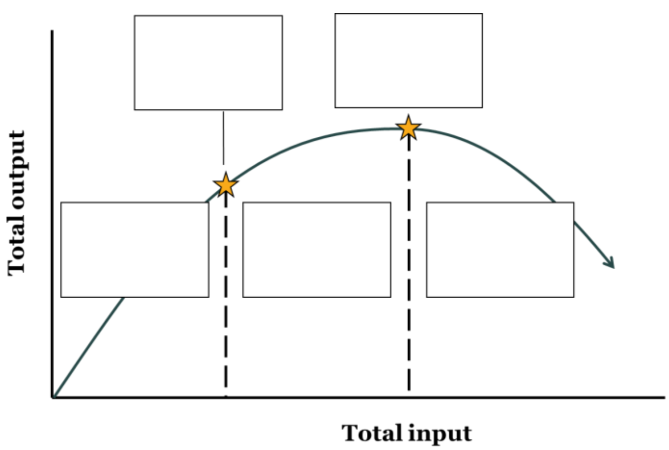
Economics Workshop

Topic 5: Production and Costs

1. The following are some costs incurred by a shoe manufacturer. Decide whether each one is fixed cost or a variable cost or has some element of both.
   (a) The cost of leather. **Variable** (dependent on production)
   (b) The fee paid to an advertising agency. **Fixed** (not dependent on output or production)
   (c) Wear and tear on machinery. **Fixed** (Machinery will be depreciated even if there is no production)
   (d) Electricity for running the machines. **Variable** (dependent on production)
   (e) Minimum wages agreed with union. **Fixed** (paid by firm even there is no production)
   (f) Overtime pay. **Variable** (directly linked to the extra work hour into the production)

2. Match the phrase with the blank space in the following diagram and discuss the law of diminishing (marginal) returns.



(a) Diminishing Returns
(b) Point of Diminishing Returns
(c) Productive Phase
(d) Negative Returns
(e) Point of Maximum Output

Law of diminishing (marginal) returns states that after some optimal level of capacity is reached, adding additional variable factor of production will result in smaller increases in output. It applies in the short run, as the fixed factors become overloaded.

3. Given the number of workers (Lb) in a corn farm and total physical product in kilograms per day, calculate average and marginal physical product (MPP) and discuss your answer.

Lb	**TPP**	**APP (TPP/Lb)**	**MPP (ΔTPP/ΔLb)**
0	0	-	
1	15	15	15
2	42	21	27
3	75	25	33
4	100	25	25
5	100	20	0
6	90	15	-10

4. Given the total fixed costs (TFC) and total variable costs (TVC), calculate the average fixed costs (AFC), average variable costs (AVC), total costs (TC), average costs (AC) and marginal costs (MC).

Output (Q)	**TFC**	**AFC (TFC/Q)**	**TVC**	**AVC (TVC/Q)**	**TC (TFC+TVC)**	**AC (TC/Q)**	**MC (ΔTC/ΔQ)**
0	12	-	0	-	12	-	
1	12	12	10	10	22	22	10
2	12	6	16	8	28	14	6
3	12	4	21	7	33	11	5
4	12	3	28	7	40	10	7
5	12	2.4	40	8	52	10.4	12
6	12	2	60	10	72	12	20
7	12	1.7	91	13	103	14.7	31

5. Draw a diagram showing the typical shapes of and relationships between the:
   (a) total cost (TC), total variable cost (TVC) and total fixed costs (TFC) curves.

   (b) The marginal cost (MC), average cost (AC) average variable cost (AVC) and average fixed cost (AFC) curves

6. Given that all factors of production are variable in the long run, a firm will want to choose the least-cost combination of inputs for any given level of output. Assuming that a firm uses three factors A, B and C, whose prices are respectively P_A , P_B and P_C , which of the following represents the least-cost combination of these factors?
    a. $\frac{MPP_A}{MPP_B} = \frac{MPP_B}{MPP_C} = \frac{MPP_C}{MPP_A}$
    b. $P_A = P_B = P_C$
    c. $\frac{MPP_A}{P_A} = \frac{MPP_B}{P_B} = \frac{MPP_C}{P_C}$
    d. $MPP_A \times P_A = MPP_B \times P_B = MPP_C \times P_C$
    e. $MPP_A = MPP_B = MPP_C$

7. What is the best explanation of economies of scale?
    a. Costs per unit increase as volume of production increases.
    b. Costs per unit decrease as volume of product decrease.
    c. Larger economies make more products.
    d. Cost per unit decreases as volume of production increases.

8. Which type of business can take advantages of economies of scale?
    a. A small pottery business operated by a sole proprietor.
    b. Paper company that prints photocopy paper, printer paper, and similar paper products.
    c. A clothing boutique.
    d. A custom furniture store where the pieces are hand built to order.

9. Which one of the following groups do economies of scale not help?
    a. Small businesses
    b. Large production companies
    c. Consumers
    d. Society at large

10. Draw the long-run average cost (LRAC) curve and discuss economies and diseconomies of scale.