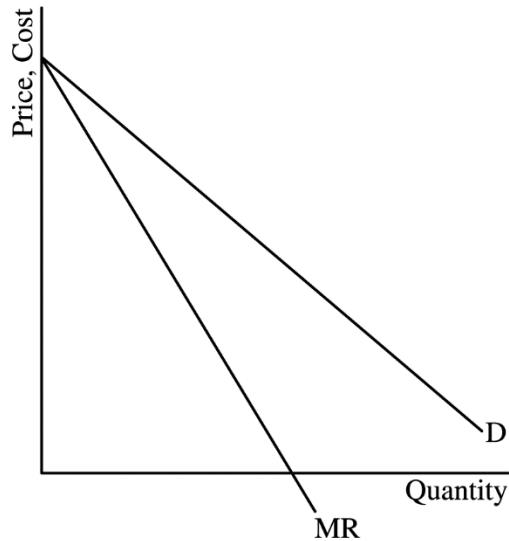# AP® Microeconomics
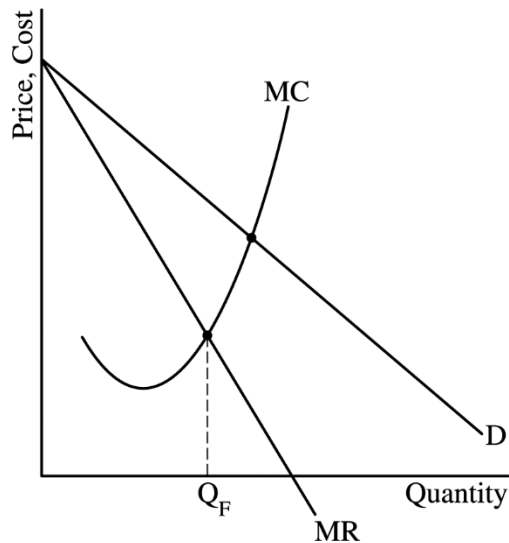## Scoring Guidelines
Set 1

Question 1

9 points (5 + 2 + 2)

(a) 5 points

- One point is earned for drawing a correctly labeled graph of the monopoly showing downward-sloping demand (D) and marginal revenue (MR) curves with the MR curve below the demand curve.
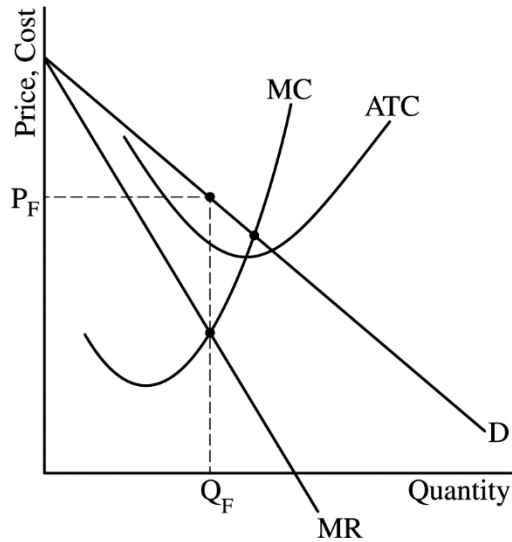

- One point is earned for showing the profit-maximizing quantity, labeled Q_F, where MR = MC.
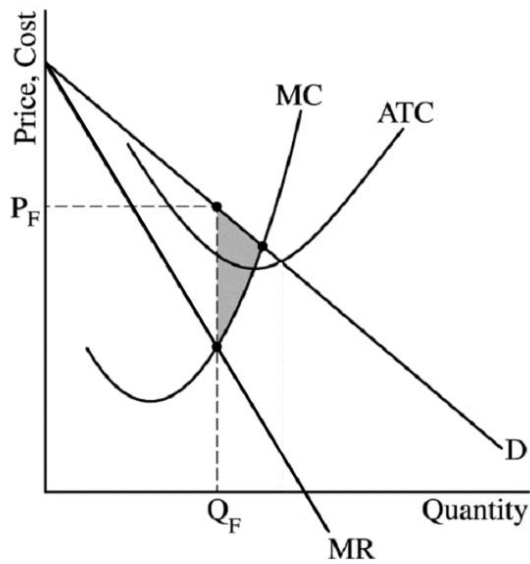
- One point is earned for showing the profit-maximizing price, labeled P_F, from the demand curve at Q_F, and above the average total cost curve (ATC).
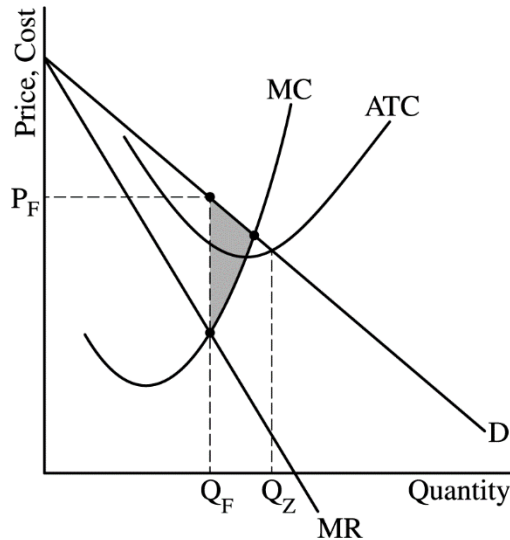

- One point is earned for completely shading the area representing the deadweight loss.

- One point is earned for showing the quantity where economic profits are zero, labeled Q_Z, where ATC intersects the demand curve.

(b) 2 points

- One point is earned for stating the deadweight loss will remain unchanged, and for explaining that changes in fixed costs do not affect MC or do not change the profit-maximizing quantity of the firm.

- One point is earned for stating that FillUp's economic profit will decrease.

(c) 2 points

- One point is earned for stating that the price must be greater than AVC at the profit-maximizing level of output.

- One point is earned for stating that the profit-maximizing quantity and price will both decrease.

Question 2

5 points (1 + 1 + 3)

(a) 1 point:

- One point is earned for calculating Dana's total benefit from purchasing 2 bottles of water and 1 unit of good X as $66 and for showing the work.

  $24 + $18 + $24 = $66 OR $42 + $24 = $66

(b) 1 point:

- One point is earned for calculating Dana's total consumer surplus from purchasing 3 units of good X as $39 and for showing the work.

  ($24 – $5) + ($18 – $5) + ($12 – $5) = $39 OR $54 – $15 = $39

(c) 3 points:

- One point is earned for explaining that Dana does not maximize her benefit because the marginal benefit per dollar spent on bottles of water is greater than the marginal benefit per dollar spent on good X.

  (18/$3 > 6/$6; OR 6 > 1; OR 6≠1; OR $MB_w/P_w > MB_x/P_x$)

- One point is earned for stating that the optimal quantities of good X and bottles of water are 3 units and 4 bottles respectively.

- One point is earned for correctly determining the optimal quantity of water, calculating the cross-price elasticity of demand for bottles of water with respect to the price of good X, showing the work, and for stating that the goods are complements. Answer must be consistent with (c)(ii).

  (% change in the quantity of bottles of water)/(% change in the price of good X)
  = (25%/–50%) = –0.5

(Using the midpoint formula is also acceptable: (1/4.5)/(–3/4.5) = –0.33)

Question 3

6 points (1 + 1 + 1 + 1 + 2)

(a) 1 point

- One point is earned for stating the actions that maximize the combined profits are for Patrick's Pie to "Advertise" and for Dee's Pizzeria to "Stay Out."

(b) 1 point

- One point is earned for stating that neither firm has an incentive to cheat and for explaining that Dee's Pizzeria profits would decrease from $0 to –$2 if Dee cheated and that Patrick's Pie's profits would decrease from $175 to $100 if Patrick cheated.

(c) 1 point

- One point is earned for stating that Patrick's Pie does not have a dominant strategy.

(d) 1 point

- One point is earned for stating two Nash equilibria as:
  - Patrick's Pie "Do Not Advertise" and Dee's Pizzeria "Enter"
  - Patrick's Pie "Advertise" and Dee's Pizzeria "Stay Out"

(e) 2 points

- One point is earned for correctly redrawing the payoff matrix and showing the effect of the side payment.

		Dee's Pizzeria	
		Enter	Stay Out
Patrick's Pie	Advertise	$50, –$2	$155, $20
	Do Not Advertise	$150, $15	$80, $20

- One point is earned for stating that the Nash equilibrium is for Patrick's Pie to "Advertise" and for Dee's Pizzeria to "Stay Out."