

HW#11 Due April 29, 2021

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		200	0	
		20			5
1	20		300	15	
		30			3.34
2	50		400	8	
		40			2.5
3	90		500	5.56	
		30			3.34
4	120		600	5	
		20			5
5	140		700	5	
		10			10
6	150		800	5.34	
		5			20
7	155		900	5.81	

- 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	TC (ATC · Q)
600 consoles	\$300	\$ 180 K
601	301	\$ 180,901

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) a) At the addition of the first 3 workers, the marginal products are increasing. After the 4th worker, the marginal products are decreasing.

→ law of diminishing marginal returns:

company hires more workers = output ↑ (due to specialization of workers)

Nevertheless, the marginal products or additional output will eventually decrease because of "fixed resources"

c) Average total cost ↓ until it reaches the minimum of \$5 (quantity of 140 brooms)  
Afterwards, it will then increase.

d) the marginal cost ↓ until it reaches the minimum of \$2.5 (quantity of 90 brooms)  
Afterwards, it will start to increase and then intersect ATC at the minimum of \$5

5) The total cost for producing the 60<sup>th</sup> console = \$180,901

→ 1 more console costs \$901 and the caller only offers \$550 for it.

Therefore, this offering should not be accepted.