Answers to End-of-Chapter Exercises

1. a. The demand for a popular CD is likely to be inelastic (at least as long as it remains popular). True fans are unlikely to think that CDs by other artists are “close substitutes,” and CDs are probably a small part of the buyer’s budgets. Both these factors will contribute to inelasticity of demand. Only the CD being not vitally needed by the fan would work in the other direction, towards greater elasticity (though diehard fans may argue that they “can’t live without” their music). As an interesting aside, you might want to ask students why the sticker prices of very popular CDs are not higher than the price of other CDs. Most new CDs, regardless of their popularity, sell for about the same price. Have recording companies failed to recognize that they could be able to make more money by charging more for very popular CDs?

b. The demand for a share of stock in a company is likely to be very (probably perfectly) elastic. If you attempt to charge more than the going stock price, most likely no one will buy your stock.

c. Assuming drinking water is difficult to come by in a desert, the demand for bottled water would be price inelastic. You might want to ask your students if they think bottled water is actually more expensive in desert communities. Again, this discussion could be used to illustrate the complexities of market behaviors. A bottled water company may be able to increase its short-run profits by taking advantage of an inelastic demand but this may cause an increase in competition or prompt consumers to seek alternatives, ultimately decreasing profits in the long run.

d. The demand for textbooks is typically perfectly price elastic as companies that buy back textbooks offer a single price for specific books. Students either sell the book at that price or not. Of course, the situation becomes more complex when we consider that students may be able to sell their books directly to other students or form a cooperative to compete with larger textbook companies.

2. The correct matches are a→vii, b→x, c→iii, d→viii, e→ii, f→ix, g→iv, h→v, i→vi, j→i.

3. a. $\left| \frac{-10\%}{5\%} \right| = 2.0$
   b. $\left| \frac{-2\%}{10\%} \right| = 0.2$
   c. $\left| \frac{-99\%}{0.05\%} \right| = 1980$ (approaching perfectly elastic demand)
   d. $\left| \frac{-0.05\%}{99\%} \right| = 0.0005$ (approaching perfectly inelastic demand)
   e. $\left| \frac{2\%}{-10\%} \right| = 0.2$

4. a. $-10\% + 5\% = -5\%$
   b. $-2\% + 10\% = +8\%$
   c. $-99 + 0.05 = -98.95\%$
   d. $-0.05 + 99 = +98.95\%$
   e. $2\% + (-10\%) = -8\%$
5. a. As illustrated in the graph below, the supply of paper is perfectly price inelastic. This means that Morales will sell the same amount to Braeburn regardless of price. The quantity is fixed as Braeburn lowers its price from $P_0$ to $P_1$ so its expenditures on paper decrease by the same proportion as the price decrease (the cross-hatched area represents the decrease in expenditures).
b. As illustrated in the graph below with an elastic supply, when Braeburn lowers the price it offers for paper from $P_0$ to $P_1$, the quantity it is able to buy declines significantly from $Q_0$ to $Q_1$. So, it will be able to buy some paper at the lower price (and decrease its total expenditures on paper), but this may not be enough paper for them to meet their publishing needs! Again, the cross-hatched area represents the decrease in expenditures.

![Graph showing elastic supply](image)

6. a. Her income elasticity of demand for carrots is $(+12\% / +10\%) = 1.2$. As her expenditures on carrots rise when her income rises, carrots are a normal good for Mariba.
   
b. Milk sales decrease by 9% $(15\% \times 0.6)$. Revenues from milk sales go up.
   
c. The price of paper must have declined by 4% $(6\% / 1.5)$.

7. The price elasticity of .5 means that demand for Sonya’s peanuts is price inelastic. If the company lowers its prices, as it is considering doing, it can expect that demand will not be very responsive, and that revenues will actually fall. On the other hand, the income elasticity of 1.8 means that demand for peanuts is not only normal (the income elasticity is positive, so that people spend more on peanuts as incomes rise), but that the demand is income elastic (the people spend a greater share of their income on peanuts as income rises). So, targeting lower-income consumers in discount stores is also not recommended because quantity demanded would drop off significantly as consumers’ incomes decline (assuming that lower-income consumers are more likely to shop at discount stores), again resulting in lower revenues. The company would be ill-advised to follow either of the proposed strategies.

8. Consuming oil creates negative externalities due to air pollution, land degradation, the risk of oil spills, etc. Raising the price of oil would reduce consumption and, consequently, reduce the level of negative externalities. The substitution effect of a price increase would encourage people to seek out alternatives to oil, such as
renewable energy or conservation. Again, this would reduce the negative externalities imposed on society. Education, on the other hand, creates positive externalities for society. So, increasing the price of education (which would lead to a decline in the amount of education purchased) would eliminate positive externalities. (Both of these strategies are sometimes referred to as “internalizing the externalities.”) The substitution effect of a price rise means that people would purchase more of “alternatives” to education. Unless these alternatives create similar positive externalities to society, the substitution effect would be considered a bad thing.

9. a. The price elasticity of demand for cigarettes (0.20) is quite low. With an inelastic demand, the quantity of cigarettes purchased declines only slightly with a large increase in price due to a tax. Thus, a tax (unless it is extremely large) will not be very effective in reducing smoking.

b. Taxes on cigarettes would be an effective way to raise revenues because the elasticity of demand for cigarettes is low. With the tax, cigarette purchases would decline only slightly and a relatively large amount of revenue could be raised.