

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	—	—	—	—
1	20	—	—	—	—
2	50	—	—	—	—
3	90	—	—	—	—
4	120	—	—	—	—
5	140	—	—	—	—
6	150	—	—	—	—
7	155	—	—	—	—

- 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. 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	0	200	—	0
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?

a) marginal product initially increases till 3 units of worker after this it starts to decrease. This pattern reflects the law of demand.

b) worker cost = 100

fixed cost = 200

Total cost = 200 + 100(workers)

c) Average total cost = $\frac{\text{total cost}}{\text{output}}$

initially decreases and after 5 unit of workers it start to increase. ATC is U-shaped.

d. marginal cost = $\frac{\text{change in TC}}{\text{change in Q}} = \frac{\text{change in TC}}{\text{marginal product}}$

pattern → initially decreases and after 90 units of output it starts to rise. Here MC is V-shaped.

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?

note: Total cost = Average total cost \times Quantity

Total cost of 600 consoles is $300 \times 600 = \$180,000$

Total cost of 601 consoles is $301 \times 601 = \$180,901$

Marginal cost of 601 consoles is $180,901 - 180,000 = \$901$

\therefore The marginal cost of 601 consoles is higher than the offered price, so the offer should not be accepted.