Econ 0100 | Homework C

Due: Sunday, October 15

Homework is designed to both test your knowledge and challenge you to apply familiar concepts in new applications. Answer clearly and completely; show your work so I can understand your thought process for partial credit; you are welcomed and encouraged to work in groups as long as your work is your own. Submit your work to your Recitation's Gradescope.

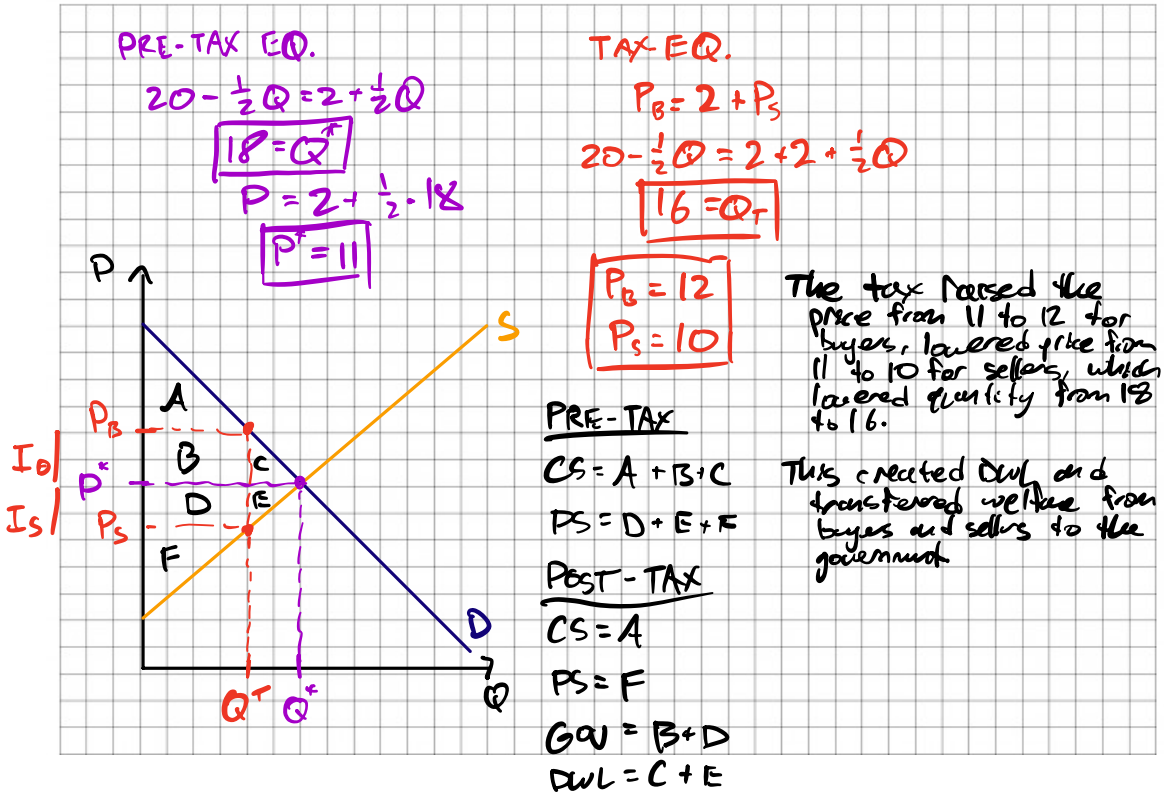
Question 1 (of 3) | The Butterbeer Tax

The Ministry of Magic was in some financial trouble after their considerable expenditures during the war. They decided to impose a tax of 2 Galleons on the sale of as a source of funding. The supply and demand curves for butterbeer can be represented by the following equations.

$$P_b = 20 - \frac{1}{2}Q_d$$

$$P_s = 2 + \frac{1}{2}Q_s$$

Use a graph and algebra to calculate equilibrium before and after the tax. Start with the pre-tax equilibrium. Then use the price equation ($P_b = \tau + P_s$) to solve for equilibrium quantity and the two prices.



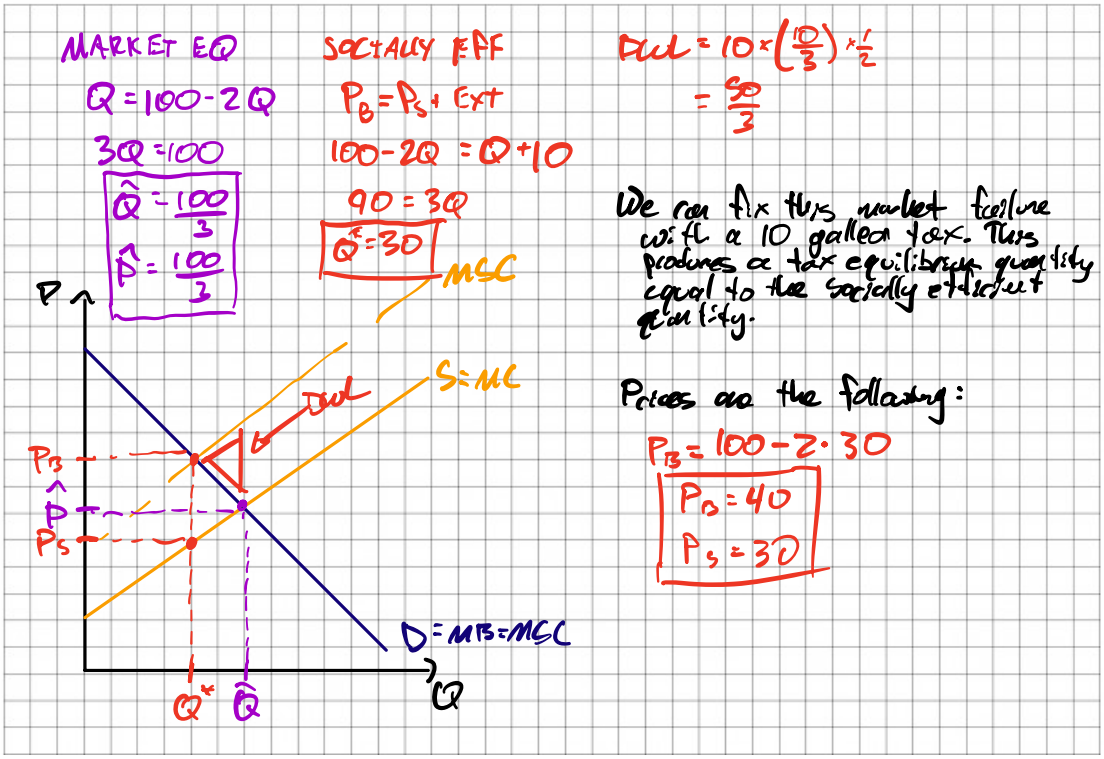
Question 2 (of 3) | Flummoxed by the Floo Powder Fiasco

Floo Powder is a magical commodity used by witches and wizards to transport themselves through fireplaces to different locations. While it's often convenient, its use is associated with negative environmental effects, including air pollution. The Ministry's Bureau of Economic Analysis has estimated the externality to be 10 galleons with the following supply and demand equations:

$$P_b = 100 - 2Q_d$$
$$P_s = Q_s$$

The Ministry of Magic has hired you to design a policy that corrects the market failure caused by the negative externality of Floo Powder use.

1. Start by using a graph to calculate the market equilibrium.
2. Then calculate the socially efficient quantity.
3. Graph and calculate DWL. No need to discuss other welfare measures.
4. Propose a policy intervention to fix the market failure.
5. Calculate the equilibrium quantity, buyer's price, and seller's price after the policy.



Question 3 (of 3) | Deadweight Loss Intuition

Which of the following best explains the intuition behind the deadweight loss associated with a negative externality like the one above?

A) The externality causes the market to produce too much of the good, leading to a surplus and reduced consumer surplus.

B) The externality causes the market to produce too little of the good, leading to a shortage and reduced producer surplus.

C) The externality causes the market to produce at a quantity where the marginal social cost of production exceeds the marginal social benefit of consumption, leading to inefficiency and reduced total surplus.

D) The externality causes the market to produce at a quantity where the marginal social benefit of consumption exceeds the marginal social cost of production, leading to inefficiency and reduced total surplus.