

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

- 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 a) At the addition of the first 3 workers, the marginal products are increasing.

After the 4<sup>th</sup> 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 601<sup>st</sup> console = \$ 180,901

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

Therefore, this offering should not be accepted.