

1) Complete the following table.

Output	Fixed Cost	Total Cost	Average Cost	Marginal Cost	Variable Cost	Average Variable Cost	Average Fixed Cost
0	12	12	NA	NA	NA	NA	NA
1				11			
2		33					
3			15				
4		58					
5					60		
6		87					
7		103					
8				37			

- a) Is this a short run or long run information on cost? Why?
- b) If the price of the good produced is currently 14, what level of output is the profit maximizing level?
- c) Draw the fixed cost, the variable cost, and the total cost as show in this table.

- d) Using the information in the table, draw an average variable cost curve, an average fixed cost curve, an average cost curve and a marginal cost curve on a single graph. Explain the reasons for the shape of each, and the implications of where the curves cross each other.

2) Define the seven short run cost concepts.

Which of these are applicable in the long run? Why?

- 3) Assume the rental rate of capital is 2, and the wage rate is 4.
- a. Draw an isocost curve for a cost level of 100.

 - b. What should the marginal rate of technical substitution be at an economically efficient bundle?

 - c. If the marginal product of labor = 4 at the economically efficient bundle, what value of the marginal product of capital meets the last-dollar rule.

4) My variable cost of producing rakes is \$5,000 per day, and the fixed costs of running my rake factory are \$120,000 per 30 day month (we work every day). Below what level of revenue would I be better off shutting down and not producing any rakes?

5) Describe the expansion path.

a. Define the expansion path.

b. Illustrate on a graph how the expansion path is derived.

c. Are there points on the expansion path that are technically efficient but are not economically efficient? Why or why not?

d. Can we identify a profit maximization point based on the information contained in the expansion path? Why or why not?

6) Necessary and sufficient conditions. Circle the correct answer.

Condition A	Condition B	What type of condition is B for Establishing A?		
An input bundle is economically efficient.	The input bundle is technologically efficient.	N,NS	S,NN	N,S
The bundle K, L satisfies $w \cdot L + r \cdot K = C$	The point defined by the bundle K, L is on the expansion path..	N,NS	S,NN	N,S
Average Cost upward sloping at a given level of output	Marginal cost $>$ average cost at that level of output.	N,NS	S,NN	N,S
Felix is a cat	Felix hates baths	N,NS	S,NN	N,S
Output more than doubles when inputs double	The firm is experiencing increasing returns to scale	N,NS	S,NN	N,S
I am taking PAI 723 this semester	I am in this class	N,NS	S,NN	N,S

N, NS : Necessary, not sufficient [If A, then B]

S, NN: Sufficient, not necessary [A if B / If B, then A]

S, N: Necessary and sufficient [A if and only if B]