

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	—	—
1	20	20	300	15	5
2	50	30	400	8	3.33
3	90	40	500	5.56	2.5
4	120	30	600	5	3.33
5	140	20	700	5	5
6	150	10	800	5.33	10
7	155	5	900	5.81	20

- 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?

a. Fill in the column of marginal products. What pattern do you see? How might you explain it?

The marginal product rises at first and declines later.

c. Fill in the column for average total cost. (Recall that  $ATC = TC/Q$ .) What pattern do you see?

The ATC is U-shaped. The average cost declines when quantity rises and the average cost increases when quantity decreases.

d. Now fill in the column for marginal cost. (Recall that  $MC = \Delta TC / \Delta Q$ .) What pattern do you see?

U-shape. It rises as output increased, because of diminishing marginal product

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The total cost of 600 players is  
 $= 600 \times 300$   
 $= \$180,000$

The total cost of 601 players is  
 $= 601 \times 301$   
 $= \$180,901$

The marginal cost to produce the extra unit is

$$MC = C_2 - C_1 = 180,901 - 180,000 \\ = \$901$$

$\therefore$  No, because offered price is lower than production cost