

Principles of Microeconomics, 10e - (Case/Fair/Oster)

Chapter 7 The Production Process: The Behavior of Profit-Maximizing Firms

7.1 The Behavior of Profit Maximizing Firms

1 Multiple Choice

- 1) Total revenue minus total cost equals
- A) the rate of return.
 - B) marginal revenue.
 - C) profit.
 - D) net cost.

Answer: C

Diff: 1

Topic: Behavior of Profit-Maximizing Firms

Skill: Fact

Refer to the information provided in Figure 7.1 below to answer the following questions.

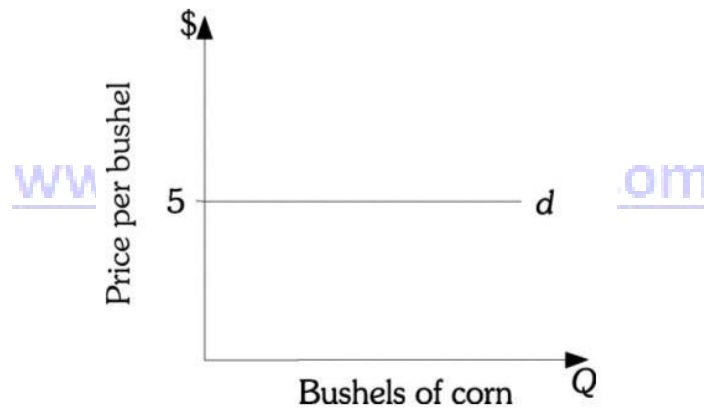


Figure 7.1

- 2) Refer to Figure 7.1. A corn producer produces 80 bushels of corn and sells each bushel at \$5. The cost of producing each unit bushel is \$2. This corn producer's total revenue is _____ and profit if _____.
- A) \$160; \$0
 - B) \$240; \$80
 - C) \$400; \$240
 - D) \$400; \$160

Answer: C

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

3) Refer to Figure 7.1. A corn producer's total revenue is \$1,000. If she sells each bushel of corn for \$5, she must be selling _____ bushels of corn.

- A) 200
- B) 450
- C) 900
- D) 4,500

Answer: A

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

4) Refer to Figure 7.1. A corn producer's profit is \$1500 and it is producing 500 bushels of output. Then he must have a cost per bushel of

- A) 1
- B) 2
- C) 3
- D) 4

Answer: B

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

5) The Wax Works sells 500 candles at a price of \$10 per candle. The Wax Works' total economic costs for producing 500 candles are \$2,000. The Wax Works' economic profit is

- A) \$2,000.
- B) \$3,000. www.yufoe.weebly.com
- C) \$5,000.
- D) indeterminate from this information.

Answer: B

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

6) The Wax Works sells 500 candles at a price of \$5 per candle. The Wax Works' total economic costs for producing 500 candles are \$3,000. The Wax Works' economic profit is

- A) -\$3,000.
- B) -\$500.
- C) \$2,500.
- D) \$3000

Answer: B

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

7) Firms must make all of the following decisions EXCEPT

- A) how much output to supply.
- B) which production technology to use.
- C) how much of each input to demand.
- D) what price to charge for its output.

Answer: D

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

8) Economic costs include

- A) both a normal rate of return on investment and the opportunity cost of each factor of production.
- B) the direct costs of hiring all factors of production.
- C) the opportunity cost of each factor of production minus any interest charges paid on borrowed funds.
- D) total revenue minus accounting profit.

Answer: A

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

9) The Sweet Success Bakery sells 500 cakes at a price of \$10 per cake. Its total economic costs for producing 500 cakes are \$500. The Sweet Success Bakery's economic profits are

- A) \$100.
- B) \$3,500.
- C) \$4,500.
- D) indeterminate from this information.

Answer: C

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

10) The Oh So Humble Bakery sells 300 muffins at a price of \$1 per muffin. Its explicit costs for producing 300 muffins are \$250. The Oh So Humble Bakery's economic profits are

- A) \$35.
- B) \$50.
- C) \$250.
- D) indeterminate from this information.

Answer: D

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

- 11) The Oh So Humble Bakery sells 300 muffins at a price of \$1 per muffin. Its explicit costs for producing 300 muffins are \$250. If the bakery is earning a normal rate of return, then its implicit costs must be
- A) \$100.
 - B) \$200.
 - C) \$300.
 - D) \$400

Answer: B

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

- 12) A firm _____ if it earns zero economic profit.
- A) earns a negative rate of return
 - B) will leave the industry
 - C) earns a positive but below normal rate of return
 - D) earns exactly a normal rate of return

Answer: D

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

- 13) You own a building that has four possible uses: a cafe, a craft store, a hardware store, and a bookstore. The building's value in each use is \$2,000; \$3,000; \$4,000; and \$5,000, respectively. You decide to open a hardware store. The opportunity cost of using this building for a hardware store is
- A) \$2,000, the value if the building is used as a cafe.
 - B) \$3,000, the value if the building is used as a craft store.
 - C) \$10,000, the sum of the values if the building is used for a cafe, a craft store, or a bookstore.
 - D) \$1,000, the difference in value if the building were used as a bookstore and its actual use.

Answer: D

Diff: 3

Topic: Behavior of Profit-Maximizing Firms

Skill: Conceptual

Refer to Scenario 7.1 below to answer the questions that follow.

SCENARIO 7.1: You own and are the only employee of a company that writes computer software that gamblers use to collect sports data. Last year your total revenue was \$90,000. Your costs for equipment, rent, and supplies were \$50,000. To start this business you invested an amount of your own capital that could pay you a \$40,000 a year return.

14) Refer to Scenario 7.1. During the year your economic costs were

- A) \$40,000.
- B) \$60,000.
- C) \$90,000.
- D) \$100,000.

Answer: C

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

15) Refer to Scenario 7.1. A yearly normal rate of return for your computer software firm would be

- A) \$20,000.
- B) \$40,000.
- C) \$60,000.
- D) \$100,000.

Answer: B

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

16) Refer to Scenario 7.1. Your accounting profit last year was

- A) \$10,000.
- B) \$30,000.
- C) \$40,000.
- D) \$60,000.

Answer: C

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

17) Refer to Scenario 7.1. Your economic profit last year was

- A) -\$40,000.
- B) -\$10,000.
- C) \$0.
- D) \$10,000.

Answer: C

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

Refer to Scenario 7.2 below to answer the questions that follow.

SCENARIO 7.2: You own and are the only employee of a company that sets odds for sporting events. Last year your total revenue was \$60,000. Your costs for rent and supplies were \$50,000. To start this business you invested an amount of your own capital that could pay you a \$20,000 a year return.

18) Refer to Scenario 7.2. During the year your economic costs were

- A) \$70,000.
- B) \$60,000.
- C) \$50,000.
- D) \$20,000.

Answer: A

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

19) Refer to Scenario 7.2. A yearly normal profit for your company is

- A) \$20,000.
- B) \$40,000.
- C) \$60,000.
- D) \$100,000.

Answer: A

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

20) Refer to Scenario 7.2. Your accounting profit last year was

- A) \$10,000.
- B) \$30,000.
- C) \$50,000.
- D) \$60,000.

Answer: A

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

21) Refer to Scenario 7.2. Your economic profit last year was

- A) -\$40,000.
- B) -\$10,000.
- C) \$10,000.
- D) \$30,000.

Answer: B

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

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Refer to Scenario 7.3 below to answer the questions that follow.

SCENARIO 7.3: Upon graduating with an accounting degree, you open your own accounting firm of which you and your assistant are the only employees. To start the firm you passed on a job offer with a large accounting firm that offered you a salary of \$50,000 annually. Last year you earned a total revenue of \$120,000. Rent and supplies last year were \$50,000. Your assistant's salary is \$30,000 annually.

22) Refer to Scenario 7.3. Your annual economic costs are

- A) \$50,000.
- B) \$80,000.
- C) \$100,000.
- D) \$130,000.

Answer: D

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

23) Refer to Scenario 7.3. Your annual economic profit is

- A) -\$10,000.
- B) \$20,000.
- C) \$40,000.
- D) \$70,000.

Answer: A

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

24) Refer to Scenario 7.3. Your annual operating profit is

- A) -\$10,000.
- B) \$40,000.
- C) \$70,000.
- D) \$80,000.

Answer: B

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Analytic

25) An economist is studying the pricing behavior of Atlanta's 100 dog kennels. She says she will limit her analysis to a time period that allows for neither new kennels to enter the market nor existing ones to leave it. The economist is referring to the _____ time period.

- A) market
- B) industry
- C) long run
- D) short run

Answer: D

Diff: 3

Topic: Behavior of Profit-Maximizing Firms

Skill: Conceptual

- 26) In the long run, a firm
- A) can shut down, but it cannot exit the industry.
 - B) has no fixed factors of production.
 - C) can vary all inputs, but it cannot change the mix of inputs it uses.
 - D) must make positive economic profits.

Answer: B

Diff: 3

Topic: Behavior of Profit-Maximizing Firms

Skill: Conceptual

- 27) In the short run, a firm
- A) has at least one fixed factor of production.
 - B) cannot enter an industry where positive profits are being earned.
 - C) can exit an industry and all of its factors of production are variable.
 - D) both (A) and (B) are correct.

Answer: D

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

2 True/False

- 1) If Harold runs a grocery store and earns a normal rate of return, we can infer that he also makes a positive economic profit.

Answer: FALSE

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

- 2) If a firm makes a positive economic profit, it is making at least a normal rate of return.

Answer: TRUE

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

- 3) In the short run, firms can enter an industry but not exit it.

Answer: FALSE

Diff: 1

Topic: Behavior of Profit-Maximizing Firms

Skill: Fact

- 4) Economists consider the short run as a period less than one year.

Answer: FALSE

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

- 5) For economic analysis, the long run is any period in which all inputs are variable (regardless of the length of time involved).

Answer: TRUE

Diff: 2

Topic: Behavior of Profit-Maximizing Firms

Skill: Definition

- 6) Deciding to invest in capital is a short-run decision.

Answer: FALSE

Diff: 1

Topic: Behavior of Profit-Maximizing Firms

Skill: Fact

7.2 The Production Process

1 Multiple Choice

- 1) To determine the optimal method of production for a good or service, a firm needs to know
- A) the market price of output.
 - B) the technologies of production that are available to the firm.
 - C) the prices of inputs.
 - D) All of the above are correct.

Answer: D

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 2) The optimal production method
- A) maximizes output regardless of cost.
 - B) maximizes inputs.
 - C) minimizes cost.
 - D) minimizes the normal rate of return.

Answer: C

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 3) Which of the following demonstrates an act of production, as economists use the term?
- A) A worker places money in a pension fund.
 - B) A local nonprofessional theater company performs a play.
 - C) An individual buys municipal bonds to avoid taxes.
 - D) all of the above

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

Use the information provided in Table 7.1 below to answer the questions that follow.

Table 7.1
Inputs Required to Produce a Product Using Alternative Technologies

Technology	Units of Capital	Number of Employees
A	4	18
B	6	12
C	8	8
D	12	6

4) Refer to Table 7.1 above. Which technology is the most labor intensive?

- A) A
- B) B
- C) C
- D) D

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

5) Refer to Table 7.1 above. Which technology is the most capital intensive?

- A) A
- B) B
- C) C
- D) D

Answer: D

Diff: 2

Topic: The Production Process

Skill: Analytic

6) Refer to Table 7.1. If the hourly price of capital is \$10 and the hourly wage rate is \$7, which production technology should be selected?

- A) A
- B) B
- C) C
- D) D

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

7) Refer to Table 7.1. If the hourly price of capital is \$20 and the hourly wage rate is \$5, which production technology should be selected?

- A) A
- B) B
- C) C
- D) D

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

Use the information provided in Table 7.2 below to answer the questions that follow.

Table 7.2
Inputs Required to Produce a Product Using Alternative Technologies

Technology	Units of Capital	Number of Employees
A	16	8
B	12	12
C	8	20
D	6	24

8) Refer to Table 7.2. Which technology is the most capital intensive?

- A) A
- B) B
- C) C
- D) D

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

9) Refer to Table 7.2. If the hourly price of capital is \$50 and the hourly wage rate is \$10, which production technology should be selected?

- A) A
- B) B
- C) C
- D) D

Answer: D

Diff: 2

Topic: The Production Process

Skill: Analytic

10) Refer to Table 7.2. If the hourly price of capital is \$1 and the hourly price of labor is \$10, which production technology should be selected?

- A) A
- B) B
- C) C
- D) D

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

11) Refer to Table 7.2. Which technology is the most labor intensive?

- A) A
- B) B
- C) C
- D) D

Answer: D

Diff: 2

Topic: The Production Process

Skill: Analytic

Use the information provided in Figure 7.2 below to answer the questions that follow.

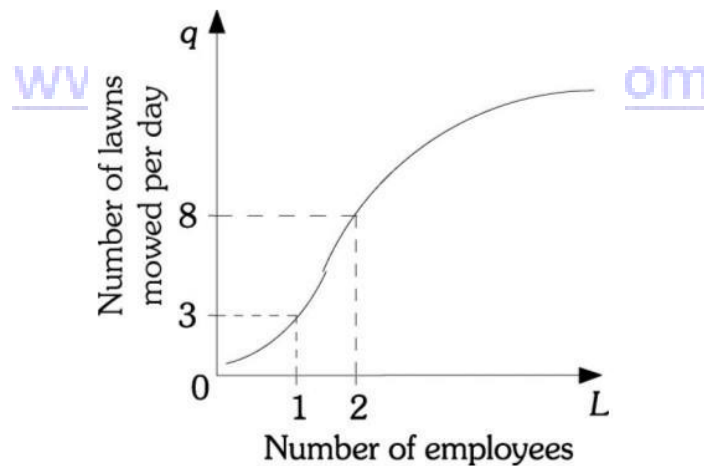


Figure 7.2

12) Refer to Figure 7.2. The marginal product of the second worker is _____ lawns moved.

- A) 4
- B) 5
- C) 5.5
- D) 11

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

- 13) Refer to Figure 7.2. The average product of the second worker is _____ lawns moved.
- A) 4
 - B) 5
 - C) 5.5
 - D) 11

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

Refer to Scenario 7.4 below to answer the questions that follow.

SCENARIO 7.4: A lawn service company has the following production possibilities. With one, two, three, and four workers, the company can mow 4, 9, 12, and 14 lawns per day, respectively.

- 14) Refer to Scenario 7.4. The marginal product of the second worker is
- A) 3
 - B) 4
 - C) 5
 - D) 9

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

- 15) Refer to Scenario 7.4. The marginal product of the third worker is
- A) 2
 - B) 3
 - C) 4
 - D) 12

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

- 16) Refer to Scenario 7.4. The marginal product of the fourth worker is
- A) 2
 - B) 3
 - C) 12
 - D) 14

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

17) Refer to Scenario 7.4. Diminishing returns to labor set in with the_____worker.

- A) first
- B) second
- C) third
- D) fourth

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

18) Refer to Scenario 7.4. The average product of labor with three workers is

- A) 3
- B) 3.5
- C) 4
- D) 12

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

19) Refer to Scenario 7.4. The average product of labor with four workers is

- A) 3
- B) 3.5
- C) 4
- D) 14

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

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Use the information provided in Figure 7.3 below to answer the questions that follow.

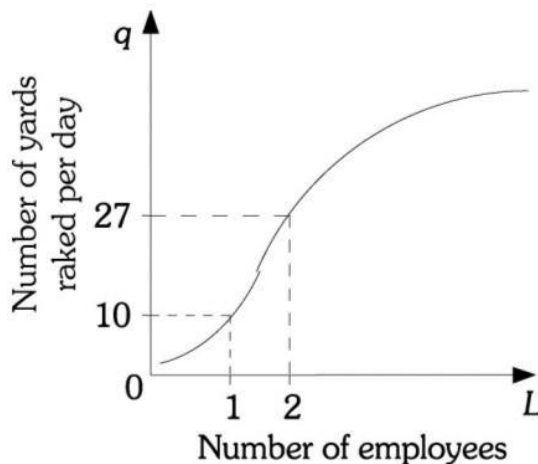


Figure 7.3

20) Refer to Figure 7.3. The marginal product of the second worker is _____ yards raked.

- A) 2
- B) 13.5
- C) 17
- D) 27

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

21) Refer to Figure 7.3. The average product of the second worker is _____ yards raked.

- A) 4
- B) 13.5
- C) 14
- D) 27

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

22) When Burger Barn hires one worker, 10 customers can be served in an hour. When Burger Barn hires two workers, 25 customers can be served in an hour. The marginal product of the second worker is _____ customers served per hour.

- A) 15
- B) 30
- C) 40
- D) 67.5

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

23) The marginal products of the first, second, and third workers are 50, 34, and 22, respectively. If four workers can produce 116 units of output, then the marginal product of the fourth worker is _____.

- A) 10
- B) 12
- C) 22
- D) 116

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

24) At the Pampered Pet Salon the marginal products of the first, second, and third workers are 50, 36, and 25 dogs washed, respectively. The total product (number of dogs washed) of the two worker is

- A) 11.
- B) 50.
- C) 86.
- D) 111.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

25) At the Pampered Pet Salon the marginal products of the first, second, and third workers are 50, 36, and 25 dogs washed, respectively. The total product (number of dogs washed) of the three workers is

- A) 50.
- B) 86.
- C) 107.
- D) 111.

Answer: D

Diff: 2

Topic: The Production Process

Skill: Analytic

26) At the Larson Bakery the marginal products of the first, second, and third salesclerks are 30, 27, and 21 customers served, respectively. The total product (number of customers served) of the two salesclerks is

- A) 6.
- B) 17.
- C) 57.
- D) 78.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

27) At the Larson Bakery the marginal products of the first, second, and third salesclerks are 30, 27, and 21 customers served, respectively. The total product (number of customers served) of the three salesclerks is

- A) 30.
- B) 57.
- C) 78.
- D) 109.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

Use the information provided in Figure 7.4 below to answer the questions that follow.

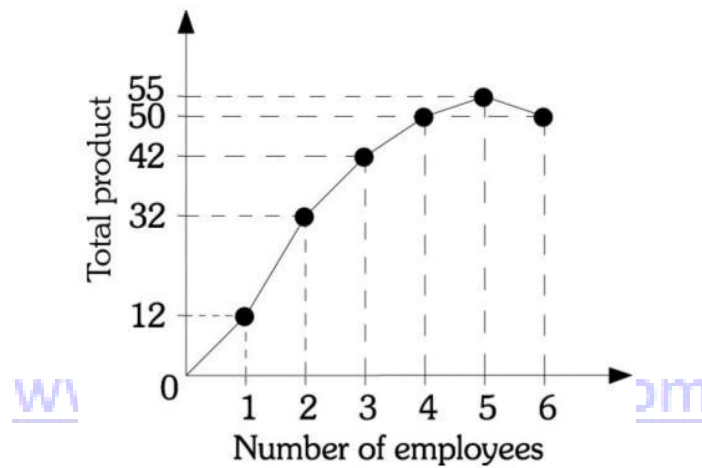


Figure 7.4

28) Refer to Figure 7.4. The marginal product of the second worker is

- A) 10.
- B) 16.
- C) 20.
- D) 32.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

29) Refer to Figure 7.4. The marginal product of the fourth worker is

- A) 5.
- B) 8.
- C) 50.
- D) 55.

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

30) Refer to Figure 7.4. The marginal product of the sixth worker is

- A) -50.
- B) -5.
- C) 5.
- D) 8.33.

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

31) Refer to Figure 7.4. The average product of the third worker is

- A) 10.
- B) 14.
- C) 21.
- D) 25.

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

32) Refer to Figure 7.4. The average product of the fifth worker is

- A) 1.
- B) 2.5.
- C) 5.
- D) 11.

Answer: D

Diff: 2

Topic: The Production Process

Skill: Analytic

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33) Refer to Figure 7.4. The average product of the sixth worker is

- A) -8.33.
- B) -5.
- C) 5.
- D) 8.33.

Answer: D

Diff: 2

Topic: The Production Process

Skill: Analytic

34) Refer to Figure 7.4. Diminishing marginal returns begin when the _____ worker is hired.

- A) first
- B) second
- C) third
- D) fifth

Answer: C

Diff: 3

Topic: The Production Process

Skill: Analytic

- 35) If diminishing marginal returns have already set in for The Picture Perfect Framing Store and the marginal product of the fifth picture framer is 25, then the marginal product of the sixth picture framer must be
- A) negative.
 - B) zero.
 - C) less than 25.
 - D) greater than 25.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Definition

- 36) 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.

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

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Use the information provided in Figure 7.5 below to answer the question that follows.

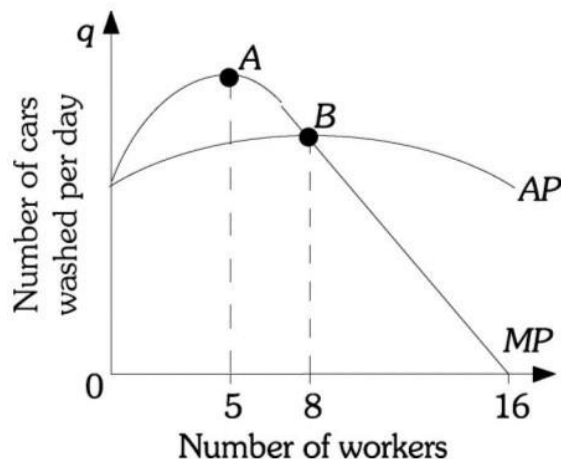


Figure 7.5

- 37) Refer to Figure 7.5. Diminishing marginal returns set in after the _____ worker is hired.
- A) first
 - B) fifth
 - C) eighth
 - D) sixteenth

Answer: B

Diff: 2

Topic: The Production Process

Skill: Definition

- 38) 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

Answer: D

Diff: 2

Topic: The Production Process

Skill: Definition

- 39) The version of the law of diminishing returns that applies to production
- A) implies that as we add more workers our production decreases.
 - B) applies only in the short run.
 - C) is true only when all inputs are variable.
 - D) applies in the short and long run.

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

Refer to the information provided in Table 7.3 below to answer the question that follows.

Table 7.3

L	0	1	2	3	4	5
Q	0	10	20	30	40	50

40) Suppose output varies, *ceteris paribus*, with labor input in the manner displayed in the table above. After how many units of labor do diminishing returns set in?

- A) 3
- B) 4
- C) 5
- D) They do not set in.

Answer: D

Diff: 1

Topic: The Production Process

Skill: Fact

41) When a firm maximizes total product in the short run, marginal product

- A) and average product are zero.
- B) is positive but average product is zero.
- C) is zero but average product is positive.
- D) and average product are positive.

Answer: C

Diff: 1

Topic: The Production Process

Skill: Fact

42) At the point where total product is maximized, marginal product

- A) is zero, but average product is still positive.
- B) and average product are negative.
- C) is positive, but average product is negative.
- D) and average product are positive.

Answer: A

Diff: 1

Topic: The Production Process

Skill: Fact

43) If marginal product is greater than average product, then

- A) average product must be decreasing.
- B) marginal product must be decreasing.
- C) marginal product must be increasing.
- D) marginal product could either be increasing or decreasing.

Answer: D

Diff: 1

Topic: The Production Process

Skill: Fact

- 44) If we assume that labor is the only variable input, the slope of the short run total product curve
- A) has no economic significance.
 - B) measures the average product of labor.
 - C) measures the marginal product of labor.
 - D) measures the marginal and average product of labor depending on where on the total product curve we are.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Fact

- 45) You own a business that answers telephone calls for physicians after their offices close. You have an incentive to substitute capital for labor if the
- A) price of capital increases.
 - B) price of labor decreases.
 - C) price of labor increases.
 - D) marginal product of labor increases.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Definition

- 46) Firms have an incentive to substitute labor for capital as the

- A) price of labor decreases.
- B) price of capital decreases.
- C) price of labor increases.
- D) marginal product of labor decreases.

Answer: A

Diff: 1

Topic: The Production Process

Skill: Fact

- 47) The specific technology chosen by a profit-maximizing clothing manufacturer depends on

- A) input prices.
- B) output prices.
- C) demand for the output.
- D) supply of the output.

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

Refer to the information provided in Figure 7.6 below to answer the questions that follow.

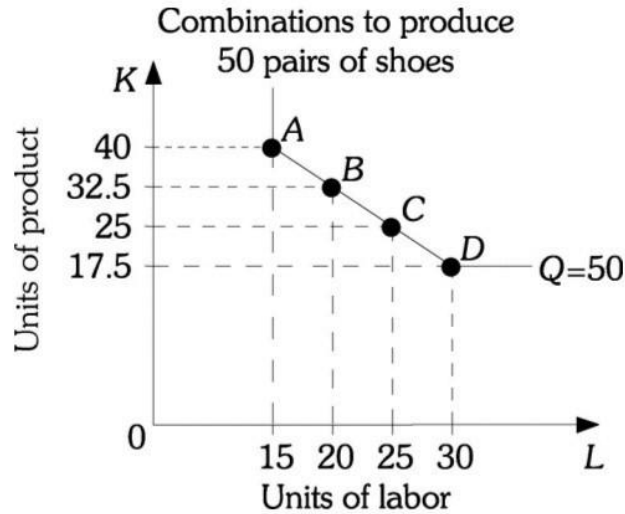


Figure 7.6

- 48) Refer to Figure 7.6. If this shoe manufacturer increases labor from 15 to 20 (moving along the given isoquant with $Q=50$), the marginal product of the 20th worker
- A) is zero, as the total number of shoes produced remains at 50.
 - B) is 8.5, as capital can be reduced by 8.5 units when the 20th worker is hired.
 - C) cannot be determined because output remains constant.
 - D) cannot be determined because both capital and labor have been increased.

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

- 49) Refer to Figure 7.6. If the price of capital is \$20 and the price of labor is \$10, the optimal product technique is
- A) A.
 - B) B.
 - C) C.
 - D) D.

Answer: D

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 50) Assume the prices of labor and capital remain the same, but the average educational level of workers increases and therefore labor productivity increases. This would lead a firm to
- A) use a more capital-intensive production technology.
 - B) use a more labor-intensive technology.
 - C) not change its production technology, but produce fewer units of output.
 - D) use only labor to produce the product.

Answer: B

Diff: 1

Topic: The Production Process

Skill: Fact

- 51) Assume that capital and labor are complementary inputs. If the firm increases the amount of capital it employs, this would
- A) cause the firm to move down along the *MP* schedule for labor.
 - B) cause the firm to move up along its *MP* schedule for labor.
 - C) shift the firm's *MP* schedule for labor to the left.
 - D) shift the firm's *MP* schedule for labor to the right.

Answer: D

Diff: 2

Topic: The Production Process

Skill: Definition

- 52) We can write the cost minimizing equilibrium condition as

- A) $MPL = MPK$.
- B) $PL = PK$.
- C) $(MPL)(PL) = (MPK)(PK)$.
- D) $MPL/PL = MPK/PK$.

Answer: D

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 53) A firm is operating such that the marginal product of labor is 10 and the marginal product of capital is 40. The firm is minimizing its costs only if
- A) the wage is one fourth the rental rate.
 - B) the rental rate is one fourth the wage.
 - C) since capital is more productive than labor, the firm must be minimizing cost.
 - D) Given this information the firm can't be minimizing cost under any circumstances.

Answer: A

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 54) A firm produces 15 units of output from the last dollar it spends on labor and 10 units from the last dollar spent on capital. The firm should
- A) employ more labor and less capital.
 - B) employ more capital and less labor.
 - C) employ more capital and labor.
 - D) employ less capital and labor.

Answer: A

Diff: 2

Topic: The Production Process

Skill: Conceptual

- 55) If the product derived from the last dollar spent on labor is greater than the product derived from the last dollar spent on capital, then the firm should
- A) make no changes since it is minimizing costs.
 - B) use more labor and less capital to minimize costs.
 - C) use less labor and more capital to minimize costs.
 - D) increase the price paid to labor and decrease the price paid to capital to minimize costs.

Answer: B

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 56) If the product derived from the last dollar spent on labor is less than the product derived from the last dollar spent on capital, then the firm should _____ costs.
- A) make no changes since it is minimizing
 - B) use more labor and less capital to minimize
 - C) use less labor and more capital to minimize
 - D) increase the price paid to labor and decrease the price paid to capital to minimize

Answer: C

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 57) If Microsoft is earning a rate of return greater than the return necessary for the business to continue operations in the long run, then
- A) total costs exceed total revenue.
 - B) total costs exceed a normal rate of return.
 - C) the firm's normal rate of return is zero.
 - D) the firm is earning an economic profit.

Answer: D

Diff: 3

Topic: The Production Process

Skill: Conceptual

- 58) If Pets.com earns a rate of return less than necessary for it to continue operations, then its
- A) total revenue exceeds its economic costs.
 - B) economic costs exceed its total revenue.
 - C) normal profit is zero.
 - D) economic profit is zero.

Answer: B

Diff: 1

Topic: The Production Process

Skill: Fact

- 59) You are certain that the computer industry's normal rate of return is 18%. You would expect a(n) _____ normal rate of return for a computer software industry that people consider much riskier than the computer industry.
- A) 18%
 - B) less than 18%
 - C) above 18%
 - D) riskfree (the rate on government bonds)

Answer: C

Diff: 1

Topic: The Production Process

Skill: Fact

- 60) The formula for the marginal product of labor is

A) L/q .

B) $(\Delta L)(\Delta q)$.

C) q/L .

D) $\Delta q/\Delta L$.

Answer: D

Diff: 2

Topic: The Production Process

Skill: Analytic

- 61) Assume the total product of two workers is 100 and the total product of three workers is 150. The third worker's average product is _____ while her marginal product is _____.

A) 40; 20

B) 20; 40

C) 50; 50

D) 150; 100

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

62) Assume the total product of two workers is 110 and the total product of three workers is 120. The third worker's average product is _____ while her marginal product is _____.

- A) 40; 10
- B) 40; 20
- C) 50; 10
- D) 120; 110

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

63) Assume the total product of two workers is 80 and the total product of three workers is 90. The third worker's average product is _____ while her marginal product is _____.

- A) 10; 30
- B) 30; 10
- C) 10; 13.33
- D) 160; 270

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

64) Assume the total product of three workers is 120 and the total product of four workers is 160. The fourth worker's average product is _____ while her marginal product is _____.

- A) 10; 30
- B) 30; 10
- C) 40; 40
- D) 160; 40

Answer: C

Diff: 2

Topic: The Production Process

Skill: Analytic

65) Burning Bob's Salsa House serves 30 customers in an hour when it hires one worker. It serves 60 customers in an hour when it hires two workers. The marginal product of the second worker is _____ customers served per hour.

- A) 20
- B) 30
- C) 50
- D) 67.5

Answer: B

Diff: 1

Topic: The Production Process

Skill: Fact

66) The formula for the average product of labor is

- A) $\Delta q/\Delta L$.
- B) $\Delta L/\Delta q$.
- C) q/L .
- D) L/q .

Answer: C

Diff: 2

Topic: The Production Process

Skill: Definition

67) When the marginal product of labor equals the average product of labor, then

- A) the average product is maximized.
- B) the marginal product is maximized.
- C) the marginal product is still increasing.
- D) the average product is still increasing.

Answer: A

Diff: 3

Topic: The Production Process

Skill: Conceptual

68) As a firm's total cost for capital and labor increases, its isocost line

- A) shifts parallel outward from the original isocost line.
- B) shifts parallel inward from the original isocost line.
- C) rotates outward on the Y-intercept.
- D) rotates outward on the X-intercept.

Answer: A

Diff: 2

Topic: The Production Process

Skill: Analytic

69) As a firm's total cost for capital and labor decreases, its isocost line

- A) shifts parallel outward from the original isocost line.
- B) shifts parallel inward from the original isocost line.
- C) rotates outward on the Y-intercept.
- D) rotates outward on the X-intercept.

Answer: B

Diff: 2

Topic: The Production Process

Skill: Analytic

- 70) Related to the *Economics in Practice* on page 144: UPS is adjusting its production process by
- A) increasing the labor intensity of its production.
 - B) increasing the capital intensity of its production.
 - C) decreasing the capital intensity of its production.
 - D) UPS is already using the optimal capital to labor ratio in its production and no modifications are currently planned.

Answer: B

Diff: 2

Topic: The Production Process: Economics in Practice

Skill: Fact

2 True/False

- 1) If the first worker produces five custom picture frames a day, and the second worker produces five additional custom picture frames a day, then diminishing marginal returns have not yet set in.

Answer: TRUE

Diff: 1

Topic: The Production Process

Skill: Fact

- 2) One worker produces 5 rocking chairs. If diminishing returns have already set in, a firm will need to hire more than two workers to produce 10 rocking chairs.

Answer: TRUE

Diff: 1

Topic: The Production Process

Skill: Fact

- 3) A production function shows the least amount that a firm will produce given the amount of labor input.

Answer: FALSE

Diff: 1

Topic: The Production Process

Skill: Fact

- 4) If the marginal product of labor is less than the average product of labor, then the average product of labor is increasing.

Answer: FALSE

Diff: 2

Topic: The Production Process

Skill: Conceptual

7.3 Choice of Technology

1 Multiple Choice

- 1) Costs of production are determined
- A) only by the technologies that are available.
 - B) only by the input prices that are available.
 - C) by the technologies that are available and by input prices.
 - D) by the technologies that are available and by the demand for the output.

Answer: C

Diff: 1

Topic: Choice of Technology

Skill: Fact

- 2) Related to the *Economics in Practice* on page 146: If you own a truck and use it to deliver merchandise to retailers and hire a driver to such deliveries. The speed at which you instruct the driver to drive depends on
- A) the driver's wage only.
 - B) the price of gasoline only.
 - C) the driver's wage and the price of gasoline.
 - D) neither the driver's wage nor the price of gasoline.

Answer: C

Diff: 1

Topic: Choice of Technology: Economics in Practice

Skill: Fact

- 3) Related to the *Economics in Practice* on page 146: Suppose you own a truck and use it to deliver merchandise to retailers and hire a driver to such deliveries. At higher rates of speed the truck gets fewer miles per gallon of gas. Holding all else constant, as the price of gasoline continues to rise
- A) you will instruct your driver to drive faster.
 - B) you will instruct your driver to drive slower.
 - C) you will ask your driver to change their driving in any way.
 - D) you will make more deliveries to cover the increasing cost of fuel.

Answer: B

Diff: 1

Topic: Choice of Technology: Economics in Practice

Skill: Conceptual

7.4 Appendix

1 Multiple Choice

- 1) A graph showing all combinations of capital and labor that a firm can use to produce a given amount of output is a(n)
- A) indifference curve.
 - B) isoquant.
 - C) isocost line.
 - D) production function.

Answer: B

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

Use the information provided in the Figure 7.7 below to answer the question that follows.

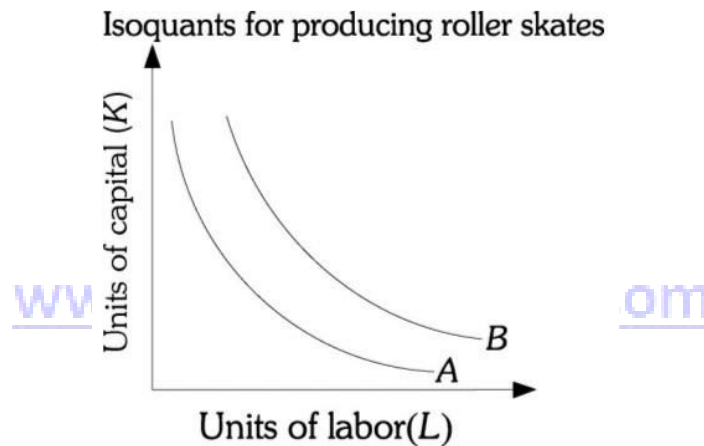


Figure 7.7

- 2) Refer to Figure 7.7 above. If Roller Skates Unlimited moves from isoquant B to isoquant A, the number of roller skates produced
- A) decreases.
 - B) increases.
 - C) remains constant, but Roller Skates Unlimited uses more capital and more labor.
 - D) remains constant, but input prices have risen.

Answer: A

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

Use the information provided in the Figure 7.8 below to answer the question that follows.

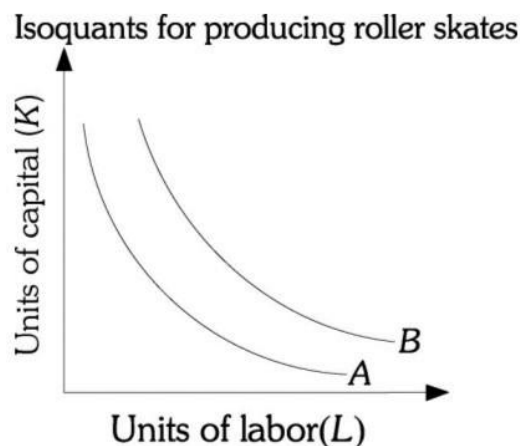


Figure 7.8

- 3) Refer to Figure 7.8 above. If Roller Skates Unlimited moves from isoquant B to isoquant A, the number of roller skates produced
- A) decreases.
 - B) increases.
 - C) remains constant, but Roller Skates Unlimited uses more capital and more labor.
 - D) remains constant, but input prices have risen.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Definition

- 4) Isoquants slope downward because as a firm uses more
- A) units of an input to produce a product, total cost increases.
 - B) units of an input to produce a product, the input's marginal productivity increases.
 - C) of one input, then to keep output constant it needs less of the other input.
 - D) both B and C

Answer: C

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

- 5) A(n) _____ shows all combinations of capital and labor that yield a given total cost.
- A) isocost line
 - B) isoquant
 - C) budget constraint
 - D) expenditure set

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

Refer to the information provided in Figure 7.9 below to answer the questions that follow.

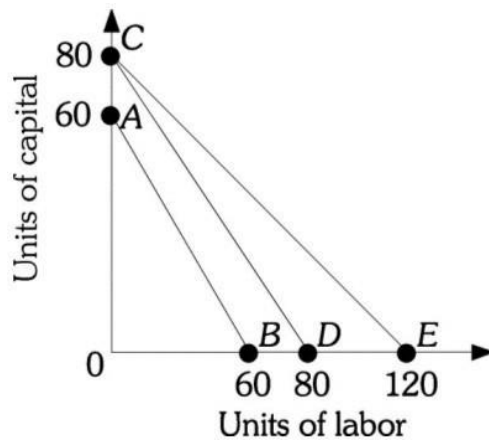


Figure 7.9

- 6) Refer to Figure 7.9. If the price of capital is \$25, then along isocost line *AB* total cost is
- A) \$1200.
 - B) \$1500.
 - C) \$2000.
 - D) indeterminate from this information since the price of labor is not given.

Answer: B

Diff: 3

Topic: Appendix: Isoquants and Isocosts

Skill: Conceptual

- 7) Refer to Figure 7.9. The firm is currently along isocost *CD*. If the price of capital is \$25, then the price of labor is
- A) \$1.
 - B) \$25.
 - C) \$80.
 - D) indeterminate from the information given.

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

- 8) Refer to Figure 7.9. The firm is currently along isocost *CE*. If the price of capital is \$24, then the price of labor is
- A) \$16.
 - B) \$24.
 - C) \$80.
 - D) \$120.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

- 9) Refer to Figure 7.9. The firm's isocost line would shift from *CD* to *CE* if

- A) the price of capital fell.
- B) the price of labor fell.
- C) the firm's total expenditure on inputs increased.
- D) either the price of labor fell or the firm's total expenditure on inputs increased.

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

10) Refer to Figure 7.9. The slope of isocost AB is

- A) -1.
- B) 0.
- C) 1.
- D) indeterminate from this information, as the prices of capital and labor are not given.

Answer: A

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

11) Refer to Figure 7.9. The slope of isocost CD is

- A) -1.
- B) $-2/3$.
- C) 0.
- D) indeterminate from this information, as the prices of capital and labor are not given.

Answer: A

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

12) Refer to Figure 7.9. The slope of isocost CE is

- A) -1.
- B) $-2/3$.
- C) 0.
- D) indeterminate from this information, as the prices of capital and labor are not given.

Answer: B

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

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- 13) Refer to Figure 7.9. The firm's isocost line could shift from CD to AB if the
- A) price of capital increased.
 - B) firm's total expenditures increased by 25%.
 - C) price of capital and labor each increased by 25%.
 - D) firm's total expenditures decreased by 25% or the price of capital and labor each increased by 33%.

Answer: D

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

- 14) Refer to Figure 7.9 The firm's isocost line could shift from AB to CD if
- A) the price of capital decreased.
 - B) the firm's total expenditures decreased by 33%.
 - C) the price of capital and labor each decreased by 25%.
 - D) the firm's total expenditures increased by 33% or the price of capital and labor each decreased by 33%.

Answer: D

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

- 15) Refer to Figure 7.9. The general formula for the slope of any of the isocost lines is
- A) $-PK/PL$.
 - B) $-PL/PK$.
 - C) TC/PL .
 - D) TC/PK .

Answer: B

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

- 16) Refer to Figure 7.9. If the price of capital is \$30, then along isocost line AB total cost is
- A) \$1,200.
 - B) \$1,800.
 - C) \$2,400.
 - D) indeterminate from this information, as the price of labor is not given.

Answer: B

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

Refer to the information provided in Figure 7.10 below to answer the questions that follow.

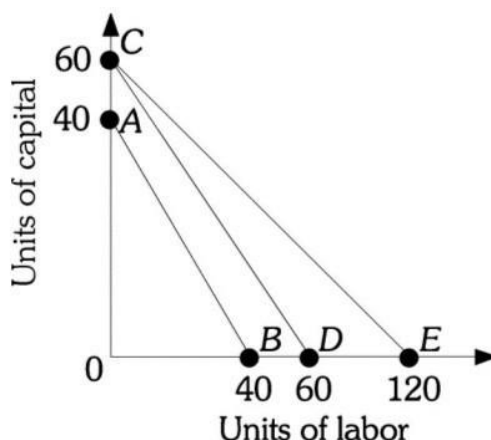


Figure 7.10

- 17) Refer to Figure 7.10. The firm is currently along isocost CD . If the price of capital is \$30, then the price of labor is
- A) \$4.
 - B) \$30.
 - C) \$180.
 - D) indeterminate from this information.

Answer: B

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

- 18) Refer to Figure 7.10. The firm's isocost line would shift from CE to CD if
- A) the price of capital rises.
 - B) the price of labor rises.
 - C) the firm's total expenditure on inputs decreases.
 - D) either the price of labor falls or the firm's total expenditure on inputs decreases.

Answer: B

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

- 19) Refer to Figure 7.10. The slope of isocost AB is
- A) -1.
 - B) 0.
 - C) 1.
 - D) indeterminate from this information, as the prices of capital and labor are not given.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

20) Refer to Figure 7.10. The slope of isocost CD is

- A) -1.
- B) 0.
- C) 1.
- D) indeterminate from this information, as the prices of capital and labor are not given.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

21) Refer to Figure 7.10. The slope of isocost CE is

- A) $-1/2$.
- B) -1.
- C) -2.
- D) indeterminate from this information, as the prices of capital and labor are not given.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

22) Refer to Figure 7.11. The firm's isocost line could shift from AB to CD if

- A) the price of capital decreased.
- B) the firm's total expenditures increased by 50%.
- C) the price of capital and labor each decreased by 50%.
- D) either B or C

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

Refer to the information provided in Figure 7.11 below to answer the questions that follow.

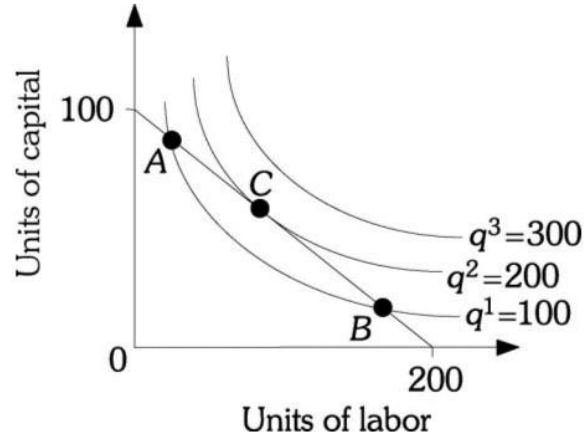


Figure 7.11

23) Refer to Figure 7.11. If this firm's cost of capital is \$10 per unit and its cost of labor is \$5 per unit, the isocost line represents a total cost of

- A) \$1,000.
- B) \$2,000.
- C) \$3,000.
- D) \$4,000.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

24) Refer to Figure 7.11. The slope of the isocost line is

- A) -2.
- B) -1/2.
- C) 1/2.
- D) 2.

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

25) Refer to Figure 7.11. At Point C the slope of the $q^2 = 200$ isoquant is

- A) -2.
- B) -1/2.
- C) -1.
- D) indeterminate from this information.

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

- 26) Refer to Figure 7.11. At Point A the absolute value of the slope of the $q_1 = 100$ isoquant is
- A) less than 2.
 - B) exactly equal to 2.
 - C) greater than 2.
 - D) indeterminate from this information.

Answer: C

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

- 27) Refer to Figure 7.11. If the given isocost line represents the firm's level of total cost, the _____ point represents the firm's optimal combination of capital and labor.
- A) A
 - B) B
 - C) C
 - D) 50 units of capital and 50 of labor

Answer: C

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

- 28) Refer to Figure 7.11. The given isocost line represents the firm's level of total cost. At the firm's optimal combination of capital and labor, the firm produces _____ units of output.
- A) 100
 - B) 200
 - C) 300
 - D) indeterminate from this information.

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

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Refer to the information provided in Figure 7.12 below to answer the questions that follow.

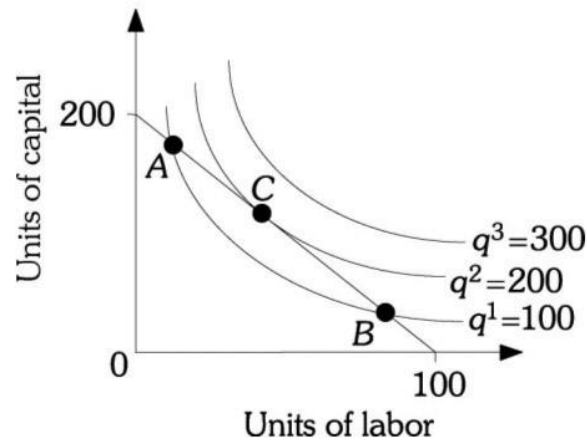


Figure 7.12

29) Refer to Figure 7.12. If the firm's cost of capital is \$15 per unit and its cost of labor is \$30 per unit, the isocost line represents a total cost of

- A) \$2,000.
- B) \$3,000.
- C) \$6,000.
- D) \$8,000.

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

30) Refer to Figure 7.12. The slope of the isocost line is

- A) -2.
- B) -1/2.
- C) 1/2.
- D) 2.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Analytic

31) Refer to Figure 7.13. At point C the slope of the $q_2 = 200$ isoquant is

- A) -2.
- B) -1/2.
- C) -1.
- D) indeterminate from this information.

Answer: A

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

32) Refer to Figure 7.13. If the isocost line given represents the firm's level of total cost, the _____ point represents the firm's optimal combination of capital and labor.

- A) A
- B) B
- C) C
- D) 50 units of capital and 50 of labor

Answer: C

Diff: 3

Topic: Appendix: Isoquants and Isocosts

Skill: Conceptual

33) The least costly way to produce any given level of output is indicated by the

- A) point of intersection between the isoquant corresponding to that level of output and the Y-axis.
- B) point of intersection between the isoquant corresponding to that level of output and the X-axis.
- C) point of tangency between an isocost line and the isoquant corresponding to that level of output.
- D) isocost line corresponding to that level of output.

Answer: C

Diff: 1

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

34) The point of tangency between an isocost line and an isoquant is necessarily

- A) the profit-maximizing combination of inputs a firm can hire to produce that output level.
- B) the least costly combination of inputs the firm can hire to produce that output level.
- C) both the profit-maximizing and least costly combination of inputs a firm can use to produce that output level.
- D) the minimum amount of output a firm can attain for that level of expenditure.

Answer: B

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Fact

35) We can derive a firm's total cost curve from its isoquant and isocost curves by varying

- A) the prices of capital and labor and keeping total expenditure constant.
- B) the production technologies, but keeping input prices and total expenditures constant.
- C) total expenditures while keeping input prices and the production technology constant.
- D) the price of either capital or labor while keeping total expenditures and the production technology constant.

Answer: C

Diff: 3

Topic: Appendix: Isoquants and Isocosts

Skill: Conceptual

36) The slope of the isoquant is

- A) $-MP_L/MP_K$.
- B) the marginal rate of technical substitution.
- C) negative.
- D) All of the above are correct.

Answer: D

Diff: 2

Topic: Appendix: Isoquants and Isocosts

Skill: Definition

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