



AP[®] Microeconomics 2003 Sample Student Responses Form B

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Write in the box the number of the question you are answering on this page as it is designated in the examination.

a) Profit-maximizing number of workers occurs when $\frac{MRP_{\text{Labor}}}{P_{\text{Labor}}} = 1$. Hence, a firm will

maximize Π s at $MRP_L = \text{wage rate}$.

b) # of workers	Output (dozens)	MP	P	MRP
0	0			
1	8	$8 \times 2 = 16$		
2	15	$7 \times 2 = 14$		
3	21	$6 \times 2 = 12$		
4	26	$5 \times 2 = 10$		
5	30	$4 \times 2 = 8$		
6	33	$3 \times 2 = 6$		
7	35	$2 \times 2 = 4$		
8	36	$1 \times 2 = 2$		

To maximize profits, Leadmill should hire workers to the point where $\frac{MRP_L}{P_L} = 1$.

Hence, $\frac{MRP_L}{P_L} = 1$, so MRP_L should equal 8.

This is reached by hiring up through to the fifth worker, so Leadmill should employ 5 workers.

Write in the box the number of the question you are answering on this page as it is designated in the examination.

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c) $\frac{MRP_L}{P_L} = 1$, $\frac{MRP_L}{6} = 1$, so Π maximization

occurs when $MRP_L = 6$. This occurs with the hiring of the 6th worker, so Leadmill should hire 6 workers.

d) # of workers	Output	MP	P	MRP_L
0	0			
1	8	8	1	8
2	15	7	1	7
3	21	6	1	6
4	26	5	1	5
5	30	4	1	4
6	33	3	1	3
7	35	2	1	2
8	36	1	1	1

$\frac{MRP_L}{P_L} = 1$, $\frac{MRP_L}{6} = 1$, hence Π maximization

occurs when $MRP_L = 6$. This occurs with the hiring of the third worker, hence Leadmill would employ 3 workers.

Write in the box the number of the question you are answering on this page as it is designated in the examination.

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~~(a)~~ (a) + (b) combined

NW	TC	ATC	MC	TR	MR
0	0	0	6	0	16
1	8	8	6	16	14
2	16	15	6	30	8
3	24	21	6	42	10
4	32	26	6	52	6
5	40	30	6	60	6
6	48	33	6	66	4
7	56	35	6	70	2
8	64	36	6	72	2

→ (a).
 where $MR = MC$
 profit-maximizing
 number of workers
 is ~~4 to 5~~ 4 to 5 workers
 → (b).

~~(c)~~

(c)

NW	TC	TR	MC	MR
0	0	0	6	16
1	8	16	6	14
2	12	30	6	12
3	18	42	6	10
4	24	52	6	8
5	30	60	6	6
6	36	66	6	4
7	42	70	6	2
8	48	72	6	2

5 to 6 workers
 5 workers

3

Write in the box the number of the question you are answering on this page as it is designated in the examination.

(d)

NW TC TR MC MR

0	0	0	6	8
1	6	8	6	7
2	12	15	6	6
3	18	21	6	5
4	24	26	6	4
5	30	30	6	3
6	36	33	6	2
7	42	35	6	1
8	48	36		

~~3 workers~~

2 to 3 workers