## Measures of Labor Productivity

#### Marginal product (MP): observed increase in TP when one more worker is hired

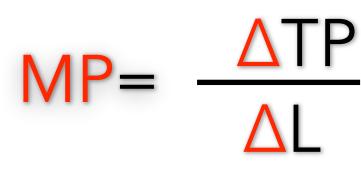
#### Total product (TP): Total units produced by ALL workers

#### Average product (AP): Output per worker

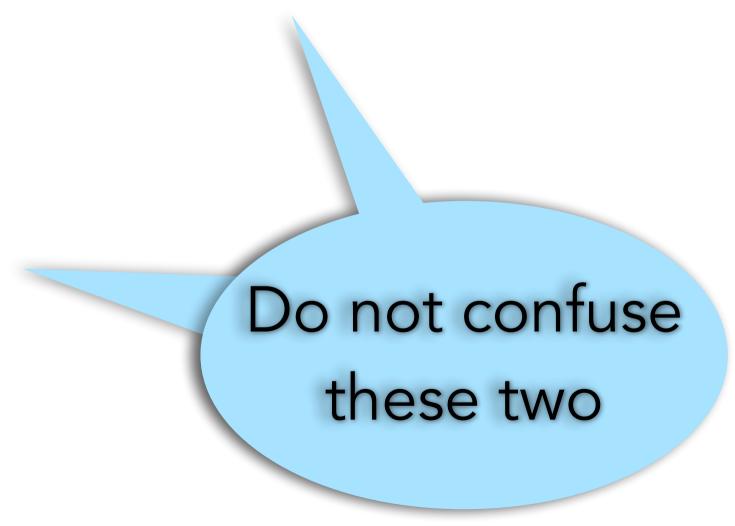




 $TP (L=n) = MP_1 + MP_2 + MP_3 + MP_4 + ... + MP_n$ 







### Measures of Labor Productivity

Total product (TP): Total units produced by ALL workers



TP (L=n) = 
$$MP_1 + MP_2 + MP_3 + MP_4 + ... + MP_n$$

Marginal product (MP): observed increase in TP when one more worker is hired

$$\frac{\text{Change in TP}}{\text{Change in L}} = \frac{\Delta \text{TP}}{\Delta \text{L}}$$

$$\frac{\Delta TP}{\Delta L}$$

Average product (AP): Output 
$$\longrightarrow$$
 AP=  $\frac{TP}{L}$ 

Do not contuse these two

# Using the Total Product (TP) to calculate the Marginal Product (MP)

Labor (L)	TP	MP	
0	0		
1	5	5-0=5	
2	12	12-5=7	
3	21	21-12=9	
4	33	33-21=12	
5	47	47-33=14	
6	63	63-47=16	
7	78	78-63=15	
8	91	91-78=13	
9	102	102-91=11	
10	110	110-102=8	
11	115	115-110=5	
12	117	117-115=2	
13	115	115-117=-2	
14	110	110-115=-5	
15	102	102-110=-8	
16	91	91-102=-11	
17	78	78-91=-13	