

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:

• fixed cost = \$200

Workers	Output	Marginal Product	Total Cost	Average Total Cost	Marginal Cost
0	0		200	-	
1	20	20	300	15	$(300-200)/(20-0) = 5$
2	50	30	400	8	$(400-300)/(50-20) = 3.33$
3	90	40	500	5.56	$(500-400)/(90-50) = 2.50$
4	120	30	600	5	$(600-500)/(120-90) = 3.33$
5	140	20	700	5	$(700-600)/(140-120) = 5$
6	150	10	800	5.33	$(800-700)/(150-140) = 10$
7	155	5	900	5.81	$(900-800)/(155-150) = 20$

a) Ans. Marginal product rises at the first 3 units then declines at the last 4 units. When the output slightly increases quantity, the marginal product begins to decrease. (diminishing marginal product)

c) Ans. When Q (quantity) is low (first few units), average total cost declines. And when Q (quantity) is high, average total cost rises. ✕

d) Ans. Marginal cost rises steeply as output increases. (The diminishing marginal product).

5. You are the chief financial officer for a firm that sells gaming consoles. Your firm has the following average-total-cost schedule:

$$AC = \frac{TC}{Q}$$

$$\therefore TC = AC \cdot Q$$

Q Quantity	AC Average Total 180,000 Cost
600 consoles	\$300
601	301

$$TC = 600 \times 300 = 180,000$$

$$TC = 601 \times 301 = 180,901$$

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?

Ans. Since, the total cost for 600 consoles is \$ 180,000, and the total cost for 601 consoles is \$ 180,901. So, the marginal cost of the 601st console is \$ 901, which is higher than the offering (\$550). Therefore, you should not accept the offer. ✕