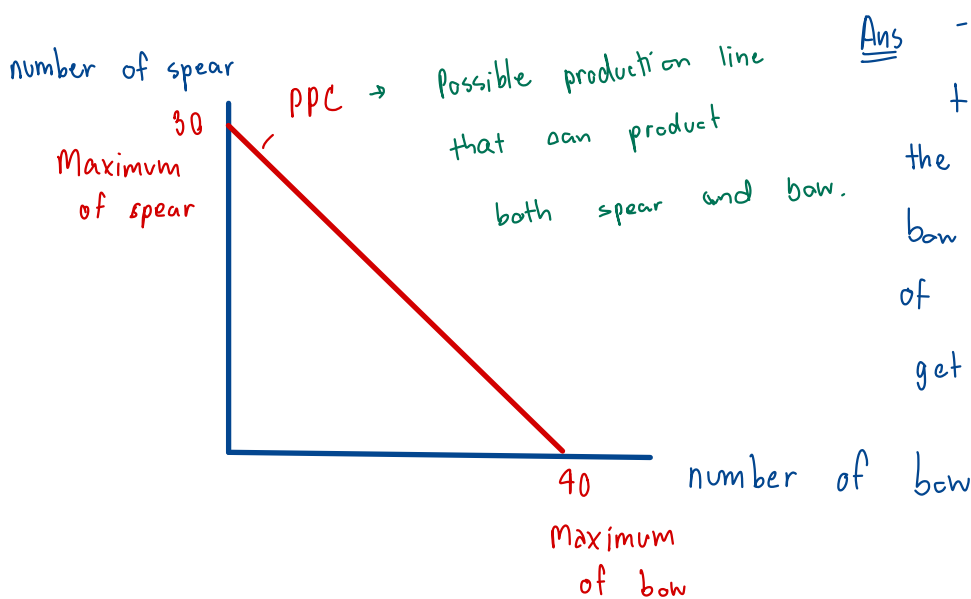


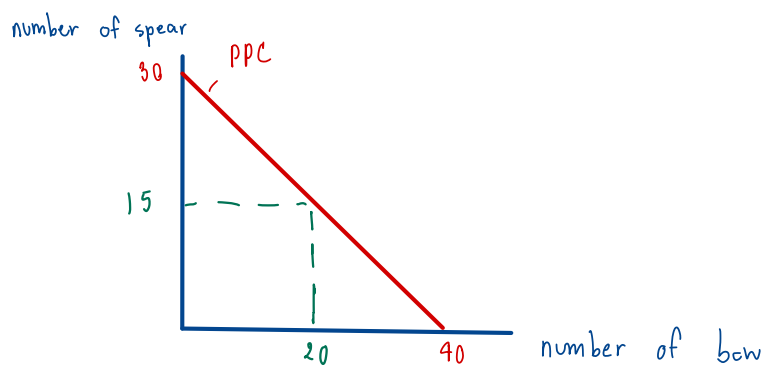
1. A human civilization finds a new wood source of total 120 units. Wood can either be used to produce spear or bow for hunting. A wood master then calculates that in order to produce a spear, it takes 4 units of wood while 3 units for a bow. Answer the following questions.

1.a) Assumed that the opportunity cost of using this 120 units of wood to produce the products is constant, draw a production possibility curve (PPC), displaying quantity of spear on the vertical axis and quantity of bow on the horizontal axis, and indicate all the essential details in the graph and explain.



Ans - If use 120 units of wood to produce spear it will get the maximum 30 spears and 0 bow but if use 120 units of wood to produce bow it will get maximum 40 bows, 0 spear.

1.b) How much is the opportunity cost for a spear, in terms of bow? Show how you calculate this figure



Ans - opportunity cost of each spear

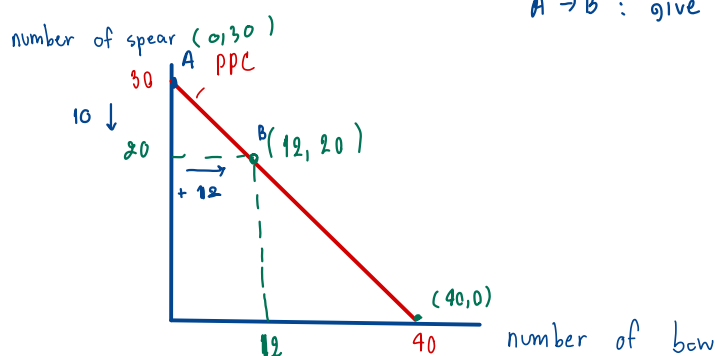
$$30 \text{ spears} = 40 \text{ bows}$$

$$1 \text{ spear} = x \text{ bow}$$

$$x = \frac{40}{30}$$

$$= 1.33 \text{ bows} \quad \text{✖}$$

1.c) With this newly found resource, is it possible for this civilization to produce 20 spears and 12 bows? If it is, is this option efficient? Display this option on a graph from (a) and explain.



$A \rightarrow B$: give up 10 spears , + 12 bows

$$10 \text{ spears} = 12 \text{ bows}$$

$$1 \text{ spear} = x \text{ bows}$$

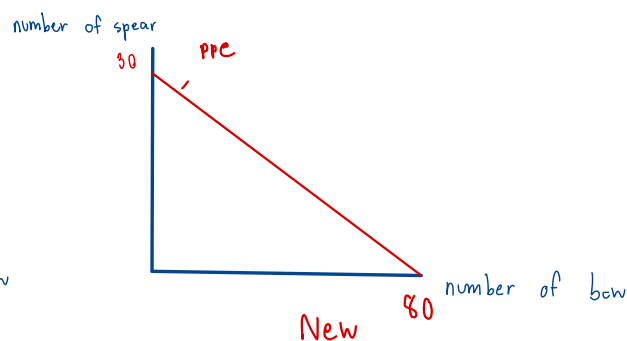
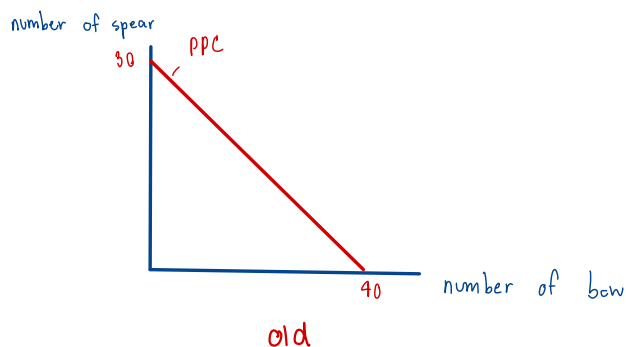
$$x = \frac{12}{10}$$

$$= 1.2 \text{ bows}$$

opportunity cost

Ans - It is possible to produce 20 spears and 12 bows but this option is not efficient because it will have useless wood for about 4 units.

1.d) If a new method of making bow is discovered and requires only 1.5 units of wood for each bow, how does it affect the PPC and the opportunity cost for a spear? Illustrate the change and explain



Ans - The PPC will be wider because if use 120 units of wood to produce only bow it will be increase 40 bows from the old PPC.

- The opportunity cost of a spear will increase because you need to lose 2.67 bows for produce 1 spear. but In the old you lose only 1.33 bows for produce 1 spear

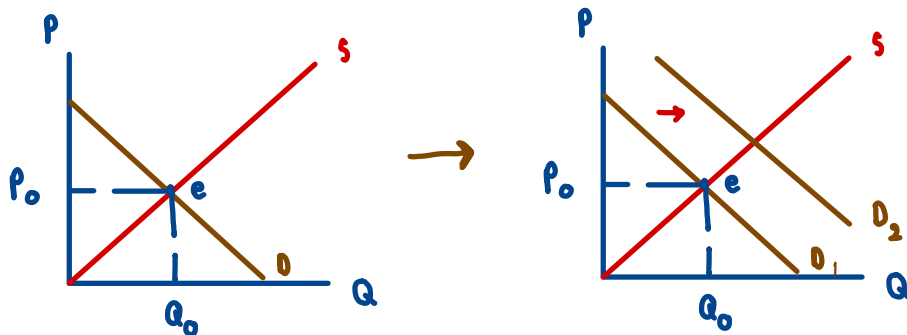
$$30 \text{ spears} = 80 \text{ bows}$$

$$1 \text{ spear} = x$$

$$x = \frac{80}{30} = 2.67 \text{ bows}^*$$

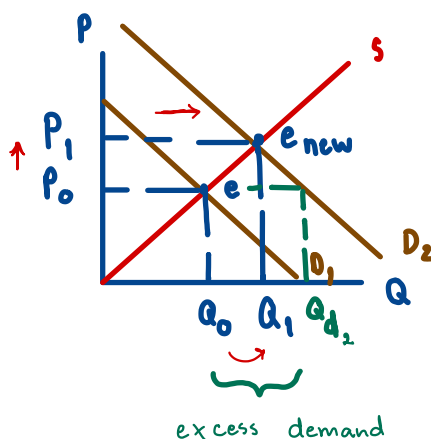
2. Assumed that a computer devices market is perfectly competitive, answer the following questions in detail.

2.a) Draw a graph showing that the computer devices market is in equilibrium at a certain original equilibrium price P_0 and equilibrium quantity Q_0 . During the pandemic, many people are assigned to work from home and computer devices are crucial. Does the market demand or market supply of computer devices change? Explain.



Ans The market demand of computer devices will change.
The demand will shift up (Rightward) from $D_1 \rightarrow D_2$

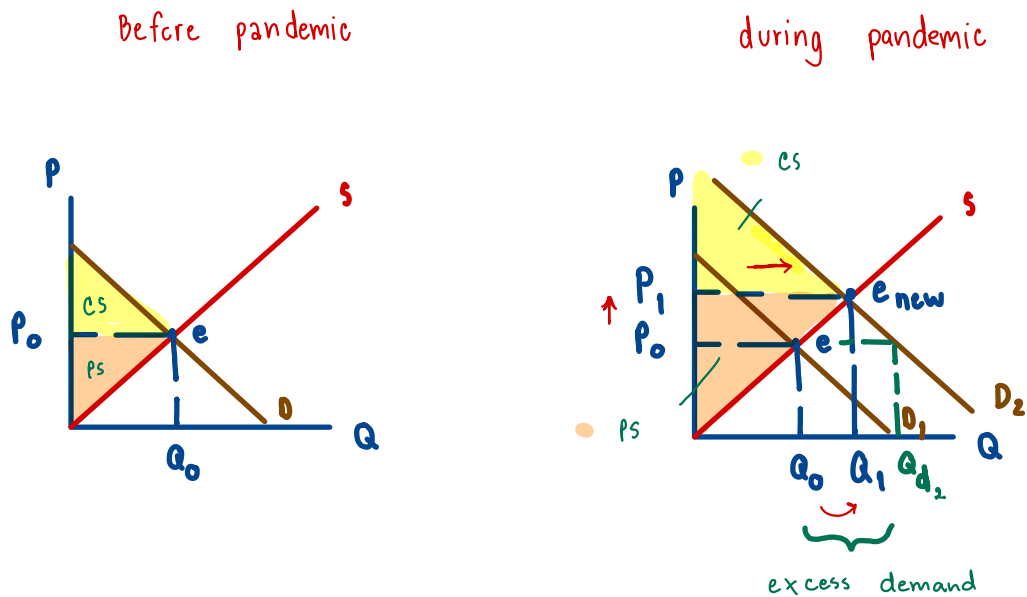
2.b) After what happened in 2.a), at the original equilibrium price P_0 will there be excess demand or excess supply? Show the new market equilibrium and state the equilibrium condition. Does the pandemic cause the equilibrium price and quantity to increase or decrease?



Ans

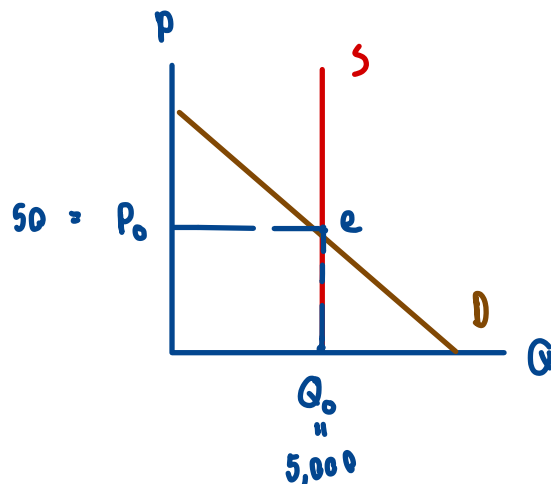
- because WFH people want to buy more computer device so it will cause an excess demand at P_0 then due to excess demand it will cause the price increase to P_1 then the excess demand will decrease from Q_{d2} to Q_1
- The pandemic cause both the equilibrium price and quantity to increase.
- at P_0 there will be excess demand

2.c) From the situation in 2.b), compare the consumer surplus and producer surplus in this computer market before and during the pandemic.

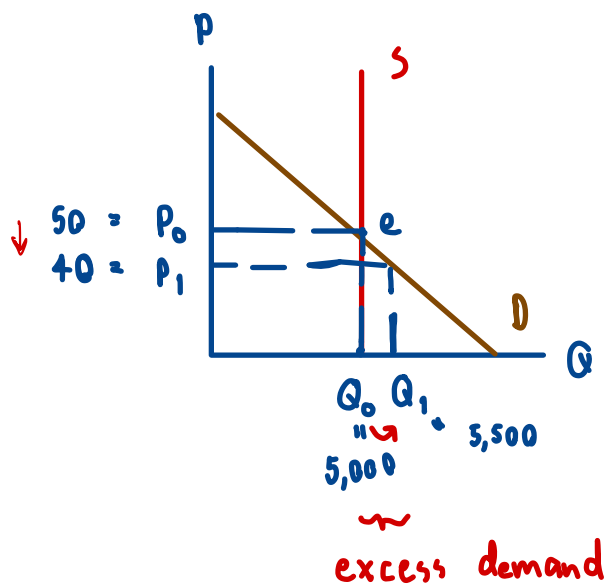


3. Consider a System-on-a-Chip (SoC) market that is assumed to be perfectly competitive, due to a technical problem of production, there are only a few factories that can produce the next generation SoC. Answer the following questions in detail.

3.a) Draw a demand and supply on graph when the demand has normal downward slope while the supply is perfectly inelastic. The equilibrium price is at \$50 and the equilibrium quantity is at 5,000 units a day.



3.b) With the situation in 3.a), a study reveals that when the price drops to \$40, there will be 500 units of excess demand. Calculate the price elasticity of demand and supply at the equilibrium.



Ans

$$\epsilon_d = \frac{P}{Q} \cdot \frac{Q_2 - Q_1}{P_2 - P_1}$$

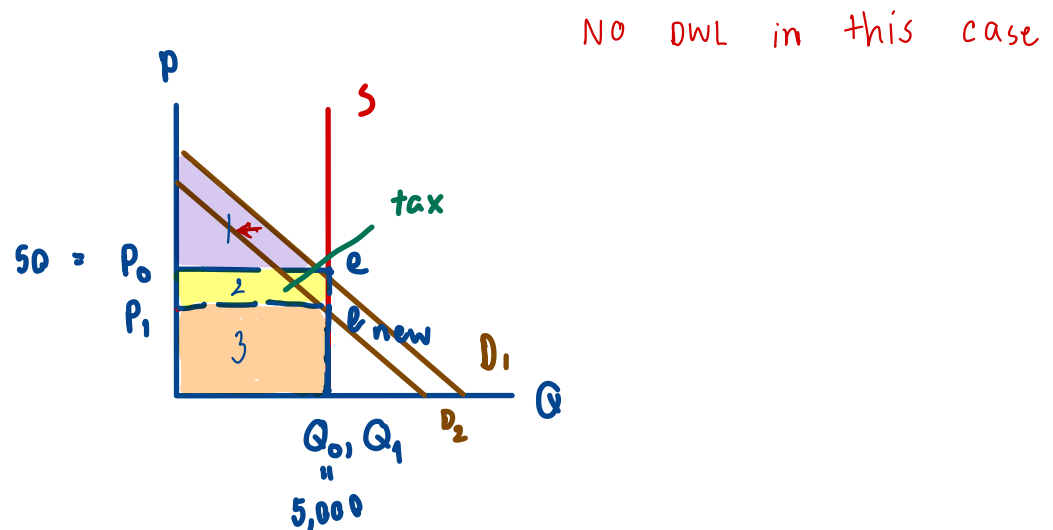
$$\epsilon_d = \frac{50}{5,000} \cdot \frac{5,500 - 5,000}{40 - 50} = -\frac{1}{2} = -\frac{0.5}{1}$$

- Price elasticity of demand = -0.5

- Price elasticity of supply = 0

↳ $\epsilon_s = 0$ because the supply is perfectly inelastic

3.c) With the situation in 3.a), if a unit tax is imposed on buyers for \$10, portray the result of this intervention including the new equilibrium price and quantity, deadweight loss, and tax burden. Also, indicate which part of the burden belongs to either the buyers or the sellers.



Ans

- $P \downarrow = 40$
- $Q = 5,000$
- No DWL in this case
- All tax burden put to Producer
which is part 2