Individual Assignment

1.) $Q_S = 400_P - 100$

$Q_D = 1100 - 200_P$

Equilibrium price:

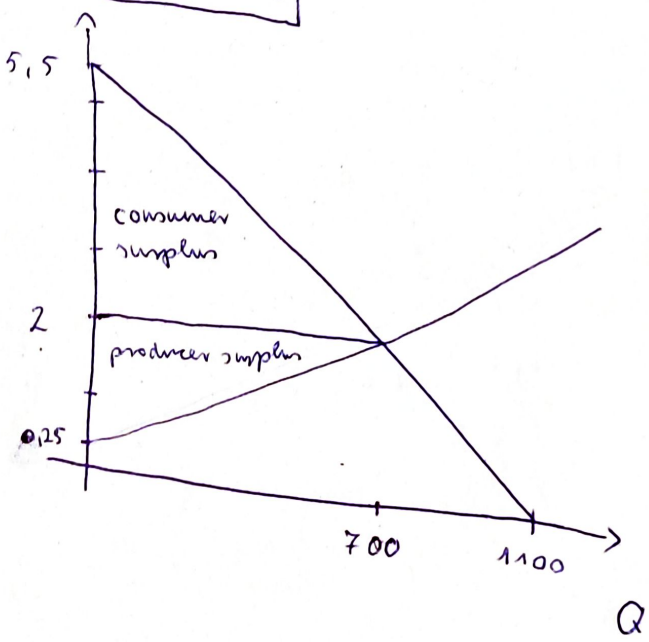
$Q_S = Q_D$

$400_P - 100 = 1100 - 200_P$

$\boxed{P = 2}$

Equilibrium quantity

$\boxed{Q = 700}$



Consumer surplus

$\frac{700 \cdot 3,5}{2} = 1225$

Producer surplus

$\frac{1,75 \cdot 700}{2} = 612,5$

Total surplus = 1837,5

2. $Q_S = 400_P - 100$

$Q_D = 1100 - 200(P+1)$

Equilibrium price

$400_P - 100 = 1100 - 200_P - 200$

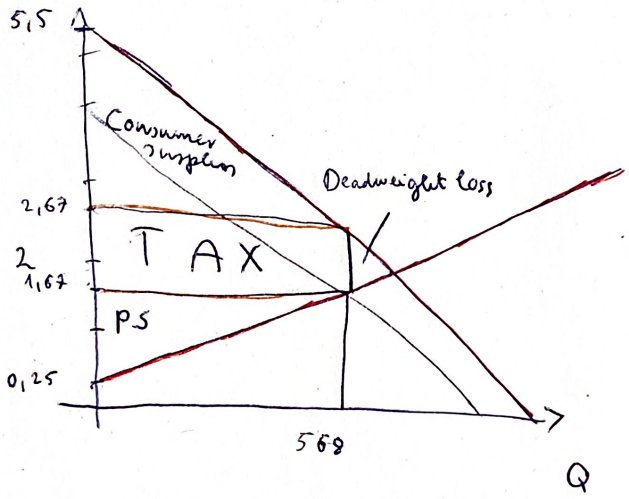
$600_P = 1000$

$P = 1,67$ — with tax : 2,67

Equilibrium quantity

$Q = 400_P - 100$

$Q = 668 - 100 = 568$



Consumer surplus

$\frac{(5,5 - 2,67) \cdot 568}{2} = 803,7$

Producer surplus

$\frac{(1,67 - 0,25) \cdot 568}{2} = 403,3$

Tax

568 . 1

Total surplus

$803,7 + 403,3 + 568 = 1775$

Deadweight loss

$1837,5 - 1775 = 62,5$

3. $Q_S = 400(p-1) - 100$

$Q_D = 1100 - 200p$

Equilibrium price

$Q_S = Q_D$

$400p - 400 - 100 = 1100 - 200p$

$600p = 1600$

$p = 2,67$ (including tax)

Equilibrium quantity

$Q = 1100 - 200p$

$Q = 568$

Same as in exercise 2.

$CS = 803,7$

$PS = 403,3$

$TAX = 568$

Total surplus = 1175

Deadweight loss = 62,5

Comment:

It does not matter whether we tax the supply or demand side, the same quantity will be purchased, the total surplus will remain the same. There is no difference if the consumer or the seller pays the same amount of tax.