



# Chapter 4: Demand Section 3

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# **ECONOMICS**

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# Objectives

1. **Explain** how to calculate elasticity of demand.
2. **Identify** factors that effect elasticity.
3. **Explain** how firms use elasticity and revenue to make decisions.



# Key Terms

- **elasticity of demand:** a measure of how consumers respond to price changes
- **inelastic:** describes demand that is not very sensitive to price changes
- **elastic:** describes demand that is very sensitive to a change in price
- **unitary elastic:** describes demand whose elasticity is exactly equal to 1
- **total revenue:** the total amount of money a company receives by selling goods or services



- What factors affect elasticity of demand?
  - Economists have developed a way to calculate how strongly consumers will react to a change in price.
  - Original price and how much you want a particular good are both factors that will determine your demand for a particular product.



# Consumer Response

- Elasticity of demand is the way that consumers respond to price changes; it measures how drastically buyers will cut back or increase their demand for a good when the price rises or falls.
  - Your demand for a good that you will keep buying despite a price change is inelastic.
  - If you buy much less of a good after a small price increase, your demand for that good is elastic.



# Elastic Demand

- Elastic Demand comes from one or more of these factors:
  - The availability of substitute goods
  - A limited budget that does not allow for price changes
  - The perception of a good as a luxury item.



# Calculating Elasticity of Demand

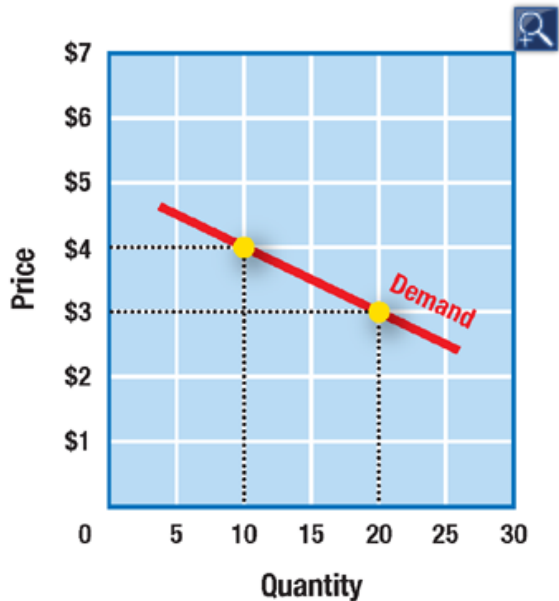
- In order to calculate elasticity of demand, take the percentage change in the quantity of the good demanded and divide this number by the percentage change in the price of the good. The result is the elasticity of demand for the good.
  - The law of demand implies that the result will always be negative. This is because increases in the price of a good will always decrease the quantity demanded, and a decrease in the price of a good will always increase the quantity demanded.



To determine elasticity of demand, use the following formulas:

$$\text{Percentage change} = \frac{\text{Original number} - \text{New number}}{\text{Original number}} \times 100$$

$$\text{Elasticity} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$



### Example 1: Elastic Demand

The price decreases from \$4 to \$3, a decrease of 25 percent.

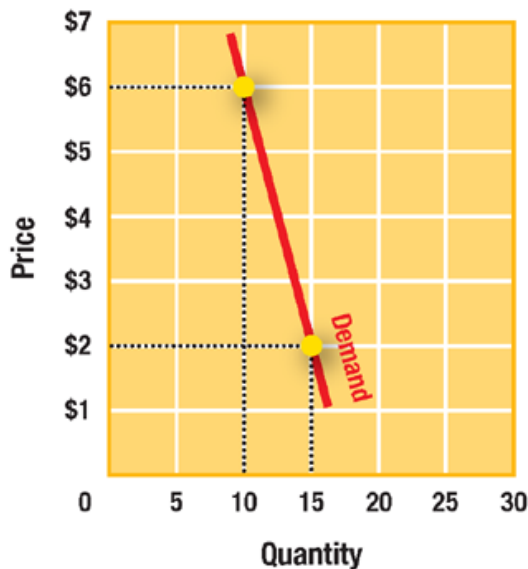
$$\frac{\$4 - \$3}{\$4} \times 100 = 25$$

The quantity demanded increases from 10 to 20. This is an increase of 100 percent.

$$\frac{10 - 20}{10} \times 100 = 100$$

Elasticity of demand is equal to 4.0. Elasticity is greater than 1 so demand is elastic. In this example, a small decrease in price caused a large increase in the quantity demanded.

$$\frac{100\%}{25\%} = 4.0$$



### Example 2: Inelastic Demand

The price decreases from \$6 to \$2, a decrease of about 67 percent.

$$\frac{\$6 - \$2}{\$6} \times 100 = 67$$

The quantity demanded increases from 10 to 15, an increase of 50 percent.

$$\frac{10 - 15}{10} \times 100 = 50$$

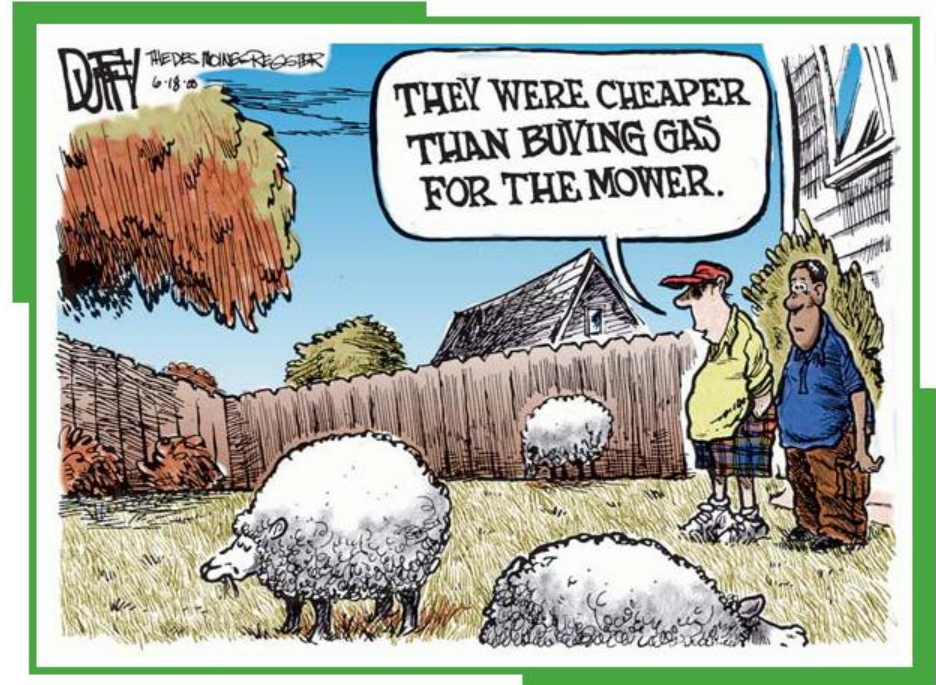
Elasticity of demand is about 0.75. The elasticity is less than 1, so demand for this good is inelastic. The increase in quantity demanded is small compared to the decrease in price.

$$\frac{50\%}{67\%} = 0.75$$



# Measuring Elasticity

- If the elasticity of demand for a good at a certain price is less than 1, the demand is inelastic. If the elasticity is greater than 1, demand is elastic. If elasticity is exactly equal to 1, demand is unitary elastic.



According to the cartoon, grazing sheep are this homeowner's solution to the high price of gasoline.



# Factors Affecting Elasticity

- Availability of Substitutes
  - If there are a few substitutes for a good, then even when its price rises greatly, you might still buy it.
  - If the lack of substitutes can make demand inelastic, a wide choice of substitute goods can make demand elastic.



# Other Factors

- Relative Importance
  - A second factor in determining a good's elasticity of demand is how much of your budget you spend on a good.
- Necessities v. Luxuries
  - Whether a person considers a good to be a necessity or a luxury has a great impact on a person's elasticity of demand for that good.



# Other Factors, cont.

- Change Over Time
  - Consumers do not always react quickly to a price increase, because it takes time to find substitutes. Because they cannot respond quickly to price changes, their demand is inelastic in the short term.
    - Demand sometimes becomes more elastic over time as people eventually find substitutes.



# Total Revenue

- Elasticity is important to the study of economics because elasticity helps us measure how consumers respond to price changes for different products.

- The elasticity of demand determines how a change in price will affect a firm's total revenue or income.

Price of a Slice of Pizza	Quantity Demanded (per day)	Total Revenue
\$1.00	300	\$300
\$2.00	250	\$500
\$3.00	200	\$600
\$4.00	150	\$600
\$5.00	100	\$500
\$6.00	50	\$300



# Total Revenue and Elastic Demand

- The law of demand states that an increase in price will decrease the quantity demanded.
- When a good has elastic demand, raising the price of each unit sold by 20% will decrease the quantity sold by a larger percentage. The quantity sold will drop enough to reduce the firm's total revenue.
- The same process can also work in reverse. If the price is reduced by a certain percentage, the quantities demanded could rise by an even greater percentage. In this case, total revenues would increase.



# Total Revenue and Inelastic Demand

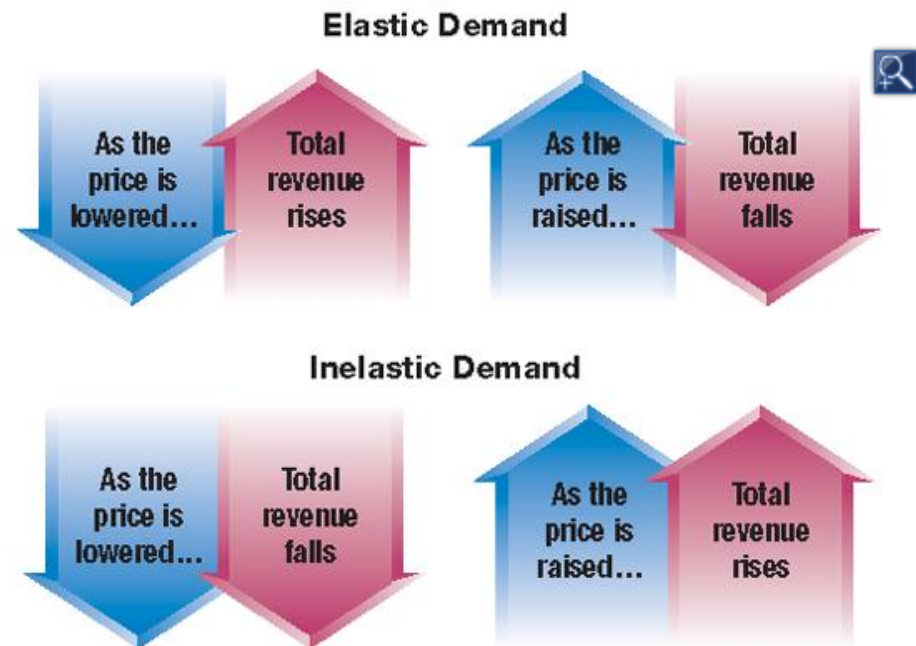
- If demand is inelastic, consumers' demand is not very responsive to price changes. If prices increase, the quantity demanded will decrease, but by less than the percentage of the price increase. This will result in higher total revenues.



# Elasticity and Revenue

- Elasticity of demand determines the effect of a price change on total revenues.

- Why will revenue fall if a firm raises the price of a good whose demand is elastic?
- What happens to total revenue when price decreases, but demand is inelastic?





# Elasticity and Price Policies

- Checkpoint: Why does a firm need to know whether demand for its product is elastic or inelastic?
  - Knowledge of how the elasticity of demand can affect a firm's total revenues helps the firm make pricing decisions that lead to the greatest revenue.
    - If a firm knows that the demand for its product is elastic at the current price, it knows that an increase in price would reduce total revenue.
    - If a firm knows that the demand for its product is inelastic at its current price, it knows that an increase in price will increase total revenue.



# Review

- Now that you have learned what factors affect elasticity of demand, go back and answer the Chapter Essential Question.
  - How do we decide what to buy?

