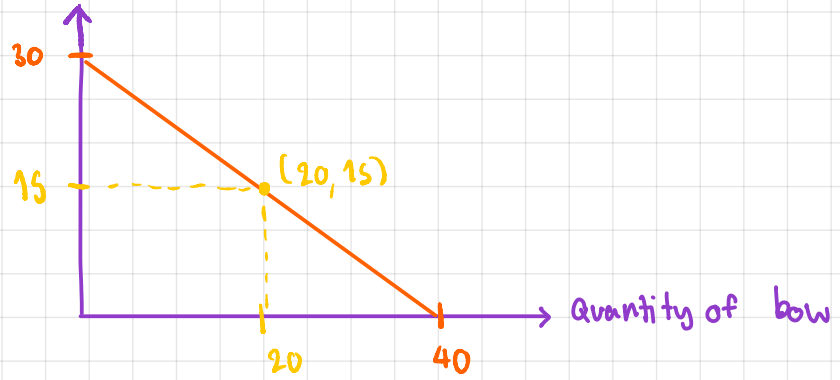
(1)

1.a) quantity of spear



- As we have 120 units of wood, and it takes 4 units of wood to produce a spear ⇒ we can produce $120 \div 4 = 30$ spears maximum.
- As we have 120 units of wood, and it takes 3 units of wood to produce a bow ⇒ we can produce $120 \div 3 = 40$ bows maximum.

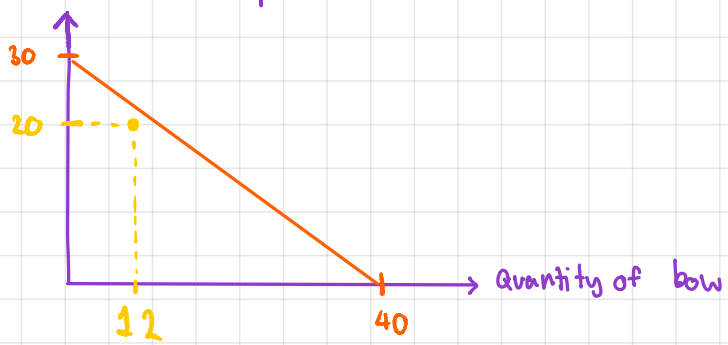
1.b) opp. cost for a spear, in terms of bow

for 15 spears → give up 20 bows

for 1 spears → give up $\frac{20}{15} \cdot 1 = \frac{4}{3}$ bows

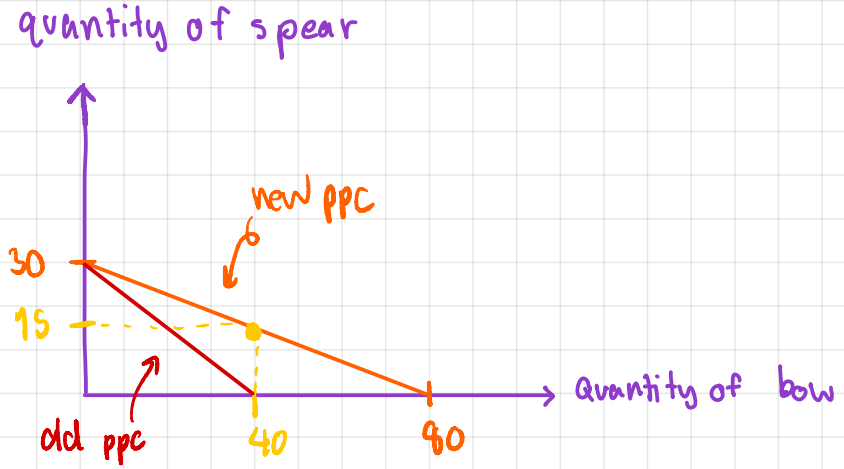
∴ opportunity cost for a spear is $\frac{4}{3}$ bow

1.c) quantity of spear



To produce 20 spears is going to consume $20 \times 4 = 80$ units of wood which means there are still $120 - 80 = 40$ units of wood left. To produce 12 bows is going to consume $12 \times 3 = 36$ units of wood. Therefore, it is possible to produce 20 spears and 12 bows. But it is not efficient because there are some resources left (4 units of wood).

1.d) As resources of 120 units of wood and it takes 1.5 units of wood to produce a bow → we can produce $120 \div 1.5 = 80$ bows maximum while the maximum quantity of spears still the same, 30.



opp. cost for a spear, in terms of bow

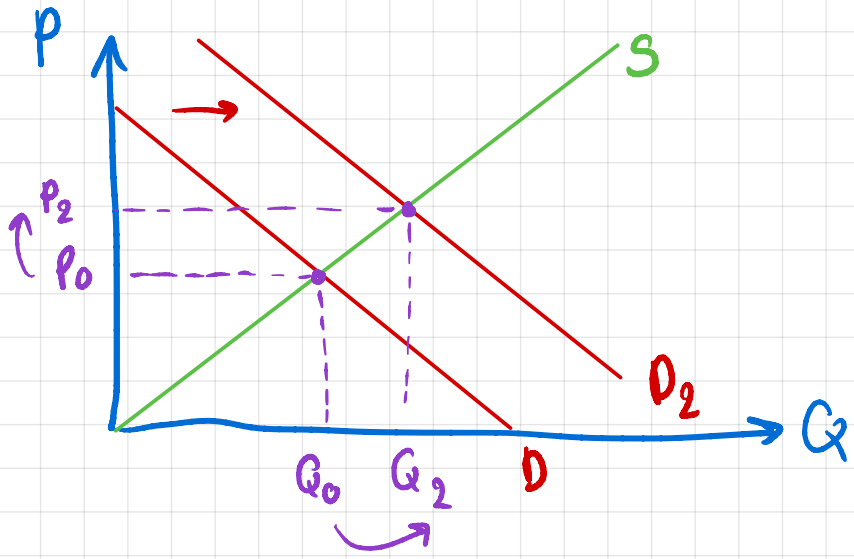
for 15 spears → give up 40 bows

for 1 spears → give up $\frac{40}{15} = \frac{8}{3} = 2.67$ bows

∴ opportunity cost for a spear is 2.67 bows

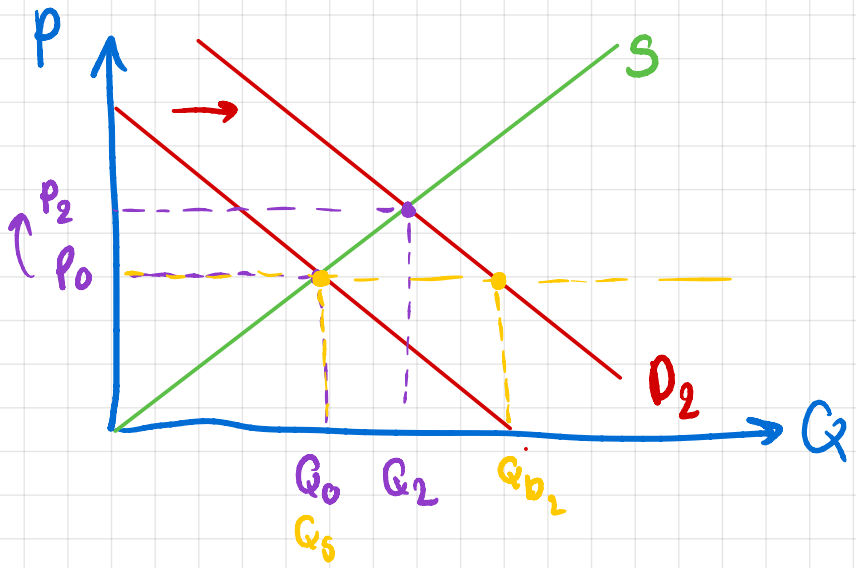
(2)

2.a)



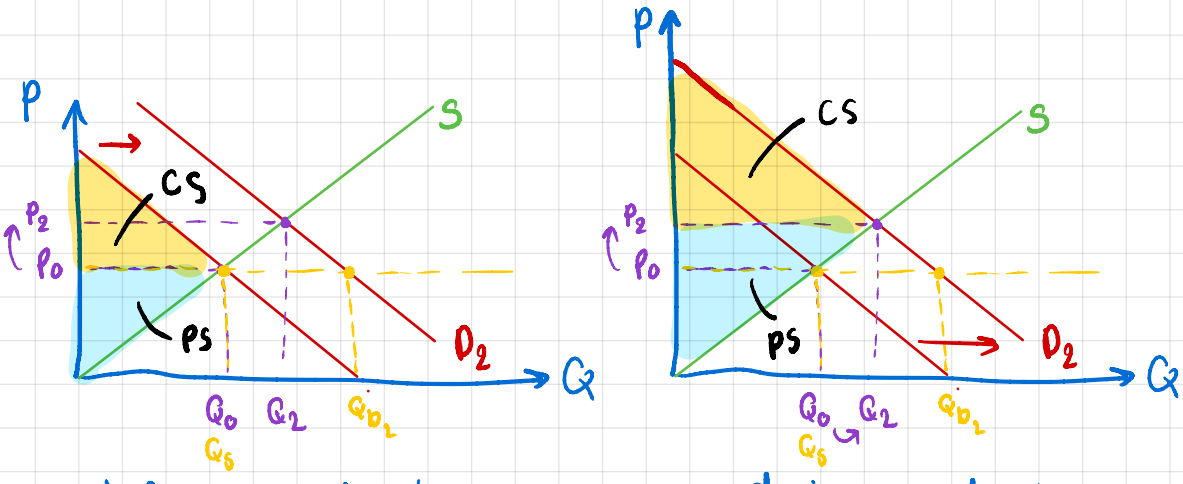
Due to the external factor, working from home, the demand for computer devices rises. Therefore, it shows in the graph that market demand shifts rightward and the equilibrium price is higher.

2.b)



At the equilibrium price, there will be excess demand. Because if price stays the same while the demand increases, the quantity demanded will be higher than the quantity supplied ($Q_{D_2} > Q_S$). The price need to be increased in order to meet the new higher equilibrium, as demand shifts rightward. The pandemic does cause both the equilibrium price and quantity to increase as shown in the graph.

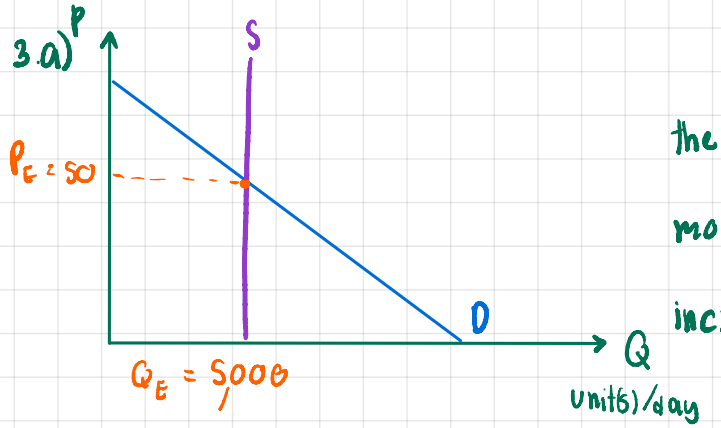
2.c)



During pandemic when demand shifted rightward, the consumer surplus and the producer surplus increase. The buyers will be willing to pay more.

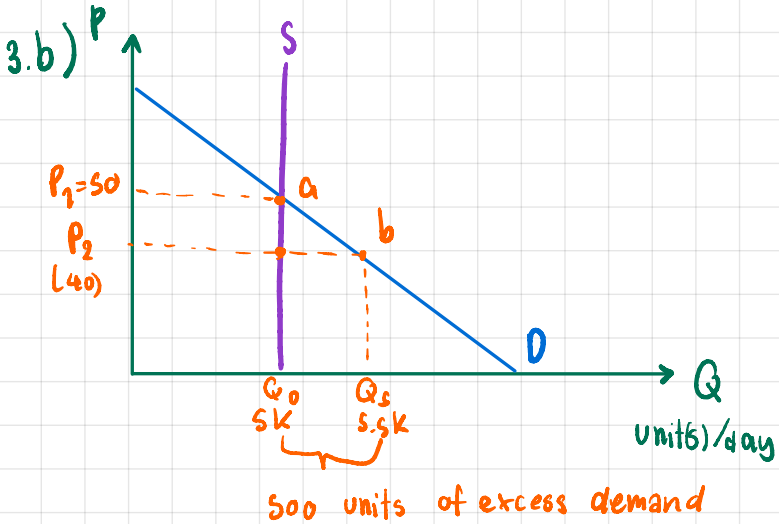
③

3.a)



When the supply is perfectly inelastic, the producers will not be able to produce more or less whether the demand is increase or decrease.

3.b)



- price elasticity of demand focusing on the equilibrium

$$\varepsilon_{d(a)} = \frac{\Delta Q}{\Delta P} \cdot \frac{P_a}{Q_a} = \frac{500^{1}}{10_{1}} \cdot \frac{5\cancel{0}^{5}}{\cancel{5000}_{10}} = \frac{1}{2} = 0.5$$

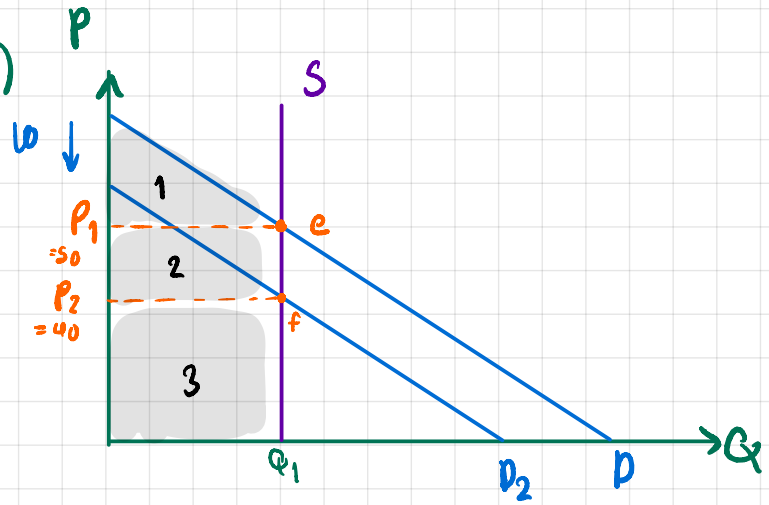
∴ This price elasticity is inelastic because it's less than 1 which means changes in price will not effect the buyers' willing to pay.

- price elasticity of supply focusing on the equilibrium

$$\varepsilon_{s(a)} = \frac{\Delta Q}{\Delta P} \cdot \frac{P_a}{Q_a} = \frac{0}{10} \cdot \frac{50}{5000} = 0$$

∴ This price elasticity is perfectly inelastic which means the quantity of supply doesn't change.

3.C)



As buyers are taxed for $ 10, the demand will be decrease. The new equilibrium price will be $40 and the quantity will stay the same at 5,000 units, Q1. There is no DWL in this case and tax burden, part 2, will belong to producer.