1) Refer to Figure 2.4. The economy moves from Point B to Point D. This could be explained by:

a) a reduction in unemployment
b) an improvement in technology
c) an increase in economic growth.
d) a change in society’s preferences for cars versus trucks.

2) The process by which resources are transformed into useful forms is
a) allocation  b) capitalization  c) production  d) consumption

3) An economy in which a central authority draws up a plan that establishes what will be produced and when, sets production goals, and makes rules for distribution is a
a) laissez-faire economy  b) command economy  c) public goods economy  d) socialist economy

4) The value of the slope of a society’s production possibility frontier is called its
a) inflation rate  b) marginal rate of substitution  c) unemployment rate  d) marginal rate of transformation.

5) Ayla and Leyla live in a small town. They own a small business in which they produce ‘yemeni’ and ‘sweaters’ and sell them to people in the town. Ayla can make 15 yemenis per hour, but only 3 sweaters. Leyla is a bit slower and can make only 12 yemenis or 2 sweaters in an hour.

<table>
<thead>
<tr>
<th>Output per hour</th>
<th>Ayla</th>
<th>Leyla</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yemenis</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Sweaters</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

a) For Ayla and Leyla what is the opportunity cost of a sweater? Who can produce the sweaters at a lower cost? Explain.
b) Who can produce the Yemenis at a lower cost? Explain.
c) Assume that Ayla works 20 hours per week in the business. If Ayla were in business on her own, graph the possible combinations of sweaters and yemenis that she could produce in a week. Do the same for Leyla.
d) If Ayla devoted half of her time (10 out of 20 hours) to yemenis and half of her time to sweaters, how many of each would she produce in a week? If Leyla did the same, how many of each would she produce? How many yemenis and sweaters would be produced in total?
e) Suppose that Leyla spent all 20 hours of her time on yemenis and Ayla spent 17 hours on sweaters and 3 hours on yemenis. How many of each would be produced?
Problem Set for Chapter 3 - Demand, Supply and Market Equilibrium

1. Incomes increase in the market for iPods (a normal good). What would happen in the market? Explain graphically.

2. New techniques in the production of LCD screens make it possible to produce them at lower marginal cost. What would happen in the market? Explain graphically.

3. Suppose the demand and supply curves for eggs in Turkey are given by the following equations:
   \[ Q_d = 100 - 20P \]
   \[ Q_s = 10 + 40P \]
   a) Fill in the following table.
   b) Use the information in the table to find the equilibrium price and equilibrium quantity algebraically.
   c) Graph the demand and supply curves and identify the equilibrium price and quantity.

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity demanded</th>
<th>Quantity supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. The figure shows the demand for and supply of rental housing in Buca.

   a) What are the equilibrium rent and quantity of rented housing?
   b) If a rent ceiling is set at 150 YTL a month, what is the quantity of housing rented, the shortage of housing and the maximum price that someone is willing to pay for the last unit of housing available?

5. Consider the market for CD’s. Explain the effects of each of the following on the quantity sold and price of CD’s and illustrate each case with a diagram, being sure to state whether the change comes from shifts in supply or in demand.
   a) All Turkish teenagers receive a doubling of their allowances. One of the major suppliers of CD’s withdraws from the market
   b) People expect the development of a new digital technique soon to render CD’s obsolete. A major supplier enters the market for Cd’s.
   c) The price of cassette tapes rises dramatically. Improvements in computer chip technology used in the production of Cd’s.
   d) All teenagers get half of their allowances. One of the major suppliers of Cd’s withdraws from the market.
Problem Set for Chapter 4 - Demand and Supply Applications

1. Pietro Cavalini sells ice cream at the beach. He is in competition with numerous other vendors. How will each of the following changes affect the equilibrium price and quantity of Pietro’ ice cream?
   a) Hot dog vendors reduce the price of hot dogs. Hot dogs are consumption substitutes for ice cream.
   b) The cost of refrigeration decreases.
   c) Fine weather attracts record crowds to the beach.

2. How will each of the following change the equilibrium price and quantity of hamburgers?
   a) There is an increase in the price of hamburger buns (used in the production of burgers).
   b) There is an increase in the price of hamburgers.
   c) Producers discover that the price of cheeseburgers is increasing.

3. Indicate in each case whether the equilibrium price and quantity of beer will increase, decrease or remain unchanged in the following cases.
   a) Price of beer decreases.
   b) States improve a new tax on beer producers.
   c) Beer workers’ wages increase.
   d) Costs of transportation decrease.
   e) Improved technology results in less waste of beer.

4. Wages of bus drivers increase. At the same time, incomes of consumers generally increase. In the market for bus rides, we should expect to see curves shift. The supply curve will ________and the demand curve will __________.
   a. shift up – shift to the left
e. shift up – remain unchanged
   b. shift up – shift to the right
   c. shift down – shift to the left
d. shift down – shift to the right
   f. shift down – remain unchanged
   g. remain unchanged – shift left
   h. remain unchanged – shift right

5. As a result of the simultaneous increase in the wages of bus drivers and of consumer incomes, we would expect that price will -- and the quantity of bus rides will --- in the new equilibrium.
   a. increase – increase
e. increase – be uncertain
   b. increase – decrease
   f. decrease – be uncertain
   c. decrease – increase
g. be uncertain -- increase
   d. decrease – decrease
   h. be uncertain – decrease.
1. The table below gives the demand schedules for good A when the price of good B \((P_B)\) is 8 YTL and 12 YTL. Complete the last column of the table by computing the cross elasticity of demand between goods A and B for each of the three prices of A. Are A and B complements or substitutes?

<table>
<thead>
<tr>
<th>(P_A)</th>
<th>(Q_A)</th>
<th>(Q_A')</th>
<th>Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2000</td>
<td>4000</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>4000</td>
<td>6000</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6000</td>
<td>8000</td>
<td></td>
</tr>
</tbody>
</table>

2. The table gives the supply schedule for long-distance phone calls. Calculate the elasticity of supply when the price falls from 40 YTL to 30 YTL a minute.

<table>
<thead>
<tr>
<th>(P_A)</th>
<th>(Q_A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>20</td>
<td>400</td>
</tr>
<tr>
<td>30</td>
<td>600</td>
</tr>
<tr>
<td>40</td>
<td>800</td>
</tr>
</tbody>
</table>

3. Calculate price elasticity of demand or supply for the following functions when \(P=8\) and when \(P=6\) using point elasticity formula?

\[
P = 40 - 0.5Q \\
Q = -4 + 0.75P \\
4Q + 4P = 64
\]

4. George Davis has estimated that the for every one percent increase in the price of natural Christmas trees, the demand for artificial trees rises by .188%. From this information one can conclude that

a) the income elasticity of demand for natural Christmas trees is less than one.
b) natural Christmas trees are luxuries.
c) natural and artificial Christmas trees are substitutes.
d) natural and artificial Christmas trees are complements.

5. Demand is said to be \textit{elastic} when

b) the percentage change in quantity demanded is less than the percentage change in price.
c) the percentage change in quantity demanded is greater than the percentage change in price.
d) the change in quantity demanded is less than the change in price.
e) the change in quantity demanded is greater than the change in price.

6. If a 12 percent rise in the price of orange juice decreases the quantity of orange juice demanded by 22 percent and increases the quantity of apple juice demanded by 14 percent, calculate the cross elasticity of demand between orange juice and apple juice.
1. The following table gives a hypothetical total utility schedule for Ali.

<table>
<thead>
<tr>
<th>Number of apples</th>
<th>Total Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>200</td>
</tr>
<tr>
<td>3</td>
<td>275</td>
</tr>
<tr>
<td>4</td>
<td>325</td>
</tr>
<tr>
<td>5</td>
<td>350</td>
</tr>
<tr>
<td>6</td>
<td>360</td>
</tr>
<tr>
<td>7</td>
<td>360</td>
</tr>
</tbody>
</table>

Calculate the Ali’s marginal utility schedule. Draw a graph of total and marginal utility. If apples cost 5 TL each what is the maximum number of apples Ali would most likely consume?

2. A consumer has an income of 100 TL per month and he wishes to spend all of it on two goods X and Y, whose prices are 4 and 5 TL respectively.

a) Express the budget line in a diagram and in algebra.
b) How will the budget line be affected by a doubling of money income which leaves money prices constant?
c) How will the budget line be affected by a doubling of all prices, leaving money income unchanged?
d) Show how a fall in the price of good X to 2 TL, assuming the price of Y and money income remains constant, will affect the budget line?

3. When the consumer's indifference curve is just tangent to the budget constraint which of the following conditions is satisfied? A) MUx = MUy  B) TUx = TUy  C) MUx/Px = MUy/Py  D) TUx/Px = TUy/Py

4. Each week Nil spends her entire pocket money on hamburger and ice tea. The prices of hamburger and ice tea are 4 TL each. The following equations represent her marginal utility schedule (MU_H) of hamburger and the marginal utility schedule (MU_I) of ice tea. \( MU_{H} = 84 - 8H \) and \( MU_{I} = 40 - 4I \) where H and I represents the quantity of hamburger and ice tea consumed respectively. If Nil's weekly pocket money is 28 TL, how many units of each good should she purchase to maximize her total satisfaction?

5. Emre is trying to decide how much beer, wine and soda to buy. Soda costs 1TL for a large bottle. Beer is 2 TL for six-pack. Wine cost 4 TL per liter. His marginal utility figures are given in the below table. If Emre wants to spend all of his money, which is 17 TL, how many units of each drink should he purchase to maximize his total satisfaction?

<table>
<thead>
<tr>
<th>Quantity</th>
<th>MU of Soda</th>
<th>MU of Beer</th>
<th>MU of Wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>16</td>
<td>20</td>
</tr>
</tbody>
</table>
1. In the table that follows, three different firms are able to combine capital (K) and labor (L) in various ways, resulting in pairs of marginal productivities as shown. (Note that higher number combinations substitute capital for labor which decreases MP\textsubscript{K} and increases MP\textsubscript{L}) For all firms, the price of a unit of capital is 10 TL and the price of labor is STL.

   a) Firm A is currently using combination 3 and Firm B is using combination 2 and Firm C is using combination 4. Which firm is minimizing its costs? Why?
   b) How would the firms that are not minimizing their costs have to alter their use of capital and labor to do so?

<table>
<thead>
<tr>
<th>Combination Number</th>
<th>MP\textsubscript{K}</th>
<th>MP\textsubscript{L}</th>
<th>MP\textsubscript{K}</th>
<th>MP\textsubscript{L}</th>
<th>MP\textsubscript{K}</th>
<th>MP\textsubscript{L}</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

2. If labor is a variable input in production, the law of diminishing marginal returns implies that in the short run
   A) labor’s marginal product is constant.
   B) labor’s marginal product decreases after a certain point.
   C) total product is negative.
   D) total product is negative after a certain point has been reached.

3. If the marginal product of labor is less than the average product of labor, then the
   A) marginal product must be increasing.     B) average product must be decreasing.
   C) marginal product must be decreasing.    D) Both B and C

4. Assume the total product of two workers is 130 and the total product of three workers is 150. The average product of the third worker is __________, and the marginal product of the third worker is __________.
   A) 40; 10                  B) 50; 20                C) 13.33; 6.67                D) 120; 100

5. Refer to the information provided in figure below to answer the questions that follow.

   If the price of capital is $20, then along isocost line AB total cost is
   A) $300                          B) $1200
   C) $2400                        D) indeterminate from this information, as the price of labor is not given.
Problem Set for Chapter 8 - Short-run Costs and Output Decisions

1. If the marginal cost curve is below the average variable cost curve, then
   A) average variable costs are increasing.
   B) average variable costs are decreasing.
   C) marginal cost must be decreasing.
   D) average variable costs could either be increasing or decreasing.

2. Refer to the information provided in the table below to answer the following question.

<table>
<thead>
<tr>
<th>Number of Fruit Baskets</th>
<th>TFC</th>
<th>TVC</th>
<th>TC</th>
<th>MC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$50</td>
<td>$0</td>
<td>$50</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>50</td>
<td>10</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>15</td>
<td>65</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
<td>21</td>
<td>71</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>31</td>
<td>81</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>50</td>
<td>46</td>
<td>96</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>50</td>
<td>68</td>
<td>118</td>
<td>22</td>
</tr>
</tbody>
</table>

Assume that fruit baskets are sold in a perfectly competitive market. The market price of a fruit basket is $22. To maximize profits, Exotic Fruit should sell ________ fruit basket(s).
   A) three          B) four          C) five          D) six

3. A firm in a perfectly competitive industry is producing 50 units, its profit-maximizing quantity. Industry price is $2, total fixed costs are $25, and total variable costs are $40. The firm’s economic profit is
   A) $15.  B) $30.  C) $35.  D) $60.

4. Refer to the information provided in the figure below to answer the questions that follow.

   a. For this farmer to maximize profits he should produce ________ bushels of wheat.
      A) 6          B) 9          C) 12          D) 16

   b. If this farmer is maximizing profits, his total costs will be
      A) $11       B) $66       C) $90       D) $132

   c. If this farmer is maximizing his profits, his TVC is
      A) $24       B) $42       C) $108      D) $255

   d. This farmer’s fixed costs are
      A) $0        B) $24        C) $45       D) indeterminate unless we know the level of output produced.

   e. If this farmer is maximizing profits, his total revenue will be
      A) $90       B) $135      C) $180      D) $240
1. Explain the differences between short-run and long-run.

2. Describe the scope of economic profit in the long run for a perfectly competitive firm.

3. If there are short-run profits in a competitive industry, will firms enter or exit over the long run? At what point will the final equilibrium be achieved?

4. When an increase in the scale of production leads to higher average costs, the industry exhibits
   a) diminishing returns.
   b) increasing returns to scale.
   c) decreasing returns to scale.
   d) constant returns to scale.

5. Engineers for the Off Road Skateboard Company have determined that a 10% increase in all inputs will cause output to increase by 5%. Assuming that input prices remain constant, you correctly deduce that such a change will cause __________ as output increases.
   a) average costs to decrease
   b) average costs to increase
   c) average fixed costs to increase
   d) total cost to decrease

6. Assume that a competitive market is in the short-run equilibrium with the representative firm making an economic profit. Short-run cost curves have traditional shapes. Graph the equilibrium condition for the market and for the representative firm. Identify profits within the representative firm diagram.
1. The table gives the demand for and supply of teenage labor.

<table>
<thead>
<tr>
<th>Wage rate (YTL per hour)</th>
<th>Quantity demanded (hours per month)</th>
<th>Quantity supplied (hours per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3000</td>
<td>1000</td>
</tr>
<tr>
<td>3</td>
<td>2500</td>
<td>1500</td>
</tr>
<tr>
<td>4</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>5</td>
<td>1500</td>
<td>2500</td>
</tr>
<tr>
<td>6</td>
<td>1000</td>
<td>3000</td>
</tr>
</tbody>
</table>

a) What are the equilibrium wage rate and level of employment?
b) What is the quantity of unemployment?
c) If a minimum wage of 3 YTL an hour is set for teenagers, how many hours do they work?
d) If a minimum wage of 3 YTL an hour is set for teenagers, how many hours of their labor is unemployed?
e) If a minimum wage is set at 5 YTL an hour and demand increases by 500 hours a month, what is the wage rate paid to teenagers and how many hours of their labor is unemployed?

2. If capital and labor are complementary inputs and the firm increases the amount of capital employed in production, the marginal revenue product of labor will

   a) remain constant because the amount of labor was not changed.
   b) either increase, decrease or remain constant depending on how complementary labor and capital are in production.
   c) decrease.
   d) increase.

3. If the wage rate is less than the marginal revenue product of labor, the firm should __________ to maximize profits.

   a) hire more labor and produce more output
   b) hire more labor and produce less output
   c) hire less labor and produce less output
   d) hire less labor and produce more output

4. Graphically illustrate and explain the effect of an increase in the price of a complementary good to that which the firm produces on the demand curve for an input.

5. Use a diagram of a competitive labor market and a representative firm to explain how much labor a profit-maximizing firm will hire.