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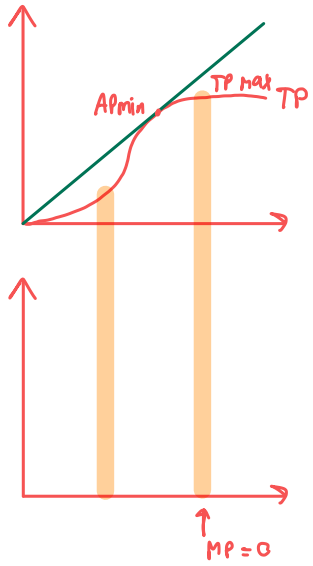
4. Nimbus, Inc., makes brooms and then sells them door-to-door. Here is the relationship between the number of workers and Nimbus's output during a given day:



Workers	Output	Marginal Product	Total Cost	Average Total Cost	Marginal Cost
0	0		200	-	
		20			300 - 200 / 20 - 0 = 5
1	20		300	15	
		30			100/30 = 3.3
2	50		400	8	
		40			100/40 = 2.5
3	90		500	5.55	
		30			100/30 = 3.33
4	120		600	5	
		20			100/20 = 5
5	140		700	5	
		10			100/10 = 10
6	150		800	5.33	
		5			100/5 = 20
7	155		900	5.81	

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

b. 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. TC = 200 + 100L

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

d. 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:

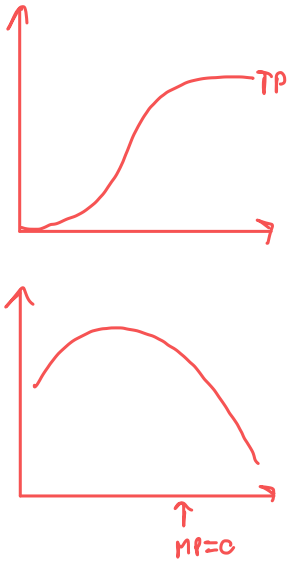
Quantity	Average Total Cost	TC	MC
600 consoles	$300	180,000	901
601	301	180,901	

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?

∴ not sell because MC > MR (marginal revenue)

④

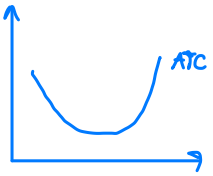
a) When adding 1 more workers since 0 to 4 workers, MP will increase a lot (more production)



c) Average will increase and then decreasing

when there are 0-3 workers : ATC ↓

4-5 workers : ATC_{min} ; AC_{min} = MC

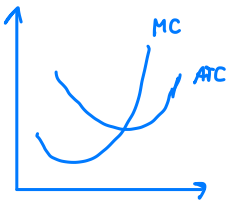


d) MC will decrease and then increase

When there are 0-3 workers : MC < ATC ; ATC ↓

4-5 workers : ATC_{min} ; AC_{min} = MC

6-7 worker : ATC ↑ : MC > ATC



⑤ we will not sell it price since our 601th's MC = $901

we offer the price only $550

∴ since P < MC : we will have negative marginal profit on 601th unit, and Make overall profit ↓