

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	\$180,000
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?

- ④
- c) At the addition of first 3 workers, the marginal products are increasing and decreasing after the 4th worker. The law of diminishing marginal returns can be explained as the company hires more workers, the number of outputs will increase due to the specialization of workers. While, the additional output or marginal products will eventually decrease because of fixed resources.
 - c) At first, the average total cost is decreasing until it reaches the minimum of \$5 at the quantity of 140 brooms, then the ATC starts to increase.
 - d) At first, The marginal cost is also decreasing until it reaches the minimum of \$2.5 at the quantity of 90 brooms, then the MC starts to increase and intersect ATC at its minimum of \$5
- ⑤ The offer should not be accepted because the total cost for producing the 601st console is \$180,901, so that 1 more console costs \$901 and the caller only offers \$550 for it.