

Microeconomics
Ch 14 Firms in Competitive Markets: Profit, Loss, Shutdown Decision (Practice Problem 2)

Consider a perfectly competitive firm below in Fig. 1 with the following cost curves (*not* drawn to scale):

Total Cost:

$$TC = 150 + 10Q + Q^2$$

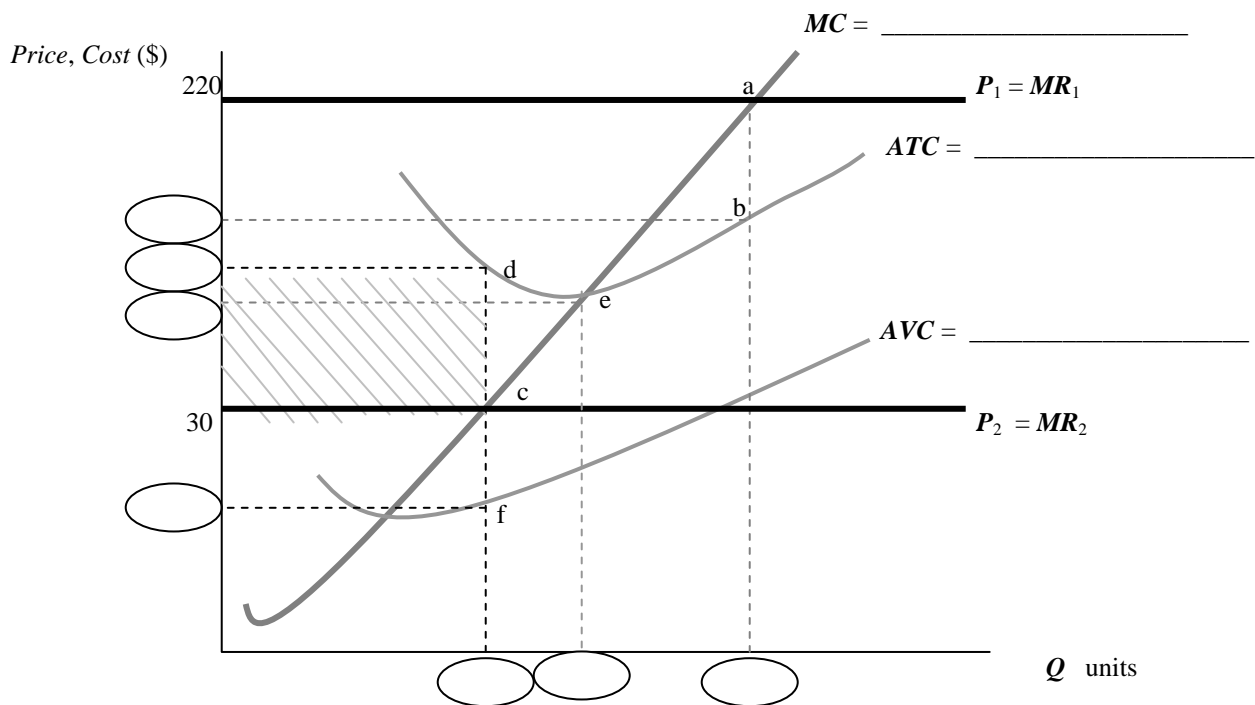
Marginal Cost:

$$MC = 10 + 2Q$$

Initial selling price:

$$P_1 = \$220$$

Fig. 1. The Cost Curves of a Perfectly Competitive Firm



1. What is the firm's fixed cost, FC , (in the short run)?

$FC = \$$ _____

2. What is the expression (equation) of the firm's average total cost, ATC , (in the short run)?
 Write it also above on the space in the graph.

$ATC =$ _____

3. What is the expression (equation) of the firm's average variable cost, AVC , (in the short run)?
 Write it also above on the space in the graph.

$AVC =$ _____

4. What is the profit-maximizing level of output Q if the price were $P_1 = \$ 220$?
(Note: Profit maximization for a competitive firm amounts to equating $P = MC$ or $MR = MC$.)

$Q =$ _____ units

5. What is the firm's average total cost, ATC , at the selling price $P_1 = \$ 220$?
Also write your answer on the appropriate space on the graph.

$ATC = \$$ _____

6. What is the firm's profit, π , if the selling price were $P_1 = \$ 220$?

$\pi = \$$ _____

7. What is the firm's average total cost, ATC , if the selling price were $P_2 = \$ 30$?
Also write your answer on the appropriate space on the graph.

$ATC = \$$ _____

8. What is the firm's average variable cost, AVC , if the selling price were $P_2 = \$ 30$?
Also write your answer on the appropriate space on the graph.

$AVC = \$$ _____

9. What is the firm's profit, π , if the selling price were $P_2 = \$ 30$?

$\pi = \$$ _____

10. If the selling price were $P_2 = \$ 30$ and the firm chooses to shut down rather than operate, what is its total loss?

Total Loss with shutdown = \$ _____

11. If the selling price were $P_2 = \$ 30$ and the firm continues to operate rather than shut down, what part of its total loss does it recover?

Part of total loss recovered by continuing to operate = \$ _____

12. What is the ATC at the minimum pt. of the ATC curve where the MC curve intersects?
Also write your answer on the appropriate space in the graph.

Min $ATC = \$$ _____