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# PRICE ELASTICITY

### OVERVIEW

1. The elasticity of demand measures the responsiveness of 1 the buyer to a change in price. The coefficient of price elasticity is the percentage change in quantity divided by the percentage change in price. If the coefficient is greater than one, demand is elastic. If the coefficient is less than one, demand is inelastic. If the coefficient is equal to one, demand is of unitary elasticity.
2. If demand is vertical, demand is perfectly inelastic. Every change in price brings no change in quantity.
3. If demand is horizontal, then demand is perfectly elastic. A small change in price brings an infinite change in quantity.
4. The determinants of the elasticity of demand are whether the good is a luxury or necessity, the availability of acceptable substitutes, and how large a part of the budget the good is. A luxury has a more elastic demand than a necessity. A good with many acceptable substitutes will have a more elastic demand than one with few substitutes. A good that is a large part of the budget also has a more elastic demand than a good that is a small part of the budget.
5. Elasticity can be determined from total revenue. If price and total revenue are inversely related, then demand is elastic. If price and total revenue are directly related, demand is inelastic. If price changes and there is no change in total revenue, demand is unitary elastic.
6. If demand for a good is inelastic, the firms producing the good may have an incentive to work together to raise price. This is because as price rises, so does total revenue when demand is inelastic.

## MATCHING

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|-------|--|----|--|
| _____ | 1. price elasticity of demand                | a. | the coefficient of price elasticity is zero  |
| _____ | 2. coefficient of price elasticity of demand | b. | the coefficient of price elasticity is infinite  |
| _____ | 3. elastic                                   | c. | when the percentage change in quantity demanded is more than the percentage change in price                      |
| _____ | 4. inelastic                                 | d. | when the percentage change in quantity demanded is less than the percentage change in price                      |
| _____ | 5. unitary elasticity                        | e. | measures the response of buyers to a change in price   |
| _____ | 6. perfectly inelastic                       | f. | the percentage change in quantity demanded divide by the percentage change in price                              |
| _____ | 7. perfectly elastic                         | g. | when the percentage change in quantity demanded equals the percentage change in price                            |
| _____ | 8. determinants of price elasticity          | h. | the factors that cause demand to be more elastic or less elastic   |
| _____ | 9. elasticity and total revenue              | i. | the idea that when price falls, total revenue rises or falls depending on whether demand is elastic or inelastic |

## True-False

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|-------|--|
| _____ | 1. If demand is elastic and the price falls, then total revenue rises. |
| _____ | 2. If demand is vertical, it is perfectly elastic.                     |
| _____ | 3. A demand curve can be inelastic and not be vertical                 |

- \_\_\_\_\_ 4. If the coefficient of price elasticity of demand is 4, then demand is elastic.
- \_\_\_\_\_ 5. The demand for a luxury is inelastic.

### PROBLEMS

1.
  - a. Suppose that the percentage change in price is 5 percent, and the percentage change in quantity is 10 percent. What is the elasticity of demand?
  - b. Suppose that the percentage change in price is 10 percent, and the percentage change in quantity is 5 percent. What is the elasticity of demand?
  - c. Suppose that the percentage change in price is 5 percent, and the percentage change in quantity is 5 percent. What is the elasticity of demand?
2.
  - a. Suppose that the elasticity of demand is 2. If the price changes 5 percent, how much is the change in the quantity demanded?
  - b. Suppose that the elasticity of demand is 1. If the price changes 5 percent, how much is the change in the quantity demanded?
  - c. Suppose that the elasticity of demand is  $1/2$ . If the price changes 5 percent, how much is change in the quantity demanded?

### IN THE NEWS

1. At the end of the model year, car dealers advertise sales, and business picks up. Car dealers, it is said, are eager to take advantage of the elasticity of demand.
  - a. Would you expect the demand for automobiles to be relatively elastic or inelastic? Explain. \_\_\_\_\_
  - b. Explain the increase in car sales in terms of elasticity. \_\_\_\_\_
  - c. Would you expect the total revenue of the car dealers to increase or decrease? Explain.
2. The aircraft carrier Intrepid saw action in World War II and Vietnam. It has been retired and is now a floating museum in New York harbor. But Intrepid may yet be sold for junk. The out-of-the-way location and high entrance fee have caused the museum to lose money. The owners have lowered the fee in the hope of attracting more visitors. But the losses mount, and the museum may have to close. Why not raise the fee rather than lower it? When will lowering the fee increase total revenue? Decrease total revenue?
3. Coca-Cola brought out a new flavor of Coke, and then, to quiet public reaction, continued the production of Classic Coke. At about the same time, Coke brought out a new line of Coke, Cherry Coke.
  - a. How would a new flavor of Coke affect the elasticity of demand for Classic Coke?

- Explain. \_\_\_\_\_
- b. Is Cherry Coke as close a substitute for Classic Coke as the new Coke? What affect will the introduction of Cherry Coke have on the elasticity of demand for Classic Coke? \_\_\_\_\_
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4. It frequently is said that health care is a necessity. When you are sick, you will go to the doctor or hospital regardless of the price. It is not the price that determines' how much health care you buy, but the state of your health.
- a. Does this observation about medical care mean that no matter what price is charged, the quantity of health care demanded will be the same? Is this observation true? \_\_\_\_\_
- b. What is the effect of health insurance on the quantity of health care demanded? \_\_\_\_\_
- c. What conclusion can you make concerning the elasticity of demand for health care? \_\_\_\_\_
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### PRACTICE TEST

Circle the correct answer

1. If the quantity demanded changes by 2 percent as price changes 5 percent, then demand is:
- a. elastic.
  - b. inelastic.
  - c. of unitary elasticity.
  - d. cannot tell.
2. If demand is elastic, then the percentage change in quantity is \_\_\_\_\_ the percentage change in price.
- a. greater than
  - b. less than
  - c. equal to
  - d. cannot tell
3. When demand is horizontal, demand is:
- a. perfectly elastic.
  - b. elastic.
  - c. inelastic.
  - d. perfectly inelastic.
4. Demand is more likely to be elastic when the good:
- a. is a necessity.
  - b. has few acceptable substitutes.
  - c. is a large percentage of the budget.
  - d. has a high demand.

5. Suppose that the total revenue rises as price rises. Then demand is:
- elastic.
  - inelastic.
  - unitary elastic.
  - cannot tell.

## ANSWERS

### Answers – Elasticity

#### Matching

- e
- f
- c
- d
- g
- a
- b
- h
- i

#### True-False

- T
- F
- T
- T
- F

### Problems

- The coefficient is 2; demand is elastic.
  - The coefficient is .5; demand is inelastic.
  - The coefficient is 1; demand is unitary elastic.
- 10 percent, by  $2 \times 5$ .
  - 5 percent, by  $1 \times 5$ .
  - 2 1/2 percent, by  $1/2 \times 5$ .

### In the News

- Demand for automobiles is relatively elastic since they are a large percentage of the budget.
  - With elastic demand, a smaller percentage decrease in price brings a larger percentage increase in the quantity demanded. A small percentage reduction in the price of automobiles means large dollar savings, a situation to which buyers respond.
  - For a good with elastic demand, a price reduction increases total revenue. The increase in the total volume of sales more than makes up for the slightly lower selling price per automobile.

2. If the demand for the museum is elastic, then to lower price would raise revenue. If the demand is inelastic, then to lower price will lower revenue. Thus whether the decrease in price is correct depends on whether the demand is elastic or inelastic.
3.
  - a. By providing another substitute for Classic Coke, the new flavor will probably make the demand for Classic Coke more elastic.
  - b. Cherry Coke is not as close a substitute for Classic Coke as new Coke. The introduction of Cherry Coke will increase the elasticity of demand for Classic Coke, but the effect will be smaller than the closer substitute, new Coke.
4.
  - a. The cost of health care does cause some people to get less health care than they might want. Many people go without because they cannot afford health care. Thus the price of health care affects the amount of health care that is demanded. The higher the cost, the smaller the amount of health care that is demanded.
  - b. Health insurance means that some people do not have to pay a very large amount of the health care cost, and health care becomes less expensive for them and a smaller part of their budget. More health care will be demanded.
  - c. When people say that a good is a necessity, and that they would pay any price to get the good, it is unlikely that they are proving the law of demand false. They are reflecting the fact that the demand for the good is inelastic.

#### Practice Test

1.b., 2.a., 3.a., 4.c., 5.b.