Welfare Economics

Consumer and Producer Surplus

Consumer Surplus

- How much are you willing to pay for a pair of jeans?
- As an individual consumer, you have no say in determining the market price; you take the market price as given.
- If the market price is at or below what you are willing to pay for a good, you buy it.

Consumer Surplus

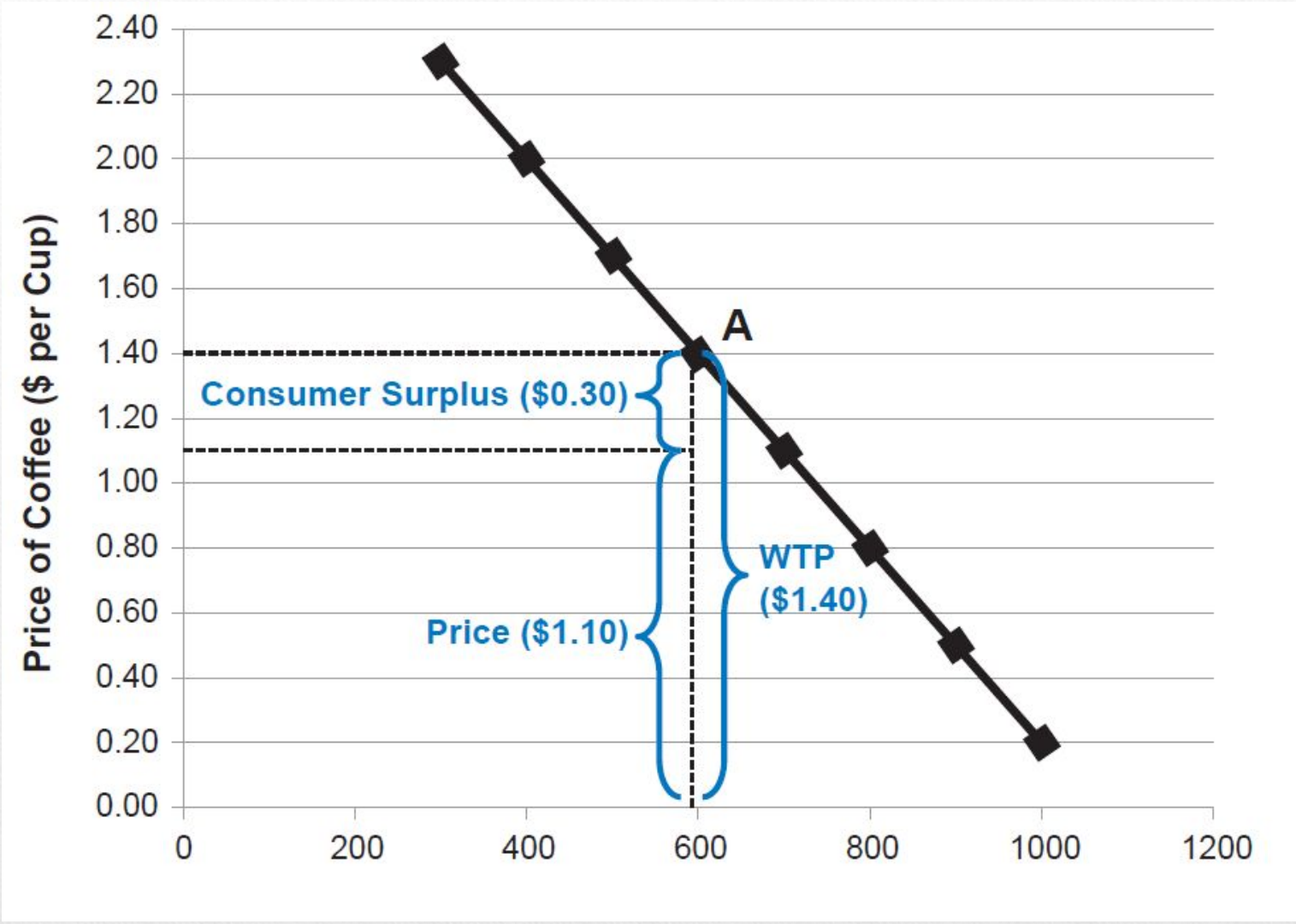
- If the market price is below what you are willing to pay for a pair of (your favorite) jeans, your purchase will result in *consumer surplus*: the difference between the price that you were willing to pay and the (market) price you actually paid.

Consumer Surplus

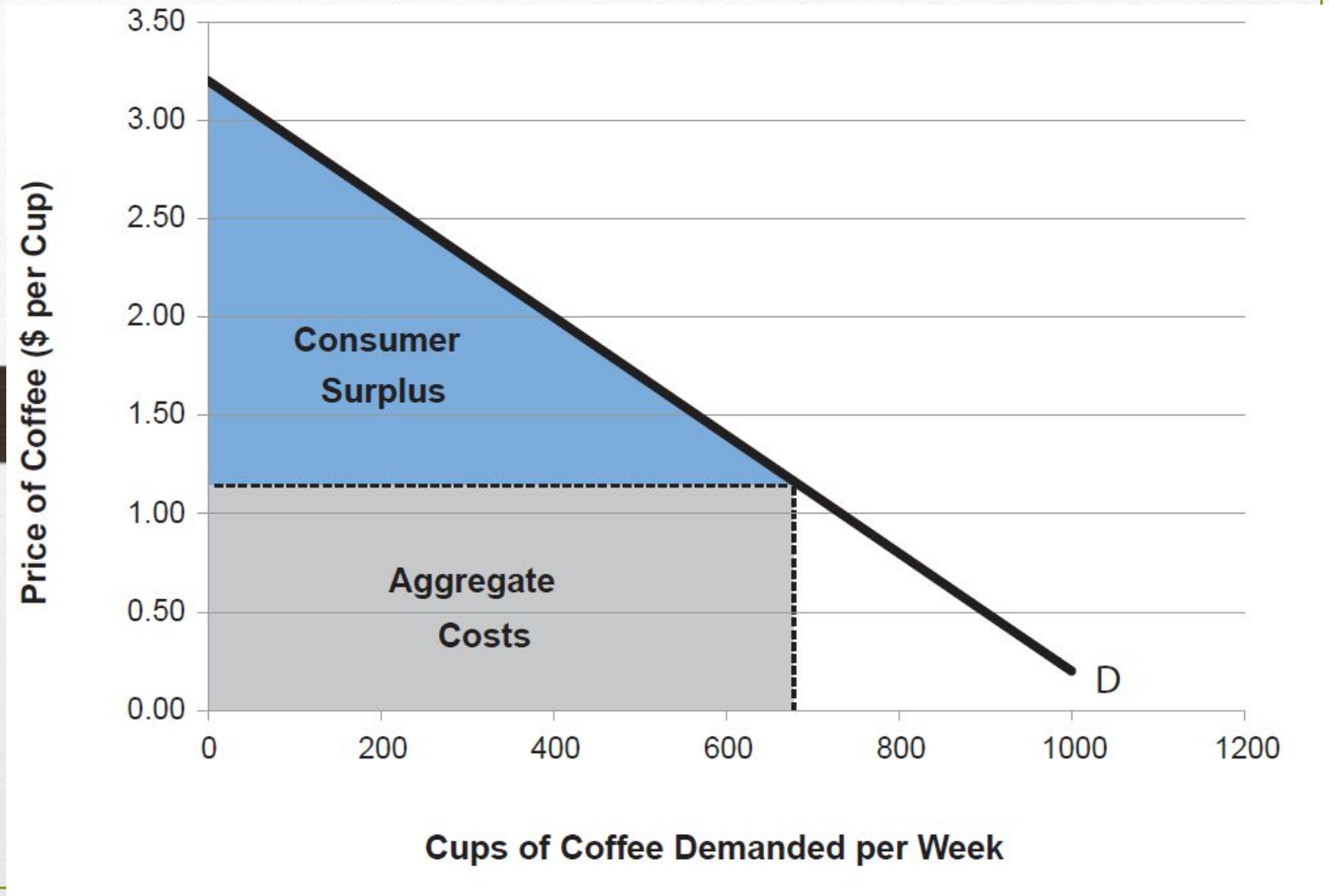
- Individual consumer surplus = net gain from the purchase of a good= the difference between the maximum price a consumer is willing to pay for a good and the actual price paid

- Total consumer surplus is the sum of all consumer surpluses gained by all buyers of a good in the market

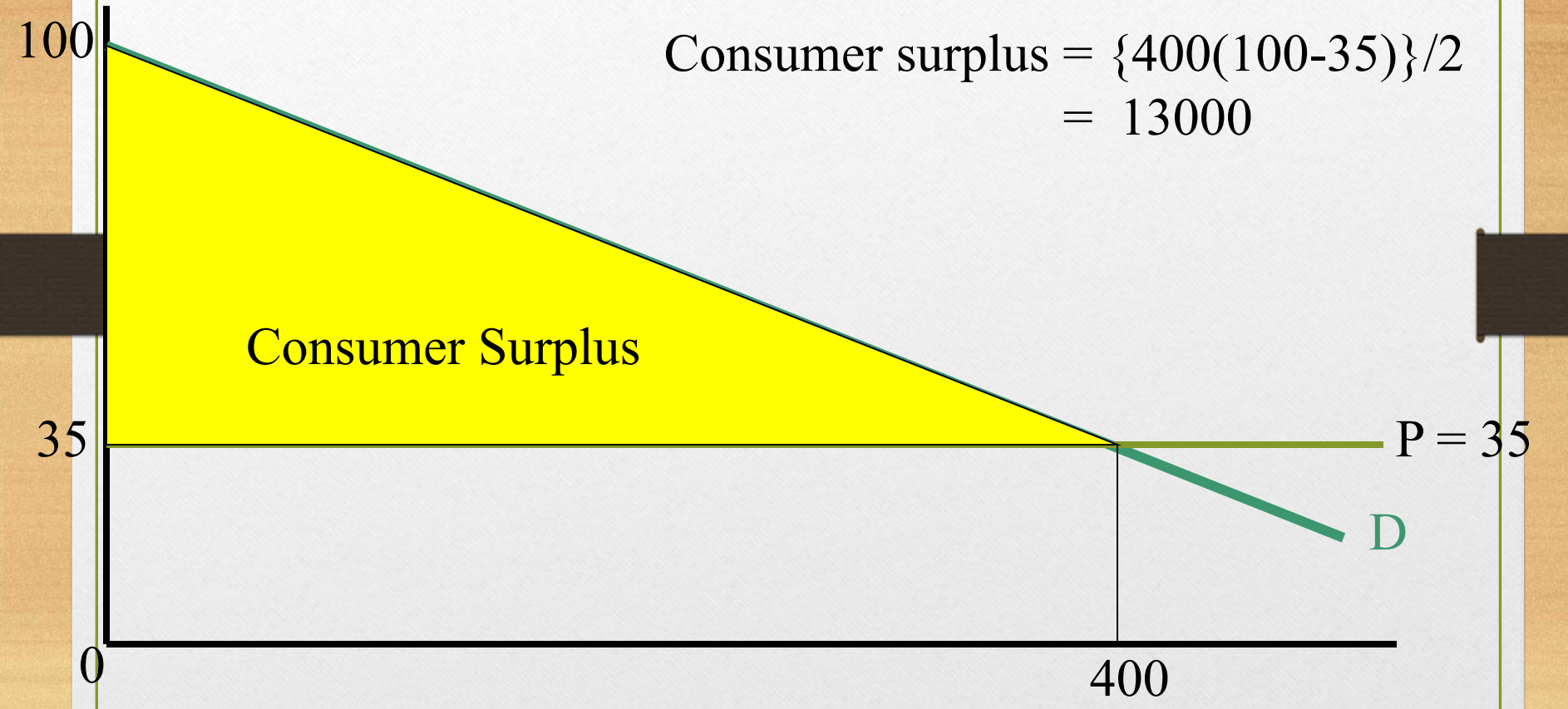
Consumer Surplus and a Demand Curve



Market Consumer Surplus /Total CS

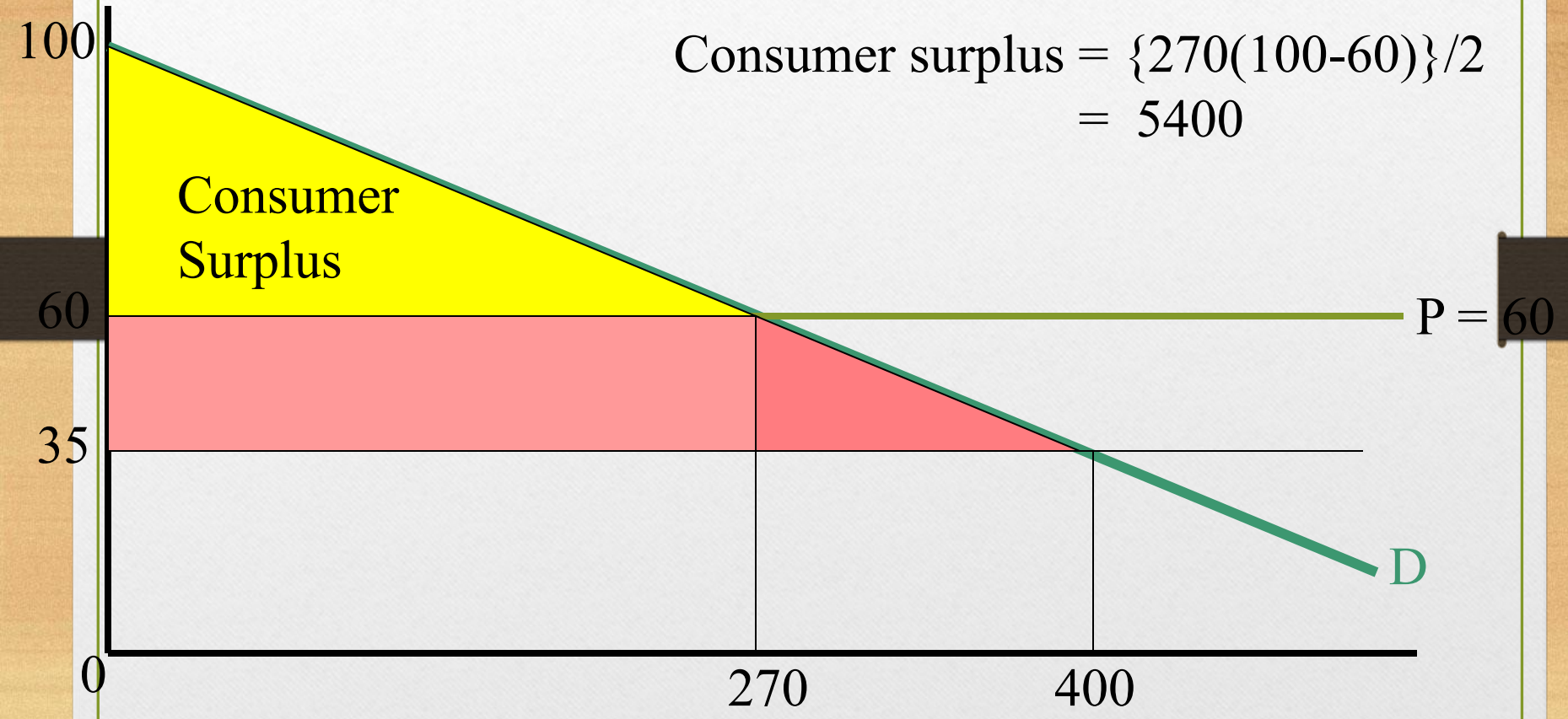


Consumer surplus = the area above the price and below the demand curve



Consumer surplus = {400(100-35)}/2
= 13000

Consumer Surplus and A Price Increase

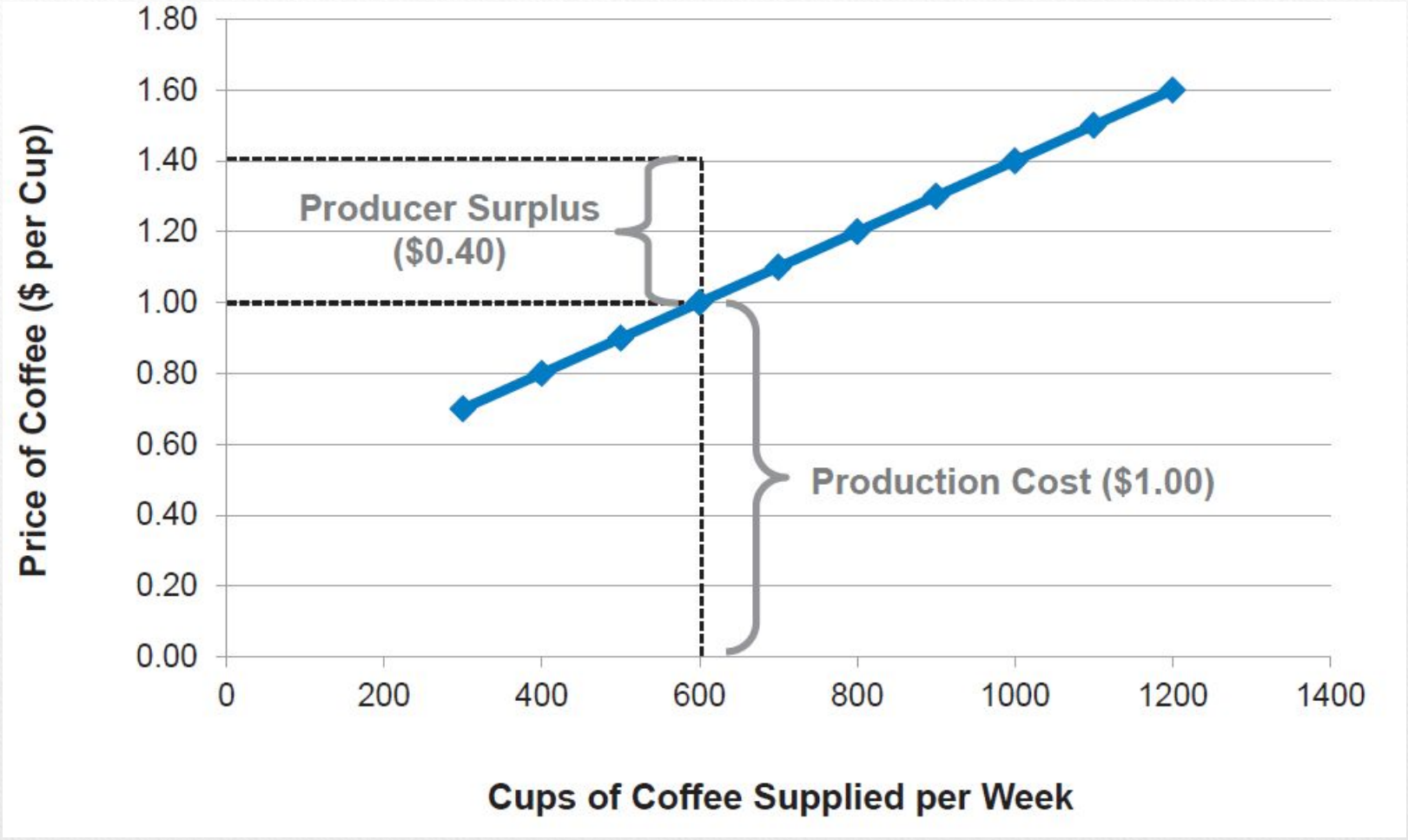


Consumer surplus = {270(100-60)}/2
= 5400

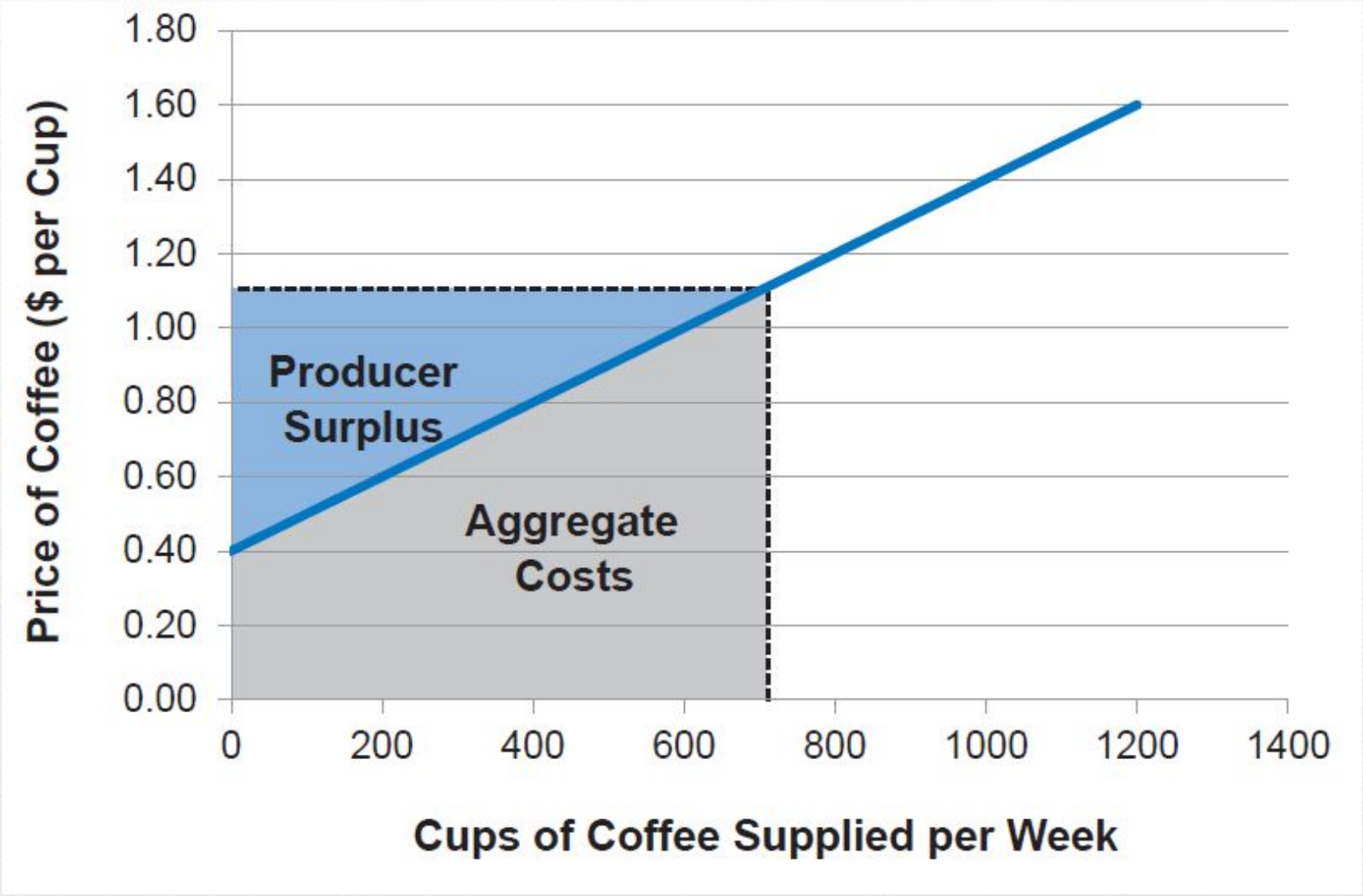
Producer Surplus

- The seller's cost: the lowest price a seller is willing to accept for a good: (marginal cost of production)
- Producer surplus: the difference between the (market) price a seller actually receives and his/her (seller's) cost
- A seller would not sell below his/her cost
- If the market price is below a seller's cost the seller will leave the market

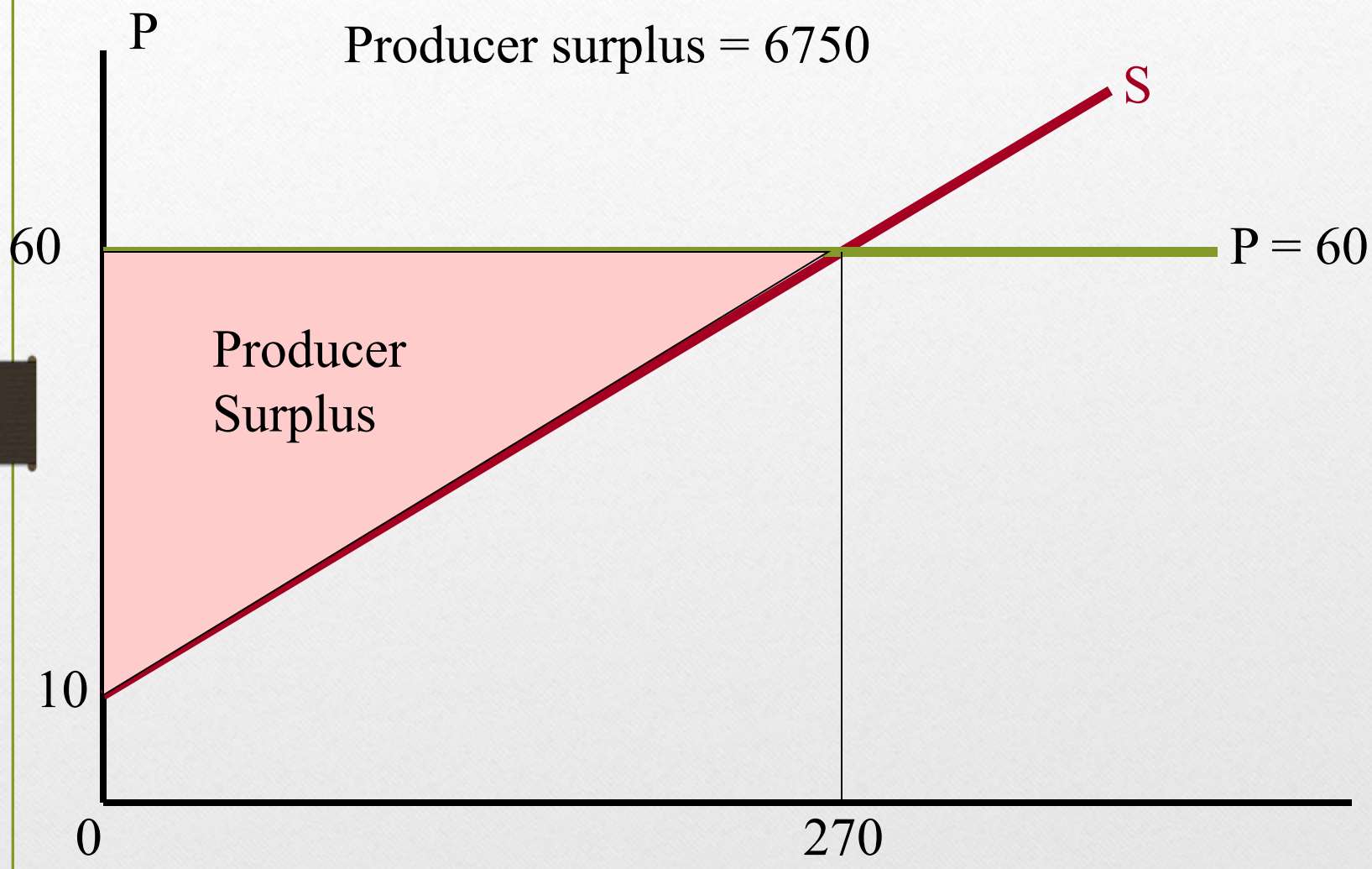
Producer Surplus and a Supply Curve



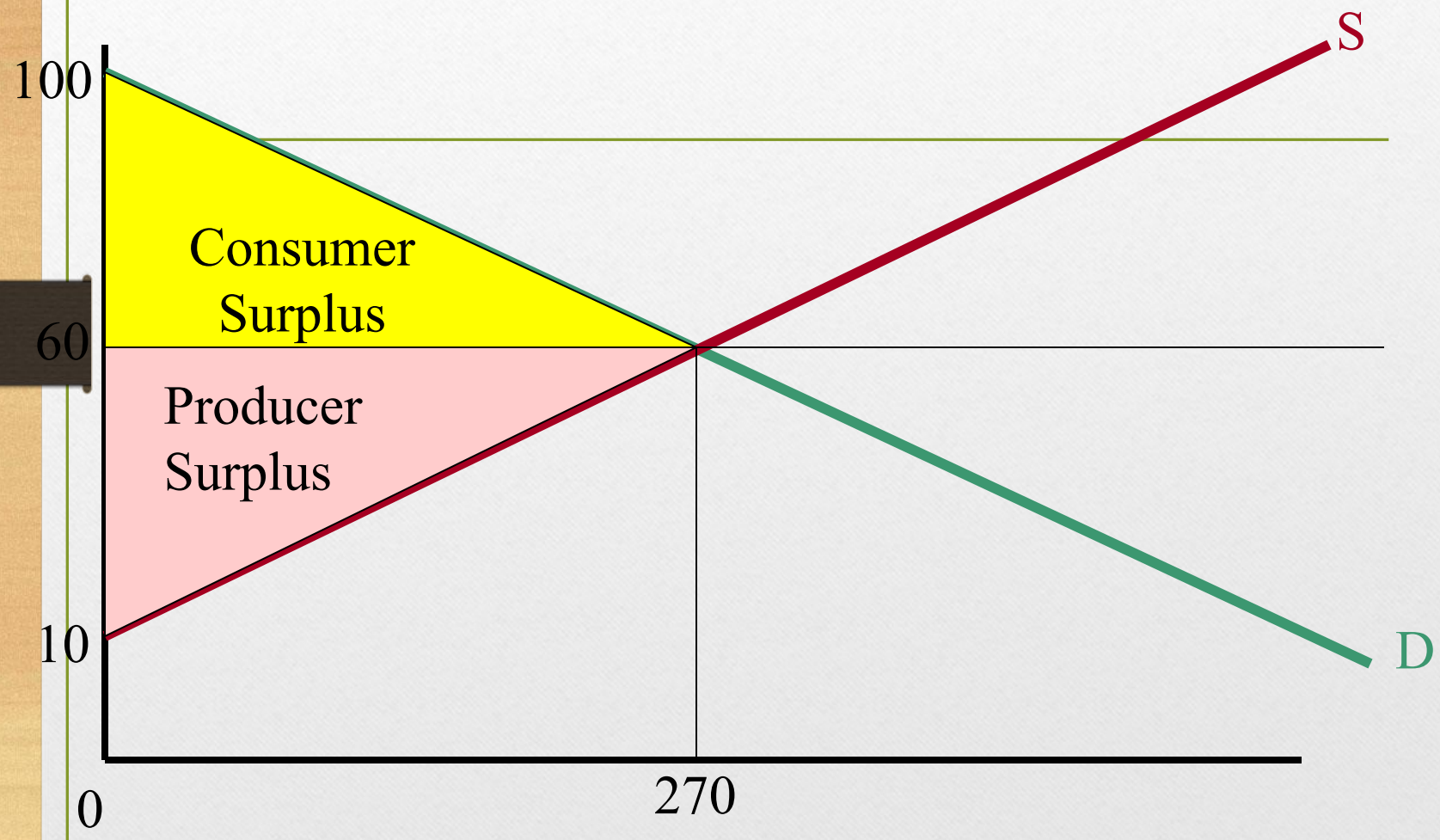
Market Producer Surplus/ Total PS



Producer Surplus and The Market Supply



Total Surplus



Example

Suppose the market for cameras has a supply curve of $P = 30 + Q$, and a demand curve of $P = 240 - 2Q$. Assume that the market is perfectly competitive.

a) What will the equilibrium price and quantity of cameras be?

b) Calculate the producer and consumer surplus associated with the equilibrium found in part (a). Illustrate on a graph.

Example

Suppose the market for cameras has a supply curve of P = 30 + Q, and a demand curve of P = 240 – 2Q. Assume that the market is perfectly competitive.

a) What will the equilibrium price and quantity of cameras be?

b) Calculate the producer and consumer surplus associated with the equilibrium found in part (a). Illustrate on a graph.

a) The equilibrium price and quantity are:

$$30 + Q = 240 - 2Q$$
$$3Q = 210$$
$$Q = 210/3$$
$$\mathbf{Q = 70}$$

Substitute this into either supply or demand to get:

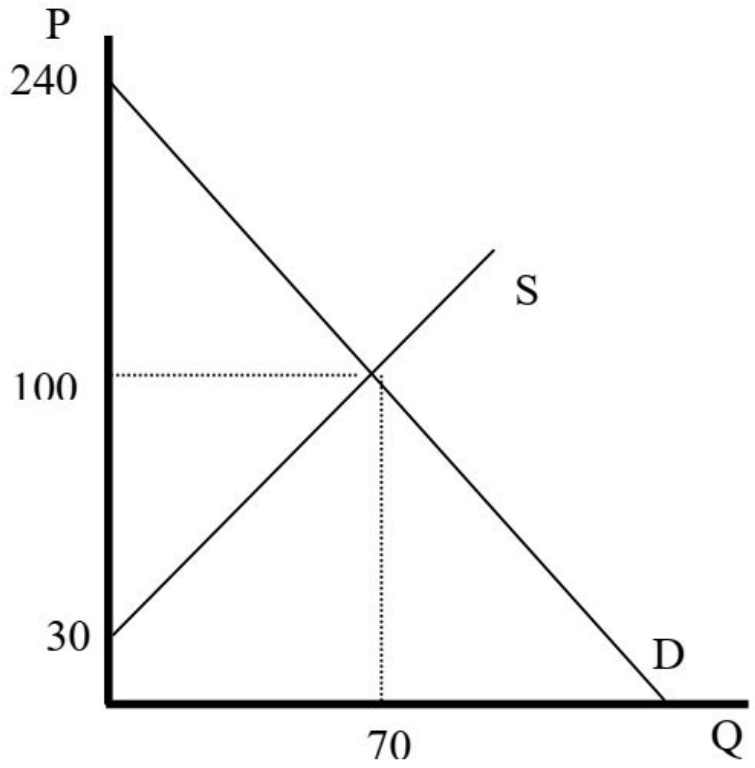
$$\mathbf{P = 100}$$

Suppose the market for cameras has a supply curve of P = 30 + Q, and a demand curve of P = 240 – 2Q. Assume that the market is perfectly competitive.

a) What will the equilibrium price and quantity of cameras be?

b) Calculate the producer and consumer surplus associated with the equilibrium found in part (a). Illustrate on a graph.

b)

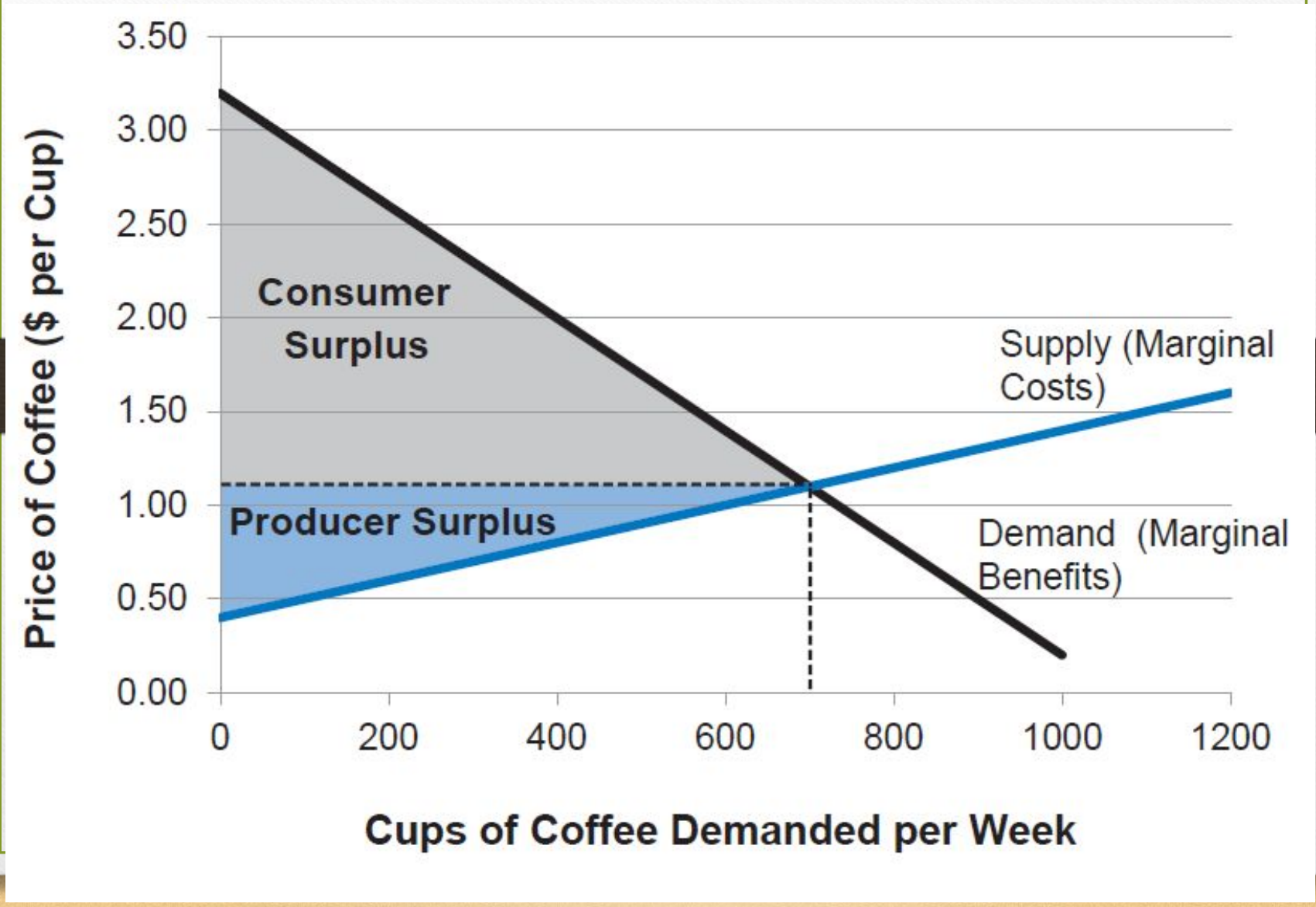


Consumer surplus is the triangle above the price and below demand. It has a height of 140 (= 240 – 100) and a base of 70. Its area = 0.5(140)(70) = **$4,900**.

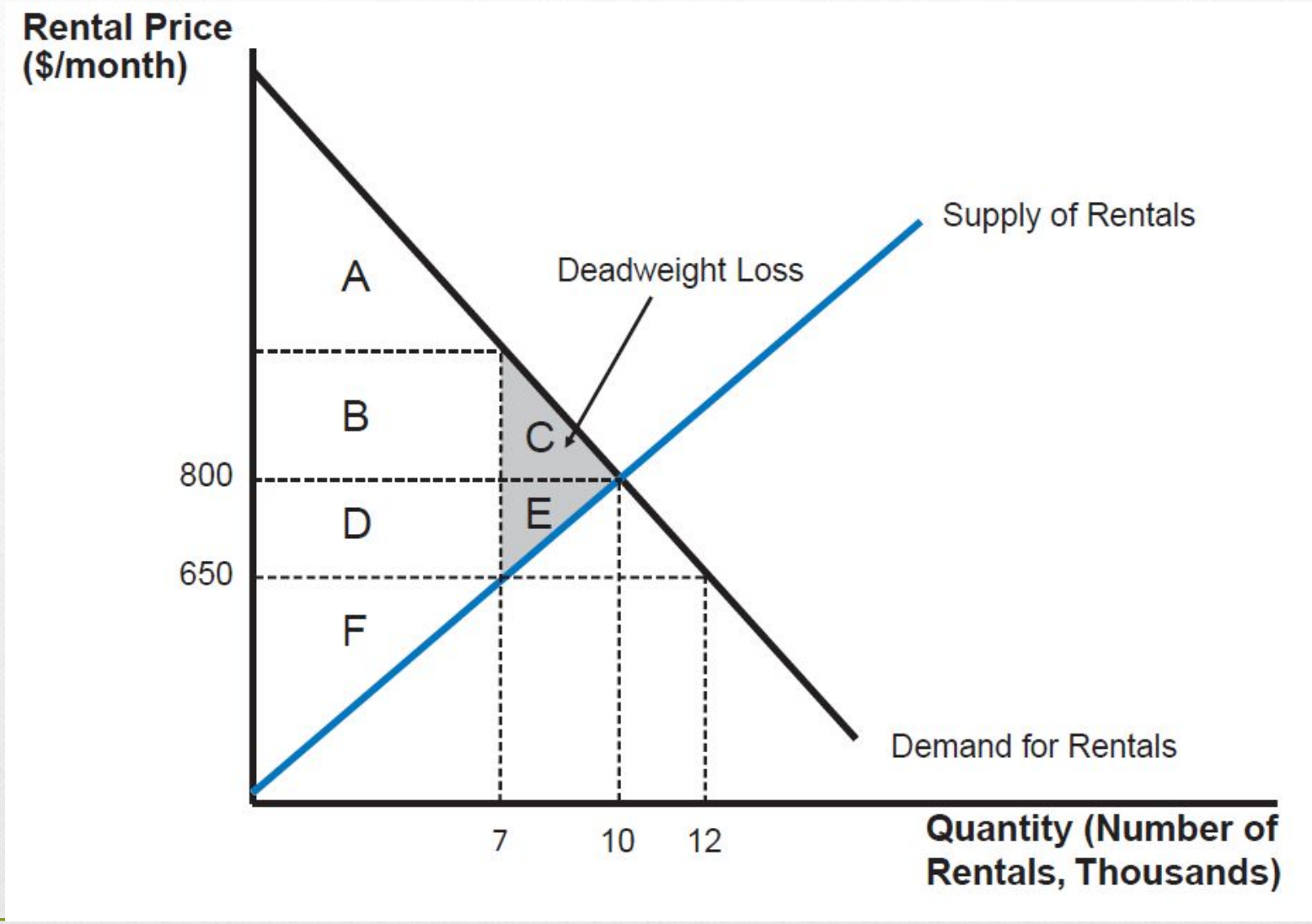
Producer surplus is the triangle below price and above supply. It has a height of 70 (= 100 – 30) and a base of 70. Its area = 0.5(70)(70) = **$2,450**.

Social Efficiency

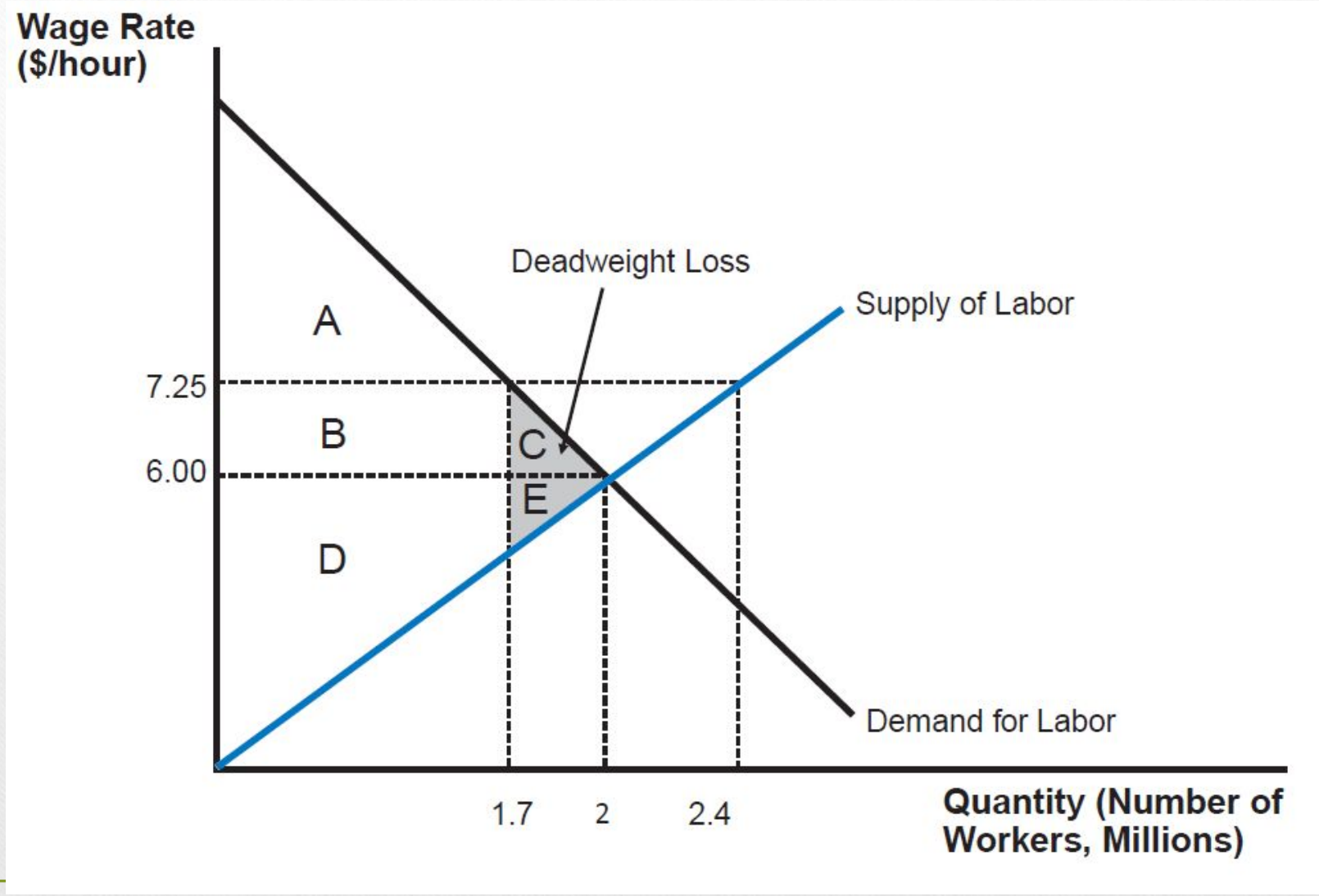
Figure 6.9: Social Welfare at market Equilibrium



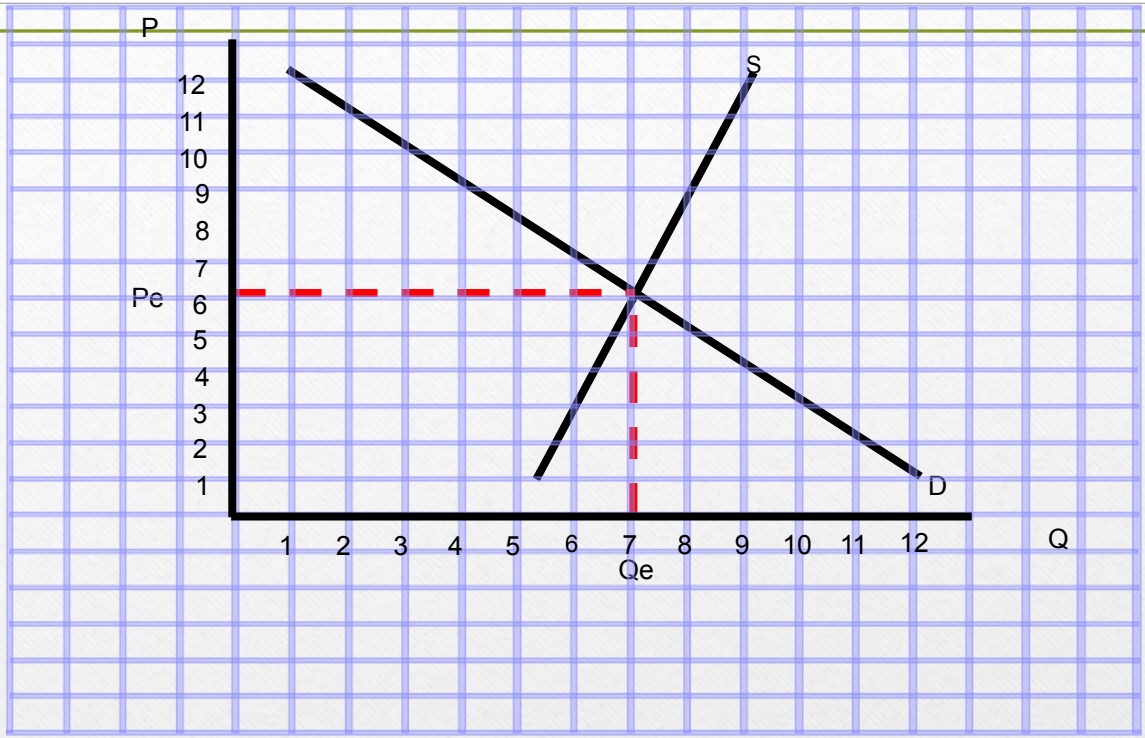
A Price Ceiling



A Price Floor



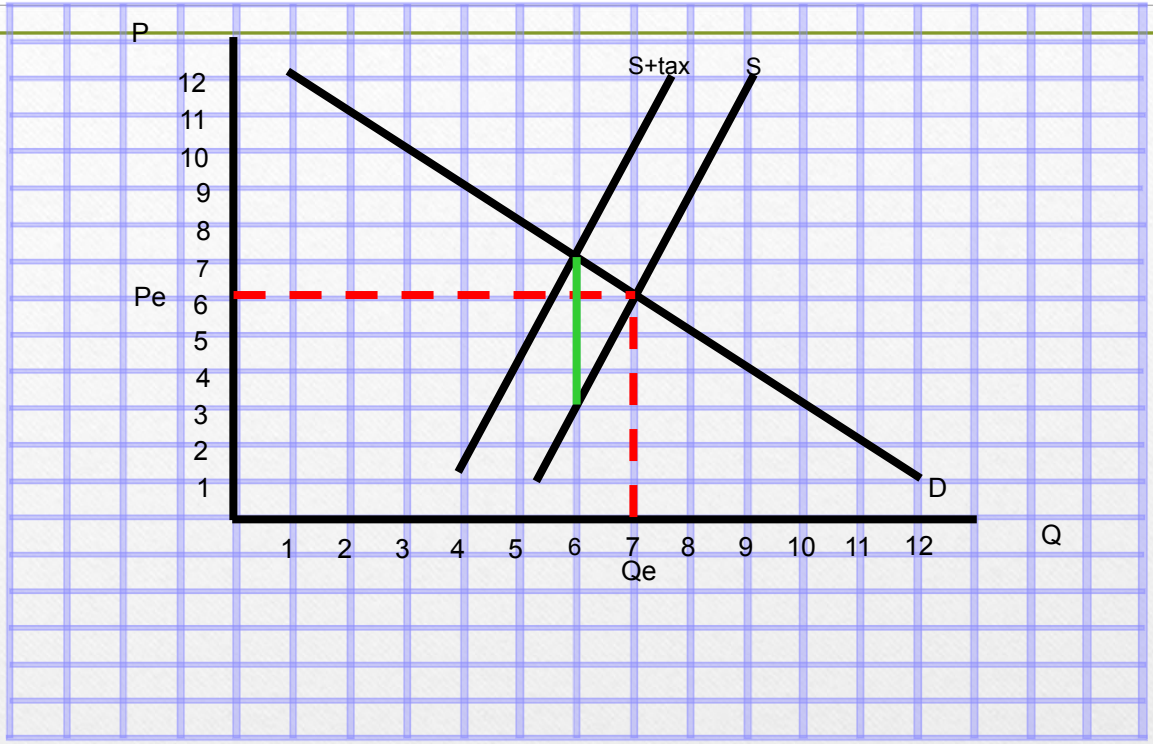
Incidence of Tax



A market in equilibrium. The equilibrium price is $6. The quantity exchanged at that price is 7.

Incidence of Tax

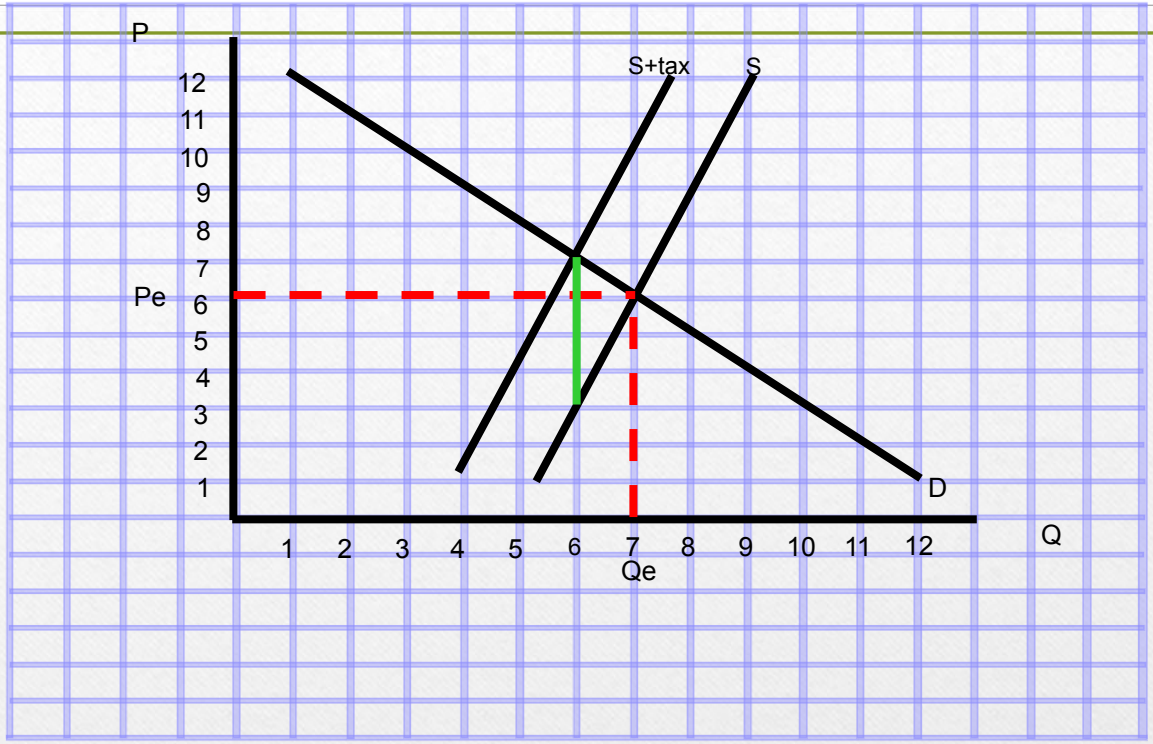
GRAPH 1



The supply curve shifts to the left to reflect the tax.

Incidence of Tax

GRAPH 1



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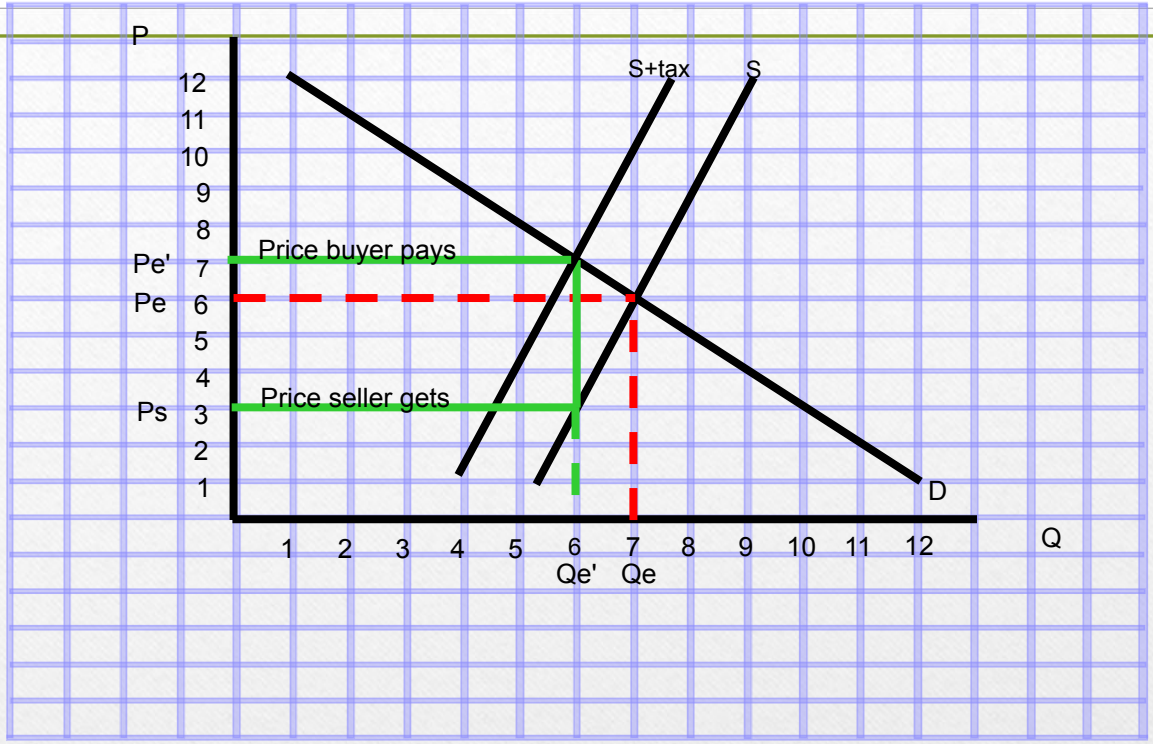
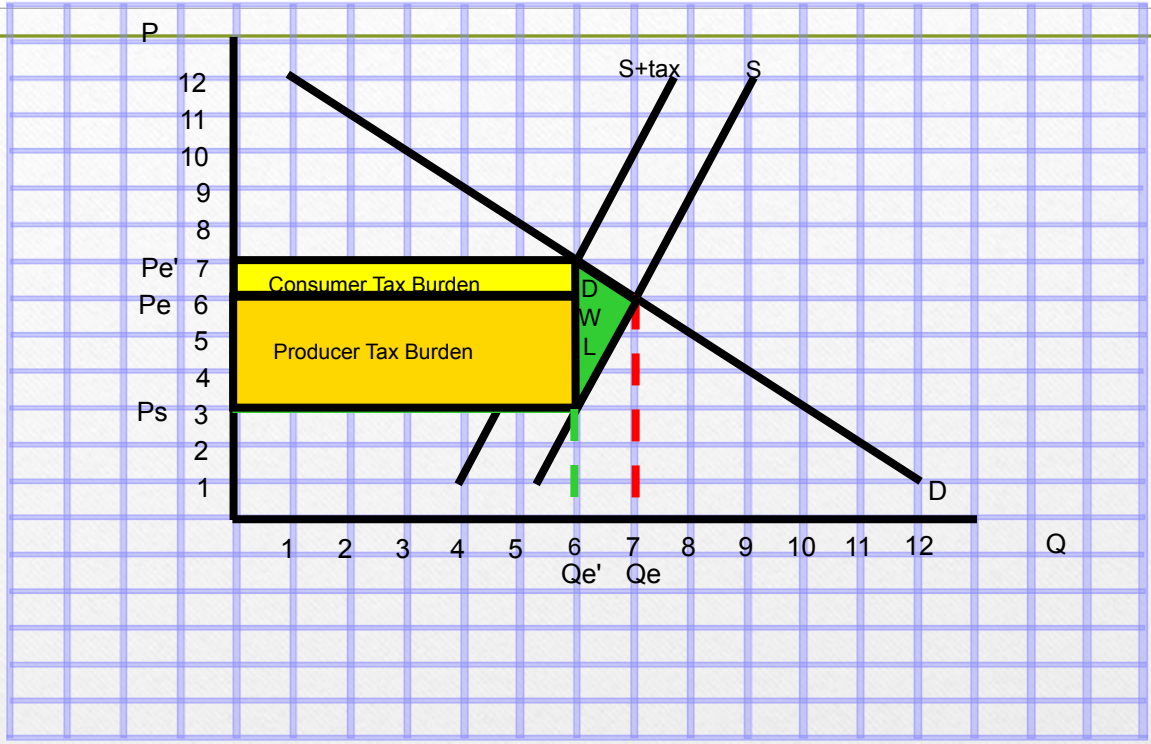


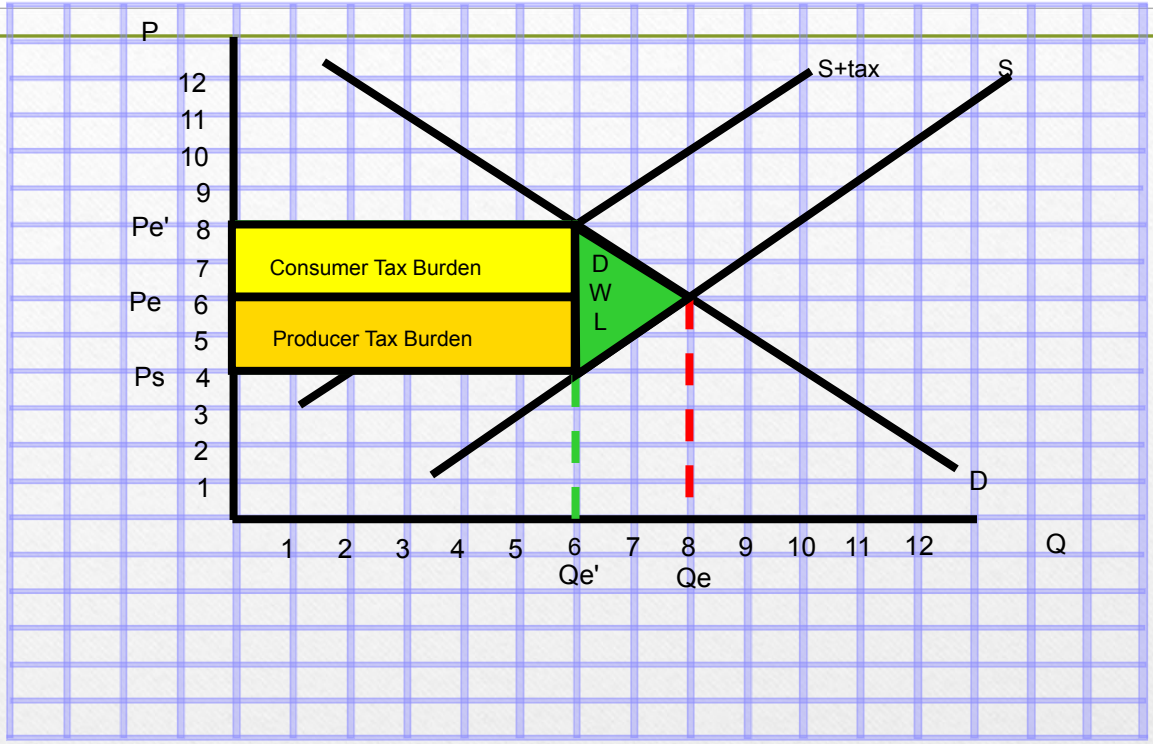
The new equilibrium price is $7 (Pe'). This is what the buyer pays. However, the producer receives only $3 (Ps - PRICEseller).

GRAPH 1



Before the tax was imposed, the equilibrium price was $6. Consumers paid $6 and producers received $6. After the $4 tax was imposed on the producers, the equilibrium price increased to $7. Consumers now pay $1 more than before, so consumer tax burden is $1 times the quantity of the good exchanged.

GRAPH 2



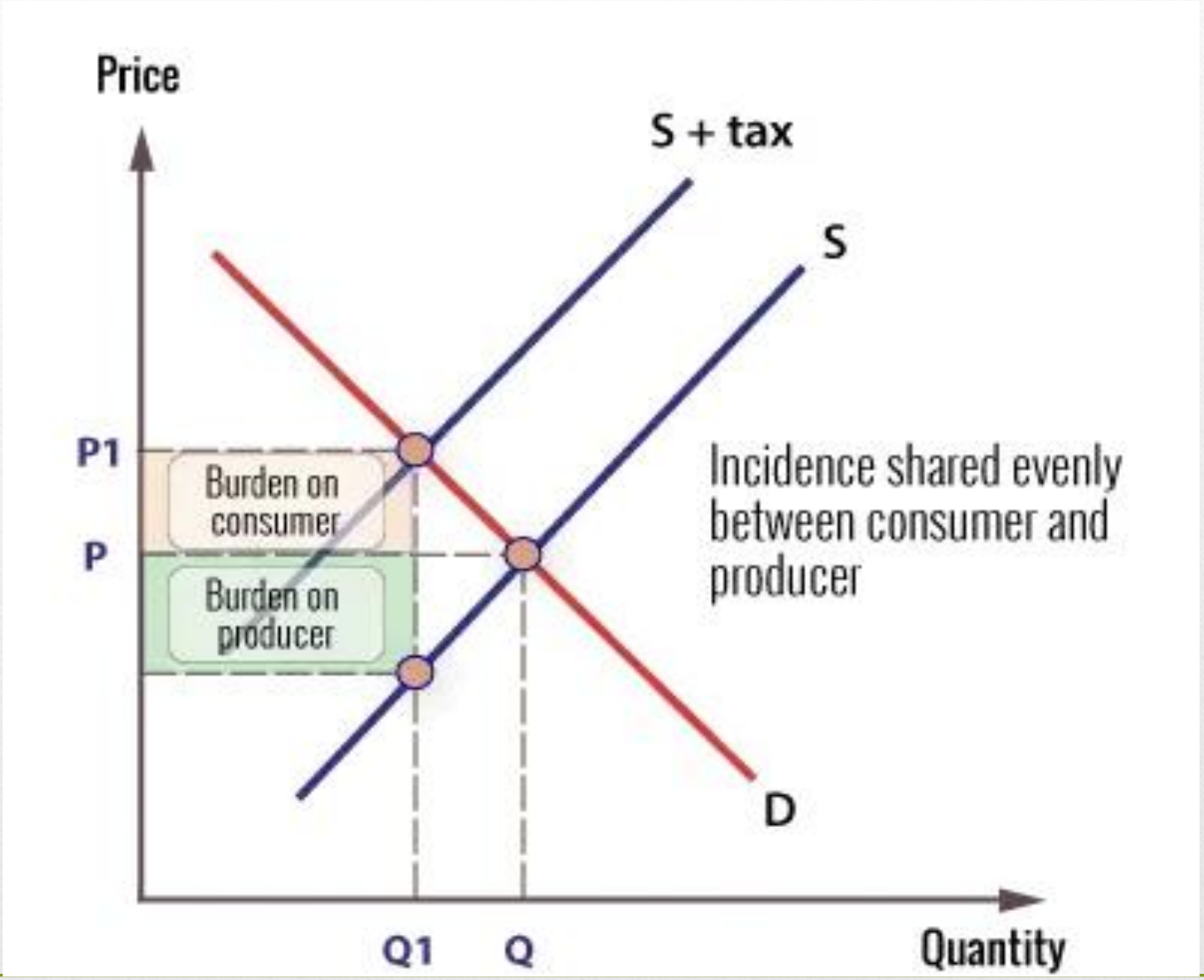
The tax generates $24 in revenue.
The tax paid by consumers is $12.
The tax paid by producers is $12.
The tax burden is shared equally by consumers and producers.
The dead weight loss is $4.

Another Example

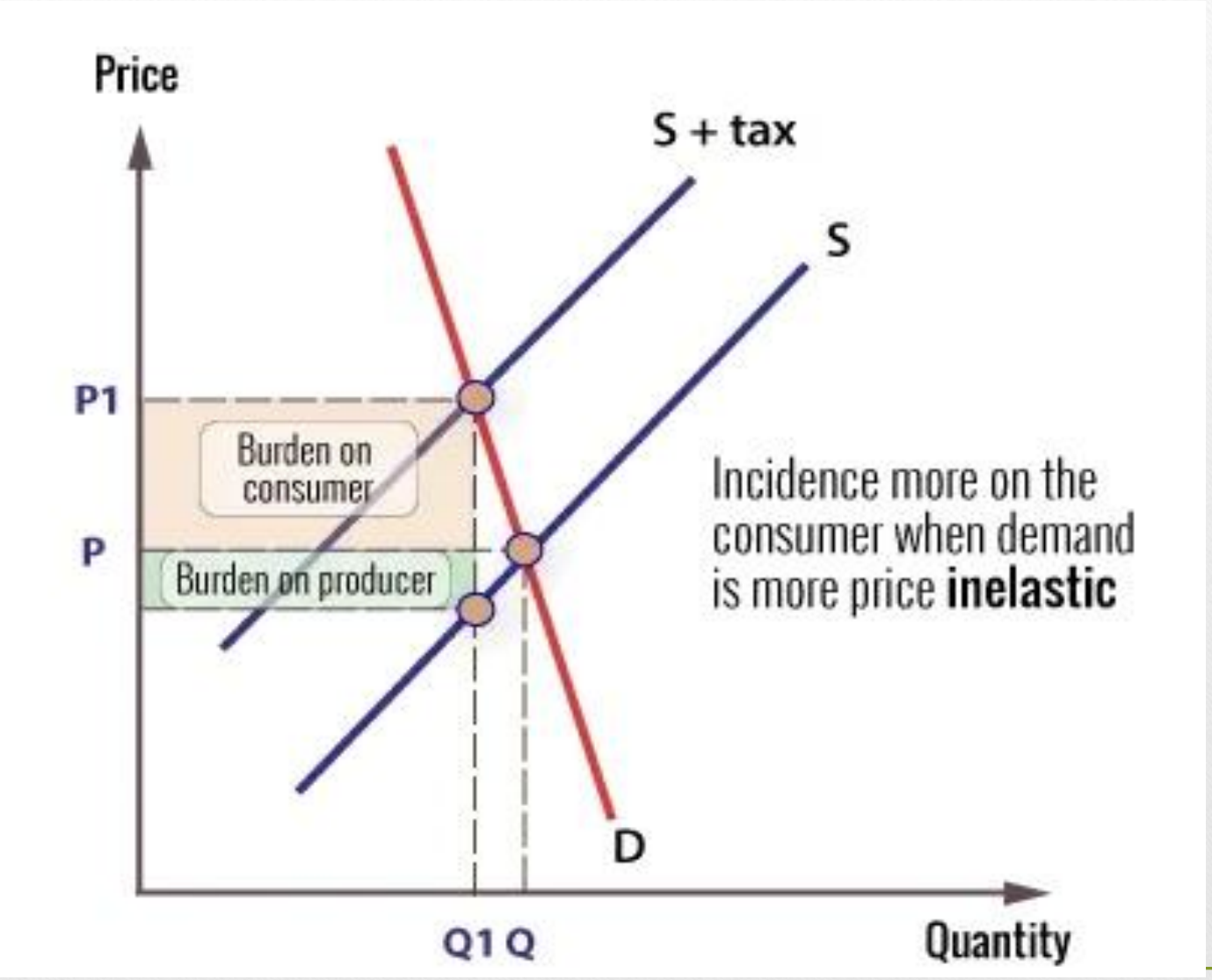
Since 2023, the concerned authority is closely monitoring the data of the red meat bought and
sold in the market.

P= -8Qd + 150; Qd is quantity demand (KG) and P is the price per KG
P= 7Qs + 45; Qs is quantity demand (KG) and P is the price per KG
a. Calculate the Producer Surplus. Illustrate the graph with proper labels.
b. If the authority imposes 15 taka sales tax, then what would be the consumer surplus after tax and tax revenue. Illustrate the graph with proper labels.
c. If the authority had decided to impose 30 taka sales tax instead, then what would have been the difference in deadweight loss generated by two different tax rates?

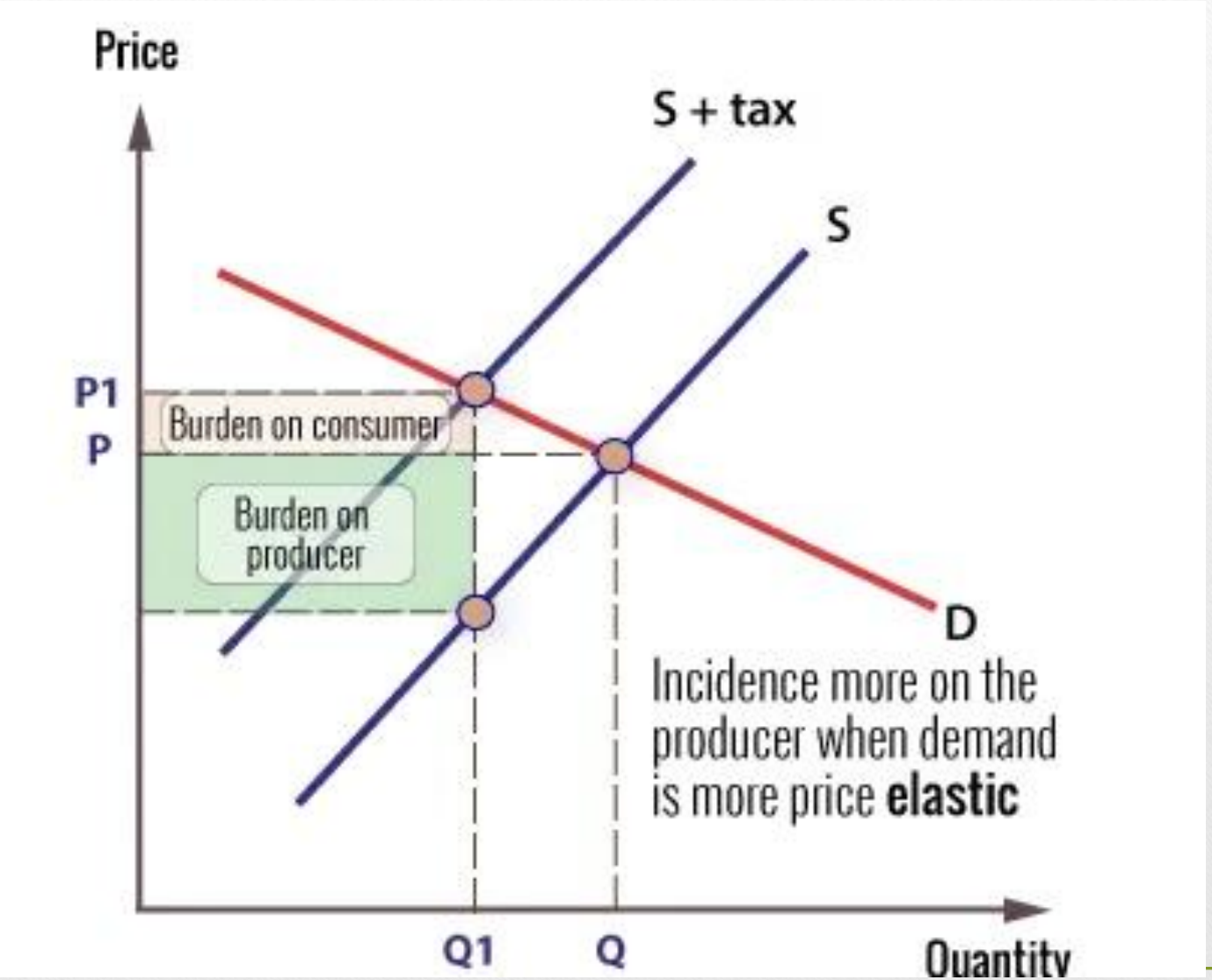
Elasticity and Tax Burden -1



Elasticity and Tax Burden -2



Elasticity and Tax Burden -3



Taxes and Consumer and Producer Surplus

Loss of consumer surplus: A+B

Loss of producer surplus: C+F

Tax revenue: A + C

Deadweight loss: B +F