

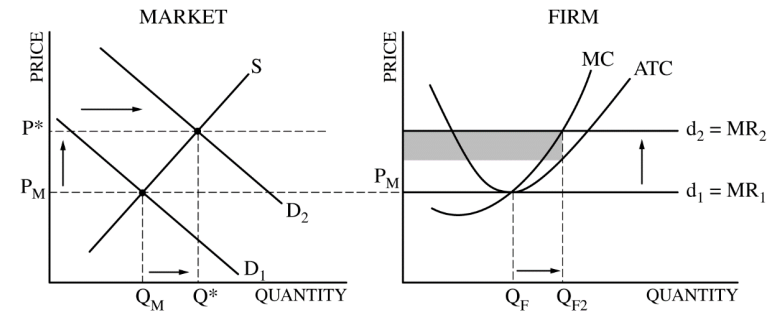
AP Microeconomics

Scoring Guidelines

2017 SCORING GUIDELINES

Question 1

10 points (4 + 2 + 1 + 1 + 2)



(a) 4 points:

- One point is earned for drawing a correctly labeled graph of the corn market with P_M and Q_M . The market demand curve must be downward sloping and the market supply curve must be upward sloping.
- One point is earned for showing a horizontal demand curve on the firm's graph extended from the market equilibrium price, P_M .
- One point is earned for identifying the firm's profit-maximizing quantity, Q_F , at marginal cost equal to marginal revenue ($MC=MR_1$).
- One point is earned for showing the firm's average total cost (ATC) curve and marginal cost (MC) passing through the minimum point of ATC, and $P = ATC = MC$ at Q_F .

Note: All quantities and prices should be labeled on the axes and connected to the intersection points by dashed lines.

(b) 2 points:

- One point is earned for showing a rightward shift of the market demand curve and a higher price and quantity, P^* and Q^* .
- One point is earned for completely shading the area representing the profit for a representative corn farmer.

(c) 1 point:

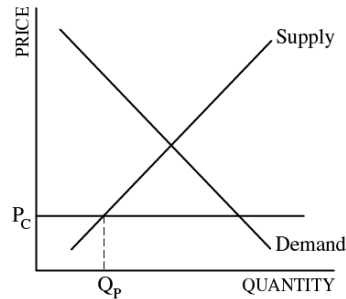
- One point is earned for stating that the market quantity will increase and the market's price will decrease in the long run, and for explaining that new corn farmers will enter the market, which will increase the market supply curve.

2017 SCORING GUIDELINES

Question 1 (continued)

(d) 1 point:

- One point is earned for stating that the price of soybeans in the next planting season will increase, and for explaining that the supply of soybeans will decrease because the higher price of corn encourages farmers to substitute corn for soybeans in production.



(e) 2 points:

- One point is earned for showing a correctly labeled graph of the corn market, with the price ceiling, P_C , below the equilibrium price of corn.
- One point is earned for showing the quantity purchased by consumers in the corn market labeled as Q_P where P_C intersects the supply curve.

2017 SCORING GUIDELINES

Question 2

5 points (1 + 4)

(a) 1 point:

- One point is earned for stating that the firm would be operating with increasing returns to scale and for explaining that doubling inputs will more than double output (output increases from 10 units to 50 units as a result of doubling labor and capital) **or** for explaining that average total cost decreases from \$27.50 to \$11 when labor and capital double.

(b) 4 points:

- One point is earned for correctly calculating the marginal product (MP) for the third unit of labor as 25 units and showing the work: $\frac{75-50}{3-2} = 25$.
- One point is earned for answering yes and for explaining that the MP of the third unit of labor (25 units) is less than the MP of the second unit of labor (30 units).
- One point is earned for correctly calculating the firm's average total cost (ATC) and showing the work: $\frac{75 \cdot 2}{75} + \frac{200 \cdot 3}{75} = 2 + 8 = \10 **or** $\frac{(75 \cdot 2) + (200 \cdot 3)}{75} = \frac{750}{75} = \10 .
- One point is earned for identifying the lowest output price as \$8 at which the third unit of labor would be hired.

2017 SCORING GUIDELINES

Question 3

7 points (2 + 1 + 1 + 2 + 1)

(a) 2 points:

- One point is earned for correctly identifying the monopolist's profit-maximizing quantity, Q_3 .
- One point is earned for correctly identifying the monopolist's profit-maximizing price, P_4 .

(b) 1 point:

- One point is earned for stating that $MSC > MPC$ **or** that the MSC curve exceeds, is above, or is greater than the MPC curve.

(c) 1 point:

- One point is earned for correctly identifying the socially optimal quantity, Q_3 .

(d) 2 points:

- One point is earned for correctly identifying the dollar value of the tax, $P_4 - P_1$.
- One point is earned for correctly identifying the profit-maximizing quantity associated with the tax, Q_2 .

(e) 1 point:

- One point is earned for correctly stating that the deadweight loss increases because the monopolist's profit-maximizing quantity is equal to the socially optimal quantity before the tax and is less than the socially optimal quantity after the tax.

AP[®] Microeconomics

2016 Scoring Guidelines

© 2016 The College Board. College Board, Advanced Placement Program, AP, AP Central, and the acorn logo are registered trademarks of the College Board.

Visit the College Board on the Web: www.collegeboard.org.

AP Central is the official online home for the AP Program: apcentral.collegeboard.org.

2016 SCORING GUIDELINES

Question 1

10 points (3+3+4)

(a) 3 points:

- One point is earned for stating that the quantity supplied exceeds the quantity demanded at the price floor or the price floor would result in a surplus because the price floor is binding or effective.
- One point is earned for correctly calculating the price elasticity of supply.
Students can use either the midpoint formula or the point elasticity formula.

$$E = (500/1250) / (0.2/1.1) = 2.2$$

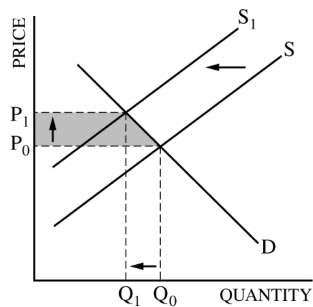
$$E = (50\%/20\%) = 2.5$$

$$E = (500/0.2) \times (1/1000) = 2.5$$

$$E = [(1500-1000)/1000] / [(1.2-1)/1] = 0.5/0.2 = 2.5$$

$$E = (500/0.2) \times (1.2/1500) = 2$$
- One point is earned for stating that the supply is elastic and for explaining that the percentage change in quantity supplied exceeds the percentage change in price or because price elasticity of supply is greater than one. (Other equivalent explanations are accepted.)

(b) 3 points:



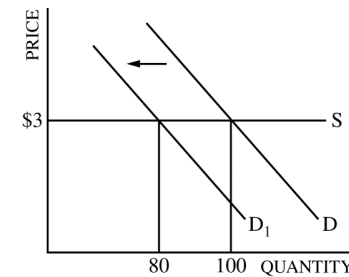
- One point is earned for drawing a correctly labeled graph and for showing the equilibrium price and quantity, labeled P_0 and Q_0 , respectively.
- One point is earned for shifting the supply curve to the left and for showing the new equilibrium price and quantity, labeled P_1 and Q_1 , respectively.
- One point is earned for completely shading on the graph the area representing the change in consumer surplus.

2016 SCORING GUIDELINES

Question 1 (continued)

(c) 4 points:

- One point is earned for stating that coffee and muffins are complementary goods.



- One point is earned for drawing a correctly labeled graph for the coffee market and showing a horizontal supply curve (S) and a downward sloping demand curve (D).
- One point is earned for shifting the demand curve to the left and for showing a decrease in the equilibrium quantity and no change in the equilibrium price of coffee.
- One point is earned for correctly calculating the new equilibrium quantity and showing the work.

$$\% \Delta Q = (10\% \times -2) = -20\%$$

$$\text{New Equilibrium Quantity} = 100 \times (-20\%) = 80$$
OR

$$\text{New Equilibrium Quantity} = 100 - (0.2 \times 100) = 80$$

(Using the midpoint formula is also acceptable.)

2016 SCORING GUIDELINES

Question 2

7 points (1+1+1+3)

(a) 1 point:

- One point is earned for stating that the marginal benefit is \$1.

(b) 1 point:

- One point is earned for correctly calculating the total consumer surplus from consuming 5 units of X.

$$CS = (\$16 - \$4) + (\$12 - \$4) + (\$8 - \$4) + (\$4 - \$4) + (\$1 - \$4) = \$21$$

OR

$$CS = \$41 - \$20 = \$21$$

(c) 1 point:

- One point is earned for explaining that this combination of X and Y is not optimal because the marginal benefit per dollar of good X ($MB_X/P_X = \$4/\$4 = 1$) is less than the marginal benefit per dollar of good Y ($MB_Y/P_Y = \$8/\$2 = 4$). (This can also be stated as $MB_X/MB_Y < P_X/P_Y$.)

($MB_X/P_X = 1$) is not equal to ($MB_Y/P_Y = 4$) is acceptable.

MB_X/P_X is less than MB_Y/P_Y is acceptable.

MB_Y/P_Y is greater than MB_X/P_X is acceptable.

(d) 1 point:

- One point is earned for stating that Martha's optimal combination is 3 units of X and 4 units of Y.

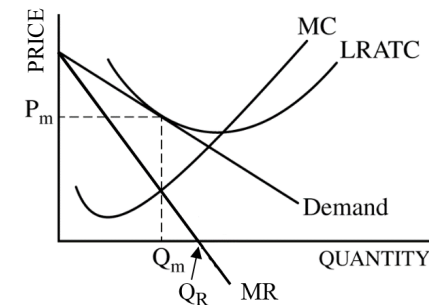
(e) 3 points:

- One point is earned for stating that the optimal quantity of good Y will decrease.
- One point is earned for stating that the optimal quantity of good Y will decrease.
- One point is earned for stating that the optimal quantity of good Y will stay the same.

2016 SCORING GUIDELINES

Question 3

6 points (4+1+1)



(a) 4 points:

- One point is earned for drawing a correctly labeled graph showing a downward sloping demand curve with MR curve below the demand curve.
- One point is earned for showing the quantity, Q_m , at $MC=MR$.
- One point is earned for showing the price, P_m , on the demand curve above Q_m .
- One point is earned for showing the long-run average total cost tangent to the demand curve at Q_m .

(b) 1 point:

- One point is earned for showing Q_R at $MR=0$.

(c) 1 point:

- One point is earned for stating that firms in this market are experiencing economies of scale in long-run equilibrium because LRATC is decreasing OR because Q_m is to the left of the minimum point of the LRATC.