

SPRING 2013

William Rainey Harper College

# **ECO 211**

**Microeconomics: An Introduction to Economic Efficiency**

**YELLOW PAGES – UNIT 3**

**Unit 3 – Product Markets and Efficiency Production**

- Chapter 8 – Pure Competition in the Short Run
- Chapter 9 – Pure Competition in the Long Run
- Chapter 10 and 18 – Monopoly and Regulation
- Chapter 11 – Monopolistic Competition and Oligopoly

**Four Market Models**

**8a**

<b>CHARACTERISTIC</b>	<b>PURE COMPETITION (Ch. 8-9)</b>	<b>MONOPOLISTIC COMPETITION (Ch. 11)</b>	<b>OLIGOPOLY (Ch. 11)</b>	<b>MONOPOLY (Ch. 10)</b>
Number of Firms:				
Type of product:				
Control over price:				
Conditions of entry:				
Nonprice competition				
Examples:				

## Quick Quiz – Product Market Models

8a

**1. Economists would describe the U.S. automobile industry as:**

1. purely competitive.
2. an oligopoly.
3. monopolistically competitive.
4. a pure monopoly.

**2. In which of the following market structures is there clear-cut mutual interdependence with respect to price-output policies?**

1. pure monopoly
2. oligopoly
3. monopolistic competition
4. pure competition

**3. Which of the following industries most closely approximates pure competition?**

1. agriculture
2. farm implements
3. clothing
4. steel

**4. Economists use the term imperfect competition to describe:**

1. all industries which produce standardized products.
2. any industry in which there is no nonprice competition.
3. a pure monopoly only.
4. those markets which are not purely competitive.

**5. In which of the following industry structures is the entry of new firms the most difficult?**

1. pure monopoly
2. oligopoly
3. monopolistic competition
4. pure competition

**6. An industry comprised of 40 firms, none of which has more than 3 percent of the total market for a differentiated product is an example of:**

1. monopolistic competition.
2. oligopoly.
3. pure monopoly.
4. pure competition.

**7. A one-firm industry is known as:**

1. monopolistic competition.
2. oligopoly.
3. pure monopoly.
4. pure competition.

**8. An industry comprised of four firms, each with about 25 percent of the total market for a product is an example of:**

1. monopolistic competition.
2. oligopoly.
3. pure monopoly.
4. pure competition.

**9. An industry comprised of a very large number of sellers producing a standardized product is known as:**

1. monopolistic competition.
2. oligopoly.
3. pure monopoly.
4. pure competition.

**10. An industry comprised of a small number of firms, each of which considers the potential reactions of its rivals in making price-output decisions is called:**

1. monopolistic competition.
2. oligopoly.
3. pure monopoly.
4. pure competition.

**Price and Output Determination – Pure competition**

**8a**

Decision: How many should the firm produce?

Goal: Profit Maximization

- 2 Steps: 1. Find the best quantity, where  $MR = MC$   
 2. Compare AR with AVC, produce only if  $AR > AVC$

Assumptions: Pure Competition

**3 Cases:** Note – this cost data is the same as that which we used in the yellow page for the chapter 7 (Costs of Production). See next page for cost data.

**Complete the tables below, find the profit maximizing quantity for each scenario, and calculate the profits or losses.**

**On pages 9, 10 and 11, find the profit maximizing quantity, calculate the profits or losses, and indicate the profits or losses on each graph.**

Profit Maximization  
 $P = \$ 10$

Loss Minimization  
 $P = \$ 5$

Shut Down  
 $P = \$ 2$

Q	TC	MC	TR	MR
0	\$25	--		--
1	35			
2	41			
3	45			
4	47			
5	49			
6	52			
7	57			
8	65			
9	79			
10	100			

Q	TC	MC	TR	MR
0	\$25	--		--
1	35			
2	41			
3	45			
4	47			
5	49			
6	52			
7	57			
8	65			
9	79			
10	100			

Q	TC	MC	TR	MR
0	\$25	--		--
1	35			
2	41			
3	45			
4	47			
5	49			
6	52			
7	57			
8	65			
9	79			
10	100			

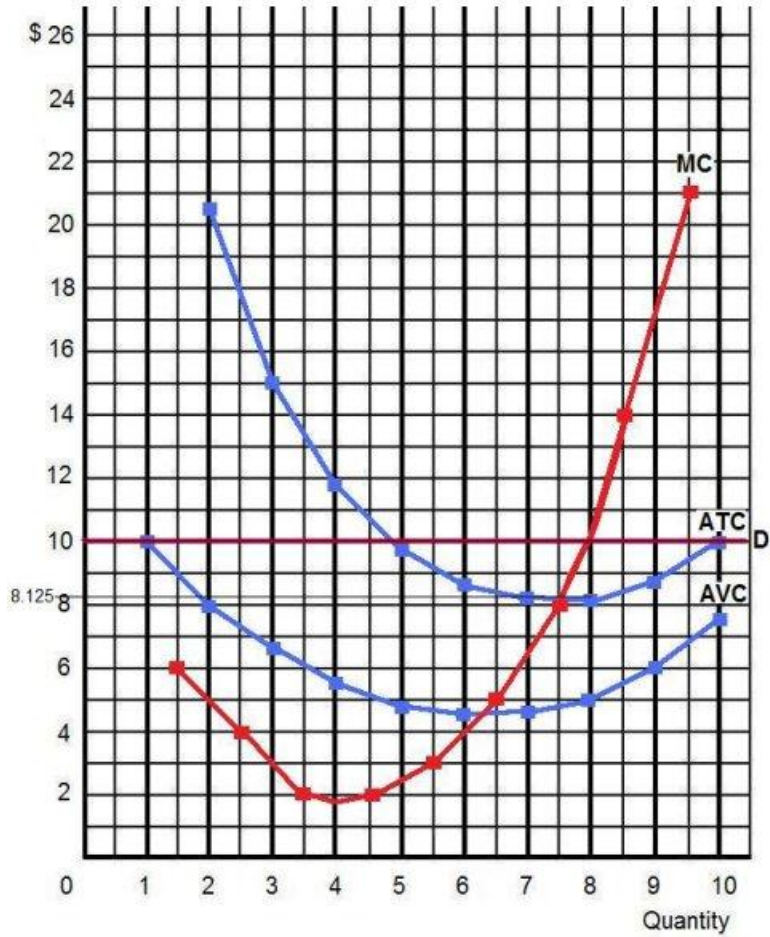
**Short-Run Cost Schedules and Curves (from chapter 7 yellow pages)**

**8a**

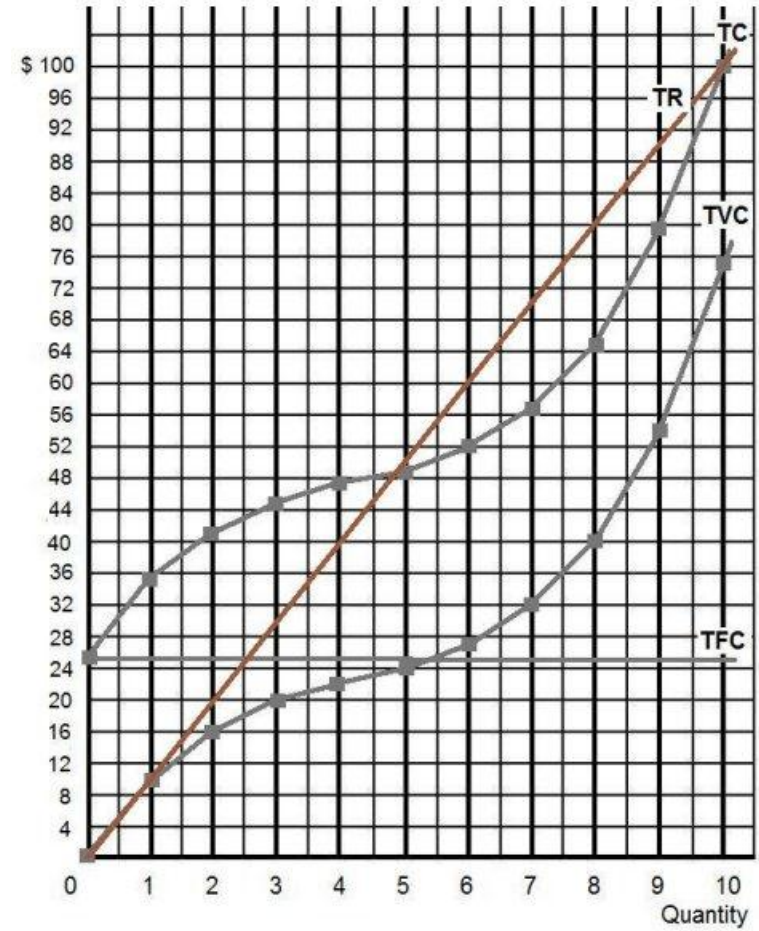
<b>Q</b>	<b>TFC</b>	<b>TVC</b>	<b>TC</b>	<b>AFC</b>	<b>AVC</b>	<b>ATC</b>	<b>MC</b>
<b>0</b>	<b>\$ 25</b>	<b>\$ 0</b>	<b>\$ 25</b>	<b>\$ --</b>	<b>\$ --</b>	<b>\$ --</b>	<b>\$ --</b>
<b>1</b>	<b>25</b>	<b>10</b>	<b>35</b>	<b>25</b>	<b>10.00</b>	<b>35</b>	<b>10</b>
<b>2</b>	<b>25</b>	<b>16</b>	<b>41</b>	<b>12.50</b>	<b>8.00</b>	<b>20.50</b>	<b>6</b>
<b>3</b>	<b>25</b>	<b>20</b>	<b>45</b>	<b>8.33</b>	<b>6.67</b>	<b>15.00</b>	<b>4</b>
<b>4</b>	<b>25</b>	<b>22</b>	<b>47</b>	<b>6.25</b>	<b>5.50</b>	<b>11.75</b>	<b>2</b>
<b>5</b>	<b>25</b>	<b>24</b>	<b>49</b>	<b>5.00</b>	<b>4.80</b>	<b>9.80</b>	<b>2</b>
<b>6</b>	<b>25</b>	<b>27</b>	<b>52</b>	<b>4.17</b>	<b>4.50</b>	<b>8.67</b>	<b>3</b>
<b>7</b>	<b>25</b>	<b>32</b>	<b>57</b>	<b>3.57</b>	<b>4.57</b>	<b>8.14</b>	<b>5</b>
<b>8</b>	<b>25</b>	<b>40</b>	<b>65</b>	<b>3.125</b>	<b>5.00</b>	<b>8.125</b>	<b>8</b>
<b>9</b>	<b>25</b>	<b>54</b>	<b>79</b>	<b>2.78</b>	<b>6.00</b>	<b>8.78</b>	<b>14</b>
<b>10</b>	<b>25</b>	<b>75</b>	<b>100</b>	<b>2.50</b>	<b>7.50</b>	<b>10.00</b>	<b>21</b>

**Pure Competition – Price = \$ 10**

Costs,  
Revenue

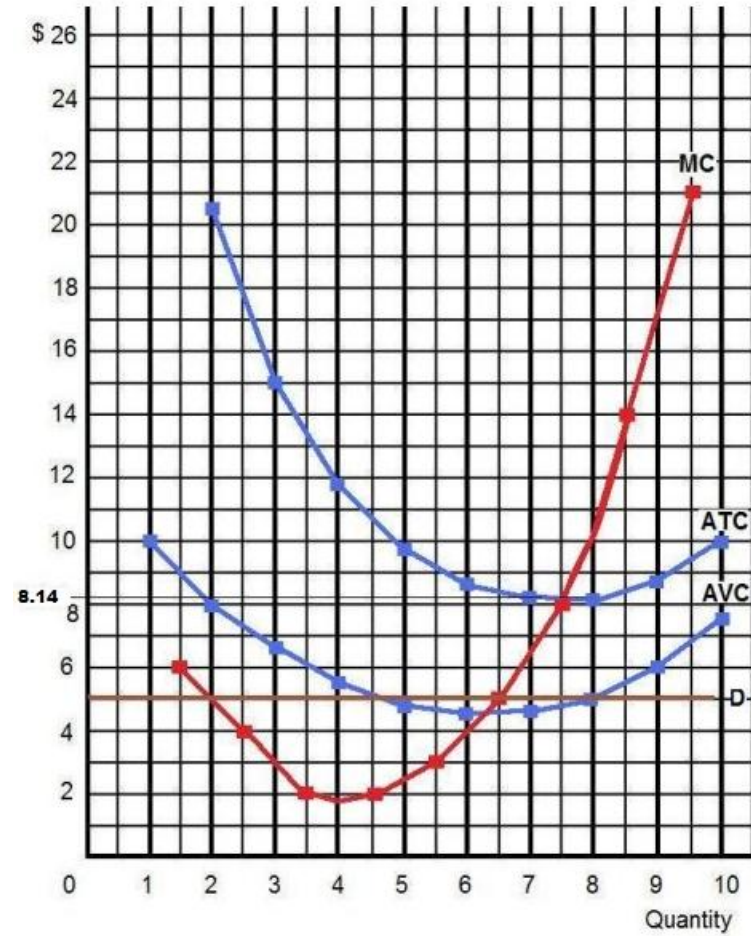


Costs,  
Revenue

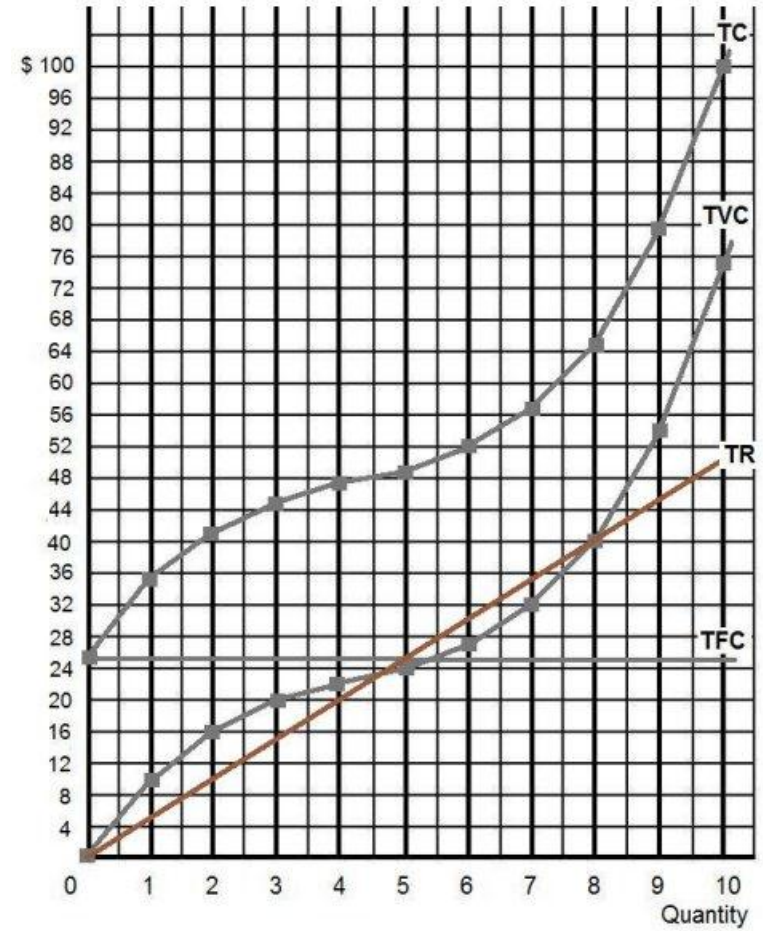


Pure Competition – Price = \$ 5

Costs,  
Revenue



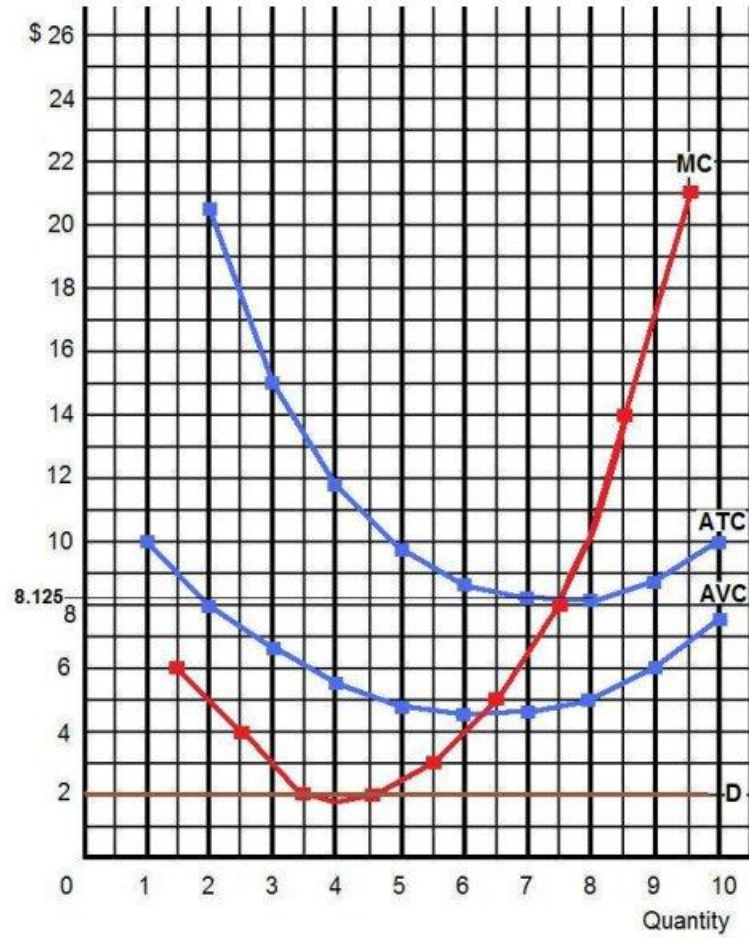
Costs,  
Revenue



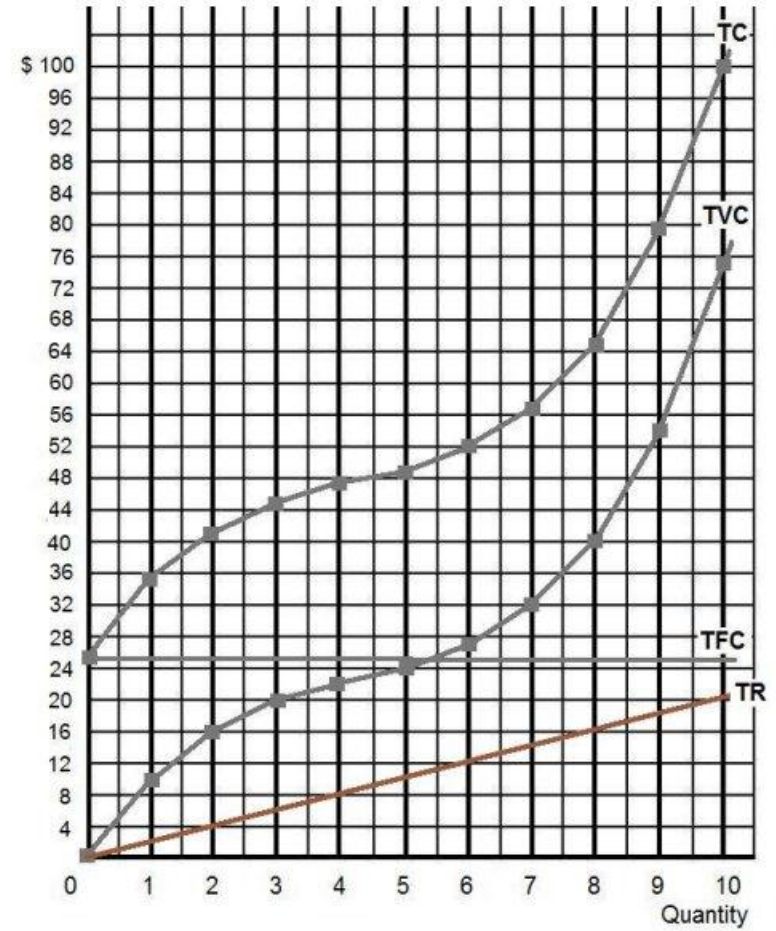


**Pure Competition – Price = \$ 2**

Costs,  
Revenue



Costs,  
Revenue

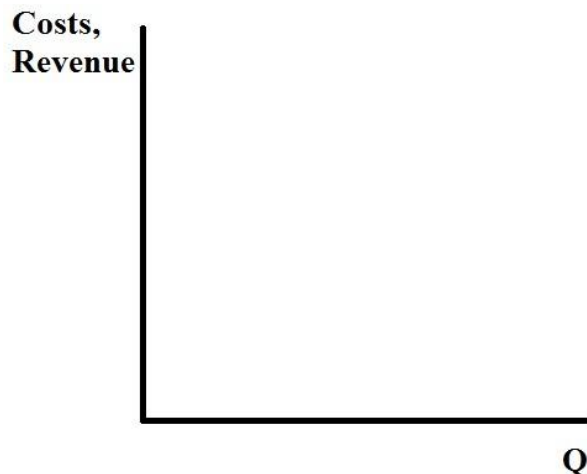


**WORKSHEET: Pure Competition in the Short Run**

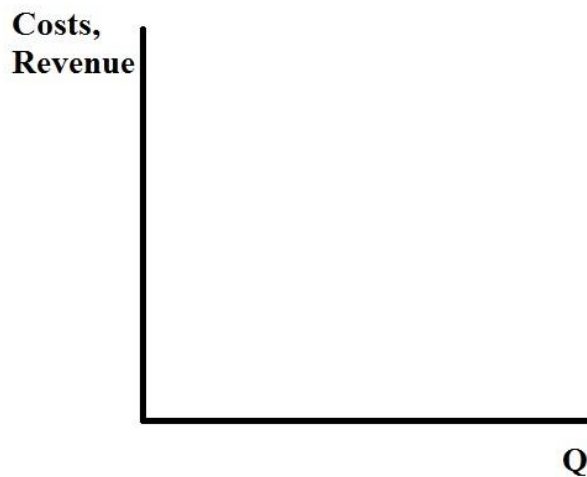
**8a**

Sketch graphs of a purely competitive firm in the short run earning (1) profits, (2) losses, but continuing to produce, and (3) losses, but shutting down. Indicate the profit maximizing quantity, price, and profits or losses.

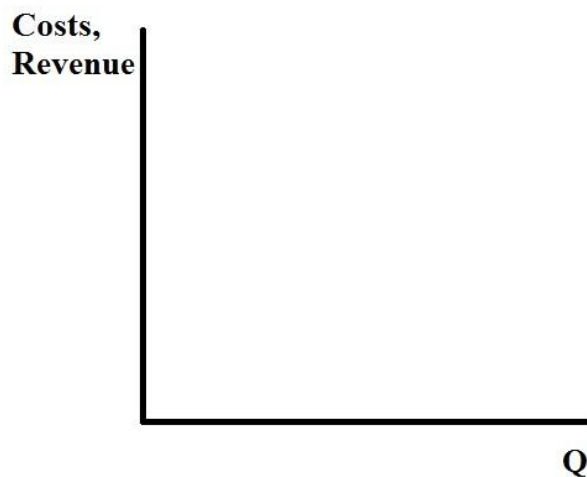
(1) PROFITS



(2) LOSSES, BUT CONTINUING TO PRODUCE



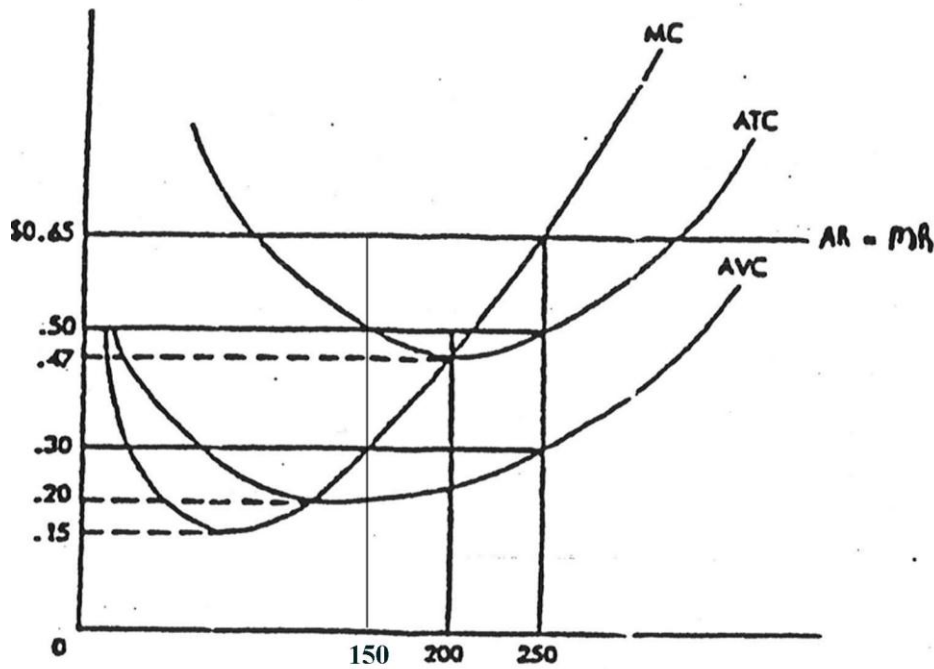
(3) LOSSES, BUT SHUTTING DOWN



**WORKSHEET: Pure Competition in the Short Run**

**8a**

Use the cost and revenue curves to answer the questions that follow. Assume the firm is a profit maximizer.



1. Q = \_\_\_\_\_
2. P = \_\_\_\_\_
3. Will this firm produce this quantity? \_\_\_\_\_
4. AR = \_\_\_\_\_
5. TR = \_\_\_\_\_
6. ATC = \_\_\_\_\_
7. TC = \_\_\_\_\_
8. Does this firm earn profits or losses? \_\_\_\_\_
9. Profits or losses = \_\_\_\_\_
10. At this quantity, AFC = \_\_\_\_\_
11. TFC = \_\_\_\_\_
12. If the price dropped to \$.30, will this firm continue to produce? \_\_\_\_\_
13. If so, what quantity will it produce? \_\_\_\_\_

14. Will it now earn profits or losses? \_\_\_\_\_

15. Profits or losses = \_\_\_\_\_

16. Why does it continue to produce? \_\_\_\_\_

\_\_\_\_\_

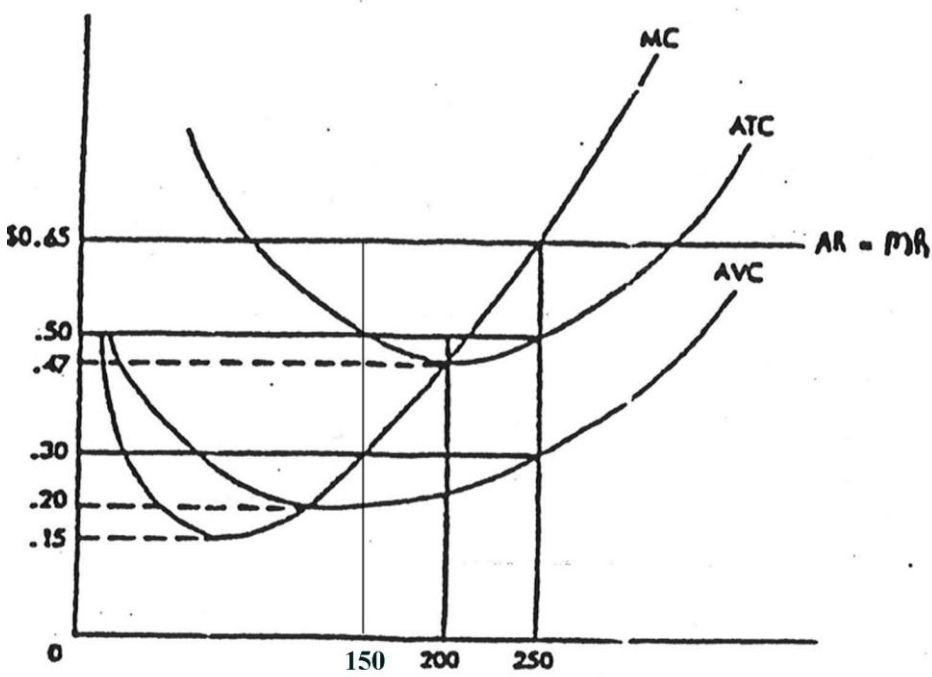
17. If the price dropped to \$.15 will this firm continue to produce? \_\_\_\_\_

18. What will be its losses if the price = \$.15? \_\_\_\_\_

19. At a price of \$.30 the firm earns enough revenues to cover its entire fixed/variable cost, as well as PART of its fixed/variable cost?

20. Which curve and what portion of it constitutes the firm's short run supply curve?

\_\_\_\_\_



Quick Quiz – Pure Competition – Short Run

8a

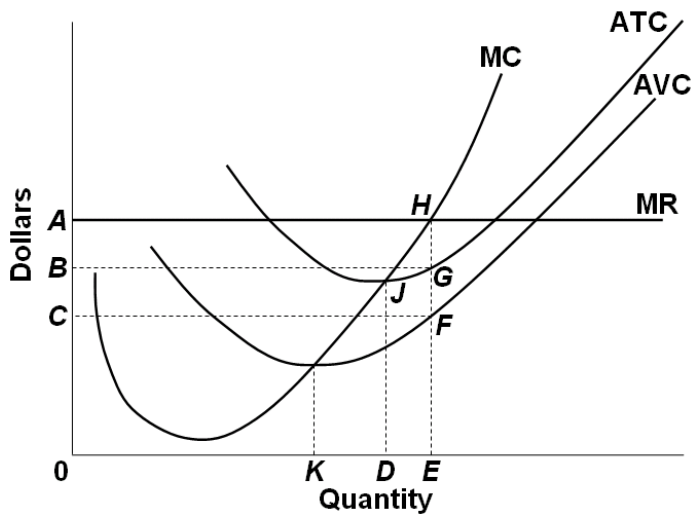
Total Product	Average Fixed Cost	Average Variable Cost	Average Total Cost	Marginal Cost
1	\$100.00	\$17.00	\$117.00	\$17
2	50.00	16.00	66.00	15
3	33.33	15.00	48.33	13
4	25.00	14.25	39.25	12
5	20.00	14.00	34.00	13
6	16.67	14.00	30.67	14
7	14.29	15.71	30.00	26
8	12.50	17.50	30.00	30
9	11.11	19.44	30.55	35
10	10.00	21.60	31.60	41
11	9.09	24.00	33.09	48
12	8.33	26.67	35.00	56

**1. Refer to the above data. If the market price for the firm's product is \$12, the competitive firm will produce:**

1. 4 units at a loss of \$109.
2. 4 units at an economic profit of \$31.75.
3. 8 units at a loss of \$48.80.
4. zero units at a loss of \$100.

**2. Refer to the above data. If the market price for the firm's product is \$32, the competitive firm will produce:**

1. 8 units at an economic profit of \$16.
2. 5 units at a loss of \$10.
3. 8 units at a loss equal to the firm's total fixed cost.
4. 7 units at an economic profit of \$41.50.



**3. Refer to the above diagram. To maximize profit or minimize losses this firm will produce:**

1.  $K$  units at price  $C$ .
2.  $D$  units at price  $J$ .
3.  $E$  units at price  $A$ .
4.  $E$  units at price  $B$ .

**4. Refer to the above diagram. At the profit-maximizing output, total revenue will be:**

1.  $OAHE$ .
2.  $OBGE$ .
3.  $OCFE$ .
4.  $ABGE$ .

**5. Refer to the above diagram. At the profit-maximizing output, total cost is equal to:**

1.  $OAHE$ .
2.  $OBGE$ .
3.  $OCFE$ .
4.  $BCFG$ .

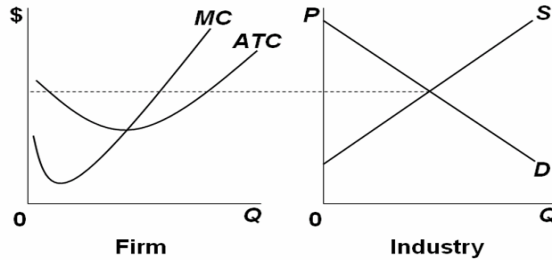
**6. Refer to the above diagram. At the profit-maximizing output, the firm will realize:**

1. a loss equal to  $BCFG$ .
2. a loss equal to  $ACFH$ .
3. an economic profit of  $ACFH$ .
4. an economic profit of  $ABGH$ .

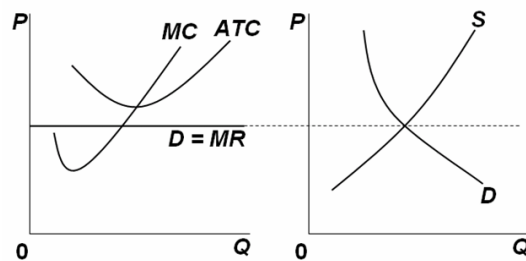
**WORKSHEET: Pure Competition in the Long Run**

**8b**

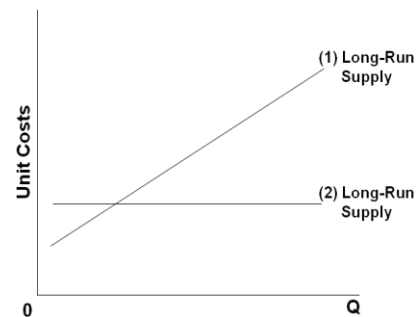
1. Consider the two graphs below. Graph A represents a typical firm in a purely competitive industry. Graph B represents the supply and demand conditions in that industry. The dashed horizontal line represents the current market price for firms and for the industry. In the long run, what will happen to price, profit, the supply curve, and the number of firms in the industry? Explain and show on the graphs.



2. Consider the two graphs below. Graph A represents a typical firm in a purely competitive industry. Graph B represents the supply and demand conditions in that industry. The dashed horizontal line represents the current market price for firms and for the industry. In the long run, what will happen to price, profit, the supply curve, and the number of firms in the industry? Explain and show on the graphs.

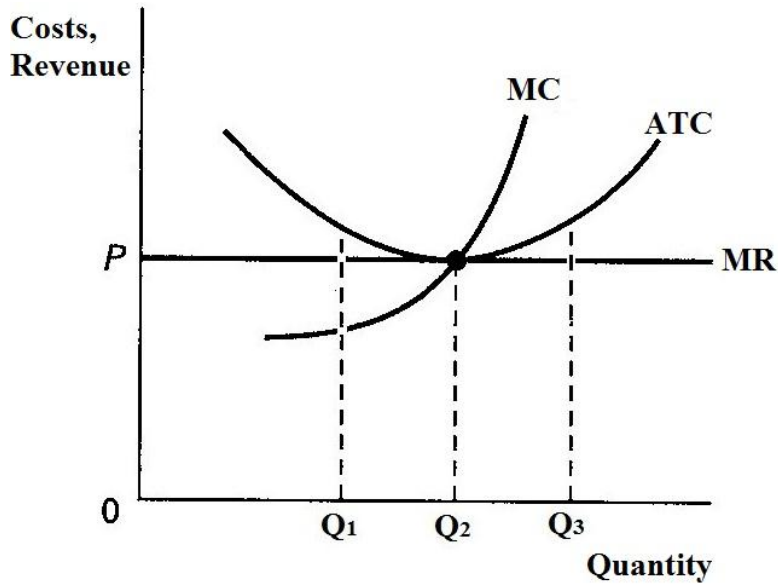


3. Below is a graph of two possible long-run industry supply curves for a purely competitive industry. Explain why (1) is upsloping and (2) is horizontal.

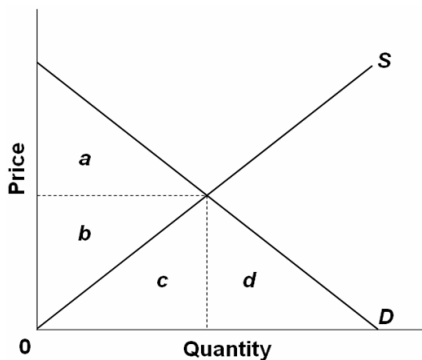


4. Describe the graph for a long-run supply curve in a decreasing-cost industry. Why does it have this slope?

5. Find the (1) profit maximizing quantity, (2) allocatively efficient quantity, and the (3) productively efficient quantity on the graph below Write the rules (formulas) that you used to find each.



6. Consider the supply and demand graph below to answer three questions: (a) Use a letter to identify the area of maximum consumer surplus; (b) Use a letter to identify the area of maximum producer surplus; (c) Why is the output level shown by the vertical dashed line one that is allocatively efficient from a marginal cost and marginal benefit perspective?





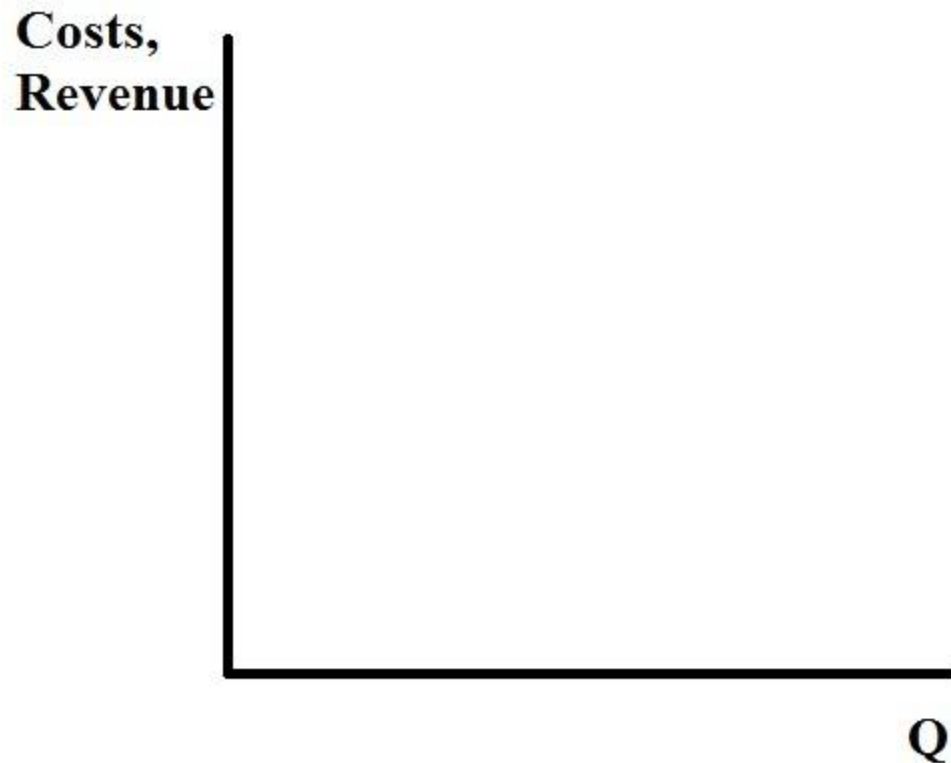
## Pure Competition: Long Run Equilibrium

8b

Draw a graph of a purely competitive firm in long run equilibrium.

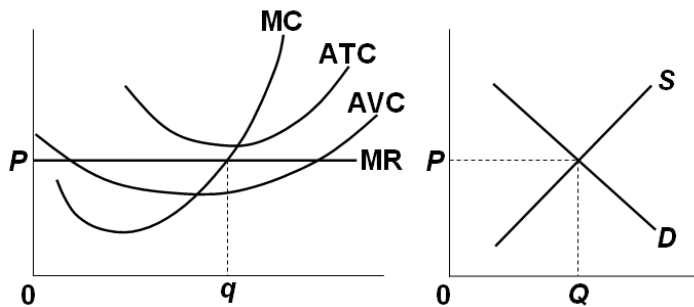
On the graph indicate the (1) profit maximizing quantity and price, (2) the allocatively efficient quantity, and (3) the productively efficient quantity, and write the rules (formulas) you used to find each.

What are the long run profits? How does the firm stay in business?.



## Quick Quiz – Pure Competition – Long Run

8b



**1. Refer to the above diagrams, which pertain to a purely competitive firm producing output  $q$  and the industry in which it operates. Which of the following is *correct*?**

1. The diagrams portray neither long-run nor short-run equilibrium.
2. The diagrams portray both long-run and short-run equilibrium.
3. The diagrams portray short-run equilibrium, but not long-run equilibrium.
4. The diagrams portray long-run equilibrium, but not short-run equilibrium.

**2. Refer to the above diagrams, which pertain to a purely competitive firm producing output  $q$  and the industry in which it operates. In the long run we should expect:**

1. firms to enter the industry, market supply to rise, and product price to fall.
2. firms to leave the industry, market supply to rise, and product price to fall.
3. firms to leave the industry, market supply to fall, and product price to rise.
4. no change in the number of firms in this industry.

**3. The term productive efficiency refers to:**

1. any short-run equilibrium position of a competitive firm.
2. the production of the product-mix most desired by consumers.
3. the production of a good at the lowest average total cost (where  $MC=ATC$ )
4. fulfilling the condition  $P = MC$ .

**4. The term allocative efficiency refers to:**

1. the level of output that coincides with the intersection of the MC and AVC curves.
2. minimization of the AFC in the production of any good.
3. the production of the product-mix most desired by consumers.
4. the production of a good at the lowest average total cost.

**5. If the price of product Y is \$25 and its marginal cost is \$18:**

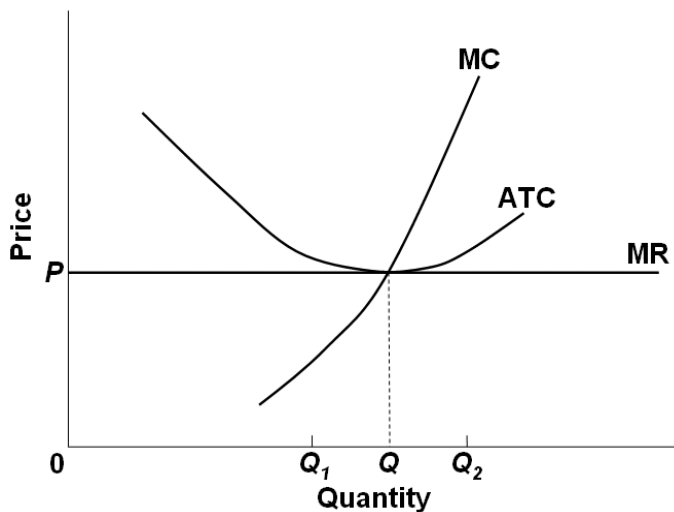
1. Y is being produced with the least-cost combination of resources.
2. society will realize a net gain if less of Y is produced.
3. resources are being underallocated to Y.
4. resources are being overallocated to Y.

**6. Under pure competition in the long run:**

1. neither allocative efficiency nor productive efficiency are achieved.
2. both allocative efficiency and productive efficiency are achieved.
3. productive efficiency is achieved, but allocative efficiency is not.
4. allocative efficiency is achieved, but productive efficiency is not.

**7. If for a firm  $P = \text{minimum ATC} = \text{MC}$ , then:**

1. neither allocative efficiency nor productive efficiency is being achieved.
2. productive efficiency is being achieved, but allocative efficiency is not.
3. both allocative efficiency and productive efficiency are being achieved.
4. allocative efficiency is being achieved, but productive efficiency is not.



**8. The above diagram portrays:**

1. a competitive firm that should shut down in the short run.
2. the equilibrium position of a competitive firm in the long run.
3. a competitive firm that is realizing an economic profit.
4. the loss-minimizing position of a competitive firm in the short run.

**9. Refer to the above diagram. If this competitive firm produces output  $Q$ , it will:**

1. suffer an economic loss.
2. earn a normal profit.
3. earn an economic profit.
4. achieve productive efficiency, but not allocative efficiency.

**10. Refer to the above diagram. By producing output level  $Q$ :**

1. neither productive nor allocative efficiency are achieved.
2. both productive and allocative efficiency are achieved.
3. allocative efficiency is achieved, but productive efficiency is not.
4. productive efficiency is achieved, but allocative efficiency is not.

**Monopoly Firms and Short Run Decisions**

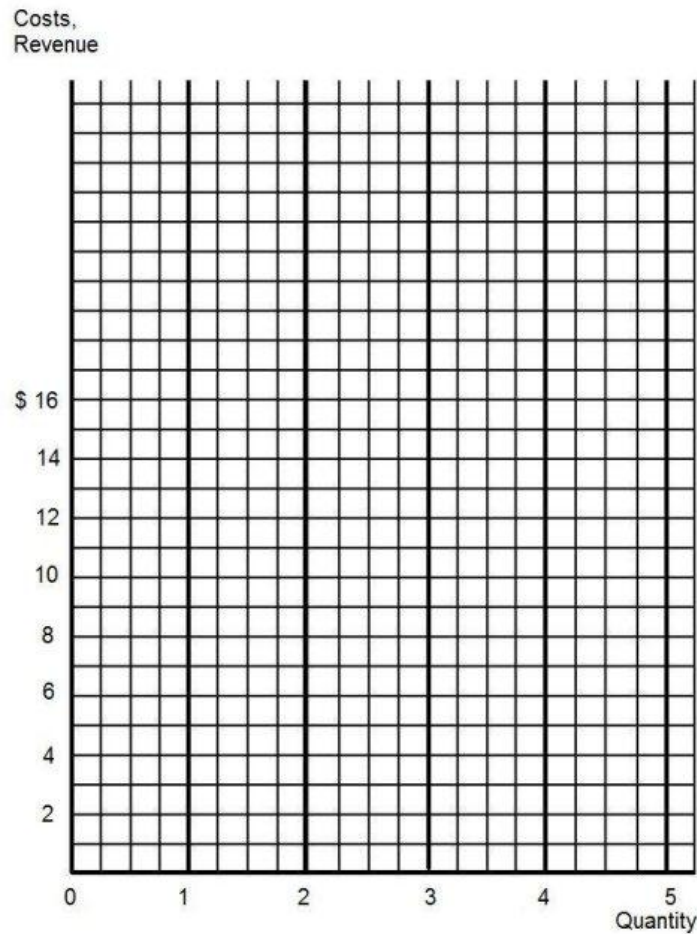
**10a**

Q	AR	TR	MR	TC	MC	TFC	ATC	AFC	AVC
0	\$ 16	\$	\$ --	\$ 12	\$ --	\$	\$ --	\$ --	\$ --
1	\$ 14			\$ 20					
2	\$ 12			\$ 23					
3	\$ 10			\$ 26					
4	\$ 8			\$ 32					
5	\$ 6			\$ 50					

Make three plots:

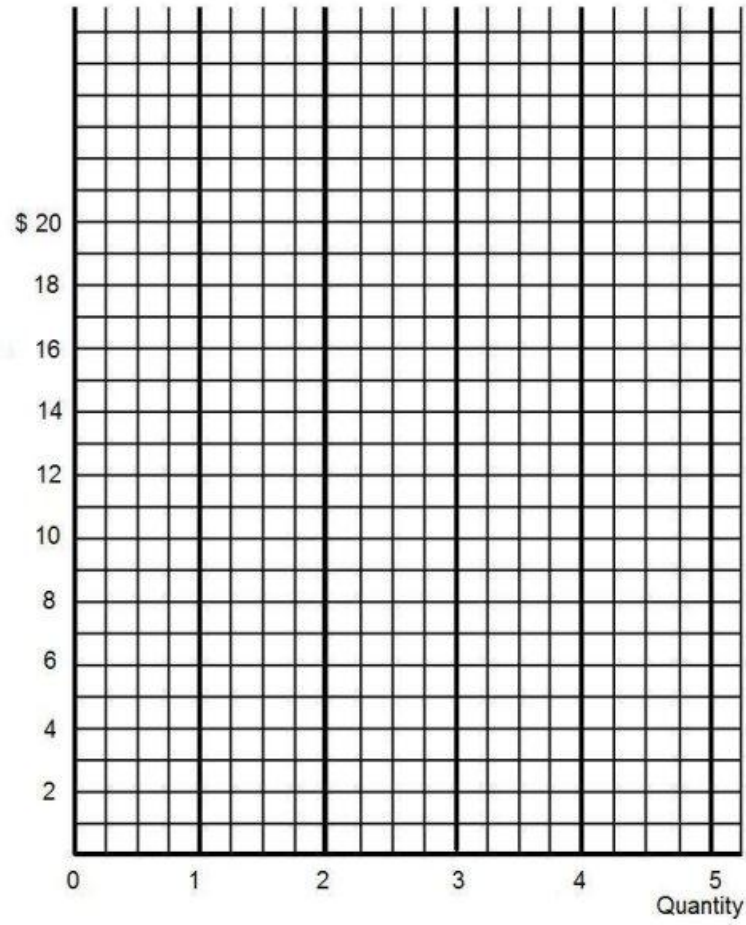
1. AR and MR
2. AR, MR, ATC, and MC
3. TR and TC

AR and MR



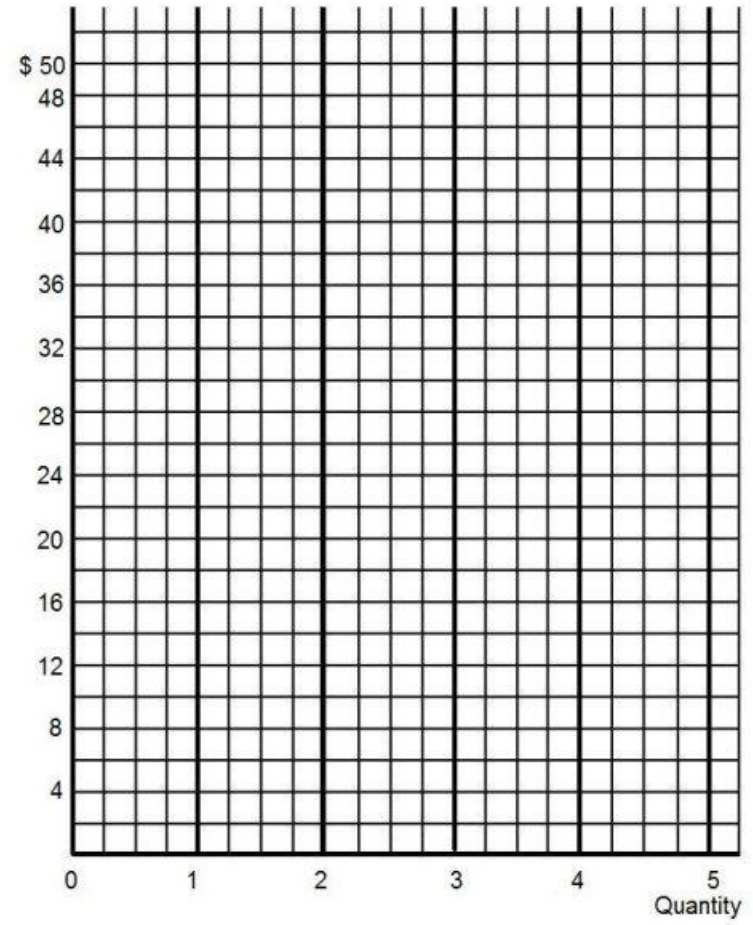
AR, MR, ATC, and MC

Costs,  
Revenue



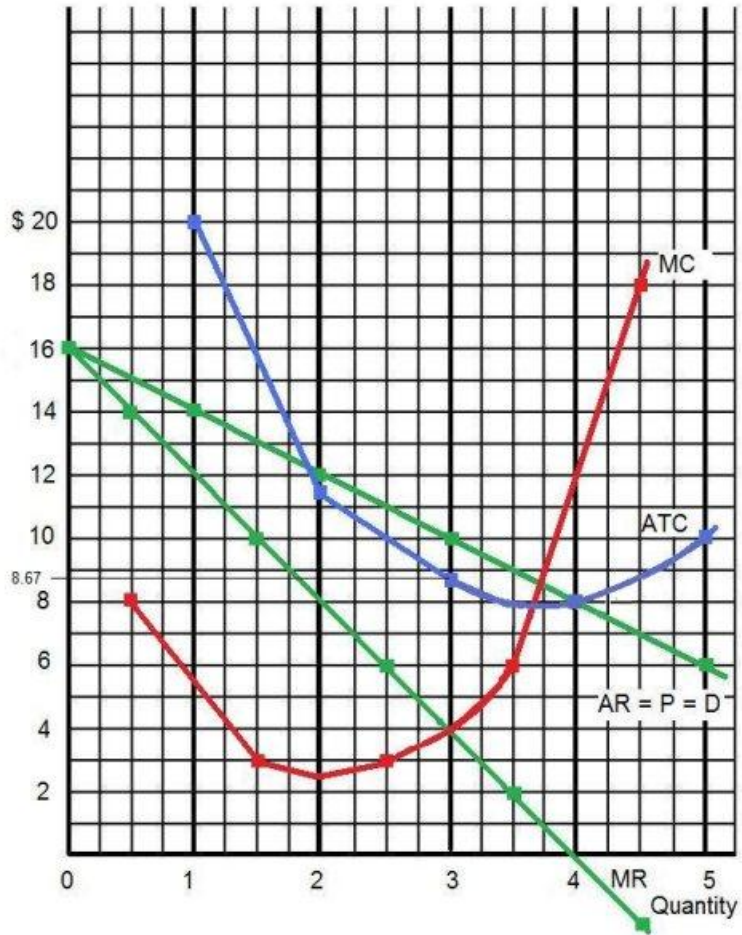
TC and TR

Costs,  
Revenue



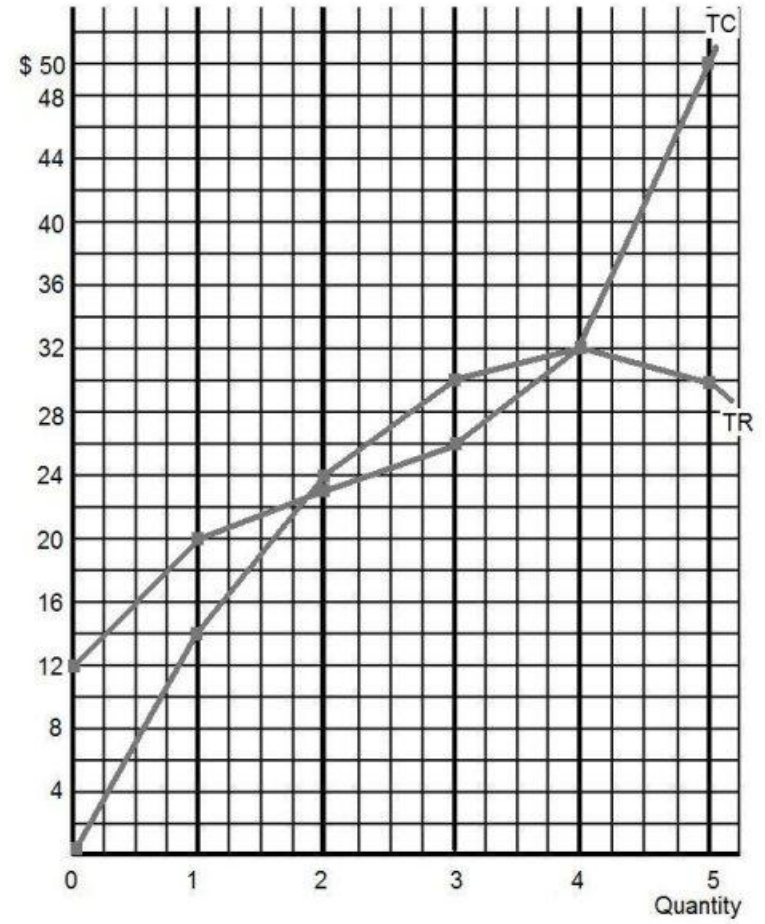
AR, MR, ATC, and MC

Costs,  
Revenue



TC and TR

Costs,  
Revenue

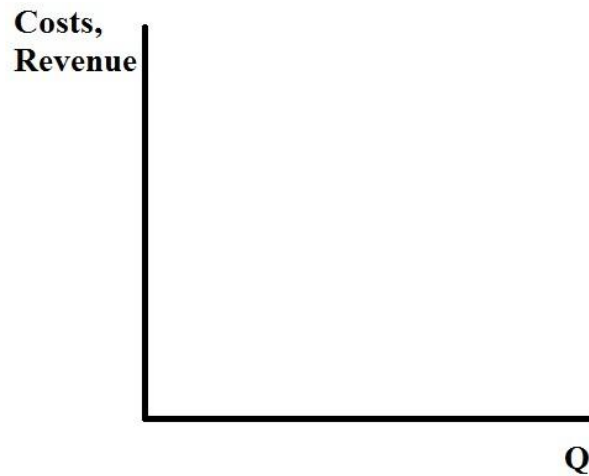


**WORKSHEET: Monopoly in the Short Run**

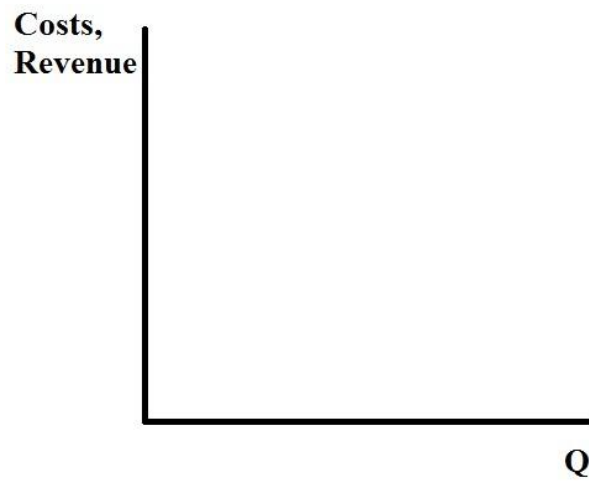
**10a**

Sketch graphs of a pure monopoly in the short run earning (1) profits, (2) losses, but continuing to produce, and (3) losses, but shutting down. Indicate the equilibrium price, quantity, and profits or losses.

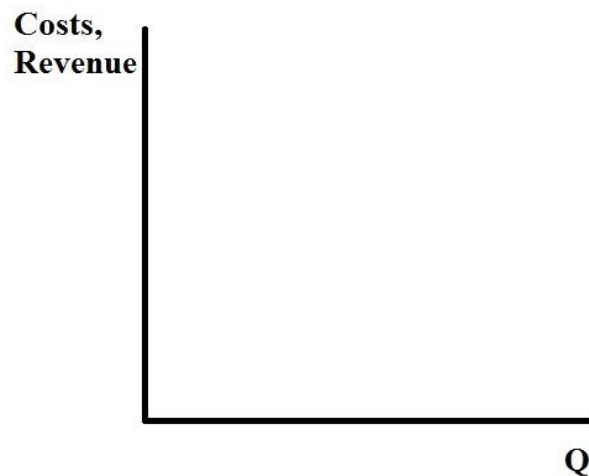
(4) PROFITS



(5) LOSSES, BUT CONTINUING TO PRODUCE



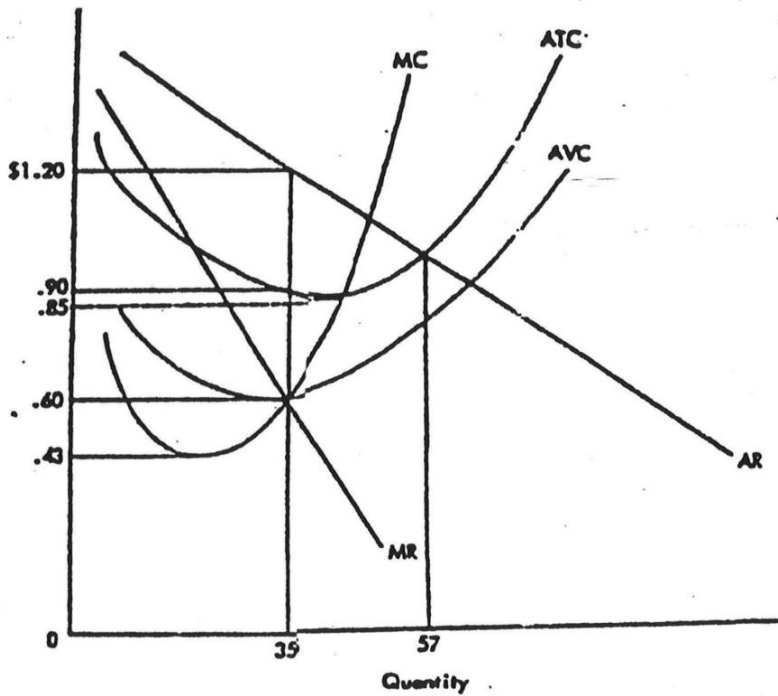
(6) LOSSES, BUT SHUTTING DOWN



**WORKSHEET: Monopoly in the Short Run**

**10a**

Use the cost and revenue curves below to answer the questions that follow. Assume the firm is a profit maximizer.



1. Q = \_\_\_\_\_
2. P = \_\_\_\_\_
3. Will this firm produce this quantity? \_\_\_\_\_
4. AR = \_\_\_\_\_
5. TR = \_\_\_\_\_
6. ATC = \_\_\_\_\_
7. TC = \_\_\_\_\_
8. Does this firm earn profits or losses? \_\_\_\_\_
9. Profits or losses = \_\_\_\_\_
10. At this quantity, AFC = \_\_\_\_\_
11. TFC = \_\_\_\_\_



12. If the price dropped to \$.75 (due to decreased demand), *ceterus paribus*, will this firm continue to produce in the short run? \_\_\_\_\_

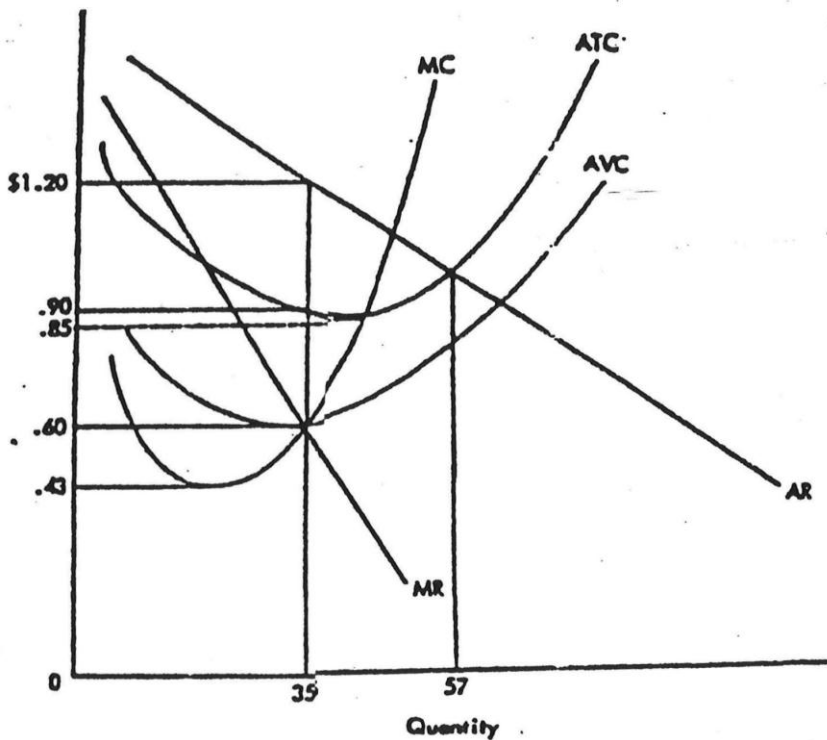
13. Will it now earn profits or losses? \_\_\_\_\_

14. Why does it continue to produce?  
\_\_\_\_\_

15. If the price dropped to \$.45 will this firm continue to produce? \_\_\_\_\_

16. Is this firm achieving productive efficiency? Explain.  
\_\_\_\_\_  
\_\_\_\_\_

17. Could the monopolist “afford” to expand production to the level where price equals ATC, an output of 57 in this example? Explain.  
\_\_\_\_\_  
\_\_\_\_\_



Total Output	Price	Marginal Revenue	Average Total Cost	Marginal Cost
1	\$100	\$100	\$100.00	\$30
2	90	80	63.00	26
3	80	60	52.67	32
4	70	40	49.50	40
5	60	20	49.60	50
6	50	0	50.00	52
7	40	-20	52.29	66
8	30	-40	55.75	80
9	20	-60	60.67	100
10	10	-80	67.60	130

**1. Refer to the above data for a nondiscriminating monopolist. This firm will maximize its profit by producing:**

1. 3 units.
2. 4 units.
3. 5 units.
4. 6 units.

**2. Refer to the above data for a nondiscriminating monopolist. At its profit-maximizing output, this firm will be operating in the:**

1. perfectly elastic portion of its demand curve.
2. perfectly inelastic portion of its demand curve.
3. elastic portion of its demand curve.
4. inelastic portion of its demand curve.

**3. Refer to the above data for a nondiscriminating monopolist. At its profit-maximizing output, this firm's total profit will be:**

1. \$82.
2. zero.
3. \$54.
4. \$27.

**4. If the above data was for a PERFECTLY PRICE DISCRIMINATING MONOPOLIST it would maximize its profits by producing what quantity?**

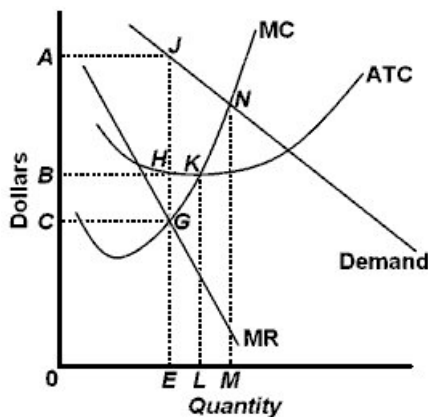
1. 3 units.
2. 4 units.
3. 5 units.
4. 6 units.

**5. If the above data was for a PERFECTLY PRICE DISCRIMINATING MONOPOLIST what would its total revenues be at the profit maximizing quantity?**

1. \$60
2. \$300
3. \$400
4. zero

**6. If the above data was for a PERFECTLY PRICE DISCRIMINATING MONOPOLIST what would its profits be at the profit maximizing quantity?**

1. zero
2. \$152
3. \$248
4. \$400



**7. Refer to the above diagram. To maximize profits or minimize losses this firm should produce:**

1.  $E$  units and charge price  $C$ .
2.  $E$  units and charge price  $A$ .
3.  $M$  units and charge price  $N$ .
4.  $L$  units and charge price  $LK$ .

**8. Refer to the above diagram. At the profit-maximizing level of output, total revenue will be:**

1.  $NM$  times  $OM$ .
2.  $OAJE$ .
3.  $0EGC$ .
4.  $0EHB$ .

**9. Refer to the above diagram. At the profit-maximizing level of output, total cost will be:**

1.  $NM$  times  $OM$ .
2.  $OAJE$ .
3.  $0CGC$ .
4.  $0BHE$ .

**10. Refer to the above diagram. At the profit-maximizing level of output, the firm will realize:**

1. an economic profit of  $ABHJ$ .
2. an economic profit of  $ACGJ$ .
3. a loss of  $GH$  per unit.
4. a loss of  $JH$  per unit.

**Monopoly: Long Run Equilibrium**

**10b**

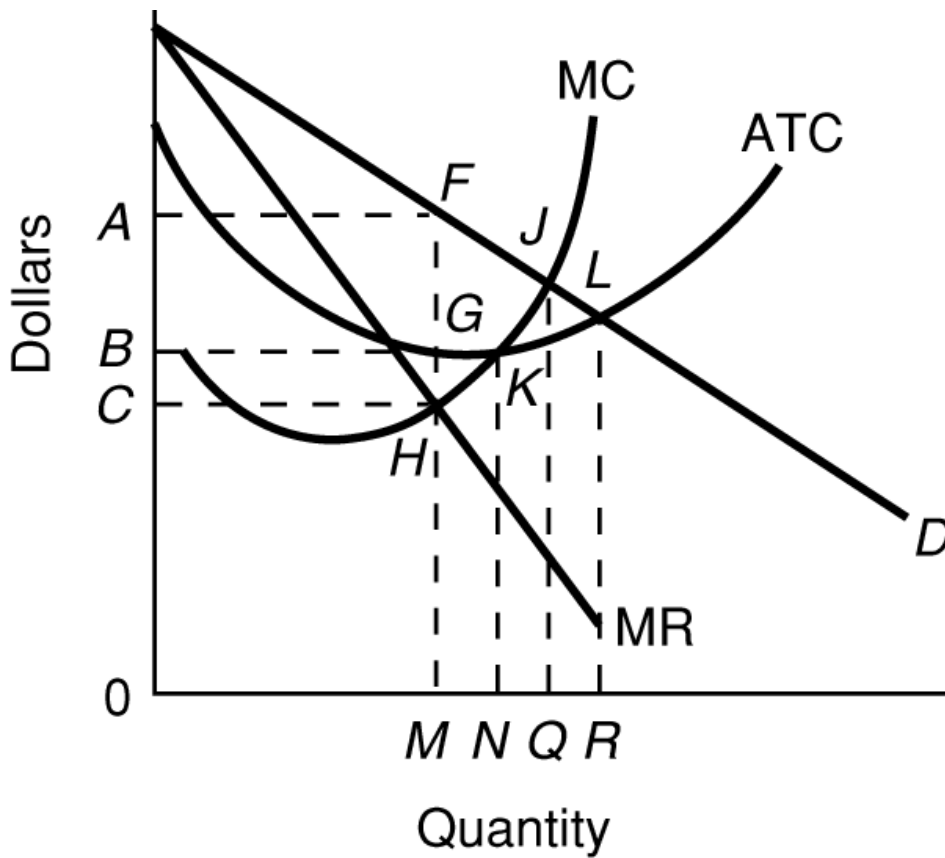
What is the profit maximizing quantity? \_\_\_\_\_

What is the profit maximizing price? \_\_\_\_\_

What is the allocatively efficient quantity? \_\_\_\_\_

What is the productively efficient quantity? \_\_\_\_\_

What are the long run profits? \_\_\_\_\_



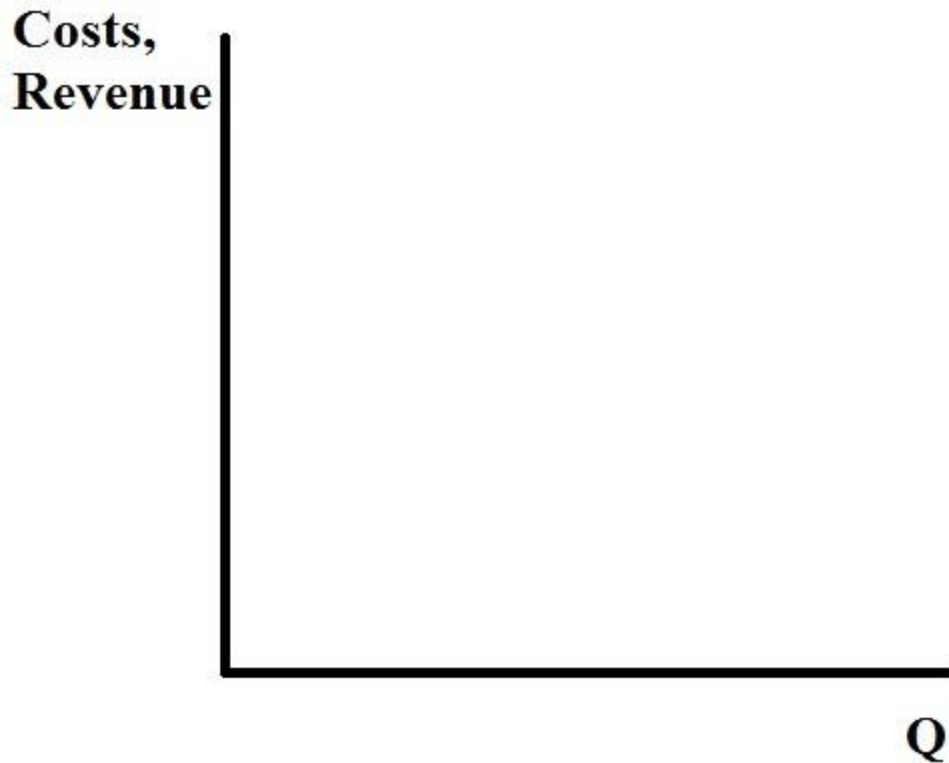
## Monopoly (Single-price): Long Run Equilibrium

10b

Draw a graph of a monopoly in long run equilibrium.

On the graph indicate the (1) profit maximizing quantity and price, (2) the allocatively efficient quantity, and (3) the productively efficient quantity, and write the rules (formulas) you used to find each.

Indicate the profits on the graph.



**Regulated Monopoly: Long Run Equilibrium**

10b

Use the graph below to answer the following questions:

What is the allocatively efficient quantity? \_\_\_\_\_

What is the productively efficient quantity? \_\_\_\_\_

If not regulated:

What is the profit maximizing quantity? \_\_\_\_\_

What is the profit maximizing price? \_\_\_\_\_

If not regulated what are the profits? \_\_\_\_\_

If this monopoly charged the allocatively efficient price:

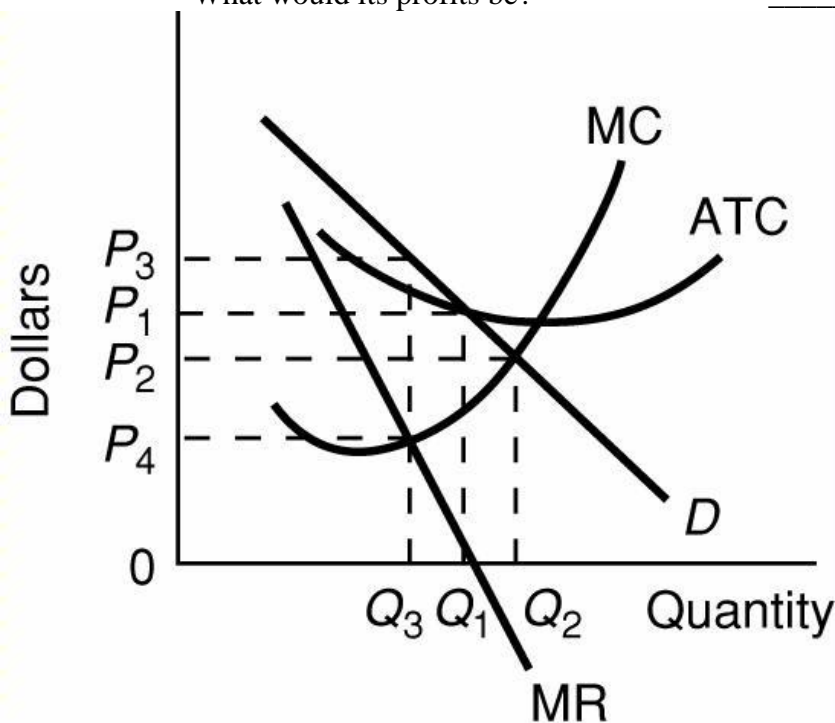
What price would it charge? \_\_\_\_\_

What would its profits be? \_\_\_\_\_

If this monopoly is regulated and forced to charge the “fair-return price (AC pricing):

What price would it charge? \_\_\_\_\_

What would its profits be? \_\_\_\_\_



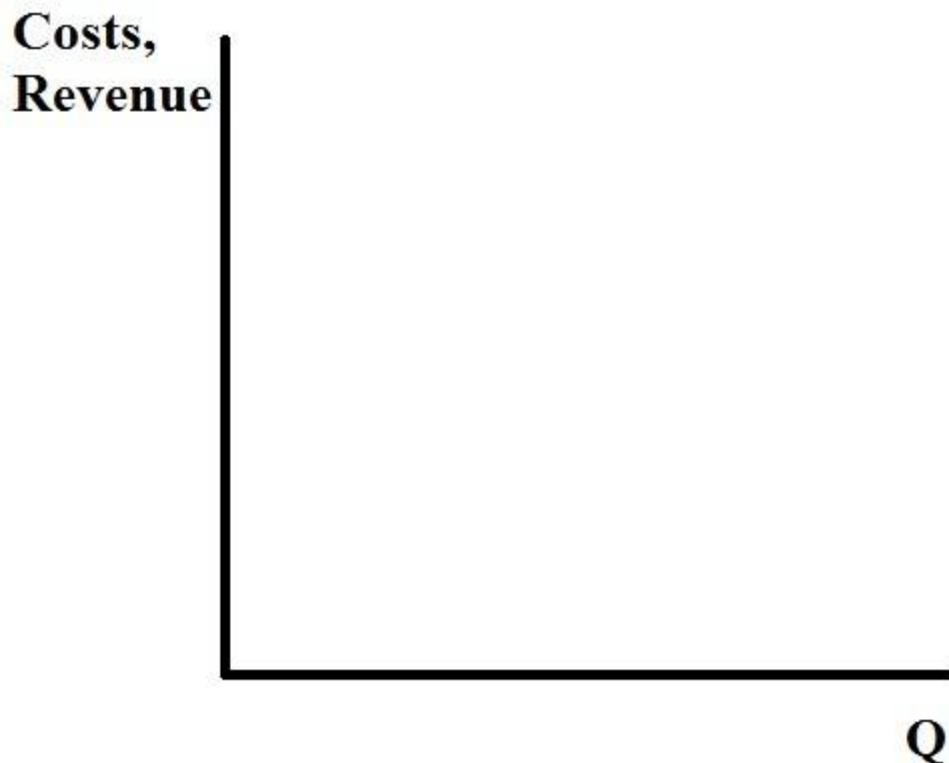
## Regulated Monopoly: Long Run Equilibrium

10b

Draw a graph of a natural monopoly in long run equilibrium.

On the graph indicate:

- The allocatively efficient quantity.
- The productively efficient quantity.
- If not regulated, the profit maximizing quantity and price.
- The price and quantity if this monopoly is regulated using the “fair-return” (AC) .





**Perfectly Price Discriminating Monopoly: Long Run Equilibrium**

**11b**

We have been assuming that monopolies charge the same price to all customers (Single-Price Monopoly). What happens to efficiency if the monopoly can price discriminate perfectly, charging the highest price that each customer will pay? Hint: the MR curve will be the same as the demand (price) curve ( $P=MR$ ).

What is the profit maximizing quantity? \_\_\_\_\_

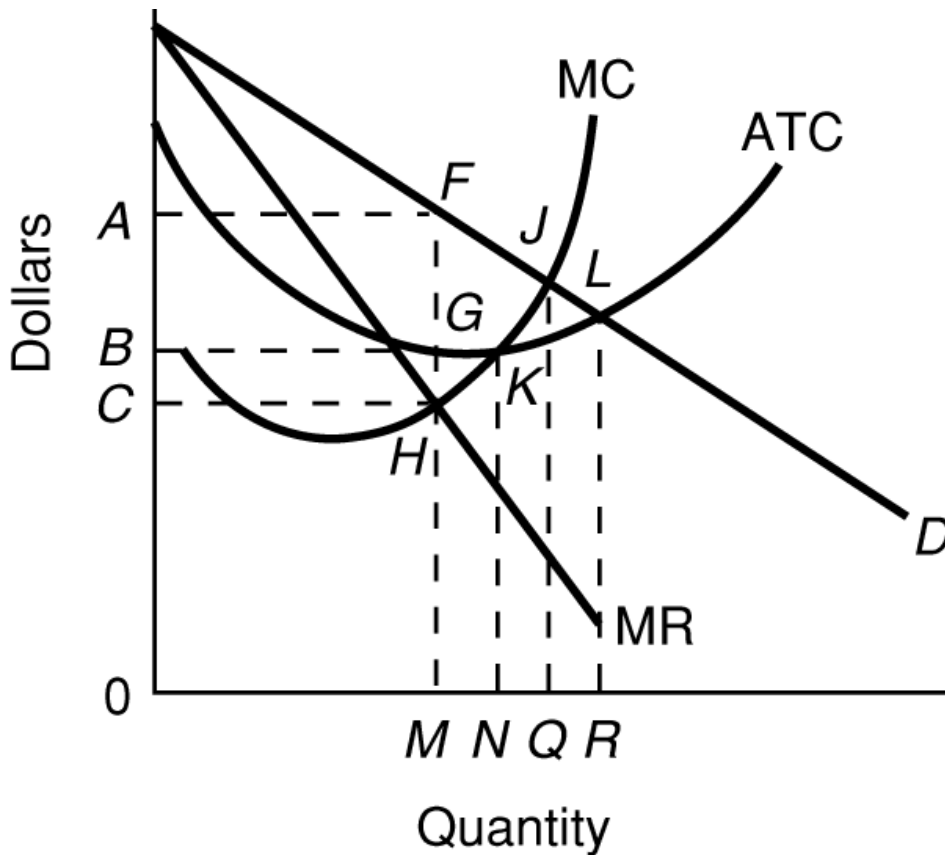
What is the profit maximizing price? \_\_\_\_\_

How does this quantity and price compare with that produced by a single-price monopolist?

What is the allocatively efficient quantity? \_\_\_\_\_

What is the productively efficient quantity? \_\_\_\_\_

What are the long run profits? \_\_\_\_\_



**1. At its profit-maximizing output, a pure nondiscriminating monopolist achieves:**

1. neither productive efficiency nor allocative efficiency.
2. both productive efficiency and allocative efficiency.
3. productive efficiency but not allocative efficiency.
4. allocative efficiency but not productive efficiency.

**2. The profit-maximizing output of a pure monopoly is allocatively inefficient because in equilibrium:**

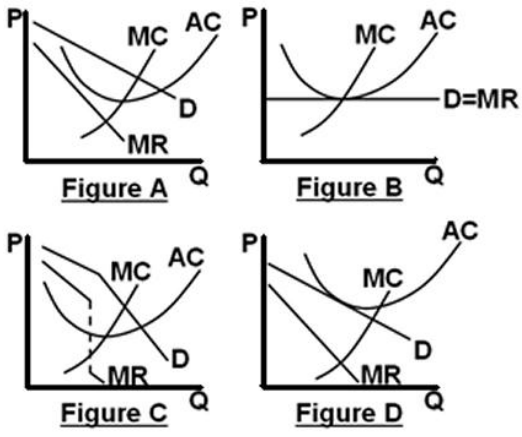
1. price equals minimum average total cost.
2. marginal revenue equals marginal cost.
3. marginal cost exceeds price.
4. price exceeds marginal cost.

**3. Comparing a pure monopoly and a purely competitive firm with identical costs, we would find in long-run equilibrium that the pure monopolist's:**

1. price, output, and average total cost would all be higher.
2. price and average total cost would be higher, but output would be lower.
3. price, output, and average total cost would all be lower.
4. price and output would be lower, but average total cost would be higher.

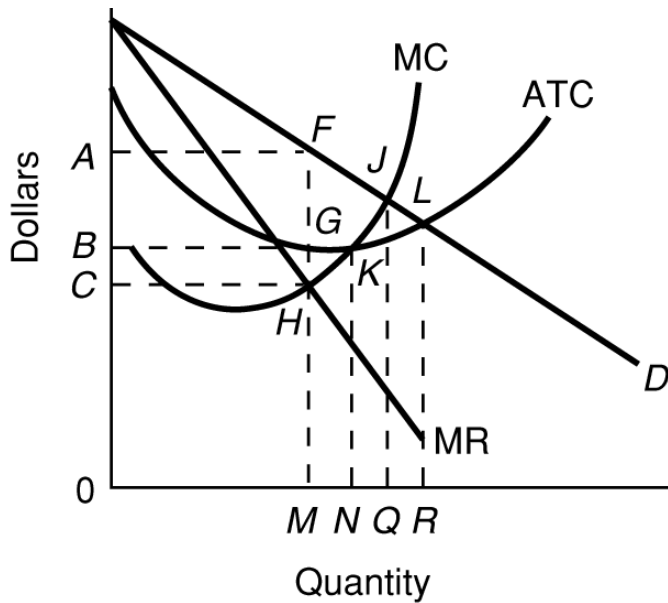
**4. X-inefficiency refers to a situation in which a firm:**

1. is not as technologically progressive as it might be.
2. encounters diseconomies of scale.
3. fails to realize all existing economies of scale.
4. fails to achieve the minimum average total costs attainable at each level of output.



5. The monopolistic (monopoly) market model in long run equilibrium is portrayed in the above figures by:

1. Figure A.
2. Figure B.
3. Figure C.
4. Figure D.



6. Use the figure above for a monopoly in long run equilibrium to answer this question. What quantity will this monopolist produce and what price will it charge?

1. quantity 0Q; price 0B
2. quantity 0M; price 0C
3. quantity 0M; price 0A
4. quantity 0n; price 0B

7. Use the figure above for a monopoly in long run equilibrium to answer this question. The allocatively efficient quantity is

1. 0M
2. 0N
3. 0Q
4. 0R

8. Use the figure above for a monopoly in long run equilibrium to answer this question. The productively efficient quantity is

1. 0M
2. 0N
3. 0Q
4. 0R

9. Use the figure above for a monopoly in long run equilibrium to answer this question. In long run equilibrium this firm will

1. produce too much.
2. produce too little.
3. produce the efficient quantity.
4. not produce anything at all.

1. What are “four-firm” concentration ratios? How do economists use them to define monopolistically competitive industries and oligopolistic industries?
  
2. What is the Herfindahl index and how is it calculated? How do economists use them to define monopolistically competitive industries and oligopolistic industries?
  
3. Assume that the short-run cost and demand data given in the table below confront a monopolistic competitor selling a given product and engaged in a given amount of product promotion. Compute the marginal cost and marginal revenue of each unit of output and enter these figures in the table.

Output	Total cost	Marginal cost	Quantity demanded	Price	Marginal revenue
0	\$ 25		0	\$60	
1	40	\$_____	1	55	\$_____
2	45	_____	2	50	_____
3	55	_____	3	45	_____
4	70	_____	4	40	_____
5	90	_____	5	35	_____
6	115	_____	6	30	_____
7	145	_____	7	25	_____
8	180	_____	8	20	_____
9	220	_____	9	15	_____
10	265	_____	10	10	_____

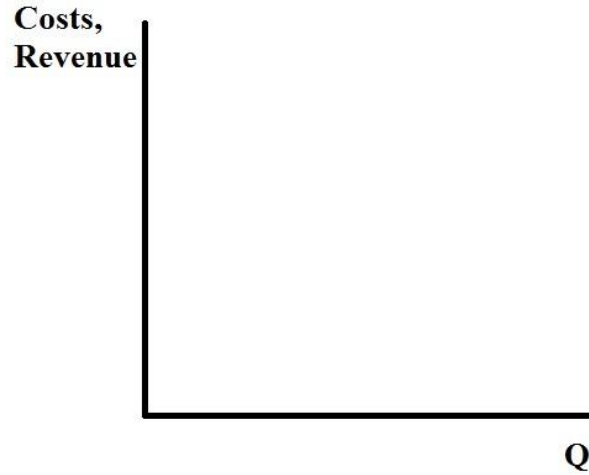
- (a) At what output level and at what price will the firm produce in the short run? What will be the total profit?
  
- (b) What will happen to demand, price, and profit in the long run?

**WORKSHEET: Monopolistic Competition in the Short Run**

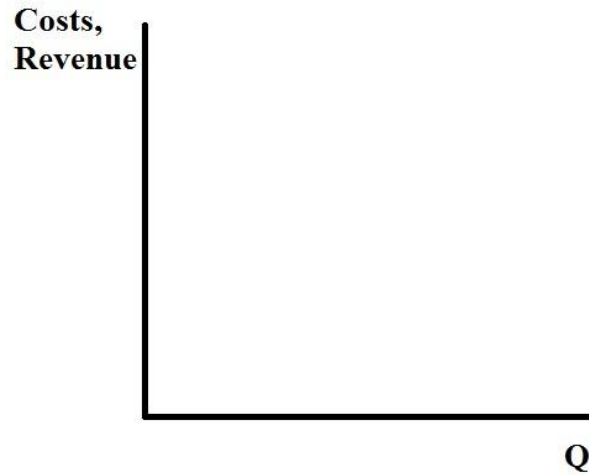
**11a**

Sketch graphs of a monopolistically competitive firm in the short run earning (1) profits, (2) losses, but continuing to produce, and (3) losses, but shutting down. Indicate the profit maximizing price, quantity, and profits or losses.

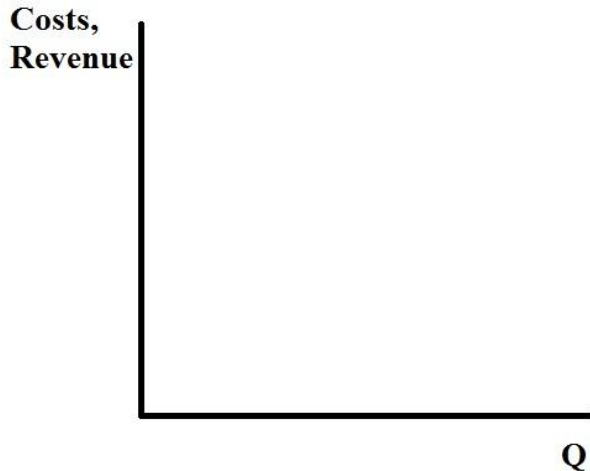
PROFITS



LOSSES, BUT CONTINUING TO PRODUCE



LOSSES, BUT SHUTTING DOWN

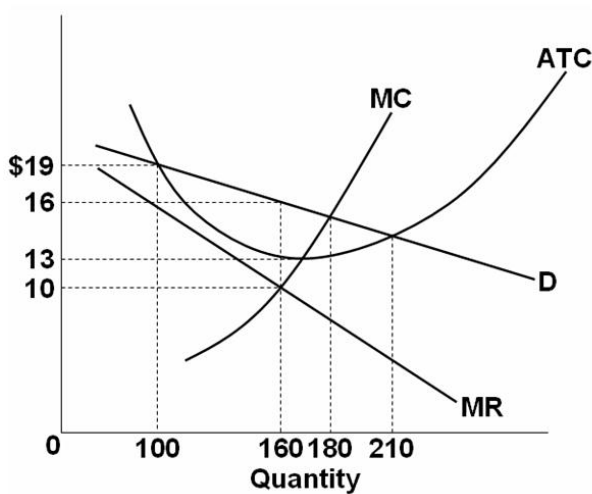


**1. Which of the following is *not* a basic characteristic of monopolistic competition?**

- A. the use of trademarks and brand names
- B. recognized mutual interdependence
- C. product differentiation
- D. a relatively large number of sellers

**2. Nonprice competition refers to:**

- A. competition between products of different industries, for example, competition between aluminum and steel in the manufacture of automobile parts.
- B. price increases by a firm that are ignored by its rivals.
- C. advertising, product promotion, and changes in the real or perceived characteristics of a product.
- D. reductions in production costs that are not reflected in price reductions.



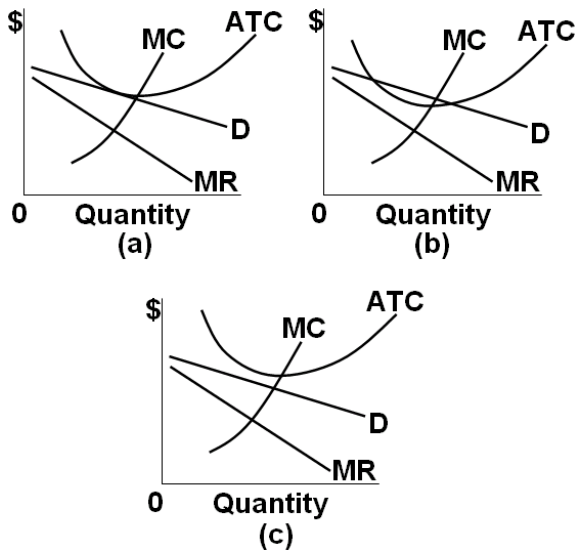
**3. Refer to the above diagram for a monopolistically competitive firm in short-run equilibrium.**

**This firm will realize an economic:**

- 1. loss of \$320.
- 2. profit of \$480.
- 3. profit of \$280.
- 4. profit of \$600.

**4. In the short run a monopolistically competitive firm's economic profit:**

- 1. will be maximized where price equals average total cost.
- 2. may be positive, zero, or negative.
- 3. are always positive.
- 4. will always be zero.



**5. Refer to the above diagrams, which pertain to monopolistically competitive firms. Short-run equilibrium entailing economic loss is shown by:**

1. diagram *a* only.
2. diagram *b* only.
3. diagram *c* only.
4. both diagrams *a* and *c*.

**6. Refer to the above diagrams, which pertain to monopolistically competitive firms. A short-run equilibrium entailing economic profits is shown by:**

1. diagram *a* only.
2. diagram *b* only.
3. diagram *c* only.
4. both diagrams *b* and *c*.

**7. A monopolistically competitive industry combines elements of both *competition* and *monopoly*. The monopoly element results from:**

- A. the likelihood of collusion.
- B. high entry barriers.
- C. product differentiation.
- D. mutual interdependence in decision making.

**8. A monopolistically competitive firm has a:**

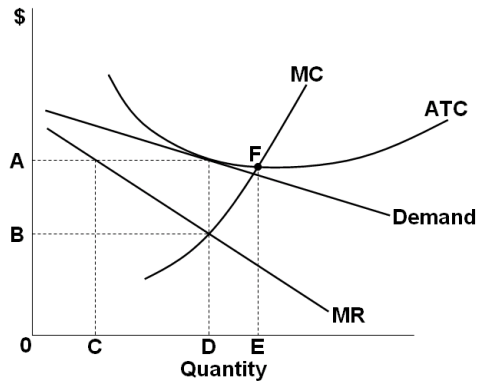
- A. highly elastic demand curve.
- B. highly inelastic demand curve.
- C. perfectly inelastic demand curve.
- D. perfectly elastic demand curve.



**WORKSHEET: Monopolistic Competition: Long Run Equilibrium**

**10b**

1. Explain why the following graph is likely to represent the long-run equilibrium for a representative firm in monopolistic competition. What will be the product price, output, and amount of economic profit?



2. In theory, the representative firm in monopolistic competition earns only a normal profit. Why might that outcome not always occur in the real world of small firms
3. Use the graphs below to answer the following questions:

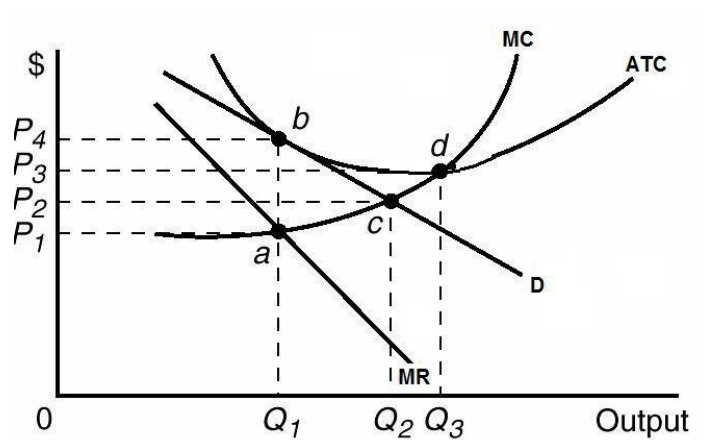
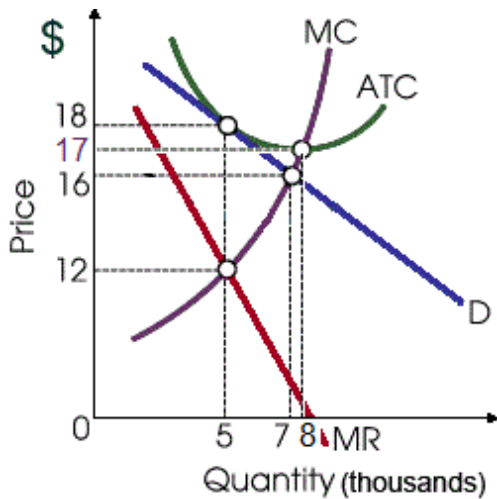
What is the profit maximizing quantity? \_\_\_\_\_

What is the profit maximizing price? \_\_\_\_\_

What is the allocatively efficient quantity? \_\_\_\_\_

What is the productively efficient quantity? \_\_\_\_\_

What are the long run profits? \_\_\_\_\_



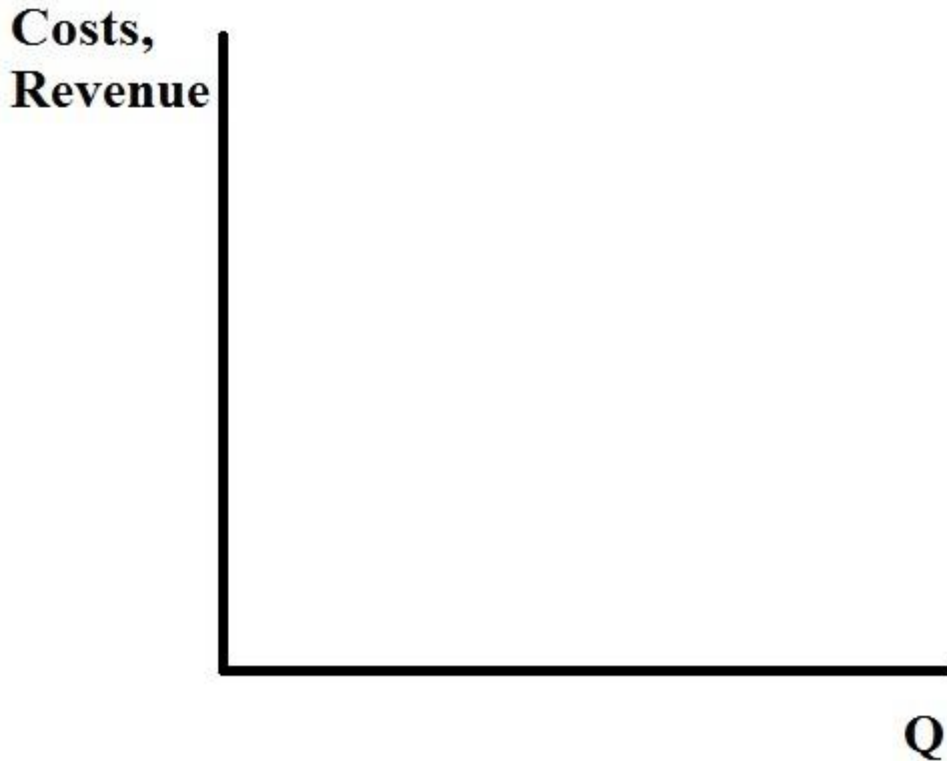
**WORKSHEET: Monopolistic Competition: Long Run Equilibrium**

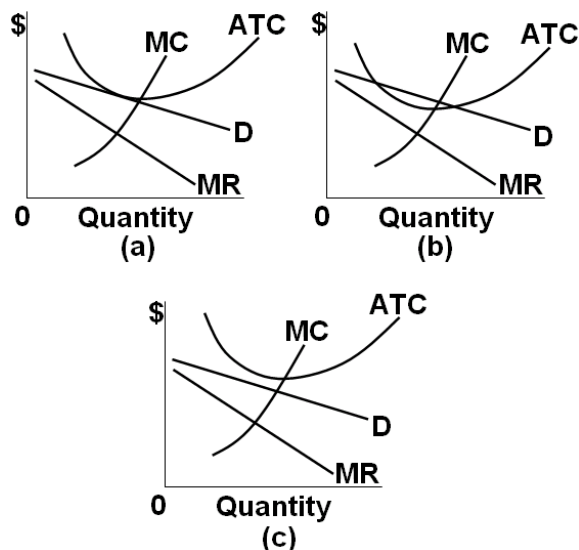
**11a**

Draw a graph of a monopolistically competitive firm in long run equilibrium.

On the graph indicate the (1) profit maximizing quantity and price, (2) the allocatively efficient quantity, and (3) the productively efficient quantity, and write the rules (formulas) you used to find each.

Indicate the profits on the graph.





**1. Refer to the above diagrams, which pertain to monopolistically competitive firms. Long-run equilibrium is shown by:**

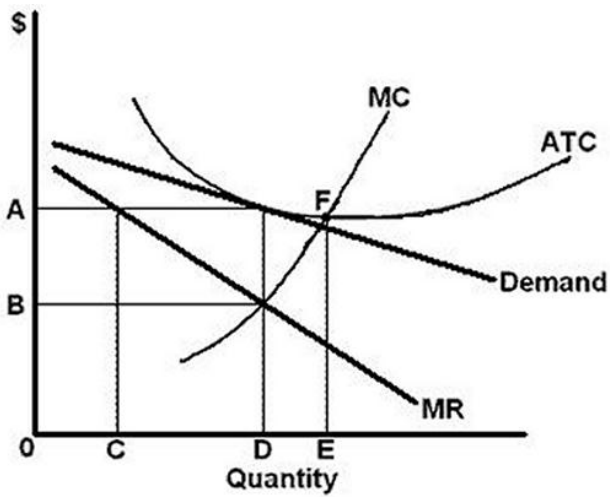
1. diagram *a* only.
2. diagram *b* only.
3. diagram *c* only.
4. both diagrams *b* and *c*.

**2. Long-run equilibrium for a monopolistically competitive firm where economic profits are zero results from:**

1. rising marginal costs.
2. a perfectly elastic product demand curve.
3. relatively easy entry.
4. product differentiation and development.

**3. Other things equal, if more firms enter a monopolistically competitive industry:**

- A. the demand curves facing existing firms would shift to the right.
- B. the demand curves facing existing firms would shift to the left.
- C. the demand curves facing existing firms would become less elastic.
- D. losses would necessarily occur.



4. Refer to the above diagram for a monopolistically competitive firm. Long-run equilibrium price will be:

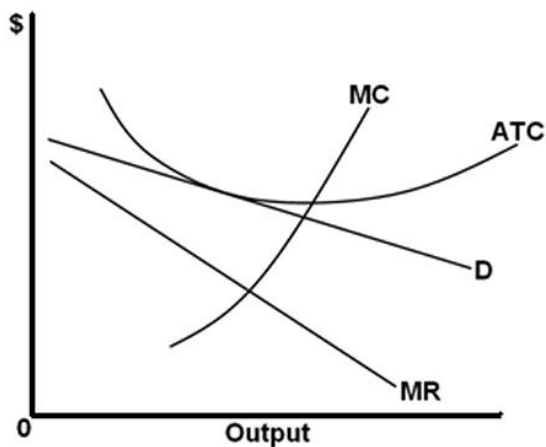
1. above A.
2.  $EF$ .
3. A.
4. B.

5. Refer to the above diagram for a monopolistically competitive firm. Long-run equilibrium output will be:

1. greater than  $E$ .
2.  $E$ .
3.  $D$ .
4.  $C$ .

6. Which of the following is *not* characteristic of long-run equilibrium under monopolistic competition?

1. price equals minimum average total cost
2. marginal cost equals marginal revenue
3. price is equal to average total cost
4. price exceeds marginal cost



**7. In long-run equilibrium, the firm shown in the diagram above will:**

1. earn a normal profit.
2. go bankrupt.
3. incur a loss.
4. realize an economic profit.

**8. In long-run equilibrium, production for the firm shown in the diagram above is:**

1. greater than would occur under pure competition.
2. less efficient than in a purely competitive market.
3. more efficient than in a purely competitive market.
4. optimally efficient.

**9. When a monopolistically competitive firm is in long-run equilibrium:**

1. production takes place where ATC is minimized.
2. marginal revenue equals marginal cost and price equals average total cost.
3. normal profit is zero and price equals marginal cost.
4. economic profit is zero and price equals marginal cost.

**10. In the long run, new firms will enter a monopolistically competitive industry:**

1. provided economies of scale are being realized.
2. even though losses are incurred in the short run.
3. until minimum average total cost is achieved.
4. until economic profits are zero.

**11. If some firms leave a monopolistically competitive industry, the demand curves of the remaining firms will:**

1. be unaffected.
2. shift to the left.
3. become more elastic.
4. shift to the right.

**12. When a monopolistically competitive firm is in long-run equilibrium:**

1.  $P = MC = ATC$ .
2.  $MR = MC$  and minimum  $ATC > P$ .
3.  $MR > MC$  and  $P = \text{minimum ATC}$ .
4.  $MR = MC$  and  $P > \text{minimum ATC}$ .

1. The market shares of firms in three different industries are listed in the table below. Use this information to calculate the Herfindahl index for each industry.

	<b>Industry</b>		
<b>Firms</b>	<b>1</b>	<b>2</b>	<b>3</b>
1	65	70	35
2	15	15	35
3	10	10	30
4	5	5	–
5	5	–	–
Herfindahl Index			

- (a) Which industry is has the greatest market power? The least?
- (b) Based on your findings, is the number of firms in the industry a good predictor of the competitiveness of an industry? Why or why not?

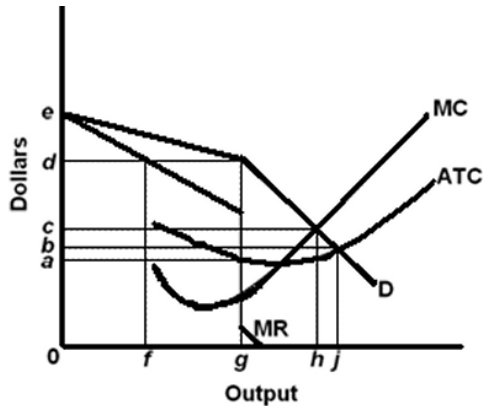
2. Describe the essential features of the kinked-demand model of oligopoly pricing.

3. The kinked-demand schedule that an oligopolist believes confronts the firm is given in the table below. Compute the oligopolist’s total revenue at each of the nine prices, and enter these figures in the table. Also compute marginal revenue *for each unit* between the nine prices and enter these figures in the table.

<b>Price</b>	<b>Quantity demanded</b>	<b>Total revenue</b>	<b>Marginal revenue per unit</b>
\$5.80	50	\$_____	
5.60	100	_____	\$_____
5.40	150	_____	_____
5.20	200	_____	_____
5.00	250	_____	_____
4.80	264	_____	_____
4.60	279	_____	_____
4.40	288	_____	_____
4.20	300	_____	_____

- (a) Where is the “kink” in the demand curve? What is the current selling price at that kink and how much output will be demanded?
- (b) What is the range of marginal cost that will keep the price set at the kink?

## Quick Quiz -- Oligopoly – Short Run



**1. The above diagram portrays:**

1. pure competition.
2. collusive oligopoly.
3. noncollusive oligopoly.
4. pure monopoly.

**2. Refer to the above diagram. Equilibrium output is:**

1. *j*.
2. *h*.
3. *g*.
4. *f*.

**3. Refer to the above diagram. Equilibrium price is:**

1. *e*.
2. *d*.
3. *c*.
4. *b*.

**4. Refer to the above diagram. This firm's demand and marginal revenue curves are based on the assumption that:**

1. the firm has no immediate rivals.
2. rivals will match both a price increase and a price decrease.
3. rivals will match a price increase, but ignore a price decrease.
4. rivals will ignore a price increase, but match a price decrease.

**5. Refer to the above diagram. In equilibrium the firm:**

1. is realizing an economic profit of *ad* per unit.
2. should close down in the short run.
3. is incurring a loss.
4. is realizing an economic profit of *bd* per unit.



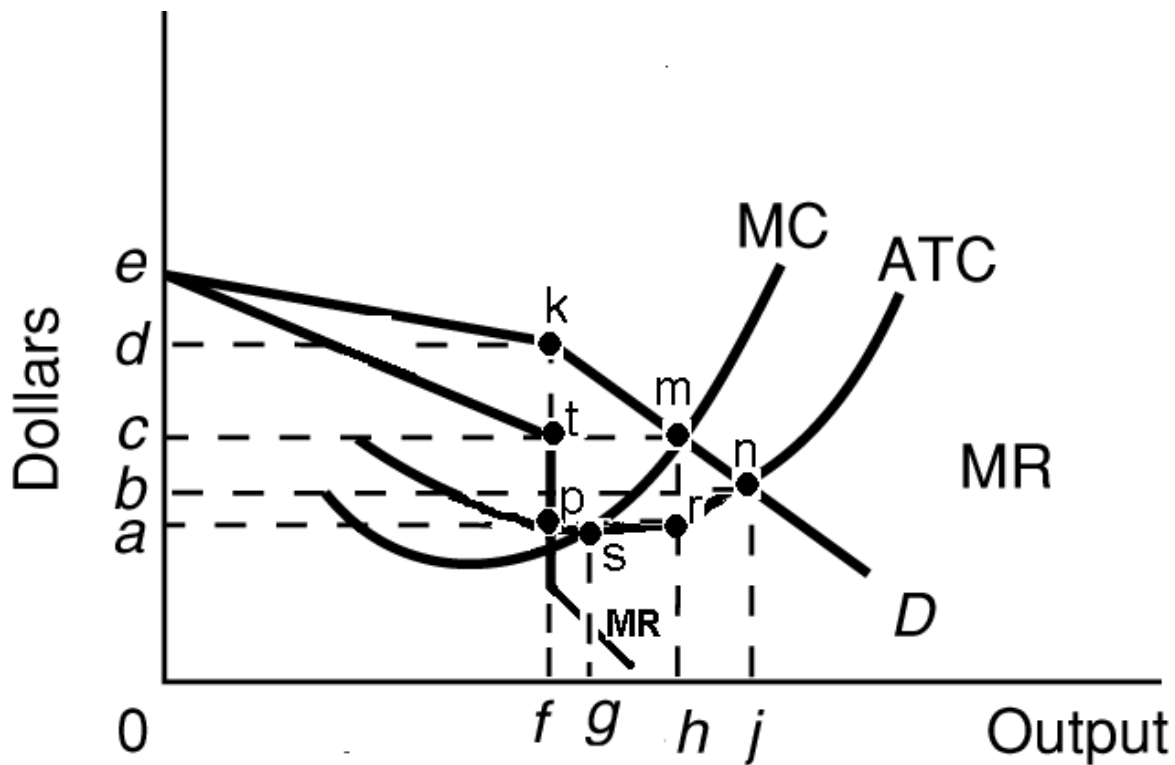
What is the profit maximizing quantity? \_\_\_\_\_

What is the profit maximizing price? \_\_\_\_\_

What is the allocatively efficient quantity? \_\_\_\_\_

What is the productively efficient quantity? \_\_\_\_\_

What are the long run profits? \_\_\_\_\_



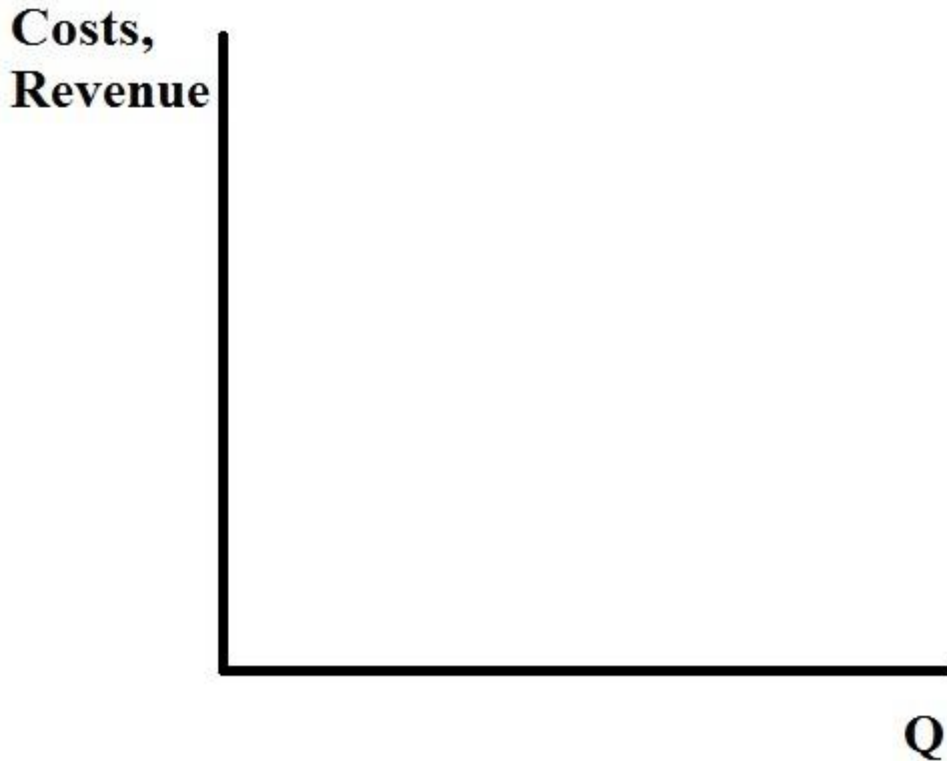
**WORKSHEET: Oligopoly - Long Run Equilibrium – Kinked Demand Model**

**11b**

Draw a graph of an oligopolistic firm in long run equilibrium using the kinked demand model.

On the graph indicate the (1) profit maximizing quantity and price, (2) the allocatively efficient quantity, and (3) the productively efficient quantity, and write the rules (formulas) you used to find each.

Indicate the profits on the graph.



**1. We would expect a cartel to achieve:**

1. both allocative efficiency and productive efficiency.
2. allocative efficiency, but not productive efficiency.
3. productive efficiency, but not allocative efficiency.
4. neither allocative efficiency nor productive efficiency.

**2. Suppose that a particular industry has a four-firm concentration ratio of 85 and a Herfindahl Index of 3,000. Most likely, this industry would achieve:**

1. both productive efficiency and allocative efficiency.
2. allocative efficiency but not productive efficiency.
3. neither productive efficiency nor allocative efficiency.
4. productive efficiency but not allocative efficiency.

**3. Suppose that an industry is characterized by a few firms and price leadership. We would expect that:**

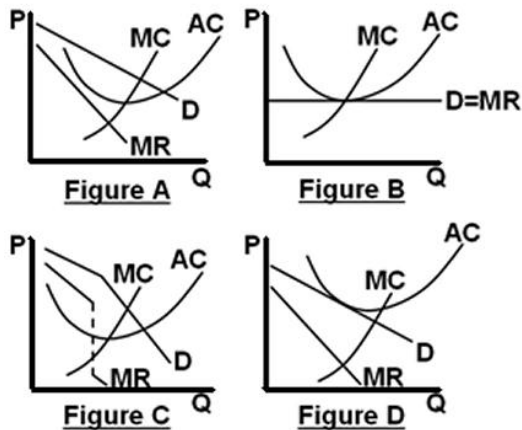
1. price would equal marginal cost.
2. price would equal average total cost.
3. price would exceed both marginal cost and average total cost.
4. marginal revenue would exceed marginal cost.

**4. The conclusion that oligopoly is inefficient relative to the competitive ideal must be qualified because:**

1. industry price leaders often select a price equal to marginal cost.
2. over time oligopolistic industries may promote more rapid product development and greater improvement of production techniques than if they were purely competitive.
3. increased output due to persuasive advertising may perfectly offset the restriction of output caused by monopoly power.
4. many oligopolists sell their products in monopolistically competitive or even purely competitive industries.

## All Market Models – Long Run – Quick Quiz

The graphs below show the long run equilibrium for each of the four product market models.



**1. The purely competitive market model is portrayed in the above figures by:**

1. Figure A.
2. Figure B.
3. Both Figures B and D.
4. Figure C.

**2. Refer to the above figures. We would expect industry entry and exit to be relatively easy in:**

1. Figure A only.
2. Figure C only.
3. Both Figures A and D.
4. Both Figures B and D.

**3. Refer to the above figures. Both allocative and productive efficiency are being realized in:**

1. All four figures.
2. Figures B and D.
3. Figure D only.
4. Figure B only.

**4. Refer to the above figures. Collusion is most likely to occur in the industry(ies) represented by:**

1. Figure A.
2. Figure B.
3. Figure C.
4. Both Figures B and D.

**5. Refer to the above figures. Product differentiation may be present in:**

1. Figure A only.
2. Figure B only.
3. Figure C only.
4. Both Figures C and D.

**6. Refer to the above figures. Government regulation of price and service is most likely to occur in:**

1. Figure A only.
2. Figure D only.
3. Both Figures A and C.
4. Both Figures A and D.

**7. Refer to the above figures. Long-run economic profits are most likely to occur in:**

1. Figures A and B.
2. Figure B only.
3. Figure D.
4. Figures A and C.

**8. Refer to the above figures. Industry entry is likely to be most difficult in:**

1. Figure A.
2. Figure B.
3. Figure C.
4. Figure D.

**9. Refer to the above figures. A homogeneous or standardized product is most likely to be produced in:**

1. Figure A.
2. Figure B.
3. Figure C.
4. Figure D.