Introductory Microeconomics
Homework 5: Policies in a Perfect Market

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1. T/F. The tax burden is shared equally between consumers and producers.
2. T/F. A very inelastic demand implies consumers will face most of the tax burden.
3. T/F. Competitive firms are unable to pass on a tax.
4. T/F. In a perfect market, the tax burden is independent of who actually pays the tax.
5. T/F. A binding price ceiling will generate shortages.
6. Consider the following market:

$$Q_D(p) = 12 - p \qquad Q_S(p) = 2p$$

   (a) Find the equilibrium. Find the consumer surplus, producer surplus, and total surplus.

   Suppose we tax consumers. The tax is \$3 per unit.

   (b) Find the new equilibrium quantity, the total price paid by consumers, and the price received by producers. Calculate the tax burden as follows:
   - For consumers: $\frac{p_C - p^*}{3}$ where p_C is the price they pay, p^* is the original equilibrium price of part (a), and 3 is the tax.
   - For producers: $\frac{p_P - p^*}{3}$, where p_P is the price they receive.

   (c) Find the new consumer and producer surpluses, the tax revenue, and the deadweight loss of the tax. Illustrate with a graph.

   (d) Assume the tax is paid by the producers. Repeat (b) and (c).

7. Same market as in the previous exercise. Now instead of a tax, the government subsidizes consumers. The subsidy is \$3 per unit.

   (a) Find the new equilibrium. What's the price consumers pay? What's the price producers receive?

   (b) Find the new consumer and producer surpluses. By how much did they increase relative to the equilibrium of 6(a)?

   (c) What's the cost of this policy for the government?

   (d) What's the dead weight loss of the subsidy?

8. Same market as in the previous exercise. Instead of a subsidy, the government implements a price ceiling of $p = 2$.

   (a) How many units are produced?

   (b) Find the consumer and producer surpluses. Find the dead weight loss.

(c) Illustrate your answers in a graph.

9. Consider the following market:

$$Q_D(p) = 12 - \frac{p}{5} \qquad Q_S(p) = p$$

   (a) Find the equilibrium (Q^*, p^*).
   (b) Find the elasticity of supply and the elasticity of demand. You may calculate the elasticity between $p_1 = p^* - 1$ and $p_2 = p^* + 1$.
   (c) If the government implements a tax in this market, who's going to pay most of it?

10. Illustrate graphically how a minimum wage policy generates unemployment in a perfect market.