ACTIVITY 34
Costs and Competitive Market Supply (Perfect Competition)

Part A. One Firm in the Short Run

1. The Fiasco Company is a perfectly competitive firm whose daily costs of production (including a “normal” rate of profit) in the short run are as follows:

The Fiasco Company’s Cost Table

Output (Per day)	Variable Cost	Total Cost	Marginal Cost	Average Total Cost	Average Variable Cost
0	0	12.00	XXXX	XXXX	XXXX
			4.00		
1	4.00	16.00		16.00	4.00
			3.00		
2	7.00	19.00		9.50	3.50
			_____		
3	9.00	21.00		7.00	3.00
			_____		
4	13.00	25.00		_____	3.25
			_____		
5	19.00	_____		_____	_____
			_____		
6	27.00	_____		_____	_____
			_____		
7	37.00	_____		_____	5.29
			_____		
8	49.00	_____		7.63	6.13
			_____		
9	63.00	_____		8.33	_____
			16.00		
10	79.00	91.00		9.10	_____

a. Fill in the blanks in *The Fiasco Company’s Cost Table*. Note that marginal cost is shown between levels of output.

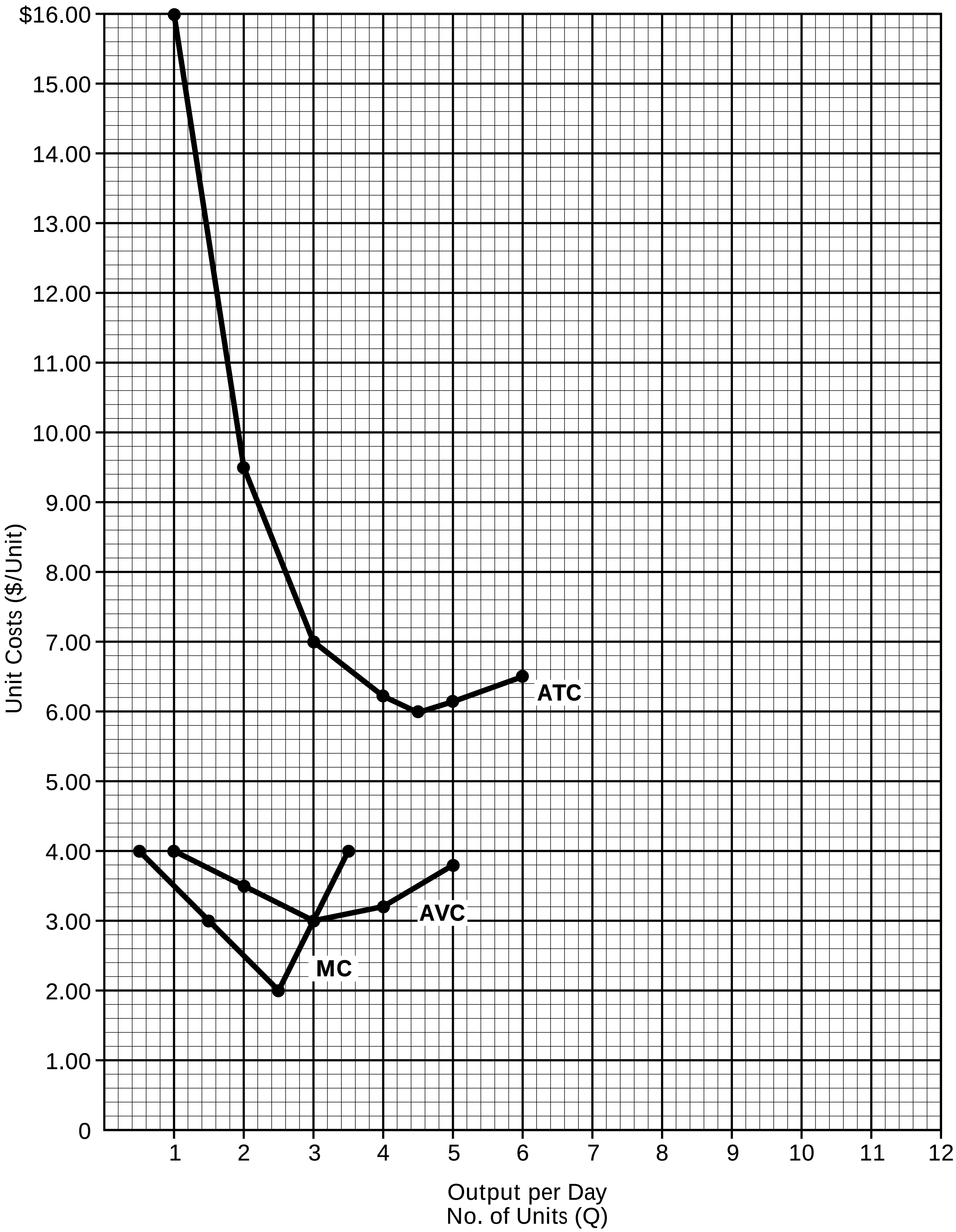
b. On the graph *The Fiasco Company’s Cost Curve*, plot and label the average variable cost (AVC), average total cost (ATC), and marginal cost (MC) curves. Assume that this firm can produce any fraction of output per day so that you connect the points to form continuous curves. NOTE: To be absolutely precise, the marginal cost (MC) curve should be plotted midway between the output intervals. (See helpful start on the graph.)

c. How would you interpret the vertical distance between the average total cost and average variable cost curves?

Adapted from Phillip Saunders, *Introduction to Microeconomics: Student Workbook*, Fifteenth edition, Bloomington, IN, 1993.

ACTIVITY 34 continued

The Fiasco Company's Cost Curve



Note: Each small square = $.20 on the vertical axis and .2 units of output on the horizontal axis.
Half units of output are plotted midway between .4 units and .6 units.
Note: MC is plotted between output levels.

ACTIVITY 34 continued

d. Why does average total cost decline at first, then start rising as output is increased?

e. The marginal cost curve intersects both average cost curves (ATC and AVC) at their minimum points. Why?

f. If fixed costs were $20 instead of $12, how would the change affect average variable costs and marginal costs?

2. Given the cost curves for Fiasco Company on the graph *The Fiasco Company's Cost Curve*, and the fact that the competitive market price at which it must sell its output is $11 a unit, fill in the blanks below and add to your graphs for Part A. (Remember, fractions of units are allowed.)

   a. Draw the average and marginal revenue curves on your graph.

   b. In order to maximize profits, Fiasco would sell _______ units, at a price of $ _______. Its average total cost would be $ _______. Its average revenue would be $ ___________. It would earn a per unit profit of $ _______ and total profit of $ _______ per day.

   c. If the firm produced instead at the quantity that minimized its average total cost, it would sell _______ units, at a price of $ _______. Its average total cost would be $ _______. Its average revenue would be $ _______. It would earn a per unit profit of $ _______ and total profit of $ _______ per day.

   d. If the competitive market price fell to $5 a unit, Fiasco would sell _______ units. Average total cost would be $ _______. It would earn a per unit *(profit/loss)* of $ _______, and a total *(profit/loss)* of $ _______ per day. (Cross out the incorrect words.)

ACTIVITY 34 continued

Part B. Many Small Firms and the Long Run

1. The long-run cost conditions (including a “normal” rate of profit) for a perfectly competitive firm are as follows:

“Normal” Rate of Profit for a Perfectly Competitive Firm

Output	Total Cost	Average Total Cost	Marginal Cost
1	9	9.00	
			4.00
2	13	6.50	
			5.00
3	18	_____	
			6.00
4	24	_____	
			_____
5	31	6.20	
			_____
6	39	_____	
			_____
7	48	6.86	
			_____
8	58	_____	
			_____
9	69	7.67	
			_____
10	81	8.10	

a. Fill in the blanks in the average total cost and marginal cost columns.

b. The level of output at which average total cost is at a minimum is _________________ units. At this output average total cost is $ _______ .

c. What quantities would the firm be willing to supply at each of the following prices for its product? (NOTE: Strictly speaking the output decision of the firm under these conditions is ambiguous because for any of the prices two levels of output yield the same profit. For instance, if price is $7/unit, the firm earns $4 profit whether it produces 4 or 5 units. For this exercise, assume the firm chooses the larger of the two output levels.)

Price and Quantity Supplied

Price	Quantity Supplied
$ 6	4
7	5
8	_____
9	_____
10	_____
11	_____
12	_____

ACTIVITY 34 continued

d. In general, the supply schedule (curve) of a perfectly competitive firm coincides with its _______ schedule (curve) in the range where _______ is rising and is greater than the _______ .

2. Suppose the perfectly competitive firm in question 1 is one of 1,000 firms currently operating in a competitive industry, all of which have identical cost functions. The market demand for this industry is given in the table.

Market Demand for an Industry

Price	Quantity Demanded	Quantity Supplied
$ 12	2,000	10,000
11	3,000	9,000
10	4,000	_____
9	5,000	_____
8	6,000	_____
7	7,000	_____
6	8,000	_____

a. Fill in the industry supply schedule in the table *Market Demand for an Industry*. Then answer the following questions by filling in the answer blanks, crossing out the incorrect words in parentheses, or writing a sentence.

b. Explain briefly how the short-run supply schedule (curve) of a competitive industry is derived.

c. Given the present 1,000 firms in the industry, the present equilibrium price for the industry is $ _______ ; the present equilibrium quantity is _______ units. At this price, each firm will be making *(positive economic profit/zero economic profit/negative economic profit/economic losses).*

d. Given the equilibrium above, and assuring that other firms can enter the industry with the same cost as the present firms, the number of firms in the industry in the long run will tend to *(increase/decrease/remain constant)* and the price will tend to *(increase/decrease/remain constant).* The output of the industry will tend to *(increase/decrease/remain constant)*, while output per firm will *(increase/decrease/remain constant).*

e. If this is a constant cost industry, (i.e., one where input prices don't change as the industry expands), the long-run equilibrium price for the industry will be $ _______ ; output per firm will be _______ units; there will be _______ firms in the industry each earning _______ economic profits;

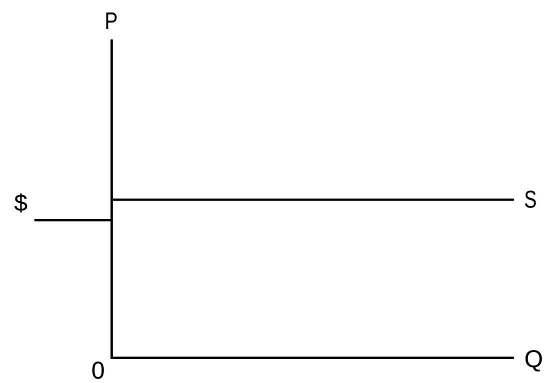
ACTIVITY 34 continued

industry output will be _______ units. The equilibrium price coincides with the _______ per unit cost of production.

f. Can you see why, under the conditions described above, that the long-run market supply curve for this industry would appear as a horizontal line on a graph? Explain.

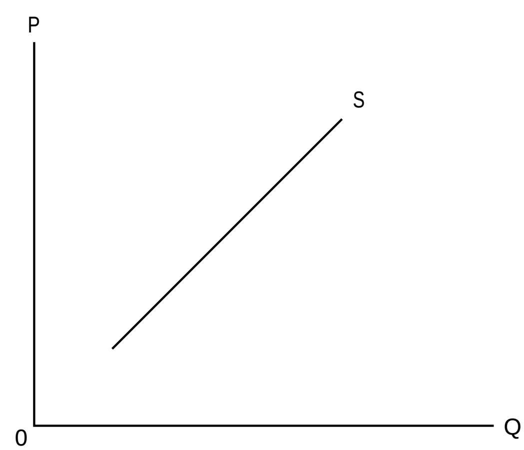
At what price would this horizontal line be plotted?

Long-Run Market Supply Curve A



g. What conditions in input markets would result in a long-run product market supply curve that slopes up to the right? Explain.

Long-Run Market Supply Curve B



h. Which of the *Long-Run Market Supply Curves* (*A* or *B*) do you think is likely to be the most typical case in a real world competitive market? Why?

ACTIVITY 35
Short-Run and Long-Run Competitive Equilibrium

Part A.

There are currently 1,000 producers of Greebes, each with economic costs like those shown in *Diagram A: Cost Situation for Each Greebe Producer*. (You should know how to label each of the cost curves.) The market demand for Greebes is shown in *Diagram B: Market Supply and Demand for Greebes*.

1. Plot on Diagram B the current market supply curve for Greebes and label this curve *S*. (Ask how much each producer will supply at various prices, and figure how much the total supply *from all 1,000 producers together* will be at those prices. NOTE: one million is a thousand thousand—1,000,000.)

Diagram A:
Cost Situation for
Each Greebe Producer

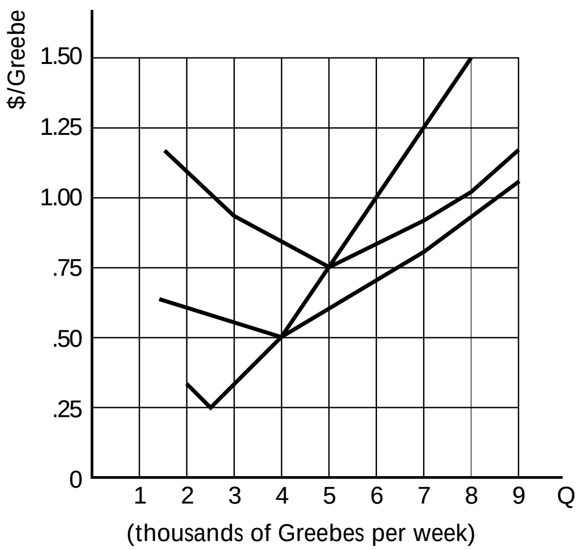
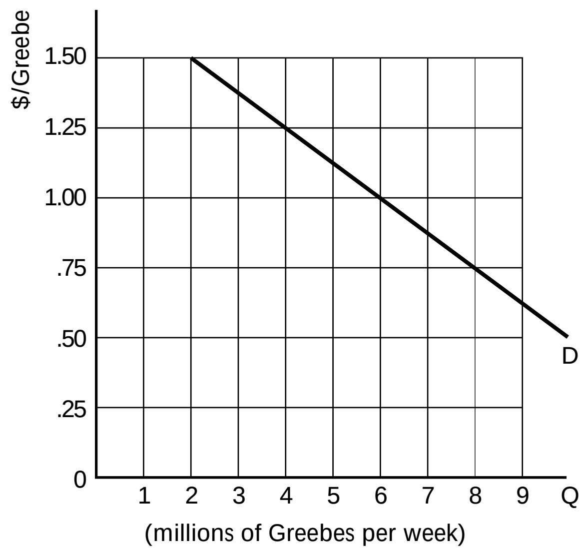


Diagram B:
Market Supply and
Demand for Greebes



2. Shade in the appropriate profit (or loss) rectangle in Diagram A, and calculate the total amount of economic profit or loss each typical Greebe producer will make under these conditions. Fill in the blanks below to aid you in your calculations.

   a. Price (P) received by each Greebe producer: $ _______ per Greebe

   b. Quantity (Q) produced by each Greebe producer: _______ thousand Greebes per week

   c. Average total cost (ATC) for this quantity (approximate): $ _______ per Greebe

   d. Economic profit (loss) for each unit produced (P – ATC): $ _______ per Greebe

   e. Total economic profit (loss) for each Greebe producer: Profit (loss) per unit x quantity produced = $ _______ per week.

Adapted from Phillip Saunders, *Introduction to Microeconomics: Student Workbook*, Fifteenth edition, Bloomington, IN, 1993.

ACTIVITY 35 continued

3. Is the Greebe market in long-run equilibrium? _______ Why or why not?

4. What is the long-run equilibrium price in this market? $ _______ per Greebe
   a. How many Greebes will each firm produce at this price? _______ thousand Greebes per week.
   b. What will be the total market quantity of Greebes produced at this price? _______ million Greebes per week
   c. How many firms will be in the market at this price?

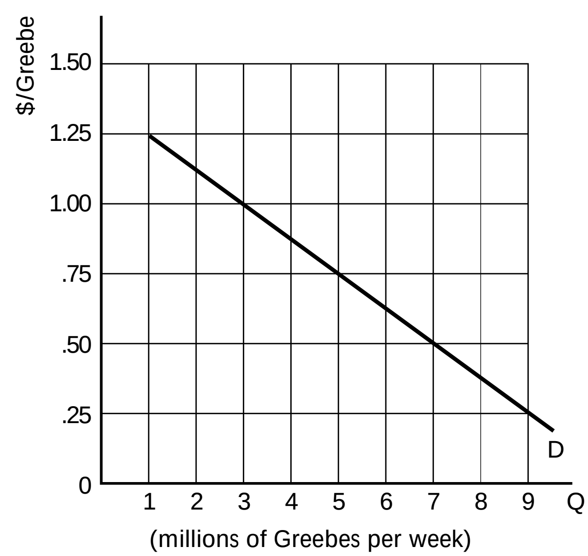
Part B.

Now, let's start all over again with a new set of cost and demand conditions in the Greebe market. There are again currently 1,000 producers of Greebes, each with *economic costs* like those shown in *Diagram C: New Cost Situation for Each Greebe Producer*. The market demand for Greebes is shown in *Diagram D: New Market Supply and Demand for Greebes*.

1. Plot on Diagram D the current market supply curve for Greebes and label this curve *S*.

Diagram C:
New Cost Situation for
Each Greebe Producer

Diagram D:
New Market Supply and
Demand for Greebes



ACTIVITY 35 continued

2. Shade in the appropriate profit (or loss) rectangle in Diagram C, and calculate the total amount of economic profit or loss each typical Greebe producer will make under these conditions. Fill in the blanks below to aid you in your calculations.

   a. Price (P) received by each Greebe producer: $ _______ per Greebe

   b. Quantity (Q) produced by each Greebe producer: _______ thousand Greebes per week

   c. Average total cost (ATC) for this quantity (approximate): $ _______ per Greebe

   d. Economic profit (loss) for each unit produced (P - ATC): $ _______ per Greebe

   e. Total economic profit (loss) for each Greebe producer: Profit (loss) per unit x quantity produced = $ _______ per week.

3. Is the Greebe market in long-run equilibrium? Why or why not?

4. a. What is the long-run equilibrium price in this market? $ _______ per Greebe

   b. How many Greebes will each firm produce at this price? _______ thousand Greebes per week.

   c. What will be the total market quantities of Greebes produced at this price? _______ million Greebes per week

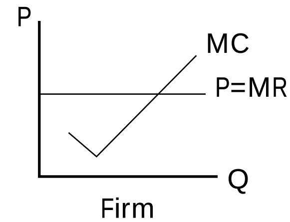
   d. How many firms will be in the market at this price?

ACTIVITY 36
Graphing Perfect Competition

The following firms or industries are all operating in a perfectly competitive market. Illustrate each situation on the graph provided. Label all curves in your answers.

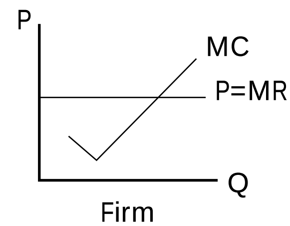
1. A firm experiencing economic profit in the short run.

Short-Run Economic Profit



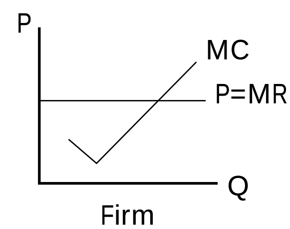
2. A firm operating with an economic loss in the short run.

Short-Run Economic Loss



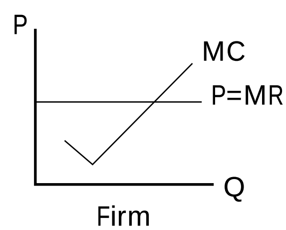
3. A firm in a classic shut-down position.

Classic Shut-Down Position

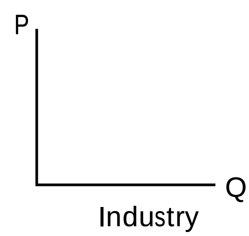


4. Short-run equilibrium for a firm and industry. Assume the firm is making an economic profit.

Short-Run Equilibrium for a Firm



Short-Run Equilibrium for an Industry

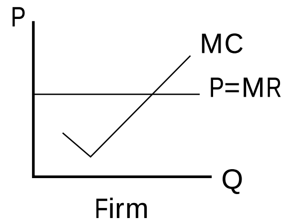


Activity developed by Joanne Beaver, Cumberland Valley High School, Mechanicsburg, PA; Janice H. Dukes, Opelika High School, Opelika, AL; and Gloria Washington, Dillard High School, Ft. Lauderdale, FL.

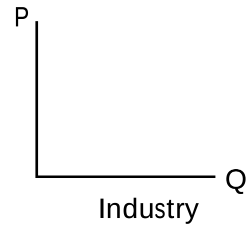
ACTIVITY 36 continued

5. Long-run equilibrium for a firm and industry.

Long-Run
Equilibrium for a Firm

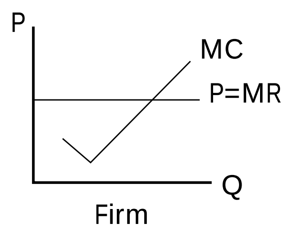


Long-Run
Equilibrium for an Industry

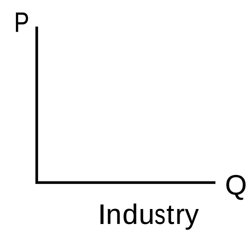


6. Illustrate how economic profits will disappear in the long run.

How Economic Profits
for a Firm will
Disappear in Long Run

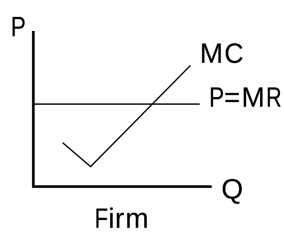


How Economic Profits
for an Industry will
Disappear in Long Run



7. Illustrate how economic losses will disappear in the long run.

How Economic Losses
for a Firm will
Disappear in Long Run



How Economic Losses
for an Industry will
Disappear in Long Run