

## Homework: Ch 10: Organizing Production

1. Devlin is a computer programmer who earned \$40,000 in 2011. But on January 1, 2012 he opened a custom woodworking business.  
At the end of 2012, Devlin submitted the info below to his accountant. Use the question facts to calculate Devlin's opportunity cost of production and economic profit.
  1. Devlin stopped renting out his cottage for \$4,000 a year and used it as his woodworking shop.
  2. The market value of the cottage increases from \$60,000 to \$63,000.
  3. He spent \$20,000 on materials, phone, utilities, etc.
  4. He leased machines for \$11,000 a year.
  5. He paid \$7,500 in wages.
  6. He used \$15,000 from his savings account, which earns 4 percent a year interest.
  7. He borrowed \$20,000 at 10 percent a year from the bank.
  8. He sold \$160,000 worth of furniture.
  9. Normal profit is \$35,000 a year.

**Opportunity Cost of Production:** the sum of the cost of using resources bought in the market, resources owned by the firm, and the resources supplied by Devlin

→ Cost of resources bought in the market: materials, phone, utilities, leased machines, wages, and interest on the loan

Cost of resources bought in the market =  $\$20,000 + \$11,000 + \$7,500 + \$2,000$   
( $20,000/10$ ) = \$40,500

→ Cost of resources owned by the firm includes forgone interest and economic depreciation

Cost of resources owned by the firm =  $\$600 (10-4) - (\$63,000 - \$60,000) = \$-2,400$

→ Cost of resources supplied by Devlin includes wages forgone, rent forgone, and normal profit

Cost of resources supplied by Devlin =  $\$40,000 + \$4,000 + \$35,000 = \$79,000$

Opportunity Cost of Production =  $\$40,500 + \$-2,400 + \$79,000 = \$117,100$

**Economic Profit:** total revenue minus total cost, with total cost measured as the opportunity cost of production

→ Total cost = \$117,100

→ Total revenue is \$160,000

Economic Profit =  $\$160,000 - \$117,100 = \$42,900$

2. Stocks too volatile? Bonds too boring? Then try an alternative investment – one you can wear on your wrist... The typical return on a watch over five to ten years is roughly 10%. One could do better in an index fund, but... what other investment is so wearable?
  - The cost of buying a watch is \_\_\_\_\_. The opportunity cost of owning a watch is \_\_\_\_\_.

→ The best thing you give up to buy the watch; the interest forgone on an alternative asset plus the depreciation of the watch

- Owning a watch \_\_\_\_ create an opportunity for economic profit \_\_\_\_.
- Can; if the gain in the value of the watch is greater than the normal profit you would have earned by investing the money in the next best alternative

3. Lucinda starts a business consulting company. She makes all the business decisions and bears the risk of running the business.

- List expects to receive \_\_\_\_.
- Normal Profit

4. Gloria is an executive who earned \$50,000 in 2011. But she enjoys photography, so at the beginning of 2012, she quit her job and became a photographer.

The info below gives details of Gloria's first year in the photography business.

The sum of the cost of resources owned by Gloria's firm and the resources supplied by Gloria is \_\_\_\_.

1. Gloria leased photographic equipment for \$25,000 and paid \$10,000 for supplies.

2. She borrowed \$20,000 at 10 percent a year.

3. She withdrew \$5,000 from her savings account that paid 4 percent a year.

4. Economic depreciation was \$1,000.

5. Gloria's revenue was \$70,000.

6. Normal profit is \$7,000.

→ Cost of resources owned by the firm includes economic depreciation and forgone interest =  $\$1,000 + \$200$  ( $20,000/10\%$  then  $2000/10\%$ ) =  $\$1,200$

→ Cost of resources supplied by Gloria includes normal profit and forgone wages =  $\$7,000 + \$57,000 = \$64,000$

5. A firm that uses the latest technology \_\_\_\_ technologically efficient because \_\_\_\_.

**Technology Efficiency:** the relationship between the factors of production used and the output produced, occurs when the firm produces a given output by using the least amount of inputs, only efficient if the firm can produce a given output by using the least amount of inputs or if it uses more of one type of input and less of another type of input when compared to a second method

→ Is not necessarily; the firm might not use the least amount of inputs to produce a given output

6. If a firm can cut its cost by producing less, then it \_\_\_\_ economically efficient \_\_\_\_.

**Economic Efficiency:** the firm produces a given output at the least cost, a firm is economically efficient if the output it is producing is produced at the least cost

→ Is not necessarily; unless it is producing its output at the least cost

7. The

Method	Labor (hours)	Capital (machines)
A	1	10
B	5	8
C	20	4
D	50	1

table shows alternative ways of laundering 100 shirts.

- Which methods are technologically efficient?  
→ All methods
- If the wage rate is \$1 and the implicit rental rate of capital is \$100, \_\_\_\_\_ is economically efficient.  
If the wage rate is \$5 and the implicit rental rate of capital is \$50, \_\_\_\_\_ is economically efficient.  
\*Method A =  $(1 \times \$1) + (10 \times \$100) = \$1,001$   
\*Method B =  $(5 \times \$1) + (8 \times \$100) = \$805$   
\*Method C =  $(20 \times \$1) + (4 \times \$100) = \$420$   
\*Method D =  $(50 \times \$1) + (1 \times \$100) = \$150$   
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\*Method A =  $(1 \times \$5) + (10 \times \$50) = \$505$   
\*Method B =  $(5 \times \$5) + (8 \times \$50) = \$425$   
\*Method C =  $(20 \times \$5) + (4 \times \$50) = \$300$   
\*Method D =  $(50 \times \$5) + (1 \times \$50) = \$300$   
→ Method D; methods C and D
- If the wage rate is \$50 and the implicit rental rate of capital is \$5, method \_\_\_ is economically efficient  
→ A

8. \_\_\_\_\_ system is a method of organizing production that uses managerial hierarchy.  
\_\_\_\_\_ system is a method of organizing production that uses a market-like mechanism inside the firm.  
→ Command; incentive