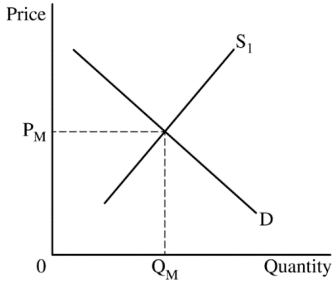
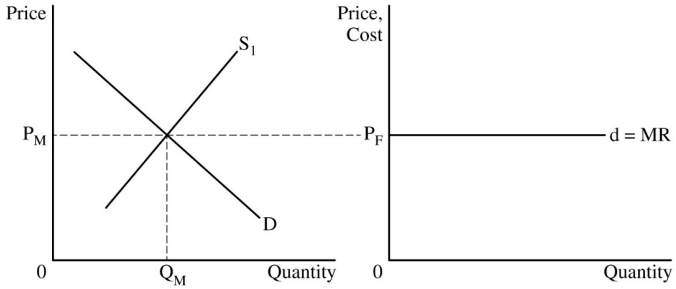
Question 1: Long — 10 points

A — **1 point**

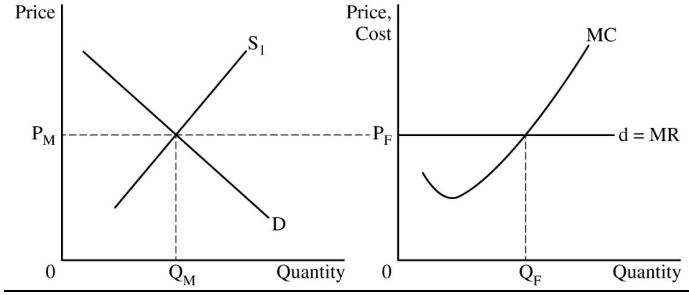
Point 1 — Draw a correctly labeled graph of the market for wooden desks with a downward-sloping demand (D) curve and an upward-sloping supply (S_1) curve and label the market equilibrium price as P_M and the market equilibrium quantity as Q_M.



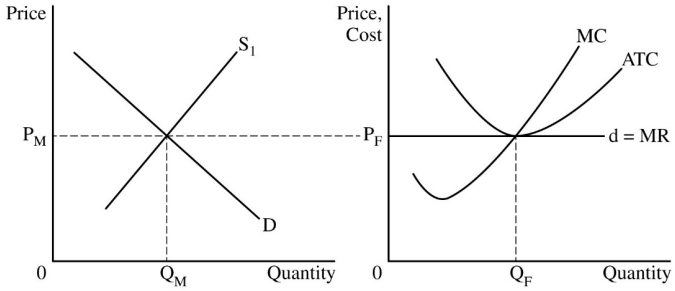
Point 2 — Draw a correctly labeled graph for Deskward that shows the firm's horizontal demand and marginal revenue (d = MR) curve extended from the market equilibrium price (P_M) and label the firm's price as P_F. **1 point**



Point 3 — The firm's graph must show a rising marginal cost (MC) curve, and show the firm's profit-maximizing quantity, labeled Q_F, where MR = MC. **1 point**



Point 4 — The firm's graph must show the average total cost (ATC) curve tangent to the firm's d = MR curve at Q_F and show the MC curve passing through the minimum point of the ATC curve. **1 point**

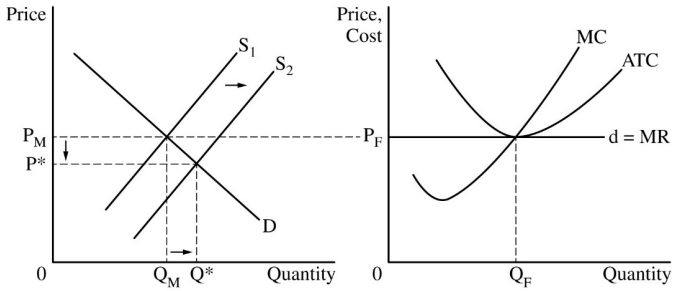


B — **1 point**

Point 5 — State that Deskward's profit-maximizing quantity will not change in the short run and explain that a change in a fixed cost does not affect the firm's marginal cost or marginal revenue.

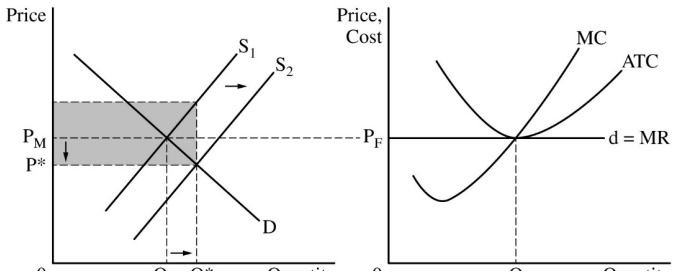
C (i) — **1 point**

Point 6 — The market graph from part A must show a rightward shift of the market supply curve and show the new market equilibrium price of wooden desks, labeled P*, and the new market equilibrium quantity of wooden desks, labeled Q*.



(ii)

Point 7 — The market graph from part A must show the area representing the total cost of the subsidy to the government, shaded completely.



D Point 8		State that the price floor will result in a surplus of wooden desks and explain that the binding price floor is set above the market equilibrium price, which causes the quantity supplied of wooden desks to be greater than the quantity demanded of wooden desks.	**1 point**
E Point 9	**(i)**	Calculate the long-run average total cost (LRATC) as \$160 per chair and show your work. $\text{LRATC at 500 chairs} = \frac{\$80{,}000}{500} = \$160$	**1 point**
Point 10	**(ii)**	State that Deskward is experiencing diseconomies of scale and explain that as output increases from 500 to 600 chairs, its LRATC increases from \$160 to \$180 (=\$108,000/600) per chair.	**1 point**

Question 2: Short — 5 points

(a)	Calculate the average fixed cost of \$3 and show the work. $\text{Average Fixed Cost} = \frac{\text{Total Fixed Cost}}{\text{Quantity of Output}}$ $\text{Average Fixed Cost} = \frac{\$90}{30} = \$3$	**1 point**
(b)	Calculate the marginal cost as \$6 and show the work. $\text{Marginal Cost} = \frac{\text{Change in Total Variable Cost}}{\text{Change in Output}}$ $\text{Marginal Cost} = \frac{(\$108 - \$90)}{(30 - 27)} = \frac{\$18}{3} = \$6$ OR $\text{Marginal Cost} = \frac{\text{Change in Total Cost}}{\text{Change in Output}}$ $\text{Marginal Cost} = \frac{(\$198 - \$180)}{(30 - 27)} = \frac{\$18}{3} = \$6$	**1 point**
(c)	State that diminishing marginal returns to labor begin with the hiring of the 3rd worker and explain that the marginal product of the 1st worker is 5 bags, the marginal product of the 2nd worker increases to 7 bags, and the marginal product of the 3rd worker decreases to 6 bags.	**1 point**
(d)	State that the profit-maximizing number of workers is 7 and explain that the marginal revenue product (MRP) of the 7th worker (\$20) is greater than the marginal factor cost (MFC) of the 7th worker (wage = \$18), and that the hiring of the 8th worker would decrease profits because the MRP of the 8th worker (\$10) is less than the MFC of the 8th worker (wage = \$18).	**1 point**
(e)	State that Gato Food will experience diseconomies of scale and explain that as output increases from 40 to 50 units, long-run average total cost increases from \$15 to \$18 per unit.	**1 point**
	Total for question 2	**5 points**

Question 3: Short — 5 points

(a)	Calculate the total fixed cost as \$72 and show your work. $\text{Total Fixed Cost} = (\text{Average Total Cost} - \text{Average Variable Cost}) \times \text{Quantity}$ $\text{Total Fixed Cost} = (\$26 - \$8) \times 4 = (\$18 \times 4) = \$72$ OR $\text{Total Fixed Cost} = (\$21 - \$9) \times 6 = (\$12 \times 6) = \$72$ OR $\text{Total Fixed Cost} = (\$20 - \$11) \times 8 = (\$9 \times 8) = \$72$	**1 point**
(b)	Identify the price as \$14 and the profit-maximizing quantity as 6 units.	**1 point**
(c)	Calculate Hansel Hangout's economic profit at the profit-maximizing quantity as $-\$42$ and show your work. $\text{Economic Profit} = (\text{Price} - \text{Average Total Cost}) \times \text{Quantity}$ $= (\$14 - \$21) \times 6 \text{ units} = (-\$7 \times 6) = -\$42$ OR $\text{Economic Profit} = \text{Total Revenue} - \text{Total Cost}$ $= (\$14 \times 6) - (\$21 \times 6) = \$84 - \$126 = -\$42$	**1 point**
(d)	State that the market price of Good X will increase in the long run and explain that some firms will exit the market due to the negative economic profits, causing the market supply curve to shift to the left, increasing the market equilibrium price.	**1 point**
(e)	State that the quantity demanded of Good C will increase and explain that a positive cross-price elasticity of demand indicates that the two goods are substitutes in consumption, and an increase in the price of Good X will increase the demand for Good C, causing an increase in the quantity demanded of Good C.	**1 point**
	Total for question 3	**5 points**