1. Perloff (fourth edition): question 3 page 139

(a) The substitution effect causes her to buy more clothing. The convexity of indifference curves assures that the substitution effect will always be positive for a price decrease.
(b) The income effect could be either positive or negative depending on whether clothing is a normal or inferior good for Cora.

2. Perloff (fourth edition): question 7 page 140

He is better off. If he were to buy all new books, the increase in income would just cover the price increase. However, if he buys all used books, he will spend only $24 more than if he bought all used books at the old prices. Thus, any combination of books that includes one or more used books leaves him with leftover income.


In order for him to be maximizing his utility, he must set his consumption such that the marginal utility per dollar (MU/p) of the last unit consumed is equal across commodities. In this case:

\[
\frac{10}{10} \neq \frac{5}{2}
\]

Specifically, the marginal utility per dollar is greater for cookies. Therefore, he should decrease his consumption of books and increase his consumption of cookies.


Because the two commodities are perfect complements, the indifference curves have right angles. Thus, the income consumption curve will be a straight line that passes through the point where the indifference curves just touch the budget lines. See Figure 5.12a. In order for Hugo to buy one more doughnut per week, his budget must rise enough to purchase both another doughnut and another cup of coffee. The Engle curve is also linear, see figure 5.12b.
5. Perloff (fourth edition): problem 33 page 142
The marginal rate of substitution is $B/C$.
The marginal condition is

$$\frac{B}{C} = 1/2, \quad B = 1/2C$$

Substituting into the budget constraint yields:

$$2B + C = 120$$
$$2C = 120$$
$$C^* = 60, \quad B^* = 30$$

When the price changes due to the tax, the new marginal condition is

$$B = 1/3C$$

Substituting into the new budget constraint yields:

$$3B + C = 120$$
$$2C = 120$$
$$C^* = 60, \quad B^* = 20$$
6. True, False or Uncertain; explain your answer. When income rises and the price of \( x \) falls, the consumer will always buy more units of \( x \).

False. In order to make predictions using economic theory, it is best to change only one parameter at a time. In this case income rises and price falls. If the good is inferior, the effects will be in opposite directions.

7. Suppose that a consumer's annual demand for office visits is described by the equation \( Q = 8 - .1p \). If office visits cost $30, and the consumer has no health insurance (i.e., the consumer pays full price), how many office visits will she make? What is the elasticity of demand for office visits at this point? Suppose a health insurance plan is instituted that pays for one-third of each office visit. How would this affect the quantity and the demand elasticity at the new equilibrium?

If the consumer has no health insurance, she will make 5 office visits per year, and the elasticity of demand is \(-.6\). If an insurance plan covers one-third of the cost of an office visit, the consumer's quantity will increase and price sensitivity will decrease. By substituting \( .667p \) into the demand equation, we can see that the elasticity will fall, as the consumer now reduces visits by \( .0667 \) when price increases by $1, rather than \( .1 \). The result is the same as if the price were $20 per visit instead of $30. The new equilibrium quantity is 6 visits per year, and the elasticity falls to \(-.33\) (\(= -.0667(20/6)\)).