

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:

$\frac{\Delta Q}{\Delta L}$
 $TC = TFC + VC$
 $\frac{TC}{Q}$
 $\frac{\Delta TC}{\Delta Q}$

Workers	Output	Marginal Product	Total Cost	Average Total Cost	Marginal Cost
0	0		200	-	
		20			
1	20		300	15	
		30			5 $\frac{100}{20}$
100 + 2	50		400	8	
		40			$\frac{10}{3}$ $\frac{400-300}{50-20} = \frac{100}{30}$
100 + 3	90		500	5.55	
		30			3.33
4	120		600	5	
		20			5
5	140		700	5	
		10			10
6	150		800	5.33	
		5			20
7	155		900	5.81	

← 100 + worker 1 @ 100

- 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?

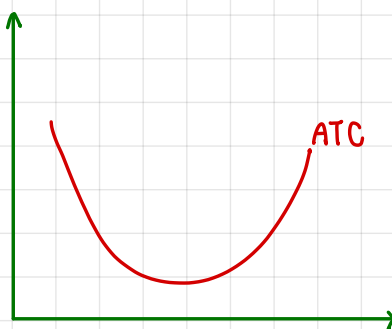
4. a) For the first 3 workers it increases marginal product.

After that when hiring more workers such as worker no. 4 and so on the marginal product will decrease.

The reason might be because when there is 3 workers there is enough capital for each of them to produce goods. However, when there are more workers there is not enough capital for each worker to use so it's like a chaotic that why it not efficient and marginal product still increase but less than the first 3 workers.

c) At first when there are 0 to 3 workers the average total cost is decreasing until it reaches its minimum cost (inflection point) at worker number 4 to 5. However, after it reaches the minimum point ATC will increase, which is at worker no. 6 to 7.

$$ATC = \frac{TC}{Q} \quad 300 = \frac{x}{60} \\ 18000$$



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d) At first, marginal cost will decrease because $ATC > MC$ from worker 0 to 4

Then, when ATC reaches its minimum where $MC = ATC$.

After, MC will increase as $ATC < MC$.

5. NO, because the $MC > P$ of producing another unit is $901 > 650$.