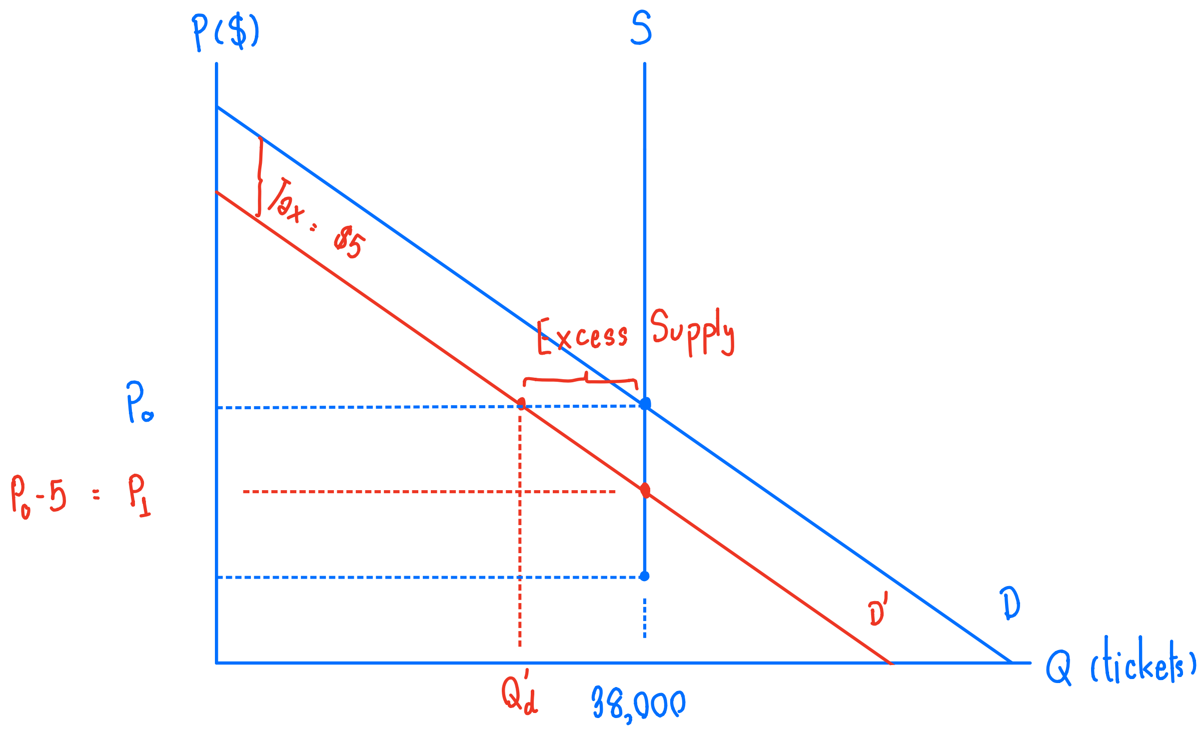
9. At Fenway Park, home of the Boston Red Sox, seating is limited to about 38,000. Hence, the number of tickets issued is fixed at that figure. Seeing a golden opportunity to raise revenue, the City of Boston levies a per ticket tax of $5 to be paid by the ticket buyer. Boston sports fans, a famously civic-minded lot, dutifully send in the $5 per ticket. Draw a well-labeled graph showing the impact of the tax. On whom does the tax burden fall—the team's owners, the fans, or both? Why?



From the graph above, at the original price and quantity = $\$P_0$ and 38,000 tickets respectively.

Then, the buyer is levied $5 per ticket causing D shift to D'. At same price level P_0, there is an excess supply = $38{,}000 - Q'_d > 0$, so the price tends to fall as long as the excess supply exists. The new equilibrium price is at P_1 because it satisfies the equilibrium condition (excess supply = 0) where the equilibrium quantity remains the same at 38,000 tickets.

According to the graph above, the sellers could get the price P_0 before the tax. Nevertheless, the sellers can now get only $P_1 = P_0 - 5$ after the tax. For the buyer, the price it has to pay is P_0 before the tax. However, the buyers pay sellers at the price $P_1 = P_0 - 5$ and tax $5. The total amount paid by buyers (after the tax has been levied) is $P_1 + 5 = P_0 - 5 + 5 = P_0$

To conclude, the tax burden falls to the seller only because the seller gets the price \$5 lower while the buyer pays the same price as the free-tax price.

From the elasticities, $\dfrac{\eta_s}{|\eta_D|} = \dfrac{\text{tax burden on the buyer}}{\text{tax burden on the seller}}$.

Since η_s is 0 (perfectly inelastic), the buyer bears no tax burden at all.

#

10. A market is described by the following supply and demand curves:

$$Q^S = 2P \quad \Rightarrow \quad P = \frac{1}{2}Q^s$$
$$Q^D = 300 - P \quad \Rightarrow \quad P = 300 - Q^D$$

a. Solve for the equilibrium price and quantity.

b. If the government imposes a price ceiling of $90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?

c. If the government imposes a price floor of $90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?

d. Instead of a price control, the government levies a tax on producers of $30. As a result, the new supply curve is:

$$Q^S = 2(P - 30).$$

Does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus?

(a) At equilibrium, $Q^s = Q^d$. Then,

$$2P = 300 - P$$
$$P_E = \$\,100$$

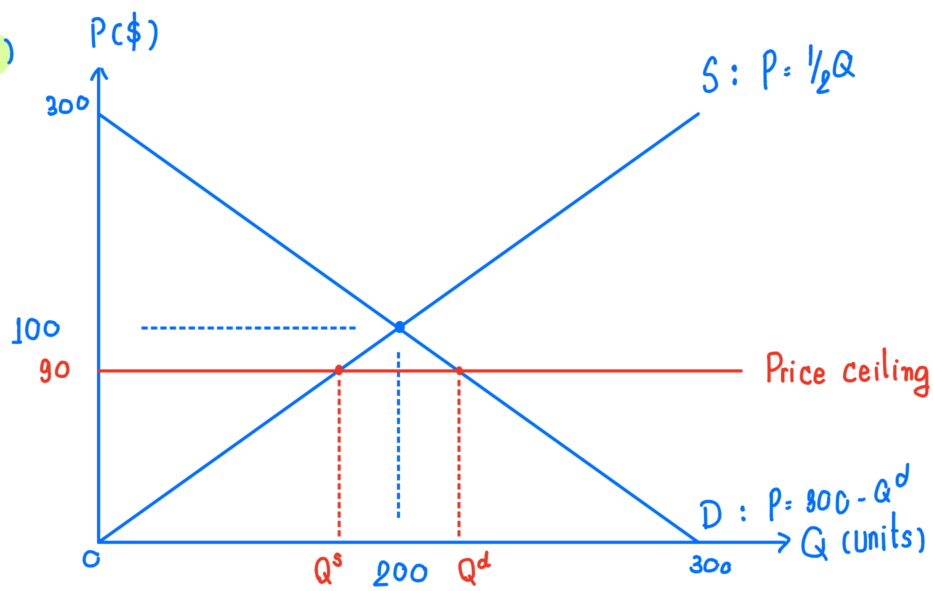
We have P_E then we can compute Q_E by put P_E in Demand / Supply equation

We get the same Q_E

$$Q = 2(P_E)$$
$$Q = 2(100)$$
$$Q_E = 200 \text{ units}$$

Thus, equilibrium point $(P, Q) = (100, 200)$ #

(b)



If the government sets price ceiling below the equilibrium price, there will be a shortage.

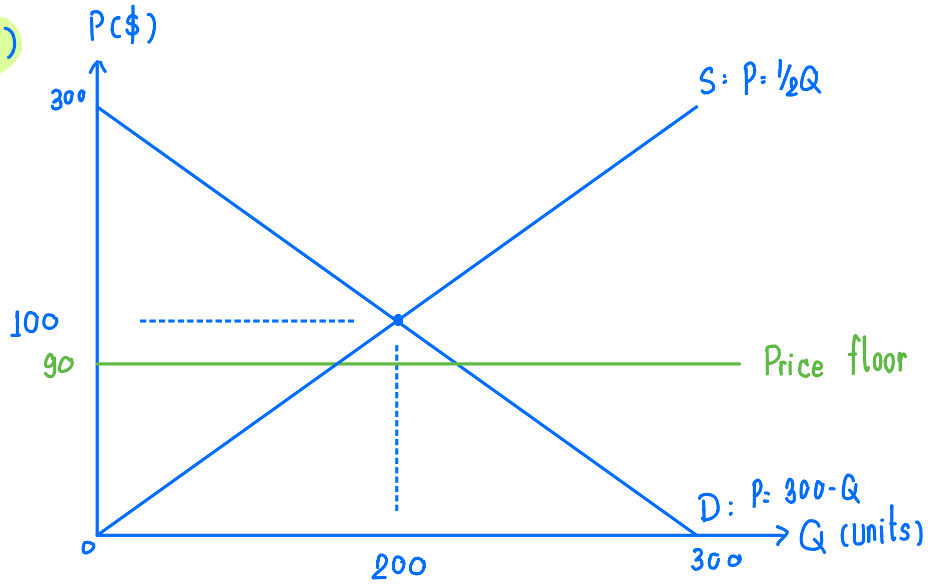
At the price = $90

$\Rightarrow$ $Q^s = 2(90) = 180$

$\Rightarrow$ $Q^d = 300 - (90) = 210$

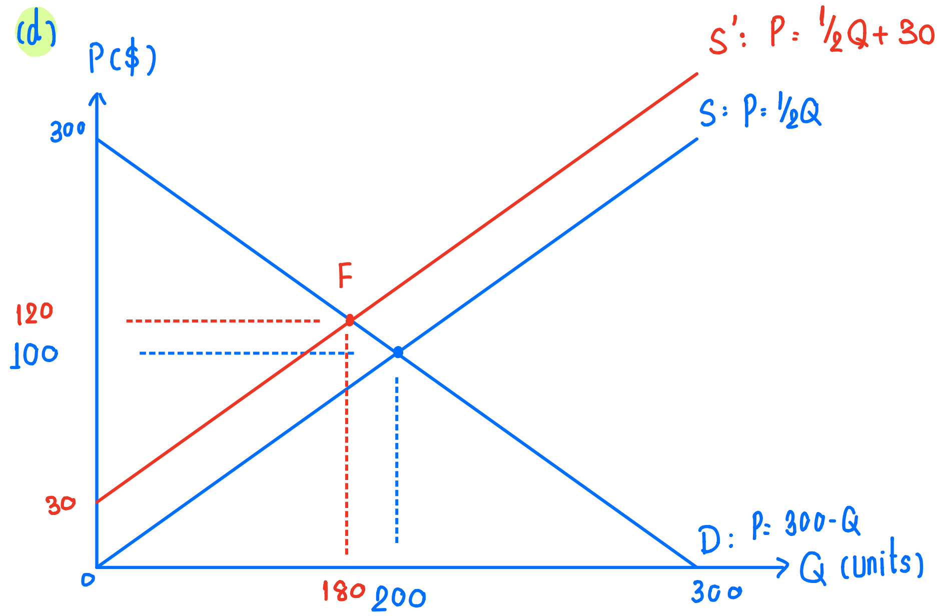
$\therefore$ We can see that there is an excess demand (shortage) = $Q^d - Q^s = 210 - 180 = 30$ units at the price ceiling = $90 #

(c)



If the government sets price floor at $90 which is lower than the equilibrium price, it creates no effect because price floor —"minimum" price traded in the market — lowers than the price that is normally traded.

(d)



To find point F ($Q^d = Q^s$)

$2(P-30) = 300 - P$

$2P - 60 = 300 - P$

$3P = 360$

$P = 120 \Rightarrow Q = 180$

$\Rightarrow$ The new equilibrium is at F where $(P, Q) = (120, 180)$ #

$\Rightarrow$ At the original price \$100, $Q^s = 2(100-30) = 140$ while $Q^d = 300 - 100 = 200$. There is an excess demand $= Q^d - Q^s = 200 - 140 = 60$. Therefore, price tends to increase until there is no excess demand (at point F) #