

Microeconomics

Unit 5 Practice Sheet

<u>Part 1: Hiring Workers-</u> Use the chart for a firm in a perfectly competitive labor market to answer the questions.

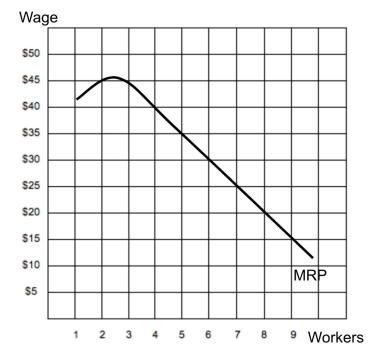
- 1. Assume that the market price of the product is \$3 and the wage is \$15. How many workers should be hired to maximize profit?
- 2. Assume that the fixed costs are \$40. Calculate the profit or loss.
- 3. Assume that the price of the product increased to \$5. How many workers should be hired to maximize profit?
- 4. Assume the fixed costs stays \$40. Calculate the profit or loss.
- 5. Assume that the government established a minimum wage of \$25, how many workers would the firm hire to maximize profit?

Quantity Workers	Total Product	Marginal Product
0	0	
1	15	
2	35	
3	45	
4	53	
5	57	
6	58	
7	56	

6. If the fixed costs are \$40. Calculate the profit or loss with the \$25 minimum wage and \$5 price.

Part 2 - Graph Practice - The graph shows the MRP for a different firm hiring workers in a perfectly competitive labor market.

- 7. Assume that the wage is \$20. Draw a marginal resource cost (MRC) curve and identify how many workers should be hired to maximize profit?
- 8. Assume that the fixed cost is \$50. What is the total cost of hiring the profit maximizing quantity?
- 9. Assume the firm produces in a perfectly competitive product market and the price of the product is \$2. How much additional output did the last worker produce?
- 10. Assume instead that the wage is \$30. How many workers should be hired to maximize profit?
- 11. Assume that the fixed cost stays \$50. What is the total cost of hiring the profit maximizing quantity?





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<u>Part 3 - Least-Cost Rule</u>- The tables below show the total amount of deliveries that can be made in a day using delivery drivers and drones. Assume that delivery drivers cost \$50 and drones cost \$150. Fill out the chart and answer the questions.

Quantity of Drivers	Total Deliveries	Marginal Product
0	0	
1	100	
2	150	
3	175	
4	180	

Quantity of Drones	Total Deliveries	Marginal Product
0	0	
1	150	
2	225	
3	270	
4	285	

- 12. With a constraint of \$450, what combination of drivers and drones would minimize costs while maximizing the total number of deliveries? Explain.
- 13. How many total deliveries can be made each day with this combination? Show your work.

Part 4 - FRQ Practice- Complete the following question from the 2008B AP exam (Question 3).

3. GW Company produces and sells hats in a perfectly competitive market at a price of \$2 per hat. Assume that labor is the only variable input and the wage rate is \$15 per unit of labor per day. The table below shows GW's short-run production function for hats.

Number of workers per day	0	1	2	3	4	5	6
Output of hats per day	0	10	26	36	44	49	52

- (a) After which worker do diminishing marginal returns begin?
- (b) Calculate the marginal physical product of the fifth worker.
- (c) Calculate the marginal revenue product of the third worker.
- (d) How many workers will GW hire to maximize profit?
- (e) If GW Company has fixed costs equal to \$20, what will be the company's short-run economic profits from hiring two workers?
- (f) If the price of hats increases, what will happen to the number of workers hired in the short run? Explain.