

HW#10 Due November 10, 2020

4. Nimbus, Inc., makes brooms and then sells them door-to-door. Here is the relationship between the number of workers and Nimbus's output during a given day:

Workers	Output	Marginal Product	Total Cost	Average Total Cost	Marginal Cost
0	0	—	—	—	—
1	20	—	—	—	—
2	50	—	—	—	—
3	90	—	—	—	—
4	120	—	—	—	—
5	140	—	—	—	—
6	150	—	—	—	—
7	155	—	—	—	—

- Fill in the column of marginal products. What pattern do you see? How might you explain it?
- A worker costs \$100 a day, and the firm has fixed costs of \$200. Use this information to fill in the column for total cost.
- Fill in the column for average total cost. (Recall that $ATC = TC/Q$.) What pattern do you see?
- Now fill in the column for marginal cost. (Recall that $MC = \Delta TC / \Delta Q$.) What pattern do you see?

5. You are the chief financial officer for a firm that sells gaming consoles. Your firm has the following average-total-cost schedule:

Quantity	Average Total Cost
600 consoles	\$300
601	301

Your current level of production is 600 consoles, all of which have been sold. Someone calls, desperate to buy one of your consoles. The caller offers you \$550 for it. Should you accept the offer? Why or why not?

4. Nimbus, Inc., makes brooms and then sells them door-to-door. Here is the relationship between the number of workers and Nimbus's output during a given day:

Workers	Output	Marginal Product	Total Cost	Average Total Cost	Marginal Cost
0	0	20	200	200	5
1	20	30	300	15	3.33
2	50	40	400	8	2.5
3	90	30	500	5.56	3.33
4	120	20	600	5	5
5	140	10	700	5	10
6	150	5	800	5.3	20
7	155		900	5.8	

↓ (a)
↓ (b)
↓ (c)
↓ (d)

(a) adding worker from the worker 1 to 3 the marginal product is increasing at increasing level however adding worker from the worker 4 to 7 the marginal product is increasing at decreasing level so the marginal product of labor fall as the number of worker increases, there are diminishing return to an input

(c) Average total cost decrease from quantity between 0 to 140 due to the spread of fixed cost but from quantity greater than 150 average total cost increase because higher output require higher variable cost.

(d) Marginal cost decrease from quantity of labor between 0 to 3 because marginal product increase.

marginal cost increase from quantity of labor that greater than 3 because marginal product decrease.

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Quantity	ATC	TC	MC
600	300	180,000	901
601	301	180,901	

if the caller offers you \$500 for one consoles you should not accept the offer because the marginal cost for producing one more unit of game consoles is \$901 ($180,000 - 180,901$).

\$500 is less than \$901 which mean the firm would not gain any profit from this deal.

More over loss \$351.