

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	
		0			20
7	155		800	5.16	

- 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 a) Marginal products increase at the addition of first 3 workers and decrease after the 4th worker. The explanation is the law of diminishing marginal returns as the company hires more workers, the number of outputs increases due to the specialization of workers. Still, the additional output or marginal products will eventually reduce due to fixed resources.
- c) The average total cost is decreasing at first until it gets to the minimum of \$5 at the quantity of 140 brooms, then the ATC starts to rise.
- d) At first, the marginal cost decreased until it reached the minimum of \$2.5 at the quantity of 90 brooms, and the MC starts to rise and intersects ATC at its minimum of \$5.
- ⑤ The offer shouldn't be accepted because the total cost for producing the console number 601 is \$180,901, hence 1 more console costs \$901 and the caller only offers \$550 for it.

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