Answers - Chapters 5 and 6

Chapter 5 - Elasticity

1. D. The price elasticity of demand is the percentage change in quantity demanded divided by percentage change in price.

2. A. Note that with an elastic demand (a number larger than one, in absolute value, for the coefficient of elasticity), you would have the percent change in quantity greater than the percent change in price, so that an increase in price would lead to a FALL in revenue. With an inelastic demand, the coefficient is smaller than one in absolute value.

3. C. The easy answer is to simply remember the fact that at the midpoint of any straight-line demand curve the elasticity is one. The harder way is to compute it out by calculating what would happen if the price change went from $50 below the midpoint or $200 to $50 above the midpoint, or $300. (The exact dollar change would not matter, as long as it was an equal amount above and below $200).

The percentage change in price would be \((300 - 200) / 250\) or 100/250 = 0.40 or 40 percent.

Applying the given equation (in the form \(Qd = 250 - 0.5 \cdot P\)) we find the quantity change would go from 150 to 100, with a midpoint of 125. The percent change in quantity would be \((100 - 150) / 125 = -50/125 = -0.40\) or 40 percent.

Elasticity will be \(-40\) percent / 40 percent = 1

4. D. Since elasticity is increased by a higher price, when we move above the midpoint, the elasticity of demand will increase in absolute value. But perfect elasticity will not be found anywhere on the demand curve.

5. A. Since the coefficient of elasticity is less than one anywhere under the midpoint of the demand curve, and both $100 and $150 are under the midpoint, anywhere under the midpoint you can raise the price without losing a large percentage of customers - and hence your revenues will increase when you raise the price.

6. C. An increase in price will raise the quantity supplied as long as supply is not perfectly inelastic. But if supply is inelastic, the responsiveness of quantity supplied to price will be small.

7. A. Since we have just a very small increase in the cost of production with a large increase in quantity, the supply curve will be very flat. We get a big percent increase in quantity with a small increase in price, and the coefficient of supply elasticity will be percent.change.Q / percent.change.P = a very large number divided by a very small number = a very large number.

8. A. The longer time gives consumers more time to look for substitutes.

9. A. You can easily substitute other fruits (strawberries?) for bananas; it is harder to find good substitutes from fruit (ice cream? you may think so, but your parents probably would not).

10. D. An elasticity of demand of 2 means that the percent change in quantity is twice the percent change in price. Hence if the price goes up 10 percent, the quantity will decrease by 20 percent.

11. B. An elasticity of demand of 1/2 means that the percent change in quantity is half the percent change in price. Hence if the price goes up 10 percent, the quantity will decrease by 5 percent.
Chapter 6. Taxes and Subsidies

1. D. An excise tax on bourbon will result in the price of bourbon going up, but how much depends on the elasticities of supply and demand.

2. A. Remember that elasticity = responsiveness. If the elasticity of demand is greater than the elasticity of supply, then the consumers will adjust their behavior more than producers will -- meaning that consumers will buy a lot less of the product if the producer tries to raise the price to the full amount of the tax. Meanwhile, the producer is producing very little less of the product, forcing the price of the product to fall. Hence the producer will pay the greater share of the tax.

3. A. The excise tax is an increase in the per unit cost of production, and like any increase in cost, it increases the price producers would like to get (shifts supply up) and leads them to produce less (shifts supply left).

4. A. The tax causes no shifts in demand curves; it would cause the supply curve to shift to the left (not the right). The burden of the tax is divided between consumers and producers; some of both consumer surplus and producer surplus is lost.

5. C. Remember that elasticity = responsiveness and that means that elasticity = escape. Buyers do not want to reduce their consumption much, and producers would reduce their production by more. Hence buyers will pay a greater share of the tax.

6. D. Again, elasticity = responsiveness, and demand is much more elastic than supply. Producers will therefore pay the greater share of the tax, which means that the price they receive must fall by more than $5.

7. A. Consumer surplus is the area between the demand curve (consumer willingness to pay) and the market price (the price consumers have to pay). Note that its area is option A in question 9.

8. C. The area under the marginal cost curve (the cost of producing an extra unit) is the total variable cost.

9. C. Total firm revenue is the price of 340 times the quantity sold of 80.

10. D. Producer surplus is that part of firm revenue not eaten up by variable costs, labeled B in the graph.

11. E. Total economic surplus = consumer surplus + producer surplus = 1/2 * (500 - 100) * 80

12. C. The deadweight loss will be the loss of consumer surplus by consumers price out of the market (area D), plus the loss of producer surplus by producers who cannot sell as much at the higher prices (area G).

13. A. Producer surplus was Areas E, F, G and H in equilibrium, but has been reduced to area H after the tax. Areas E plus F were part of producer surplus, but are now government tax revenues, and area G is the deadweight loss falling on producers.

14. B. Consumer surplus was areas A, B, C and D before the tax; areas B and C have become part of the government tax revenues, and area D is the deadweight loss falling on consumers.

15. D. Variable cost is the total of per unit costs, or the area under the supply curve.

16. B. Total tax revenue is the amount of the tax ($400 - $250 or $150) times the number of units sold (50) from the graph.