

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	$TC = ATC \times Q$
600 consoles	\$300	\$180,000
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?

a) The marginal products are increasing during the first 3 workers (1<sup>st</sup> worker, 2<sup>nd</sup> worker and 3<sup>rd</sup> worker). After the 3<sup>rd</sup> worker and so on, the marginal products are decreasing. By the law of diminishing marginal, it means that the company hires more workers which lead to the increasing of outputs.

c) The average total cost had decrease from the beginning (15  $\rightarrow$  5  $\rightarrow$  5.56  $\rightarrow$  5). Then the average total cost start to increase after it reach the minimum of \$5.

d) Same pattern as c), The marginal cost decrease from the beginning (5  $\rightarrow$  3.94  $\rightarrow$  2.5). Then the marginal cost start to increase after it reach the minimum of \$2.5

5) The total cost for producing of the 601<sup>st</sup> console is \$180,901 which mean \$901 per one console. I shouldn't accept the offer because the consumer offer me only \$550 for it but the price per console is \$901.