

TWO ESSAYS ON INCREASING THE LEARNING
EFFECTIVENESS OF ECONOMICS EDUCATION

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TWO ESSAYS ON INCREASING THE LEARNING
EFFECTIVENESS OF ECONOMIC EDUCATION

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CHAPTER I

INTRODUCTION

BACKGROUND

Firms combine inputs such as labor, energy, and factory machines (capital) to produce a good or service. Economists call the inputs factors of production. The completed good or service is called the output. The entire process is called the production process. The way a firm uses these inputs determines the amount it can produce as well as the cost of producing the output. Stated another way, the level of output is a function of the quantities of the various inputs used to produce the output. We can describe this mathematically as a production function. In our example above, we could say that output is a function of labor, energy, and capital. Given the information provided by the firm's engineers, our actual production function could be stated as:

$$\text{Output} = \text{labor}^{1/3} \times \text{energy}^{1/3} \times \text{capital}^{1/3}.$$

This means that when one combines the factors of production, the output equals the product of the cube root of each input. For example, to produce nine units of output, the firm can use different input combinations. The firm could use twenty-seven units of labor and energy each and one unit of capital. Another possibility is twenty-seven units

of labor and capital each and one unit of energy. As a firm changes the quantity of an input the output changes accordingly.

The purchase price of each input represents its cost. Firms seek to produce a given level of output at the lowest possible cost. This least cost method requires that the total cost of the inputs to produce a given output level be the smallest possible. The opposite of least cost production is production maximization. This is producing the greatest amount of output using a given set of inputs. In the production of education or learning, the amount learned by students is an output.

Economic education production functions focus on measuring learning output given a set of inputs. Traditionally, achievement scores on various types of written tests serve as outputs. Economists often use the Test of Understanding in College Economics (TUCE) to measure output or learning. The inputs represent what the student and teacher bring to the production process. Common inputs such as student gender and age, student cumulative grade point average, ACT score, work status, field of study, previous economic experience and attitude toward the subject are used to measure their contribution toward the output. One may ask how this relates to economics' departments.

College economics' departments are producers of economic education. While the curriculum varies in its scope and depth, the fact remains that each instructor teaches various economic skills, knowledge, and analytical methods. The instructor's time input, experience, subject knowledge, and teaching method constitute part of the production input for economic learning. The other main production input is what the student brings.

Each student brings a different skill set, time commitment, aptitude, and interest to the economic subject. The coupling of student inputs and instructor inputs results in the production of economic learning. The measurement of economic learning is usually conducted using written exams such as the TUCE IV. Historically, the production process starts with the syllabus.

Traditionally, course syllabi indicate the chapter coverage and exam dates. Some even provide a general road map of what the student will learn during the semester. As students read chapters, listen to lectures, and work problems, they are exposed to various concepts, methodologies, terms, and information. These are nicely packaged in encyclopedic type textbooks.

Early in the course the concept of elasticity of demand is taught. The textbook describes the different ways to calculate and use elasticity of demand. Exam time arrives and students posit the following common question. “What is on the test?” The initial reply is often, “Everything we have covered.” This is often supplemented with more specific comments like, “Know elasticity of demand.” When the exam is returned, one can often hear students say, “I didn’t think I had to know elasticity of demand that well.”

An analysis of the production process reveals several critical points. Students have spent time and effort to master the concept of elasticity of demand. The instructor has done likewise; however, the output, student performance, is dismal. While the use of PowerPoint teaching slides, online study aids, and tutoring sessions may have made student learning easier, they have not significantly improved the output. Stated another

way, students that want to learn can learn more easily economic material. Conversely, the available technologies do little to support unmotivated learners.

Dickey and Houston (2009) found that most student learning takes place with the pre-lecture reading assignment and the lecture. Subsequent post-lecture study and exam preparation phases generated negligible productivity. This implies that the last two phases add nothing to learning. Without examining the measurement instruments, one cannot determine the universal application of this finding. Furthermore, experience shows that most students do not read the assigned lecture material before class. During class, student's attention span is short. Look at the number of students checking their cell-phone during class. Others are using their lap-top computer to social network and surf the internet. If students do read the pre-lecture assignment and pay attention in class, then these two areas could be the most productive learning phases.

Common sense and personal experience would lead one to believe that learning takes place during all four phases. How do students learn economics? They "learn by doing" economics. Learning by doing with repetition supports the approach that all phases contribute to learning.

Siegfried and Walstad (1998, pp. 147-148) indicate "... that below-average students earned lower grades because they made significantly less effective use of study time than above-average students." They also found (1998, pp. 148-149) that, "Benefits from more efficient pedagogical techniques that reduce student study time may be used by students to 'purchase' increased learning in other subjects, or may simply be converted into more leisure." Arce, Formby, and Zheng (1996) confirmed the large

positive benefits class attendance had on learning. Consequently, each individual brings a different level of study effectiveness and time commitment to the learning process.

How do we improve the output without increasing the input time of the teacher and the learner?

The use of learning objectives (LO) in textbooks to guide learning has become more common during the past ten years. However, learning objectives as currently stated in textbooks represent an end point without any standard or task conditions. For instance, in the Bade and Parkin principles of microeconomics textbook, the learning objective appears as “Define, explain the factors that influence, and calculate the price elasticity of demand” (Bade 2009, p. 111). This learning objective contains at least three distinct individual tasks.

1. Define price elasticity of demand
2. Explain the factors that influence price elasticity of demand.
3. Calculate price elasticity of demand.

Does the learning objective indicate the task conditions in which one must explain the influences, or calculate the price elasticity of demand? Does the student explain the influences from memory, from a scenario, and/or by using a graph?

Lastly, what performance standards must the student meet to be considered proficient on the given task? Answering these questions requires considerable preparation on the instructor’s part. Also, communicating task, task conditions, and the task standard to the student requires additional changes in classroom material presentation.

In summary the efficient production of economic learning requires the instructor to answer five key questions. First, what must a student know or do? Second, under what condition(s) must the student perform the task? Thirdly, what steps must a student perform and in what order to complete the task. Fourthly, what constitutes acceptable task proficiency? Lastly, how can one assess performance before, during, and after class? Clearly and concisely answering these questions is an important step in improving the production process.

The increasing cost of higher education and increasing competitiveness in global labor markets necessitates that courses and curriculum provide greater economic benefit. This can be accomplished in numerous ways. Firstly, teachers can cover the same material in a shorter time frame. Secondly, teachers can go deeper into the course material during the normal course time allotted. Thirdly, institutions can provide the course using a cheaper delivery method such as online distance learning. Lastly, a hybrid approach such as task based, self-paced program instruction can reduce both student and university costs. The shorter, deeper, and cheaper approaches not only focus learning but also reduce content costs. The teaching, learning, and evaluation outline (TLEO) pedagogy found in this study is applicable to all four approaches.

The TLEO pedagogy establishes a task domain for each subject. Within the task domain, one finds tasks that are unique to the course. A unique task for a Money and Banking course would be, "Calculate the change in checkable deposits and currency from open market operations when the money multiplier is influenced by the public, banks, and the Federal Reserve." Conversely, calculating the expenditure multiplier is a principles level task. Both are used in the course. The money supply task is taught for

the first time in this course. The expenditure multiplier task is a sustainment or reinforcement task that should not be re-taught at this level.

The TLEO pedagogy identifies and reduces the number of new tasks requiring initial teaching. Likewise, the pedagogy indicates the tasks which students are expected to know before entering the course. By specifying prerequisite skills, knowledge and abilities, the course content can be covered in a shorter time period. This contributes to shorter classes. More important it sends a message to students that certain tasks are necessary for subsequent courses and re-teaching is not part of the curriculum at the higher level. A deeper approach may also be available.

The deeper approach is possible when the available time remains unchanged and one uses the TLEO pedagogy. By indicating prerequisite tasks versus prerequisite courses, an economics department can focus its instruction based on pre-specified goals. Identifying the course unique tasks provides a learning domain for the student and teacher. Teachers focusing on unique tasks can cover more new material while leaving students to sustain their proficiency on prerequisite tasks. Another option is discussing some concepts in greater depth. Active learning is more likely when there is more time available for instruction.

The teaching, learning, and evaluation outlines for several tasks can also serve as the foundation for scenario driven instruction. Scenario driven instruction requires one to integrate numerous tasks for problem solving. For instance, the scenario could be, “The Fed purchases \$20 billion in U.S. Treasury bonds from the banking system. Illustrate and explain the impact of this action on the bond market, the Loanable funds market, the

money market, and the IS-LM model.” This is deeper but uses numerous tasks to complete the overall action. Making the learning experience cheaper is the last challenge.

The TLEO pedagogy can support task based learning as well as distance learning. The task teaching, learning, and evaluation outlines enable teachers to present performance steps visually. Likewise, students can follow the teacher and practice the task per the performance steps. Lastly assessment follows using the evaluation/assessment portion of the task.

Whether an economics department is using the shorter, deeper, or cheaper approach, the TLEO pedagogy supports their effort. This pedagogy should be taken for all classes taught in economics department. Following this process helps teachers learn and teach the essential tasks as well as enabling students to teach themselves the task.

RESEARCH QUESTION/STATEMENT OF THE PROBLEM

The problem is, “How does one improve economic learning without increasing student or instructor production inputs.” Put another way, “Is there a way to increase the effectiveness related to teaching, learning, and assessing economics education?” This study proposes a new pedagogy, the teaching, learning, and evaluation outline (TLEO). This pedagogy should meet the challenges without increasing student or instructor inputs. Essay one develops the pedagogical process and supporting documents. Essay two describes the use and evaluates the effectiveness of the pedagogy for online and in-class use.

PURPOSE OF THE STUDY

This study seeks to transfer a previously proven teaching and learning pedagogy used by the United States Army to the production of economics learning. The method has been used successfully since 1976 at all levels of the organization. One can find this method being used to train/teach new recruits as well as with high-level executives.

The TLEO pedagogy provides the instructor and student with a document containing the task, task conditions, performance steps, performance measures, and proficiency standard for the specified task. An individual task in the above format will serve as the vehicle for classroom instruction and as the student instructional guide for learning economic tasks.

One of the goals of the new pedagogy is that it should not significantly add to the time and effort required to prepare or present classroom instruction. Additionally, it should focus student learning efforts, and identify and simplify required performance steps. Lastly it provides a vehicle for the student to practice the task, and determine performance shortfalls or task mastery.

DEFINITION OF TERMS

Task. A clearly defined and measurable activity accomplished by an individual. It is the lowest behavioral level in a job or course of study that is performed for its own sake. It must be specific, usually has a definite beginning and ending; may support or be supported by other tasks; has only one action and, therefore, is described using only one verb. It must be observable and measurable. The task title must contain an action verb and object and may contain a qualifier (TRADOC 1999).

Task condition. It describes the evaluation conditions under which the task will be performed. It expands on the information in the task title by identifying when, where and why the student performs the task and what aids the student is allowed to perform the task (TRADOC 1999).

Standard. A statement which establishes criteria for how well a task or learning objective must be performed. The standard specifies how well, completely, or accurately a process must be performed or output produced. A task standard often contains several performance measures that must be completed (TRADOC 1999).

-The task standard reflects task performance requirements in the classroom or workplace.

-The learning objective standard reflects the standard that must be achieved in the formal learning environment.

Performance measures. The actions that can be objectively observed and measured to determine if a task performer, student, has performed the task to the prescribed standard. When combined in a process or methodology, these performance measures will result in “task performance steps” (TRADOC 1999).

Knowledge. Information or fact required to perform a skill or supported task (TRADOC 1999).

Skill. The ability to perform a subject related activity which contributes to the effect performance of a task performance step (TRADOC 1999).

Task-based instruction. Instruction developed and implemented to teach students to perform tasks and supporting skills and knowledges to established performance standards (TRADOC 1999).

Learning objective (LO). A precise three-part statement describing what the student is to be capable of accomplishing in terms of the expected student performance under specific conditions to accepted standards. Learning objectives clearly and concisely describe student performance required to demonstrate competency in the material being taught. LEARNING OBJECTIVES focus the instruction on what needs to be taught and focuses student learning on what needs to be learned. Both terminal and enabling objectives are learning objectives (TRADOC 1999).

Online class. Computer based learning using recorded lectures to present instructional content. Students interact with the teacher through email, telephone, chat rooms or office visits.

SIGNIFICANCE OF THE STUDY

The creation of the TLEO pedagogy with its associated task domain will enable instructors to pick and choose tasks that support their course. The TLEO format provides a concise document identifying a specific task, task conditions, performance steps, performance measures, and performance standard. The standard includes specific performance measures that clarify the degree of proficiency the student must demonstrate. Additionally, the task conditions further establish the aids or background information the student will have to perform the task.

The task teaching, learning, and evaluation outline simplifies pre-class preparation. This occurs because it presents all the critical information and guidance needed to teach and/or learn the task. Additionally, it enhances classroom instruction by stating the performance steps and performance measures for the task. Each student can

follow the teacher as the performance steps are illustrated. Furthermore, the performance steps can be used to learn the task. The performance measures assist with student task proficiency assessment.

The instructor identified tasks focus a student's efforts. Furthermore, the use of the TLEO pedagogy with associated performance measures adds specificity to one's learning efforts. Consequently, the student knows his task domain, each task's conditions, and the proficiency requirements for the associated task. Furthermore, the performance steps sections focus instructor teaching as well as student learning. With little additional input, both instructor and student should have a clear picture of the greater learning objectives.

The TLEO pedagogy can be applied to nearly any academic course. Additionally, evaluation instruments such as exams could then focus on performance measures within task standards. The evaluations would better reflect student learning. Many textbook test bank questions do not provide reliable information on a student's proficiency in specific tasks.

The actual development of TLEO documents requires subject matter experts to conduct a top down subject analysis. This analysis would identify the tasks common to all areas within a specific field of study as well as those associated with specialized areas within the field of study. For example, one could identify the unique and lower level tasks associated with an intermediate level economics course. Likewise, the unique and lower level tasks associated with more specific topical areas such as International Trade or Money and Banking can be identified. This would enable departments to better

synchronize the teaching and reinforcement of critical and common tasks during a student's program progression. An aggressive economics department could determine those essential tasks that all economics students should master.

The last benefit of this study regards the increase in student learning without increasing the level of effort. Furthermore, instructor preparation is aided by the selection and teaching of relevant student tasks that support the textbook material. This would add focus to teaching preparation and establish a common framework for teaching and demonstrating the task without increasing instructor preparation time.

ASSUMPTIONS

The following assumptions will be made:

1. Students will not share the TLEO with students in sections not using the TLEO.
2. Students will not increase the amount of time they spend preparing or studying for class or examinations.
3. The instructor will use the TLEO pedagogy to identify tasks and teach the task in accordance with its task conditions, performance steps, and task standard.
4. Students will fully participate in pre-Test of Understanding in College Economics (TUCE) (Micro or Macro) version IV, and embedded post-TUCE.
5. The students will honestly answer the personal information inventory and Attitude Toward Economics (ATE) survey.

LIMITATIONS

The research may be limited by the following:

1. A small number of sections receive the treatment.
2. A small number of students participate in the personal information inventory and Attitude Toward Economics survey.
3. Some students will fail to complete some items on the personal information inventory

DELIMITATIONS

The study will have the following delimitations:

1. The students will be enrolled in ECON 1113, Economics of Social issues or ECON 3313, Money and Banking.
2. An equal number of treatment and non-treatment sections will be used for ECON 1113.
3. An equal number of treatment and non-treatment students will be used for ECON 3313.
4. Only students that complete the pre-TUCE, student survey instruments, and post-TUCE at the scheduled time will be included in the study data.
5. Student performance results will consist of:
 - a. post-TUCE score
 - b. (post-TUCE score – pre-TUCE score): Change in TUCE score,
 - c. [Change in TUCE score]/[1 – pre-TUCE score]: GAP
 - d. Final individual course average (ECON 1113 Only)
 - e. Exam three score (ECON 3313 Only) from three possible exams

CHAPTER II

REVIEW OF LITERATURE

Most economics education and education production studies address one of the following areas: improving teaching; increasing student learning; assessing economics learning; parts of the education production function; or course content.

This chapter starts with a review of the relevant literature. Next the numerous challenges facing effective teaching in a large, global institution are discussed. Then the variables used in the education production function are presented. Lastly, a testable hypothesis using an education production function and means comparison tests is introduced.

TRADITIONAL LECTURE METHOD

The predominant college economics pedagogy in 1995, 2000, and 2005 is the “chalk and talk” method (Becker and Watts, 2008). “Chalk and talk” is when one “... lectures to a class of students as he writes text, equations, or graphs on the chalkboard” (Becker and Watts, 1996, p. 450). The effectiveness of this method of instruction varies with the level of student involvement. Drawing students into the learning process requires them to possess certain foundational skills, knowledge, and abilities. Additionally, lecture effectiveness varies with the level of student preparation prior to

class and subsequent attention during class. My observations indicate that students seldom come to class prepared to learn and are easily distracted.

ASSESSING LEARNING

“Despite complaints about poor assessment methods; few studies document how Principles of Economics instructors assess student performance.” (Salemi et.al. 2001, p. 442). The Council on Economic Education currently has a study group working on this issue. Regardless, continuous, relevant assessment before, during, and after class is necessary. The assessment must focus on the tasks taught using stated task conditions and task standards.

Learning assessment in introductory economics classes uses multiple choice and essay questions predominately (Becker and Watts, 2001). Multiple choice questions constitute the largest portion of assessment in these courses (Buckles and Siegfried, 2006). There are conflicting findings regarding the level of learning measured by multiple choice and essay questions (Walstad and Becker, 1994, Chan and Kennedy, 2001, Walstad, 2006). Buckles and Siegfried (2006) state that well written multiple choice questions can evaluate a student’s learning at the knowledge, comprehension, application, and analysis levels of Bloom’s taxonomy. Furthermore, free-response questions designed for grading by a large number of assistants using checklists often fail to measure higher levels of understanding.

Grimes and Nelson (1998) found that a student’s attitude toward economics significantly influences a student’s persistence to complete a Principles of

Macroeconomics course. O'Neill (2001) found that test types have no impact on a student's attitude toward economics or the decision to complete the course.

INTRODUCTORY COURSE CONTENT AND COURSE SEQUENCING

Introductory course content and microeconomics/macroeconomics ordering received considerable attention. (Hansen 2001, Walstad 1998, Salemi 1999, McConnell 1998). The debate continues between those advocating an all encompassing introductory course versus those that want to foster a "usable level of economic literacy" as the goal (McConnell, 1998, p. 39). Frank contends that the "...best way to teach introductory microeconomics (or any subject for that matter) is to expose students to repeated applications of a short list of the core ideas of the discipline." (Frank 1998, p. 13).

DISAGGREGATING EDUCATION PRODUCTION

Normally economics education production functions measure the increase in learning from the beginning of a course to its completion: a student should know more economics at the end of the course versus the beginning of the course. Therefore, a student's end of course TUCE score should be larger than the start of course TUCE score. Dickey and Houston (2009) disaggregated the process to measure student performance during four stages of production. The four stages were: the reading assignment, the lecture, post-lecture study, and preparation for the exam. The findings indicate that the reading assignment and lecture had a positive impact on production. The post-lecture study and test preparation phases had a negligible effect on the production process.

USING LEARNING OBJECTIVES

“One of the most useful things that we can do to help our students acquire new knowledge is to let them know exactly what it is that they are supposed to learn” (Saunders 1998, p. 95). Focusing student learning through the use of learning objectives has increased; however, the learning objectives are often in the analysis, synthesis or evaluation categories in the cognitive learning domain. Saunders (1998) indicates that this will simplify the instructors work and still communicate what the student must learn. When was the last time you posited learning objectives or had one stated in your class? As stated earlier, someone must determine the lower level cognitive tasks that enable one to complete the higher learning objectives. Currently no studies are available to determine the utility of using higher level tasks without stating the necessary lower level supporting task.

DISCUSSION OF RELEVANT ISSUES

Technology has expanded the number of learning aids available to students and instructors alike. Class lectures are available in audio and audio-video formats for student use. Teaching notes, instructor slides, problem sets, and solutions are also available to students in electronic and paper formats. When used in a timely and proper manner, they enable students to learn more and help focus instructor teaching. These accomplishments are also accompanied by an increase in time committed to the course. Because of the increased time commitment, these pedagogies do not meet the criteria for this study.

TEACHING, LEARNING, AND EVALUATION OUTLINE HISTORY

The United States Army implemented a training-teaching strategy in 1976 which is applicable to the production of learning in general (TC 21-5, 1976). The strategy solved several training-teaching challenges which this global, diverse organization confronted. The challenges solved were:

1. What does a soldier in a specific job specialty need to know or be able to do (skills, knowledge, and abilities)?
2. In what conditions must he/she use these skills and knowledge?
3. What steps or procedures do these actions require?
4. What constitutes acceptable proficiency in the skills and knowledge?
5. How can a task, process, or methodology be standardized on a global basis?
6. What can be done to assist the instructor in preparing instruction?
7. What can be done to communicate to the instructor and the student:
 - a. What the learning task is.
 - b. What the conditions are to perform this task.
 - c. What performance measures must be completed and to what level of proficiency.
 - d. What constitutes proficiency on this task.

The implemented solution resembles the teaching, learning, and evaluation outline pedagogy. Tasks are developed for work, office use, projects, missions, and teaching. Each task is accompanied by conditions and measurable standards. As such, everyone understands the end result and the steps to reach it (TC 21-5, 1976).

No published research studies are available to validate this process; however, I have used and observed this process for 23 years. The process is currently used by all services and for joint-services publications and operations. Furthermore, I observed how it:

1. minimizes instructor preparation time for teaching recurring tasks.
2. enables the learner to see what he/she needs to perfect to be proficient on the task.
3. establishes a standard that is universally applied.
4. causes teachers to analyze a situation to identify the critical tasks.
5. enables the development of performance standards for the task identified in 4 above for non-recurring subjects, actions, events, and missions.

The procedure empowers teachers and students without increasing their time commitment. Once the economic tasks are identified, task conditions are established, and performance standards delineated; the time spent on a task is maximized. Like a laser, one's efforts are focused.

The goal of this dissertation is to develop the TLEO pedagogy for a typical semester long Principles of Microeconomics course and a portion of a Money and Banking course, and to assess its effectiveness in enhancing learning.

HYPOTHESIS

Table 1

Listing Of Variables Used In Education Production Function

Variable Name	Variable Description
Pre-TUCEMi	Student's pre-course score on Test of Understanding in College Economics (TUCE) IV, Microeconomics
Post-TUCEMi	Student's post-course score on TUCE IV, Microeconomics
Pre-TUCEMa	Student's pre-course score on TUCE IV, Macroeconomics
Post-TUCEMa	Student's post-course score on TUCE IV, Macroeconomics
ATE	Student's pre-course Attitude Toward Economics survey instrument
GEND	Female=0; Male=1
AGE	Age in years
WORK	Working during semester =1; not working=0
GDSCH	Going to graduate school: 1=yes; 0=no
CGPA	Student's cumulative GPA on course start day
PEDAGOGY	TLEO Method=1; Traditional=0
ACT	Student's composite score on American College Test
AVERAGE/(EX3)	Student course average for all exams in ECON 1113; (exam 3 ECON 3313)
SECT	ECON 1113.002=1, ECON 1113.003=2, ECON 3313.603 = 3, ECON 3313.613=4

An education production function is used to assess the effectiveness of the TLEO pedagogy (Siegfried and Walstad 1998, Dickey and Houston 2009). Educational production functions measure learning output, achievement, based upon a standard group of independent variables. Often a unique experimental variable is added to the inputs. The standard group of independent variables is listed and defined in Table 1. The unique

experimental variable is PEDAGOGY. This study uses four unique measurements for achievement. These measurements are:

- a. post-TUCE score
- b. Change in TUCE score: post-TUCE minus pre-TUCE
- c. GAP: [Change in TUCE score]/[1 – pre-TUCE score]:
- d. Average: Final individual numerical average (ECON 1113 Only)
- e. EX3: Individual numerical score on exam 3 (ECON 3313 Only)

The education production function for this study is: (ECON 1113 Only)

$$\text{Achievement} = a + b_1 \text{Pr } eTUCEMi + b_2 ATE + b_3 GEND + b_4 AGE + b_5 WORK + b_6 GDSCH + b_7 CGPA + b_8 ACT + b_9 PEDOGOGY + \varepsilon \quad (1)$$

Achievement is measured for the ECON 1113 sections as:

- a. post-TUCE score: (Post-TUCEMi)
- b. Post-TUCEMi minus Pre-TUCEMi: (ChgTUCEMi)
- c. [ChgTUCEMi]/[1 – pre-TUCE score]: GAP
- d. Final individual course average (ECON 1113 Only): Average

The testable hypothesis at $\alpha = 0.05$ level using a one tail test is:

$$H_0: b_9 \leq 0$$

$$H_A: b_9 > 0$$

ECON 3313 classes are online classes. Students are randomly selected to receive the TLEO pedagogical treatment. According to Stock and Watson (2007, p. 87) “If the treatment in a randomized controlled experiment is binary, then the causal effect can be

estimated by the differences in the sample average outcomes between the treatment and control (nontreatment) groups.” Achievement is measured for the ECON 3313 sections as:

- a. Post-TUCE score: (Post-TUCEMa)
- b. Pre-TUCEMa minus Post-TUCEMa: (ChgTUCEMa)
- c. $[\text{ChgTUCEMa}]/[1 - \text{pre-TUCE score}]$: GAP
- d. Exam three score (ECON 3313 Only): EX3

Table 2 list the difference of the means test performed.

Table 2
Difference of Means Tests For Econ 3313 by Groups and Within Sections

ECON 3313/ SECTION	Means Tested
3313	HO: $\text{Pre-TUCEMa}_{\text{Nontreatment}} = \text{Pre-TUCEMa}_{\text{Treatment}}$
3313	HO: $\text{Post-TUCEMa}_{\text{Nontreatment}} = \text{Post-TUCEMa}_{\text{Treatment}}$
3313	HO: $\text{ChgTUCEMa}_{\text{Nontreatment}} = \text{ChgTUCEMa}_{\text{Treatment}}$
3313	HO: $\text{GAP}_{\text{Nontreatment}} = \text{GAP}_{\text{Treatment}}$
3313	HO: $\text{EX3}_{\text{Nontreatment}} = \text{EX3}_{\text{Treatment}}$
3313.601	HO: $\text{Pre-TUCEMa}_{\text{Nontreatment}} = \text{Pre-TUCEMa}_{\text{Treatment}}$
3313.601	HO: $\text{Post-TUCEMa}_{\text{Nontreatment}} = \text{Post-TUCEMa}_{\text{Treatment}}$
3313.601	HO: $\text{ChgTUCEMa}_{\text{Nontreatment}} = \text{ChgTUCEMa}_{\text{Treatment}}$
3313.601	HO: $\text{GAP}_{\text{Nontreatment}} = \text{GAP}_{\text{Treatment}}$
3313.601	HO: $\text{EX3}_{\text{Nontreatment}} = \text{EX3}_{\text{Treatment}}$
3313.613	HO: $\text{Pre-TUCEMa}_{\text{Nontreatment}} = \text{Pre-TUCEMa}_{\text{Treatment}}$
3313.613	HO: $\text{Post-TUCEMa}_{\text{Nontreatment}} = \text{Post-TUCEMa}_{\text{Treatment}}$
3313.613	HO: $\text{ChgTUCEMa}_{\text{Nontreatment}} = \text{ChgTUCEMa}_{\text{Treatment}}$
3313.613	HO: $\text{GAP}_{\text{Nontreatment}} = \text{GAP}_{\text{Treatment}}$
3313.613	HO: $\text{EX3}_{\text{Nontreatment}} = \text{EX3}_{\text{Treatment}}$

The testable hypothesis at the .05 level using a one tail test is:

$$H_0: \overline{Nontreatment} = \overline{Treatment}$$

$$H_A: \overline{Nontreatment} < \overline{Treatment}$$

CHAPTER III

METHODOLOGY

INTRODUCTION

The research consists of three phases. In phase one, the training, learning, and evaluation outline pedagogy is developed. Pedagogy development starts by identifying tasks from the Principles of Microeconomics domain and those associated with unit three of the Money and Banking domain. This phase concludes with development of individual teaching, learning, and evaluation outlines for most of the identified tasks.

Phase two starts with the administration of the course pre-TUCE. The pre-TUCE uses multiple choice questions to measure student's initial level of knowledge. This event is followed by student survey data collection. Random selection of treatment subjects from the online Money and Banking course follows. Next, the training, learning, and evaluation outline pedagogy is used in classroom instruction. Phase two ends with the post-TUCE.

The post-TUCE uses multiple choice questions to measure student's knowledge level at the end of the course. The ECON 1113 sections receive the Microeconomics TUCE version while the ECON 3313 sections receive the Macroeconomics version. The

Microeconomics pre-TUCE and post-TUCE use identical questions. The same applies for the Macroeconomics pre-TUCE and post-TUCE exams.

Phase three consists of data analysis. Data from all instruments are combined into three EXCEL spreadsheets. There are separate spreadsheets for the ECON 1113 and ECON 3313 courses. A combined spreadsheet is also prepared. Descriptive statistics, means comparison tests, and regression analysis are completed. The phase ends when these actions are analyzed and findings are prepared.

The research uses students taking ECON 1113, Economics of Social Issues, and ECON 3313, Money and Banking, at Oklahoma State University (OSU) during fall semester 2009. The Economics of Social Issues sections are traditional sixteen week courses. Each section meets twice a week for seventy-five minutes each day. The Money and Banking sections consist of one sixteen week and one eight week course. These sections are online classes. There is no scheduled meeting time for these sections. Therefore, there are four sections for evaluation purposes.

Seven instruments are used during the semester for data collection and hypothesis testing. The student survey is common to all sections. The Economics of Social Issues classes use the Microeconomics pre-TUCE and post-TUCE. Each student's class average is also used. Money and Banking students use the Macroeconomics pre-TUCE and post-TUCE. The unit three exam score, EX3, is the final instrument used for Money and Banking students.

SUBJECTS

Students taking ECON 3313 and ECON 1113 during spring semester 2009 represent students in the colleges of Business, Education, Human Environmental Sciences, Arts and Sciences, and Agricultural Sciences and Natural Resources at OSU. The sample consists of four sections taught by the author.

The student population consists of undergraduates majoring in fields inside the above mentioned colleges. The majority of students are traditional students. Students taking ECON 1113 have no previous economic courses at the college level. Students taking ECON 3313 have had at least one principles level economics course. The Principles of Macroeconomics course is a prerequisite course for Money and Banking; however, some students take the course without completing the prerequisite course. Table 3 indicates the number of students starting and completing the course by course and section. Also listed are the class formats and treatment received.

Table 3
Subjects by Course, Section, Instructional Method, and Treatment

Course Number and Section	Students Starting the Course	Students Completing the Course	Format	Treatment
ECON 1113.002	46	35	Classroom	No
ECON 1113.003	70	54	Classroom	Yes
ECON 3313.603	62	60	Online	Randomized
ECON 3313.613	43	41	Online	Randomized

The treatment selectees, those receiving the TLEO pedagogy, were chosen as follows. A coin flip decided that ECON 1113.002 would receive the traditional lecture method of instruction. Consequently, ECON 1113.003 receives the treatment.

The ECON 3313 sections use a random number generator to select individuals that will receive the treatment. Students completing the pre-TUCEMa, pre-TUCE Macroeconomics version, and the student survey are given a number from 1-60 generated by a random number generator. Students from section 3313.603 with a number of less than 31 were entered into the treatment group. Section 3313.613 students with a random number less than 22 entered the treatment group. This randomized controlled experiment enables one to estimate the causal effect of the pedagogical treatment using only difference of means testing (Stock and Watson, 2007)

INSTRUMENTS AND QUESTIONNAIRE CONTENT

Seven instruments are used during the experiment. Six are test instruments and one is a student questionnaire of personal information. The two test instruments administered at the beginning of the course are the pre-TUCEMi, Microeconomics version, and pre-TUCEMa, Macroeconomics version. Each consists of twenty one questions. The TUCE is a nationally norm referenced exam which was recently norm referenced in 2007.

Students taking the Economics of Social Issues classes, ECON 1113, are administered the pre-TUCEMi exam during the second class meeting. Students missing the exam are administered the exam before the fourth class period. Several students missed both exam periods and are eliminated from the study. Pre-TUCEMi scores are recorded in the student's file in Desire2Learn which is the university's course management system.

Desire2Learn is a learning platform designed to create, organize and manage student online activities and courses; create and administer student evaluation tools; manage and record grades; and communicate with students (D2L, 2006). Since the Money and Banking students are enrolled in online classes, they experience a different approach than the traditional in-class Social Issues sections.

These students take the pre-TUCEMa exam online in Desire2Learn. Students complete the exam before the second week of class. Those failing to complete the exam are removed from the study.

Online classes differ from traditional classes. The online classes use instructor recorded lectures. Students view the lectures and complete the problem set questions at their leisure. All online students take proctored exams on specific dates like the students in the Economics of Social Issues classes. Taking proctored exams on a specific date is the only action with a date and time requirement. Otherwise, they manage their own “class time” and study. Student-teacher communication is conducted by email, phone, chat room or student office visitation.

After completing the pre-TUCE exams, students complete the student survey, appendix F. The student survey has two parts. Part one obtains personal information such as race, gender, age, work, graduate school intentions, GPA, ACT score, and college major. Part two contains the Attitude Toward Economics questions.

Students in the Social Issues classes complete a paper survey immediately after completing the pre-TUCEMi exam. Several students opted out of the survey and are eliminated from the study. Money and Banking students take the survey online in

Qualtrics, an internet survey site. Failure to complete the survey eliminates a student from the study. The post-TUCE evaluations are the next instrument administered.

Both the macroeconomics version and the microeconomics version are imbedded in the last exam taken by each student. This is exam three for the ECON 3313 students and the final exam for ECON 1113 students. Failure to complete the pertinent exam eliminates the student from the study.

Each course has one additional instrument. Each ECON 3313 student's unit three numerical exam score is used. Each ECON 1113 student's final numerical course score is used as its last instrument.

RESEARCH DESIGN

The design for this causal-comparative experiment incorporates traditional and online students in two different economics courses. Additionally, there are two formats for the online Money and Banking sections, sixteen and eight weeks. Students included in the study complete the applicable pre-TUCE and student survey during the first week of the course. Students completing the two previous instruments and the post-TUCE are included in the final group for the study.

The teaching, learning, and evaluation outline pedagogy is applied to ECON 1113.003 starting with the third class session and continues until 12 November. ECON 1113.002 receives a standard "chalk and talk" pedagogy throughout the semester. The post-TUCEMi, embedded in the final exam, is taken on 8 and 10 December respectively.

Upon completing the unit two examination in ECON 3313, treatment students are notified of their selection. The uniform resource locator for a specially recorded video is

sent to the treatment individuals. The video explains the purpose of the study, use of the teaching, learning, and evaluation outline pedagogy, and use of the individual task in TLEO format. Individuals receive the option not to participate or to withdraw from the treatment at any time during unit three. The remaining treatment students are sent uniform resource locators (URL) for TLEO pedagogy lessons for chapters 19 to 22 of *Money, Banking & Financial Markets*.

Nontreatment students continued to view video lessons and use materials that are not TLEO pedagogy related. One student saw the TLEO materials from a friend and demanded inclusion in the treatment group. She indicates that the materials are much better than the non-TLEO pedagogy materials.

The post-TUCEMa is embedded in the unit three examination. ECON 3313.613 takes examination three on 5 November 2010 while ECON 3313.603 takes examination 3 on 18 November 2010. The post-TUCEMa tests are graded and recorded on the appropriate spreadsheet.

DATA COLLECTION AND RECORDING

As previously stated, data collection occurs during the first two weeks of each course and then during last three weeks of each course. The pre-TUCEMi is a paper based exam and the pre-TUCEMa is contained within the Desire2Learn program. Results from each student's pre-TUCE test are stored within the class D2L website. The data remains there until data consolidation takes place during the period 16 December to 23 December 2010. At that time, it is imported into a class spread sheet.

A spreadsheet mirroring the one found in Qualtrics is developed and used to record survey data from the Economics of Social Issues Classes. This spreadsheet also contains column headings for pre and post TUCEMi scores as well as final course averages. Student survey data is recorded 8-9 September 2010. The post-TUCEMi scores are calculated on 11 December 2010 and added to the spreadsheet. Pre-TUCEMi scores are added the following week as are the student course averages. The four achievement measures are calculated and added to the spreadsheet later in December. Student data from the Money and Banking courses use a different procedure. A consolidated spreadsheet containing the two Social Issues classes is prepared. Only students completing all required events were included in the consolidated spreadsheet.

The student survey data from the Qualtrics program provides the basic spreadsheet for the Money and Banking course data collection. The downloaded survey data is appended with each student's pre-TUCEMa score. This is necessary to determine which students are eligible for inclusion in the study. Students with no pre-TUCEMa score or student survey are eliminated from the study. When ECON 3313.613, the eight week course, finishes exam three on 18 November 2010, the post-TUCEMa results and exam three results are calculated. The results are imported into the basic spreadsheet. Three measures of achievement are calculated and added to the spreadsheet. ECON 3313.603 experiences the same process on 9-10 December 2010. The two ECON 3313 spreadsheets are consolidated. The consolidated spreadsheet only contains individuals that are fully qualified for the study.

CHAPTER IV

THE TEACHING, LEARNING, AND EVALUATION OUTLINE PEDAGOGY

INTRODUCTION

The transformation of tasked based instruction used by the U.S. Army to an introductory level economics courses requires several steps. A task domain of 130 tasks for Principles of Economics is developed, appendix A. This domain is further reduced to 88 tasks associated with a typical semester long microeconomics course, appendix B. Since the training, learning, and evaluation outline pedagogy will be applied to an Economics of Social Issues class, the domain is finally reduced to 73 tasks associated with Economics of Social Issues. Next, individual teaching, learning, and evaluation outlines are developed for the 73 tasks, appendix C. Additionally, the task domain for unit three of the Money and Banking course is identified, appendix D. From this domain, task teaching, learning, and evaluation outlines are developed, appendix E.

A brief review of the literature relating to principles level course content, instructional methods, and learning objectives starts the chapter. Next, the identification process for common and unique tasks in the Principles of Microeconomics domain is discussed. Subsequent iterations of this process reduce the tasks to those associated with the Economics of Social Issues course and those for unit three of the Money and Banking

course. Next, the development and completion of teaching, learning, and evaluation outlines for each task in the Money and Banking and Social Issues course occurs. The significance and unique features of the TLEO pedagogy are then discussed. Lastly, findings and conclusions complete the chapter.

LITERATURE REVIEW

Much has been written concerning the content domain for a Principles of Microeconomics or Macroeconomics course. Frank (1998) believes that a short list of core ideas should be taught. Siegfried (1998, pp. 67-68) believes that, “The introductory course should emphasize the application of a limited number of important concepts and theoretical tools to a variety of problems.” Hansen et.al (2001) believe The Voluntary National Content Standards, 1998, produced by the National Council on Economic Education should be the course domain for the principles course. While short list support seems common, current teaching methods reveal that most courses use the long-list approach.

Becker and Watts (1996, 1998) determined that the teaching methods for principles courses are lecturing 83 percent and less than 5 percent for cooperative learning and other hands-on activities. This conclusion is based on survey data obtained from 628 college level teachers. Hansen et. al (2001) posit that the long-list approach is driving and/or supporting the extensive use of lecturing.

The support for active learning in the classroom is increasing while its use has not. Becker (1997) finds that students learn better when exposed to active learning. Salemi supports limited active learning for the most important concepts within his

courses. He uses an elementary form of learning objectives to direct learning at the application and analysis levels of Bloom's cognitive taxonomy (Salemi 2002). Creating active learning exercises is time consuming and requires more class time to implement. Programs such as Aplia or MyEconLab stimulate active learning outside of the classroom; however, they are often used by students to complete a homework or quiz assignment and nothing more. Regardless, students still want to know: What do I have to know; How well do I have to know it; and Under what conditions will I be required to perform the task! As previously stated, Saunders (1998) supports the use of learning objectives to focus learning.

The United States Army uses a systems approach to training (teaching) methodology to identify and to develop tasks associated with individual job performance. Using observation, subject matter expertise, and battlefield laboratory analysis, individual tasks are developed for all personnel regardless of organizational level. The identified tasks represent those skills, knowledge and abilities an individual must possess to effectively function as part of a group and contribute to mission accomplishment. These tasks vary in type and applicability; however, they are all developed using the systems approach to training (TRADOC Reg. 350-37, 1999).

Incorporating the good ideas from all these viewpoints requires new thinking. This new thinking should identify the task domain for a subject. More specifically, what tasks do individuals need to perform? For every identified task, a task performance standard should be established. These actions establish the start and end points. The actions between these points affect teaching effectiveness and efficiency as well as successful student learning.

RESEARCH AND DEVELOPMENT METHODOLOGY

Identifying economic tasks establishes the foundation for developing individuals. A task title is developed which describes what the student is required to do in the course. It has one active verb, an object, and may have a qualifier that describes the required actions (TRADOC Regulation 350-70, 1999). Verbs such as know, explain, understand would not be used because they are imprecise. A task in economics would be: Calculate total profit.

A survey of the Bade and Parkin, Mankiw, and Tucker principles of microeconomics textbooks reveals 130 tasks at the knowledge and comprehension cognitive domain levels. These 130 tasks become the principles of microeconomics domain. Appendix A contains the detailed listing. The full domain is reduced to 88 tasks by excluding those tasks not covered during a “typical” semester long course. These micro tasks are listed in appendix B. Only 73 tasks from the original task domain are taught in Economics of Social Issues.

Money and Banking students use the TLEO pedagogy also. The use is on a smaller scale than with the Social Issues students. A task domain of 53 macro tasks is identified to support unit three material for the Money and Banking course. The identified tasks are at appendix D. The course has two other units which were not used in the evaluation.

The development of a detailed task containing task title, task conditions, task standards, performance steps and performance measures requires giving it a title, conditions, and standards. Each teaching, learning, and evaluation outline becomes the

cornerstone instrument for the new pedagogy. Therefore, in the work that follows, only the Economics of Social Issues and Money and Banking tasks will be used to develop teaching, learning, and evaluation outlines developed. Individual TLEOs for the Social Issues course are found in appendix C while appendix E contains those for the Money and Banking Course.

DEVELOPING TASK TEACHING, LEARNING, AND EVALUATION OUTLINES

A complete teaching, learning, and evaluation outline requires one to identify how the task is actually performed; under what conditions it is performed; and how well the individual must perform it. The completion of each phase contributes to the development of a complete task. With the task delineated, the teaching, learning and evaluation outline development process continues with the establishment of task conditions. Task conditions reflect the constraints or conditions under which the task will be performed. Continuing with the previous example, the task condition statement could be: Given an equilibrium quantity and price, and output average total cost. By changing the task conditions, one can increase the level of difficulty. For example, the task conditions could be graphical or mathematical equations. Additionally, a time constraint could also be applied.

The task is further developed by identifying and listing all task performance steps in performance sequence order. The process reveals what has to be accomplished and in what order if sequencing is important. Extending the previous example, task performance steps would include 1) calculating total revenue, 2) calculating total cost,

and 3) subtracting total cost from total revenue. The task performance steps become the teaching and learning outline for the task.

A measurable, objective task standard is formulated to measure task performance. An example would be with 100 percent accuracy. Standards such as “satisfactory”, “well”, etc. would not be used because they lack specificity. The task performance standard could be 100 percent accuracy for calculating total profit. All practice attempts need timely assessment to determine individual progress.

The task performance measures are now derived from the performance steps. The performance measures must be observable, measurable actions. Comparison of student performance against task performance measures generates timely feedback to the individual. Correctly performed measures receive a “GO” and incorrectly performed or not performed measures receive a “NO-GO” during the self-assessment process. The feedback enables the student to focus corrective actions on the NO-GO performance measures. Furthermore, there is always a standard for comparison. For the total profit task, the task standard may require the student to perform all three performance steps correctly instead of just getting the answer correct. The value of this last process step is assessment. One should always assess performance by comparing ones actions with the specified performance measures. Vince Lombardi, the legendary National Football League coach would tell his players: “Practice does not make perfect. Only perfect practice makes perfect.” (BrainyQuote, 2010).

Our example task, Calculate total profit, in complete teaching, learning, and evaluation outline pedagogical format is illustrated at figure 1. Appendix C contains the

detail teaching, learning, and evaluation outlines for the Economics of Social Issues tasks. The detailed pedagogical outlines for the Money and Banking courses are found at appendix E.

Figure 1: Example Task Teaching, Learning, and Evaluation Outline

Task: Calculate total profit

Conditions: Given: Equilibrium price is \$10 and quantity is 500 units.
ATC at 500 units is \$6.

Standard: With 100% accuracy determine total revenue, total cost, and net profit.

Performance Steps:

1. Calculate total revenue: Equilibrium price (\$10) times equilibrium quantity (500)= \$5000.
2. Calculate total cost: ATC (\$6) times equilibrium quantity (500) = \$3000
3. Calculate profit: total revenue (\$5000) minus total cost (\$3000) = \$2000

Performance Measures:	GO	NO GO
1. Calculated total revenue	_____	_____
2. Calculated total cost	_____	_____
3. Calculated total profit	_____	_____

SIGNIFICANCE OF TLEO PEDAGOGY

Current Principles of Microeconomics level textbooks contain 15 to 23 chapters.¹

These books introduce and expand on key concepts. Some even provide learning objectives in the chapters or learning focus to help students. A review of the detailed table of content or the key terms and concepts at the end of each chapter, gives the

¹ A sample of thirteen Principles of Microeconomics textbooks from four publishers revealed the following number of chapters from each textbook, by author: Cengage Publishing- Mankiw, (22), Arnold (21), Tucker (17), Hall & Liberman (16), McEachern (21), Baumol & Blinder (22), Gwartney et. al. (16); McGraw-Hill Publishing-McConnell et.al. (23), Frank and Bernanke (15); Pearson Education- Hubbard & O'Brien (18), Bade & Parkin (19), Miller (21); and Worth Publishers- Krugman & Wells (21). The median and mode were 21 chapters.

student and instructor a general idea of the chapter's content. Within the chapters, concepts are defined, explained, illustrated, and often exemplified.

Instructor resource guides often contain outlines that reduce instructor preparation time. The quality varies as does the utility of the document. Students often rely upon student study guides for an overview of chapter material. Student study guides also vary in quality. The study guide for the Brue, McConnell and Flynn textbook by William Walstad contains chapter summaries, learning checklists, chapter outlines, true/false questions, multiple choice questions, problems, short answer and essay questions. The study guide for the Economics and Contemporary Issues textbook contains chapter learning objectives, key terms, true false questions, multiple choice questions, and a few application questions. The depth and breadth of coverage pales in comparison to the Walstad study guide. Regardless, concepts or procedures are not developed in a manner that provides the instructor or student with specific task, task conditions, task standard, or an assessment document. Providing an overview with relevant detail is needed. The teaching, learning, and evaluation outline pedagogy does all these things.

Instructors can reduce the encyclopedic economics textbooks into a smaller, course specific document. From the task domain, instructors can select the tasks that will be used in the semester course. Task conditions can be changed, if necessary, to meet those used by the instructor. Likewise, task standards can be modified as desired by the instructor. If active learning exercises are part of the course curriculum, then several tasks can be grouped to support the learning exercise.

All active learning is outcome based. The selection of numerous tasks that support a current economic event will facilitate student efforts toward problem solving. The introduction a higher learning problem solving process can be supported by selected economic tasks.

Teaching by the task performance steps presents a clear and sequenced method for performing the task. Furthermore, students can follow along during the instructor's teaching and subsequent application step. The students then have a procedural aide to practice the task. There is no confusion on what must be accomplished to perform the task. Students and instructors should require less preparation time before class.

Assuming that Dickey and Houston's finding are correct, there will be students that failed to prepare for class, that failed to listen during the lecture, or missed the class entirely. After class practice is often needed to master the task or to sustain task proficiency.

Students can solve homework problems using the task performance steps. When a student thinks he has mastered a task, he can test his proficiency. Working problems and comparing outcomes with the task performance measures gives the student an accurate and current assessment of his or her proficiency level. The performance measures also assist instructors with exam formulation.

The performance measures form the foundation for task evaluation. Instructors can develop assessment instruments that require students to select or perform the correct task performance measure. Multiple choice questions need to evaluate enough performance measures so an inference can be made about student proficiency. Short answer or essay questions should require the student to perform most if not all

performance measures. This focus on performance measures insures continuity from teaching through assessment.

In summary, the pedagogy establishes a task domain of specific tasks. Task outlines provide the task title, task conditions, task performance steps, and task performance measures. These parts represent what to learn, how well to learn it, and under what conditions to use it. Class preparation time should be reduced for the instructor and the student. Post-class study and pre-examination preparation time should be reduced because the student has documents that indicate what to learn and how well one knows the material.

FINDINGS AND CONCLUSIONS

Identifying course tasks and developing detailed TLEO produce several findings. Firstly, the findings reveal the universal applicability of the TLEO development process. The process used to identify tasks, develop task conditions, delineate task performance steps, and formulate task performance measures with an overall task standard can be applied to other academic disciplines. One can use the process to develop a task like, “Make a Journal Entry” in accounting or “Determine the Sample Mean” in statistics. Next, a greater in-depth knowledge regarding the task conditions, performance steps, and standards evolves. Thirdly, identification of common tasks, course specific tasks, and higher level economics tasks became clearer. Furthermore, support for active learning as well as higher cognitive domain learning becomes apparent with the grouping of tasks. Lastly, the assessment process incorporates individual and instructor involvement in and outside the classroom setting.

There is a high fixed cost associated with formulating the task domain and developing the teaching, learning, and evaluation outlines for each domain task. However, it is a small one-time cost when calculated over the lifespan of the task. A similar condition exists when one considers test question development on a task by task basis. Departmental identification of essential tasks from the overall course task domain can support a departmental foundational curriculum that identifies learning outcomes and supports internal and external assessment. Additionally, the establishment of task conditions and task standards through a group consensus standardizes the difficulty and proficiency level for students and teachers using the task.

Developing task TLEO reveals the intricacies of performing the task. Using task TLEO establishes the standard and process for achieving task proficiency. Economics is a “learn by doing” discipline. One must practice these skills, knowledge, and abilities to gain and sustain task proficiency. They represent the foundation for higher level thinking.

Students that read power point slides, fail to draw graphs, or fail to apply the effects of determinants of supply and demand fail to demonstrate basic economic proficiencies. Poor exam results reveal an inability “to do” many economic tasks. The use of teaching, learning, and evaluation outlines supports “learning by doing.”

The document provides a learning “by the numbers” approach. Furthermore, it supports self-paced learning because the student can learn the process in small portions until the entire process is mastered. Active learning and higher order cognitive learning can use task TLEO to support exercises or current economic event’s analysis. One develops a greater awareness of the specific skills, knowledge, and abilities necessary to

gain proficiency in the task. The resulting situational awareness illuminates the types of tasks as well as the learning level for each task.

The domain generation process identifies tasks that are unique to Introductory Microeconomics as well as tasks that are common to both Introductory Macroeconomics and Introductory Microeconomics. Since these tasks are common to both economic areas, they represent the foundation for introductory level economics courses. The remaining introductory microeconomics tasks provide a foundation for higher level microeconomics courses. At the introductory level, one maximizes total utility using marginal utility and fixed prices for goods. At the intermediate level, one maximizes total utility using a budget line and indifference curves. At an even higher level one uses a utility function and a budget constraint. This pyramidal or hierarchal structure provides a road map for learning how to maximize total utility. A cursory review of several intermediate microeconomics textbooks reveals the inclusion of a large number of introductory microeconomics tasks.² Furthermore, grouping tasks supports higher learning levels and task sustainment.

The use of selective tasks supports active learning. One can determine the task domain for a real world economic situation. Next, the teacher can require an analysis of the situation using the previously identified tasks. Another option is to develop scenarios which use a specified task list. After teaching the domain tasks, one can introduce the scenario, economic event, or situation. Students can then apply the skills

² A review of the first two chapters in intermediate microeconomics textbooks by Besanko and Braeutigam, Perloff, and Pendiycck and Rubinfeld reveals tasks such as trade-offs, positive vs. normative analysis, what is a market, competitive vs. noncompetitive markets, supply and demand, changes in market equilibrium, and elasticities.

learned to analyze or evaluate the given situation. Furthermore, any problem solving methodology can also be used in conjunction with domain tasks. This type of active learning requires students to operate at a higher cognitive learning level such as explaining or analyzing.

Teachers normally assess student learning using homework, quizzes, or tests. Most of these assessment tools only reflect correct or incorrect responses. If incorrect, the student does not know what he or she did incorrectly. Task performance steps provide a map for performing the task. The performance measures indicate the level of student proficiency on the task. Using these two parts of the task TLEO helps students learn the process and practice until proficiency is attained. These are pre-quiz and pre-tests actions that help students master a task and build self-confidence. While student initiated assessments are conducted outside the classroom, teacher assessments normally occur in the classroom.

The task domain and task TLEO development process can increase teacher subject knowledge, expose challenging subject material and establish learning roadmaps. Task TLEO enable students and/or teachers to assess student proficiency using observable, measureable performance. Additionally, the task TLEO facilitates directed internal and external assessment of specific tasks.

CHAPTER V

USING AND EVALUATING THE TEACHING, LEARNING, AND EVALUATION OUTLINE PEDAGOGY

INTRODUCTION.

A major shortcoming regarding economic education is the absence of an integrated pedagogy that addresses several important areas. Areas needing development, improvement and/or integration are:

1. stating course tasks concisely.
2. specifying the task environment or conditions that constrain a task.
3. delineating the way a task is performed step by step while stressing any sequential performance steps.
4. establishing what and how many performance measures constitute successful task completion.
5. providing a tool that enables student self-evaluation.
6. enhancing teacher and/or student productivity.

This study seeks to evaluate the teaching, learning, and evaluation outline pedagogy. Initially, relevant literature is discussed as well as the significance of the research. The different research instruments comprising the teaching, learning, and evaluation outline pedagogy and the pedagogical evaluation are introduced. The actual experiment, analysis of descriptive and regression statistics, and conclusions follow.

LITERATURE REVIEW.

Significance of Research.

Prior research into economic learning studied numerous factors such as gender (Becker and Powers 2001, Grimes and Nelson 1998; O'Neill 2001; Siegfried, 1979, Lumsden and Scott 1987), test construction (Walstad 1994, 2001 & 2006; O'Neill 2001, Buckles and Siegfried 2005), attitude toward economics (O'Neill 2001, Grimes and Nelson 1998, Soper and Walstad 1983), instructors (Watts and Bosshardt 1991, Charkins et. al. 1985), social issues content versus traditional principles courses (Grimes and Nelson 1998), online instruction (Allen and Seaman 2003, Khan 1997, Ascough 2002), and the use of audio-visual material (Cassady 1998, Apperson 2008). More recently, Dickey and Houston (2009) measured the effectiveness of the pre-lecture reading assignment, lecture, post-lecture study, and test preparation phases of learning. They found that pre-lecture reading and the class lecture are the more productive stages of learning. Conversely, they found the post-lecture study period and pre-test preparation phases generate insignificant results. Hansen et al. (2002) argue that the introductory level economics course should focus on the twenty Voluntary National Content Standards in Economics. Most agree that active learning is the best classroom teaching method; however, it is time consuming regarding instructor preparation and use of class room instructional time. Saunders (1998) supports using learning objectives to focus learning.

A pedagogy that incorporates the best of all these ideas is needed. The teaching, learning, and evaluation outline pedagogy provides a method to structure teaching and learning. It is based on the U.S. Army's systems approach to training (teaching) model.

The system has been used and refined since 1976. While it works well for the military's teaching purposes, it has never been applied to or evaluated in an academic environment. This study will evaluate an experimental economics pedagogy based on the systems approach to training model. The potential benefits were previously discussed in chapters 2 and 4. However, several deserve repeating.

Providing students and instructors with a task in an outline learning format can reduce instructor preparation time and improve the effectiveness of student pre-lecture preparation. Secondly, it clarifies the process for performing the task successfully. Thirdly, it provides the performance environment for performing the task. Lastly, it specifies the performance measures for task proficiency and self-evaluation.

Research Instruments.

The teaching, learning, and evaluation outlines in appendices C and E are used in the Economics of Social Issues classes and the Money and Banking classes respectively. Students complete a Pre-TUCE and student survey, appendix F, before receiving the pedagogical teaching method. The Pre-TUCE score establishes a baseline score for each student's economic knowledge. The survey provides information regarding a student's aptitude prior to entering college and conditions influencing student performance during the semester.

The ACT score is used to indicate the level of student knowledge accumulation prior to post-secondary education. Cumulative grade point average (CGPA) reveals the level of student learning accomplished while in college. The Attitude Toward Economics (ATE) score provides a cursory view of each student's attitude toward economics and its

associated tools. Information regarding a student's propensity for higher learning, outside work activities, age, and gender may influence learning outcomes. The student survey collects this information.

RESEARCH METHODOLOGY: THE EXPERIMENT

Selection of Treatment Subjects.

Subjects available for the implementation and evaluation of the teaching, learning, and evaluation outline pedagogy are two sixteen week sections of Economics of Social Issues, ECON 1113.002/.003 and two online sections of Money and Banking, ECON 3313.603/.613. ECON 3313.603 is a sixteen week section and ECON 3313.613 is an eight week section. A coin toss designates ECON 1113.003 as the treatment group. The ECON 3313 sections uses a random number generator to select individuals to receive the treatment. Students in ECON 3313.603 that complete the pre-TUCEMa and the student survey receive a number from 1-60 generated by a random number generator. Students in ECON 3313.603 with a number of less than 31 enter the treatment group. Students in ECON 3313.613 that complete the pre-TUCEMa and the student survey get a number from 1-42 generated by a random number generator. Students with a number of less than 22 enter the treatment group.

Classroom Instruction Method: ECON 1113.003 (Treatment Group)

The Desire2Learn course management system is used to post course materials. Posted content includes course syllabus with daily class topics and TLEO listing; individual task TLEO by chapter and unit; and problem sets with final answers. The TLEO and problem set materials are posted by units of instruction. All materials are

downloadable by students. These materials provide guidance, a learning foundation, and student work required for each class meeting.

A class meeting or teaching period consists of several designated tasks. For example, period 1 instruction teaches tasks 1-4, appendix C. Students are told to read the tasks TLEO before class and bring them to class. Additionally, they are given specific textbook pages to scan before the class meeting. The class starts with a discussion of what is economics? The instructor guides the discussion to the topic of scarcity. Now the TLEO comes into play. Students are told “You must be able to define and list the effects of scarcity given two markets and three economic units. You must define scarcity and how it impacts the three economic units when they go to the product and factor markets.” I then start explaining the decision process that government, households, and business use. Furthermore, I create a circular flow diagram to illustrate the decision making process and the markets effected. During the process, I ask students for examples representing these actions. The process covers the performance steps as stated in the task TLEO. Upon completing the performance steps, I walk them through a practical exercise, step by step. I purposely interject an error on the last performance measure. Using the performance measures, we self-assess our work. The error is identified and I receive a NO-GO evaluation. This process illustrates the use of the self-assessment portion of the TLEO. It is the instructor’s expertise that weaves the different tasks into a continuous flow

Having seen the types of decisions made by households, government, and business because of scarcity, we examine next the five core ideas that influence decision making, task 2. The pedagogical teaching method starts again with me stating, “You

must list the five core ideas of economics from memory with 100 per cent accuracy.”

The five core ideas are listed and explained. Students are required to give examples illustrating how the economic units use these core ideas in decision making. Previous decisions from task 1 form the decision making domain for the exercise.

Not all tasks lend themselves to in-class student performance/assessment; however, these tasks represent a small percentage of the overall course task domain. For example, requiring a student to recite the determinates of demand immediately after teaching them would result in a reading exercise from the task TLEO. Asking the same question at the beginning of the next class is realistic because the student has time to memorize the determinants. The guiding rule is to require students to perform the task after the teacher has modeled the process. Time constraints, task conditions or length of performance process may prevent this action.

All classes focus on introducing and mastering select tasks. Students get the opportunity to perform the task using the performance steps if necessary. The better prepared students perform the tasks without using the performance steps and self-assess using the performance measures. Homework problems enable students to practice until they are ready to perform the task using the assessment tools. No home work is collected or graded.

Before each class begins, students are encouraged to ask questions regarding anything on the homework which they find confusing or do not understand. This final step completes the cycle started during the previous class meeting.

Classroom Instruction Method: ECON 1113.002 (Nontreatment Group)

The nontreatment group experiences a traditional lecture course. Through Desire2Learn, they receive the course syllabus with daily class schedule topics and textbook page coverage. Instructor prepared power point slides for each chapter and problem sets with final answers are also available. The problem set is identical to the one given the treatment group. The class period work starts with the pre-lecture reading assignment.

Students are instructed to read the assigned textbook pages prior to the class meeting. They are also told to review the chapter questions from the current problem set. Period 1 instruction covers the same material that is covered in period 1 of the treatment group class. The method of presentation is different. The class starts with the same discussion and moves to the topic of scarcity. At this point I post an incomplete circular flow diagram on the board with three blank boxes representing government, households, and business. Additionally, two blank boxes representing the product and factor markets are placed on the graph. Using this diagram, I teach who the economic units are and where they fit on the diagram. Then the product and factor markets are introduced. I then relate scarcity to each economic group and the two markets. The process continues by identifying what decisions are made by each group and what action(s) influence those decisions. Lastly, normative and positive economic examples are introduced on the model.

Student interaction occurs as we cover the major topics. Students answer questions regarding, Why do people work. What decisions do they make regarding

work? What decisions do businesses make regarding the production of a good or service? How does the money flow? Who gets the money? What decisions do businesses make regarding the production of goods and services? The better prepared students move the discussion forward by answering these and other questions associated with the day's instruction.

As the class meeting approaches its end, I tell the students, "You need to be able to complete this model and explain how the economic units interact with the various markets. There will be at least two exam questions from today's class. Complete the homework problems in the chapter problem set that apply to today's class. I'll answer any homework questions at the beginning of our next class meeting." At the next class meeting, I ask the students if they have any questions regarding the homework. After answering their questions, new material is introduced.

Classroom Instruction Method: Similarities and Differences.

While both groups, sections, cover the same major topics, they also experience different situations. The treatment group relies more on task TLEOs than the textbook. The nontreatment group uses the textbook more. Only the nontreatment group uses instructor developed slides. When I developed the slides, I unconsciously used the logic process associated with the teaching, learning, and evaluation outlines. In retrospect, these slides focus instruction much like task TLEO. The treatment group seldom asks questions regarding previous class material or the homework. Their questions seem reserved for the exam review period. The nontreatment group section has six students who are not shy about asking questions about homework or during new

material presentation. Their questions stimulate discussion as well as provide additional opportunities to restate or expand the task taught.

Numerous similarities exist between the two groups. Each group uses the same homework problem set. Likewise, the same material is presented in both classes, but in different ways. Generally speaking, students in both groups seem ill-prepared for class. Few read the textbook in the nontreatment group or the specified TLEO in the treatment group.

Online Instruction Method: ECON 3313 Nontreatment Group

Money and Banking nontreatment students are in two sections. One section is an eight week course and the other is a sixteen week course. All nontreatment group students receive the same course material. The Desire2Learn class site contains instructor developed power point slides for unit three instruction. A problem set with homework questions for each chapter is also present. Each set of chapter homework questions has a detailed solution posted also. Lastly, the recorded class presentations are available on the site. Interaction with students is conducted by telephone, email, chat room, and office visit. The treatment group has access to these materials and those associated with the treatment.

Online Instruction Method: ECON 3313 Treatment Group

Students receiving the treatment are in two sections like the nontreatment students. The treatment group receives several additional materials by email. Firstly, a special video recording that explains the purpose and use of the teaching, learning, and evaluation outline and the pedagogical instructional method is sent to them. Secondly,

they receive recorded class presentations using the task teaching, learning, and evaluation outlines. The presentation material is presented in the same manner as it is for the Economics of Social Issues treatment group. Thirdly, a complete by chapter listing of task TLEOs, appendix E, is sent. Lastly, a problem set with detailed solutions is provided. Students are asked not to share any of these materials with other students. In summary, the treatment group could access everything the nontreatment group has as well as the materials that they receive by email. The URL listings for the special recording materials are listed below:

1. <http://ra.okstate.edu/cba/mclean/econ3313/SPECIAL/special.html>
2. <http://ra.okstate.edu/cba/mclean/econ3313/SSBECON3313CH20SPECIAL/untitled.html>
3. <http://ra.okstate.edu/cba/mclean/econ3313/SSBECON3313CH20SPECIAL/SSBECON3313CH20SPECIAL.html>
4. <http://ra.okstate.edu/cba/mclean/econ3313/SSBECON3313CH21SPECIAL/SSBECON3313CH21SPECIAL.html>
5. <http://ra.okstate.edu/cba/mclean/econ3313/SSBECON3313CH22SPECIAL/SSBECON3313CH22SPECIAL.html>

Online Instruction Method: Similarities and Differences.

There are more similarities than differences between the two groups. Both groups have access to the same unit three materials at the Desire2Learn class site. However, there are two differences between the two groups. Firstly, only the treatment group has access to the unit three task TLEOs. Lastly, the class presentations using the TLEO pedagogy are available only to the treatment group.

Theoretical Evaluation Model

An education production function is used to assess the effectiveness of the pedagogy for the ECON 1113 sections (Dickey and Houston 2009, O'Neill 2001, & Siegfried and Walstad 1998). The model states:

$$\text{Achievement} = f(\text{Prior Economic Knowledge, One's Attitude Toward Economics, Gender, Age, Working During School, One's Desire for Post Graduate Studies, Cumulative Grade Point Average, ACT scores, Exposure to the Pedagogy}) \quad (2)$$

The empirical model follows:

$$\text{Achievement} = a + b_1 \text{PreTUCEMi} + b_2 \text{ATE} + b_3 \text{GEND} + b_4 \text{AGE} + b_5 \text{WORK} + b_6 \text{GDSCH} + b_7 \text{CGPA} + b_8 \text{ACT} + b_9 \text{PEDOGOGY} + \varepsilon \quad (3)$$

Achievement is measured:

- a. Post-TUCE score: (Post-TUCEMi)
- b. Change in TUCE score: (ChgTUCEMi)
- c. [Change in TUCE score]/[1 – pre-TUCE score]: GAP
- d. Final individual course average: AVERAGE

The testable hypothesis at the $\alpha=0.05$ level of significance using a one tail test is:

$$H_0: b_9 \leq 0$$

$$H_A: b_9 > 0$$

Students are randomly selected to receive the TLEO pedagogical treatment in the online ECON 3313 classes. According to Stock and Watson (2007, p. 87) “If the treatment in a randomized controlled experiment in binary, then the causal effect can be estimated by the differences in the sample average outcomes between the treatment and

control (nontreatment) groups.” Differences in means tests for the means stated in table 2, page 23, are used to determine if the pedagogy has a positive influence on learning.

The testable hypothesis at the $\alpha=0.05$ level of significance using a one tail test is:

$$H_0: \overline{Nontreatment} = \overline{Treatment}$$

$$H_A: \overline{Nontreatment} < \overline{Treatment}$$

The Data and Descriptive Statistics

The variables used in the analysis are listed and defined in chapter 2, table 1. In table 4, the variable mean, standard deviation, minimum and maximum values are listed for students taking the Economics of Social Issues classes. Table 4A provides the descriptive statistics by treatment and nontreatment groups. The pre-TUCEMi mean for the two groups is not statistically different from the national mean of 31.3%. The national post-TUCEMi mean of 42.57% is not significantly different from the two group means for this variable (Walstad et. al. 2007). A cursory analysis of the noncategorical variables in Table 4A reveals no significant difference between the two groups. Table 5 shows the frequency for categorical variables from table 4 results. Some students failed to complete survey questions related to working during the semester (WORK), intentions toward attending graduate school (GDSCH), and Attitude Toward Economics (ATE). Many first semester freshmen did not have a cumulative GPA. Additionally, two non-traditional students did not have an ACT score. There were 61 complete records for use in the regression analysis.

Table 4

Observations, Mean, Standard Deviation, Minimum And Maximum Of Variables For
Economics Of Social Issues Classes

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Post-TUCEMi	81	0.4162963	0.136889	0.14	0.71
ChgTUCEMi	81	0.1146914	0.1352321	-0.14	0.53
GAP	81	0.1562963	0.1868853	-0.25	0.62
AVERAGE	81	0.7320123	0.1161538	0.402	0.996
Pre-TUCEMi	81	0.3016049	0.1103795	0.1	0.57
GEND	81	0.4691358	0.5021558	0	1
AGE	81	20.40741	2.827445	18	34
WORK	76	0.5394737	0.5017513	0	1
CGPA	67	2.992388	0.6684947	1.33	4
ACT	79	23.62025	4.055082	16	34
GDSCH	76	0.4342105	0.5249896	0	1
ATE	75	49.77333	3.808147	39	58
PEDAGOGY	81	0.5802469	0.4965933	0	1

Table 4A
Observations, Mean, Standard Deviation For Economics of
Social Issues Classes By Groupings

Variable	<u>Nontreatment</u>		<u>Treatment GRP</u>	
	<u>GRP</u>			
	N	Mean (SD)	N	Mean (SD)
Post-TUCEMi	34	0.44 (0.1137)	47	0.3991 (0.1503)
ChgTUCEMi	34	0.1353 (0.1333)	47	0.0998 (0.1360)
GAP	34	0.1835 (0.1742)	47	0.1366 (0.1950)
AVERAGE	34	0.7479 (0.113)	47	0.7205 (0.118)
Pre-TUCEMi	34	0.3047 (0.1094)	47	0.2994 (0.1122)
GEND	34	0.4412 (0.504)	47	0.4894 (0.505)
AGE	34	20.118 (2.358)	47	20.617 (3.131)
WORK	34	0.5294 (0.5066)	42	0.5476 (0.5038)
CGPA	29	3.1597 (0.646)	38	2.8647 (0.665)
ACT	34	23.794 (4.147)	45	23.489 (4.026)
GDSCH	34	0.3824 (0.493)	42	0.4286 (0.501)
ATE	34	50.5589 (3.863)	41	49.122 (3.682)

Table 5
Observations And Summary Of Categorical Variables For
Economics Of Social Issues Classes

Variable	Observations	<i>(Female)/</i> NO= 0	<i>(Male)/</i> YES= 1
GEND	81	<i>(43)</i>	<i>(38)</i>
WORK	76	35	41
GDSCH	76	45	31
PEDAGOGY	81	34	47

The categorical variables are listed by treatment and nontreatment groups in table 5A. An analysis of the data by variable reveals no large differences between the two groups. For example, 56% of the nontreatment group is female while 51% of the treatment group is female. The only major difference concerns the number of students in each section. Forty two percent of the subjects are in the nontreatment group with the remaining 58% in the treatment group.

Table 5A

Observations and Summary of Categorical Variables for Economics of Social Issues Classes, By Groupings

Variable	Nontreatment GRP	Treatment GRP	Total
GEND	<u>34</u>	<u>47</u>	<u>81</u>
Female	19	24	43
Male	15	23	38
WORK	<u>34</u>	<u>42</u>	<u>76</u>
No	16	19	35
Yes	18	23	41
GDSCH	<u>34</u>	<u>42</u>	<u>76</u>
No	21	24	45
Yes	13	18	32
PEDAGOGY	<u>34</u>	<u>47</u>	<u>81</u>
1113.002	34	0	34
1113.003	0	47	47

Table 6 shows the results for five means comparison tests. The Pre-TUCEMi mean represents students' baseline knowledge at the start of the semester. The results reveal no significant difference between the treatment group, ECON 1113.003, and nontreatment group, ECON 1113.002. The remaining four measures compare learning at the end of the semester. There is no statistical difference in the mean scores of the treatment and nontreatment groups for the four measures of achievement; however, the

post-TUMCMi is significant at the 10% significance level. Since each section was an experimental group, no means comparison test within each section is possible.

Table 6
Means Comparison Tests For Econ 1113

ECON 1113	HO: $\text{Pre-TUCEMi}_{\text{Nontreatment}} = \text{Pre-TUCEMi}_{\text{Treatment}}$	t=0.21	fail to reject
ECON 1113	HO: $\text{Post-TUCEMi}_{\text{Nontreatment}} = \text{Post-TUCEMi}_{\text{Treatment}}$	t=1.33	fail to reject
ECON 1113	HO: $\text{ChgTUCEMi}_{\text{Nontreatment}} = \text{ChgTUCEMi}_{\text{Treatment}}$	t=1.17	fail to reject
ECON 1113	HO: $\text{GAP}_{\text{Nontreatment}} = \text{GAP}_{\text{Treatment}}$	t=1.12	fail to reject
ECON 1113	HO: $\text{Average}_{\text{Nontreatment}} = \text{Average}_{\text{Treatment}}$	t=1.05	fail to reject

Regression Analysis, Means Comparison Tests, and Findings

Table 7 indicates the results from the four dependent variable specifications for achievement relating to the Economics of Social Issues classes. Column two contains the Post-TUCEMi results. Columns three through five indicate the ChgTUCEMi, GAP, and Course AVERAGE respectively.

As Grimes and Nelson (1998) find, the pre-TUCEMi is not significant when using the post-TUCEMi measure for achievement. However, GEND and ACT match Grimes and Nelson (1998) findings using the post-TUCEMi measure. ACT is also significant using the Course Average measure. GEND has a large impact in the post-TUCEMi model. Male students score 7.2 percentage points higher than females on the post-TUCEMi. Each point on the ACT increases the Post-TUCEMi score by 1.1 percent points and 1.8 percent points on the Course Average. This study found CGPA not significant while AGE was significant and negatively related to achievement.

While PEDAGOGY is the most important variable in this study, it was not significant. This indicates that the treatment has no measurable effect on any of the four measures of achievement.

Table 7

Achievement Regression Results For Social Issues Classes				
Dependent Variables				
Independent Variable	Change in			
	Post-TUCEMi	TUCEMi	GAP	Course Average
Constant	0.3277 (1.1)	0.1118 (0.33)	0.1169 (0.37)	0.2339 (1.07)
Pre-TUCEMi	0.2674 (1.53)			0.0825 (0.65)
GEND	0.0721** (2.11)	0.0376 (0.99)	0.0703 (1.40)	0.0147 (0.59)
AGE	-0.0133* (-1.73)	-0.0115 (-1.30)	-0.0189 (-1.62)	-0.0024 (-0.43)
WORK	-0.0342 (-0.92)	-0.0534 (-1.26)	-0.0654 (-1.17)	-0.0362 (-1.33)
CGPA	-0.0379 (-1.16)	-0.0169 (-0.46)	-0.0346 (-0.71)	0.0042 (0.18)
ACT	0.0107** (2.02)	0.0002 (0.03)	0.0031 (0.43)	0.0180*** (4.63)
GDSCH	0.0443 (1.32)	0.052 (1.35)	0.075 (1.47)	0.0326 (1.33)
ATE	0.0027 (0.63)	0.0057 (1.2)	0.0079 (0.1.25)	0.0019 (0.61)
PEDAGOGY	-0.0320 (-0.97)	-0.0065 (-0.17)	-0.01 (-0.20)	-0.0148 (-0.62)
ADJ R2	0.218	-0.002	0.026	0.44
df	61	61	61	61
F(8,53)	2.89	0.99	0.026	6.32

Notes: t-statistic value ()

* Statistically significant at the 0.10 level

** Statistically significant at the 0.05 level

*** Statistically significant at the 0.01 level

The insignificant variables from the original regression except PEDAGOGY are deleted to form a restricted model. Results from the restricted model are listed in table 8. GEND, Pre-TUCEMi and ACT remained statistically significant and have significant impact on predicted Post-TUCEMi scores. Males score 5.65 percentage points higher than females. Additionally, each point a student achieves on the ACT increases his Post-TUCEMi score by 1 percentage point. ACT is significant in the Course Average regression. Its value is slightly higher at 1.8 percentage points. The adjusted r-square for the Course Average model decreases from 0.44 in the unrestricted model to 0.37 in the restricted model. The same measurement for the Post-TUCEMi model is 5 percentage points higher in the restrictive model. The Change in TUCEMi and GAP variables in the restricted model have an adjusted r-square near zero. Different results are obtained when analyzing the Money and Banking classes.

Table 8
Achievement Regression Results For Social Issues Classes, Restrictive
Variables

Independent Variable	Dependent Variables			
	Post-TUCEMi	Change in TUCEMi	GAP	Course Average
Constant	0.2156 (1.40)	0.28 (1.60)	0.343 (1.43)	0.3884*** (3.28)
Pre-TUCEMi	0.3067** ((2.13)			-0.002 (-0.02)
GEND	0.0565* (1.97)	0.0158 (0.50)	0.039 (0.91)	0.0145 (0.64)
AGE	-0.007 (-1.17)	-0.0089 (-1.35)	-0.013 (-1.43)	-0.0038 (-0.83)
ACT	0.0103*** (2.67)	0.0011 (0.30)	0.0036 (0.68)	0.0177*** (5.83)
Pedagogy	-0.0326 (-1.21)	-0.026 (-0.85)	-0.0328 (-0.78)	-0.02 (-0.93)
ADJ R2	0.27	-0.0136	-0.000	0.37
df	78	78	78	78
F(5,73)	6.77	0.74	1	10.17

Notes: t-statistic value ()

* Statistically significant at the 0.10 level

** Statistically significant at the 0.05 level

*** Statistically significant at the 0.01 level

Descriptive statistics for the variables used with Money and Banking students are listed at table 9. The mean, standard deviation, minimum and maximum values are listed for each variable. Variable definitions are found in chapter 2, table 1.

Table 9
Observations, Mean, Standard Deviation, Minimum And Maximum Of Variables
For Money And Banking Classes

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Post-TUCEMa	97	0.6113402	0.1476244	0.29	0.95
ChgTUCEMa	97	0.1597938	0.1609217	-0.19	0.59
GAP	97	0.273299	0.2828012	-0.45	0.9
EX3	97	0.7219072	0.1615028	0.324	1.117
Pre-TUCEMa	97	0.4515464	0.1158694	0.19	0.71
GEND	97	0.5979381	0.4928614	0	1
AGE	97	25.74227	9.385581	20	64
WORK	70	0.6571429	0.4780914	0	1
CGPA	97	3.050268	0.6467333	0	4
ACT	86	24.51163	4.008063	16	33
GDSCH	69	0.4782609	0.5031868	0	1
ATE	67	52.67164	3.154545	46	61
PEDAGOGY	97	0.5154639	0.502357	0	1
SECT	97	3.402062	0.4928614	3	4

Table 9A provides the descriptive statistics by treatment and nontreatment groups in the Money and Banking classes. The pre-TUCEMa mean for each group is statistically greater than the national mean of 32.5%. This should occur because Principles of Macroeconomics is a prerequisite course for the Money and Banking course. Likewise, the national post-TUCEMi mean of 47.3% was also significantly smaller than the means of the two groups (Walstad et. al. 2007). A cursory analysis of the noncategorical variables in Table 9A reveals no significant difference between the two groups with the exception of the EX3 means. Some students failed to complete survey questions relating

to working during the semester (WORK), intentions toward attending graduate school (GDSCH), and Attitude toward Economics (ATE).

Table 9A
Observations, Mean, Standard Deviation For Money and Banking
Classes By Groupings

Variable	<u>Nontreatment GRP</u>		<u>Treatment GRP</u>	
	N	Mean (SD)	N	Mean (SD)
Post-TUCEMa	47	0.5964 (0.1423)	50	0.6254 (0.1525)
ChgTUCEMa	47	0.1489 (0.1426)	50	0.17 (0.1772)
GAP	47	0.2577 (0.2457)	50	0.288 (0.3155)
EX3	47	0.6881 (0.15)	50	0.754 (0.1669)
Pre-TUCEMa	47	0.4474 (0.1204)	50	0.4554 (0.1126)
GEND	47	0.5319 (0.5044)	50	0.66 (0.4785)
AGE	47	25.936 (8.89)	50	25.56 (9.92)
WORK	33	0.697 (0.4667)	37	0.6216 (0.4917)
CGPA	47	2.9132 (0.6908)	50	3.179 (0.58)
ACT	43	24.512 (4.228)	43	24.512 (3.83)
GDSCH	33	0.4545 (0.5056)	36	0.5 (0.5071)
ATE	32	52.813 (3.063)	35	52.543 (3.275)

Table 10 reflects the frequencies for categorical variables. Missing data for WORK, ACT, ATE, and GDSCH reduced the number of complete records.. There are two noteworthy observations from the table. Males accounted for 60% of the Money

and Banking students and 66% of the students work.

Table 10
Observations And Summary Of Categorical Variables For Money
And Banking Classes

Variable	Observations	(Female)/ NO= 0	(Male)/ YES= 1
GEND	97	(39)	(58)
WORK	70	24	46
GDSCH	69	36	33
PEDAGOGY	97	47	50

The categorical variables are listed by treatment and nontreatment groups in table 10A. An analysis of the data reveals several large differences within and between the two groups. There are nearly twice as many males in the treatment group than females. Both groups have significantly more students working than not working.

Table 10A
Observations and Summary of Categorical Variables for Money and
Banking Classes, By Groupings

Variable	Nontreatment GRP	Treatment GRP	Total
GEND	<u>47</u>	<u>50</u>	<u>97</u>
Female	22	17	39
Male	25	33	58
WORK	<u>33</u>	<u>37</u>	<u>70</u>
No	10	14	24
Yes	23	23	46
GDSCH	<u>33</u>	<u>36</u>	<u>69</u>
No	18	18	36
Yes	15	18	33
PEDAGOGY	<u>47</u>	<u>50</u>	<u>97</u>
3313.603	29	29	58
3313.613	18	21	39

Table 11 show the results for five means comparison tests by groups for the Money and Banking sections. The results reveal that there is no significant difference between the mean scores for the treatment and non-treatment groups when comparing Pre-TUCEMa, Post-TUCEMa, ChgTUCEMa, and GAP. One can infer that the two groups were equal when they started the semester. However, the two means for EX3 are not equal. The one tail hypothesis test of $EX3_{Treatment} = EX3_{Nontreatment}$ is significant at the five percent level.

Table 11
Means Comparison Tests For ECON 3313 By Groups

ECON 3313	HO: $Pre-TUCEMa_{Nontreatment} = Pre-TUCEMa_{Treatment}$	t=-0.34 fail to reject
ECON 3313	HO: $Post-TUCEMa_{Nontreatment} = Post-TUCEMa_{Treatment}$	t=-0.97 fail to reject
ECON 3313	HO: $ChgTUCEMa_{Nontreatment} = ChgTUCEMa_{Treatment}$	t=-0.64 fail to reject
ECON 3313	HO: $GAP_{Nontreatment} = GAP_{Treatment}$	t=-0.53 fail to reject
ECON 3313	HO: $EX3_{Nontreatment} = EX3_{Treatment}$	t=-2.03** reject

Comparing treatment and nontreatment groups means within classes is feasible with the Money and Banking classes. Table 11A reveals no differences between the treatment and nontreatment groups in the ECON 3313.613 section. However, two of the five means tests in the ECON 3313.603 section are significantly different. The one-tail means tests for Post-TUCEMa reveals that the two means are not equal at the 10% level. Additionally, the EX3 mean is significantly different at the 1% level. This indicates that the pedagogy has some impact on learning in the sixteen week class.

Table 11A
Means Comparison Tests For ECON 3313 by Groups Within Sections

ECON 3313 SECTION	Variable Tested	t-value
601	HO: $\text{Pre-TUCEMa}_{\text{Nontreatment}} = \text{Pre-TUCEMa}_{\text{Treatment}}$	t=-0.34
601	HO: $\text{Post-TUCEMa}_{\text{Nontreatment}} = \text{Post-TUCEMa}_{\text{Treatment}}$	t=-1.37*
601	HO: $\text{ChgTUCEMa}_{\text{Nontreatment}} = \text{ChgTUCEMa}_{\text{Treatment}}$	t=-1.24
601	HO: $\text{GAP}_{\text{Nontreatment}} = \text{GAP}_{\text{Treatment}}$	t=-0.85
601	HO: $\text{EX3}_{\text{Nontreatment}} = \text{EX3}_{\text{Treatment}}$	t=-2.60***
613	HO: $\text{Pre-TUCEMa}_{\text{Nontreatment}} = \text{Pre-TUCEMa}_{\text{Treatment}}$	t=-0.391
613	HO: $\text{Post-TUCEMa}_{\text{Nontreatment}} = \text{Post-TUCEMa}_{\text{Treatment}}$	t=0.41
613	HO: $\text{ChgTUCEMa}_{\text{Nontreatment}} = \text{ChgTUCEMa}_{\text{Treatment}}$	t=0.578
613	HO: $\text{GAP}_{\text{Nontreatment}} = \text{GAP}_{\text{Treatment}}$	t=0.367
613	HO: $\text{EX3}_{\text{Nontreatment}} = \text{EX3}_{\text{Treatment}}$	t=0.06

* Statistically significant at the 0.10 level

** Statistically significant at the 0.05 level

*** Statistically significant at the 0.01 level

Conclusions

This experiment evaluated the impact of the teaching, learning, and evaluation outline pedagogy within an Economics of Social Issues and Money and Banking course. The results indicate that the experimental pedagogy has no impact on student learning in the Economics of Social Issues class at the 5% significance level. The pedagogy has some impact in the Money and Banking course. There is no evidence that the pedagogy has any influence within the students taking the eight week class; however, there is evidence that the pedagogy does have a positive influence on learning in the eighteen week class.

CHAPTER VI

CONCLUSIONS

BACKGROUND

This dissertation posits a new teaching pedagogy for teaching economics. Using a systems approach to training model, the Principles of Microeconomics task domain is identified. Once identified, individual economic tasks are codified with a task title. The task development process establishes task conditions, task performance steps, task performance measures, and task standard. All these steps are packaged in a stand-alone document in outline format. The teaching, learning, and evaluation outline generation process is the first part of the dissertation. Using and evaluating the teaching, learning, and evaluation outlines is the second part of the dissertation.

Treatment groups receive the TLEO documents for use while nontreatment groups rely upon textbooks and instructor prepared power point slides. A traditional “chalk and talk” teaching method is used with nontreatment groups. Treatment groups receive instruction using task outlines. Treatment and nontreatment groups are from two Economics of Social Issues classes in a traditional classroom setting, and two online Money and Banking courses in an eight and sixteen week format. Social Issues students receive the treatment for sixteen weeks. The eight week Money and Banking class receives the treatment for two weeks versus four weeks for the sixteen week class.

The findings from the generation phase reflect observations from the TLEO development process.

FINDINGS

Identifying individual economic task and creating task outlines are possible using the systems approach to training model. The process requires a discipline approach and a large initial time commitment. Reducing numerous paragraphs of material to a task containing an action verb and its object is not a job for an inexperienced economics educator. The task TLEO establishes task standard, identifies task conditions, and reveals task performance steps. Each TLEO is a self-contained mini-lesson plan for teaching and learning. Aggregating several task TLEOs creates a class lesson plan. My preparation time is less using the TLEO pedagogy than using the power point “chalk and talk” method. The outline format helps me present all performance steps for a task and helps students learn and practice the task. When used, the self-assessment portion provides real-time, anytime feedback to the users on task proficiency. Specific results for the teaching phase produced mixed results.

In the Economics of Social Issues classes, there is no significant difference between the treatment section and the nontreatment section using regression analysis and difference of means testing. However, there is a statistical difference between the Post-TUCEMi means at the 10% significance level. The means comparison test for the Pre-TUCEMi indicates no difference between the two groups when the semester started. Means comparison tests for the four measures of achievement are statistically identical for each group at a 5% significance level.

Regression analysis indicates that the PEDAGOGY variable is insignificant at the 10% level in the four regression models measuring achievement. The same results occur in the restricted variables models. In summary, the two groups started at the same level of achievement and moved together to the Post-TUCEMi. The results are different in the Money and Banking classes.

Randomized selection for entry into the treatment group eliminates the regression analysis requirement in the Money and Banking classes. The Pre-TUCEMa indicates no difference between the two groups as the baseline measure of economic knowledge at the start of unit three. At a 5% significance level, both groups have statistically identical means for Post-TUCEMa, ChgTUCEMa, and GAP variables. There is a means difference at the 5% significance level for EX3. The alternative hypothesis is that the treatment group mean is greater than the nontreatment group mean. This finding alone suggests that the TLEO pedagogy has a positive influence on learning.

Means difference tests between the treatment and nontreatment group in each section reveals no differences in the eight week section. While the pedagogy does nothing to improve learning in this section, it has an impact on the treatment group in the sixteen week section. The Post-TUCEMa and EX3 means are statistically different at the 10% and 1% significance levels respectively. Students receiving the treatment scored higher in these measures than the nontreatment group. There are pedagogical learning impacts present in Money and Banking sections.

WHAT THE RESULTS SUGGEST

The task identification and development process is immense but valuable. Consequently, few teachers would implement the process independently. However, using a group of teachers reduces development time. The ideal solution is a publisher provided universal TLEO ancillary.

The TLEO pedagogy can be used to teach tasks in economics classes. The pedagogy appears most effective for students following an online, self-learning format. Several unsolicited student comments praised the outline format, especially performance steps, and the establishment of a task standard. Students using the TLEO pedagogy did as well as those using the “chalk and talk” method. Furthermore, less instructor preparation time is used with the TLEO pedagogy.

WHAT THE RESULTS DO NOT SUGGEST

Unequivocal proof does not exist that the TLEO pedagogy is better than traditional “chalk and talk” instruction. Although I used less preparation time, the same cannot be said of other potential teachers. Likewise, there is no measure of differences in student preparation time for each class.

EXPERIMENT DESIGN WEAKNESS

Numerous design flaws adversely influence the study. The most fatal is assuming that students and professional soldiers are similar. A professional soldier’s career and life depend on learning and sustaining individual skills, knowledge, and abilities. Likewise, the lives of others including close friends often depend on these proficiency levels. As

such, soldiers take learning their job related tasks seriously. Leaders are responsible for insuring that subordinates are proficient on a specified domain of tasks. A leader can always apply positive or negative reinforcement to get the soldier to learn the task. When subordinates perform poorly, it is a direct reflection on the leader which impacts his chances for career advancement. A college teacher cannot make a student attend “remedial training” or “tutoring” on Saturday or at night. In summary, the soldier has a higher motivation level to achieve than the average student.

Assuming that students would use the task TLEOs as intended appears incorrect. In the Social Issues treatment class, most students were completely unprepared for class. They did not know what the tasks for the day were or did not have them downloaded and available for use. Students that had economics in high school seldom came to class except to take exams. All students graduating from Texas high schools take economics their senior year.

A sharing of task TLEO with the nontreatment students occurs. A number of sororities and fraternities are represented in both groups. Sharing occurred during normal class periods and during exam preparation. The effects of these actions are indeterminate.

The TUCEMi contained questions on topics that were not covered during the semester. This reduced the utility of the instrument as a measure for learning.

A survey instrument for students to rate the features of the teaching, learning, and evaluation outline is absent. Student attitudes toward the outline formatted documents as well as perceived strengths and weaknesses could increase the documents effectiveness.

The teaching received by the nontreatment group is more similar than dissimilar to the treatment group. My power point slides resemble TLEO tasks. Additionally, the classroom presentations between the two groups were similar.

PROBLEMS WITH TLEO DESIGN

The performance steps and performance measures are often redundant. Each task could be shortened by integrating the performance steps and performance measures. This feature increases the chance of introducing differing standards; however, this is not a problem with a single instructor course presentation.

WHAT IS NEXT

Based on student comments during the semester, the pedagogy should be further refined and studied. Firstly, an experiment that increases the use of TLEOs is needed. For example, do not use a textbook for one section during semester A. Then teach a section with the textbook during semester B. A survey instrument will collect data on student use and preferences and dislikes regarding the task teaching, learning, and evaluation outline format. The TUCEMi will be reduced to material actually covered during the semester. Augmentation questions will be chosen from previously released Advanced Placement Microeconomics exams.

The pedagogy should be applied to a portion of a semester long course as it was with the Money and Banking course. Given the previously developed TLEOs, a Principles of Microeconomics' class is preferred. Likewise, continue the experiment with the sixteen week online Money and Banking Courses. This experiment will use a

survey instrument to get TLEO user feedback on strengths and weakness of the document and process.

Lastly, create a complete TLEO ancillary document for the Principles of Microeconomics domain. With the completion of the additional fifty seven task outlines, the document could be used and tested by teachers and students. A survey instrument could gather teacher and student evaluations regarding the document. If the document is used in conjunction with the teaching pedagogy, then user evaluation comments can also be collected.

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APPENDICES

Appendix A: Task Domain for Principles of Microeconomics

- Task Number: 1 Define and list the effects of scarcity
- Task Number: 2 List the five core ideas of economics
- Task Number: 3 Contrast normative and positive economic statements
- Task Number: 4 Contrast microeconomics and macroeconomics
- Task Number: 5 List and describe the three questions that all economies must answer
- Task Number: 6 List and describe the three groups of decision makers in a closed, market economy
- Task Number: 7 List the fundamental decisions made by households and businesses (firms) in the resource and goods/services market
- Task Number: 8 List the three major markets and their traded good/service.
- Task Number: 9 Describe the factors of production provided by households.
- Task Number: 10 Describe the operation of the factor market
- Task Number: 11 Describe the types/categories of goods and services provided to the product market.

- Task Number: 12 Describe the operation of the product market
- Task Number: 13 Draw the circular flow diagram for a closed economy
- Task Number: 14 Draw a production possibilities curve.
- Task Number: 15 Illustrate the concept of scarcity.
- Task Number: 16 Illustrate the concept of production efficiency
- Task Number: 17 Calculate opportunity cost
- Task Number: 18 Contrast constant and increasing opportunity costs.
- Task Number: 19 Determine comparative advantage for producing iPod devices.
- Task Number: 20 Draw a market graph from demand and supply equations.
- Task Number: 21 Draw a market graph.
- Task Number: 22 Draw a market graph from demand and supply schedules.
- Task Number: 23 List the determinants that increase (shift) demand.
- Task Number: 24 List the determinants that decrease (shift) demand.
- Task Number: 25 List the determinants that increase (shifts) supply.
- Task Number: 26 List the determinants that decrease (shift) supply.
- Task Number: 27 Contrast a normal good and an inferior good.
- Task Number: 28 Describe and give an example of a substitute good and a complimentary good in consumption.

- Task Number: 29 Contrast and illustrate a change in demand and a change in quantity demanded
- Task Number: 30 Contrast and illustrate a change in supply and a change in quantity supplied.
- Task Number: 31 Describe and illustrate market equilibrium.
- Task Number: 32 Illustrate and determine the effects of a change in demand.
- Task Number: 33 Illustrate and determine the effects of a change in supply.
- Task Number: 34 Illustrate and determine the effects of a change in supply and change in demand.
- Task Number: 35 Describe and illustrate surplus or excess supply.
- Task Number: 36 Describe and illustrate shortage or excess demand.
- Task Number: 5.1 Calculate the price elasticity of demand
- Task Number: 5.2 Interpret price elasticity of demand values
- Task Number: 5.3 Determine a price elasticity category using a total revenue test
- Task Number: 5.4 Calculate the price elasticity of supply.
- Task Number: 5.5 Interpret price elasticity of supply values
- Task Number: 5.6 Calculate cross price elasticity.
- Task Number: 5.7 Interpret cross price elasticity values.
- Task Number: 5.8 Calculate income elasticity
- Task Number: 5.9 Interpret income elasticity values.

- Task Number: 5.10 Define a perfectly elastic demand curve.
- Task Number: 5.11 Define a perfectly elastic supply curve.
- Task Number: 5.12 Define a perfectly inelastic demand curve.
- Task Number: 5.13 Define a perfectly inelastic supply curve.
- Task Number: 6.21 Identify marginal cost, marginal benefit, consumer surplus, and producer surplus.
- Task Number: 6.22 Calculate consumer surplus under perfect competition.
- Task Number: 6.31 Calculate producer surplus under perfect competition.
- Task Number: 6.32 Calculate total surplus (total welfare) under perfect competition.
- Task Number: 6.42 Calculate deadweight loss in an inefficient market.
- Task Number: 6.43 List eight conditions/actions that create inefficient markets.
- Task Number: 7.11 Illustrate the market effects of an effective price ceiling.
- Task Number: 7.21 Illustrate the market effects of an effective minimum wage.
- Task Number: 7.31 Illustrate the market effects of a price support.
- Task Number: 8.11A Illustrate the market effects of a tax when the seller pays the tax.
- Task Number: 8.11B Illustrate the market effects of a tax when the buyer pays the tax.
- Task Number: 8.12 Calculate the tax incidence in a competitive market.
- Task Number: 8.13 Calculate the tax incidence with a perfectly elastic demand curve.

- Task Number: 8.14 Calculate the tax incidence with a perfectly inelastic demand curve.
- Task Number: 8.15 Calculate the tax incidence with a perfectly elastic supply curve.
- Task Number: 8.16 Calculate the tax incidence with a perfectly inelastic supply curve.
- Task Number: 9.1 Illustrate positive production externalities
- Task Number: 9.2 Illustrate negative production externalities
- Task Number: 9.3 Illustrate positive consumption externalities
- Task Number: 9.4 Illustrate negative consumption externalities
- Task Number: 9.5 Contrast a market with and without external cost
- Task Number: 9.6 Contrast a market with and without external benefits.
- Task Number: 9.7 Illustrate the effects of a production subsidy (unit) on a market with external benefits
- Task Number: 9.8 Illustrate the effects of a production tax (unit) on a market with external cost
- Task Number: 11.11 Graph a budget line.
- Task Number: 11.12 Adjust a consumer's budget line for a change in consumer income.
- Task Number: 11.21 Construct a consumer's marginal utility schedule.
- Task Number: 11.22 Maximize consumer total utility.
- Task Number: 12.11 Identify explicit costs.
- Task Number: 12.12 Identify implicit costs.

- Task Number: 12.13 Calculate economic profit.
- Task Number: 12.14 Determine normal profit and economic profit.
- Task Number: 12.21 Determine total product (TP).
- Task Number: 12.22 Determine marginal product (MP).
- Task Number: 12.23 Determine average product (AP).
- Task Number: 12.24 Identify increasing and diminishing marginal returns.
- Task Number: 12.31 Contrast long-run and short-run economic situations.
- Task Number: 12.32 Determine total fixed costs.
- Task Number: 12.33 Determine total variable costs.
- Task Number: 12.34 Determine total costs.
- Task Number: 12.35 Calculate average costs (fixed, variable, and total)
- Task Number: 12.36 Calculate production cost
- Task Number: 13.11 Describe a market that is perfectly competitive.
- Task Number: 13.12 Calculate total revenue in a competitive market.
- Task Number: 13.13 Determine the profit maximizing output level in perfect competition.
- Task Number: 13.14 Plot a firm's short-run supply curve.
- Task Number: 13.21 Indicate a firm's short-run shut-down criteria.

- Task Number: 13.31 Illustrate the effects of firms entering and leaving a competitive market.
- Task Number: 14.11 Describe a monopoly market.
- Task Number: 15.11 Describe monopolistic competition.
- Task Number: 15.12 Determine the four-firm concentration ratio.
- Task Number: 15.13 Calculate and interpret a Herfindal-Hirschman Index (HHI).
- Task Number: 16.1 Illustrate a natural oligopoly with three firms.
- Task Number: 16.2 Create a payoff matrix for two firms with each firm having three strategies.
- Task Number: 16.3 Determine a Nash equilibrium from a 3 by 3 payoff matrix.
- Task Number: 17.1 Illustrate marginal cost pricing.
- Task Number: 17.2 Illustrate average cost pricing.
- Task Number: 17.3 Illustrate rate of return regulation.
- Task Number: 17.4 Illustrate price cap regulation.
- Task Number: 18.1 List and describe the three major types of factor markets.
- Task Number: 18.2 Calculate the value of the marginal product (VMP) or the marginal revenue product (MRP) for a firm.
- Task Number: 18.3 Calculate a firm's labor demand.
- Task Number: 18.4 Illustrate a firm's labor demand.
- Task Number: 18.5 List and describe the determinants of labor demand.

- Task Number: 18.6 Calculate a labor supply curve.
- Task Number: 18.7 Illustrate a labor market.
- Task Number: 19.1 Draw a Lorenz Curve.
- Task Number: 19.2 Interpret a Lorenz Curve.
- Task Number: 20.1 Identify exports.
- Task Number: 20.2 Identify imports.
- Task Number: 20.3 Determine the balance of trade.
- Task Number: 20.4 Determine the level of imports or exports when a country abandons autarky.
- Task Number: 20.5 Determine comparative advantage.
- Task Number: 20.6 Calculate the gains from trade given the terms of trade.
- Task Number: 20.7 Illustrate the effects of an import tariff.
- Task Number: 21.1 Calculate current account balance.
- Task Number: 21.2 Calculate financial account balance.
- Task Number: 21.3 Calculate a country's balance of payments.
- Task Number: 21.4 Determine how a country can finance a current account deficit.
- Task Number: 21.5 Determine how a country can run a financial account negative balance.
- Task Number: 21.6 Determine foreign exchange rates

Appendix B: Task Domain for a “Typical” one semester Principles of Microeconomics Course.

The Basics

Task Number: 1 Define and list the effects of scarcity

Task Number: 2 List the five core ideas of economics

Task Number: 3 Contrast normative and positive economic statements

Task Number: 4 Contrast microeconomics and macroeconomics

The Economy

Task Number: 5 List and describe the three questions that all economies must answer

Task Number: 6 List and describe the three groups of decision makers in a closed, market economy

Task Number: 7 List the fundamental decisions made by households and businesses (firms) in the resource and goods/services market

Task Number: 8 List the three major markets and their traded good/service.

Task Number: 9 Describe the factors of production provided by households.

Task Number: 10 Describe the operation of the factor market

Task Number: 11 Describe the types/categories of goods and services provided to the product market.

Task Number: 12 Describe the operation of the product market

Task Number: 13 Draw the circular flow diagram for a closed economy

The Economic Problem

Task Number: 14 Draw a production possibilities curve.

Task Number: 15 Illustrate the concept of scarcity.

Task Number: 16 Illustrate the concept of production efficiency

Task Number: 17 Calculate opportunity cost

Task Number: 18 Contrast constant and increasing opportunity costs.

Task Number: 19 Determine comparative advantage for producing iPod devices.

Supply and Demand

Task Number: 20 Draw a market graph from demand and supply equations.

Task Number: 21 Draw a market graph.

Task Number: 22 Draw a market graph from demand and supply schedules.

Task Number: 23 List the determinants that increase (shift) demand.

Task Number: 24 List the determinants that decrease (shift) demand.

Task Number: 25 List the determinants that increase (shifts) supply.

- Task Number: 26 List the determinants that decrease (shift) supply.
- Task Number: 27 Contrast a normal good and an inferior good.
- Task Number: 28 Describe and give an example of a substitute good and a complimentary good in consumption.
- Task Number: 29 Contrast and illustrate a change in demand and a change in quantity demanded
- Task Number: 30 Contrast and illustrate a change in supply and a change in quantity supplied.
- Task Number: 31 Describe and illustrate market equilibrium.
- Task Number: 32 Illustrate and determine the effects of a change in demand.
- Task Number: 33 Illustrate and determine the effects of a change in supply.
- Task Number: 34 Illustrate and determine the effects of a change in supply and change in demand.
- Task Number: 35 Describe and illustrate surplus or excess supply.
- Task Number: 36 Describe and illustrate shortage or excess demand.

Elasticities

- Task Number: 5.1 Calculate the point price elasticity of demand
- Task Number: 5.2 Interpret point price elasticity of demand values

Efficiency of Markets

- Task Number: 6.21 Identify marginal cost, marginal benefit, consumer surplus, and producer surplus.
- Task Number: 6.22 Calculate consumer surplus under perfect competition.

- Task Number: 6.31 Calculate producer surplus under perfect competition.
- Task Number: 6.32 Calculate total surplus (total welfare) under perfect competition.
- Task Number: 6.42 Calculate deadweight loss in an inefficient market.
- Task Number: 7.11 Illustrate the market effects of an effective price ceiling.
- Task Number: 7.21 Illustrate the market effects of an effective minimum wage.
- Task Number: 7.31 Illustrate the market effects of a price support.
- Task Number: 8.11A Illustrate the market effects of a tax when the seller pays the tax.
- Task Number: 8.11B Illustrate the market effects of a tax when the buyer pays the tax.
- Task Number: 8.12 Calculate the tax incidence in a competitive market.

Production and Markets

- Task Number: 11.21 Construct a consumer's marginal utility schedule.
- Task Number: 11.22 Maximize consumer total utility.
- Task Number: 12.11 Identify explicit costs.
- Task Number: 12.12 Identify implicit costs.
- Task Number: 12.13 Calculate economic profit.
- Task Number: 12.14 Determine normal profit and economic profit.

- Task Number: 12.21 Determine total product (TP).
- Task Number: 12.22 Determine marginal product (MP).
- Task Number: 12.23 Determine average product (AP).
- Task Number: 12.24 Identify increasing and diminishing marginal returns.
- Task Number: 12.31 Contrast long-run and short-run economic situations.
- Task Number: 12.32 Determine total fixed costs.
- Task Number: 12.33 Determine total variable costs.
- Task Number: 12.34 Determine total costs.
- Task Number: 12.35 Calculate average costs (fixed, variable, and total)
- Task Number: 12.36 Calculate production cost
- Task Number: 13.11 Describe a market that is perfectly competitive.
- Task Number: 13.12 Calculate total revenue in a competitive market.
- Task Number: 13.13 Determine the profit maximizing output level in perfect competition.
- Task Number: 13.14 Plot a firm's short-run supply curve.
- Task Number: 13.21 Indicate a firm's short-run shut-down criteria.
- Task Number: 13.31 Illustrate the effects of firms entering and leaving a competitive market.
- Task Number: 14.11 Describe a monopoly market.

- Task Number: 15.11 Describe monopolistic competition.
- *Task Number: 18.1 List and describe the three major types of factor markets.
- *Task Number: 18.2 Calculate the value of the marginal product (VMP) or the marginal revenue product (MRP) for a firm.
- *Task Number: 18.3 Calculate a firm's labor demand.
- *Task Number: 18.4 Illustrate a firm's labor demand.
- *Task Number: 18.5 List and describe the determinants of labor demand.
- *Task Number: 18.6 Calculate a labor supply curve.
- *Task Number: 18.7 Illustrate a labor market.

International Trade:

- *Task Number: 20.1 Identify exports.
- *Task Number: 20.2 Identify imports.
- *Task Number: 20.3 Determine the balance of trade.
- *Task Number: 20.4 Determine the level of imports or exports when a country abandons autarky.
- *Task Number: 20.5 Determine comparative advantage.
- *Task Number: 20.6 Calculate the gains from trade given the terms of trade.
- *Task Number: 20.7 Illustrate the effects of an import tariff.
- *Task Number: 21.6 Determine foreign exchange rates

Task with * were not included in the Economics of Social Issues task domain.

Appendix C: Teaching, Learning, and Evaluation Outlines for Economics of Socials Issues Course

Task Number: 1

Task Title: Define and list the effects of scarcity

Condition: Given-

1. Goods and Services (Product) Market
2. Factor Market
3. Households, Firms, and Government

Standard: With 100% accuracy define scarcity and list a decision made by each economic unit in the two markets.

Performance Steps:

1. Define scarcity. The condition where wants exceed the resources needed to produce or acquire them.
2. Because of scarcity, economic units (households, businesses, and governments must make choices
 - a. Choices can be associated with market in the economy
 - i. Goods and Services Market
 1. Households-what to buy with limited money resources
 2. Firms-what goods to provide the market
 3. Government-what goods and services to provide the country
 - ii. Factor Market
 1. Households-what quantity of factors to supply
 2. Firms-what combination of factors to use in production
 3. Government-what type and quantity of factors to use in providing goods and services to the country

PERFORMANCE MEASURES

GO

NO-GO

1. Defined scarcity	_____	_____
2. Listed one choice made by each economic unit in the product market	_____	_____
.2.1 Households	_____	_____
.2.2 Firms	_____	_____
2.3 Government	_____	_____
3. Listed one choice made by each economic unit in the factor market	_____	_____
3.1 Households	_____	_____
3.2 Firms	_____	_____
3.3 Government	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 2

Task Title: List the five core ideas of economics

Condition: **Given**-from memory

Standard: Correctly list all five core economic ideas of economics.

Performance Steps:

1. The five core ideas are:
 - a. All transactions have cost
 - b. People do what is in their best interest.
 - c. People make rational decisions by comparing costs and benefits.
 - d. People make decisions on the margin.
 - e. People respond to incentives.

PERFORMANCE MEASURES

GO

NO-GO

1. Stated that all transactions have cost.	_____	_____
2. Stated that people do what is in their best interest.	_____	_____
3. Stated that people make rational decisions by comparing costs and benefits.	_____	_____
4. Stated that people make decisions on the margin.	_____	_____
5. Stated that people respond to incentives	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 3

Task Title: Contrast normative and positive economic statements

Condition: **Given**-from memory

Standard: Correctly identify the difference between the two.

Performance Steps:

1. Define positive economic statements: a statement of *what is (testable fact)*. . ie. gasoline prices rose 11.2% last week.
2. Define normative economic statements. a statement of *what should be (opinion)*. ie. gasoline prices should be lower (are to high).
3. Positive economics deals in *what is* while normative deals in *what should be*.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined positive economic statement.
2. Defined normative economic statement.
3. Indicated the differences between the two.

_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 4

Task Title: Contrast microeconomics and macroeconomics

Condition: Given-from memory

Standard: Adequately describe the differences between macroeconomics and microeconomics.

Performance Steps:

1. Define microeconomics (The details of the picture). The **study of the choices** made by households, firms and governments and how these choices interact and influence each other. The primary focus is on markets and the individual decision makers.
2. Define macroeconomics (The big picture). The study of the **economy as a whole** or in terms of aggregated units. All consumers, firms, and government, are each treated as a singular unit. These aggregates are used to determine total output, price levels, unemployment, etc.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined microeconomics.
2. Defined macroeconomics.

_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 5

Task Title: List and describe the three questions that all economies must answer

Condition: Given-from memory

Standard: Accurately list the three questions and identify the physical components associated with each question.

Performance Steps:

1. What goods and services will be produced?
 - a. Goods:
 - i. Consumption goods are goods purchased by households and consumed to provide satisfaction.
 - ii. Capital goods are goods that are purchased by business or government to increase resource productivity or produce goods and services
 - b. Services are acts or uses that are purchased by business, households and government:
2. How will the goods and services be produced?
 - a. Factors (resources) used to produce goods and services
 - i. Land
 - ii. Labor
 - iii. Capital
 - iv. Entrepreneurship
 - b. All goods and services will be produced using the least cost method
3. Who will receive the goods and services?
 - a. Governments, businesses, and households PURCHASE them.
 - b. Governments use tax revenue to purchase goods and services
 - c. Businesses use revenue to purchase goods and services
 - d. Households use transfer payments, rental income, interest income, and wage/salary income to purchase goods and services

PERFORMANCE MEASURES

GO

NO-GO

1.	Listed question 1: What goods and services will be produced?	_____	_____
2.	Defined consumption goods	_____	_____
3.	Defined capital goods	_____	_____
4.	Defined services	_____	_____
5.	Listed question 2: How will goods and services be produced?	_____	_____
6.	Listed the four factors of production	_____	_____
7.	Stated that the least cost method of production would be used.	_____	_____
8.	Listed question 3: Who will receive the goods and services?	_____	_____
9.	Listed the three groups purchasing the goods and services	_____	_____
10	Indicated that the groups purchased the goods	_____	_____
11	Indicate where each groups funds originated	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 6

Task Title: List and describe the three groups of decision makers in a closed, market economy

Condition: **Given-**A closed, market economy

Standard: Accurately identify the decision-making groups in the economy and their objective.

Performance Steps:

1. The groups of decision makers are:
 - a. households
 - b. businesses
 - c. government
2. Households are individuals or groups of individuals seeking to maximize utility (satisfaction).
3. Businesses/firms are corporate, partnership, or sole proprietorship organizations that produce and/or sell goods and services to maximize profits.
4. Government represents local, county, state, and federal governments that purchase goods and services to the well-being of its citizens.

PERFORMANCE MEASURES

GO

NO-GO

1. Listed the three groups of decision makers	_____	_____
2. Described the <u>composition</u> and <u>objective</u> of households	_____	_____
3. Described the <u>composition</u> and <u>objective</u> of businesses/firms	_____	_____
4. Described the <u>composition</u> and <u>objective</u> of government	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 7

Task Title: List the fundamental decisions made by households and businesses (firms) in the resource and goods/services market

Condition: **Given-**Assume both markets are perfectly competitive

Standard: Accurately list the decisions made by both groups in the resource and goods/services market.

Performance Steps:

1. **Households** own all the factors of production in closed economy. They decide 1) how much and at what price they will 2) supply land, labor, capital, and entrepreneurship 3) in the resource market.
2. **Households** receive money income from selling factors of production in the resources market and/or transfer payments from government. They 1) decide which goods and services to purchase and 2) what price they are willing to pay for them 3) in the goods & services market.
3. **Businesses** decide what goods and/or services they will produce.
4. **Businesses** decide what combination of production factors and technology will be used. They purchase them in the factor market using revenue obtained in the goods and services market.
5. **Businesses** decide the level of output and selling price for their goods and services that they sell in the goods/services market.

PERFORMANCE MEASURES

GO

NO-GO

1. Stated that households 1)determine at what price and at what levels they will 2) supply land, labor, capital, and entrepreneurship 3) in the factors market
2. Stated that households 1) determine which goods and services to purchase and 2) what price they are willing to pay for them 3) in the goods & services market.
3. Stated that businesses decide what goods and/or services to produce.

_____	_____
_____	_____
_____	_____

- | | | |
|--|-------|-------|
| 4. Stated that businesses decide what combination of production factors and technology will be used. | _____ | _____ |
| 5. Stated that businesses buy factors of production in the factors market | _____ | _____ |
| 6. Stated that businesses determine their level of output and selling price for goods supplied to the goods and services market. | _____ | _____ |
| | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8

Task Title: List the three major markets and their traded good/service.

Condition: **Given-**A closed economy.

Standard: Correctly list the three major markets and identify the good/service traded in that market.

Performance Steps:

1. Resource market.
2. Goods & services market
3. Credit market
4. The four factors of production (land, labor, capital, and entrepreneurship) are the traded goods in the factors market.
5. Capital and consumer goods and services are the traded goods in the goods and services (product) market.
6. Debt instruments such as bonds, mortgages are the traded goods in the credit market.

PERFORMANCE MEASURES

GO

NO-GO

1. Listed the resource market	_____	_____
2. Listed the goods and services market	_____	_____
3. Listed the credit market	_____	_____
4. Listed the four factors of production as the traded good in the factor market	_____	_____
5. Listed capital and consumer goods and services as the traded good in the goods and services market	_____	_____
6. Listed debt instruments as the traded good in the credit market.	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 9

Task Title: Describe the factors of production provided by households.

Condition: Given-from memory

Standard: Accurately list and describe each of the four factors of production.

Performance Steps:

1. **Land** represents the natural resources provided by nature. ie. coal
2. **Labor** represents the work effort supplied by individuals to produce goods and services. ie. teaching an economics class
3. **Capital** represents non-consumption items produced with the purpose of producing other goods and services. i.e. building crane
4. **Entrepreneurship** represents the individual resource that organizes land, labor, and capital to produce a good or service. i.e. McDonald's franchise owner.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined land	_____	_____
2. Described land	_____	_____
3. Defined labor	_____	_____
4. Described labor	_____	_____
5. Defined capital	_____	_____
6. Described capital	_____	_____
7. Defined entrepreneurship.	_____	_____
8. Described entrepreneurship	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 10

Task Title: Describe the operation of the factor market

Condition: Given-

1. Three economic decision making units
2. Real flows
3. Money flows

Standard: Accurately identify the physical and money flows to and from the factor market.

Performance Steps:

1. Households supply the factors of production to the factor market.
2. Firms and government demand the factors of production.
3. Based on quantity supplied and quantity demanded, an equilibrium price and quantity is achieved for each factor of production.
4. Firms use revenue from the product market and government uses tax revenue to pay for the factors of production.
5. Household income takes the form of rental income, interest income, wage/salary income, and profits.
6. Firms combine the factors of production to produce goods and services for the product market.

PERFORMANCE MEASURES

GO

NO-GO

1. Indicated that households supply factors of production to the factors market
2. Indicated that firms and government demand factors of production in the factors market
3. Indicated that an equilibrium price and quantity is reached for each factor of production.

_____	_____
_____	_____
_____	_____

- | | | |
|---|-------|-------|
| 4. Indicated that businesses and government pay money to households for factors of production. . | _____ | _____ |
| 5. Indicated that the income households receive is classified as rental income, interest income, wage/salary income, and profit/loss. | _____ | _____ |
| 6. Stated that firms combine the factors of production to produce goods and services. | _____ | _____ |
| | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 11

Task Title: Describe the types/categories of goods and services provided to the product market.

Condition: Given-from memory

Standard: Accurately describe the two types of goods, the two types of consumer goods and consumer services.

Performance Steps:

1. Capital goods are goods that are purchased by business or government to increase resource productivity or produce goods and services.
2. Consumer goods are goods purchased by households and consumed to provide satisfaction.
 - a. durable goods are consumer goods that are expected to last at least three years.
 - b. nondurable goods are consumer goods that are expect to last less than three years.
3. Consumer services are acts or uses that are purchased by business, households and government.

PERFORMANCE MEASURES

GO

NO-GO

1. Described Capital goods	_____	_____
2. Described Consumer goods	_____	_____
3. Described durable consumer goods.	_____	_____
4. Described nondurable consumer goods.	_____	_____
5. Described consumer services	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12

Task Title: Describe the operation of the product market

Condition: Given-

1. Three economic decision making units
2. Real flows
3. Money flows

Standard: Correctly identify the physical and money flows to and from the product market.

Performance Steps:

1. Businesses supply goods and services to the product market.
2. Households and government demand goods and services.
3. Based on quantity supplied and quantity demanded, an equilibrium price and equilibrium quantity is achieved for each good or service in the market..
4. Households use income from the resource market and government transfer payments to buy goods and services.
5. Government uses tax revenue to buy goods and services.
6. The money firms receive is called revenue.

PERFORMANCE MEASURES

GO

NO-GO

1. State that businesses supply goods and services to the market.
2. Indicated that households and government demand goods and services in the product mark
3. State that an equilibrium price and quantity is achieved for each good and service.

_____	_____
_____	_____
_____	_____

- 4. Households purchase goods and services with money (income and transfer payments). _____
- 5. Indicated that government receives goods and services in exchange for money (tax revenue). _____
- 6. Stated that businesses receive money (revenue) for selling goods and services. _____

Student must get a GO on all performance measures to be considered a GO on this task

Task Number: 13

Task Title: Draw the circular flow diagram for a closed economy

Condition: Given-

1. Product or Goods and Services Market
2. Factor Market
3. Households and Businesses
4. Real Flows
5. Money Flows

Standard: Correctly list the markets, real flows, money flows, and decision-making units.

Performance Steps:

1. Place the goods and services market at the 12 o'clock position
2. Place the factors market at the 6 o'clock position.
3. Place households at the 3 o'clock or 9 o'clock position.
4. Place businesses opposite of households.
5. Direction of money flow: Out of businesses to factor market to households into goods and services market and back to businesses.
6. Direction of real flows: Factors of production flow out of households into the resource market. Purchased factors of production flow into firms. Completed final goods and services flow out of the firm into the goods and services market. Purchased goods and services flow out of the goods and services market into household.

PERFORMANCE MEASURES

GO

NO-GO

1. Placed and labeled the goods and services market at the "12 o'clock" position.
2. Placed and labeled the factors market at the "6 o'clock" position.

_____	_____
_____	_____

3. Placed and labeled households and businesses at the “3 o’clock” and “9 o’clock” positions. The important act is placing them opposite of each other.
4. Indicated that the money flow was a circular flow from businesses to the product market to households to the goods and services market back to businesses. The starting point is not important.
5. Indicated that the real flow was a circular flow from households to the factor market, to businesses, next to the goods and services market, and then back to households. The starting point is not important.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 14

Task Title: Draw a production possibilities curve.

Condition: Given-

1. Production possibilities schedule

Point	iPod Devices (Millions) (horizontal axis)	Industrial Robots (Millions) (vertical axis)
a	0	5
b	1	4.9
c	5	4.2
d	10	3.2
e	15	1.8
f	19	0.6
g	20	0

2. "Industrial Robots" on vertical axis

Standard: Draw a bowed out production possibilities curve with all points from the schedule and axes correctly labeled.

Performance Steps:

1. Draw the vertical axis.
2. Label the axis "Industrial Robots"
3. Draw a horizontal axis.
4. Label the axis "iPod Devices"
5. Plot the first combination of iPod devices and industrial robots (point a)
6. Plot point "g"
7. Plot points "b" through "e".
8. Connect the points forming a nonlinear (curved) line.
9. Labeled the graph as the PPC or PPF

PERFORMANCE MEASURES

GO

NO-GO

1. Drew the vertical axis
2. Labeled the axis "Industrial Robots"
3. Drew the horizontal axis
4. Labeled the axis "iPod Devices"
5. Correctly plotted points "a" through "g"
6. Connected the points
7. Labeled the graph

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 15

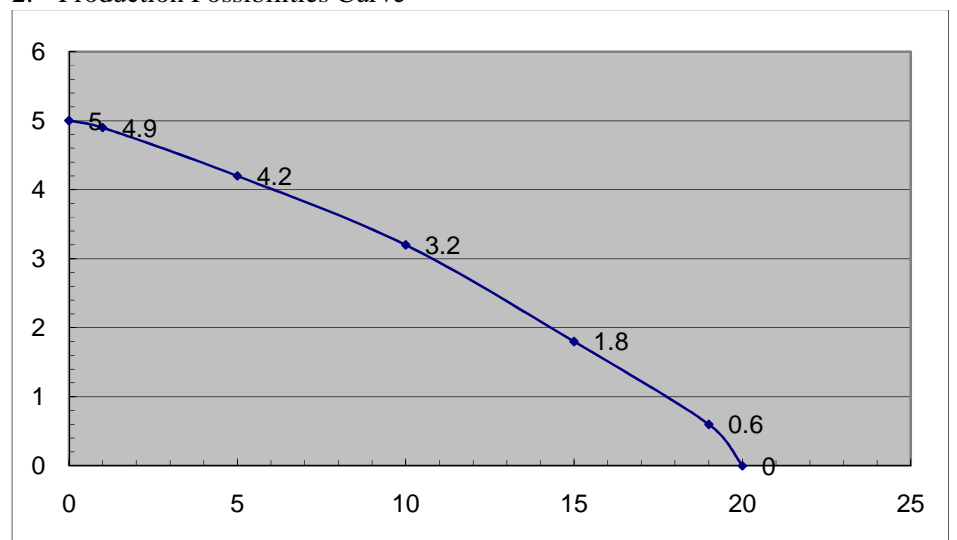
Task Title: Illustrate the concept of scarcity.

Condition: Given-

1. Production possibilities schedule

Point	iPod Devices (Millions) (horizontal axis)	Industrial Robots (Millions) (vertical axis)
a	0	5
b	1	4.9
c	5	4.2
d	10	3.2
e	15	1.8
f	19	0.6
g	20	0

2. Production Possibilities Curve



3. A starting point on the PPF/PPC.

Standard: Accurately show scarcity.

Performance Steps:

1. Define scarcity as wants and needs exceeding required resources available.
2. Move from the starting point to an adjacent point. ie. Point d to point e.
 - a. To produce more iPod devices, the economy must reduce production of industrial robots.
 - b. The reduction in industrial robots is required because there are not enough resources to produce the new level of iPod devices without taking resources away from the production of industrial robots.
3. OR: Move from the starting point to any point beyond the PPF.
 - a. The economy does not have the resources to produce the selected combination of goods.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined scarcity.

2. Selected a subsequent point on the PPF/PPC.

3. Indicated that increased production of one good required decreased production of other good.

OR

4. Selected a point beyond the PPF

5. Indicated the economy did not have enough resources to produce the new combination of goods.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

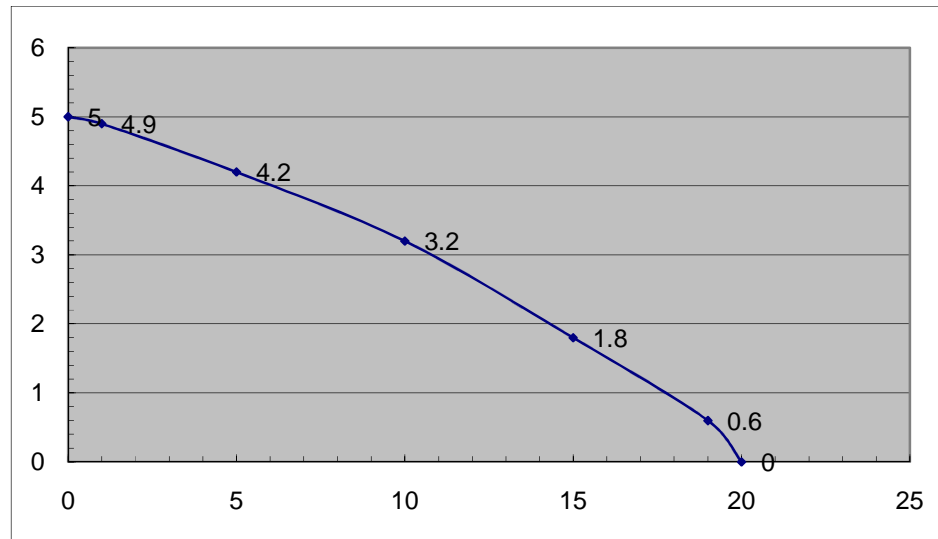
Student must get a GO on performance measures 1-3 or 1, 4-5 to be considered a GO on this task.

Task Number: 16

Task Title: Illustrate the concept of production efficiency

Condition: Given-

1. Production Possibilities Curve



2. Point A (10, 3.2)

Standard: Move from point A to another point on the PPC.

Performance Steps:

1. Define production efficiency. When an economy can not produce more of one good without decreasing production of another good.
2. From point A, select any point along the PPF to the left.
 - a. Producing more industrial robots requires a reduction in iPod devices.
3. From point A, select any point along the PPF to the right.
 - a. Producing more iPod devices requires a reduction in industrial robots.
4. Both examples meet the definition of production efficiency.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined production efficiency.
2. Indicated that moving left along the PPF required a reduction in the production of iPod devices
3. Indicated that moving right leftward along the PPF required a reduction in the production of industrial robots devices

_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures 1 & 2 or 1 & 3 to be considered a GO on this task.

Task Number: 17

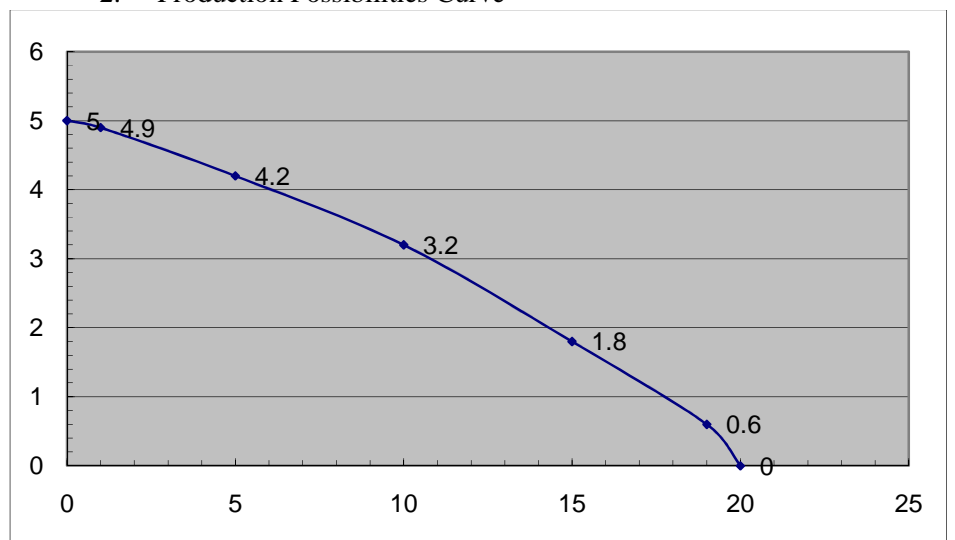
Task Title: Calculate opportunity cost

Condition: Given-

1. Production possibilities schedule

Point	iPod Devices (Millions) (horizontal axis)	Industrial Robots (Millions) (vertical axis)
a	0	5
b	1	4.9
c	5	4.2
d	10	3.2
e	15	1.8
f	19	0.6
g	20	0

2. Production Possibilities Curve



3. A start point on the PPF. ie. (5 million iPod Devices, 4.2 million industrial robots)
4. A finish point on the PPF ie. (10 million iPod Devices, 3.2 million industrial robots).

Standard: Correctly calculate the opportunity cost of the movement from one point to another on the PPF.

Performance Steps:

1. Define opportunity cost. What you must give up to gain something (a ratio).
2. Calculate how much of a good is forgone (given up). (3.2 million industrial robots minus 4.2 million industrial robots equals a loss of 1 million industrial robots)
3. Calculate how much of a good is gain. (10 million iPod Devices minus 5 iPod devices equals a gain of 5 million iPods)
4. Opportunity costs = (-1 million industrial robots/ 5 iPod devices) = 1/5 industrial robot per iPod device.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined opportunity cost	_____	_____
2. Calculated the amount of good forgone.	_____	_____
3. Calculated the amount of good gained.	_____	_____
4. Calculated the opportunity cost per iPod device gained.	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 18

Task Title: Contrast constant and increasing opportunity costs.

Condition: Given-memory only.

Standard: Correctly describe the difference between the two.

Performance Steps:

1. Define constant opportunity cost. Giving up a constant amount of one item for a constant unit increases in another good.
2. Constant opportunity cost are linear.
3. Production resources are equally productive and interchangeable for producing either good.
4. Define increasing opportunity cost. Giving up more and more of a good for equal unit increases in another good.
5. Increasing opportunity cost are concave or bowed out to the origin.
6. Production resources are not equally productive for producing either good.

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 1. Defined constant opportunity cost. | _____ | _____ |
| 2. Indicated that constant opportunity cost is linear. | _____ | _____ |
| 3. Stated that production resources are equally productive and interchangeable for producing either good. | _____ | _____ |
| 4. Defined increasing opportunity cost. | _____ | _____ |
| 5. Indicated that increasing opportunity cost is non-linear and bowed-out to the origin. | _____ | _____ |
| 6. Stated that production resources are not equally productive for producing either good. | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 19

Task Title: Determine comparative advantage for producing iPod devices..

Condition: Given-

1. Production possibilities schedule

PRODUCTION (millions)	Tech Corp. (millions)	Midas Electric (millions)
iPod devices	10	12
industrial robots	2	3

Standard: Accurately calculate comparative advantage.

Performance Steps:

1. Define comparative advantage. Producing a good or service at a lower opportunity cost than another person, firm, country, etc.
2. Calculate the opportunity cost of producing iPod devices for both firms.
 - a. Tech Corp: $(-2 \text{ million industrial robots} / 10 \text{ million iPod devices})$ equals 0.20 industrial robots per iPod device.
 - b. Midas Electric: $(-3 \text{ million industrial robots} / 12 \text{ million iPod devices})$ equals 0.25 industrial robots per iPod device
3. Tech Corp has the lower opportunity cost for producing iPod devices, so it has the comparative advantage for producing iPod devices.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined comparative advantage.
2. Calculated Tech Corporation's opportunity cost for producing iPod devices.
3. Calculated Midas Electric's opportunity cost for producing iPod devices

_____	_____
_____	_____
_____	_____

4. Stated that Tech Corp. had the lowest opportunity cost.
5. Stated that Tech Corp has a comparative advantage over Midas Electric for producing iPod devices.

_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20

Task Title: Draw a market graph from demand and supply equations.

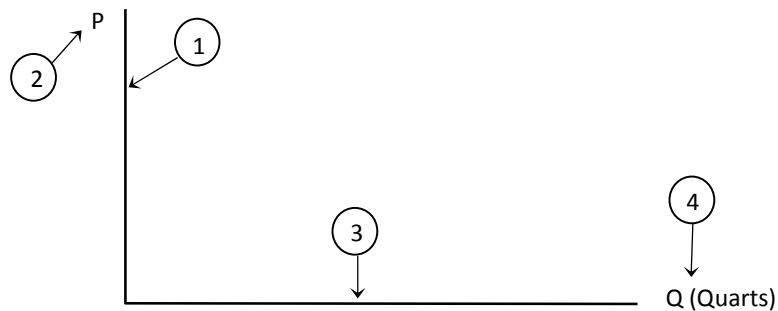
Condition: Given-

1. Demand Equation: i.e., $P = \$5 - Q/250$
2. Supply Equation: i.e., $P = \$2 + Q/500$
3. Milk Market
4. Quantity in Quarts per Day

Standard: With 100% accuracy, draw and label all curves, axes, and equilibrium conditions and market name.

Performance Steps:

1. Draw vertical axis.
2. Label the vertical axis "P" or "\$" on the left side of the vertical line at the top of the line segment.
3. Draw horizontal axis.
4. Label the horizontal axis "Q" or "quarts" on the bottom side near the right end of the line segment.



5. Calculate market equilibrium quantity.
 - 5.1. Set the two equations equal to each other.
 - 5.2. i.e., $5 - Q/250 = 2 + Q/500$
 - 5.3. Solve for Q.
 - 5.4. Q should equal 500.
6. Calculate market equilibrium price.
 - 6.1. Substitute your answer from 5 into either equation and solve for P.
 - 6.2. P should be 3.
7. Determine the demand curve intercept value on the vertical axis (\$5).

$$Q = 0 \qquad P = 5 - 0/250$$

$$P = 5$$
8. Determine the demand curve intercept value on the horizontal axis (1,250).

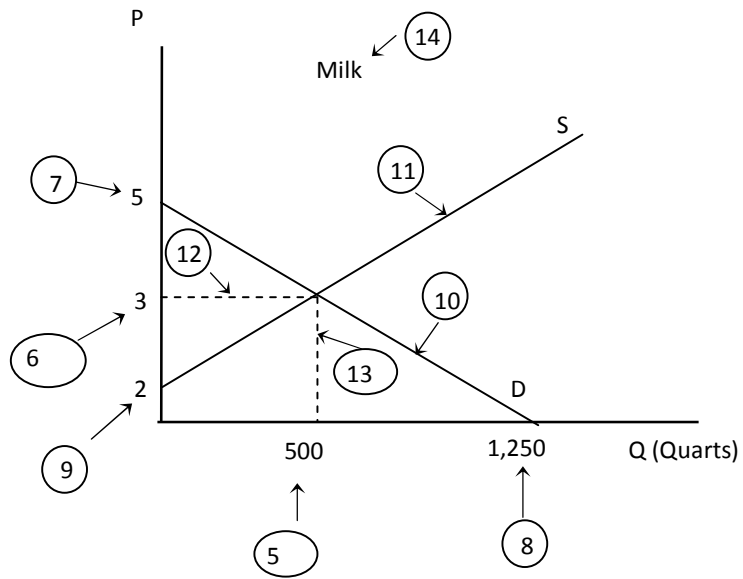
$$P = 0 \qquad 0 = 5 - Q/250$$

$$0 = 1,250 - Q$$

$$Q = 1,250$$
9. Determine the supply curve intercept value on vertical axis (\$2).

$$Q = 0 \qquad P = 2 + 0/500$$

$$P = 2$$
10. Draw and label the demand curve.
11. Draw and label the supply curve.
12. Indicate the equilibrium price.
13. Indicate the equilibrium quantity.
14. Indicate the market.



PERFORMANCE MEASURES

GO

NO-GO

1. Drew vertical axis.

2. Labeled vertical axis.

3. Drew horizontal axis.

4. Labeled horizontal axis.

5. Calculated market equilibrium quantity.

6. Calculated market equilibrium price.

7. Determined the demand curve intercept value on the vertical axis.

8. Determined the demand curve intercept value on the horizontal axis.

9. Determined the supply curve intercept value on the vertical axis.

PERFORMANCE MEASURES

GO

NO-GO

10. Drew the demand curve.

11. Drew the supply curve.

12. Indicated the equilibrium price.

13. Indicated the equilibrium quantity.

14. Indicated the market.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 21

Task Title: Draw a market graph.

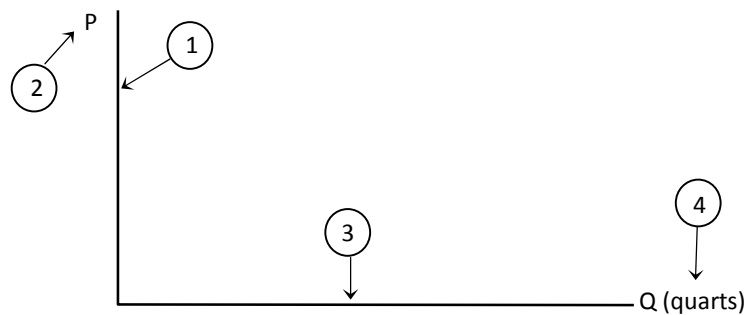
Condition: **Given-**

1. Equilibrium quantity is 10
2. Equilibrium price is \$5
3. Milk Market
4. Quantity in Quarts per Day

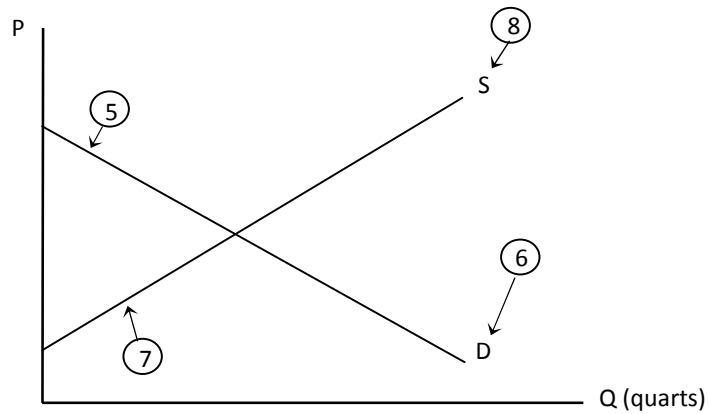
Standard: With 100% accuracy, draw and label all curves, axes, and equilibrium conditions and market name.

Performance Steps:

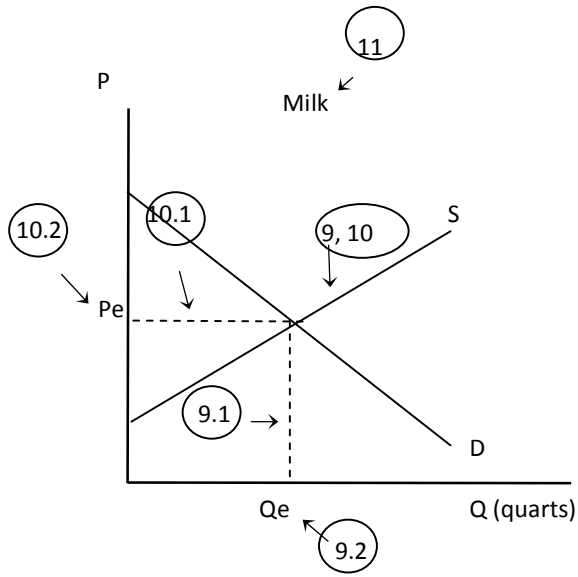
1. Draw vertical axis.
2. Label the vertical axis “P” or “\$” on the left side of the vertical line at the top of the line segment.
3. Draw horizontal axis.
4. Label the horizontal axis “Q (quarts)” or “quarts” on the bottom side near the right end of the line segment.



5. Draw a downward sloping “**Demand**” (declining) curve.
6. Label the demand curve “D.”
7. Draw an upward sloping “**Supply**” curve.
8. Label the supply curve “S.”



9. Locate the point where the two curves intersect.
 - 9.1. Draw a line down to the quantity axis.
 - 9.2. Where the line touches the quantity axis, label it “ Q_e .” This is the market equilibrium quantity supplied and demanded.
10. Locate the point where the two curves intersect.
 - 10.1. Draw a line across to the price axis.
 - 10.2. Where the line touches the price axis, label it “ P_e .” This is the market equilibrium price.
11. Above the graph, name the market “Milk.”



PERFORMANCE MEASURES

GO

NO-GO

1. Drew vertical axis.
2. Drew vertical axis.
3. Labeled the vertical axis "P" or "\$."
4. Drew horizontal axis.
5. Labeled the horizontal axis "Q (quarts)" or "quarts."
6. Drew a downward sloping demand curve.
7. Labeled the demand curve "D."
8. Drew an upward sloping supply curve.
9. Labeled the supply curve "S."
10. Drew a line down from the interesting supply/demand curves to the quantity axis.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

11. Labeled the point on the quantity axis “Qe.”

12. Drew a line across from the interesting supply/demand curves interesting point to the price axis.

13. Labeled the point on the price axis “Pe.”

14. Above the graph, named the market “Milk.”

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 22

Task Title: Draw a market graph from demand and supply schedules.

Condition: Given-

<u>Price</u>	<u>Quantity Demanded</u>		
	<u>Adam</u>	<u>Becky</u>	<u>Chris</u>
6	1	0	0
5	2	1	0
4	3	2	1
3	4	3	2
2	5	4	3
1	6	5	4
0	7	6	5

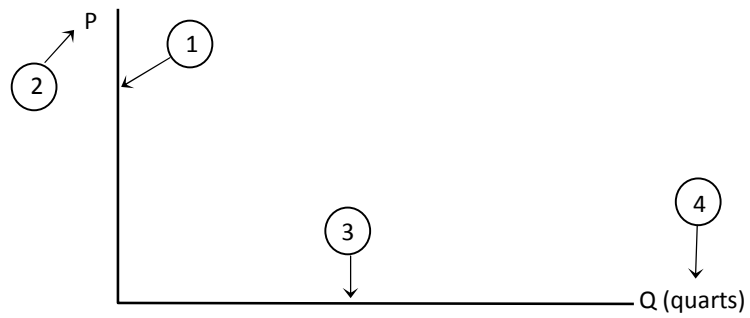
<u>Price</u>	<u>Quantity Supplied</u>		
	<u>Store A</u>	<u>Store B</u>	<u>Store C</u>
6	6	7	6
5	5	6	5
4	4	5	4
3	3	4	3
2	2	3	2
1	1	2	1
0	0	0	0

1. Milk Market
2. Quantity in Quarts per Day

Standard: With 100% accuracy, draw and label all curves, axes, and equilibrium conditions and market name.

Performance Steps:

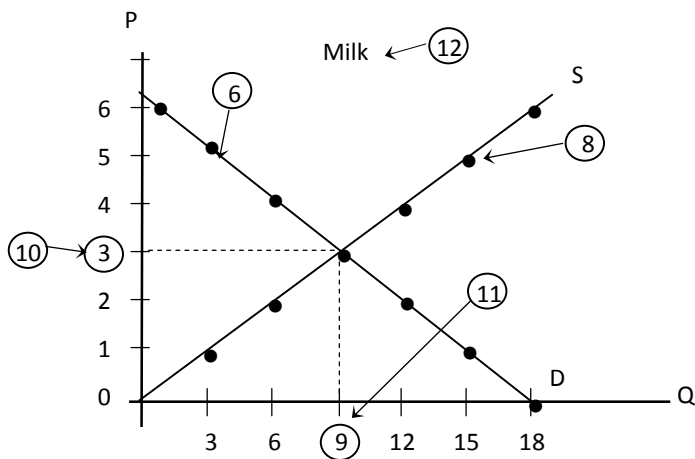
1. Draw vertical axis.
2. Label the vertical axis "P" or "\$" on the left side of the vertical line at the top of the line segment.
3. Draw horizontal axis.
4. Label the horizontal axis "Q" or "quarts" on the bottom side near the right end of the line segment.



5. Calculate the market demand curve. Horizontally sum quantity demand for each price level.

<u>Price</u>	<u>Quantity Demanded</u>
6	$1 + 0 + 0 = 1$
5	$2 + 1 + 0 = 3$
4	$3 + 2 + 1 = 6$
3	$4 + 3 + 2 = 9$
2	$5 + 4 + 3 = 12$
1	$6 + 5 + 4 = 15$
0	$7 + 6 + 5 = 18$

6. Plot the market demand curve.



7. Calculate the market supply curve. Horizontally sum quantity supplied for each price level.

<u>Price</u>	<u>Quantity Demanded</u>
6	$7 + 6 + 5 = \mathbf{18}$
5	$6 + 5 + 4 = \mathbf{15}$
4	$5 + 4 + 3 = \mathbf{12}$
3	$4 + 3 + 2 = \mathbf{9}$
2	$3 + 2 + 1 = \mathbf{6}$
1	$2 + 1 + 0 = \mathbf{3}$
0	$0 + 0 + 0 = \mathbf{0}$

8. Plot the supply curve. See 6 above.
9. Create the market supply and demand schedule.

<u>Price</u>	<u>Quantity Demanded</u>	<u>Quantity Supplied</u>
6	$1 + 0 + 0 = \mathbf{1}$	$7 + 6 + 5 = \mathbf{18}$
5	$2 + 1 + 0 = \mathbf{3}$	$6 + 5 + 4 = \mathbf{15}$
4	$3 + 2 + 1 = \mathbf{6}$	$5 + 4 + 3 = \mathbf{12}$
3	$4 + 3 + 2 = \mathbf{9}$	$4 + 3 + 2 = \mathbf{9}$
2	$5 + 4 + 3 = \mathbf{12}$	$3 + 2 + 1 = \mathbf{6}$
1	$6 + 5 + 4 = \mathbf{15}$	$2 + 1 + 0 = \mathbf{3}$
0	$7 + 6 + 5 = \mathbf{18}$	$0 + 0 + 0 = \mathbf{0}$

10. Indicate the equilibrium price.

<u>Price</u>	<u>Quantity Demanded</u>	<u>Quantity Supplied</u>
6	$1 + 0 + 0 = 1$	$7 + 6 + 5 = 18$
5	$2 + 1 + 0 = 3$	$6 + 5 + 4 = 15$
4	$3 + 2 + 1 = 6$	$5 + 4 + 3 = 12$
3	$4 + 3 + 2 = 9$	$4 + 3 + 2 = 9$
2	$5 + 4 + 3 = 12$	$3 + 2 + 1 = 6$
1	$6 + 5 + 4 = 15$	$2 + 1 + 0 = 3$
0	$7 + 6 + 5 = 18$	$0 + 0 + 0 = 0$

11. Indicate the equilibrium quantity.

<u>Price</u>	<u>Quantity Demanded</u>	<u>Quantity Supplied</u>
6	$1 + 0 + 0 = 1$	$7 + 6 + 5 = 18$
5	$2 + 1 + 0 = 3$	$6 + 5 + 4 = 15$
4	$3 + 2 + 1 = 6$	$5 + 4 + 3 = 12$
3	$4 + 3 + 2 = 9$	$4 + 3 + 2 = 9$
2	$5 + 4 + 3 = 12$	$3 + 2 + 1 = 6$
1	$6 + 5 + 4 = 15$	$2 + 1 + 0 = 3$
0	$7 + 6 + 5 = 18$	$0 + 0 + 0 = 0$

12. Indicate the market.

PERFORMANCE MEASURES

GO

NO-GO

1. Drew vertical axis.	_____	_____
2. Labeled the vertical axis “P” or “\$” on the left side of the vertical line at the top of the line segment	_____	_____
3. Drew horizontal axis.	_____	_____
4. Labeled the horizontal axis “Q” or “quarts” on the bottom side near the right end of the line segment.	_____	_____
5. Calculated the market demand curve	_____	_____
6. Plotted the market demand curve.	_____	_____
7. Calculated the market supply curve.	_____	_____
8. Plotted the supply curve.	_____	_____
9. Created the market supply and demand schedule.	_____	_____
10. Indicated the equilibrium price.	_____	_____
11. Indicated the equilibrium quantity.	_____	_____
12. Indicated the market.	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 23

Task Title: List the determinants that increase (shift) demand.

Condition: Given-from memory

Standard: List with 100% accuracy.

Performance Steps:

1. Increasing number of consumers
2. Increase in the price of substitutes
3. Decrease in the price of compliments
4. Increased taste preference for the good or service
5. Increase in income (normal good or service)
6. Expected short run price increase or shortage

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 1. Listed increasing number of consumers | _____ | _____ |
| 2. Listed increase in the price of substitutes | _____ | _____ |
| 3. Listed decrease in the price of compliments. | _____ | _____ |
| 4. Listed increased taste preference for the good or service. | _____ | _____ |
| 5. Listed increase in income (normal good or service) | _____ | _____ |
| 6. Listed expected short run price increase or shortage | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 24

Task Title: List the determinants that decrease (shift) demand.

Condition: Given-from memory

Standard: List with 100% accuracy.

Performance Steps:

1. Decreasing number of consumers
2. Decrease in the price of substitutes
3. Increase in the price of compliments
4. Decreased taste preference for the good or service
5. Decrease in income (normal good or service)
6. Expected short run price decrease or surplus

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 1. Listed decreasing number of consumers | _____ | _____ |
| 2. Listed decrease in the price of substitutes | _____ | _____ |
| 3. Listed increase in the price of compliments. | _____ | _____ |
| 4. Listed decreased taste preference for the good or service. | _____ | _____ |
| 5. Listed decrease in income (normal good or service) | _____ | _____ |
| 6. Listed expected short run price decrease or surplus | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 25

Task Title: List the determinants that increase (shifts) supply.

Condition: Given-from memory

Standard: List with 100% accuracy.

Performance Steps:

1. Increasing number of sellers
2. Price of complementary good in production increases
3. Price of substitute good in production decreases.
4. Increased productivity
5. Expected short run decrease in the good's price
6. Price of production inputs decreases

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 1. List ed increasing number of sellers | _____ | _____ |
| 2. Listed price of complementary good in production increases | _____ | _____ |
| 3. Listed price of substitute good in production decreases. | _____ | _____ |
| 4. Listed increased productivity | _____ | _____ |
| 5. Listed expected short run decrease in the good's price | _____ | _____ |
| 6. Listed price of production inputs decreases | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 26

Task Title: List the determinants that decrease (shift) supply.

Condition: Given-from memory

Standard: List with 100% accuracy.

Performance Steps:

1. Decreasing number of sellers
2. Price of complementary good in production decreases
3. Price of substitute good in production increases.
4. Decreased productivity
5. Expected short run increase in the good's price
6. Price of production inputs increases

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 1. Listed decreasing number of sellers | _____ | _____ |
| 2. Listed price of complementary good in production decreases | _____ | _____ |
| 3. Listed price of substitute good in production increases | _____ | _____ |
| 4. Listed decreased productivity | _____ | _____ |
| 5. Listed expected short run increase in the good's price | _____ | _____ |
| 6. Listed price of production inputs increases | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 27

Task Title: Contrast a normal good and an inferior good.

Condition: **Given-**Personal income increases.

Standard: Identify the difference between a normal and inferior good.

Performance Steps:

1. Define normal good. A good that you will consume more of as your income increases.
2. Define inferior good. A good that you will consume less of as your income increases.
3. One would consume more of a normal good and less of an inferior good.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined normal good usage with increasing income.

2. Defined inferior good usage with increased income.

3. Indicated that one would consume more of a normal good and less of an inferior good as income increases.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 28

Task Title: Describe and give an example of a substitute good and a complimentary good in consumption.

Condition: Given-from memory

Standard: With 100% accuracy, describe the two goods and give an example.

Performance Steps:

1. Define substitute good. A good that one is willing to use in lieu of another good. The consumer is indifferent between the two goods. ie. Wal Mart brand fat free milk and Borden's fat free milk.
2. Define complimentary good. A good that you will consume with (along side) another good. If the price of one good rises, then the consumer will purchase less of the other good. ie. As the price of gasoline increases, the demand for new or used gas guzzling vehicles decreases.

PERFORMANCE MEASURES

GO

NO-GO

1. Described substitute good

1.1 Defined substitute good

1.2. Gave correct example

2. Described complementary good

1.1 Defined complementary good

1.2. Gave correct example

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 29

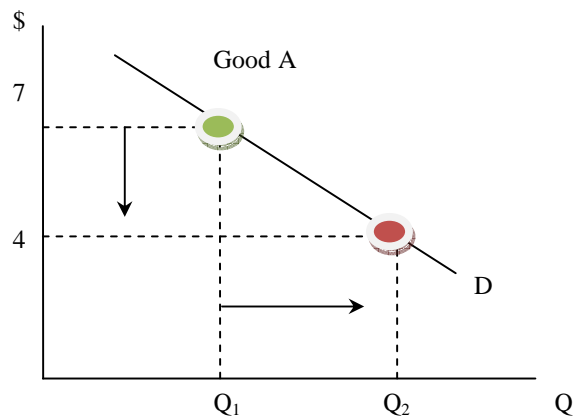
Task Title: Contrast and illustrate a change in demand and a change in quantity demanded

Condition: Given- from memory.

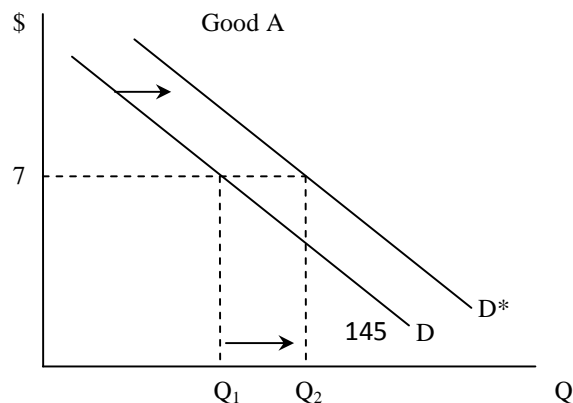
Standard: With 100% accuracy show a shift in demand and a change in quantity demanded.

Performance Steps:

1. A change in quantity demanded is caused by a change in the price of the good.
2. Change in quantity demanded (movement along the demand curve).



3. A change in demand is caused by a change in one of the determinants of demand. With a change in demand, the consumer is willing to pay more or less for the same amount of the good.
4. Change in demand (demand curve shifts).



5. A change in quantity demanded is caused by a **change in the price of the good** while a change in demand is caused by a consumer's willingness to **purchase more or less of the good at unchanged prices**

PERFORMANCE MEASURES	GO	NO-GO
1. Defined change in quantity demanded	_____	_____
2. Defined change in demand	_____	_____
3. Illustrated change in quantity demanded	_____	_____
3.1 Correctly drawn and label graph (vertical and horizontal axis, downward sloping demand curve)		
3.2 Indicated an initial price and quantity demanded		
3.3 Indicated a new (higher or lower) price and corresponding quantity demanded.		
3.4 Stated that the change in quantity demanded was caused by the change in price.	_____	_____
4. Illustrated change in demanded	_____	_____
4.1 Correctly drawn and label graph (vertical and horizontal axis, downward sloping demand curve)		
4.2 Indicated an initial price and quantity demanded		
4.3 Indicated a new (higher or lower) quantity demanded at the same price (shifted demand curve)		
4.4 Stated that the change in quantity demanded was caused by a change in a determinant of demand.		

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 30

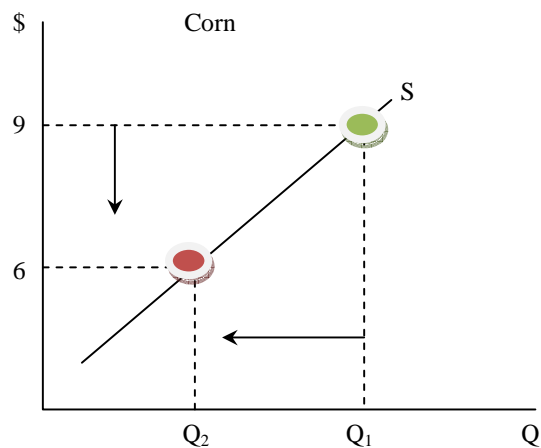
Task Title: Contrast and illustrate a change in supply and a change in quantity supplied.

Condition: Given-from memory.

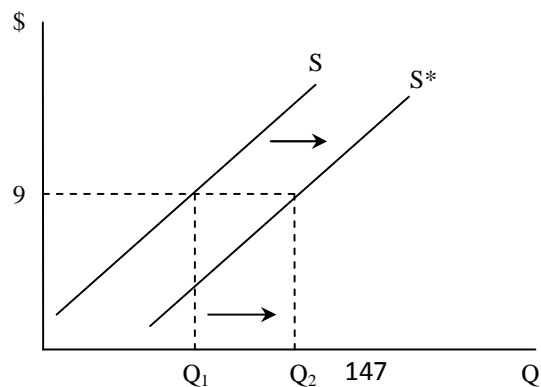
Standard: With 100% accuracy show a change in supply and a change in quantity supplied

Performance Steps:

1. A change in quantity supplied is caused by a change in the price of the good.
2. Change in quantity supplied (movement along supply curve).



3. A change in supply is caused by a change in one of the determinants of supply. With a change in supply, the supplier is willing to supply more or less of a good at each price.



4. Change in supply (supply curve shifts).
5. A change in quantity supplied is caused by a **change in the price of the good** while a change in supply is caused by a supplier's willingness to **supply more or less of the good at unchanged prices.**

PERFORMANCE MEASURES	GO	NO-GO
1. Defined change in quantity supplied	_____	_____
2. Defined change in supply	_____	_____
3. Illustrated change in quantity supplied	_____	_____
3.1 Correctly drawn and label graph (vertical and horizontal axis, upward sloping supply curve)		
3.2 Indicated an initial price and quantity supplied		
3.3 Indicated a new (higher or lower) price and corresponding quantity supplied.		
3.4 Stated that the change in quantity supplied was caused by the change in price.		
4. Illustrated change in supply	_____	_____
4.1 Correctly drawn and label graph (vertical and horizontal axis, upward sloping supply curve)		
4.2 Indicated an initial price and quantity supplied		
4.3 Indicated a new (higher or lower) quantity supplied at the same price (shifted supply curve) .		
4.4 Stated that the change in quantity supplied was caused by a change in a determinant of supply.		

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 31

Task Title: Describe and illustrate market equilibrium.

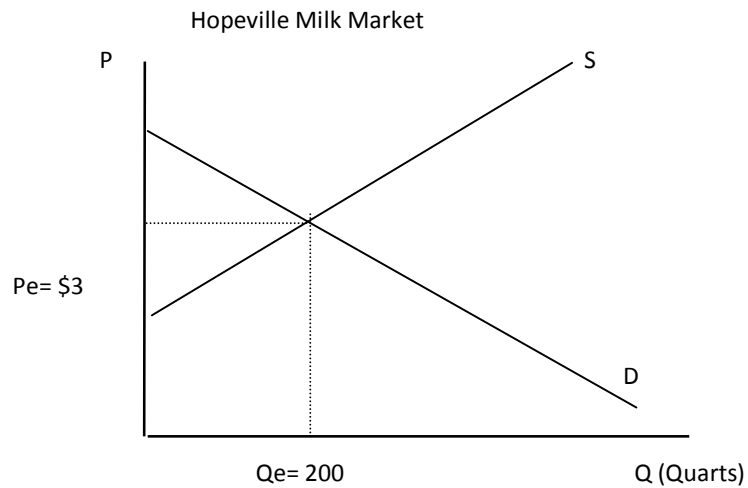
Condition: **Given-**

1. Hopeville Milk Market
2. Quantity in Quarts per Day
3. Equilibrium price is \$3
4. Equilibrium quantity is 200

Standard: With 100% accuracy draws a market in equilibrium and indicated the equilibrium conditions.

Performance Steps:

1. Define market equilibrium. When quantity supplied equals quantity demand.
2. There is a unique equilibrium price (P_e) and quantity (Q_e) for each pair of supply and demand curves.
3. There is no surplus or shortage of the good at market equilibrium price.
4. Illustrated equilibrium market condition.



PERFORMANCE MEASURES

GO

NO-GO

1. Defined market equilibrium
2. Indicated that no shortage or surplus exists at market equilibrium.
3. There is a unique market equilibrium price and quantity for each pair of supply and demand curves.
4. Illustrated market equilibrium condition
 - 4.1 Correctly drawn and labeled graph (vertical and horizontal axis, upward sloping supply and downward sloping demand curves)
 - 4.2 Indicated an equilibrium price of \$3
 - 4.3 Indicated an equilibrium quantity of 200

_____	_____
_____	_____
_____	_____
_____	_____

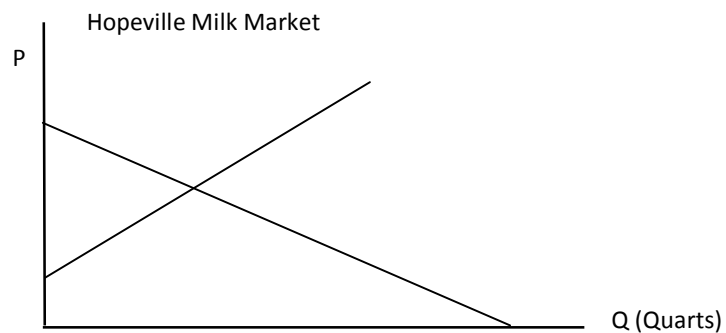
Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 32

Task Title: Illustrate and determine the effects of a change in demand.

Condition: **Given-**

1. Partially labeled Hopeville Milk Market Graph

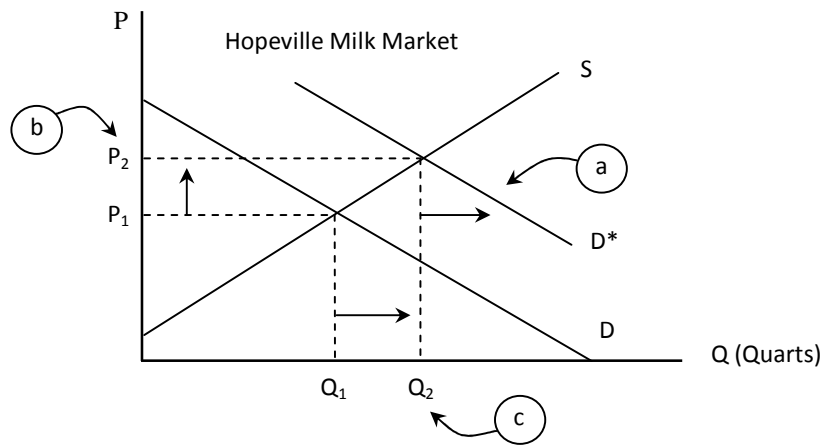


2. Change in demand
 - a. Change 1: There is an increase in demand.
 - b. Change 2: There is a decrease in demand

Standard: With 100% accuracy, indicate an increase and decrease in demand and the new equilibrium conditions.

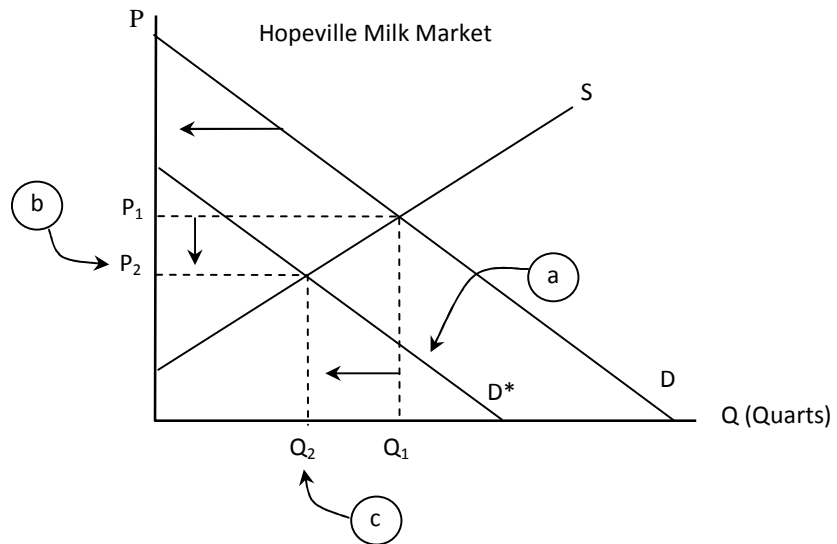
Performance Steps:

1. Increase in demand:
 - a. Demand curve shifts to the right.
 - b. Equilibrium price increases
 - c. Equilibrium quantity increases



2. Decrease in demand

- a. Demand curve shifts to the left
- b. Equilibrium price decreases
- c. Equilibrium quantity decreases



PERFORMANCE MEASURES

GO

NO-GO

1 . Increase in demand

1.1 Demand curve shifted to the right.

1.2 Equilibrium price increased.

1.3 Equilibrium quantity increased.

2 . Decrease in demand

2.1 Demand curve shifted to the left.

2.2 Equilibrium price decreased.

2.3 Equilibrium quantity decreased.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
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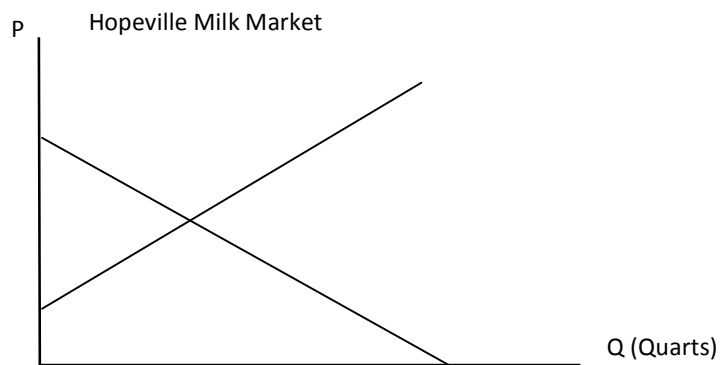
Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 33

Task Title: Illustrate and determine the effects of a change in supply.

Condition: **Given-**

1. Partially labeled Hopeville Milk Market Graph

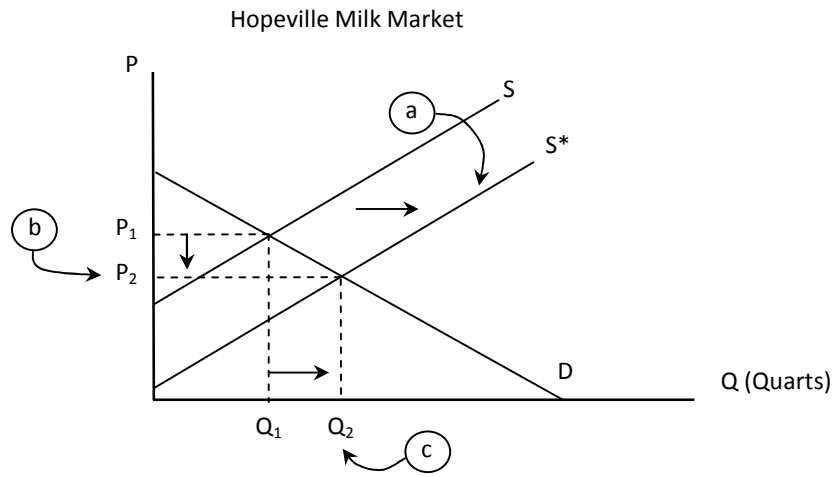


2. Change in supply
 - a. Change 1: There is an increase in supply.
 - b. Change 2: There is a decrease in supply

Standard: Correctly shift the supply curve and determine the new equilibrium condition.

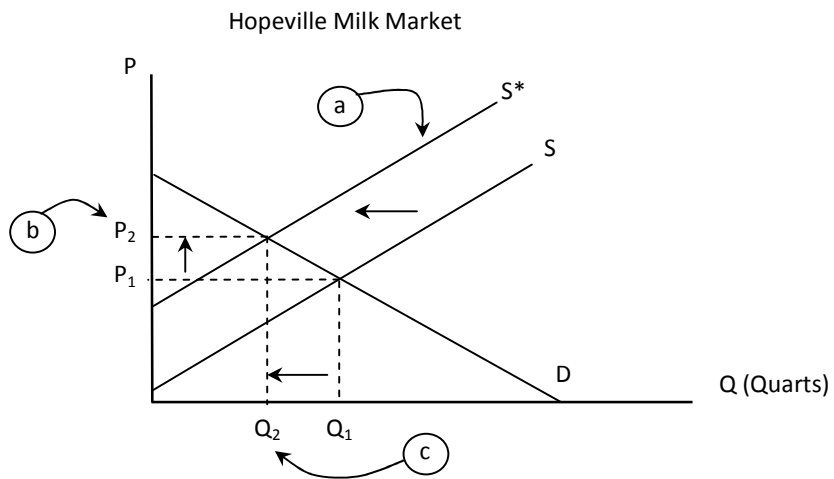
Performance Steps:

1. Increase in supply:
 - a. Supply curve shifts to the right.
 - b. Equilibrium price decreases
 - c. Equilibrium quantity increases



2. Decrease in supply

- a. Supply curve shifts to the left
- b. Equilibrium price increases
- c. Equilibrium quantity decreases



PERFORMANCE MEASURES

GO

NO-GO

1 . Increase in supply

1.1 Supply curve shifted to the right.

1.2 Equilibrium price decreased.

1.3 Equilibrium quantity increased.

2 . Decrease in supply

2.1 Supply curve shifted to the left.

2.2 Equilibrium price increased.

2.3 Equilibrium quantity decreased.

_____	_____
_____	_____
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Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 34

Task Title: Illustrate and determine the effects of a change in supply and change in demand.

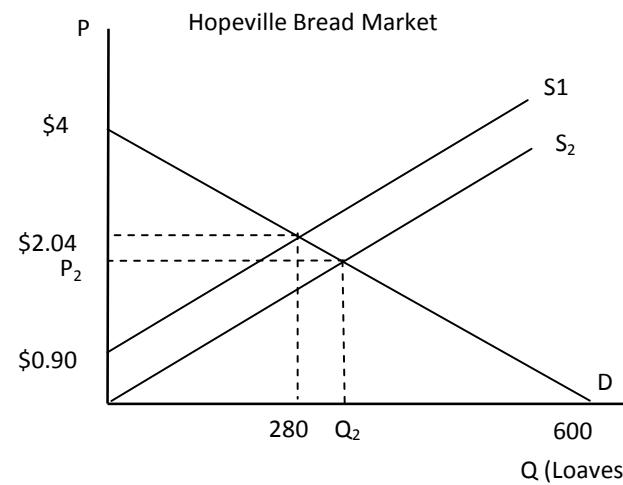
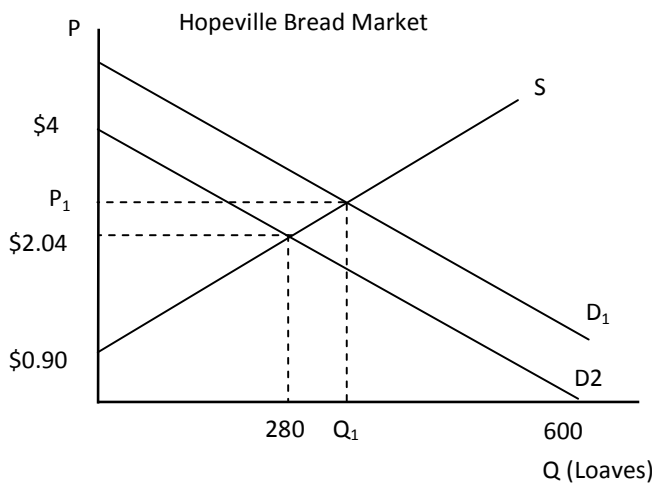
Condition: Given-

1. Hopeville Bread Market Graph
2. An increase in demand and an increase in supply.
3. An increase in demand and a decrease in supply
4. A decrease in demand and an increase in supply.
5. A decrease in demand and a decrease in supply

Standard: With 100% accuracy, make the curve shifts and determine the new equilibrium condition.

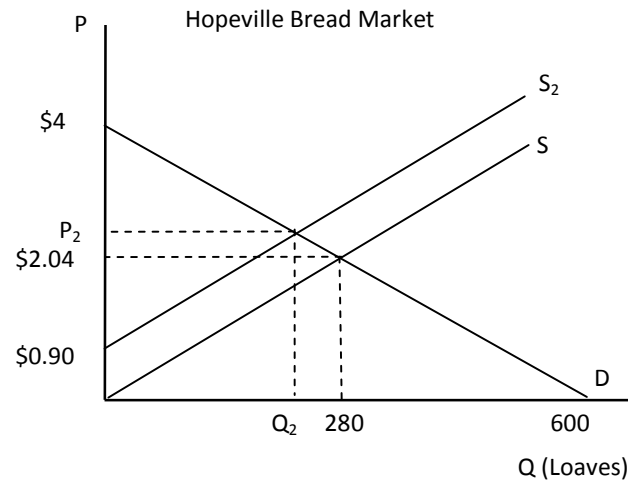
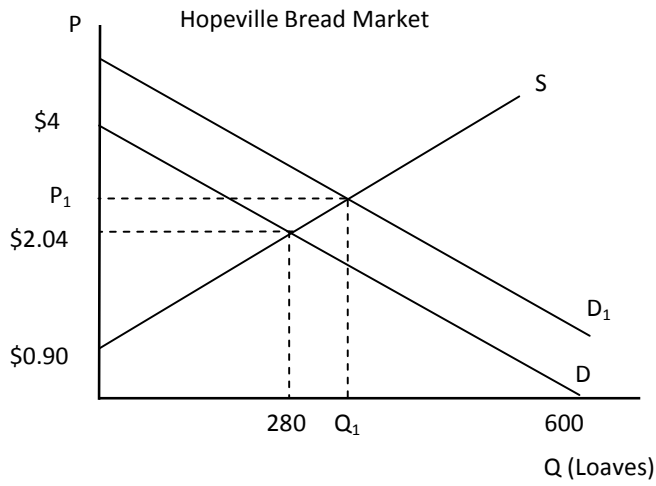
Performance Steps:

1. An increase in demand and an increase in supply.



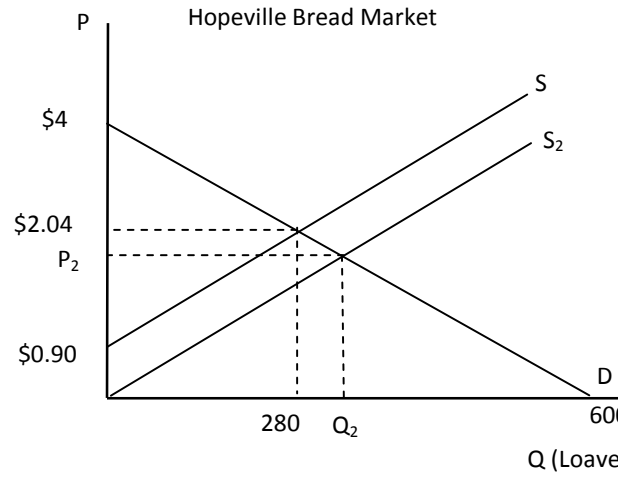
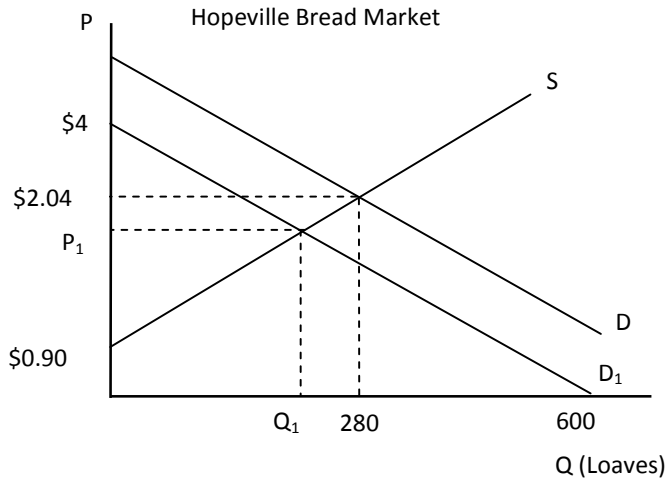
	Direction	Price	Quantity
<i>Demand</i>	Increase	+	+
<i>Supply</i>	Increase	-	+
	Net Change:	Indeterminate	+

2. An increase in demand and a decrease in supply



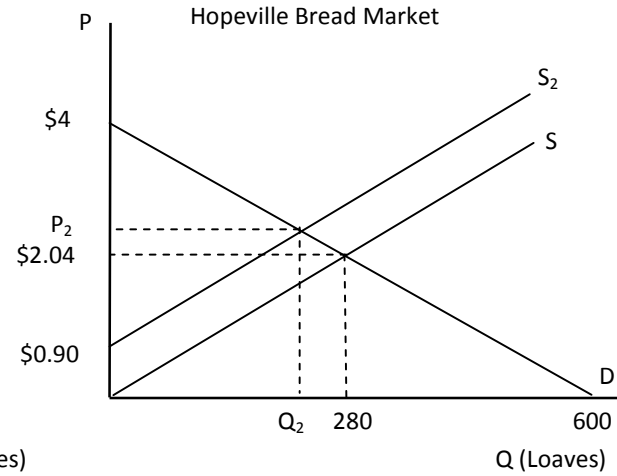
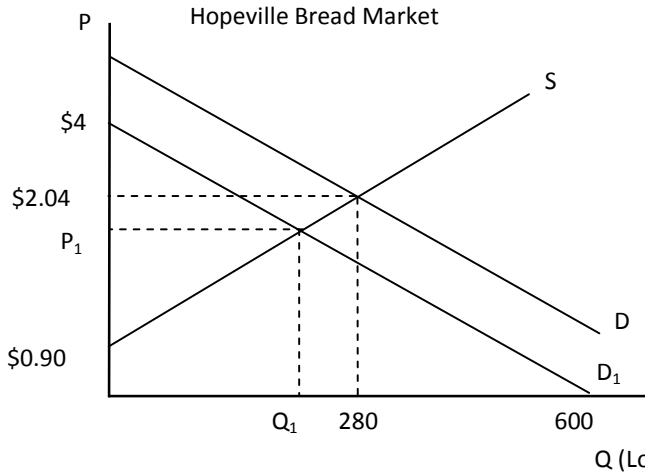
	Direction	Price	Quantity
<i>Demand</i>	Increase	+	+
<i>Supply</i>	Decrease	+	-
	Net Change:	+	Indeterminate +

3. A decrease in demand and an increase in supply.



	Direction	Price	Quantity
<i>Demand</i>	Decrease	-	-
<i>Supply</i>	Increase	-	+
	Net Change:	-	Indeterminate

4. A decrease in demand and a decrease in supply.



	Direction	Price	Quantity
<i>Demand</i>	Decrease	-	-
<i>Supply</i>	Decrease	+	-
	Net Change:	Indeterminate	-

PERFORMANCE MEASURES

GO

NO-GO

1. **Increased supply and increased demand** resulted in an indeterminate equilibrium price and an increase in equilibrium quantity.
2. **Decreased supply and increased demand** resulted in an ***increased*** equilibrium price and an indeterminate equilibrium quantity
3. **Increased supply and decreased demand** resulted in a ***decreased*** equilibrium price and an indeterminate equilibrium quantity.
4. **Decreased supply and decreased demand** resulted in an indeterminate price change and a decreased in equilibrium quantity.

_____	_____
_____	_____
_____	_____
_____	_____

Task Number: 35

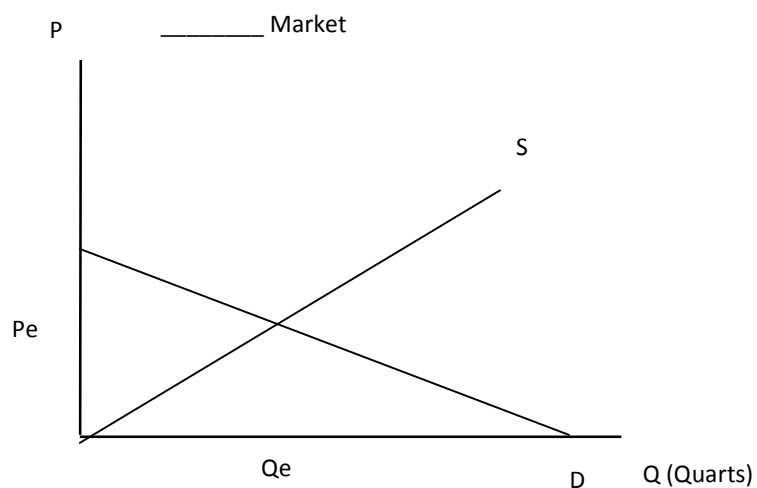
Task Title: Describe and illustrate surplus or excess supply.

Condition: **Given-** from memory

Standard: Correctly choose a market price and indicate the quantity demanded and quantity supplied.

Performance Steps:

1. Define surplus or excess supply. When the quantity supplied exceeds the quantity demanded.
2. Draw a market graph.
3. Indicated the initial market equilibrium price and quantity (P_e and Q_e).
4. Select a market price above market equilibrium. Label as P_1 .
5. Using P_1 , determine the quantity demanded. Label as Q_{d1} .
6. Using P_1 , determine the quantity supplied. Label as Q_{s1} .
7. Indicate that quantity between Q_{s1} and Q_{d1} is the surplus or excess quantity supplied..



PERFORMANCE MEASURES

GO

NO-GO

1. Defined surplus or excess supply	_____	_____
2. Drew a market graph.	_____	_____
3. Indicated initial market equilibrium price and quantity..	_____	_____
4. Selected and labeled a market price above market equilibrium.	_____	_____
5. Selected and labeled the quantity demanded.	_____	_____
6. Selected and labeled the quantity supplied.	_____	_____
7. Indicated the surplus ($Q_{s1}-Q_{d1}$)	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 36

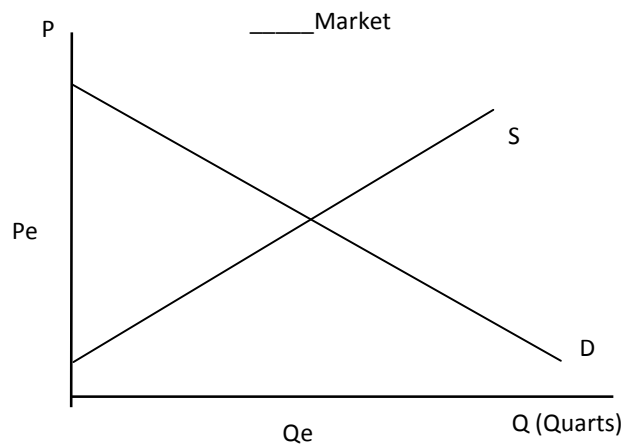
Task Title: Describe and illustrate shortage or excess demand.

Condition: **Given-** from memory

Standard: Correctly choose a market price and indicate the quantity demanded and quantity supplied.

Performance Steps:

1. Define shortage or excess demand. When the quantity demanded exceeds the quantity supplied.
2. Draw a market graph.
3. Indicated the initial market equilibrium price and quantity (P_e and Q_e).
4. Select a market price below market equilibrium. Label as P_1 .
5. Using P_1 , determine the quantity demanded. Label as Q_{d1} .
6. Using P_1 , determine the quantity supplied. Label as Q_{s1} .
7. Indicate that quantity between Q_{s1} and Q_{d1} is the shortage or excess quantity demanded..



PERFORMANCE MEASURES

GO

NO-GO

1. Defined shortage or excess demand	_____	_____
2. Selected and labeled a market price below market equilibrium.	_____	_____
3. Selected and labeled the quantity demanded.	_____	_____
4. Selected and labeled the quantity supplied.	_____	_____
5. Indicated the shortage ($Q_{d1} - Q_{s1}$)	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 5.1

Task Title: Calculate the point price elasticity of demand

Condition: **Given-**

1. a demand schedule

Price (P)	Quantity Demanded (Q _d)
\$70	40
60	60
50	80
40	100
30	120

2. a change in price/quantity

Standard: Correctly determine the point price elasticity of demand

Performance Steps:

1. Define point price elasticity of demand. The percentage change in quantity demanded for a given percentage change in price.
2. State the formula: $E_d = \frac{(\text{New } Q^d - \text{Old } Q^d) / \text{Old } Q^d}{(\text{New } P - \text{Old } P) / \text{Old } P}$
3. Indicate:
 - a. Old Price
 - b. New Price
 - c. Old Quantity demanded
 - d. New Quantity demanded
4. Calculate the percentage change in price
5. Calculate the percentage change in quantity demanded.
6. Calculate the point elasticity of demand value.

PERFORMANCE MEASURES

GO

NO-GO

1.	Define point price elasticity of demand.	_____	_____
2.	Stated the point elasticity of demand formula..	_____	_____
3.	Indicated all new and old prices and quantity demanded.	_____	_____
4.	Calculated the percentage change in price.	_____	_____
5.	Calculated the percentage change in quantity demanded	_____	_____
6	Calculated the point elasticity of demand value	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 5.2

Task Title: Interpret point price elasticity of demand values

Condition: Given-

1. a demand schedule

E_d	% ΔQ_d	% ΔP
3		+ 10 %
1.3	-39%	
1		+2%
0.1	+3%	

2. a change in price/quantity

Standard: Correctly determine the point price elasticity of demand

Performance Steps:

1. Define point price elasticity of demand. The percentage change in quantity demanded for a given percentage change in price.
2. State the formula: $E_d = \frac{(\text{New } Q^d - \text{Old } Q^d) / \text{Old } Q^d}{(\text{New } P - \text{Old } P) / \text{Old } P}$
3. Indicate:
 - a. Old Price
 - b. New Price
 - c. Old Quantity demanded
 - d. New Quantity demanded
4. Calculate the percentage change in price
5. Calculate the percentage change in quantity demanded.
6. Calculate the point elasticity of demand value.

PERFORMANCE MEASURES

GO

NO-GO

1.	Define point price elasticity of demand.	_____	_____
2.	Stated the point elasticity of demand formula..	_____	_____
3.	Indicated all new and old prices and quantity demanded.	_____	_____
4.	Calculated the percentage change in price.	_____	_____
5.	Calculated the percentage change in quantity demanded	_____	_____
6.	Calculated the point elasticity of demand value	_____	_____

Task Number: 6.21

Task Title: Identify marginal cost, marginal benefit, consumer surplus, and producer surplus.

Condition: **Given-** Completely labeled milk market (perfect competition) graph.

Standard: With 100% accuracy, identify marginal cost, marginal benefit, value, price, consumer surplus, and producer surplus.

Performance Steps:

1. Indicate that the supply curve is also the marginal cost curve.
2. Indicate that the demand curve is also the marginal benefit curve.
3. Indicate that the demand curve represents the consumer's value for each unit of product.
4. The equilibrium price is what the consumer pays for the product.
5. The equilibrium price is what the seller receives for the product.
6. The value minus price equals consumer surplus per unit.
7. The selling price minus marginal cost equals producer surplus per unit.

PERFORMANCE MEASURES

GO

NO-GO

1. Indicated that the supply curve is also the marginal cost curve.
2. Indicated that the demand curve is also the marginal benefit curve.
3. Indicated that the demand curve represents the consumer's value for each unit of product.
4. Explained that the equilibrium price is what the consumer pays for the product.
5. Explained that the equilibrium price is what the seller receives for the product
6. Stated that consumer surplus per unit is the demand curve

GO	NO-GO
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

price minus the equilibrium price.

7. Stated that producer surplus per unit is the difference between the selling price and marginal cost (supply curve).

Task Number: 6.22

Task Title: Calculate consumer surplus under perfect competition.

Condition: Given-

1. Perfect competition market graph.
2. Graph labeled with dollar and quantity values for all required values and several other unimportant values.

Standard: Determine the exact consumer surplus value.

Performance Steps:

1. Determine the market-selling price for the good.
 - 1.1. The point on the vertical axis that is directly left of where the supply and demand curves intersect.
2. Determine the equilibrium quantity of the good.
 - 2.1. The point on the horizontal axis that is directly below where the supply and demand curves intersect.
3. Determine the selling price when quantity demanded equals zero.
 - 3.1. The point on the vertical axis where the demand curve touches.
4. Calculate the difference between the selling price when quantity demanded equals zero and the equilibrium-selling price.
5. Multiply the equilibrium quantity demanded by the answer in 4 above and then divide the answer by 2.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the market-selling price for the good.
2. Determined the equilibrium quantity of the good.

_____	_____
_____	_____

PERFORMANCE MEASURES

GO

NO-GO

3. Determined the selling price when quantity demanded equals zero.

4. Calculated the difference between the selling price when quantity demanded equals zero and the equilibrium-selling price.

5. Multiplied the equilibrium quantity demanded by the answer to 4 above and divide the answer by 2.

6. Stated the consumer surplus answer.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 6.31

Task Title: Calculate producer surplus under perfect competition.

Condition: Given-

1. Perfect competition market graph
2. Graph labeled with dollar and quantity values for all required values and several other unimportant values

Standard: Determine the exact producer surplus value.

Performance Steps:

1. Determine the market-selling price for the good.
2. Determine the equilibrium quantity of the good.
3. Determine the selling price when quantity supplied (Q_s) equals zero.
4. Calculate the difference between the equilibrium selling price and the price when the Q_s equals zero.
5. Multiply the market equilibrium quantity by the answer in 4 above and then divide the answer by 2.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the market-selling price for the good.

2. Determined the equilibrium quantity of the good.

3. Determined the selling price when $Q_s = 0$.

4. Calculated the difference between the equilibrium selling price and the price when the $Q_s = 0$.

5. Multiplied the market equilibrium quantity by the answer to 4 above and then divide the answer by 2.

Task Number: 6.32

Task Title: Calculate total surplus (total welfare) under perfect competition.

Condition: **Given-**

1. Perfect competition market graph
2. Graph labeled with dollar and quantity values for all required values and several other unimportant values

Standard: Determine the exact surplus (welfare) value.

Performance Steps:

1. Determine the equilibrium quantity of the good.
2. Determine the market-selling price for the good.
3. Determine the selling price when quantity demanded (Q_d) equals zero.
4. Determine the selling price when quantity supplied (Q_s) equals zero.
5. Calculate consumer surplus
 - 5.1. From the price where $Q_d = 0$, subtract the market selling price.
 - 5.2. Multiply the answer in 5.1 by the equilibrium quantity and then divide by 2.
6. Calculate producer surplus
 - 6.1. From the market selling price, subtract the selling price when $Q_s = 0$.
 - 6.2. Multiply the answer in 6.1 by the equilibrium quantity and then divide by 2.
7. Add consumer surplus (5.2) and producer surplus (6.2).
8. State total surplus value.

PERFORMANCE MEASURES**GO****NO-GO**

1. Determined the quantity of the good supplied to the market.

2. Determined the market-selling price for the good.

3. Determined the selling price when $Q_d = 0$.

4. Determined the selling price when $Q_s = 0$.

5. Calculated consumer surplus.

5.1. From the price where $Q_d = 0$, subtracted the market selling price.

5.2. Multiplied the answer in 5.1 by the equilibrium quantity and then divided by 2.

6. Calculated producer surplus.

6.1. From the market selling price, subtracted the selling price when $Q_s = 0$.

6.2. Multiplied the answer in 6.1 by the equilibrium quantity and then divided by 2.

7. Added consumer surplus (5.2) and producer surplus (6.2).

8. Stated total surplus value.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 6.42

Task Title: Calculate deadweight loss in an inefficient market.

Condition: Given-

1. Graph where price (P) \neq MC \neq MB (P \neq S \neq D).
2. Graph labeled with dollar and quantity values for all required values and several other unimportant values.
3. Specify a quantity produced that is less than equilibrium quantity.

Special Conditions: Tell student that the actual selling price is greater than equilibrium selling price.

Standard: Determine the exact deadweight loss.

Performance Steps:

1. Determine the quantity where supply (S) equals demand (D).
2. Determine the actual selling price for the Qs.
3. Determine the marginal cost for the Qs.
4. Determine the difference between the selling price and the marginal cost.
5. Determine the difference between the equilibrium quantity and the actual Qs.
6. Multiply the difference in selling price and marginal cost by the difference in equilibrium quantity and actual Qs.
7. Divide the answer in 6 by 2.
8. State your answer in 7 as the deadweight loss value.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the quantity where supply (S) equals demand (D).

2. Determined the actual selling price for the Qs.

- | | | |
|--|-------|-------|
| 3. Determined the marginal cost for the Qs. | _____ | _____ |
| 4. Determined the difference between the selling price and the marginal cost | _____ | _____ |
| 5. Determined the difference between the equilibrium quantity and the actual Qs. | _____ | _____ |
| 6. Multiplied the difference in selling price and marginal cost by the difference in equilibrium quantity and actual Qs. | _____ | _____ |
| 7. Divided the answer in 6 by 2. | _____ | _____ |
| 8. Stated your answer in 7 as the deadweight loss value | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 6.43

Task Title: List eight conditions/actions that create inefficient markets.

Condition: **Given-** Four minutes

Standard: Accurately list the eight conditions/actions.

Performance Steps:

1. Describe the relationship between the price the seller receives and the price the buyer pays and the efficient market price.
2. Price regulations
3. Quantity regulations
4. Taxes
5. Subsidies
6. Positive externalities
7. Negative externalities
8. Public goods
9. Common goods
10. Imperfect competition

PERFORMANCE MEASURES

GO

NO-GO

1. Price regulations
 - 1.1. Price ceilings (effect rent control ceiling)
 - 1.2. Effective minimum wage
 - 1.3. Effective minimum commodity price

PERFORMANCE MEASURES

GO

NO-GO

2. Quantity regulations

2.1. Quota

3. Taxes

4. Subsidies

5. Positive externalities

6. Negative externalities

7. Public goods

8. Common goods

9. Imperfect competition

_____	_____
_____	_____
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_____	_____
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_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 7.11

Task Title: Illustrate the market effects of an effective price ceiling.

Condition: Given-

1. One perfect competition graph with marked vertical and horizontal values.
2. Effective rent control price

Standard: With 100% accuracy, identify the difference in actual price and equilibrium price as well as the difference in actual quantity supplied and equilibrium quantity.

Performance Steps:

1. Determine the equilibrium quantity of rental units and price.
2. Draw the rent control price on the graph.
3. Determine the new quantity demanded of rental units.
4. Determine the new quantity supplied of rental units.
5. Determine the shortage of rental units.
6. Indicate why this is an inefficient market ($P \neq S \neq D$).

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity of rental units and price.
2. Drew the rent control price on the graph.
3. Determined the new quantity demanded of rental units.
4. Determined the new quantity supplied of rental units.
5. Determined the shortage of rental units.
6. Indicated why this is an inefficient market.

_____	_____
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_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 7.21

Task Title: Illustrate the market effects of an effective minimum wage.

Condition: Given-

1. One perfect competition graph with indicated vertical and horizontal values.
2. Effective minimum wage

Standard: With 100% accuracy, identify the difference in price and quantity of the efficient and inefficient market.

Performance Steps:

1. Determine the equilibrium quantity of labor and wage rate.
2. Draw the minimum wage rate on the graph.
3. Determine the new quantity of labor demanded.
4. Determine the new quantity of labor supplied.
5. Determine the surplus labor.
6. Indicate why this is an inefficient market ($P \neq S \neq D$).

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity of labor and wage rate.
2. Drew the minimum wage rate on the graph.
3. Determined the new quantity of labor demanded.
4. Determined the new quantity of labor supplied.
5. Determined the surplus labor.
6. Indicated why this is an inefficient market.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 7.31

Task Title: Illustrate the market effects of a price support.

Condition: **Given-**

1. One perfect competition graph with indicated vertical and horizontal values.
2. Government price support

Standard: With 100% accuracy, identify the difference in market price, excess production quantity, change in quantity demanded, market surplus generated, and government price support cost.

Performance Steps:

1. Determine the equilibrium quantity.
2. Determine the equilibrium price.
3. Apply the government price support to the graph.
4. Determine the quantity demanded at the support price.
5. Subtract the support price quantity demanded from the original equilibrium quantity.
This is change in quantity demanded.
6. Determine the support price quantity supplied at the support price.
7. Determine the quantity supplied at the support price.
8. Subtract the original equilibrium quantity from the support price quantity supplier. This is the excess production caused by the price support.
9. Subtract the price support quantity demanded from the price support quantity supplier.
This is the surplus that the government must buy.
10. Indicate the cost to the government of the price support system.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity.	_____	_____
2. Determined the equilibrium price.	_____	_____
3. Applied the government price support to the graph.	_____	_____
4. Determined the quantity demanded at the support price.	_____	_____
5. Subtracted the support price quantity demanded from the original equilibrium quantity.	_____	_____
6. Determined the support price quantity supplied at the support price.	_____	_____
7. Determined the quantity supplied at the support price.	_____	_____
8. Subtracted the original equilibrium quantity from the support price quantity supplied.	_____	_____
9. Subtracted the price support quantity demanded from the price support quantity supplied.	_____	_____
10. Indicated the cost to the government of the price support system.	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8.11A

Task Title: Illustrate the market effects of a tax when the seller pays the tax.

Condition: Given-

1. A perfect competition graph with indicated vertical and horizontal values.
2. \$1 gasoline sales tax paid (seller gives the tax revenue to the government).

Standard: With 100% accuracy, identify the difference in price and equilibrium quantity between the efficient and inefficient market.

Performance Steps:

1. Determine the equilibrium quantity and price.
2. Locate two points that are \$1 above the supply curve.
3. Connect the points and label S2.
4. Locate the point where the new supply curve crosses the demand curve.
5. Determine the price and Qd for the point in 4. This is the price paid by the consumer.
6. Subtract \$1 from this value. This is the price the seller receives after paying the government the tax revenue. The point will be located on the supply curve directly below.
7. Determine the reduction in market quantity with the tax imposed.
8. State the price difference that the seller and buyer experience and the change in quantity supplied/demanded.
9. Indicate why this is an inefficient market ($P \neq S \neq D$).

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity and price.

2. Located two points that are \$1 above the supply curve.

3. Connected the points and labeled S2.

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|--|-------|-------|
| 4. Located the point where the new supply curve crosses the demand curve. | _____ | _____ |
| 5. Determined the price and Qd for the point in 4. | _____ | _____ |
| 6. Subtracted \$1 from this value and located it on the S curve. | _____ | _____ |
| 7. Determined the reduction in market quantity with the tax imposed. | _____ | _____ |
| 8. Stated the price difference that the seller and buyer experienced and the change in quantity supplied/demanded. | _____ | _____ |
| 9. Indicated why this is an inefficient market. | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8.11B

Task Title: Illustrate the market effects of a tax when the buyer pays the tax.

Condition: Given-

1. A perfect competition graph with indicated vertical and horizontal values.
2. \$1 gasoline sales tax paid (seller gives the tax revenue to the government).

Standard: With 100% accuracy, identify the difference in price and equilibrium quantity between the efficient and inefficient market.

Performance Steps:

1. Determine the equilibrium quantity and price.
2. Locate two points that are \$1 below the demand curve.
3. Connect the points and label D2.
4. Locate the point where the new demand curve crosses the supply curve.
5. Determine the price and Q_s for the point in 4. This is the price paid by the consumer to the producer.
6. The consumer then pays the \$1 to the government. This makes the total price to the buyer.
7. Indicate why this is an inefficient market ($P \neq S \neq D$).

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity and price.

2. Located two points that are \$1 below the demand curve.

3. Connected the points and labeled D2.

4. Located the point where the new demand curve crosses the supply curve.

5. Determined the price and Q_s for the point in 4.

6. Calculated the final consumer price.

7. Indicated why this is an inefficient market.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8.12

Task Title: Calculate the tax incidence in a competitive market.

Condition: Given-

1. A perfect competition graph with indicated vertical and horizontal values.
2. \$1 per item tax.

Standard: With 100% accuracy, identify the portions of the tax paid by the supplier and the demander.

Performance Steps:

1. Determine the equilibrium quantity.
2. Determine the equilibrium price.
3. Locate two points that are \$1 above the supply curve.
4. Connect the points and label S2.
5. Locate the point where the new supply curve crosses the demand curve. This is the price paid by the consumer.
6. Subtract the old equilibrium price from the new consumer price.
7. State the difference is the portion paid by the consumer.
8. Subtract \$1 from the new consumer purchase price. This is what the seller receives after paying the tax to the government.
9. Subtract the answer from 8 above from the original market equilibrium price.
10. State that the difference in 9 above is the seller's tax incidence.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity.
2. Determined the equilibrium price.

_____	_____
_____	_____

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|--|-------|-------|
| 3. Located two points that are \$1 above the supply curve. | _____ | _____ |
| 4. Connected the points and labeled the new supply curve. | _____ | _____ |
| 5. Subtracted the old equilibrium price from the new consumer price. | _____ | _____ |
| 6. Stated the difference is the portion paid by the consumer. | _____ | _____ |
| 7. Subtracted \$1 from the new consumer purchase price. This is what the seller receives after paying the tax to the government. | _____ | _____ |
| 8. Subtracted the answer from 7 above from the original market equilibrium price. | _____ | _____ |
| 9. Stated that the difference in 8 above is the seller's tax incidence. | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8.13

Task Title: Calculate the tax incidence with a perfectly elastic demand curve.

Condition: **Given-**

1. One perfect competition graph with indicated vertical and horizontal values.
2. Supply and demand curves illustrated.
3. \$1 per item tax.

Standard: With 100% accuracy, identify the portions of the tax paid by the supplier and the demander.

Performance Steps:

1. Determine the equilibrium quantity.
2. Determine the equilibrium price.
3. Locate two points that are \$1 above the supply curve.
4. Connect the points.
5. Locate the point where the new supply curve crosses the demand curve. This is the price paid by the consumer.
6. Subtract the old equilibrium price from the new consumer price.
7. State the difference as the portion of the tax paid by the consumer.
8. Subtract \$1 from the new consumer purchase price. This is what the seller receives after paying the tax to the government.
9. Subtract the answer from 8 above from the original market equilibrium price.
10. State that the difference in 9 above is the seller's tax incidence.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity.

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 2. Determined the equilibrium price. | _____ | _____ |
| 3. Located two points that are \$1 above the supply curve. | _____ | _____ |
| 4. Connected the points. | _____ | _____ |
| 5. Located the point where the new supply curve crosses the demand curve. This is the price paid by the consumer. | _____ | _____ |
| 6. Subtracted the old equilibrium price from the new consumer price. | _____ | _____ |
| 7. Stated the difference as the portion of the tax paid by the consumer. | _____ | _____ |
| 8. Subtracted \$1 from the new consumer purchase price. This is what the seller receives after paying the tax to the government | _____ | _____ |
| 9. Subtracted the answer from 8 above from the original market equilibrium price. | _____ | _____ |
| 10. Stated that the difference in 9 above is the seller's tax incidence. | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8.14

Task Title: Calculate the tax incidence with a perfectly inelastic demand curve.

Condition: **Given-**

1. One perfect competition graph with indicated vertical and horizontal values.
2. Supply and demand curves illustrated.
3. \$1 per item tax.

Standard: With 100% accuracy, identify the portion of the tax paid by the supplier and the demander.

Performance Steps:

1. Determine the equilibrium quantity.
2. Determine the equilibrium price.
3. Locate two points that are \$1 above the supply curve.
4. Connect the points and label.
5. Locate the point where the new supply curve crosses the demand curve. This is the price paid by the consumer.
6. Subtract the old equilibrium price from the new consumer price.
7. State the difference (6 above) as the portion of the tax paid by the consumer.
8. Subtract the consumer's tax incidence (7 above) from \$1. This is the seller's tax incidence.
9. State the difference (7 above) as the portion of the tax paid by the consumer.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity.
2. Determined the equilibrium price.

_____	_____
_____	_____

PERFORMANCE MEASURES

GO

NO-GO

3. Located two points that are \$1 above the supply curve.

4. Connected the points and labeled.

5. Located the point where the new supply curve crossed the demand curve. This is the price paid by the consumer.

6. Subtracted the old equilibrium price from the new consumer price.

7. Stated the difference (6 above) as the portion of the tax paid by the consumer.

8. Subtracted the consumer's tax incidence (7above) from \$1. This is the seller's tax incidence.

9. Stated the difference (7 above) as the portion of the tax paid by the consumer.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8.15

Task Title: Calculate the tax incidence with a perfectly elastic supply curve.

Condition: **Given-**

1. One perfect competition graph with indicated vertical and horizontal values.
2. Supply and demand curves illustrated.
3. \$1 per item tax.

Standard: With 100% accuracy, identify the portion of the tax paid by the supplier and the demander.

Performance Steps:

1. Determine the equilibrium quantity.
2. Determine the equilibrium price.
3. Locate two points that are \$1 above the supply curve.
4. Connect the points and label the new supply curve.
5. Locate the point where the new supply curve crosses the demand curve. This is the price paid by the consumer.
6. Subtract the old equilibrium price from the new consumer price.
7. State the difference as the consumer's tax incidence.
8. Subtract the consumer's tax incidence (7 above) from \$1. This is the supplier's tax incidence.
9. State that the difference (7 above) is the seller's tax incidence.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity.
2. Determined the equilibrium price.

_____	_____
_____	_____

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 3. Located two points that are \$1 above the supply curve. | _____ | _____ |
| 4. Connected the points and labeled. | _____ | _____ |
| 5. Located the point where the new supply curve crossed the demand curve. This is the price paid by the consumer. | _____ | _____ |
| 6. Subtracted the old equilibrium price from the new consumer price. | _____ | _____ |
| 7. Stated the difference as the consumer's tax incidence. | _____ | _____ |
| 8. Subtracted the consumer's tax incidence (7 above) from \$1. This is the supplier's tax incidence. | _____ | _____ |
| 9. Stated the difference (7 above) as the seller's tax incidence. | _____ | _____ |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 8.16

Task Title: Calculate the tax incidence with a perfectly inelastic supply curve.

Condition: Given-

1. One perfect competition graph with indicated vertical and horizontal values.
2. Supply and demand curves illustrated.
3. \$1 per item tax.

Standard: With 100% accuracy, identify the portion of the tax paid by the supplier and the demander.

Performance Steps:

1. Determine the equilibrium quantity.
2. Determine the equilibrium price.
3. Subtract \$1 from the equilibrium price. This is what the seller receives after paying the tax to the government.
4. Subtract the answer in 3 above from the original market equilibrium price..
5. State that the difference in 4 above is the seller's tax incidence.
6. Subtract the seller's tax incidence from \$1. This is the buyer's tax incidence.
7. State the buyer's tax incidence from 6 above.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the equilibrium quantity.

2. Determined the equilibrium price.

3. Determined the seller's price.

4. Determined the difference in the original seller's price and the new seller's price as the seller's tax incidence.

5. Stated the seller's tax incidence.

6. Stated the buyer's tax incidence.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 11.11

Task Title: Graph a budget line.

Condition: Given-

1. Price of good y ($P_y = \underline{\hspace{2cm}}$).
2. Price of good x ($P_x = \underline{\hspace{2cm}}$).
3. Consumer's income $\underline{\hspace{2cm}}$.

Standard: Draw and label with 100% accuracy a consumer's budget line graph.

Performance Steps:

1. Draw vertical axis.
2. Label vertical axis.
3. Draw horizontal axis.
4. Label horizontal axis.
5. Calculate the maximum amount of good x possible.
 - 5.1. Divide the consumer's income by P_x .
 - 5.2. Mark and label the point on the horizontal axis.
6. Calculate the maximum amount of good Y possible.
 - 6.1. Divide the consumer's income by P_y .
 - 6.2. Mark and label the point on the vertical axis.
7. Draw the budget line by connecting the two points.

PERFORMANCE MEASURES

GO

NO-GO

1. Drew vertical axis.

2. Labeled vertical axis.

PERFORMANCE MEASURES

GO

NO-GO

3. Drew horizontal axis.

4. Labeled horizontal axis.

5. Calculated and plotted the maximum amount of good x possible.

5.1. Divided consumer's income by P_x .

5.2. Marked and labeled the point on the horizontal axis.

6. Calculated and plotted the maximum amount of good y possible.

6.1. Divided consumer's income by P_y .

6.2. Marked and labeled the point on the vertical axis.

7. Drew the budget line by connecting the two points.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 11.12

Task Title: Adjust a consumer's budget line for a change in consumer income.

Condition: Given-

1. A graph with a consumer's budget line and values for goods x and y.
2. Price of good y ($P_y = \underline{\hspace{2cm}}$).
3. Price of good x ($P_x = \underline{\hspace{2cm}}$).
4. New consumer's income $\underline{\hspace{2cm}}$.

Standard: Draw and label with 100% accuracy a consumer's budget line graph.

Performance Steps:

1. Calculate the maximum amount of good x possible with the new income level.
 - 1.1. Divide the consumer's income by P_x .
 - 1.2. Mark and label the point on the horizontal axis.
2. Calculate the maximum amount of good Y possible with the new income level.
 - 2.1. Divide the consumer's income by P_y .
 - 2.2. Mark and label the point on the vertical axis.
3. Draw the budget line by connecting the two points.

PERFORMANCE MEASURES

GO

NO-GO

1. Calculated the maximum amount of good x possible.
 - 1.1. Divided consumer's income by P_x .
 - 1.2. Marked and labeled the point on the horizontal axis.

2. Calculated the maximum amount of good y possible.

2.1. Divided consumer's income by P_y .

2.2. Marked and labeled the point on the vertical axis.

3. Drew the budget line by connecting the two points.

Student must get a GO on all performance measures to be considered a GO on this task

Task Number: 11.13

Task Title: Adjust a consumer's budget line for a change in price(s).

Condition: **Given-**

1. A graph with a consumer's budget line and values for goods x and y.
2. Price of good y ($P_y = \underline{\hspace{2cm}}$).
3. Price of good x ($P_x = \underline{\hspace{2cm}}$).
4. Consumer's income $\underline{\hspace{2cm}}$.

Only one of the following is required for the task.

5. New $P_x = \underline{\hspace{2cm}}$ use performance steps/measures 1 and 3.
6. New $P_y = \underline{\hspace{2cm}}$ use performance steps/measures 2 and 3.

Standard: Draw and label with 100% accuracy the new consumer's budget line graph.

Performance Steps:

1. Calculate the maximum amount of good x possible at the new price level.
 - 1.1. Divide the consumer's income by the new P_x .
 - 1.2. Mark and label the point on the horizontal axis.
 - 1.3. Calculate the difference in quantity possible.
2. Calculate the maximum amount of good y possible at the new income level.
 - 2.1. Divide the consumer's income by the new P_y .
 - 2.2. Mark and label the point on the vertical axis.
 - 2.3. Calculate the difference in quantity possible.
3. Draw the budget line by connecting the two points.

PERFORMANCE MEASURES

GO

NO-GO

1. Calculated the maximum amount of good x possible.

1.1. Divided consumer's income by P_x .

1.2. Marked and labeled the point on the horizontal axis.

2. Calculated the maximum amount of good y possible.

2.1. Divided consumer's income by P_y .

2.2. Marked and labeled the point on the vertical axis.

3. Drew the budget line by connecting the two points.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 11.21

Task Title: Construct a consumer's marginal utility schedule.

Condition: **Given-** A total utility table with 0-5 units of the good.

Standard: Make a marginal utility schedule with 100% accuracy.

Performance Steps:

1. Calculate marginal utility for the purchase of the first unit.
 - 1.1. Total utility with unit 1 minus the total utility at zero unit.
2. Calculate marginal utility for the purchase of the second unit.
 - 2.1. Total utility with unit 2 minus the total utility at the first unit.
3. Calculate marginal utility for the purchase of the third unit.
 - 3.1. Total utility with unit 3 minus the total utility at the second unit.
4. Calculate marginal utility for the purchase of the fourth unit.
 - 4.1. Total utility with unit 4 minus the total utility at the third unit.
5. Calculate marginal utility for the purchase of the fifth unit.
 - 5.1. Total utility with unit 5 minus the total utility at the fourth unit.

PERFORMANCE MEASURES

GO

NO-GO

1. Calculated marginal utility for the purchase of the first unit.
2. Calculated marginal utility for the purchase of the second unit.
3. Calculated marginal utility for the purchase of the third unit.
4. Calculated marginal utility for the purchase of the fourth unit.
5. Calculated marginal utility for the purchase of the fifth unit.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Task Number: 11.22

Task Title: Maximize consumer total utility.

Condition: **Given-**

1. A total utility table for two goods.
2. Price of good A = $P_a = \underline{\hspace{2cm}}$.
3. Price of good B = $P_b = \underline{\hspace{2cm}}$.
4. Income level $\underline{\hspace{2cm}}$.

Special Conditions: The student must be proficient at calculating a consumer's marginal utility before attempting this task.

Standard: Determine the combination of goods A, B, and C that provides the greatest level of utility.

Performance Steps:

1. Construct a utility maximizing table.
 - 1.1. Column 1: Quantity of good A
 - 1.2. Column 2: Marginal utility of good A
 - 1.3. Column 3: Marginal utility per dollar of good A
 - 1.4. Column 4: Quantity of good B
 - 1.5. Column 5: Marginal utility of good B
 - 1.6. Column 6: Marginal utility per dollar of good B
 - 1.7. Column 7: Total expenditure
2. Complete columns 1 and 4 using all possible combinations of each good.
 - 2.1. Row 1: 0 units of good A and $(\text{income level}/P_b) =$ units of good B
 - 2.2. Row 2: 1 unit of good A and $(\text{income level} - 1 \times P_a / P_b)$ units of good B
 - 2.3. Row 3: 2 units of good A and $(\text{income level} - 2 \times P_a / P_b)$ units of good B

- 2.4. Row 4: 3 units of good A and $(\text{income level} - 3 \times P_a / P_b)$ units of good B
- 2.5. Continue until all income possible combinations are listed.
3. Complete column 7 by adding the total expenditures for goods A and B on that row.
4. Complete columns 2 and 5 by calculating the marginal utility associated with each new quantity of good A and good B.
5. Complete columns 3 and 6 by dividing marginal utility for each good's respective unit price.
6. Determine the affordable bundle of goods A and B where the marginal utility per dollar is equal or nearly equal.

PERFORMANCE MEASURES

GO

NO-GO

1. Constructed a utility maximizing table.

--	--	--

 - 1.1. Column 1: Quantity of good A
 - 1.2. Column 2: Marginal utility of good A
 - 1.3. Column 3: Marginal utility per dollar of good A
 - 1.4. Column 4: Quantity of good B
 - 1.5. Column 5: Marginal utility of good B
 - 1.6. Column 6: Marginal utility per dollar of good B
 - 1.7. Column 7: Total expenditure

2. Completed columns 1 and 4 using all possible combinations of each good.

--	--	--

 - 2.1. Row 1: 0 units of good A and $(\text{income level}/P_b)$ units of good B
 - 2.2. Row 2: 1 unit of good A and $(\text{income level} - 1 \times P_a / P_b)$ units of good B

- 2.3. Row 3: 2 units of good A and $(\text{income level} - 2 \times P_a / P_b)$ units of good B
- 2.4. Row 4: 3 units of good A and $(\text{income level} - 3 \times P_a / P_b)$ units of good B
- 2.5. Continue until all income possible combinations are listed.
- 3. Completed column 7 by adding the total expenditures for goods A and B on that row.
- 4. Completed columns 2 and 5 by calculating the marginal utility associated with each new quantity of good A and good B.
- 5. Completed columns 3 and 6 by dividing marginal utility for each good's respective unit price.
- 6. Determined the affordable bundle of goods A and B where the marginal utility per dollar is equal or nearly equal.

_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.11

Task Title: Identify explicit costs.

Condition: Given-

1. 10 or more costs.
2. At least 5 costs are explicit costs.

Special Conditions: Create a scenario and then determine 10 costs.

Standard: Define and select all explicit costs.

Performance Steps:

1. Define explicit costs: costs that represent monetary outflows from the firms; a cost paid in money.
2. Evaluate each cost by the definition of explicit costs. Determine whether the firm had an outflow of money.
3. Small, privately owned business with the following costs.
 - 3.1. Salary in old business was \$35,000
 - 3.2. Normal profit
 - 3.3. Wages paid to employees
 - 3.4. Lease payment for office building use
 - 3.5. Economic depreciation
 - 3.6. Accounting depreciation
 - 3.7. Cost of materials to produce output
 - 3.8. Transportation costs of output
 - 3.9. Utility payment for last month
 - 3.10. Interest payment on bank loan

PERFORMANCE MEASURES

GO

NO-GO

1. Defined explicit costs.
2. Correctly evaluated each cost by the definition of explicit costs.
 - 2.1. Salary in old business was \$35,000
 - 2.2. Normal profit
 - 2.3. Wages paid to employees
 - 2.4. Lease payment for office building use
 - 2.5. Economic depreciation
 - 2.6. Accounting depreciation
 - 2.7. Cost of materials to produce output
 - 2.8. Transportation costs of output
 - 2.9. Utility payment for last month
 - 2.10. Interest payment on bank loan

_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.12

Task Title: Identify implicit costs.

Condition: **Given-**

1. 10 or more costs.
2. At least 4 costs are implicit costs.

Special Conditions: Create a scenario and then determine 10 costs.

Standard: Define and select all implicit costs.

Performance Steps:

1. Define implicit costs: An opportunity cost incurred by the firm, which uses its self-owned or self-employed resources. To the firm, implicit costs are the money payments that self-employed resources could have earned in the best alternative use.
2. Evaluate each cost by the definition of implicit costs. Small, privately owned business with the following costs.
 - 2.1. Salary of owner in old business was \$35,000
 - 2.2. Normal profit
 - 2.3. Wages paid to employees
 - 2.4. Lease payment for office building use
 - 2.5. Economic depreciation
 - 2.6. Accounting depreciation
 - 2.7. Cost of materials to produce output
 - 2.8. Transportation costs of output
 - 2.9. Utility payment for last month
 - 2.10. Interest payment on bank loan

PERFORMANCE MEASURES

GO

NO-GO

1. Defined implicit costs.
2. Correctly evaluated each cost by the definition of implicit costs.
 - 2.1. Salary in old business was \$35,000
 - 2.2. Normal profit
 - 2.3. Wages paid to employees
 - 2.4. Lease payment for office building use
 - 2.5. Economic depreciation
 - 2.6. Accounting depreciation
 - 2.7. Cost of materials to produce output
 - 2.8. Transportation costs of output
 - 2.9. Utility payment for last month
 - 2.10. Interest payment on bank loan

_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.13

Task Title: Calculate economic profit.

Condition: **Given-**

1. Sales or total revenue.
2. At least 12 cost items. At least 1 item must not be related to the firm.
3. Normal return to entrepreneurship/business.

Standard: With 100% accuracy, determine the economic profit.

Performance Steps:

1. Define economic profit: $\text{Economic profit} = \text{total revenue} - \text{implicit costs} - \text{explicit costs}$.
2. Determine all explicit costs.
3. Determine all implicit costs.
4. Determine total revenue.
5. Subtract total implicit costs and total explicit costs from total revenue.
6. Three conditions can be obtained:
 - 6.1. $\text{Economic profit} < 0$ (negative economic profit, which is an *economic loss*),
 - 6.2. $\text{Economic profit} = 0$ (*break even*),
 - 6.3. $\text{Economic profit} > 0$.

PERFORMANCE MEASURES

GO NO-GO

1. Defined economic profit.
2. Determined all explicit costs.
3. Determined all implicit costs.

_____	_____
_____	_____
_____	_____

4. Determined total revenue.

5. Subtracted total implicit costs and total explicit costs from total revenue.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.14

Task Title: Determine normal profit and economic profit.

Condition: Given-

	Explicit	Implicit	Total	Normal Profit	Economic
<u>Firm</u>	<u>Costs</u>	<u>Costs</u>	<u>Revenue</u>	<u>(Y or N)</u>	<u>Profit (\$)</u>
A	50 M	40 M	110M		
B	75 M	20M	95 M	_____	_____
C	100 M	30 M	120 M	_____	_____
				_____	_____

Standard: With 100% accuracy, determine the economic profit and whether a normal profit situation exists.

Performance Steps:

1. Calculate economic profit: $\text{Economic Profit} = \text{TR} - (\text{Explicit and Implicit Costs})$.
2. Define normal profit: The minimum profit necessary to keep a firm in operation.
3. When economic profit is equal to or greater than zero, then the firm has no incentive to relocate resources to another use.

PERFORMANCE MEASURES

GO

NO-GO

1. Calculated economic profit for Firms A, B, and C.
2. Defined normal profit: The minimum profit necessary to keep a firm in operation (when economic profit \geq zero)
3. Determined that Firms A and B were earning a normal profit.

_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.21

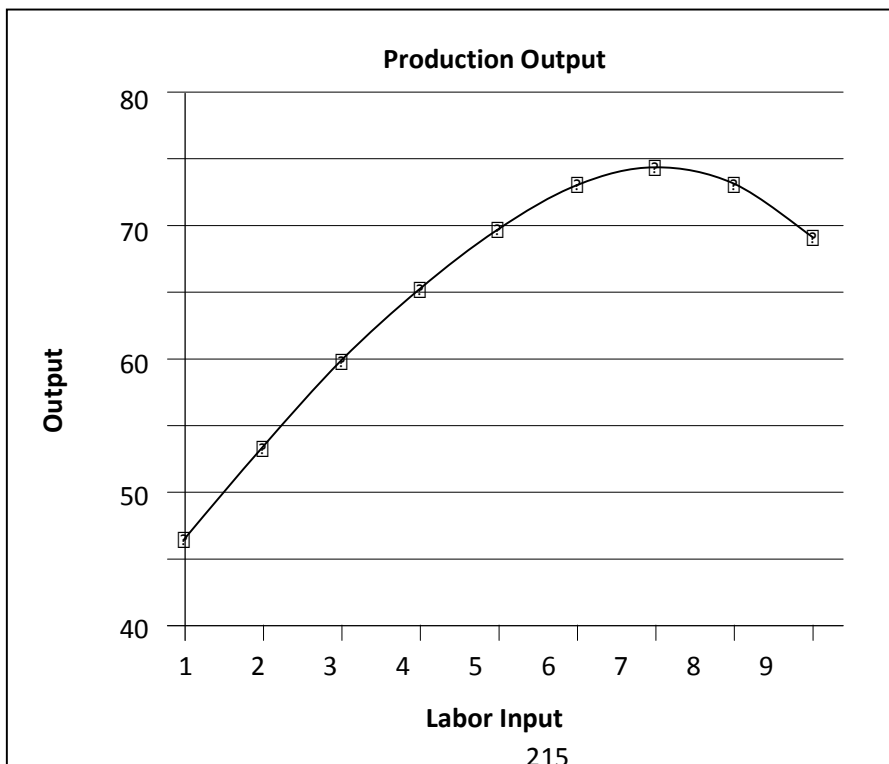
Task Title: Determine total product (TP).

Condition: Given-

1. Production Schedule

	Marginal	Total
<u>Labor</u>	<u>Output</u>	<u>Output</u>
0	0	_____
1	13	_____
2	14	_____
3	12	_____
4	11	_____
5	9	_____
6	6	_____
7	2	_____
8	-2	_____

2. Total Product Graph



3. Production Equation: $Q = 13.26L + 0.32L^2 - 0.12L^3$

Standard: With 100% accuracy, determine total product at three levels of production.

Performance Steps:

1. Define total product.
2. TP using production schedule.
 - 2.1. Determine the level of input.
 - 2.2. Sum the marginal products for all inputs used.
3. TP using production graph.
 - 3.1. Determine the level of input.
 - 3.2. Determine the level of output from the vertical axis on the graph.
4. TP using an equation.
 - 4.1. Determine the level of input (L variable).
 - 4.2. Calculate Q using the formula.

PERFORMANCE MEASURES	GO	NO-GO
1. Defined total product.	_____	_____
2. TP using production schedule.	_____	_____
2.1. Determined the level of input.		
2.2. Summed the marginal products for all inputs used.		
3. TP using production graph.	_____	_____
3.1. Determined the level of input.		
3.2. Determined the level of output from the vertical axis on the graph.		

4. TP using an equation.

4.1. Determined the level of input (L variable).

4.2. Substituted the value of L and calculated Q using the formula.

Student must get a GO on all performance measures to be considered a GO on this task.

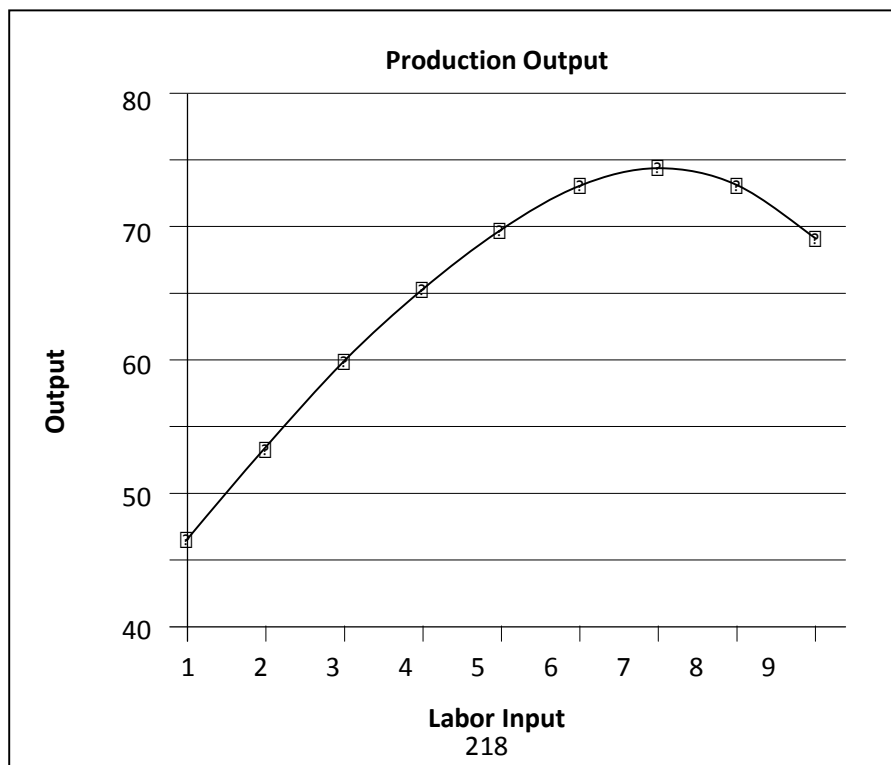
Task Number: 12.22

Task Title: Determine marginal product (MP).

Condition: **Given-1.** Production Schedule

	Total	Marginal
<u>Labor</u>	<u>Product</u>	<u>Product</u>
0	0	
1	13	_____
2	27	_____
3	39	_____
4	50	_____
5	59	_____
6	65	_____
7	67	_____
8	65	_____
9	58	_____

2. Total Product Graph



Standard: With 100% accuracy, determine marginal product for three input levels.

Performance Steps:

1. Define marginal product.
2. MP using production schedule.
 - 2.1. Determine the new TP.
 - 2.2. Subtract the old TP.
 - 2.3. Divide the change in TP by the change in input.
3. MP using production graph.
 - 3.1. Determine the new level of input.
 - 3.2. Determine the new level of output from the vertical axis on the graph.
 - 3.3. Determine the change in TP.
 - 3.4. Divide the change in TP by the change in input.

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|--|--|--|
| <ol style="list-style-type: none"> 1. Defined marginal product. 2. MP using production schedule. <ol style="list-style-type: none"> 2.1. Determined the new TP. 2.2. Subtracted the old TP. 2.3. Divided the change in TP by the change in input. 3. MP using production graph. <ol style="list-style-type: none"> 3.1. Determined the new level of input. 3.2. Located the point on the production curve that corresponds to the new input level. | <p>_____</p> <p>_____</p> <p>_____</p> | <p>_____</p> <p>_____</p> <p>_____</p> |
|--|--|--|

- 3.3. Determined the new TP on the vertical axis on the graph.
- 3.4. Determined the change in TP.
- 3.5. Divided the change in TP by the change in input.

Student must get a GO on all performance measures to be considered a GO on this task.

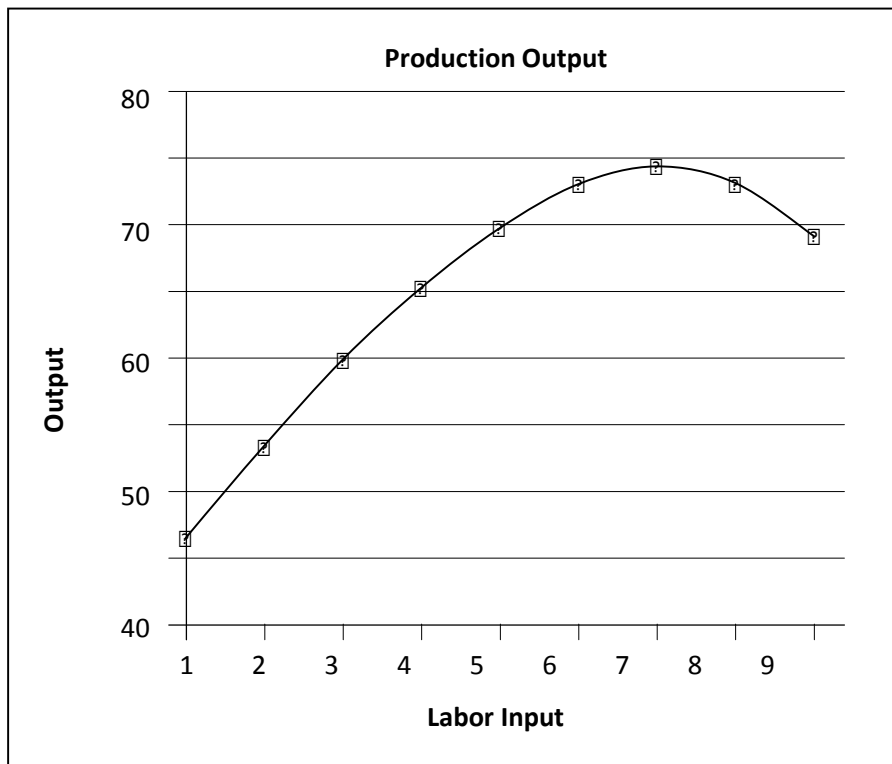
Task Number: 12.23

Task Title: Determine average product (AP).

Condition: Given-1. Production Schedule

	Total	Average
<u>Labor</u>	<u>Product</u>	<u>Product</u>
0	0	
1	13	_____
2	14	_____
3	12	_____
4	11	_____
5	9	_____
6	6	_____
7	2	_____
8	-2	_____

2. Total Product Graph



Standard: With 100% accuracy, determine average product.

Performance Steps:

1. Define average product.
2. AP using production schedule.
 - 2.1. Determine the TP.
 - 2.2. Divide TP by total input.
3. AP using production graph.
 - 3.1. Determine the level of input.
 - 3.2. Locate the point on the production curve that corresponds to the input level.
 - 3.3. Determine the TP on the vertical axis on the graph.
 - 3.4. Divide TP by total input.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined average product.	_____	_____
2. AP using production schedule.	_____	_____
2.1. Determined the TP.		
2.2. Divided TP total input.		
3. AP using production graph.	_____	_____
3.1. Determined the level of input.		
3.2. Located the point on the production curve that corresponds to the input level.		
3.3. Determined the TP on the vertical axis on the graph.		
3.4. Divided TP by total input.		

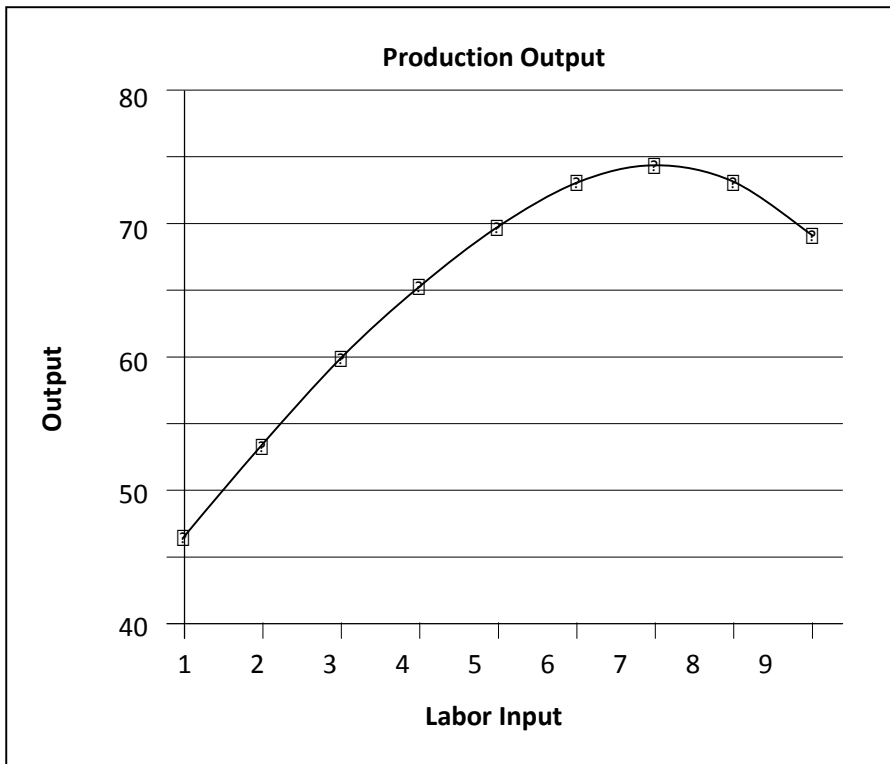
Task Number: 12.24

Task Title: Identify increasing and diminishing marginal returns.

Condition: Given-1. Production Schedule

	Marginal	Total
<u>Labor</u>	<u>Product</u>	<u>Product</u>
0	0	_____
1	13	_____
2	14	_____
3	12	_____
4	11	_____
5	9	_____
6	6	_____
7	2	_____
8	-2	_____

2. Total Product Graph



Standard: With 100% accuracy, identify two cases of diminishing and increasing marginal returns.

Performance Steps:

1. Define increasing marginal returns: When the marginal product of an additional worker exceeds the marginal product of the previous worker.
2. Increasing marginal returns using production schedule.
 - 2.1. Determine the MP for the new input.
 - 2.2. Determine the MP for the previous input.
 - 2.3. If the MP of the new worker exceeds that of the previous worker, then one has increasing marginal returns.
3. Increasing marginal returns using production graph.
 - 3.1. Determine the MP for the new input.
 - 3.2. Determine the MP for the previous input.
 - 3.3. If the MP of the new worker exceeds that of the previous worker, then one has increasing marginal returns.
4. Define decreasing marginal returns: When the marginal product of an additional worker is less than the marginal product of the previous worker.
5. Decreasing returns using production schedule.
 - 5.1. Determine the MP for the new input.
 - 5.2. Determine the MP for the previous input.
 - 5.3. If the MP of the new worker is less than that of the previous worker, then one has decreasing marginal returns.
6. Decreasing marginal returns using production graph.
 - 6.1. Determine the MP for the new input.
 - 6.2. Determine the MP for the previous input.

- 6.3. If the MP of the new worker is less than that of the previous worker, then one has decreasing marginal returns.

PERFORMANCE MEASURES	GO	NO-GO
1. Defined increasing marginal returns.	_____	_____
2. Increasing marginal returns using production schedule.	_____	_____
2.1. Determined the MP for the new input.		
2.2. Determined the MP for the previous input.		
2.3. If the MP of the new worker exceeds that of the previous worker, then one has increasing marginal returns.		
3. Increasing marginal returns using production graph.	_____	_____
3.1. Determined the MP for the new input.		
3.2. Determine the MP for the previous input.		
3.3. If the MP of the new worker exceeds that of the previous worker, then one has increasing marginal returns.		
4. Defined decreasing marginal returns.	_____	_____
5. Decreasing returns using production schedule.	_____	_____
5.1. Determined the MP for the new input.		
5.2. Determined the MP for the previous input.		
5.3. If the MP of the new worker is less than that of the previous worker, then one has decreasing marginal returns.		
6. Decreasing marginal returns using production graph.	_____	_____
6.1. Determined the MP for the new input.		

PERFORMANCE MEASURES

GO

NO-GO

- 6.2. Determined the MP for the previous input.
- 6.3. If the MP of the new worker is less than that of the previous worker, then one has decreasing marginal returns.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.31

Task Title: Contrast long-run and short-run economic situations.

Condition: Given-

1. Six inputs and time required to vary input.
 - a. 6 months to change assembly line machines
 - b. 3 months to adjust computerized cutting machine
 - c. 1 day to adjust labor usage
 - d. 2 weeks to change suppliers input deliveries
 - e. 1 week to perform annual maintenance services
 - f. 1 hour to prepare the assembly line for production

Standard: With 100% accuracy, determine where the short run ends and the long run begins

Performance Steps:

1. Define short run.
2. Define long run.
3. Determine the variable that takes the longest period of time to change.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined short run as the time when at least one variable is fixed.

2. Defined long run as the time when all variables are flexible.

3. Determined that changing assembly line machines is the variable taking the longest time to change.

4. Indicated that the short run lasts 6 months

PERFORMANCE MEASURES

GO

NO-GO

5. Indicated that the long run starts at the 6 month mark.

_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.32

Task Title: Determine total fixed costs.

Condition: **Given-**

1. Total variable cost
2. Total cost

<u>Q</u>	<u>TFC</u>	<u>TVC</u>	<u>TC</u>
0		0	100
1	_____	45	145
2	_____	85	185
3	_____	120	220

Standard: With 100% accuracy, determine the total fixed cost.

Performance Steps:

1. Define total fixed costs.
2. Set up the equation for TC: $TC = TVC + TFC$.
3. Substitute the values for TC and TVC and solve for TFC.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined total fixed costs.

2. Set up the equation for TC: $TC = TVC + TFC$.

3. Substituted the values for TC and TVC and solve for TFC.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.33

Task Title: Determine total variable costs.

Condition: **Given-**

1. Total fixed cost
2. Total cost

<u>Q</u>	<u>TFC</u>	<u>TVC</u>	<u>TC</u>
0	100		100
1	100	_____	145
2	100	_____	185
3	100	_____	220

Standard: With 100% accuracy, determine the total variable cost.

Performance Steps:

1. Define total variable costs.
2. Set up the equation for TC: $TC = TVC + TFC$.
3. Substitute the values for TC and TFC and solve for TVC.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined total variable costs.
2. Set up the equation for TC: $TC = TVC + TFC$.
3. Substituted the values for TC and TFC and solved for TVC.

_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.34

Task Title: Determine total costs.

Condition: **Given-**

1. Total fixed cost
2. Total variable cost

<u>Q</u>	<u>TFC</u>	<u>TVC</u>	<u>TC</u>
0	50	0	
1	50	25	_____
2	50	20	_____
3	50	30	_____

3. or average total cost.

<u>Q</u>	<u>ATC</u>
2	50
3	40
4	55
5	75

Standard: With 100% accuracy, determine the total costs.

Performance Steps:

1. Define total costs.
2. Set up the equation for TC: $TC = TVC + TFC$.
3. Substitute the values for TVC and TFC and solve for TC.
4. Using AFC:
 - 4.1. Set up equation: $ATC = (TC/Q)$.
 - 4.2. Substitute the values for Q and ATC and then solve the equation.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined total costs.

2. Set up the equation for TC: $TC = TVC + TFC$.

3. Substituted the values for TVC and TFC and solved for TC.

4. Using AFC:

4.1. Set up equation: $ATC = (TC/Q)$.

4.2. Substituted the values for Q and ATC and then solved the equation.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.35

Task Title: Calculate average costs (fixed, variable, and total)

Condition: **Given-** Production cost schedule.

<u>Q</u>	<u>TFC</u>	<u>TVC</u>	<u>TC</u>	
10	350	320	670	
20	350	700	1,050	_____
30	350	1,200	1,550	_____

Standard: With 100% accuracy, determine AFC, AVC, and ATC.

Performance Steps:

1. Calculate $AFC = (TFC \div Q)$.
2. Calculate $AVC = (TVC \div Q)$.
3. Calculate $ATC = (AFC + AVC)$
or $ATC = (TC \div Q)$

PERFORMANCE MEASURES

GO

NO-GO

1. Calculated $AFC = (TFC \div Q)$

Q = 10

Q = 20

Q = 30

2. Calculated $AVC = (TVC \div Q)$.

Q = 10

Q = 20

Q = 30

3. Calculate $ATC = (AFC + AVC)$.

or $ATC = (TC \div Q)$

PERFORMANCE MEASURES

GO

NO-GO

Q = 10

Q = 20

Q = 30

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 12.36

Task Title: Calculate production cost

Condition: **Given-** Production cost schedule.

<u>Q</u>	<u>TFC</u>	<u>TVC</u>	<u>TC</u>	<u>AFC</u>	<u>AVC</u>	<u>ATC</u>	<u>MC</u>
0	100	0	100				
1		45	145	100	45	145	45
2	100		185		42.5	92.5	40
3	100	120		33.3		73.3	35
4	100	150	250	25	37.5		
5	100	185	285				35

Standard: With 100% accuracy, determine all the missing values.

Performance Steps:

1. Set up equation $TC = TFC + TVC$.
2. Set up equation $ATC = AFC + AVC$.
3. Set up equation $(TC_2 - TC_1) \div (Q_2 - Q_1) = MC$

PERFORMANCE MEASURES

GO

NO-GO

1. Set up equation $TC = TFC + TVC$.

1.1. Solved for TVC

1.2. Solved for TFC

1.3. Solved for TC

PERFORMANCE MEASURES

GO

NO-GO

2. Set up equation $ATC = AFC + AVC$.

2.1. Solved for AFC

2.2. Solved for AVC

2.3. Solved for ATC

3. Set up equation $(TC_2 - TC_1) \div (Q_2 - Q_1) = MC$ and solved for MC

_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 13.11

Task Title: Describe a market that is perfectly competitive.

Condition: Given- Memory

Standard: Indicate the characteristics and associated conditions with 100% accuracy.

Performance Steps:

<u>Characteristics</u>	<u>Condition</u>
1. Number of firms	Many; a large number
2. Type of product	Standardized, homogeneous
3. Control over price	None
4. Barriers to entry	None
5. Nonprice competition	None

PERFORMANCE MEASURES

GO

NO-GO

1. List the five characteristics

Number of firms

Type of product

Control of price

Barriers to entry

Nonprice competition

2. Correctly indicate the conditions associated with each characteristic

Number of firms

Many; a large number

Type of product

Standardized, homogeneous

Control of price

None

_____	_____
_____	_____

Barriers to entry	Easy, no obstacles
Nonprice competition	None

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 13.12

Task Title: Calculate total revenue in a competitive market.

Condition: **Given-** Output and price schedule.

<u>Price</u>	<u>Output</u>
5	0
5	1
5	2
5	3
5	4
5	5
5	6
5	7
5	8

Special Conditions: Create a scenario and then determine 10 costs.

Standard: Define and select all the implicit costs.

Performance Steps:

1. Define total revenue.
2. Multiple price times quantity to get total revenue for a specific level of output.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined total revenue.

2. Multiple price times quantity to get total revenue for a specific level of output.

_____	_____
_____	_____

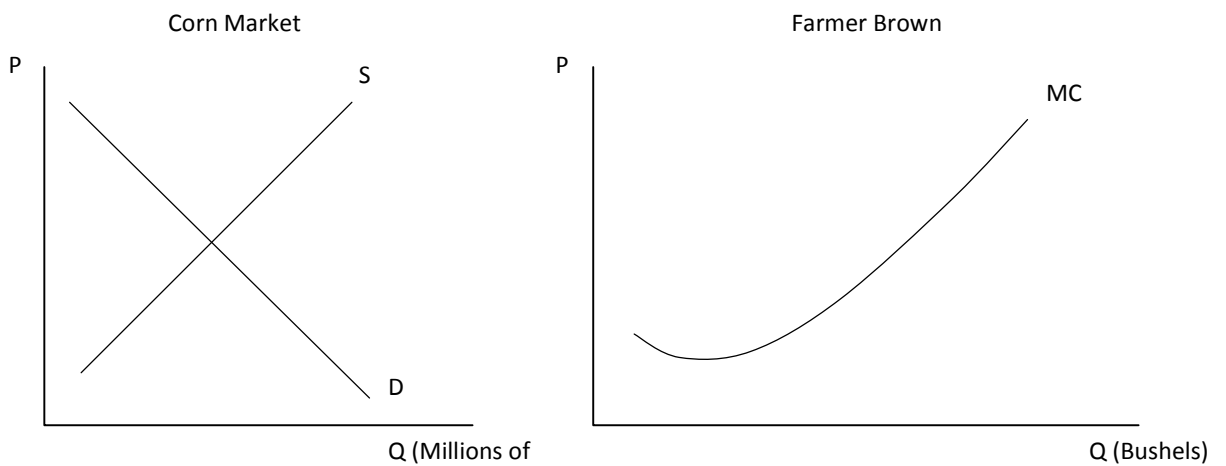
Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 13.13

Task Title: Determine the profit maximizing output level in perfect competition.

Condition: Given-

1. A market graph indicating supply and demand.
2. A graph containing a firm's marginal cost curve.



Standard: State the output level with 100% accuracy.

Performance Steps:

1. Indicate that the market price is the firm's selling price.
2. Determine where $MR = MC$
3. State/indicate the output level associated with #2 above.

PERFORMANCE MEASURES

GO

NO-GO

1. Indicated that the market price is the firm's selling price.

2. Determined where $MR = MC$.

3. Stated the output level associated with #2 above.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 13.14

Task Title: Plot a firm's short-run supply curve.

Condition: **Given-** Production Schedule (output, total cost, average variable cost)

<u>Output</u>	<u>Total Cost</u>	<u>AVC</u>
0	4	8.0
1	12	6.5
2	17	5.3
3	20	4.3
4	21	4.0
5	24	4.3
6	30	5.1
7	40	6.3
8	54	7.8
9	74	8.0

Standard: With 100% accuracy, plot the MC curve.

Performance Steps:

1. Determine the MC for each level of output.
2. Plot the MC value for each level of output.
3. Determine the point where the MC = AVC.
4. Indicate that the short-run supply curve is the MC cost curve from the minimum AVC upward.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the MC for each level of output.

PERFORMANCE MEASURES

GO

NO-GO

- | | | |
|---|-------|-------|
| 2. Plotted the MC value for each level of output. | _____ | _____ |
| 3. Determined the point where the MC = AVC. | _____ | _____ |
| 4. Indicate that the short-run supply curve is the MC cost curve from the minimum AVC upward. | _____ | _____ |

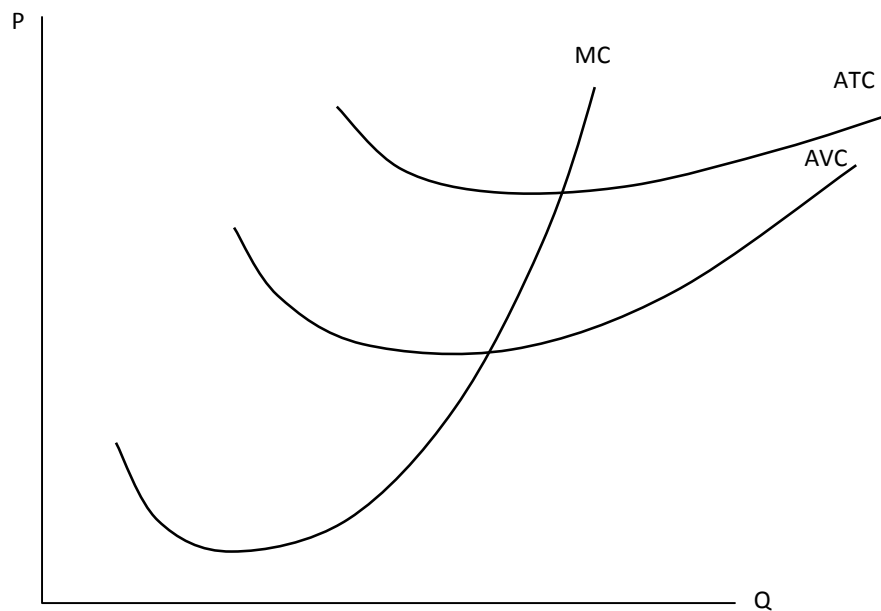
Student must get a GO on all performance measures to be considered a GO on this task.

INDIVIDUAL TASK ANALYSIS REPORT

Task Number: 13.21

Task Title: Indicate a firm's short-run shut-down criteria.

Condition: **Given-** The firm's graph with MC, ATC, AVC.



Standard: With 100% accuracy, determine the firm's short-run shut-down criteria.

Performance Steps: State the short-run shut-down rule: Shut down when the price is less than the AVC.

PERFORMANCE MEASURES

GO

NO-GO

1. Stated the short-run shut-down rule.

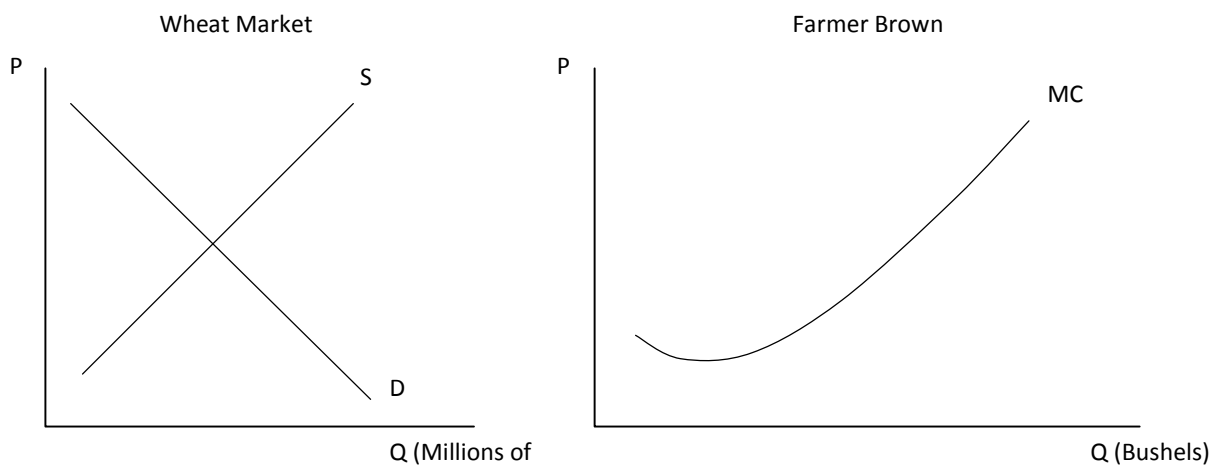
Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 13.31

Task Title: Illustrate the effects of firms entering and leaving a competitive market.

Condition: **Given-**

1. A competitive market in equilibrium.
2. The firm's market graph.



3. Condition A: Firms entering the market.
4. Condition B: Firms leaving the market.

Standard: With 100% accuracy, determine the effects of firm's entering and leaving a competitive market.

Performance Steps:

1. Condition A: Firms entering the market.
 - 1.1. Supply curve shifts to the right.
 - 1.2. Equilibrium price decreases.
 - 1.3. Equilibrium output increases.
 - 1.4. The individual firm's demand curve shifts to equal the new market equilibrium price.

2. Condition B: Firms leaving the market.
 - 2.1. Supply curve shifts to the left.
 - 2.2. Equilibrium price increases.
 - 2.3. Equilibrium output decreases.
 - 2.4. The individual firm's demand curve shifts to equal the new market equilibrium price.

PERFORMANCE MEASURES

GO

NO-GO

- | 1. Condition A: Firms entering the market. | | |
|---|-------|-------|
| 1.1. Supply curve shifts to the right. | _____ | _____ |
| 1.2. Equilibrium price decreases. | | |
| 1.3. Equilibrium output increases. | | |
| 1.4. The individual firm's demand curve shifts to equal the new market equilibrium price. | | |
| 2. Condition B: Firms leaving the market. | | |
| 2.1. Supply curve shifts to the left. | _____ | _____ |
| 2.2. Equilibrium price increases. | | |
| 2.3. Equilibrium output decreases. | | |
| 2.4. The individual firm's demand curve shifts to equal the new market equilibrium price. | | |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 14.11

Task Title: Describe a monopoly market.

Condition: Given- Memory

Standard: Indicate the characteristics and associated conditions with 100% accuracy.

Performance Steps:

<u>Characteristics</u>	<u>Condition</u>
1. Number of firms	One
2. Type of product	No close substitutes or regulated
3. Control over price	Considerable
4. Barriers to entry	High
5. Nonprice competition	None

PERFORMANCE MEASURES

GO NO-GO

1. Listed the five characteristics.

- 1. Number of firms
- 2. Type of product
- 3. Control over price
- 4. Barriers to entry
- 5. Nonprice competition

2. Correctly indicated the conditions associated with each characteristic.

Characteristics Condition

- 1. Number of firms One
- 2. Type of product No close substitutes or regulated

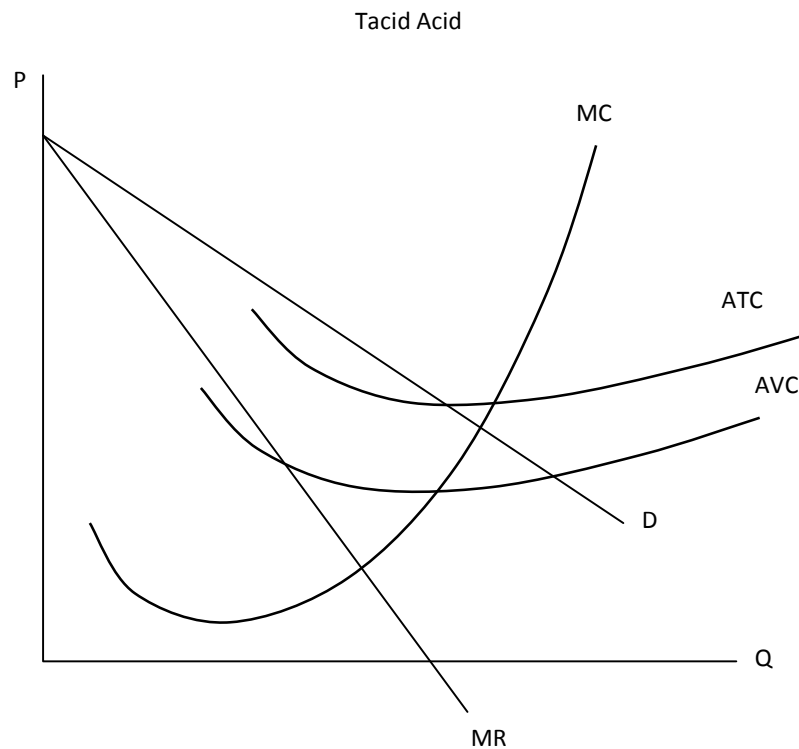
- | | | | |
|-------------------------|--------------|-------|-------|
| 3. Control over price | Considerable | _____ | _____ |
| 4. Barriers to entry | High | | |
| 5. Nonprice competition | None | | |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 14.21

Task Title: Determine a monopoly's output and selling price.

Condition: **Given-** A monopoly's graph showing supply, demand, marginal revenue, marginal cost, average total cost, and average variable cost.



Standard: Accurately indicate the correct level of output and the firm's selling price.

Performance Steps:

1. Indicate the profit maximizing rule.
2. Determine the output associated with the point where $MR = MC$.
3. Determine the price on the demand curve associated with the output determined in 2 above.
4. State the level of output and selling price.

PERFORMANCE MEASURES

GO

NO-GO

1. Indicated the profit maximizing rule.

2. Determined the output associated with the point where $MR = MC$.

3. Determined the price on the demand curve associated with the output determined in 2 above.

4. Stated the level of output and selling price.

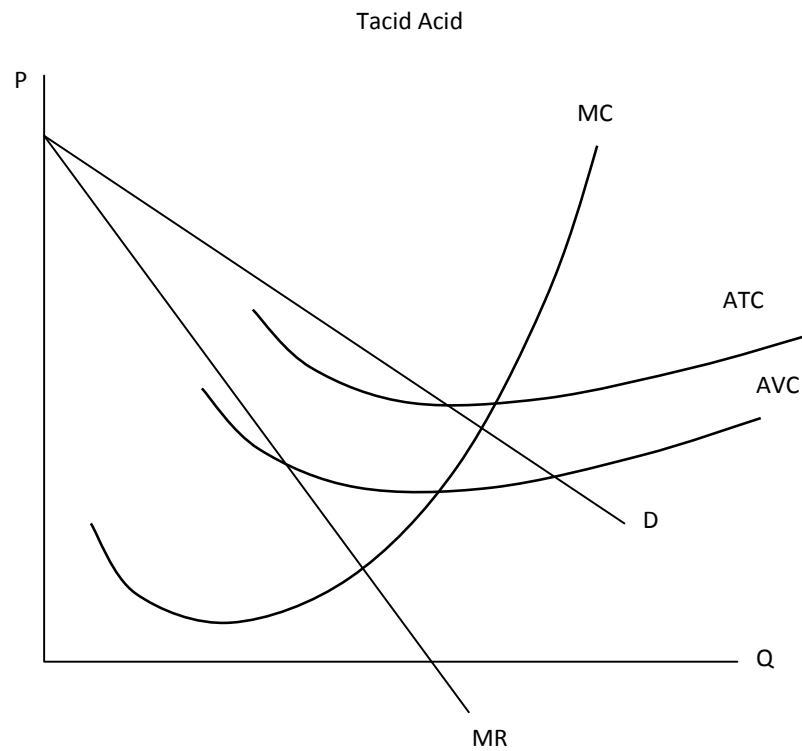
Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 14.31

Task Title: Indicate why a monopoly is inefficient.

Condition: Given-

1. A monopoly's graph showing supply, demand, marginal revenue, marginal cost, average total cost, and average variable cost.



OR

2. A monopolist's schedule.

	Quantity	Total	Marginal	Total	Marginal
<u>Price</u>	<u>Demanded</u>	<u>Revenue</u>	<u>Revenue</u>	<u>Cost</u>	<u>Cost</u>
\$17	3	\$51	---	\$56	---
16	4	64	\$13	63	\$ 7
15	5	75	11	71	8
14	6	84	9	80	9
13	7	91	7	90	10
12	8	96	5	101	11
11	9	99	3	113	12

Special Conditions: The student must be proficient with Task 14.21, determining a monopoly's output and selling price.

Standard: With 100% accuracy, indicate the three conditions that make this market inefficient.

Performance Steps:

1. Determine the efficient market price.
2. Indicate that the efficient market price does not equal the market price.
3. Determine the efficient market output level.
4. Indicate that the efficient market output level is greater than the market output level.
5. Indicate that there is a deadweight loss to society.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the efficient market price.
2. Indicated that the efficient market price does not equal the market price.

PERFORMANCE MEASURES

GO

NO-GO

3. Determined the efficient market output level.

4. Indicated that the efficient market output level is greater than the market output level.

5. Indicate that there is a deadweight loss to society.

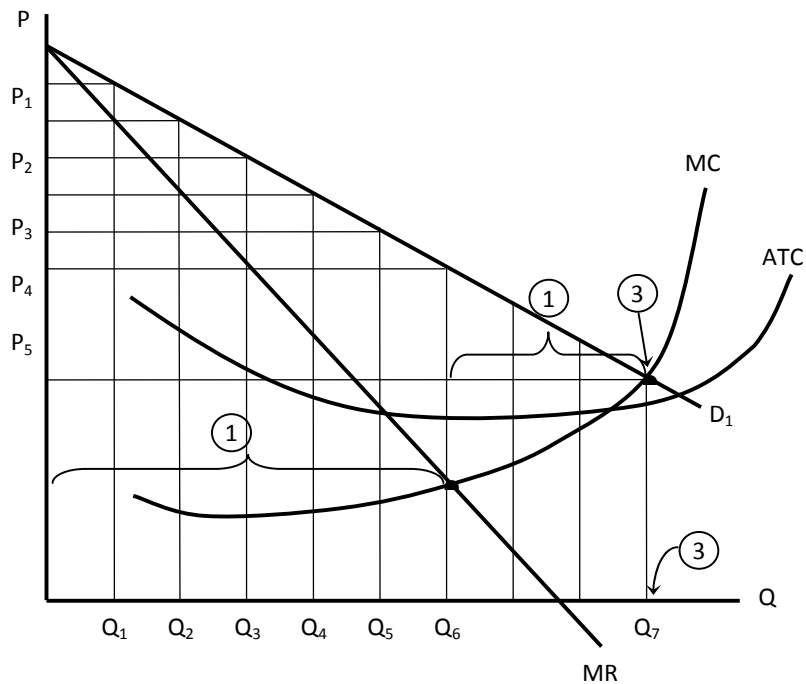
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 14.41

Task Title: Describe how a monopoly increases profits from perfect price discrimination.

Condition: Given- A firm's graph with MC, D, ATC, price, and quantity.



Standard: With 100% accuracy, determine and describe how a firm executes perfect price discrimination.

Performance Steps:

1. Define perfect price discrimination.
 - 1.1. Extract all consumer surplus by charging the highest price that consumers are willing and able to pay for each unit.
2. Describe the two conditions that must exist to execute perfect price discrimination.
 - 2.1. Identify and separate the different types of buyers.
 - 2.2. Prevent reselling of the product/service.

3. Determine the profit derived from the deadweight loss area.
 - 3.1. Select the quantity where price = MC.
 - 3.2. Select the price where price = MC.
 - 3.3. Sell the additional output at the new price from 3.2 above.

PERFORMANCE MEASURES

GO

NO-GO

1. Defined perfect price discrimination.
2. Described the two conditions that must exist to execute perfect price discrimination.
 - 2.1. Identify and separate the different types of buyers.
 - 2.2. Prevent reselling of the product/service.
3. Determined the profit derived from the deadweight loss area.
 - 3.1. Selected the quantity where price = MC.
 - 3.2. Selected the price where price = MC = D.
 - 3.3. Sold the additional output at the new price from 3.2 above.

	_____	_____
	_____	_____
	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 15.11

Task Title: Describe monopolistic competition.

Condition: Given- Memory.

Standard: Indicate the characteristics and associated conditions with 100% accuracy.

Performance Steps:

<u>Characteristics</u>	<u>Condition</u>
1. Number of firms	Many
2. Type of Product	Differentiated product/service
3. Control over price	Some
4. Barriers to entry	None
5. Nonprice competition	Much

PERFORMANCE MEASURES

GO

NO-GO

1. List the five characteristics.

- 1. Number of firms
- 2. Type of Product
- 3. Control over price
- 4. Barrier to entry
- 5. Nonprice competition

2. Correctly indicated the conditions associated with each characteristic.

<u>Characteristics</u>	<u>Condition</u>
1. Number of firms	Many

2. Type of Product	Differentiated product/service
3. Control over price	Some
4. Barriers to entry	None
5. Nonprice competition	Much

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 15.12

Task Title: Determine the four-firm concentration ratio.

Condition: **Given-**

1. At least six individual firm's total revenue.
2. Industry total sales.

	Total Sales
<u>Firm</u>	<u>(Millions)</u>
A	300
B	350
C	220
D	280
E	150
F	250
Other 3	400

Standard: With 100% accuracy, determine the four-firm concentration ratio.

Performance Steps:

1. Identify the four firms with the highest sales level.
 - 1.1. In order of sales: Firms B, A, D, and F.
2. Determine the industry total sales (1,950).
3. Sum the four highest sales levels (1,180).
4. Divide the sum of the four highest sales levels by total industry sales.
 - 4.1. $(1,180/1,950)$
5. State the concentration ratio.
 - 5.1. $(1,180/1,950) = 0.61$ or 61%.

6. Interpret its meaning.
 - 6.1. 100% = monopoly.
 - 6.2. Greater than 40% but less than 100% = oligopoly.
 - 6.3. Greater than 5% but less than 40% = monopolistic competition.
 - 6.4. Less than 5% = perfect competition.

PERFORMANCE MEASURES	GO	NO-GO
1. Identified the four firms with the highest sales level.		
1.1. In order of sales: Firms B, A, D, and F.	_____	_____
2. Determined the industry total sales (1,950).		
3. Summed the four highest sales levels (1,180).	_____	_____
4. Divided the sum of the four highest sales levels by total industry sales.	_____	_____
4.1. $(1,180/1,950)$	_____	_____
5. Stated the concentration ratio.		
5.1. $(1,180/1,950) = 0.61$ or 61%.	_____	_____
6. Interpreted its meaning.		
6.1. 100% = monopoly.	_____	_____
6.2. Greater than 40% but less than 100% = oligopoly.		
6.3. Greater than 5% but less than 40% = monopolistic competition.		
6.4. Less than 5% = perfect competition.		

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 15.13

Task Title: Calculate and interpret a Herfindal-Hirschman Index (HHI).

Condition: **Given-**

1. An industry with 4-10 firms.
2. Each firm's market share.

<u>Firm</u>	<u>Market Share</u>
1	25
2	20
3	15
4	10
5	10
6	10
7	7
8	3

Standard: With 100% accuracy, determine the HHI.

Performance Steps:

1. Square each firm's market share percentage.
 - 1.1. $25^2, 20^2$, etc.
2. Sum all the squared market shares.
 - 2.1. $625 + 400 + 225 + 100 + 100 + 100 + 49 + 9$
3. State the HHI (1,608).
4. Interpret its meaning.
 - 4.1. $10,000 =$ monopoly.
 - 4.2. Greater than 1,800 = oligopoly.

4.3. Near 0 = perfect competition.

4.4. Clearly greater than 0 but less than 1,800 = monopolistic competition.

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the efficient market price.

2. Squared each firm's market share percentage.

3. Summed all the squared market shares.

4. Stated the HHI.

5. Interpreted its meaning.

5.1. 10,000 = monopoly.

5.2. Greater than 1,800 = oligopoly.

5.3. Near 0 = perfect competition.

5.4. Clearly greater than 0 but less than 1,800 = monopolistic competition.

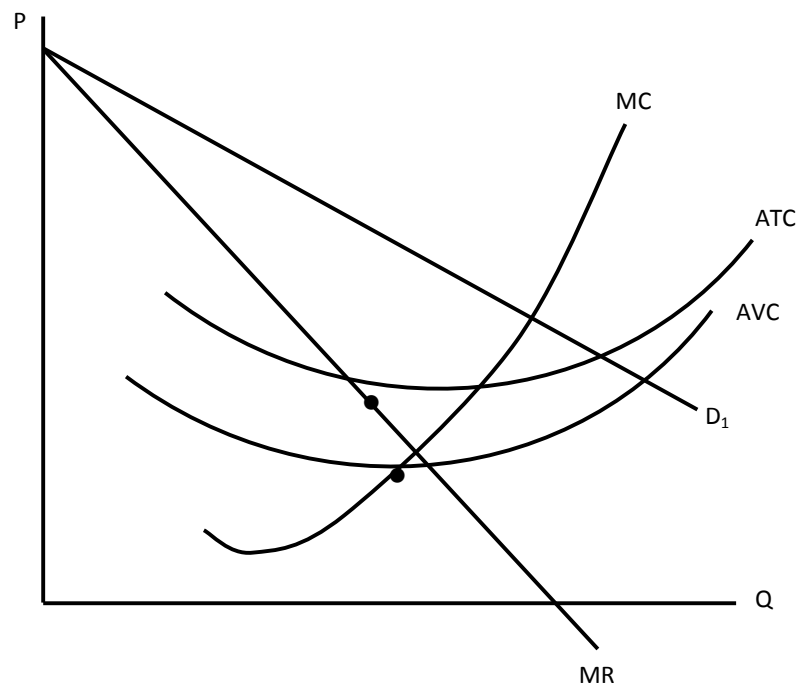
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 15.21

Task Title: Determine a monopolistic competitive firm's profit maximizing output level and selling price.

Condition: **Given-** An imperfect competition graph showing supply, demand, marginal revenue, marginal cost, average total cost, and average variable cost.



Standard: Accurately indicate the correct level of output and the firm's selling price.

Performance Steps:

1. Indicate the profit maximizing rule.
2. Determine the output associated with the point where $MR = MC$.
3. Determine the price on the demand curve associated with the output determined in 2 above.
4. State the level of output and selling price.

PERFORMANCE MEASURES

GO

NO-GO

1. Indicated the profit maximizing rule.

2. Determined the output associated with the point where $MR = MC$.

3. Determined the price on the demand curve associated with the output determined in 2 above.

4. Stated the level of output and selling price.

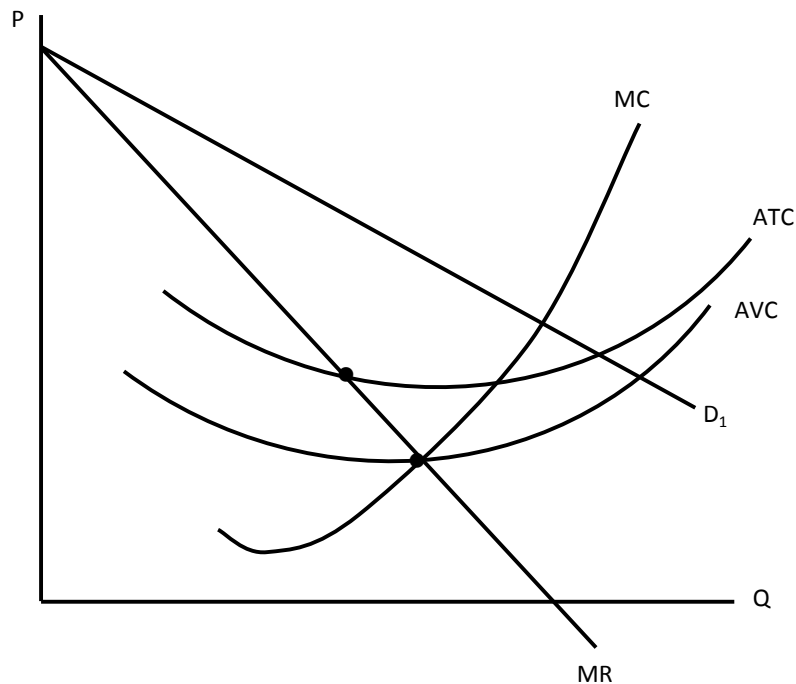
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 15.22

Task Title: Determine a monopolistic competitive firm's profit or loss.

Condition: **Given-** An imperfect competition graph showing supply, demand, marginal revenue, marginal cost, average total cost, and average variable cost.



Special Conditions: The student must be proficient on task 15.21 before attempting this task.

Standard: Accurately indicate the profit or loss area on the graph.

Performance Steps:

1. Indicate the profit maximizing rule.
2. Determine the output associated with the point where $MR = MC$.
3. Determine the price on the demand curve associated with the output determined in 2 above.
4. Determine the ATC associated with the selected level of output.

5. Determine the profit condition.
 - 5.1. If price exceeds ATC, then an economic profit exists.
 - 5.2. If price is less than ATC, then an economic loss exists.
 - 5.3. If price = ATC, then the firm breaks even (normal profit exists).
6. Draw the rectangle that indicates the profit/loss area.
 - 6.1. Profit: Vertical Distance (Selling Price to ATC), Horizontal Distance (Level of Output).
 - 6.2. Loss: Vertical Distance (ATC to Selling Price), Horizontal Distance (Level of Output).
 - 6.3. Break Even: Price = ATC

PERFORMANCE MEASURES

GO NO-GO

- | | | |
|---|---|---|
| <ol style="list-style-type: none"> 1. Indicated the profit maximizing rule. 2. Determined the output associated with the point where MR = MC. 3. Determined the price on the demand curve associated with the output determined in 2 above. 4. Determined the ATC associated with the selected level of output. 5. Determined the profit condition. <ol style="list-style-type: none"> 5.1. If price exceeds ATC, then an economic profit exists. 5.2. If price is less than ATC, then an economic loss exists. 5.3. If price = ATC, then the firm breaks even (normal profit exists). 6. Drew the rectangle that indicates the profit/loss area. | <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> | <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> |
|---|---|---|

PERFORMANCE MEASURES

GO

NO-GO

- | | GO | NO-GO |
|---|----|-------|
| 6.1. Profit: Vertical Distance (Selling Price to ATC), Horizontal Distance (Level of Output). | | |
| 6.2. Loss: Vertical Distance (ATC to Selling Price), Horizontal Distance (Level of Output). | | |
| 6.3. Break Even: Price = ATC | | |

Student must get a GO on all performance measures to be considered a GO on this task.

Appendix D: Tasks for Unit 3 of ECON 3313, Money and Banking

- Task Number: 19.1. Explain the equation of exchange.
- Task Number: 19.2. Calculate the velocity of money.
- Task Number: 19.3. Calculate the inflation rate.
- Task Number: 19.4. List the variables that determine real money demand.
- Task Number: 19.5. Define the velocity of money.
- Task Number: 20.1. List the components of aggregate demand.
- Task Number: 20.2. Explain the components of aggregate demand.
- Task Number: 20.3. List the components the cause the aggregate demand curve to increase.
- Task Number: 20.4. List the components the cause the aggregate demand curve to decrease.
- Task Number: 20.5. Calculate aggregate demand.
- Task Number: 20.6. Draw the Keynesian cross model.
- Task Number: 20.7. Describe the consumption function.
- Task Number: 20.8. Calculate disposable income.
- Task Number: 20.9. Determine the change in consumption.
- Task Number: 20.10. Calculate the marginal propensity to consume.
- Task Number: 20.11. Describe the economic situation at disequilibrium.
- Task Number: 20.12. Determine the expenditure multiplier.
- Task Number: 20.13. Determine the tax multiplier.

- Task Number: 20.14. Determine equilibrium aggregate output.
- Task Number: 20.15. Determine the change in equilibrium aggregate output.
- Task Number: 20.16. Determine fiscal policy actions to bring the economy to equilibrium condition.
- Task Number: 20.17. Derive the IS curve.
- Task Number: 20.18. Derive the LM curve.
- Task Number: 21.1. Draw the ISLM model in short run equilibrium.
- Task Number: 21.2. List the factors that cause the IS curve to increase.
- Task Number: 21.3. List the factors that cause the IS curve to decrease.
- Task Number: 21.4. List the factors that cause the LM curve to increase.
- Task Number: 21.5. List the factors that cause the LM curve to decrease.
- Task Number: 21.6. Determine the changes in the ISLM model caused by changes in the money market and/or aggregate demand
- Task Number: 21.7. Draw the ISLM model in long-run equilibrium.
- Task Number: 21.8. Illustrate a long-run disequilibrium condition.
- Task Number: 21.9. Illustrate the short run effects of expansionary monetary/fiscal policy.
- Task Number: 21.10. Illustrate the short run effects of contractionary monetary/fiscal policy.
- Task Number: 21.11. Illustrate the long run effects of expansionary monetary policy.
- Task Number: 21.12. Illustrate the long run effects of contractionary monetary policy.
- Task Number: 21.13. Not used
- Task Number: 21.14. Not used
- Task Number: 21.15. Illustrate the long-run effects of contractionary fiscal policy

- Task Number: 21.16. Illustrate the lone run effects of expansionary fiscal policy
- Task Number: 21.17. Develop monetary policy(ies) to move the economy to full employment.
- Task Number: 21.18. Develop fiscal policy(ies) to move the economy to full employment
- Task Number: 22.1. Draw an ADAS model in long run equilibrium.
- Task Number: 22.2. Derive the aggregate demand curve
- Task Number: 22.3. List the factors that shift the AD curve.
- Task Number: 22.4. List the factors that shift the AS curve.
- Task Number: 22.5. Describe the long run aggregate supply curve.
- Task Number: 22.6. Describe the natural rate level of output.
- Task Number: 22.7. Describe the natural rate level of unemployment.
- Task Number: 22.8. Illustrate the effects of a supply shock.
- Task Number: 22.9. Illustrate an economy in recession.
- Task Number: 22.10. Illustrate an economy operating above the natural rate level of output.
- Task Number: 22.11. Determine the short run effects of expansionary monetary/fiscal policy.
- Task Number: 22.12. Determine the short run effects of contractionary monetary/fiscal policy.
- Task Number: 22.13. Determine the long run effects of expansionary monetary/fiscal policy.
- Task Number: 22.14. Determine the long run effects of contractionary monetary/fiscal policy.

Appendix E: Teaching, Learning and Evaluation Outline for all Unit 3 Tasks in Money and Banking Course

Task Number: 19.1

Task Title: State the equation of exchange in words

Condition: Given- Memory.

Standard: State all the variables and then the equation with 100% accuracy.

Performance Steps:

1. The variables are:
 - a. nominal money supply
 - b. velocity of money
 - c. price level
 - d. real output (real GDP)
2. Symbols for the variables are:
 - a. M
 - b. V
 - c. P
 - d. Y

Note: PY is nominal GDP
3. The equation is: $MV = PY$

PERFORMANCE MEASURES

GO

NO-GO

1. Listed the four variables..

2. Listed the symbols for the four variable..

3. Correctly listed the equation of exchange

Student must get a GO on all performance measures to be considered a GO on this task

Task Number: 19.2

Task Title: Calculate the velocity of money

Condition: **Given-** 1. Nominal money supply and nominal GDP or
2. Nominal money supply, price level, and real output (RGDP)

Special Conditions: Specify values for M, P, Y, PY

M=\$2.5 Trillion

P=1.25

Y=\$10 Trillion

Or PY=\$12.5 Trillion

Standard: Calculate with 100% accuracy.

Performance Steps:

1. Transform the equation of exchange into the velocity of money.

a. $MV = PY$

b. $V = (PY \div M)$

2. Substitute the values into the equation:

a. The price level times real output equals nominal GDP

b. $V = (\$12.5 \text{ Trillion} \div \$2.5\text{Trillion}) = 5$

or

c. $V = (1.25 \times \$10 \text{ Trillion}) \div \2.5 Trillion

d. $V = (\$12.5 \text{ Trillion} \div \$2.5\text{Trillion}) = 5$

PERFORMANCE MEASURES

GO

NO-GO

1. Stated . $V = (PY \div M)$.

2. Correctly substituted the values into the equation..

PERFORMANCE MEASURES

GO

NO-GO

3. Correctly calculated the velocity of money

Student must get a GO on all performance measures to be considered a GO on this task. _____

Task Number: 19.3

Task Title: Describe the effects of increasing the determinants of real money demand.

Condition: **Given-** From memory

Standard: Calculate with 100% accuracy.

Performance Steps:

1. Variable 1 (Interest Rate): When the interest rate rises:
 - a. the quantity of money demanded decreases.
 - b. it is a movement upward along the money demand curve to the stated interest rate.
 - c. the equilibrium quantity of money decreases
2. Variable 2 (Real GDP) When real output (RGDP) increases:
 - a. the money demand curve shift up and to the right
 - b. the equilibrium interest rate increases
 - c. the equilibrium quantity of money is unchanged.

PERFORMANCE MEASURES

GO NO-GO

1. Indicated that interest rate is a determinant of real money demand
2. Indicated the quantity of money demanded decreases
3. Indicated a upward movement along the money demand curve to the new interest rate
4. Indicated the equilibrium quantity of money decreases”
5. Indicated that the real output (RGDP) is a determinant of real money demand
6. Indicated the money demand curve shifts up and to the right

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

PERFORMANCE MEASURES

GO **NO-GO**

7. Indicated the equilibrium interest increases

8. Indicated the equilibrium quantity of money is unchanged.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.1

Task Title: Describe the expanded aggregate demand equation.

Condition: **Given-** From memory

Standard: List and identify all the variables with 100% accuracy.

Performance Steps:

1. The aggregate demand equation is: $Y^{ad} = C + I + G + NX$ where

- a. C is consumer expenditure
- b. I is planned investment spending
- c. G is government spending
- d. NX is net exports

2. The expanded aggregate demand equation is:

$Y^{ad} = [a + mpc(Y-T)] + I + G + [X - IM]$ where

- a. a is autonomous consumption
- b. mpc is the marginal propensity to consume
- c. Y is aggregate output
- d. T is taxes
- e. (Y-T) is disposable income
- f. X is exports
- g. IM is imports

PERFORMANCE MEASURES

GO NO-GO

1. Listed $Y^{ad} = [a + mpc(Y-T)] + I + G + [X - IM]$
2. Identified all variables and disposable income
 - a. a is autonomous consumption
 - b. mpc is the marginal propensity to consume
 - c. Y is aggregate output
 - d. T is taxes
 - e. (Y-T) is disposable income
 - f. X is exports
 - g. IM is imports

_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.2

Task Title: Describe the consumption function.

Condition: **Given-** From memory

Standard: List and describe all the function variables and the function with 100% accuracy.

Performance Steps:

1. The consumption function is: $C = [a + mpc(Y-T)]$ where
 - a. a is autonomous consumption
 - b. mpc is the marginal propensity to consume
 - c. Y is aggregate output
 - d. T is taxes
 - e. (Y-T) is disposable income
2. "a" autonomous consumption is the level of consumption when disposable income is zero.
3. mpc is the change in consumption given a change in disposable income

PERFORMANCE MEASURES

	GO	NO-GO
1. Listed $C = [a + mpc(Y-T)]$	_____	_____
2. Identified all variables	_____	_____
3. Described all variables	_____	_____
a. autonomous consumption	_____	_____
b. mpc		
c. Y is aggregate output		

PERFORMANCE MEASURES

GO **NO-GO**

- | | | |
|---------------------------------|-------|-------|
| | _____ | _____ |
| d. T is taxes | | |
| e. $(Y-T)$ is disposable income | | |

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.3

Task Title: Identify the determinants that cause aggregate demand to increase in the Keynesian Cross Model

Condition: **Given-** From memory

Standard: Identify all the variables with 100% accuracy.

Performance Steps:

1. An increase in:
 - a. autonomous consumption
 - b. the marginal propensity to consume
 - c. exports
 - d. planned investment spending
 - e. government spending

2. A decrease in:
 - a. taxes
 - b. imports
 - c. interest rates

PERFORMANCE MEASURES

GO NO-GO

1. Stated an increase in:

2. Stated a decrease in:
 - a. taxes
 - b. imports
 - c. interest rates

_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.4

Task Title: Identify the determinants that cause aggregate demand to decrease in the Keynesian Cross Model

Condition: **Given-** From memory

Standard: Identify all the variables with 100% accuracy.

Performance Steps:

1. A decrease in:
 - a. autonomous consumption
 - b. the marginal propensity to consume
 - c. exports
 - d. planned investment spending
 - e. government spending
2. An increase in:
 - a. taxes
 - b. imports
 - c. interest rates

PERFORMANCE MEASURES

GO **NO-GO**

1. Stated a decrease in:
2. Stated an increase in:
 - a. taxes
 - b. imports
 - c. interest rates

_____	_____
_____	_____

Task Number: 20.5

Task Title: Calculate aggregate demand

Condition: **Given Values for some of following variables:**

- a. Disposable income
- b. Nominal GDP
- c. Real GDP
- d. Total investment
- e. Planned investment
- f. Government spending
- g. marginal propensity to consume
- h. Exports
- i. Imports
- j. Taxes
- k. Autonomous consumption
- l. Consumer spending

Special Conditions: **Specify values for each of the above variables**

Standard: Calculate with 100% accuracy.

Performance Steps:

1. Write out the short aggregate demand equation.
2. If you can find the values for C, I, G, NX; then substitute the values in the equation and calculate. Otherwise
3. Write out the long aggregate demand equation.
4. Substitute the values in the equation and calculate

PERFORMANCE MEASURES

GO

NO-GO

1a. Wrote out short aggregate demand equation

2a. If possible, substituted the values into the equation.

3a. If possible calculated the value

If necessary

1b. Wrote out long aggregate demand equation

2b. Substituted the values into the equation.

3b. Calculated the value

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.6

Task Title: Draw a Keynesian Cross (Aggregate Demand) Model.

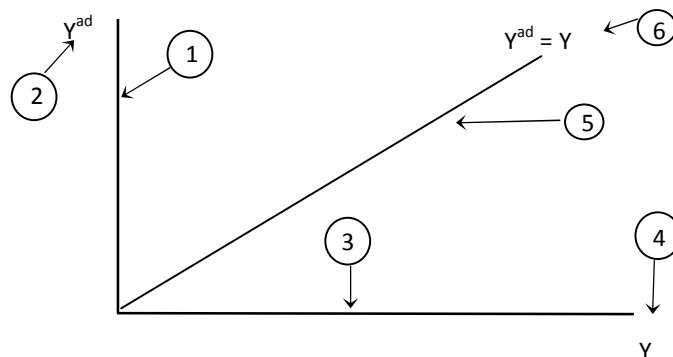
Condition: **Given-**

1. $Y^{ad} = 2T + 0.9Y_d$
2. $Y_d =$ disposable income
3. $Y^{ad} = Y = \$5T$

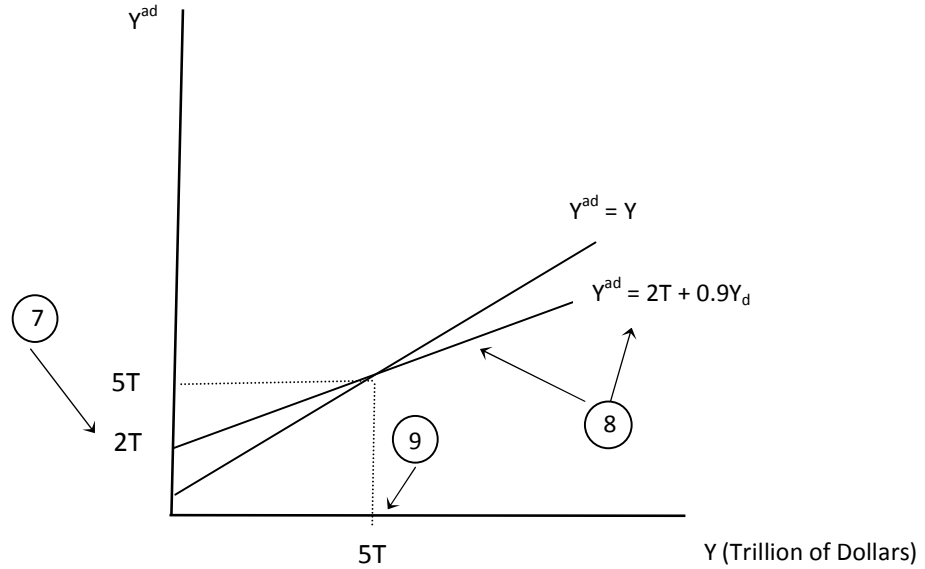
Standard: With 100% accuracy, draw and label all curves, axes, and equilibrium conditions.

Performance Steps:

1. Draw vertical axis.
2. Label the vertical axis “ Y^{ad} ”
3. Draw horizontal axis.
4. Label the horizontal axis “ Y ” on the bottom side near the right end of the line segment.
5. Draw a line from the origin out and upward at a 45° angle.
6. Label the curve “ $Y^{ad} = Y$ ”



7. Find the Y^{ad} intercept for the aggregate demand equation and labeled “2T”.
8. Draw and label the Y^{ad} line
9. Equilibrium output [“5T”] is where $Y^{ad} = Y$



PERFORMANCE MEASURES

GO NO-GO

1. Drew vertical axis.
2. Labeled vertical axis “ Y^{ad} ”.
3. Drew horizontal axis.
4. Labeled horizontal axis “ Y ”
5. Drew line from the origin at 45^0 angle
6. Labeled line “ $Y^{ad}=Y$ ”.
7. Located intercept point on Y^{ad} axis and labeled point.
8. Drew an upward sloping line from the vertical intercept value.
9. Labeled the curve with the given Y^{ad} equation

GO	NO-GO
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

10. Locate then point where the Y^{ad} line crossed the $Y^{ad}=Y$ line.

11. Identified and labeled the equilibrium Y and Y^{ad} quantities

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.8

Task Title: Calculate disposable income

Condition: **Given Values for some of following variables:**

- a. Real Output (Real GDP)
- b. Nominal GDP
- c. Total investment
- d. Planned investment
- e. Government spending
- f. marginal propensity to consume
- g. Exports
- h. Imports
- i. Taxes
- j. Autonomous consumption
- k. Consumer spending

Special Conditions: Specify values for each of the above variables

Standard: Calculate with 100% accuracy.

Performance Steps:

1. Write the equation for disposable income: $Y_d = (Y - T)$
2. Substitute the values for real output and taxes in the equation.
3. Calculate the value for $(Y - T)$

PERFORMANCE MEASURES

GO

NO-GO

1a. Wrote disposable income equation

2a. Substituted values for Y and T into the equation.

3a. Calculated the correct value for disposable income.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.9

Task Title: Determine the change in consumption

Condition: Given an initial and subsequent set of values for:

- a. Real Output (Real GDP)
- b. Nominal GDP
- c. Total investment
- d. Planned investment
- e. Government spending
- f. marginal propensity to consume
- g. Exports
- h. Imports
- i. Taxes
- j. Autonomous consumption

Special Conditions: Specify values for each of the above variables

Standard: Calculate with 100% accuracy.

Performance Steps:

1. Write the equation for the consumption function: $C = [a + mpc(Y-T)]$
2. Substitute the initial values for C, a, mpc, Y, and T.
3. Calculate the initial consumption value)
4. Substitute the subsequent values for C, a, mpc, Y, and T.
5. Calculate the subsequent consumption value)
6. Change in consumption is the subsequent consumption value minus the initial consumption value.

PERFORMANCE MEASURES

GO

NO-GO

1. Write the equation for the consumption function: $C = [a + mpc(Y-T)]$

2. Substitute the initial values for C, a, mpc, Y, and T.

3. Calculate the initial consumption value)

4. Substitute the subsequent values for C, a, mpc, Y, and T.

5. Calculate the subsequent consumption value)

6. Change in consumption is the subsequent consumption value minus the initial consumption value.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.10

Task Title: Calculate the marginal propensity to consume (mpc).

Condition: Given an initial and subsequent set of values for:

- a. Real GDP
- b. Taxes
- d. Consumer consumption

Special Conditions: Specify values for each of the above variables

Standard: Calculate mpc with 100% accuracy.

Performance Steps:

1. Define marginal propensity to consume: It is the change in consumption given a change in disposable income
2. Write the equation for $mpc = [\Delta C \div \Delta(Y-T)]$
2. Determine the change in C, Y, and T.
 - a. $mpc = [(C_2 - C_1) \div \{(Y_2 - T_2) - (Y_1 - T_1)\}]$
 - b. Substitute the initial and subsequent values for C, Y, and T.
4. Solve for mpc

PERFORMANCE MEASURES

GO

NO-GO

1. Defined marginal propensity to consume
2. Wrote the equation for mpc..
3. Determined the change in C, Y, and T
4. Solved for mpc.

_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.11

Task Title: Describe the economic situation at disequilibrium

Condition: **Given:**

a. A condition that $Y^{ad} > Y$

or

b. A condition that $Y^{ad} < Y$

or

c. A graph indicating either condition a or b above

Special Conditions: Specify values for each of the above variables

Standard: Describe with 100% accuracy what is happening to, labor demand, unemployment, demand for production inputs, and real output,.

Performance Steps:

1. Identify the disequilibrium condition
2. Indicate what happens:

	Labor Demand	Unemployment	Input Demand	Real Output
$Y^{ad} > Y$	Increases	Decreases	Increases	Increases
$Y^{ad} < Y$	Decreases	Increases	Decreases	Increases

PERFORMANCE MEASURES

GO

NO-GO

1. Correctly identified the disequilibrium condition
2. Determined what happened to

PERFORMANCE MEASURES

GO

NO-GO

- a. Labor demand _____
- b. Unemployment _____
- c. Input demand _____
- d. Real output _____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.12

Task Title: Determine the expenditure multiplier

Condition: Given one of the following:

- a. consumption function
- b. aggregate demand equation
- c. consumption schedule
- d. marginal propensity to consume

Special Conditions: Specify values for each of the above variables

Standard: Calculate the expenditure multiplier with 100% accuracy.

Performance Steps:

1. The formula for the expenditure multiplier is: $\text{expenditure multiplier} = 1 \div (1 - \text{mpc})$
2. Determine the mpc if necessary
 - a. the coefficient before disposable income (ie. $C = 10 + \underline{0.83}(Y - T)$)
 - b. the slope of the Y^{ad} curve (ie. $Y^{\text{ad}} = 200 + \underline{0.83}(Y_d)$)
 - c. consumption schedule per task 20.10
3. Substitute mpc into the formula
4. Solve for the expenditure multiplier

PERFORMANCE MEASURES

GO

NO-GO

1. Wrote the equation for the expenditure multiplier
2. Determined the mpc if necessary
3. Substituted the mpc into the formula

_____	_____
_____	_____
_____	_____

PERFORMANCE MEASURES

GO

NO-GO

4. Calculated the correct multiplier value.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.13

Task Title: Determine the tax multiplier

Condition: Given one of the following:

- a. consumption function
- b. aggregate demand equation
- c. consumption schedule
- d. marginal propensity to consume

Special Conditions: Specify values for each of the above variables

Standard: Calculate the tax multiplier with 100% accuracy.

Performance Steps:

1. The formula for the tax multiplier is: $\text{tax multiplier} = -\text{mpc} \div (1-\text{mpc})$
2. Determine the mpc if necessary
 - a. the coefficient before disposable income (ie. $C=10 + \underline{0.83}(Y-T)$)
 - b. the slope of the Y^{ad} curve (ie. $Y^{\text{ad}} = 200 + \underline{0.83}(Y_d)$)
 - c. consumption schedule per task 20.10
3. Substitute mpc into the formula
4. Solve for the tax multiplier

PERFORMANCE MEASURES

GO

NO-GO

1. Wrote the equation for the expenditure multiplier
2. Determined the mpc if necessary
3. Substituted the mpc into the formula

_____	_____
_____	_____
_____	_____

PERFORMANCE MEASURES

GO

NO-GO

4. Calculated the correct multiplier value.

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.14

Task Title: Determine equilibrium aggregate output

Condition: **Given values for the items below:**

- a. Taxes
- b. Real output
- c. marginal propensity to consume
- d. Planned investment
- e. Government spending
- f. Exports
- g. Imports
- h. Autonomous consumption

Special Conditions: **Specify values for each of the above variables**

Standard: Calculate equilibrium aggregate output with 100% accuracy.

Performance Steps:

1. Write the expanded aggregate demand equation: (TASK 20.1)
2. Substitute the given values into the expanded aggregate demand equation.
3. Calculate Y^{ad} for the given values
4. Since we know that $Y=Y^{ad}$ at equilibrium, we can substitute Y for Y^{ad}
5. Solve for Y
6. To check your answer, substitute the equilibrium value into the Y^{ad} equation and solve. ($Y^{ad} = Y$)

PERFORMANCE MEASURES

GO

NO-GO

1. Write the expanded aggregate demand equation

2. Substituted the given values into Y^{ad} equation.

3. Calculated Y^{ad} with given values

4. Substituted Y for Y^{ad} .

5. Solved for Y

6. Obtained the correct value of Y .

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.15

Task Title: Determine the change in equilibrium aggregate output

Condition: Given the mpc and changes in one or more of the below listed variables:

- a. Taxes
- b. Autonomous consumption
- c. Planned investment
- d. Government spending
- e. Exports
- f. Imports

Special Conditions: Specify values for each of the above variables

Standard: Calculate the change in equilibrium aggregate output with 100% accuracy.

Performance Steps:

1. Determine which multiplier is associated with the changed variables.

Variable	Multiplier
autonomous consumption	Expenditure
Taxes	Tax
Government	Expenditure
Investment	Expenditure
Exports	Expenditure
Imports	Expenditure

2. Write the change in Y equation using all changed variables and multipliers: (ie.

$mpc=0.90$, $\Delta I=+20B$, $\Delta T=+10B$, then,

$$\Delta Y = [\Delta I \times (1 \div (1 - mpc))] + [\Delta T \times (-mpc \div (1 - mpc))]$$

3. Insert the values for the change variables and mpc.

$$\text{ie: } \Delta Y = [+20B \times (1 \div (1-0.9))] + [+10B \times (-0.9 \div (1-0.9))]$$

4. Calculate the ΔY value.

$$\text{ie: } \Delta Y = [+20B \times (10)] + [+10B \times (-9)]$$

$$\Delta Y = +200B - 90B$$

$$\Delta Y = +110B$$

PERFORMANCE MEASURES

GO

NO-GO

1. Determined the multiplier associated with the changed variables.

2. Wrote the ΔY equation with the changed variables and multiplier equations.

3. Substituted the changed variables values and mpc into the ΔY equation.

4. Calculated the ΔY value.

5. *Obtained the correct value.*

_____	_____
_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 20.16

Task Title: Determine fiscal policy actions to bring the economy to equilibrium.

Condition: **Given:**

a. A condition that $Y^{ad} > Y$

or

b. A condition that $Y^{ad} < Y$

Standard: With 100% change the fiscal variables to move toward equilibrium.

Performance Steps:

1. Identify the disequilibrium condition

Fiscal Variables	$Y^{ad} > Y$	$Y^{ad} < Y$
Government spending (G)	Decrease	Increases
<i>OR</i>		
Taxes (T)	Increase	Decreases
<i>OR</i>		
G & T	Decrease & Increase	Increase & Decrease

2. Select the fiscal variable(s) to use.
3. Determine how you would change them to move toward equilibrium.

PERFORMANCE MEASURES

GO

NO-GO

1. Identified the disequilibrium condition
2. Selected the correct variable(s) to change.
3. Changed the variable(s) in the correct way

_____	_____
_____	_____
_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

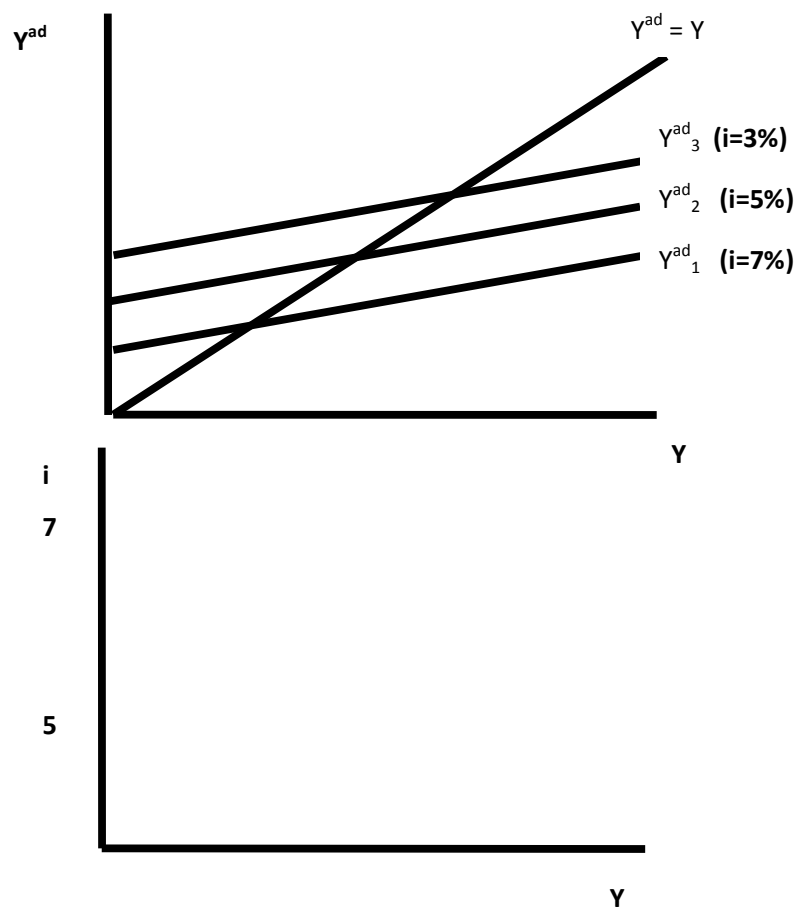
Task Number: 20.17

Task Title: Derive the Investment-Savings (IS) curve.

Condition: **Given:**

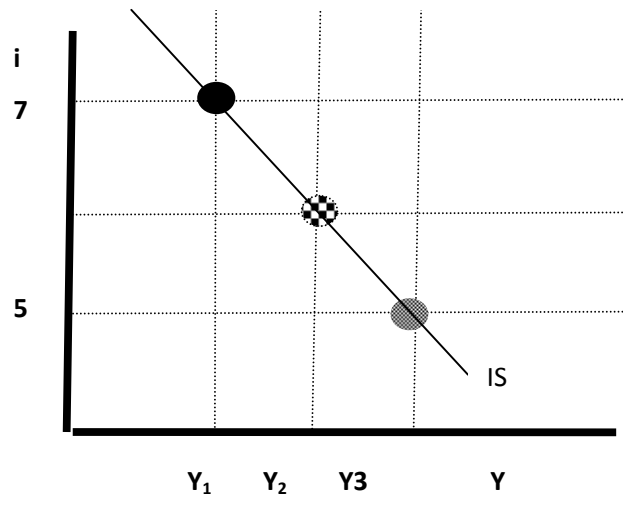
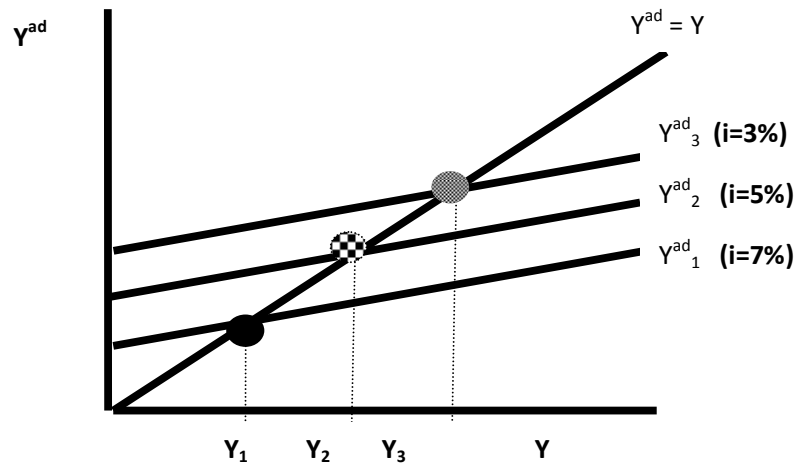
- a. A Keynesian Cross Diagram
- b. Three Y^{ad} equations with specified market interest rates.
- c. A blank graph in I-Y space
- d. $Y^{\text{ad}} = Y^{\text{ad}}_1$
- d. **interest rates are changed outside the model initially**

Standard: With 100% accuracy, plot the three points of IS curve.



Performance Steps:

1. Locate the equilibrium point for Y_1^{ad} ($i=7\%$)
2. Draw a line from the equilibrium point in (1) down to the Y axis on the lower graph.
3. Label the points Y_1 where the line crosses the Y axis on each graph
4. Locate the 7% interest rate on the lower graph and draw a horizontal line to the right.
5. Locate the point where the interest rate (7%) line and equilibrium output (Y_1) line intersect.
6. Place a dot at that point. This represents the point on the Keynesian Cross diagram.
- 7-12. Interest rates change to 5%. Repeat steps 1-6 for Y_2^{ad} ($i=5\%$)
- 13-18 Interest rates change to 3%. Repeat steps 1-6 for Y_3^{ad} ($i=3\%$)
19. Connect the three points
20. Label the line, IS.



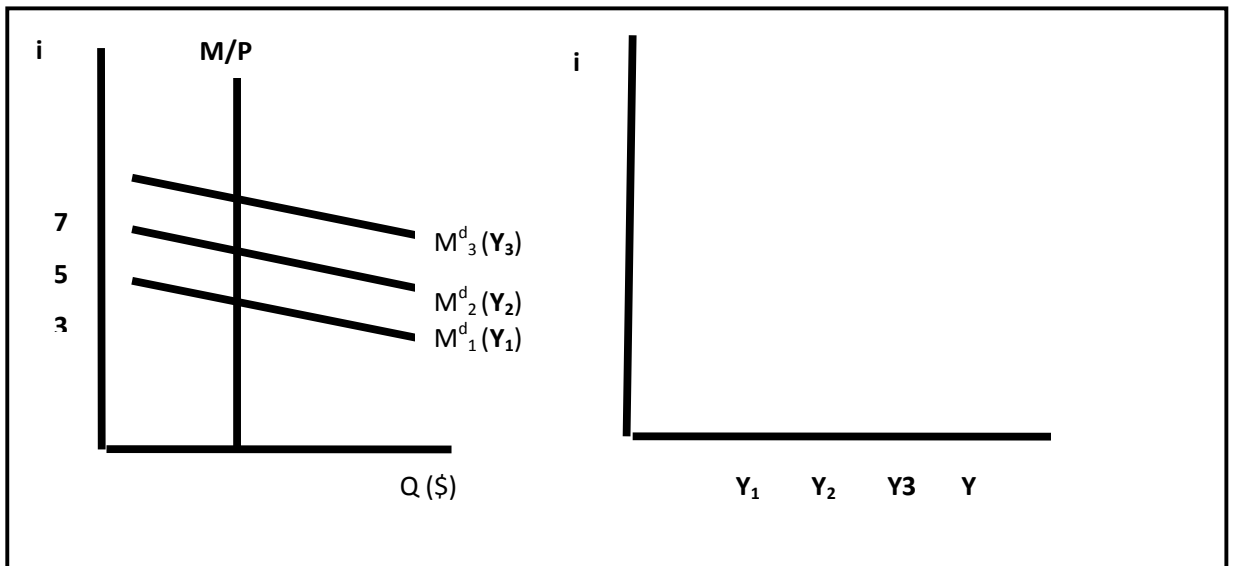
Task Number: 20.18

Task Title: Derive the Liquidity-Money (LM) curve.

Condition: **Given:**

- a. A money market graph
- b. A blank graph in I-Y space
- c. Real money demand for three levels of real output

Standard: With 100% accuracy, plot the three points of LM curve.



Performance Steps:

1. Hold the nominal money supply and price level constant.
2. Locate the equilibrium point for $M^d_1(Y_1)$
3. Draw a line from the equilibrium point in (1) left to the “i” axis on the money market graph and right through the graph in “i, Y” space.
4. Label the points 3 where the line crosses the i axis on each graph
5. Locate the Y_1 output level on the right graph and draw a vertical line upward.

6. Locate the point where the interest rate (3%) line and equilibrium output (Y_1) line intersect.

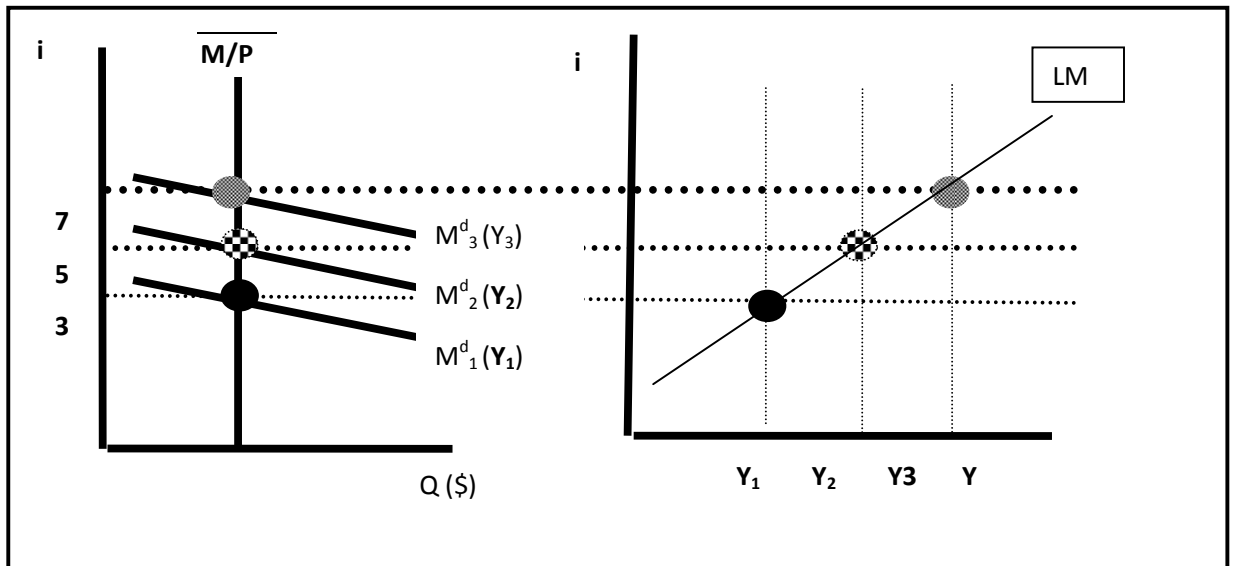
7. Place a dot at that point. This represents the equilibrium point in the money market diagram.

8-13. Output increases to Y_2 . Repeat steps 2-7 for $M^d_2(Y_2)$

14-19. Output increases to Y_3 . Repeat steps 2-7 for $M^d_3(Y_3)$

20. Connect the three points

21. Label the line, LM.



Task Number: 21.1

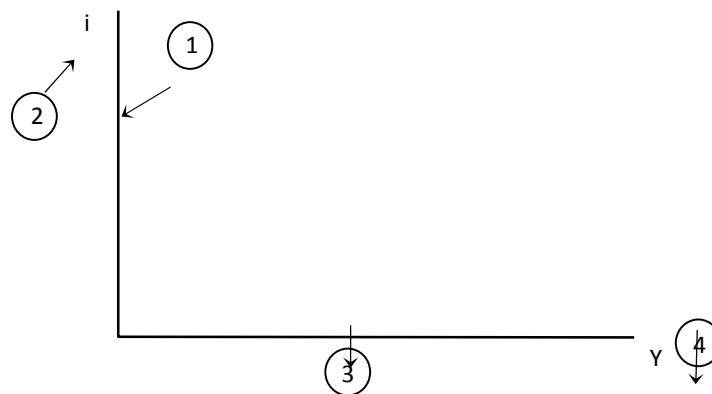
Task Title: Draw the ISLM model in short run equilibrium.

Condition: From memory:

Standard: With 100% accuracy, draw and label all curves, axes, and equilibrium condition.

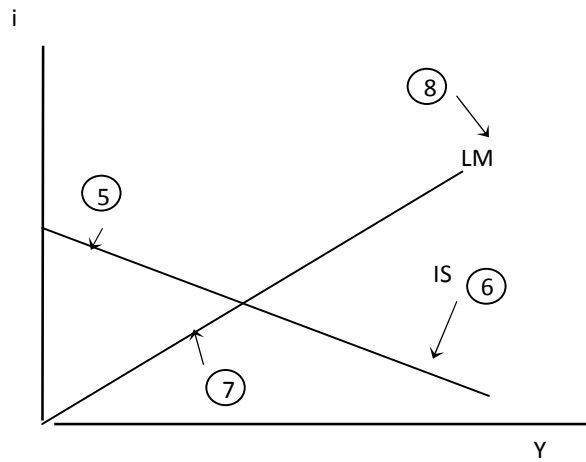
Performance Steps:

1. Draw vertical axis.
2. Label the vertical axis “i” on the left side of the vertical line at the top of the line segment.
3. Draw horizontal axis.
4. Label the horizontal axis “Y” on the bottom side near the right end of the line segment.

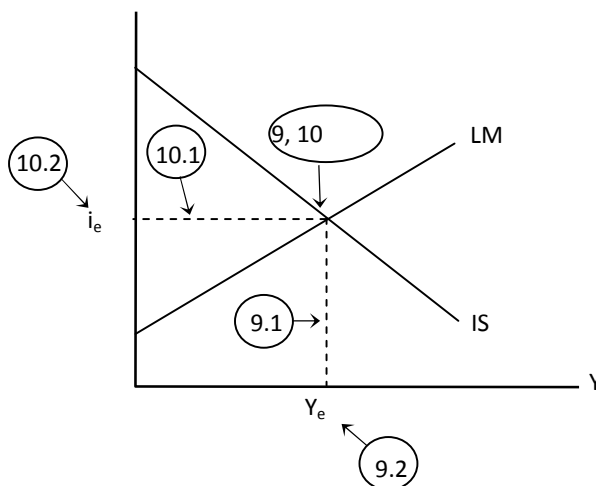


5. Draw a downward sloping curve.
6. Label the curve “IS.”
7. Draw an upward sloping curve.

8. Label the curve “LM.”



9. Locate the point where the two curves intersect.
 - 9.1. Draw a line down to the quantity axis.
 - 9.2. Where the line touches the quantity axis, label it " Y_e ." This is the market equilibrium output.
10. Locate the point where the two curves intersect.
 - 10.1. Draw a line across to the interest axis.
 - 10.2. Where the line touches the interest axis, label it " i_e ." This is the market equilibrium interest rate.



PERFORMANCE MEASURES

GO

NO-GO

1. Drew vertical axis.	_____	_____
2. Labeled the vertical axis “i” ”.	_____	_____
3. Drew horizontal axis	_____	_____
4. Labeled the horizontal axis “Y”	_____	_____
5. Drew a downward sloping curve.	_____	_____
6. Labeled the demand curve “IS.”	_____	_____
7. Drew an upward sloping curve.	_____	_____
8. Labeled the supply curve “LM.”	_____	_____
9. Drew a line down from the interesting IS/LM curves to the Y axis.	_____	_____
10. Labeled the point on the quantity axis “Ye.”	_____	_____
11. Drew a line across from the interesting supply/demand curves interesting point to the interest axis.	_____	_____
12. Labeled the point on the price axis “i _e .”	_____	_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 21.2

Task Title: List the factors that increase the IS curve.

Condition: From memory

Standard: With 100% accuracy, list all variables with correct change

Performance Steps:

1. List the variables that can change the IS curve (column A)
2. Indicate how those variables change to increase the IS curve (column B)

(A) (B)

Variables	Change
autonomous consumption (a)	Increase
Taxes (T)	Decrease
Investment (I)	Increase
Government spending (G)	Increase
Exports (X)	Increase
Imports (IM)	Decrease

PERFORMANCE MEASURES

GO

NO-GO

1. Listed the variables: a, T, I, G, X, IM

2. Correctly indicated the change for:.

a. a _____/_____

b. T _____/_____

c. I _____/_____

d. G _____/_____

e. X _____/_____

f. IM _____/_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 21.3

Task Title: List the factors that decrease the IS curve.

Condition: From memory

Standard: With 100% accuracy, list all variables with correct change

Performance Steps:

1. List the variables that can change the IS curve (column A)
2. Indicate how those variables change to increase the IS curve. (column B)

(A) (B)

Variables	Change
autonomous consumption (a)	Increase
Taxes (T)	Decrease
Investment (I)	Increase
Government spending (G)	Increase
Exports (X)	Increase
Imports (IM)	Decrease

PERFORMANCE MEASURES

GO

NO-GO

1. Listed the variables: a, T, I, G, X, IM

2. Correctly indicated the change for:.

a. a ____/____

b. T ____/____

c. I ____/____

d. G ____/____

e. X ____/____

f. IM ____/____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 21.4

Task Title: List the factors that increase the LM curve.

Condition: From memory

Standard: With 100% accuracy, list all variables with correct change

Performance Steps:

1. List the variables that can change the LM curve (column A)
2. Indicate how those variables change to increase the LM curve (column B)

(A)	(B)
Variables	Change
Money Supply (M^s)	Increase
Price Level (PL)	Decrease
Autonomous money demand (z)	Decrease

PERFORMANCE MEASURES

GO

NO-GO

1. Listed the variables: Money Supply, Price Level, autonomous money demand

2. Correctly indicated the change for:.

a. M^s _____/_____

b. PL _____/_____

c. z _____/_____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 21.5

Task Title: List the factors that decrease the LM curve.

Condition: From memory

Standard: With 100% accuracy, list all variables with correct change

Performance Steps:

1. List the variables that can change the LM curve (column A)
2. Indicate how those variables change to increase the LM curve (column B)

(A) (B)

Variables	Change
Money Supply (M^s)	Decrease
Price Level (PL)	Increase
Autonomous money demand (z)	Increase

PERFORMANCE MEASURES

GO

NO-GO

1. Listed the variables: Money Supply, Price Level, autonomous money demand

2. Correctly indicated the change for:.

a. M^s _____/_____

b. PL _____/_____

c. z _____/_____

_____ _____
_____ _____

Student must get a GO on all performance measures to be considered a GO on this task.

Task Number: 21.6

Task Title: Determine changes in equilibrium output and interest rate.

Condition: **Given:** All aggregate demand and money market variables and an indicated change in the variable

Standard: With 100% accuracy, list all variables with correct change in output and interest rate

Performance Steps:

1. Indicate the curve and direction of change (columns C or D).
2. Indicate how “i” and “y” are changed (columns E and F).

(A)	(B)	(C)	(D)	(E)	(F)
Variable	Increase	IS	LM	i	Y
a	↑	+		+	+
T	↑	-		-	-
I	↑	+		+	+
G	↑	+		+	+
X	↑	+		+	+
IM	↑	-		-	-
Ms	↑		+	-	+
PL	↑		-	+	-
z	↑		-	+	-
Variable	Decrease	IS	LM	i	Y
a	↓	-		-	-
T	↓	+		+	+
I	↓	-		-	-
G	↓	-		-	-
X	↓	-		-	-
IM	↓	+		+	+
Ms	↓		-	+	-
PL	↓		+	-	+
z	↓		+	-	+

PERFORMANCE MEASURES

(A)	(B)	(C)	(D)	(E)	(F)			Overall			
Variable	Increase	IS	LM	<u>Go</u>	<u>No Go</u>	i	Y	<u>Go</u>	<u>No Go</u>	GO	NO GO
a	↑	+				+	+				
T	↑	-				-	-				
I	↑	+				+	+				
G	↑	+				+	+				
X	↑	+				+	+				
IM	↑	-				-	-				
Ms	↑		+			-	+				
PL	↑		-			+	-				
z	↑		-			+	-				
Variable	Decrease	IS	LM	<u>Go</u>	<u>No Go</u>	i	Y	<u>Go</u>	<u>No Go</u>	GO	NO GO
a	↓	-				-	-				
T	↓	+				+	+				
I	↓	-				-	-				
G	↓	-				-	-				
X	↓	-				-	-				
IM	↓	+				+	+				
Ms	↓		-			+	-				
PL	↓		+			-	+				
z	↓		+			-	+				

Student must get a GO on all performance measures to be considered a GO on this task.

Appendix F: Student Survey

Economics Student Questionnaire

(Part 1 of 2)

LAST Name: _____

1. Gender
 - a. Female
 - b. Male
2. Age: _____
3. During this semester, will you have a paying job?
 - a. Yes
 - b. No
4. Year in school
 - a. Freshman or Sophomore
 - b. Junior or Senior
5. Race/Ethnic Origin
 - a. White
 - b. African-American/Black
 - c. Hispanic/Latino
 - d. American Indian
 - e. Other
6. Enrollment Status
 - a. Full-time
 - b. Part-time
7. Overall GPA
 - a. 4.00-3.50
 - b. 3.49-3.00
 - c. 2.99-2.50
 - d. 2.49-2.00
 - e. 1.99-1.50
 - f. 1.49-0.00
8. Major
 - a. Economics
 - b. Business (other than economics)
 - c. Non-business (other)
9. Number of Economics Courses Taken (College or Advanced Placement Economics) before this course.
 - a. Four or more
 - b. Three
 - c. Two
 - d. one
 - e. none
10. Is this course required for your major
 - a. Yes
 - b. No
11. Expected Grade for this Course
 - a. A
 - b. B
 - c. C
 - d. D
 - e. Other
12. Composite ACT Score: _____
13. Do you plan to attend graduate school?
 - a. Yes
 - b. No

Economics Student Questionnaire

(Part 2 of 2)

For each of the following, blacken the box that best represents your attitude or belief about the statement. In example: [1] [2] [] [4] [5]

		Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]
1	I enjoy reading articles about economic topics.	[1]	[2]	[3]	[4]	[5]
2	I hate economics	[1]	[2]	[3]	[4]	[5]
3	Economics is easy for me to understand.	[1]	[2]	[3]	[4]	[5]
4	Economics is dull.	[1]	[2]	[3]	[4]	[5]
5	I enjoy economics.	[1]	[2]	[3]	[4]	[5]
6	Studying economics is a waste of time.	[1]	[2]	[3]	[4]	[5]
7	Economics is one of my most dreaded subjects.	[1]	[2]	[3]	[4]	[5]
8	On occasion I read an unassigned book in economics.	[1]	[2]	[3]	[4]	[5]
9	I would be willing to attend a lecture by an economist.	[1]	[2]	[3]	[4]	[5]
10	Economics is a very difficult subject for me.	[1]	[2]	[3]	[4]	[5]
11	Economics is one of my favorite subjects.	[1]	[2]	[3]	[4]	[5]
12	I use economic concepts to analyze situations.	[1]	[2]	[3]	[4]	[5]
13	Economics is practical.	[1]	[2]	[3]	[4]	[5]
14	Economic ideas are dumb.	[1]	[2]	[3]	[4]	[5]
15	I enjoy working with graphs	[1]	[2]	[3]	[4]	[5]

- | | | | | | | |
|----|--|-------|-------|-------|-------|-------|
| 16 | I find math interesting and helpful. | [1] | [2] | [3] | [4] | [5] |
| 17 | Teachers don't tell you what you need to learn for tests. | [1] | [2] | [3] | [4] | [5] |
| 18 | Exams reflect what the teacher taught in class or assigned for homework. | [1] | [2] | [3] | [4] | [5] |

Appendix G: STATA Codes for ECON 1113 Regressions and ECON 3313 Means Comparison Tests

1. Table 7, Achievement Regressions for Social Issues Classes

Post-TUCEMi: regress PoTUMi PrTUMi GEND AGE Work CGPA ACT
GradSch ATE Pedagogy

Change in TUCHMi: regress ChgTUMi GEND AGE Work CGPA ACT
GradSch ATE Pedagogy

GAP: regress GAP GEND AGE Work CGPA ACT GradSch ATE Pedagogy

Course Average: regress Average PrTUMi GEND AGE Work CGPA ACT
GradSch ATE Pedagogy

2. Table 8, Achievement Regressions for Social Issues Classes, Restricted Model

Post-TUCEMi: regress PoTUMi PrTUCHMi GEND AGE ACT Pedagogy

Change in TUCHMi: regress ChgTUMi GEND AGE ACT Pedagogy

GAP: regress GAP GEND AGE ACT Pedagogy

Course Average: regress Average GEND AGE ACT Pedagogy

3. Table 11, Means Comparison Tests For ECON 3313 by Groups

ttest PrTUMi, by (Pedagogy)

ttest PoTUMI, by (Pedagogy)

ttest ChgTUMi, by (Pedagogy)

ttest GAP, by (Pedagogy)

ttest Average, by (Pedagogy)

4. Table 11A, Means Comparison Tests For ECON 3313 by Groups Within Sections

ttest PrTUMa if sect2==1, by (Pedagogy)

4. Table 11A, Means Comparison Tests For ECON 3313 by Groups Within Sections
(Continued)

ttest PoTUMa if sect2==1, by (Pedagogy)

ttest ChgTUMa if sect2==1, by (Pedagogy)

ttest GAP if sect2==1, by (Pedagogy)

ttest EX3 if sect2==1, by (Pedagogy)

ttest PrTUMa if sect3==1, by (Pedagogy)

ttest PoTUMa if sect3==1, by (Pedagogy)

ttest ChgTUMa if sect3==1, by (Pedagogy)

ttest GAP if sect3==1, by (Pedagogy)

ttest EX3 if sect3==1, by (Pedagogy)

Appendix H: Data Set (ECON 1113)

<u>Pr</u> <u>TUMi</u>	<u>Po</u> <u>TUMi</u>	<u>Chg</u> <u>TUMi</u>	<u>GAP</u>	<u>Average</u>	<u>GEND</u>	<u>AGE</u>	<u>Work</u>	<u>CGPA</u>	<u>ACT</u>	<u>Grad-</u> <u>Sch</u>	<u>ATE</u>	<u>Peda-</u> <u>gogy</u>
0.57	0.48	-0.09	-0.21	0.714			0		34	0	52	1
0.52	0.48	-0.04	-0.08	0.798			1	2.53	30	1	46	0
0.48	0.52	0.04	0.08	0.733			1	2.05	27	1	49	0
0.48	0.62	0.14	0.27	0.903			0	3.42	23	0	53	0
0.48	0.57	0.09	0.17	0.806			0		30	1	51	1
0.48	0.62	0.14	0.27	0.837			1	3.56	29	0	52	1
0.48	0.52	0.04	0.08	0.84			1	2.03	25	1	44	1
0.43	0.48	0.05	0.09	0.658			1	2.41	21	0	51	0
0.43	0.33	-0.1	-0.18	0.589			0	4	20	0	52	0
0.43	0.43	0	0	0.682			1	3.45	21	0	49	0
0.43	0.57	0.14	0.25	0.902			0	4	30	1	45	0
0.43	0.52	0.09	0.16	0.808			0	4	31	1	51	0
0.43	0.71	0.28	0.49	0.844			1	2.05	23	1	49	1
0.43	0.33	-0.1	-0.18	0.609				2.46				1
0.43	0.29	-0.14	-0.25	0.56			1	2.61	24	0	43	1
0.43	0.67	0.24	0.42	0.904			0		30	1	51	1
0.38	0.48	0.1	0.16	0.772			1	2.9	21	0	50	0
0.38	0.67	0.29	0.47	0.841			1	2.76	23	0	49	0
0.38	0.48	0.1	0.16	0.837			0	4	26	1	53	0
0.38	0.43	0.05	0.08	0.819					28			1
0.38	0.33	-0.05	-0.08	0.749			0	3.66	25	0	48	1
0.38	0.43	0.05	0.08	0.836			1		21	1	55	1
0.38	0.57	0.19	0.31	0.928			0		33	0	52	1
0.38	0.62	0.24	0.39	0.707				1.78	26			1
0.38	0.33	-0.05	-0.08	0.61			1	2.33	27	0	41	1
0.38	0.43	0.05	0.08	0.639			0	2.59	22	0	50	1
0.38	0.33	-0.05	-0.08	0.734			0			0	55	1
0.38	0.38	0	0	0.84			1	3.63	25	1	48	1
0.33	0.24	-0.09	-0.13	0.632			1	3.26	18	0	51	0
0.33	0.57	0.24	0.36	0.768			1	3.01	20	1	51	0
0.33	0.33	0	0	0.693			0	3.12	23	0	44	0
0.33	0.43	0.1	0.15	0.764			1	2.95	26	0	56	0

Appendix H: Data Set (ECON 1113)(Continued)

<u>Pr</u> <u>TUMi</u>	<u>Po</u> <u>TUMi</u>	<u>Chg</u> <u>TUMi</u>	<u>GAP</u>	<u>Average</u>	<u>GEND</u>	<u>AGE</u>	<u>Work</u>	<u>CGPA</u>	<u>ACT</u>	<u>Grad-</u> <u>Sch</u>	<u>ATE</u>	<u>Peda-</u> <u>gogy</u>
0.33	0.43	0.1	0.15	0.646			0	2.77	22	1	54	1
0.33	0.57	0.24	0.36	0.782			0	3.08	23	1	50	1
0.33	0.52	0.19	0.28	0.748			1	3.26	26	1	44	1
0.33	0.52	0.19	0.28	0.663			1	2.58	20	0	48	1
0.33	0.38	0.05	0.07	0.921			1	1.33	25	1	50	1
0.29	0.38	0.09	0.13	0.649			1	3	23	0	53	0
0.29	0.57	0.28	0.39	0.996			0	4	33	0	52	0
0.29	0.33	0.04	0.06	0.583			1	2.33	21	1	58	0
0.29	0.38	0.09	0.13	0.804			0	3	24	0	46	0
0.29	0.33	0.04	0.06	0.706			1	3.39	24	0	49	0
0.29	0.48	0.19	0.27	0.884			0	3.67	28	0	50	0
0.29	0.29	0	0	0.683				2.88	17			1
0.29	0.38	0.09	0.13	0.604			1	2.51	21	0	56	1
0.29	0.38	0.09	0.13	0.693			1	3.26	24	0	50	1
0.29	0.24	-0.05	-0.07	0.581			1	3.05	18	0	47	1
0.29	0.29	0	0	0.735			1	3.3	24	1	54	1
0.24	0.38	0.14	0.18	0.579			0		21	1	53	0
0.24	0.33	0.09	0.12	0.831			0		26	0	51	0
0.24	0.62	0.38	0.5	0.916			1		24	0	52	0
0.24	0.38	0.14	0.18	0.619			1	2.2	17	0	45	0
0.24	0.29	0.05	0.07	0.639			0	3.73	26	0	51	0
0.24	0.29	0.05	0.07	0.851			1	3.49	28	1	58	0
0.24	0.71	0.47	0.62	0.914			0	4	24	1	47	1
0.24	0.24	0	0	0.65			0	3	25	1	48	1
0.24	0.57	0.33	0.43	0.698			0	2.13	24	0	50	1
0.24	0.48	0.24	0.32	0.759			1	3.29	26	0	51	1
0.24	0.48	0.24	0.32	0.868			1	3.9	21	1		1
0.24	0.29	0.05	0.07	0.618			0	2.12	18	0	49	1
0.24	0.24	0	0	0.79			0	3.32	24	1	47	1
0.19	0.48	0.29	0.36	0.814			0	4	25	1	53	0
0.19	0.33	0.14	0.17	0.79			0		25	0	54	0
0.19	0.43	0.24	0.3	0.682			0		23	0	50	0
0.19	0.19	0	0	0.553			1	3.46	23	0	46	1
0.19	0.29	0.1	0.12	0.62				2.24	18			1
0.19	0.24	0.05	0.06	0.673			1	2.97	17	0	48	1
0.19	0.33	0.14	0.17	0.94			0	3	26	0	50	1
0.19	0.52	0.33	0.41	0.727			0	3.6	21	0	45	1

Appendix H: Data Set (ECON 1113)(Continued)

<u>Pr</u> <u>TUMi</u>	<u>Po</u> <u>TUMi</u>	<u>Chg</u> <u>TUMi</u>	<u>GAP</u>	<u>Average</u>	<u>GEND</u>	<u>AGE</u>	<u>Work</u>	<u>CGPA</u>	<u>ACT</u>	<u>Grad-</u> <u>Sch</u>	<u>ATE</u>	<u>Peda-</u> <u>gogy</u>
0.19	0.14	-0.05	-0.06	0.525			1	2.69	18	0	42	1
0.19	0.24	0.05	0.06	0.714			1		21	0	47	1
0.19	0.29	0.1	0.12	0.586			1	1.95	20	0	53	1
0.14	0.38	0.24	0.28	0.629			0	2.89	16	1	39	0
0.14	0.38	0.24	0.28	0.645			1	1.77	19	1	51	0
0.14	0.67	0.53	0.62	0.844			1	3.59	28	1	54	0
0.14	0.29	0.15	0.17	0.7			0	3.51	21	1	53	1
0.14	0.33	0.19	0.22	0.722			0	4	24	1	51	1
0.14	0.14	0	0	0.402			1	2.06	17	1	48	1
0.1	0.38	0.28	0.31	0.587			1	2.71	18	0	50	0
0.1	0.19	0.09	0.1	0.664			1		26	0	43	1
0.1	0.52	0.42	0.47	0.71			0	2.9	21	0	52	1

Contact the author for GEND and AGE data

Appendix I: Data Set (ECON 3313)

PrTU Ma	PoTU Ma	ChgT UMa	GAP	EX3	GEND	AGE	Work	GPA	ACT	Grad Sch	ATE	Peda gogy	sect2	sect3
0.71	0.62	-0.09	-0.33	0.835			1	3.645	30	0	51	1	1	0
0.67	0.81	0.14	0.43	0.835				3.075	28	1		0	1	0
0.67	0.71	0.04	0.13	0.834				3.704	32			0	1	0
0.63	0.52	-0.11	-0.31	0.666			1	3.197	21	0	56	0	0	1
0.63	0.76	0.13	0.35	0.814			0	3.652	24	1	51	1	0	1
0.63	0.71	0.08	0.21	0.841			1	3.063	29	0	56	1	0	1
0.62	0.62	0	0	0.7			0	2.739	31	1	52	0	1	0
0.62	0.62	0	0	0.754			0	2.933	21	0	53	1	1	0
0.62	0.86	0.24	0.63	0.969			0	3.969	22	1	60	1	1	0
0.62	0.52	-0.1	-0.26	0.754			0	3.322	25	1	52	1	1	0
0.6	0.71	0.11	0.28	0.727			0	3.814	24	0	56	0	0	1
0.57	0.67	0.1	0.23	0.714				2.38				0	1	0
0.57	0.76	0.19	0.44	0.754			1	3	28	1	51	0	1	0
0.57	0.52	-0.05	-0.12	0.633			1	2.354	30	0	53	0	1	0
0.57	0.81	0.24	0.56	0.955			1	3.78	28	0	54	0	1	0
0.57	0.71	0.14	0.32	0.794			0	2.89	32	1	55	1	1	0
0.57	0.43	-0.14	-0.33	0.7				2.632				1	1	0
0.57	0.86	0.29	0.67	1.09				4	33	1		1	1	0
0.57	0.81	0.24	0.56	0.566				3.596	23			1	1	0
0.57	0.38	-0.19	-0.45	0.915				3.774	24			1	1	0
0.57	0.52	-0.05	-0.11	0.687			1	3.677	27	0	56	0	0	1
0.57	0.71	0.14	0.33	0.888			1	3.504	22	0	56	1	0	1
0.57	0.81	0.24	0.56	0.861			0	3.194	22	0	49	1	0	1
0.53	0.76	0.23	0.49	0.835			0	4	29	1	52	0	0	1
0.53	0.71	0.18	0.38	0.942			0	2.983	28	0	50	0	0	1
0.53	0.62	0.09	0.19	0.74			0	3.155		0	52	1	0	1
0.53	0.43	-0.1	-0.22	0.619			0	3.781	28	1	46	1	0	1
0.52	0.38	-0.14	-0.3	0.404				0				0	1	0
0.52	0.57	0.05	0.1	0.727				2.735	20			0	1	0
0.52	0.71	0.19	0.39	0.808				2.747	25			0	1	0

Appendix I: Data Set (ECON 3313)(Continued)

0.43	0.57	0.14	0.25	1.036			1	3.1	28	1	53	1	1	0
0.43	0.57	0.14	0.24	0.606			1	2.184	21	1	49	0	0	1
0.43	0.57	0.14	0.24	0.606			1	2.943	26	0	54	1	0	1
0.4	0.67	0.27	0.45	0.861			0	3.286	26	1	54	0	0	1
0.4	0.81	0.41	0.68	0.767			1	2.889	22	0	46	0	0	1
0.4	0.43	0.03	0.05	0.552			1	3.51	21	0	54	1	0	1
0.4	0.81	0.41	0.68	0.767				2.29	22			1	0	1
0.4	0.57	0.17	0.28	0.525			1	1.936	20	0	50	1	0	1
0.38	0.48	0.1	0.16	0.579				3.435	28			0	1	0
0.38	0.38	0	0	0.525				3.01	25			0	1	0
0.38	0.57	0.19	0.31	0.673			0	3.14	31	1	50	0	1	0
0.38	0.81	0.43	0.69	0.888				2.894				1	1	0
0.38	0.71	0.33	0.53	0.888				3.6	30			1	1	0
0.37	0.86	0.49	0.78	0.915			1	3.011	30	1	49	0	0	1
0.37	0.67	0.3	0.48	0.539			1	3.629	22	0	52	0	0	1
0.37	0.48	0.11	0.18	0.492			0	2.471	21	1	56	0	0	1
0.37	0.48	0.11	0.18	0.539			1	2.673		0	49	1	0	1
0.37	0.52	0.15	0.24	0.458			1	3.725	25	1	55	1	0	1
0.33	0.38	0.05	0.07	0.525			1	2.443	18	0	49	0	1	0
0.33	0.62	0.29	0.43	0.7			1	2.268	21	1	60	0	1	0
0.33	0.43	0.1	0.15	0.606			1	3.402	24	1	49	0	1	0
0.33	0.57	0.24	0.36	0.566			1	3.017	28	0	53	0	1	0
0.33	0.71	0.38	0.57	0.848			0	3.475	26	1	56	1	1	0
0.33	0.62	0.29	0.43	0.687			0	3.283	18	1	52	1	1	0
0.33	0.57	0.24	0.36	0.754				3.69	29			1	1	0
0.33	0.33	0	0	0.633			0	3.487	24	0	49	1	1	0
0.33	0.67	0.34	0.51	0.74			1	3.688	24	1	54	1	1	0
0.33	0.48	0.15	0.22	0.754				3.641	23			1	1	0
0.33	0.76	0.43	0.64	0.942			1	4	30	1	51	1	1	0
0.33	0.81	0.48	0.72	0.875			0	3.21	26	0	56	0	0	1
0.33	0.48	0.15	0.22	0.532			1	2.506	19	0	46	1	0	1
0.33	0.76	0.43	0.64	0.942			0	2.99	20	1	50	1	0	1

Appendix I: Data Set (ECON 3313)(Continued)

0.4	0.57	0.17	0.28	0.525			1	1.936	20	0	50	1	0	1
0.38	0.48	0.1	0.16	0.579				3.435	28			0	1	0
0.38	0.38	0	0	0.525				3.01	25			0	1	0
0.38	0.57	0.19	0.31	0.673			0	3.14	31	1	50	0	1	0
0.38	0.81	0.43	0.69	0.888				2.894				1	1	0
0.38	0.71	0.33	0.53	0.888				3.6	30			1	1	0
0.37	0.86	0.49	0.78	0.915			1	3.011	30	1	49	0	0	1
0.37	0.67	0.3	0.48	0.539			1	3.629	22	0	52	0	0	1
0.37	0.48	0.11	0.18	0.492			0	2.471	21	1	56	0	0	1
0.37	0.48	0.11	0.18	0.539			1	2.673		0	49	1	0	1
0.37	0.52	0.15	0.24	0.458			1	3.725	25	1	55	1	0	1
0.33	0.38	0.05	0.07	0.525			1	2.443	18	0	49	0	1	0
0.33	0.62	0.29	0.43	0.7			1	2.268	21	1	60	0	1	0
0.33	0.43	0.1	0.15	0.606			1	3.402	24	1	49	0	1	0
0.33	0.57	0.24	0.36	0.566			1	3.017	28	0	53	0	1	0
0.33	0.71	0.38	0.57	0.848			0	3.475	26	1	56	1	1	0
0.33	0.62	0.29	0.43	0.687			0	3.283	18	1	52	1	1	0
0.33	0.57	0.24	0.36	0.754				3.69	29			1	1	0
0.33	0.33	0	0	0.633			0	3.487	24	0	49	1	1	0
0.33	0.67	0.34	0.51	0.74			1	3.688	24	1	54	1	1	0
0.33	0.48	0.15	0.22	0.754				3.641	23			1	1	0
0.33	0.76	0.43	0.64	0.942			1	4	30	1	51	1	1	0
0.33	0.81	0.48	0.72	0.875			0	3.21	26	0	56	0	0	1
0.33	0.48	0.15	0.22	0.532			1	2.506	19	0	46	1	0	1
0.33	0.76	0.43	0.64	0.942			0	2.99	20	1	50	1	0	1
0.3	0.57	0.27	0.39	0.613			1	3.077				0	0	1
0.29	0.29	0	0.01	0.404				2.33	16			0	1	0
0.29	0.67	0.38	0.54	0.835			1	2.444	20	1	54	0	1	0
0.29	0.48	0.19	0.27	0.593			1	2.059	21	0	54	1	1	0
0.29	0.71	0.42	0.59	0.781			1	2.75	23	1	52	1	1	0
0.29	0.52	0.23	0.33	0.673				3.906	30			1	1	0
0.27	0.86	0.59	0.81	0.861			1	2.778	22	0	53	1	0	1
0.23	0.52	0.29	0.37	0.499			0	2.051	19	0	57	0	0	1
0.19	0.29	0.1	0.12	0.378				2.017	17			0	1	0
0.19	0.43	0.24	0.3	0.552			1	2.533	30	0	53	0	1	0

Contact the author for GEND and AGE data

Oklahoma State University Institutional Review Board

Date: Thursday, July 16, 2009
IRB Application No: BU0916
Proposal Title: Determining the Effectiveness of Task Based Instruction and Other Key Variables on Economic Learning

Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): **Approved** Protocol Expires: 7/15/2010

Principal

Investigator(s) ✓

William J. McLean

Steve Edwards

432 Business

325U Willard

Stillwater, OK 74078

Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 46 CFR 46.

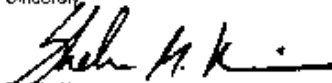
✓ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. IRB continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research, and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTaman in 219 Corbett North (phone: 405-744-5700, beth.mctaman@okstate.edu)

Sincerely,



Shelia Kohnson, Chair
Institutional Review Board

VITA

William Joseph McLean

Candidate for the Degree of

Doctor of Philosophy

Thesis: TWO ESSAYS ON INCREASING THE LEARNING EFFECTIVENESS OF
ECONOMICS EDUCATION

Major Field: Economics

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Economics at
Oklahoma State University, Stillwater, Oklahoma in July 2010

Completed the requirements for the Master of Arts in National Security and
Strategic Studies at the Naval War College, Newport, Rhode Island, USA in
1990

Completed the requirements for the Master of Business Administration at
Florida Institute of Technology, Melbourne, Florida, USA in 1984

Completed the requirements for the Bachelor of Business Administration at
Columbus College, Columbus, Georgia, USA in 1976

Name: William Joseph McLean

Date of Degree: July 2010

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: TWO ESSAYS ON INCREASING THE LEARNING EFFECTIVENESS
OF ECONOMICS EDUCATION

Pages in Study: 332

Candidate for the Degree of Doctor of Philosophy

Major Field: Economics

Scope and Method of Study:

This study develops, implements, and evaluates a new economics teaching pedagogy based on the U.S. Army's systems approach to training model. Using the approach, tasks are identified that compose the task domain for the Principles' of Microeconomics course. From the 130 identified tasks, 73 are used by Economics of Socials Issues classes for the evaluation phase. Next each task is expanded to include task conditions, task standard, task performance steps, and task performance measures. The developed document is called a teaching, learning, and evaluation outline (TLEO). The same process identifies 53 tasks used in unit 3 of Money and Banking classes. An experiment is used to assess the impact of using the TLEO documents to enhance learning. One section of Social Issues receives the TLEO pedagogical treatment and one does not. Completely randomized selection is used for the two Money and Banking courses. The treatment groups receive the TLEO documents for each task and are taught using the task, conditions, standard format from the document. Social issues students received the treatment for 16 weeks while the Money and Banking students received 2-4 weeks of treatment.

Findings and Conclusions:

The task identification and document generation process can be applied to economics and many other academic subjects. The process is time consuming and almost prohibitive for an individual instructor; however, the finished product provides a self-contained lesson plan for teaching and an outline format for class preparation and task learning. The effectiveness of the new pedagogy is mixed. Regression analysis revealed no significant pedagogical effect on the Social Issues classes. Difference of means tests for Money and Banking classes showed greater learning by the treatment group in one of the learning achievement measures. Two of the four learning achievement measures supported increased learning in the longer Money and Banking class. Student use of the TLEO documents as envisioned was inconsistent during the experiment. More research is needed to determine student attitudes toward the new task document. Lastly, to accurately measure the TLEO document and the pedagogy, further testing in an environment where students must rely upon the TLEO exclusively is needed.

ADVISER'S APPROVAL: Lee C. Adkins, PhD
