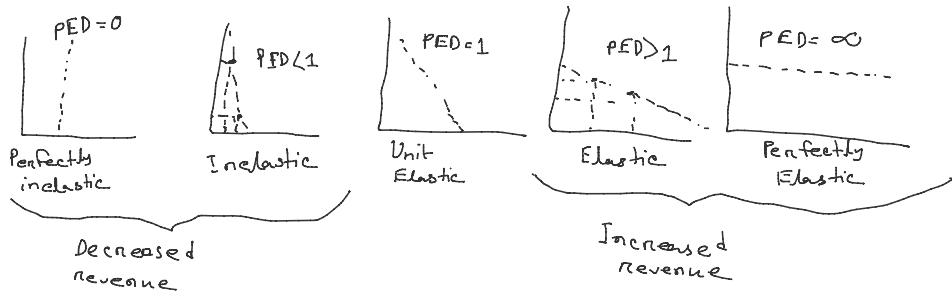


Chapter 4

Price elasticity on Demand (PED) :-

$$PED = \frac{\% \Delta Q}{\% \Delta P} = \frac{\frac{\Delta Q}{avg(Q)}}{\frac{\Delta P}{avg(P)}} = \frac{\frac{Q_2 - Q_1}{Q_1 + Q_2}}{\frac{P_2 - P_1}{P_1 + P_2}}$$

[Sign is ignored]



Cross Elasticity on Demand (XED) :-

$$XED = \frac{\% \Delta Q}{\% \Delta P}$$

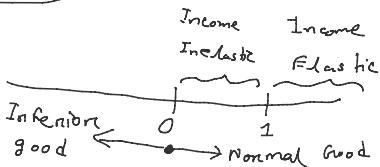
← my product ← other product (complement / substitute)

Magnitude defines shift of demand curve.

Income Elasticity on Demand (YED) :-

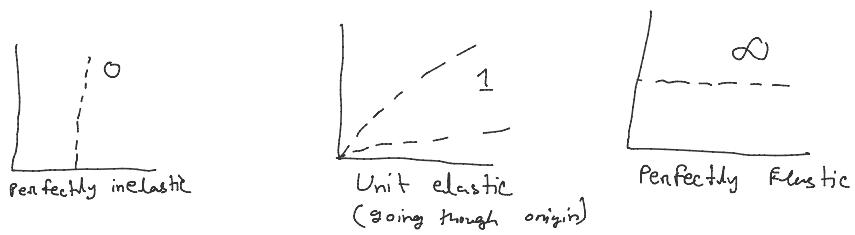
$$YED = \frac{\% \Delta Q}{\% \Delta P}$$

← Salary / Income



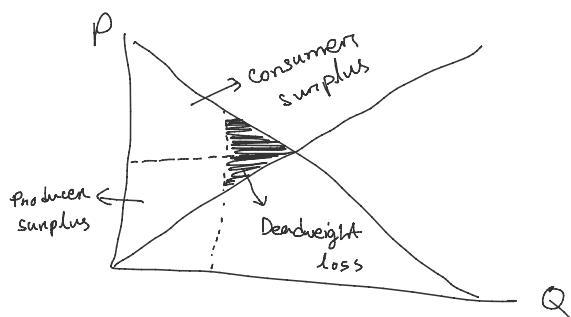
Elasticity of Supply :-

$$\frac{\% \Delta Q}{\% \Delta P}$$



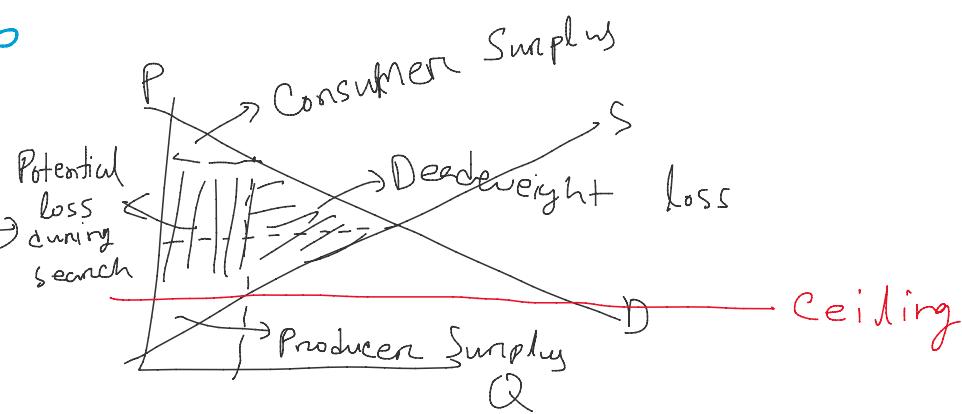
#Chapter 5

Surplus:-

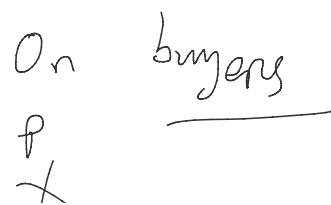


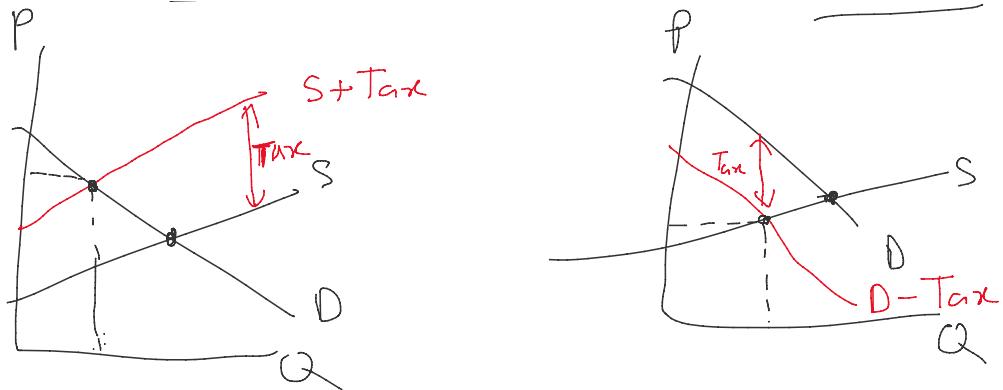
#Chapter 6

Ceiling

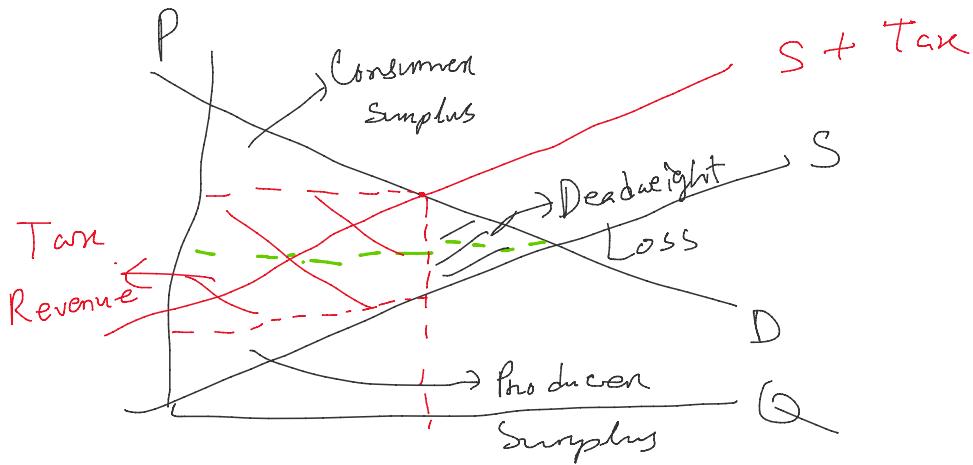


Tax:-



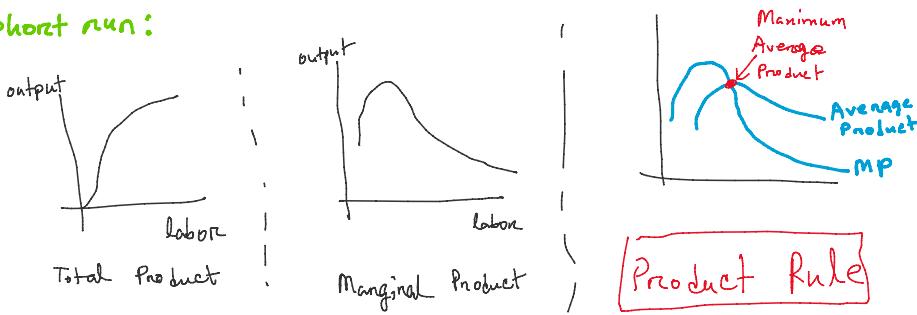


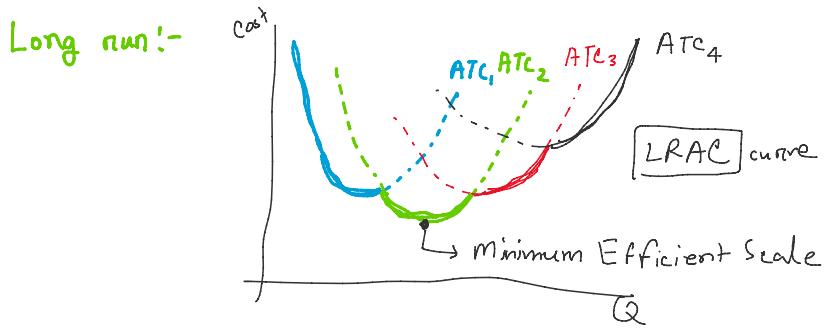
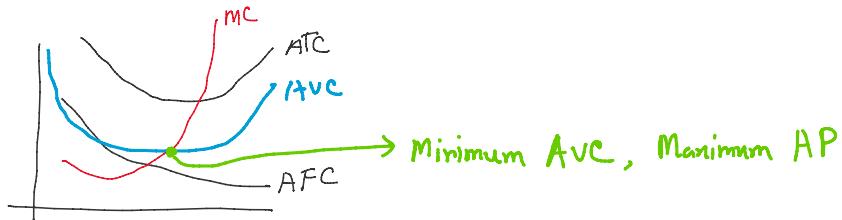
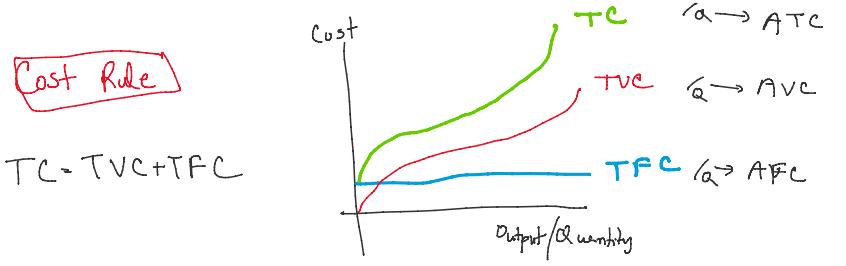
- Perfectly inelastic Demand (L^0) \rightarrow Buyers Pay
- " elastic \sim (L^∞) \rightarrow Sellers Pay
- Vice versa for supply



Chapter 11:-

Short run:

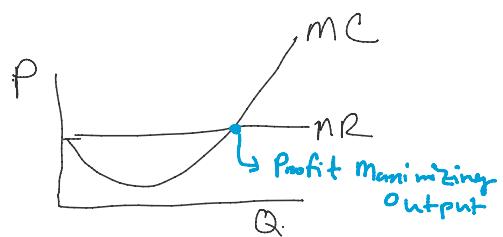
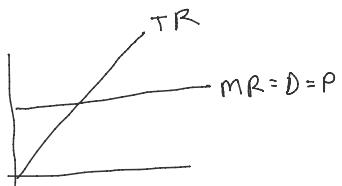




Chapter 12 (Perfect competition) :-

- ① Identical Product (Many firms \rightarrow Many buyers)
- ② No restriction on Entry
- ③ No one has advantage
- ④ All know about the price

For 1 firm:-

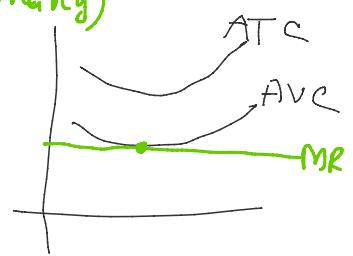


$$\boxed{\text{Profit} = TR - TC}$$

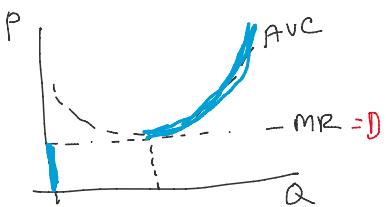
$$\begin{aligned}\text{Loss} &= TC - TR \\ &= TFC + TVC - TR \\ &= TFC + (AVC - P) \times Q\end{aligned}$$

Shutdown decision:- (Temporary)

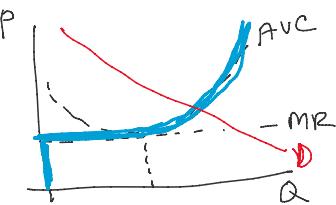
- ① $P = \min(AVC)$, either decision
- ② $P > \min(AVC)$, Produce
- ③ $P < \min(AVC)$, Shutdown



Firms Supply Curve



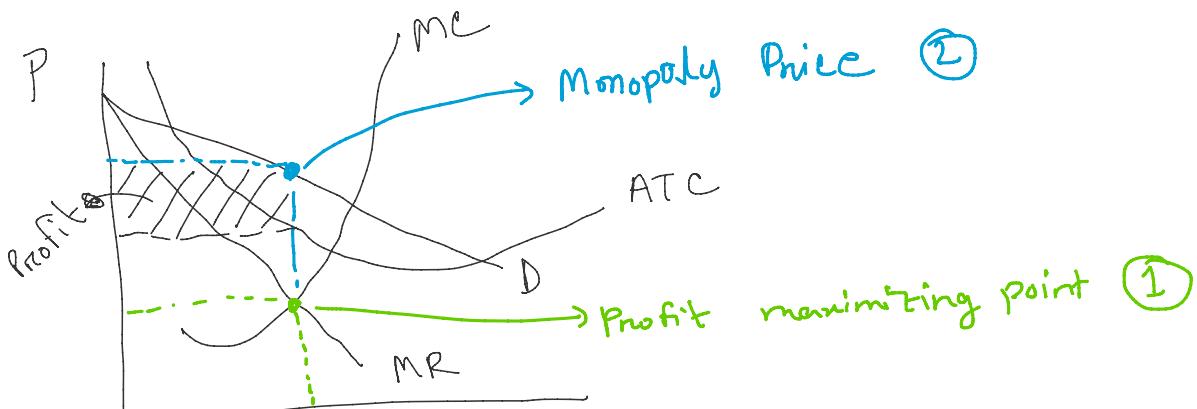
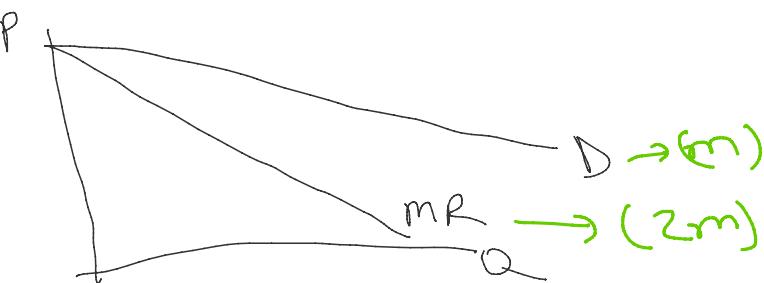
Markets Supply Curve

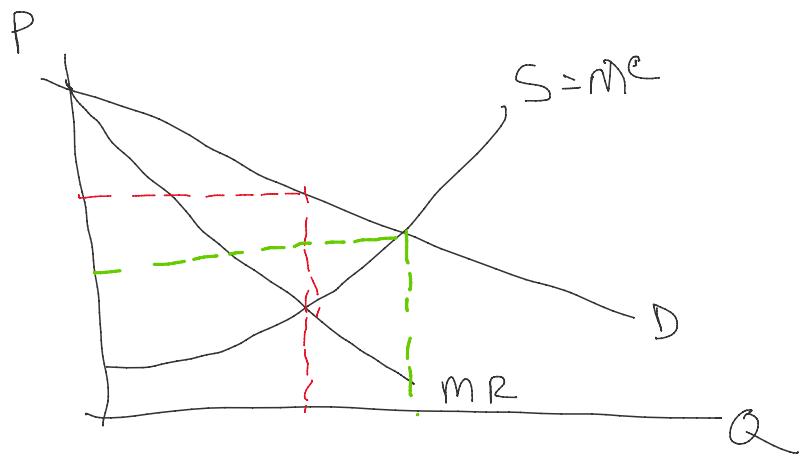
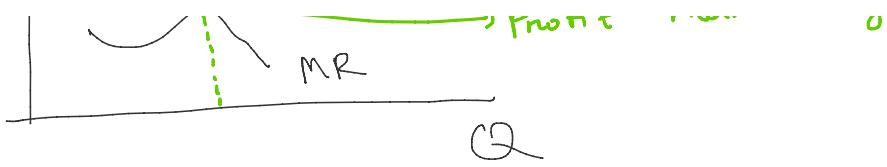


#Chapter 13 :-

① Entry Barrier

② No close substitute

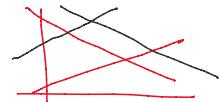




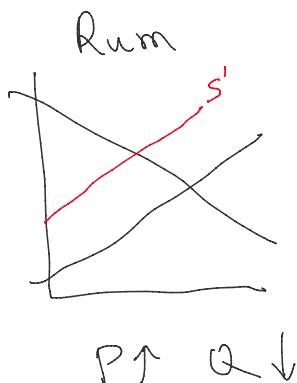
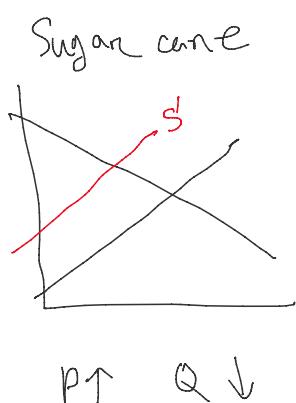
Q1) What is the effect on the price of a camera lens and the quantity of camera lens sold if:

- a. The price of a camera rises? ~~Supply shifts left~~ $P \uparrow Q \downarrow$
- b. The price of a camera falls? \rightarrow ~~Demand shifts right~~
- c. The supply of camera lenses increases? ~~Supply shifts right~~ $P \downarrow Q \uparrow$
- d. Consumer's income decreases? ~~Demand shifts left~~
- e. The wage rate of workers who produce camera lenses increases? ~~Supply shifts left~~
- f. The wage rate of workers who produce camera lenses increases at the same time the price of a camera falls. The effect of increasing the wage rate is higher than the effect of falling camera prices.

$P \uparrow Q \downarrow$



Q2) Assume that the markets for sugar cane, rum, and whiskey are initially in equilibrium. Assume further that Hurricane Marilyn destroys much of the Jamaican sugar cane crop. Sugar cane is a principal ingredient in rum, but it is not an ingredient in whiskey. Analyze the effect of the hurricane on the markets for each of the three goods. Explain using graphs.

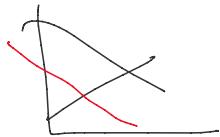


Q3) Summarize the result in the following table format:

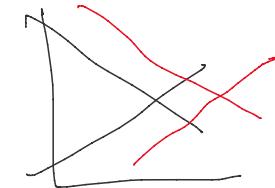
	Market	Demand Curve	Supply Curve	Equilibrium Price	Equilibrium Quantity
a)	Bubble Tea	↖	·	↓	↓
b)	Fruit Smoothies	↗	↗	·	↑
c)	Microwave Meal	↗	·	↑	↑
d)	Wisconsin Cheese	·	↖	↑	↓

Show all the shifts and changes in equilibrium prices and quantities using separate diagrams.

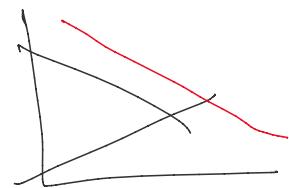
- a) A recent study claims that the tapioca pearls in bubble tea are linked to increased risk for cancer, creating fear among consumers.



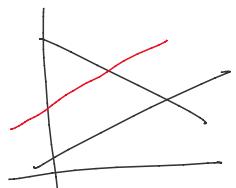
- b) In addition to the study report in a), you are also told that fruit smoothies are good alternatives to bubble tea. At the same time, you know that the extended summer has invigorated fruit harvests.



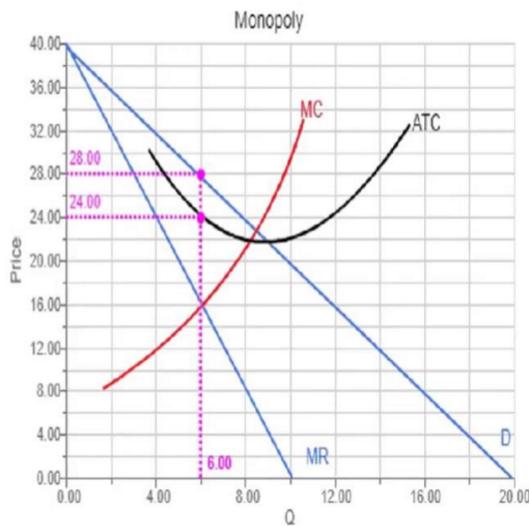
- c) Teaching assistants consider microwaveable meals an inferior good. This semester, they are greeted with bad news as the Department of Economics cuts their stipends by 15%.



- d) Wisconsin produces fine cheese using cow's milk; however, mad cow disease has wiped out half the population of cows in Wisconsin.



Q4)



- What is the profit maximizing output, q^* ?
- What is the profit maximizing price?
- Calculate TR.
- What is the ATC at q^* ?
- Calculate Total Cost.
- Calculate the Profit.

$$a) MC = MR \Rightarrow q^* = 6$$

$$b) MC = MR \Rightarrow P^* = 28$$

$$c) TR = Q \times P = 6 \times 28 = 168$$

$$d) ATC = 24$$

$$e) TC = ATC \times Q = 24 \times 6 = 144$$

$$f) \text{Profit} = TR - TC = 168 - 144 \\ = 24$$

Q5) The Health ministry is evaluating the data of the soft beverages market.

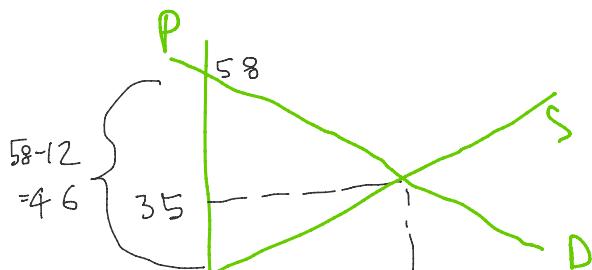
Demand function: $Q_D = 290 - 5P$

Supply function: $Q_S = -60 + 5P$

(a) Find the total surplus.

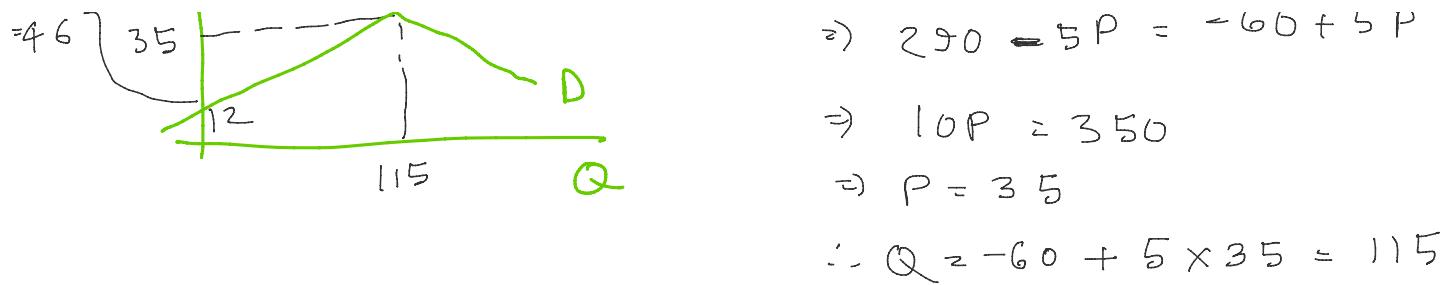
(b) The authority is concerned about the increasing obesity rate in the country. Hence, they have decided to impose a tax of TK. 10 per unit on the soft drinks

(c) What is the total new consumer surplus and producer surplus after government intervention?



$$Q_d = Q_s$$

$$\Rightarrow 290 - 5P = -60 + 5P$$



a) Total surplus = $\frac{1}{2} \times 115 \times 46$

$$= 2695$$

b) Given, $Q_s = -60 + 5P$

$$\Rightarrow P = \frac{Q_s + 60}{5}$$

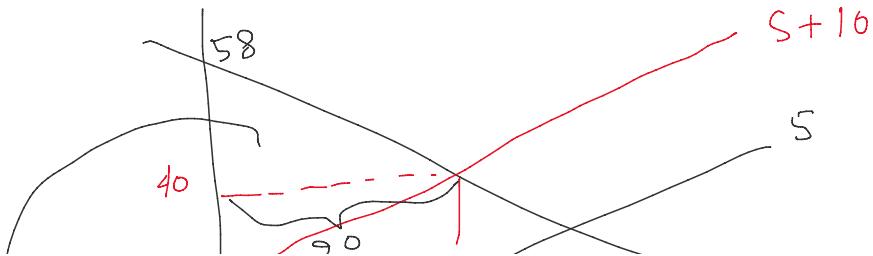
: New price $\Rightarrow P = \frac{Q_s + 60}{5} + 10$

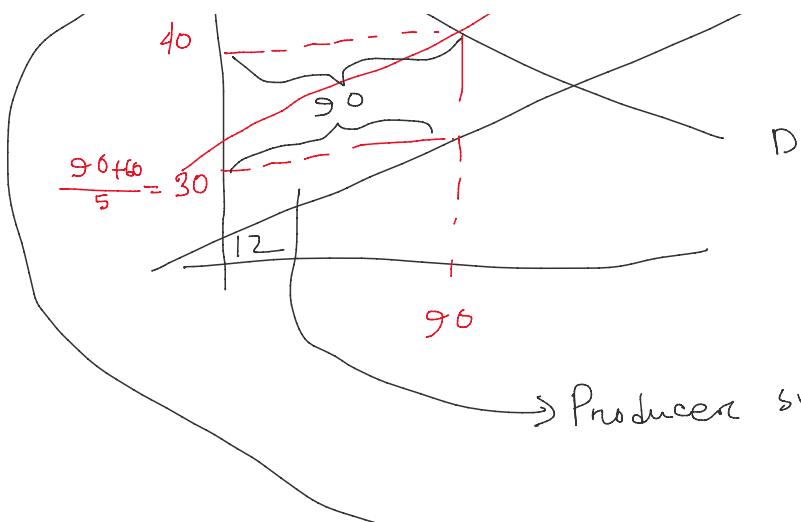
As, $Q_s = Q_d$, $P = \frac{(290 - 5P) + 60}{5} + 10$

$$\Rightarrow 5P = 400 - 5P$$

$$\therefore P = 40$$

$$\therefore Q = 290 - 5 \times 40 = 90$$





$$\rightarrow \text{Producer surplus} = \frac{1}{2} \times 90 \times (30 - 12)$$

$$= 810$$

$$\rightarrow \text{Consumer surplus} = \frac{1}{2} \times 90 \times (58 - 40)$$

$$= 810$$