Chapter 8: PRODUCTION AND COST IN THE SHORT RUN

Multiple Choice

8-1 Fill out the table and answer the question below.

<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>Total Product</th>
<th>Average Product</th>
<th>Marginal Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>20</td>
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<td>3</td>
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<td>6</td>
<td>78</td>
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<tr>
<td>7</td>
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<td>10</td>
<td></td>
</tr>
</tbody>
</table>

The average product of labor when 4 units of labor are employed is
a. 22.
 b. 20.
 c. 19.
 d. 16.
Answer: c
Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-2 Fill out the table and answer the question below.

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<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

The marginal product of the fifth unit of labor is
a. 16.
b. 10.
c. 4.
d. −2.
Answer: c
Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking

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8-3 Fill out the table and answer the question below.

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<td>1</td>
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<td>20</td>
<td>____</td>
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<tr>
<td>2</td>
<td>____</td>
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</tr>
<tr>
<td>7</td>
<td>____</td>
<td>10</td>
<td>____</td>
</tr>
</tbody>
</table>

Diminishing returns begin with the
a. first unit of labor.
b. third unit of labor.
c. fourth unit of labor.
d. sixth unit of labor.

Answer: b

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-4 Fill out the table and answer the question below.

<table>
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</thead>
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<td>____</td>
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<tr>
<td>2</td>
<td>____</td>
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</tr>
<tr>
<td>7</td>
<td>____</td>
<td>10</td>
<td>____</td>
</tr>
</tbody>
</table>

Marginal product is negative when _____ units of labor are employed.

a. 5 units of labor are employed.
b. 6 units of labor are employed.
c. 7 units of labor are employed.
d. both b and c.

Answer: d

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02
8-5 A production function measures the relation between
a. input prices and output prices.
b. the quantity of inputs and the quantity of output.
c. input prices and the quantity of output.
d. the quantity of inputs and input prices.
e. none of the above
Answer: b
Difficulty: 01 Easy
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
Blooms: Remember
Learning Objective: 08-01

8-6 A short-run production function assumes that
a. the level of output is fixed.
b. at least one input is a fixed input.
c. all inputs are fixed inputs.
d. both a and b
e. both b and c
Answer: b
Difficulty: 01 Easy
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-01

8-7 Given the table below, if capital is fixed at two units, what is the marginal product of the fourth unit of labor?

<table>
<thead>
<tr>
<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>80</td>
<td>100</td>
<td>120</td>
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<td>2</td>
<td>180</td>
<td>220</td>
<td>260</td>
</tr>
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<td>3</td>
<td>270</td>
<td>330</td>
<td>390</td>
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<tr>
<td>4</td>
<td>340</td>
<td>420</td>
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<td>5</td>
<td>390</td>
<td>490</td>
<td>590</td>
</tr>
<tr>
<td>6</td>
<td>410</td>
<td>530</td>
<td>650</td>
</tr>
</tbody>
</table>

Amount of total output produced from various combinations of labor and capital.

a. 60
b. 80
c. 100
d. 420
e. none of the above
Answer: e
Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02
8-8 Given the table below, if capital is fixed at one unit, diminishing returns begin with the

<table>
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<td>590</td>
</tr>
<tr>
<td></td>
<td>410</td>
<td>530</td>
<td>650</td>
</tr>
</tbody>
</table>

Amount of total output produced from various combinations of labor and capital.

a. first unit of labor.
b. second unit of labor.
c. third unit of labor.
d. fourth unit of labor.
e. none of the above

Answer: c

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

8-9 Given the table below, if labor is fixed at three units, how much does the third unit of capital add to total output?

<table>
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<td>590</td>
</tr>
<tr>
<td></td>
<td>410</td>
<td>530</td>
<td>650</td>
</tr>
</tbody>
</table>

Amount of total output produced from various combinations of labor and capital.

a. 60
b. 80
c. 110
d. 130
e. none of the above

Answer: a

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-10 If labor is fixed at 5 units, how much does the second unit of capital add to total output?
<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>80</td>
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<td>590</td>
</tr>
<tr>
<td>6</td>
<td>410</td>
<td>530</td>
<td>650</td>
</tr>
</tbody>
</table>

Amount of total output produced from various combinations of labor and capital.

a. 490
b. 390
c. 50
d. 100
e. none of the above

Answer: d

Difficulty: 01 Easy

Topic: Production in the Short Run

AACSB: Reflective Thinking

Blooms: Understand

Learning Objective: 08-02

8-11 If average product is increasing, then marginal product
a. must be greater than average product.
b. must be less than average product.
c. must be increasing.
d. cannot be decreasing.
e. both a and c

Answer: a

Difficulty: 01 Easy

Topic: Production in the Short Run

AACSB: Reflective Thinking

Blooms: Understand

Learning Objective: 08-02

8-12 Which of the following statements is FALSE?

a. A firm plans in the long run and operates in the short run.
b. In the short run, a firm can change some but not all of its inputs.
c. In the long run all inputs are variable.
d. In the short run all inputs are fixed.

Answer: d

Difficulty: 01 Easy

Topic: Some General Concepts in Production and Cost

AACSB: Reflective Thinking

Blooms: Understand

Learning Objective: 08-01

8-13 Suppose you run a pizza shop and currently have two employees. If you hire a third employee, your output of pizzas per day rises from 55 to 65. If you hire a fourth employee, output rises to 80 per day. A fifth and sixth employee would cause output to rise to 90 and 95 per day, respectively. Pick the correct statement:

a. Diminishing returns set in with the hiring of the fourth worker.
b. Diminishing returns set in with the hiring of the fifth worker.

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN

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c. Diminishing returns set in with the hiring of the sixth worker.
d. Diminishing returns set have not yet set in because output is still increases.

Answer: b

8-14 For a short-run production function in which output is determined by the number of workers utilized (capital stock held constant), which of the following is FALSE?

a. In general, when there are few workers the marginal product of labor will be increasing.
b. When the marginal product of labor is negative, total product is falling.
c. To determine the marginal product of labor, the capital stock must be held constant.
d. When diminishing returns set in, adding one more worker decreases output.
e. none of the above

Answer: d

8-15 Suppose that you run a house-painting company and currently have 2 workers painting a total of 4 houses per month. If you hire a third worker, 6 houses can be painted per month. If you hire a fourth worker, 9 houses can be painted, and a fifth and sixth worker will increase the number of houses painted to 13 and 15, respectively. Diminishing returns

a. set in when the fourth worker is hired.
b. set in when the fifth worker is hired.
c. set in when the sixth worker is hired.
d. have not yet set in because output is still increasing.

Answer: c
In the table above, how much does the third unit of labor ADD to total output?

<table>
<thead>
<tr>
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<th>Average Product</th>
<th>Marginal Product</th>
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<tr>
<td>1</td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>125</td>
<td></td>
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<td>4</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>290</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

a. 100  
b. 125  
c. 150  
d. 300  
e. none of the above

Answer: e

Difficulty: 01 Easy

Topic: Production in the Short Run

AACSB: Analytic

Blooms: Apply

Learning Objective: 08-02

In the table above, diminishing returns

a. begin with the first unit of labor.

b. begin with the third unit of labor.

c. begin with the fourth unit of labor.

d. begin with the fifth unit of labor.

e. do not occur because output is positive for all levels of labor usage.

Answer: b

Difficulty: 01 Easy

Topic: Production in the Short Run

AACSB: Analytic

Blooms: Apply

Learning Objective: 08-02
### Question 8-18

<table>
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<td>4</td>
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<td>20</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>290</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the table above, what is the average product of four units of labor?

a. 20  
b. 60  
c. 80  
d. 100  
e. 350

Answer: c

Difficulty: 01 Easy  
Topic: Production in the Short Run  
AACSB: Reflective Thinking  
Blooms: Understand  
Learning Objective: 08-02

### Question 8-19

<table>
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<tr>
<td>5</td>
<td>290</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the table above, what is the maximum amount of output that can be produced with two workers?

a. 50  
b. 125  
c. 150  
d. 250  
e. 320

Answer: d

Difficulty: 01 Easy  
Topic: Production in the Short Run  
AACSB: Reflective Thinking  
Blooms: Understand  
Learning Objective: 08-02

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In the table above, what is the marginal product of the fifth unit of labor?

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<td>20</td>
</tr>
<tr>
<td>5</td>
<td>290</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 20  
b. 50  
c. 80  
d. −10  
e. −30

Answer: e

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-21 Use the following table to answer the question below:

The amount of total output produced from various combinations of labor and capital.

<table>
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<tr>
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<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>360</td>
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<td></td>
<td>160</td>
<td>480</td>
<td>710</td>
<td>790</td>
</tr>
</tbody>
</table>

If the capital stock is fixed at one unit, how much does the third unit of labor add to total output?

a. 20  
b. 40  
c. 60  
d. 80  
e. none of the above

Answer: b

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

8-22 Use the following table to answer the question below:
The amount of total output produced from various combinations of labor and capital.

<table>
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<tr>
<th>Units of Capital</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<td>Units of Labor</td>
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<tr>
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<td>160</td>
<td>480</td>
<td>710</td>
</tr>
</tbody>
</table>

If the capital stock is fixed at one unit, diminishing returns begin with the
a. first unit of labor.
b. second unit of labor.
c. third unit of labor.
d. fourth unit of labor.
e. fifth unit of labor.
Answer: c
Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-23 Use the following table to answer the question below:

The amount of total output produced from various combinations of labor and capital.

<table>
<thead>
<tr>
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<th>2</th>
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<td></td>
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<td>160</td>
<td>480</td>
<td>710</td>
</tr>
</tbody>
</table>

If the capital stock is fixed at four units and there are three units of labor, what is the average product of labor?
a. 50
b. 140
c. 157.5
d. 170
e. none of the above
Answer: e
Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-24 Use the following table to answer the question below:

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN
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The amount of total output produced from various combinations of labor and capital.

<table>
<thead>
<tr>
<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>120</td>
<td>160</td>
<td>180</td>
</tr>
<tr>
<td>2</td>
<td>110</td>
<td>260</td>
<td>360</td>
<td>390</td>
</tr>
<tr>
<td>3</td>
<td>150</td>
<td>360</td>
<td>510</td>
<td>560</td>
</tr>
<tr>
<td>4</td>
<td>170</td>
<td>430</td>
<td>630</td>
<td>690</td>
</tr>
<tr>
<td>5</td>
<td>160</td>
<td>480</td>
<td>710</td>
<td>790</td>
</tr>
</tbody>
</table>

If labor is fixed at three units, how much does the second unit of capital add to total output?

a. 100
b. 150
c. 210
d. 360
e. none of the above

Answer: c

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-25 The marginal product of labor
a. measures how output changes as the wage rate changes.
b. is less than the average product of labor when the average product of labor is decreasing.
c. is negative when adding another unit of labor decreases output.
d. both a and b
e. both b and c

Answer: e

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-26 Use the following table to answer the question below:

The amount of total output produced from various combinations of labor and capital.

<table>
<thead>
<tr>
<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>36</td>
<td>48</td>
<td>53</td>
</tr>
<tr>
<td>2</td>
<td>38</td>
<td>68</td>
<td>88</td>
<td>94</td>
</tr>
<tr>
<td>3</td>
<td>53</td>
<td>94</td>
<td>122</td>
<td>133</td>
</tr>
<tr>
<td>4</td>
<td>63</td>
<td>112</td>
<td>148</td>
<td>164</td>
</tr>
<tr>
<td>5</td>
<td>68</td>
<td>120</td>
<td>164</td>
<td>184</td>
</tr>
</tbody>
</table>
If capital is fixed at three units, how much does the fourth unit of labor add to total output?

a. 16
b. 28
c. 34
d. 36
e. none of the above

Answer: e

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

8-27 Use the following table to answer the question below:

<table>
<thead>
<tr>
<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Labor</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>36</td>
<td>48</td>
<td>53</td>
</tr>
<tr>
<td>2</td>
<td>38</td>
<td>68</td>
<td>88</td>
<td>94</td>
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<tr>
<td>3</td>
<td>53</td>
<td>94</td>
<td>122</td>
<td>133</td>
</tr>
<tr>
<td>4</td>
<td>63</td>
<td>112</td>
<td>148</td>
<td>164</td>
</tr>
<tr>
<td>5</td>
<td>68</td>
<td>120</td>
<td>164</td>
<td>184</td>
</tr>
</tbody>
</table>

If the amount of labor used increases from three to four units, the marginal product of the second unit of capital

a. increases by 8 units.
b. increases by 49 units.
c. decreases by 14 units.
d. decreases by 49 units.
e. none of the above

Answer: a

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

8-28 Use the following table to answer the question below:

<table>
<thead>
<tr>
<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Labor</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
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</tr>
<tr>
<td>5</td>
<td>68</td>
<td>120</td>
<td>164</td>
<td>184</td>
</tr>
</tbody>
</table>
Which of the following input combinations can produce the same level of output?

a. $4K, 2L$ and $3K, 2L$

b. $3K, 2L$ and $2K, 3L$

c. $2K, 3L$ and $4K, 2L$

d. all of the above

Answer: c

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-29 Use the following table to answer the question below:

<table>
<thead>
<tr>
<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
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<td>1</td>
<td>20</td>
<td>36</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>38</td>
<td>68</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>53</td>
<td>94</td>
<td>122</td>
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<td>4</td>
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<td>112</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>68</td>
<td>120</td>
<td>164</td>
</tr>
</tbody>
</table>

If the amount of capital increases from 3 to 4 units, the marginal product of the fourth unit of labor

a. decreases by 3 units.

b. increases by 8 units.

c. increases by 5 units.

d. decreases by 12 units.

e. none of the above

Answer: c

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-30 Use the following table to answer the question below:

<table>
<thead>
<tr>
<th>Units of Capital</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tr>
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<td>3</td>
<td>53</td>
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</tr>
<tr>
<td></td>
<td>5</td>
<td>68</td>
<td>120</td>
<td>164</td>
</tr>
</tbody>
</table>

Diminishing marginal productivity

a. occurs when the marginal product curve begins to slope downward.

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN
b. means that adding one more unit of the variable input will reduce total product.

c. occurs eventually because each additional unit of the variable unit has, on average, fewer units of the fixed input with which to work.

d. both a and c

e. both b and c

Answer: d

8-31 If marginal product is decreasing, then it must be the case that
a. average product is decreasing.

b. average product is greater than marginal product.

c. average product is less than marginal product.

d. both a and c

e. none of the above.

Answer: e

8-32 If a firm is producing a given level of output in a technically efficient manner, then it must be the case that
a. this is the lowest cost method of producing that output.

b. each input is producing its maximum marginal product.

c. this output level is the most that can be produced with the given levels of inputs.

d. both a and c

e. all of the above

Answer: c

8-33 If a firm is producing a given level of output in an economically efficient manner, then it must be the case that
a. this is the lowest cost method of producing that output.

b. each input is producing its maximum marginal product.

c. this output level is the most that can be produced with the given level of inputs.

d. both a and c

e. none of the above

Answer: d
8-34 A firm is using a single variable input, labor, with a given amount of a fixed input, capital. If the level of capital is decreased,

a. the total product curve of labor curve shifts downward.
b. the average product curve of labor curve shifts downward.
c. the marginal product curve of labor shifts downward.
d. all of the above
e. none of the above

Answer: d

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-35 Diminishing returns refers to the decrease in

a. profit that results from increases in output.
b. average total cost that results from decreases in input prices.
c. average product that results from increases in the variable input.
d. marginal product that results from increases in the variable input.
e. long-run average cost that results from increases in input.

Answer: d

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-36 Given the table below, as the number of workers increases from 10 to 15, output per worker

<table>
<thead>
<tr>
<th>Number of Workers</th>
<th>Total Product</th>
<th>Average Product</th>
<th>Marginal Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>420</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

a. increases from 290 to 420
b. increases from 28 to 29
c. decreases from 29 to 28
d. decreases from 30 to 26
e. none of the above

Answer: c

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02
8-37 Given the table below, how much does the 13th worker add to total output?

<table>
<thead>
<tr>
<th>Number of Workers</th>
<th>Total Product</th>
<th>Average Product</th>
<th>Marginal Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

a. 28 units
b. 29 units
c. 130 units
d. 420 units
e. none of the above

Answer: e
Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Bloom: Apply
Learning Objective: 08-02

8-38 Given the table below, diminishing returns begin with the

<table>
<thead>
<tr>
<th>Number of Workers</th>
<th>Total Product</th>
<th>Average Product</th>
<th>Marginal Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

a. 1st worker.
b. 5th worker.
c. 10th worker.
d. 11th worker.
e. 16th worker.
Answer: d
Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Bloom: Apply
Learning Objective: 08-02
8-39 Given the table below, the maximum amount that can be produced using 20 workers is

<table>
<thead>
<tr>
<th>Number of Workers</th>
<th>Total Product</th>
<th>Average Product</th>
<th>Marginal Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

ea. 442 units.
b. 530 units.
c. 22 units.
d. 420 units.
e. 26.5 units.

Answer: b
Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

8-40 A firm's cost of production is affected by changes in
a. the available technology.
b. input prices.
c. profits.
d. both a and b
e. both b and c

Answer: d
Difficulty: 01 Easy
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-01

8-41 A short-run cost function assumes that
a. the level of output is fixed.
b. at least one input is fixed in supply.
c. all inputs are fixed in supply.
d. both a and b
e. both b and c

Answer: b
Difficulty: 01 Easy
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-01
A fixed cost is
a. the cost of any input with a fixed price per unit.
b. a cost which increases in a fixed proportion as output increases.
c. a cost the firm must pay even if output is zero.
d. both b and c

e. all of the above

Answer: c

Given the table below, what is the total fixed cost when 400 units of output are produced?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
<th>Total Fixed Cost</th>
<th>Total Variable Cost</th>
<th>Average Fixed Cost</th>
<th>Average Variable Cost</th>
<th>Average Total Cost</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>560</td>
<td></td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td>4.00</td>
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<td>200</td>
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<td></td>
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<tr>
<td>300</td>
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<td></td>
<td></td>
<td>4.00</td>
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</tr>
<tr>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.00</td>
<td></td>
</tr>
</tbody>
</table>

a. $500
b. $2000
c. $3500
d. $5000
e. none of the above

Answer: a

Given the table below, what is average total cost when 200 units of output are produced?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
<th>Total Fixed Cost</th>
<th>Total Variable Cost</th>
<th>Average Fixed Cost</th>
<th>Average Variable Cost</th>
<th>Average Total Cost</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>560</td>
<td></td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td>4.00</td>
</tr>
<tr>
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<td>300</td>
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<td></td>
<td></td>
<td>4.00</td>
<td></td>
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<tr>
<td>400</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>7.00</td>
<td></td>
</tr>
</tbody>
</table>

a. $2.30
b. $2.50
c. $4.00
d. $4.80
e. none of the above
8-45 Given the table below, what is average fixed cost when 300 units of output are produced?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
<th>Total Fixed Cost</th>
<th>Total Variable Cost</th>
<th>Average Fixed Cost</th>
<th>Average Variable Cost</th>
<th>Average Total Cost</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>560</td>
<td></td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
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<td></td>
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<td>4.00</td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

a. $0.60  
b. $3.00  
c. $160  
d. $500  
e. none of the above

Answer: e

8-46 Given the table below, what is the marginal cost of the 250th unit of output?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
<th>Total Fixed Cost</th>
<th>Total Variable Cost</th>
<th>Average Fixed Cost</th>
<th>Average Variable Cost</th>
<th>Average Total Cost</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>560</td>
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<td></td>
</tr>
</tbody>
</table>

a. $0.14  
b. $2.40  
c. $4.00  
d. $7.40  
e. none of the above

Answer: d
8-47  Average fixed cost
  a. increases as output increases.
  b. decreases as output increases.
  c. increases if marginal cost is increasing.
  d. increases if marginal cost is greater than average fixed cost.
Answer: b
Difficulty: 01 Easy
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-01

8-48  Marginal cost
  a. measures how total cost changes when input prices change.
  b. measures how total cost changes when one more unit of output is produced.
  c. is less than average cost when average cost is decreasing.
  d. both a and b
  e. both b and c
Answer: e
Difficulty: 01 Easy
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-01

8-49  Suppose that the firm's only variable input is labor. When 50 workers are used, the average product of labor is 50 and the marginal product of labor is 75. The wage rate is $80 and the total cost of the fixed input is $500. What is average variable cost?
  a. $0.63
  b. $1.60
  c. $3.20
  d. $10.00
  e. none of the above
Answer: b
Difficulty: 02 Medium
Topic: Some General Concepts in Production and Cost
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-01

8-50  Suppose that the firm's only variable input is labor. When 50 workers are used, the average product of labor is 50 and the marginal product of labor is 75. The wage rate is $80 and the total cost of the fixed input is $500. What is the marginal cost?
  a. $0.63
  b. $0.94
  c. $1.60
  d. $3.20
  e. none of the above
Answer: e
Difficulty: 02 Medium
Suppose that the firm's only variable input is labor. When 50 workers are used, the average product of labor is 50 and the marginal product of labor is 75. The wage rate is $80 and the total cost of the fixed input is $500.

8-51 What is average total cost?

a. $0.825  
b. $0.63  
c. $1.80  
d. $4.10  
e. none of the above

Answer: c  
Difficulty: 02 Medium  

8-52 Which of the following is true?

a. Average variable cost is increasing.  
b. Marginal cost is increasing.  
c. Average variable cost is decreasing.  
d. Cannot determine without more information.

Answer: c  
Difficulty: 02 Medium  

8-53 Suppose that the firm's only variable input is labor. When 50 workers are used, the average product of labor is 50 and the marginal product of labor is 75. The wage rate is $80 and the total cost of the fixed input is $500. Suppose that installation of a new assembly line increases the output produced per worker. The cost per unit of output

a. will increase.  
b. will decrease.  
c. will be unchanged.  
d. is at its maximum.  
e. is at its minimum

Answer: b  
Difficulty: 01 Easy  

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN  
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8-54  Average total cost
   a. increases as output increases.
   b. decreases as output increases.
   c. increases if marginal cost is increasing.
   d. increases if marginal cost is greater than average total cost.
   e. both c and d
Answer: d
Difficulty: 01 Easy
Topic: Short-Run Costs of Production
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-03

8-55  A firm is currently producing 10 units of output; marginal cost is $24 and average total cost is $6 at this level of output. The average total cost at 9 units of output is:
   a. $4
   b. $5
   c. $6
   d. $8
   e. none of the above
Answer: a
Difficulty: 03 Hard
Topic: Short-Run Costs of Production
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-03

8-56

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN
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Above is a firm's average product of labor and marginal product of labor curves. The price of labor is $60 per unit. Given this, diminishing returns set in with the
a. 3rd unit of labor.
b. 6th unit of labor.
c. 10th unit of labor.
d. 12th unit of labor.
e. 14th unit of labor.
Answer: b
Difficulty: 01 Easy
Topic: Short-Run Costs of Production
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-03

Above is a firm's average product of labor and marginal product of labor curves. The price of labor is $60 per unit. When the firm uses 6 units of labor, what is marginal cost?

a. $0.25
b. $5
c. $6.67
d. $7.06
e. $10.25
Answer: b
Difficulty: 02 Medium
Topic: Short-Run Costs of Production

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN
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Above is a firm's average product of labor and marginal product of labor curves. The price of labor is $60 per unit. When the firm uses 4 units of labor, what is AVERAGE variable cost?

a. $10
b. $24
c. $124
d. $240
e. none of the above

Answer: a

Difficulty: 03 Hard

Topic: Short-Run Costs of Production

AACSB: Analytic

Blooms: Apply

Learning Objective: 08-03
8-59  Based on the following table, what is total variable cost when 100 units of output are produced?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$300</td>
</tr>
<tr>
<td>50</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>1050</td>
</tr>
<tr>
<td>150</td>
<td>1650</td>
</tr>
<tr>
<td>200</td>
<td>2400</td>
</tr>
</tbody>
</table>

a. $5  
b. $10.50  
c. $105  
d. $1050  
e. none of the above

Answer: e

Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-02

8-60  Based on the following table, what is average fixed cost when 150 units of output are produced?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$300</td>
</tr>
<tr>
<td>50</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>1050</td>
</tr>
<tr>
<td>150</td>
<td>1650</td>
</tr>
<tr>
<td>200</td>
<td>2400</td>
</tr>
</tbody>
</table>

a. $2  
b. $9  
c. $11  
d. $16.50  
e. none of the above

Answer: a

Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

8-61  Based on the following table, the additional cost of producing the 170th unit of output is:

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$300</td>
</tr>
<tr>
<td>50</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>1050</td>
</tr>
<tr>
<td>150</td>
<td>1650</td>
</tr>
<tr>
<td>200</td>
<td>2400</td>
</tr>
</tbody>
</table>

a. $10.50  
b. $11.50  
c. $13  

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN
d. $15
e. none of the above
Answer: d
Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

Based on the following table, what is average variable cost when output is 200?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$300</td>
</tr>
<tr>
<td>50</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>1050</td>
</tr>
<tr>
<td>150</td>
<td>1650</td>
</tr>
<tr>
<td>200</td>
<td>2400</td>
</tr>
</tbody>
</table>

a. $2.00
b. $12.00
c. $10.50
d. $240
e. $210
Answer: c
Difficulty: 02 Medium
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02

Based on the following table, the additional cost of producing the 60th unit of output is:

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$300</td>
</tr>
<tr>
<td>50</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>1050</td>
</tr>
<tr>
<td>150</td>
<td>1650</td>
</tr>
<tr>
<td>200</td>
<td>2400</td>
</tr>
</tbody>
</table>

a. $5
b. $250
c. $8
d. $120
e. $80
Answer: a
Difficulty: 01 Easy
Topic: Production in the Short Run
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-02
8-64 Based on the following table, what is average fixed cost when 200 units of output are produced?

<table>
<thead>
<tr>
<th>Output</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$300</td>
</tr>
<tr>
<td>50</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>1050</td>
</tr>
<tr>
<td>150</td>
<td>1650</td>
</tr>
<tr>
<td>200</td>
<td>2400</td>
</tr>
</tbody>
</table>

a. $2.80  
b. $80    
c. $150   
d. $1.50  
e. none of the above

Answer: d

Difficulty: 01 Easy  
Topic: Production in the Short Run  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-02

8-65 Suppose a firm is hiring 20 workers at a wage rate of $60. The average product of labor is 30, the last worker added 12 units of output, and total fixed cost is $3,600. What is marginal cost?

a. $.20  
b. $5    
c. $240  
d. $720  
e. none of the above

Answer: b

Difficulty: 01 Easy  
Topic: Production in the Short Run  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-02

8-66 Suppose a firm is hiring 20 workers at a wage rate of $60. The average product of labor is 30, the last worker added 12 units of output, and total fixed cost is $3,600. What is average total cost?

a. $2    
b. $8    
c. $600  
d. $1800  
e. none of the above

Answer: b

Difficulty: 02 Medium  
Topic: Production in the Short Run  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-02
The capital stock is fixed at 5 units, the price of capital is $60 per unit, and the price of labor is $20 per unit.

<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>Units of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>6</td>
<td>46</td>
</tr>
<tr>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>72</td>
</tr>
<tr>
<td>12</td>
<td>80</td>
</tr>
</tbody>
</table>

Based on the above, if the firm produces 80 units of output, what is its total cost of production?

- a. $540
- b. $1,600
- c. $1,900
- d. $5,040
- e. none of the above

Answer: a

8-68 The capital stock is fixed at 5 units, the price of capital is $60 per unit, and the price of labor is $20 per unit.

<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>Units of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>6</td>
<td>46</td>
</tr>
<tr>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>72</td>
</tr>
<tr>
<td>12</td>
<td>80</td>
</tr>
</tbody>
</table>

Based on the above, if the firm produces 60 units of output, what is average variable cost?

- a. $5
- b. $7.67
- c. $20
- d. $57.50
- e. $2.67

Answer: e
The capital stock is fixed at 5 units, the price of capital is $60 per unit, and the price of labor is $20 per unit.

<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>Units of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
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<td>6</td>
<td>46</td>
</tr>
<tr>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>72</td>
</tr>
<tr>
<td>12</td>
<td>80</td>
</tr>
</tbody>
</table>

Based on the above, how much does the 12th unit of output add to the firm's total variable cost?

a. $2.50
b. $4

c. $5
d. $20
e. $40

Answer: a

In the figure above, the wage rate is $600 and total fixed cost is $15,000. When there are 40 workers, what is average variable cost?

a. $0.23
b. $5.00
c. $4.10
d. $6.00
e. $12.00

Answer: b
In the figure above, the wage rate is $600 and total fixed cost is $15,000. How much output does the firm produce when average variable cost is at its minimum?

a. 270  
b. 375  
c. 30  
d. 1,600  
e. 4,800

Answer: e

Difficulty: 02 Medium

Topic: Short-Run Costs of Production
AACSBS: Analytic
Blooms: Apply
Learning Objective: 08-03
In the figure above, the wage rate is $600 and total fixed cost is $15,000. What is average variable cost at its minimum?

a. $3.75  
b. $30  
c. $0.94  
d. $28  
e. $2.80

Answer: a

Difficulty: 02 Medium

Topic: Short-Run Costs of Production

AACSB: Analytic

Blooms: Apply

Learning Objective: 08-03

8-73

Short-run average cost is

a. always greater than long-run average cost.
b. always less than long-run average cost.
c. less than short-run marginal cost when short-run marginal cost is decreasing.
d. both a and c  
e. none of the above

Answer: e

Difficulty: 02 Medium

Topic: Some General Concepts in Production and Cost

AACSB: Reflective Thinking

Blooms: Understand

Learning Objective: 08-01
In the table below, the capital stock is fixed at 40 units, the price of capital is $15 per unit, and the price of labor is $80 per unit.

<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>Units of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>15</td>
<td>180</td>
</tr>
<tr>
<td>20</td>
<td>220</td>
</tr>
</tbody>
</table>

If the firm produces 180 units of output, what is total variable cost?

- a. $1,200
- b. $1,800
- c. $14,400
- d. $17,100
- e. none of the above

Answer: a

Difficulty: 01 Easy

Topic: Some General Concepts in Production and Cost

AACSB: Analytic

Blooms: Apply

Learning Objective: 08-01

In the table below, the capital stock is fixed at 40 units, the price of capital is $15 per unit, and the price of labor is $80 per unit.

<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>Units of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>15</td>
<td>180</td>
</tr>
<tr>
<td>20</td>
<td>220</td>
</tr>
</tbody>
</table>

If the firm produces 40 units of output, what is average fixed cost?

- a. $7.50
- b. $25
- c. $120
- d. $600
- e. none of the above

Answer: e

Difficulty: 02 Medium

Topic: Production in the Short Run

AACSB: Analytic

Blooms: Apply

Learning Objective: 08-02
In the table below, the capital stock is fixed at 40 units, the price of capital is $15 per unit, and the price of labor is $80 per unit.

<table>
<thead>
<tr>
<th>Units of Labor</th>
<th>Units of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>15</td>
<td>180</td>
</tr>
<tr>
<td>20</td>
<td>220</td>
</tr>
</tbody>
</table>

How much does the 50th unit of output add to the firm's total cost?

a. $6.67  
b. $10  
c. $400  
d. $600  
e. none of the above

Answer: a

Difficulty: 03 Hard  
Topic: Relations Between Short-Run Costs and Production  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-04

A firm produces 4,000 units of output using 500 workers. Marginal cost is $10, the wage rate is $160, and total fixed cost is $100,000. What is average variable cost?

a. $0.32  
b. $16  
c. $20  
d. $1,280  
e. none of the above

Answer: c

Difficulty: 02 Medium  
Topic: Relations Between Short-Run Costs and Production  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-04

A firm produces 4,000 units of output using 500 workers. Marginal cost is $10, the wage rate is $160, and total fixed cost is $100,000. What is the marginal product of labor?

a. $8 per worker  
b. 8 units of output per worker  
c. $16 per worker  
d. 16 units of output per worker  
e. none of the above

Answer: d

Difficulty: 02 Medium  
Relations Between Short-Run Costs and Production  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-04
A firm produces 4,000 units of output using 500 workers. Marginal cost is $10, the wage rate is $160, and total fixed cost is $100,000. When output is 4,000 units,

a. average variable cost is decreasing.

b. average variable cost is increasing.

c. average total cost is decreasing.

d. average total cost is increasing.

e. both a and c

Answer: e

Difficulty: 03 Hard

Topic: Short-Run Costs of Production

AACSB: Reflective Thinking

Blooms: Understand

Learning Objective: 08-03

In the above figure, what is the TOTAL cost of producing 5 units of output?

a. $10

b. $60

c. $100

d. $225

e. $2,000

Answer: c

Difficulty: 01 Easy

Topic: Short-Run Costs of Production

AACSB: Reflective Thinking

Blooms: Understand

Learning Objective: 08-03

Chapter 8: PRODUCTION AND COST IN THE SHORT RUN
In the above figure, what is the AVERAGE total cost of producing 10 units of output?

a. $4  
b. $8  
c. $12  
d. $50  
e. $360  

Answer: c  
Difficulty: 01 Easy  
Topic: Short-Run Costs of Production  
AACSB: Reflective Thinking  
Blooms: Understand  
Learning Objective: 08-03
In the above figure, what is the AVERAGE variable cost of producing 5 units of output?

a. $12  
b. $20  
c. $40  
d. $60  
e. $80  

Answer: a
Difficulty: 01 Easy  
Topic: Short-Run Costs of Production  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-03

8-83 To answer, refer to the following:

"Ford built 18 vehicles per auto employee in North America last year, while GM could only manage 12."  (The Wall Street Journal)

In comparison with GM, Ford had a higher

a. average product of labor.  
b. average product of capital.  
c. marginal product of labor.  
d. marginal product of capital.  

Answer: a
Difficulty: 01 Easy  
Topic: Some General Concepts in Production and Cost  
AACSB: Reflective Thinking  
Blooms: Understand  
Learning Objective: 08-01
8-84 To answer, refer to the following:

"Ford built 18 vehicles per auto employee in North America last year, while GM could only manage 12." (The Wall Street Journal)

In comparison with GM, Ford had
a. higher average variable cost.
b. lower average variable cost.
c. higher total variable cost.
d. both a and c
e. none of the above
Answer: b
Difficulty: 02 Medium
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-01

8-85 To answer, refer to the following:

"At Huffy's ... bicycle factory, 1,700 employees turn out 15,000 bicycles a day (in 1987). Five years before, it required 2,200 workers to make 10,000 bikes daily." (The Wall Street Journal).

In 1987,
a. total product was 15,000 bicycles per day.
b. the average product of labor was 0.11.
c. the marginal product of labor was 8.8.
d. both a and b
e. both a and c
Answer: d
Difficulty: 02 Medium
Relations Between Short-Run Costs and Production
AACSB: Reflective Thinking
Blooms: Understand
Learning Objective: 08-04

8-86 To answer, refer to the following:

"At Huffy's ... bicycle factory, 1,700 employees turn out 15,000 bicycles a day (in 1987). Five years before, it required 2,200 workers to make 10,000 bikes daily." (The Wall Street Journal).

Holding all else equal, we can conclude that, over those years,
a. Huffy's average variable cost decreased.
b. Huffy's average variable cost increased.
c. Huffy's marginal cost decreased.
d. Huffy's marginal cost increased.
e. both a and c
Answer: a
Difficulty: 01 Easy
Topic: Some General Concepts in Production and Cost
AACSB: Reflective Thinking
The capital stock is fixed at 50 units, the price of capital is $30 per unit, and the price of labor is $25 per unit.

<table>
<thead>
<tr>
<th>Output</th>
<th>Average Variable Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>$40</td>
</tr>
<tr>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

Given the above, if the firm produces 40 units of output, what is total variable cost?

a. $1.50  
b. $60  
c. $100  
d. $2,400  
e. none of the above

Answer: d

The capital stock is fixed at 50 units, the price of capital is $30 per unit, and the price of labor is $25 per unit.

<table>
<thead>
<tr>
<th>Output</th>
<th>Average Variable Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>$40</td>
</tr>
<tr>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

Given the above, if the firm produces 20 units of output, what is average fixed cost?

a. $1.50  
b. $50  
c. $150  
d. $600  
e. none of the above

Answer: e
The capital stock is fixed at 50 units, the price of capital is $30 per unit, and the price of labor is $25 per unit.

<table>
<thead>
<tr>
<th>Output</th>
<th>Average Variable Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>$40</td>
</tr>
<tr>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

Given the above, how much does the 23rd unit of output add to the firm's total cost?

a. $75  
b. $135  
c. $750  
d. $1,350  
e. none of the above  

Answer: a  
Difficulty: 02 Medium  
Topic: Production in the Short Run  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-02

The capital stock is fixed at 50 units, the price of capital is $30 per unit, and the price of labor is $25 per unit.

<table>
<thead>
<tr>
<th>Output</th>
<th>Average Variable Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>$40</td>
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<tr>
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<td>30</td>
</tr>
<tr>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

Given the above, if the firm produces 30 units of output, how many units of labor does the firm use?

a. 30  
b. 45  
c. 54  
d. 60  
e. none of the above  

Answer: c  
Difficulty: 02 Medium  
Topic: Production in the Short Run  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-02
The following graph shows the marginal and average product curves for labor, the firm's only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.

At what output does the firm reach minimum average variable cost?

a. 7,400  
b. 8,000  
c. 100  
d. 6,000  
e. 600

Answer: b

Difficulty: 02 Medium  
Topic: Short-Run Costs of Production  
AACSB: Reflective Thinking  
Blooms: Understand  
Learning Objective: 08-03
The following graph shows the marginal and average product curves for labor, the firm’s only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.

What is AVC at its minimum?

a. $80
b. $100
c. $8
d. $50
e. $35

Answer: e

Difficulty: 02 Medium
Topic: Short-Run Costs of Production
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-03
The following graph shows the marginal and average product curves for labor, the firm's only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.

When the firm uses 40 units of labor, how much output does it produce?

a. 1,600 units  
b. 400 units  
c. 4,000 units  
d. 2,800 units  
e. none of the above  

Answer: a

Difficulty: 02 Medium
Topic: Short-Run Costs of Production
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-03
When the firm uses 40 units of labor, what is $AVC$ at this level of output?

a. $120 \\
b. $400 \\
c. $40 \\
d. $70 \\
e. $86

Answer: d

Difficulty: 02 Medium
Topic: Short-Run Costs of Production
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-03
The following graph shows the marginal and average product curves for labor, the firm's only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.

When the firm uses 40 units of labor, what is marginal cost at this level of output?

a. $70
b. $35
c. $60
d. $280
e. $55

Answer: b

Difficulty: 02 Medium
Topic: Short-Run Costs of Production
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-03
The following graph shows the marginal and average product curves for labor, the firm's only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.

When the firm uses 40 units of labor, what is average total cost at this output?

a. $140  
b. $40  
c. $70  
d. $170  
e. none of the above

Answer: d

Difficulty: 02 Medium  
Topic: Short-Run Costs of Production  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-03

The following graph shows the marginal and average product curves for labor, the firm's only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.
When the firm uses 120 units of labor, how much output does it produce?

a. 7,000 units
b. 70 units
c. 8,400 units
d. 9,200 units
e. 7,500 units

Answer: c
Difficulty: 02 Medium
Topic: Short-Run Costs of Production
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-03

8-98 The following graph shows the marginal and average product curves for labor, the firm's only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.
When the firm uses 120 units of labor, what is its $AVC$ at this output?

a. $40
b. $70
c. $60
d. $56
e. none of the above

Answer: a
Difficulty: 02 Medium
Topic: Short-Run Costs of Production
AACSB: Analytic
Blooms: Apply
Learning Objective: 08-03

The following graph shows the marginal and average product curves for labor, the firm’s only variable input. The monthly wage for labor is $2,800. Fixed cost is $160,000.
When the firm uses 120 units of labor, what is its marginal cost at this output?

a. $65  
b. $70  
c. $50  
d. $56  
e. $120  

Answer: d  
Difficulty: 02 Medium  
Topic: Short-Run Costs of Production  
AACSB: Analytic  
Blooms: Apply  
Learning Objective: 08-03
When the firm uses 120 units of labor, what is average total cost at this output?

a. $59
b. $40
c. $190
d. $84
e. $120

Answer: a

Difficulty: 02 Medium

Topic: Short-Run Costs of Production

AACSB: Analytic

Blooms: Apply

Learning Objective: 08-03