Econ 101 Discussion Section-Handout 10

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1 Problems: Producer Theory

1. 1) Willy Wonka's Chocolate factory produces chocolate bars by using Oompa Loompas (labor) and boats that float down the chocolate river (capital). Assume that Willy Wonka is a price taker in the markets for chocolate bars, Oompa Loompas and boats.

   (a) Suppose the price of a chocolate bar is $5 and at the current level of labor and capital MPL = 10, MPK = 100, the price of labor is $40 and the rental price of a boat is $600. Assuming the chocolate factory exhibits diminishing marginal returns to both labor and capital, what should Willy Wonka do to improve his profits?

   (b) Charlie eventually takes over the chocolate factory and ensures that it always maximizes profits. Years later the price of a chocolate bar is $6 and the wage of an Oompa Loompa is $72. Calculate the MPL under Charlie's management.

2. Consider a representative firm producing a certain good using labor as an input. The firm is a price taker both in labor market and in output market.

   (a) Complete the following table for the firm. What is the market equilibrium price for the good

Labor (L)	Output(q)	Mp_l	MRP_l
0		-	-
1			380
2			340
3			300
4	64		
5	75		
6		9	
7		7	
8	96	5	

   (b) Suppose the current market wage is $200. How many laborers will the firm hire?

   (c) Suppose the market wage falls by $65. How many workers will the firm hire now?

3. Consider the retail gasoline market, which is perfectly competitive. Market demand and supply for gasoline are represented by the following: Supply: P = 0.2Q Demand: P = 400 − 0.2Q P is the price of gasoline and Q is gallons of gasoline. There are 100 identical firms in the market. Each gas station hires workers in a perfectly competitive labor market. The supply and demand for labor are represented by: Supply: W = 0.03L Demand: W = 50 − 0.02L W is the price of labor (wage) and L is the quantity of workers.

   (a) How many workers will be hired by each firm in equilibrium?

   (b) What is the market equilibrium wage?

   (c) Calculate the marginal product of labor for each firm.

4. Hurley and Leonard pool their money to buy a lottery ticket and manage to win one million dollars. Which of the following is a Pareto efficient division of the winnings, assuming Hurley and Leonard both want as much money as possible?

   (a) Hurley and Leonard split the money fifty-fifty.

   (b) Hurley gets all the money and Leonard gets nothing.

   (c) Leonard gets $400,000, Hurley gets $300,000 and the other $300,000 is burned.

5. For a given firm, MRPL = 100 and MPK = 50, while PL = $20, PK = $50 and PX = $2. Which of the following statements is TRUE?

   (a) The firm is currently maximizing profits.

   (b) The firm could increase profits by hiring more workers and more capital

   (c) The firm could increase profits by hiring fewer workers and less capital

   (d) The firm could increase profits by hiring more workers and less capital.

6. 2) For McDonald's, the employee's wage is $15. The price of a Big Mac is $3. An additional employee would produce 6 additional Big Macs. Firing one worker will lower production by 8 Big Macs. Which of the following is TRUE?

   (a) McDonald's should hire at least 1 more employee to maximize profits

   (b) McDonald's should fire at least 1 employee to maximize profits

   (c) McDonald's should do nothing to maximize profits

   (d) There is not enough information to know what to do