



# Microeconomics

## Unit 5 Practice Sheet

**Part 1: Hiring Workers-** 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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**Part 3 - Least-Cost Rule-** 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

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