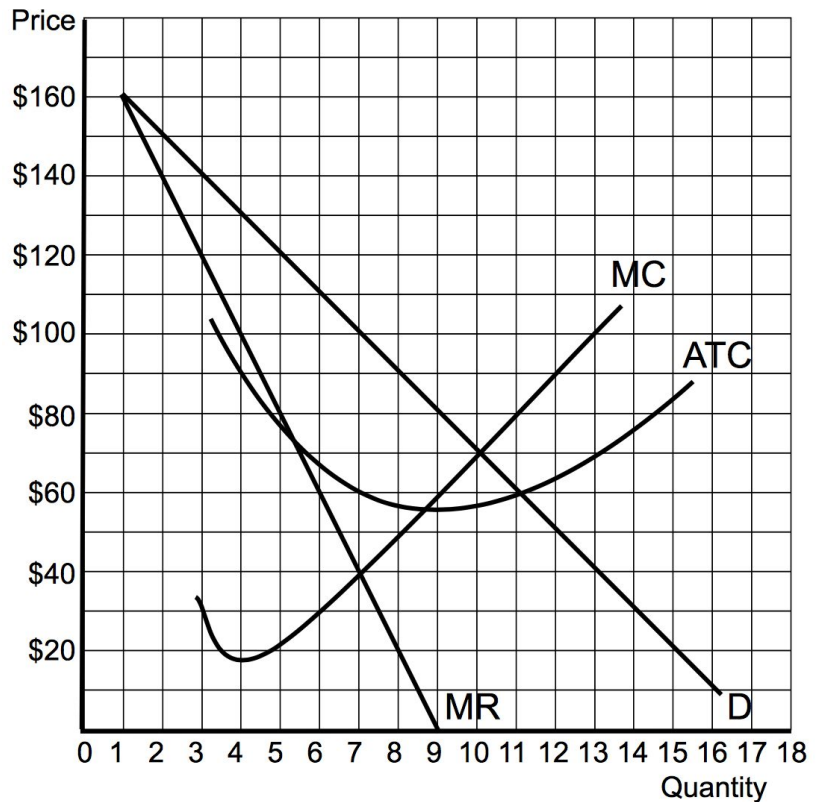# Microeconomics
Unit 4 Practice Sheet

Part 1: Monopoly- *Use the graph of a non-price discriminating monopoly to answer the following questions. Show your work when asked to calculate.*

1. Identify the profit maximizing price and quantity. P=$100, Q=7, where MR=MC with price up to demand
2. Calculate the total revenue at the profit maximizing price and quantity. $700= $100 x 7 = P x Q
3. Calculate the total cost at the profit maximizing price and quantity. $420 = $60 x 7 = ATC x Q
4. Calculate the profit or loss at the profit maximizing price and quantity. $280 = $700 - $420 = TR - TC
5. Calculate the area of deadweight loss. $90 = $60 x 3/2
6. Identify the socially optimal (allocatively efficient) price and quantity. P = $70, Q = 10, where demand = MC
7. Identify the price and quantity where the total revenue is maximized. P = $80, Q = 9, where MR hits zero.

8. At the price of $120, is the demand relatively elastic, relatively inelastic, or unit elastic? Why? Elastic. The MR is positive. If price falls, the total revenue will increase.
9. Identify the price and quantity if this monopoly's fixed costs increase by $140. P=$100, Q=7, The profit maximizing price and quantity will stay the same since the MC, MR, and Demand didn't change
10. Identify the profit maximizing price and quantity if the government levies a $30 per unit tax on this monopoly. P=$110, Q=6, The MC will shift upward by the vertical distance of $30. The new MR=MC is at 6 units.
11. Identify the profit maximizing price and quantity if this monopoly figures out a way to perfectly price discriminate. P = $70, Q = 10, where demand/MR = MC

12. *Assume instead that the costs of production changed for this monopoly so that the marginal cost (MC) and average total cost (ATC) for every unit was $80.* Under these new circumstances, identify the profit maximizing price and quantity. P=$120, Q=5, where MR=MC with price up to demand

13. Calculate the new total revenue at the profit maximizing price and quantity. $600 = $120 x 5 = P x Q

14. Calculate the new total cost at the profit maximizing price and quantity. $400 = $80 x 5 = ATC x Q

15. Calculate the new profit or loss at the profit maximizing price and quantity. $200 = $600 - $400 = TR - TC

Part 2: Monopolistic Competition- *Use the graph below to answer the following questions.*

16. Identify the profit maximizing price and quantity. P=$25, Q=4, where MR=MC with price up to demand

17. Calculate the total revenue at the profit maximizing price and quantity. $100= $25 X 4 = P x Q

18. Calculate the profit or loss at the profit maximizing price and quantity. Profit = $0. P = ATC

19. Will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain. Stay the same. The firm is in long-run equilibrium and is making no economic profit.

20. Assume the demand decreased. Would profit increase, decrease, or stay the same in the long run? Explain. In the long run, the profit will stay the same. Demand will decrease and firms will leave and demand will return to the same spot.
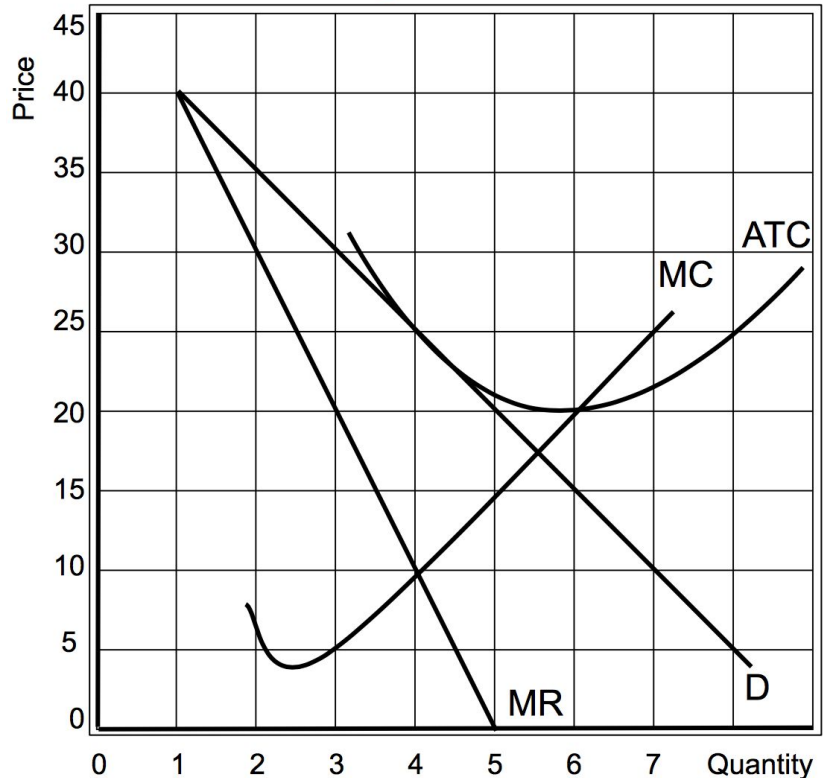
21. Is this firm experiencing economies of scale at the profit maximizing quantity? Explain. Yes, the average total cost (ATC) is falling at the profit maximizing quantity. This means that they can lower their average cost by producing more. They are experiencing economies of scale.

Part 3: Oligopoly- *Use the payoff matrix showing two movie studios, DS and MS, to answer the questions.*

		Morvel Studios (MS)	
		Rated R	Rated PG-13
Detective Studios (DS)	Rated R	$50, $40	$70, $80
	Rated PG-13	$60, $30	$50, $60

22. If both DS and MS make Rated R movies, how much profit will each firm earn? DS earns $50 and MS earns $40

23. Does DS have a dominant strategy? If so, what is it? No, they do not have a dominant strategy

24. Does MS have a dominant strategy? If so, what is it? Yes. The dominant strategy is Rated PG-13 movies

25. Given this information, is there a Nash equilibrium? If so, what will each firm decide to do? Yes. DS will make Rated R movies and MS will make PG-13.

26. Assume instead that these firms decide to collude to maximize profit. What will each firm decide to do? The same as above. DS will make Rated R movies and MS will make PG-13 movies.

**Part 4- FRQ Practice-** Complete the following question from the 2019 AP exam (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.
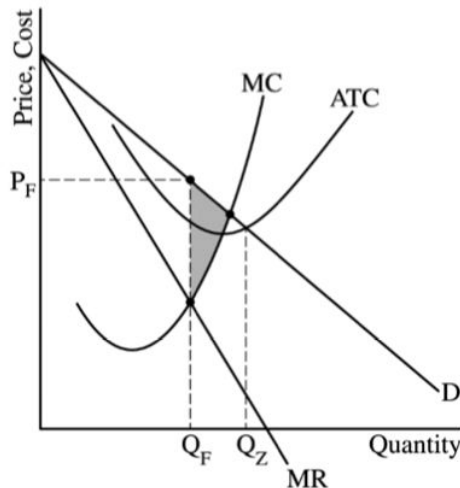
(b) 2 points

- 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.