Economics 12th edition Michael Parkin Solutions Manual

SKU: 9780133872279-SOLUTIONS



Chapter

4 ELASTICITY

Answers to the Review Quizzes

Page 90

1. Why do we need a units-free measure of the responsiveness of the quantity demanded of a good or service to a change in its price?

   The elasticity of demand is a units-free measure. Compare it as a measure of the responsiveness to some other candidate that depends on the units, such as the slope. The slope of the demand curve changes as the units measuring the same quantity of the good change (going from pounds to ounces, for example). The value of the elasticity is independent of the units used to measure the price and quantity of the product. As a result, the elasticity can be compared across the same good when quantity is measured in different units and/or the price is measured in different currencies. The elasticities of different goods also can be compared even though they are measured in different units.

2. Define the price elasticity of demand and show how it is calculated.

   The price elasticity of demand is units-free measure of the responsiveness of the quantity demanded of a good to a change in its price when all other influences on buying plans remain the same. It equals the absolute value (or magnitude) of the ratio of the percentage change in the quantity demanded to the percentage change in the price. The percentage change in quantity (price) is measured as the change in quantity (price) divided by the average quantity (price).

3. What makes the demand for some goods elastic and the demand for other goods inelastic?

   The magnitude of the price elasticity of demand for a good depends on three main influences:

   - *Closeness of substitutes.* The more easily people can substitute other items for a particular good, the larger is the price elasticity of demand for that good.
   - *The proportion of income spent on the good.* The larger the portion of the consumer's budget being spent on a good, the greater is the price elasticity of demand for that good.
   - *The time elapsed since a price change.* Usually, the more time that has passed after a price change, the greater is the price elasticity of demand for a good.

4. Why is the demand for a luxury generally more elastic (or less inelastic) than the demand for a necessity?

   Demand for a necessity is generally less elastic than demand for a luxury because there are fewer substitutes for a necessity. Because there are more substitutes for a luxury than a necessity, the elasticity of demand for a luxury is larger is than the elasticity of demand for a necessity.

5. What is the total revenue test?

   The total revenue test is a method of estimating the price elasticity of demand by observing the change in total revenue, given a change in price, holding all other things constant. The total revenue test shows

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

that a price cut increases total revenue if demand is elastic, decreases total revenue if demand is inelastic, and does not change total revenue if demand is unit elastic.

Page 94

1. What does the income elasticity of demand measure?

   The income elasticity of demand measures how the quantity demanded of a good responds to a change in income. The formula for the income elasticity of demand is the percentage change in the quantity of the good demanded divided by the percentage change in income.

2. What does the sign (positive/negative) of the income elasticity tell us about a good?

   The sign of the income elasticity of demand reveals whether a good is a normal good or an inferior good: The income elasticity of demand is positive for normal goods and negative for inferior goods.

3. What does the cross elasticity of demand measure?

   The cross elasticity of demand measures how the quantity demanded of one good responds to a change in the price of another good. The formula for the cross elasticity of demand is the percentage change in the quantity of the good demanded divided by the percentage change in the price of the related good.

4. What does the sign (positive/negative) of the cross elasticity of demand tell us about the relationship between two goods?

   The sign of the cross elasticity of demand reveals whether two goods are substitutes or compliments: The cross elasticity of demand is positive for substitutes and negative for complements.

Page 96

1. Why do we need a units-free measure of the responsiveness of the quantity supplied of a good or service to a change in its price?

   The elasticity of supply is a units-free measure. We need a units-free measure of the elasticity of supply for the same reason we need a units-free measure of the elasticity of demand: Because the value of the elasticity of supply is independent of the units used to measure the price and quantity of the good, the elasticity of supply can be compared across the same good when quantity is measured in different units and/or the price is measured in different currencies. In addition, the elasticities of supply of different goods also can be compared even though they are measured in different units.

2. Define the elasticity of supply and show how it is calculated.

   The *elasticity of supply* measures the responsiveness of the quantity supplied to a change in the price of a good when all other influences on selling plans remain the same. The elasticity of supply is calculated by the percentage change in the quantity supplied divided by the percentage change in the price.

3. What are the main influences on the elasticity of supply that make the supply of some goods elastic and the supply of other goods inelastic?

   The main influences on the elasticity of supply are:

   - ☐ *Resource substitution possibilities*: the greater the suppliers' ability to substitute resources, the greater will be their ability to react to price changes and the greater the elasticity of supply.
   - ☐ *Time frame for the supply decision*: the greater the amount of time available after the price change, the greater is the suppliers' ability to adjust quantity supplied, and the greater the elasticity of supply.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

4. Provide examples of goods or services whose elasticities of supply are (a) zero, (b) greater than zero but less than infinity, and (c) infinity.

Here are some examples:

a) The *momentary supply* of wheat is perfectly inelastic. Once farmers have brought their wheat to market, there is no other alternative use for it and they sell it all regardless of the going price.

b) The *short-run supply* of wheat. If the farmers already have a mature wheat crop but have not yet harvested it, farmers with both relatively high and low yield fields may chose to harvest both types of fields if the price for wheat is high. However, the farmers will not harvest their low yield fields when the price of wheat is relatively low to economize on added labor costs.

c) The *supply of wheat to an individual buyer*. Any one buyer can purchase as much wheat at the going price as he or she desires. However, no quantity of wheat will be supplied at a lower price.

5. How does the time frame over which a supply decision is made influence the elasticity of supply? Explain your answer.

The momentary supply, short-run supply, and long-run supply all illustrate the response of suppliers to changes in the price, but they differ according to how much time has elapsed after the price change.

- ☐ The *momentary supply* is frequently the least elastic and shows how suppliers cannot easily respond to a price change immediately after the price change occurs. Changing the quantity produced means changing the inputs into the production process, which takes time to complete. Sometimes the momentary supply is *perfectly inelastic*.
- ☐ The *short-run supply* shows suppliers' response after enough time has elapsed for some, but not all, of the possible technological adjustments have occurred. Short-run supply generally is intermediate in elasticity between the momentary supply and the long-run supply.
- ☐ The *long-run supply* shows how suppliers react after enough time has passed that *all* possible adjustments to factors of production have been made to accommodate the price change. It usually is the most elastic of the three supplies.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

Answers to the Study Plan Problems and Applications

1. Rain spoils the strawberry crop, the price rises from $4 to $6 a box, and the quantity demanded decreases from 1,000 to 600 boxes a week.

   a. Calculate the price elasticity of demand over this price range.

      The price elasticity of demand is 1.25. The price elasticity of demand equals the percentage change in the quantity demanded divided by the percentage change in the price. The price rises from $4 to $6 a box, a rise of $2 a box. The average price is $5 a box. So the percentage change in the price is $2 divided by $5 and then multiplied by 100, which equals 40 percent. The quantity decreases from 1,000 to 600 boxes, a decrease of 400 boxes. The average quantity is 800 boxes. So the percentage change in quantity is 400 divided by 800, which equals 50 percent. The price elasticity of demand for strawberries is 50 percent divided by 40 percent, which equals 1.25.

   b. Describe the demand for strawberries.

      The price elasticity of demand exceeds 1, so the demand for strawberries is elastic.

2. If the quantity of dental services demanded increases by 10 percent when the price of dental services falls by 10 percent, is the demand for dental services inelastic, elastic, or unit elastic?

   The demand for dental services is unit elastic. The price elasticity of demand for dental services equals the percentage change in the quantity of dental services demanded divided by the percentage change in the price of dental services. The price elasticity of demand is 10 percent divided by 10 percent, which equals 1. The demand is unit elastic.

3. The demand schedule for hotel rooms is in the table.

Price (dollars per night)	Quantity demanded (millions of rooms per night)
200	100
250	80
400	50
500	40
800	25

   a. What happens to total revenue when the price falls from $400 to $250 a room per night and from $250 to $200 a room per night?

      When the price is $400, the total revenue is equal to $400 × 50 million rooms, or $20 billion. When the price is $250, the total revenue is equal to $250 × 80 million rooms, or $20 billion. So the total revenue does not change when the price falls from $400 to $250 a night.

      When the price is $250, the total revenue is equal to $250 × 80 million rooms, or $20 billion. When the price is $200, the total revenue is equal to $200 × 100 million rooms, or $20 billion. So the total revenue does not change when the price falls from $400 to $250 a night.

   b. Is the demand for hotel rooms elastic, inelastic or unit elastic?

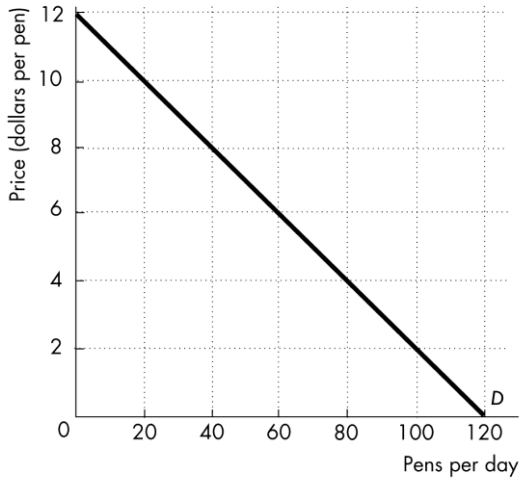
      The total revenue is the same at all prices, $20 billion. Because a change in price does not change the total revenue at *any* price, the demand is unit elastic at all prices.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

4. The figure shows the demand for pens. Calculate the elasticity of demand when the price rises from $4 to $6 a pen. Over what price range is the demand for pens elastic?

FIGURE 4.1
Problem 4



The price elasticity of demand is 0.72. When the price of a pen rises from $4 to $6, the quantity demanded of pens decreases from 80 to 60 a day. The price elasticity of demand equals the percentage change in the quantity demanded divided by the percentage change in the price. The price increases from $4 to $6, an increase of $2 a pen. The average price is $5 per pen. So the percentage change in the price equals $2 divided by $5 and then multiplied by 100, which equals 40 percent. The quantity decreases from 80 to 60 pens, a decrease of 20 pens. The average quantity is 70 pens. So the percentage change in quantity demanded equals 20 divided by 70 and then multiplied by 100, which equals 28.6 percent. The price elasticity of demand for pens equals 28.6 percent divided by 40 percent, which is 0.72.

The demand for pens is elastic at all prices higher than the price at the midpoint of the demand curve, which indicates that the demand for pens is elastic at prices between $12 per pen and $6 per pen.

5. In 2003, when music downloading first took off, Universal Music slashed the average price of a CD from $21 to $15. The company expected the price cut to boost the quantity of CDs sold by 30 percent, other things remaining the same.

   a. What was Universal Music's estimate of the price elasticity of demand for CDs?

   Using the data in the question, the price elasticity of demand is 0.90. The change in the price is $6 and the average of the two prices is $18, so the percentage change in the price is ($6/$18) × 100, which equals 33.3 percent. The increase in the quantity demanded was estimated to be 30 percent. The price elasticity of demand equals (30.0 percent)/(33.3 percent), or 0.90.

   b. If you were making the pricing decision at Universal Music, what would be your pricing decision? Explain your decision.

   The demand is inelastic, so if nothing else changes the price cut leads to a decrease in Universal Music's total revenue. However, downloaded music and CDs are substitutes for each other and the quantity of downloaded music was forecast to rise substantially. Effectively, the price of downloading music fell as more people gained access to the Internet and download sites proliferated. The fall in the price of the substitute, downloaded music, decreases the demand for Universal Music's CDs, so the decision to cut prices most likely was forced as the result of the (forecasted) decrease in demand for CDs.

6. When Judy's income increased from $130 to $170 a week, she increased her demand for concert tickets by 15 percent and decreased her demand for bus rides by 10 percent. Calculate Judy's income elasticity of demand for (a) concert tickets and (b) bus rides.

   The income elasticity of demand for (a) concert tickets is 0.56 and (b) bus rides is −0.375. The income elasticity of demand equals the percentage change in the quantity demanded divided by the percentage

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

change in income. The change in income is $40 and the average income is $150, so the percentage change in income equals 26.7 percent.

a. The change in the quantity demanded of concert tickets is 15 percent. The income elasticity of demand for concert tickets equals 15/26.7, which is 0.56.

b. The change in the quantity demanded of bus rides is ☐10 percent. The income elasticity of demand for bus rides equals ☐10/26.7, which is ☐0.375.

7. If a 12 percent rise in the price of orange juice decreases the quantity of orange juice demanded by 22 percent and increases the quantity of apple juice demanded by 14 percent, calculate the

a. Price elasticity of demand for orange juice.

The price elasticity of demand for orange juice is 1.83. The price elasticity of demand is the percentage change in the quantity demanded of the good divided by the percentage change in the price of the good. So the price elasticity of demand equals 22 percent divided by 12 percent, which is 1.83.

b. Cross elasticity of demand for apple juice with respect to the price of orange juice.

The cross elasticity of demand between orange juice and apple juice is 1.17. The cross elasticity of demand is the percentage change in the quantity demanded of one good divided by the percentage change in the price of another good. So the cross elasticity of demand is the percentage change in the quantity demanded of apple juice divided by the percentage change in the price of orange juice. The cross elasticity equals 14 percent divided by 12 percent, which is 1.17.

8. If a rise in the price of sushi from 98¢ to $1.02 a piece decreases the quantity of soy sauce demanded from 101 units to 99 units an hour and decreases the quantity of sushi demanded by 1 percent an hour, calculate the:

a. Price elasticity of demand for sushi.

The price of sushi rises by ($1.02 − $0.98)/$1.00 = 4 percent. Therefore the price elasticity of demand for sushi equals |(−1 percent)/(4 percent)|, which is 0.25.

b. Cross elasticity of demand for soy sauce with respect to the price of sushi.

The quantity of soy sauce decreases by (99 – 101)/100 = −2 percent. Therefore the cross elasticity of demand for soy sauce with respect to the price of sushi equals |(−2 percent)/(4 percent), which is −0.5.

9. The table sets out the supply schedule of jeans.

Price (dollars per pair)	Quantity supplied (millions of pairs per year)
120	24
125	28
130	32
135	36

a. Calculate the elasticity of supply when the price rises from $125 to $135 a pair.

The elasticity of supply equals the percentage change in the quantity supplied divided by the percentage change in price. The percentage change in the quantity demanded equals [(36 – 28)/32] × 100, which is 25.0 percent. The percentage change in the price equals [($135 – $125)/$130] × 100, which is 7.7 percent. The elasticity of supply equals (25.0 percent/7.7 percent), which is 3.25.

b. Calculate the elasticity of supply when the average price is $125 a pair.

To find the elasticity at an average price of $125 a pair, change the price such that $125 is the average price—for example, a rise in the price from $120 to $130 a pair. To calculate the elasticity when the average price is $125, calculate the elasticity over the price range from $120 to $130. The percentage change in the quantity demanded equals [(32 – 24)/28] × 100, which is 28.6 percent. The percentage

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

change in the price equals [($130 – $120)/$125] × 100, which is 8.0 percent. The elasticity of supply equals (28.6 percent/8.0 percent), which is 3.58.

c. Is the supply of jeans elastic, inelastic, or unit elastic?

The supply of jeans is elastic.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

Answers to Additional Problems and Applications

10. With higher fuel costs, airlines raised their average fare from 75¢ to $1.25 per passenger mile and the number of passenger miles decreased from 2.5 million a day to 1.5 million a day.

    a. What is the price elasticity of demand for air travel over this price range?

    The price elasticity of demand equals the percentage change in the quantity demanded divided by the percentage change in the price. The quantity demanded changes by 1.0 million passenger miles and the average passenger miles is 2.0 million. The percentage change in the quantity demanded is (1.0 million)/(2.0 million) × 100, which is 50 percent. The price changes by $0.50 and the average price is $1.00. The percentage change in the quantity demanded is ($0.50 /($1.00) × 100, which is 50 percent. So the price elasticity of demand is (50 percent)/(50 percent), or 1.00.

    b. Describe the demand for air travel.

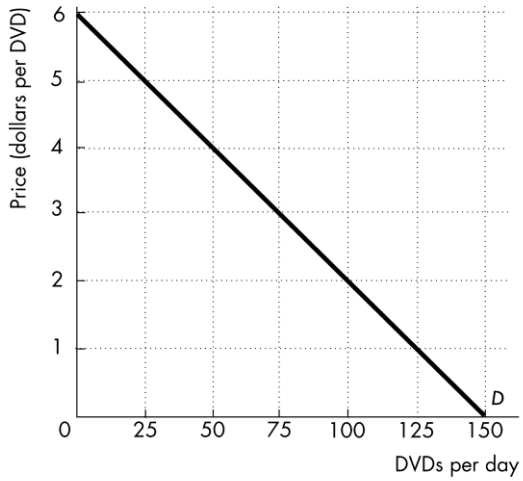
    The demand for air travel between these two prices is unit elastic. The 50 percent price hike leads to a 50 percent decrease in the quantity of air miles traveled.

11. Figure 4.2 shows the demand for DVD rentals.

    a. Calculate the elasticity of demand when the price of a DVD rental rises from $3 to $5.

    The price elasticity of demand is 2. When the price of a DVD rental rises from $3 to $5, the quantity demanded of DVDs decreases from 75 to 25 a day. The price elasticity of demand equals the percentage change in the quantity demanded divided by the percentage change in the price. The price increases from $3 to $5, an increase of $2 a DVD. The average price is $4 per DVD. So the percentage change in the price equals $2 divided by $4 and then multiplied by 100, which equals 50 percent. The quantity decreases from 75 to 25 DVDs, a decrease of 50 DVDs. The average quantity is 50 DVDs. So the percentage change in quantity demanded equals 50 divided by 50 and then multiplied by 100, which equals 100 percent. The price elasticity of demand for DVD rentals equals 100 percent divided by 50 percent, which is 2.

FIGURE **4.2**
Problem 11



    b. At what price is the elasticity of demand for DVD rentals equal to 1?

    The price elasticity of demand equals 1 at $3 a DVD. The price elasticity of demand equals 1 at the price halfway between the origin and the price at which the demand curve intersects the *y*-axis. That price is $3 a DVD.

Use the following table to work Problems 12 to 14.
The demand schedule for computer chips is in the table.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

Price (dollars per chip)	Quantity demanded (millions of chips per year)
200	50
250	45
300	40
350	35
400	30

12. a. What happens to total revenue if the price falls from $400 to $350 a chip and from $350 to $300 a chip?

When the price of a chip is $400, 30 million chips are sold and total revenue equals $12,000 million. When the price of a chip falls to $350, 35 million chips are sold and total revenue is $12,250 million. The total revenue increases when the price falls.

When the price is $350 a chip, 35 million chips are sold and total revenue is $12,250 million. When the price of a chip is $300, 40 million chips are sold and total revenue decreases to $12,000 million. The total revenue decreases as the price falls.

b. At what price is total revenue at a maximum?

Total revenue is maximized at $350 a chip. When the price of a chip is $300, 40 million chips are sold and total revenue equals $12,000 million. When the price is $350 a chip, 35 million chips are sold and total revenue equals $12,250 million. Total revenue increases when the price rises from $300 to $350 a chip. When the price is $400 a chip, 30 million chips are sold and total revenue equals $12,000 million. Total revenue decreases when the price rises from $350 to $400 a chip. Total revenue is maximized when the price is $350 a chip.

13. At an average price of $350, is the demand for chips elastic, inelastic, or unit elastic? Use the total revenue test to answer this question.

The demand for chips is unit elastic. The total revenue test says that if the price changes and total revenue remains the same, the demand is unit elastic at the average price. For an average price of $350 a chip, cut the price from $400 to $300 a chip. When the price of a chip falls from $400 to $300, the total revenue remains at $12,000 million. So at the average price of $350 a chip, demand is unit elastic.

14. At $250 a chip, is the demand for chips elastic or inelastic? Use the total revenue test to answer this question.

The demand for chips is inelastic. The total revenue test says that if the price falls and total revenue falls, the demand is inelastic. When the price falls from $300 to $200 a chip, total revenue decreases from $12,000 million to $10,000 million. So at an average price of $250 a chip, demand is inelastic.

15. Your price elasticity of demand for bananas is 4. If the price of bananas rises by 5 percent, what is

a. The percentage change in the quantity of bananas you buy?

The quantity of bananas you buy decreases by 20 percent. The price elasticity of demand equals the percentage change in the quantity demanded divided by the percentage change in the price. Rearranging this formula shows that the percentage change in the quantity demanded equals the price elasticity of demand multiplied by the percentage change in the price. The percentage change in the quantity demanded equals 4 × 5 percent, which is 20 percent.

b. The change in your expenditure on bananas?

Your total expenditure decreases because your demand is elastic. The fall in expenditure is *approximately* 15 percent, the 5 percent rise in price offset by the 20 percent decrease in the quantity purchased.

16. **As Gasoline Prices Soar, Americans Slowly Adapt**

As gas prices rose in March 2008, Americans drove 11 billion fewer miles than in March 2007. Realizing that prices are not going down, Americans adapted to higher energy costs. Americans

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

spent 3.7 percent of their disposable income on transportation fuels. How much we spend on gasoline depends on the choices we make: what car we drive, where we live, how much time we spend driving, and where we choose to go. For many people, higher energy costs mean fewer restaurant meals, deferred weekend outings with the kids, less air travel, and more time closer to home.

Source: *International Herald Tribune*, May 23, 2008

a. List and explain the elasticities of demand that are implicitly referred to in the news clip.

The elasticities to which the clip refers are the income elasticity of demand, the price elasticity of demand, and the cross elasticity of demand. The income elasticity of demand is reflected in the news clip's discussion of the fraction of income spent on transportation fuels. More references are made to the factors that influence the price elasticity of demand. The article lists many substitutions households can make in response to higher fuel prices. In particular the type of car a family can drive, where the family lives, and where the family chooses to go reflect substitution methods that households can use to decrease the quantity of gasoline demanded. In addition, discussion of "fewer restaurant meals, deferred weekend outings with the kids, less air travel and more time closer to home" suggest that higher gasoline prices have an income effect that decreases the quantity demanded. It is the strength of these factors that determines the magnitude of the price elasticity of demand for fuel. Additionally these activities, such as smaller cars, more time closer to home, are also the substitutes that people use in place of gasoline. The news clips suggests that these activities increase in response to the higher price of gasoline, indicating that they are substitutes for gasoline so that their cross elasticity of demand with respect to the price of gasoline is positive.

b. Why, according to the news clip, is the demand for gasoline inelastic?

One factor listed that helps make the demand for gasoline inelastic is the point that gasoline accounts for only a relatively small fraction of people's incomes. Another factor is more qualitative: none of the substitutions listed for gasoline—the type of car the family drives and so forth—are particularly close substitutes for gasoline. The absence of close substitutes combined with the relatively small fraction of income spent on gasoline combine to make the demand for gasoline inelastic.

Use this information to work Problems 17 and 18.

Economy Forces Many to Shorten Holiday Plans

This year Americans are taking fewer exotic holidays by air and instead are visiting local scenic places by car. The global financial crisis has encouraged many Americans to cut their holiday budgets.

Source: *USA Today*, May 22, 2009

17. Given the prices of the two holidays, is the income elasticity of demand for exotic holidays positive or negative? Are exotic holidays a normal good or an inferior good? Are local holidays a normal good or an inferior good?

The income elasticity of demand for exotic holidays is positive so exotic holidays are a normal good. The income elasticity of demand for local holidays is negative so local holidays are an inferior good.

18. Are exotic holidays and local holidays substitutes? Explain your answer.

Exotic holidays and local holidays are substitutes. The article points out that in 2009 Americans were visiting local scenic places rather than visiting exotic locations. So Americans were substituting local holidays for exotic holidays.

19. When Alex's income was $3,000, he bought 4 bagels and 12 donuts a month. Now his income is $5,000 and he buys 8 bagels and 6 donuts a month. Calculate Alex's income elasticity of demand

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

for (a) bagels and (b) donuts.

a. The income elasticity of demand equals the percentage change in the quantity demanded divided by the percentage change in income. The change in income is $2,000 and the average income is $4,000, so the percentage change in income equals 50 percent. The change in the quantity demanded is 4 bagels and the average quantity demanded is 6 bagels, so the percentage change in the quantity demanded equals 66.67 percent. The income elasticity of demand for bagels equals (66.67 percent)/(50 percent), which is 1.33.

b. From part (a), the percentage change in income is 50 percent. The change in the quantity demanded is −6 donuts and the average quantity demanded is 9 donuts, so the percentage change in the quantity demanded is −66.67 percent. The income elasticity of demand for donuts equals (−66.67 percent)/(50 percent), which is −1.33.

20. **Wal-Mart's Recession-Time Pet Project**

During the recession, Wal-Mart moved its pet food and supplies to in front of its other fast growing business, baby products. Retail experts point out that kids and pets tend to be fairly recession-resistant businesses—even in a recession, dogs will be fed and kids will get their toys.

Source: CNN, May 13, 2008

a. What does this news clip imply about the income elasticity of demand for pet food and baby products?

The news clip implies that both pet food and baby food are necessities. Their income elasticities of demand are positive but very small (since they "tend to be fairly recession resistant businesses").

b. Would the income elasticity of demand be greater or less than 1? Explain.

The income elasticities of demand are less than 1 because they are necessities.

21. If a 5 percent fall in the price of chocolate sauce increases the quantity demanded of chocolate sauce by 10 percent and increases the quantity of ice cream demanded by 15 percent, calculate the:

a. Price elasticity of demand for chocolate sauce.

The price elasticity of demand for chocolate sauce equals the percentage change in the quantity of chocolate sauce demanded divided by the percentage change in the price of chocolate sauce. Using the data in the problem, the price elasticity of demand equals (10 percent)/(−5 percent), which is 2.0.

b. Cross elasticity of demand for ice cream with respect to the price of chocolate sauce.

The cross elasticity of demand for ice cream with respect to the price of chocolate sauce equals the percentage change in the quantity of ice cream demanded divided by the percentage change in the price of chocolate sauce. Using the data in the problem, the cross elasticity of demand equals (15 percent)/(−5 percent), which is −3.0. Ice cream and chocolate sauce are complements.

22. **To Love, Honor, and Save Money**

In a survey of caterers and event planners, nearly half of them said that they were seeing declines in wedding spending in response to the economic slowdown; 12% even reported wedding cancellations because of financial concerns.

Source: *Time*, June 2, 2008

a. Based upon this news clip, are wedding events a normal good or inferior good? Explain.

Based on the news clip, wedding events are a normal good. The economic slowdown means that people's incomes are falling and, as a result, the demand for wedding events is decreasing.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

b. Are wedding events more a necessity or a luxury? Would the income elasticity of demand be greater than 1, less than 1, or equal to 1? Explain.

Wedding events are a luxury. Wedding events are not necessities because couples can marry with plain weddings; indeed, couples can marry using a civil ceremony and with no wedding event at all. If wedding events are a luxury, their income elasticity of demand is greater than 1.

23. The table sets out the supply schedule of long-distance phone calls. Calculate the elasticity of supply when

Price (cents per minute)	Quantity supplied (millions of minutes per day)
10	200
20	400
30	600
40	800

a. The price falls from 40¢ to 30¢ a minute.

The elasticity of supply is 1. The elasticity of supply is the percentage change in the quantity supplied divided by the percentage change in the price. When the price falls from 40 cents to 30 cents, the change in the price is 10 cents and the average price is 35 cents. The percentage change in the price is 28.57 percent. When the price falls from 40 cents to 30 cents, the quantity supplied decreases from 800 to 600 calls. The change in the quantity supplied is 200 calls, and the average quantity is 700 calls, so the percentage change in the quantity supplied is 28.57 percent. The elasticity of supply equals (28.57 percent)/(28.57 percent), which is 1.

b. The average price is 20¢ a minute.

The elasticity of supply is 1. The formula for the elasticity of supply calculates the elasticity at the average price. So to find the elasticity at an average price of 20 cents a minute, change the price such that 20 cents is the average price—for example, a fall in the price from 30 cents to 10 cents a minute. When the price falls from 30 cents to 10 cents, the change in the price is 20 cents and the average price is 20 cents. The percentage change in the price is 100 percent. When the price falls from 30 cents to 10 cents, the quantity supplied decreases from 600 to 200 calls. The change in the quantity supplied is 400 calls and the average quantity is 400 calls. The percentage change in the quantity supplied is 100 percent. The elasticity of supply is the percentage change in the quantity supplied divided by the percentage change in the price. The elasticity of supply is 1.

24. **Weak Coal Prices Hit China's Third-Largest Coal Miner**

The chairman of Yanzhou Coal Mining reported that the recession had decreased the demand for coal, with its sales falling by 11.9 per cent to 7.92 million tons from 8.99 million tons a year earlier, despite a 10.6 percent cut in the price.

Source: Dow Jones, April 27, 2009

Calculate the price elasticity of supply of coal. Is the supply of coal elastic or inelastic?

The price elasticity of supply of coal equals the percentage change in the quantity of coal supplied divided by the percentage change in the price of coal. Using the data in the problem, the price elasticity of supply equals (–11.9 percent)/(–10.6 percent), which is 1.12. The elasticity exceeds 1.0 in value, so the supply of coal is elastic.

Economics in the News

25. After you have studied *Economics in the News* on pp. 98–99, answer the following questions.

a. Looking at Fig. 1 on p. 99, explain what must have happened in 2014 to the supply of coffee.

The price of coffee soared in 2014, which indicates that the supply of coffee decreased.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual

b. Given the information in Fig. 1 and the estimated elasticity of demand for coffee, by what percentage did the quantity of coffee change in 2014 and in which direction?

The price of coffee rose from $1.00 per pound to $1.60 per pound. Therefore the percentage increase in the price of coffee is ($1.60 – $1.00)/$1.30 = 46 percent. The price elasticity of demand is 0.26. Therefore the quantity of coffee decreased by 0.26 × 46 percent, which is 12 percent.

c. The news article says that farmers' revenue shrank as the price of coffee fell. Explain why this fact tells us that the demand for coffee is inelastic.

The total revenue test shows that total revenue falls when the price falls only if the demand for the product is inelastic. Therefore, because farmers' total revenue from coffee fell when the price of coffee fell, the total revenue test means that the demand for coffee must be inelastic.

d. How does the total revenue test work for a rise in the price? What do you predict happened to total revenue in 2014? Why?

If the demand for a product is inelastic and the price rises, the total revenue increases. Therefore, in 2014 when the price of coffee rose, coffee farmers' total revenue increased.

e. Coffee isn't just coffee. It comes in different varieties, the main two being Arabica and Robusta. Would you expect the elasticity of demand for Arabica to be the same as the elasticity of demand for coffee? Explain why or why not.

There are more close substitutes for the specific type of coffee, Arabica, than there are for coffee in general, so the price elasticity of demand for Arabica is larger than the price elasticity of demand for coffee.

26. **Comcast Deal Won't Lead to Netflix Price Hike**

Under the deal, Netflix will buy Internet service from Comcast, rather than connect directly for free with some smaller ISPs like Cablevision as it does now.

Source: CNN, April 24, 2014

a. How will Netflix's decision to buy more expensive Internet service influence Netflix's supply of online movie viewing?

The increase in the cost decreases the supply of online movie viewing.

b. Given your answer to part (a), explain why Netflix says it will not hike its price.

Netflix is not raising its price because the demand for online movie viewing is perfectly elastic.

c. What can you say about the price elasticity of demand for Netflix online movie viewing?

The demand for Netflix's online movie viewing is perfectly elastic.

© 2016 Pearson Education, Inc.

Economics 12th edition Michael Parkin Solutions Manual