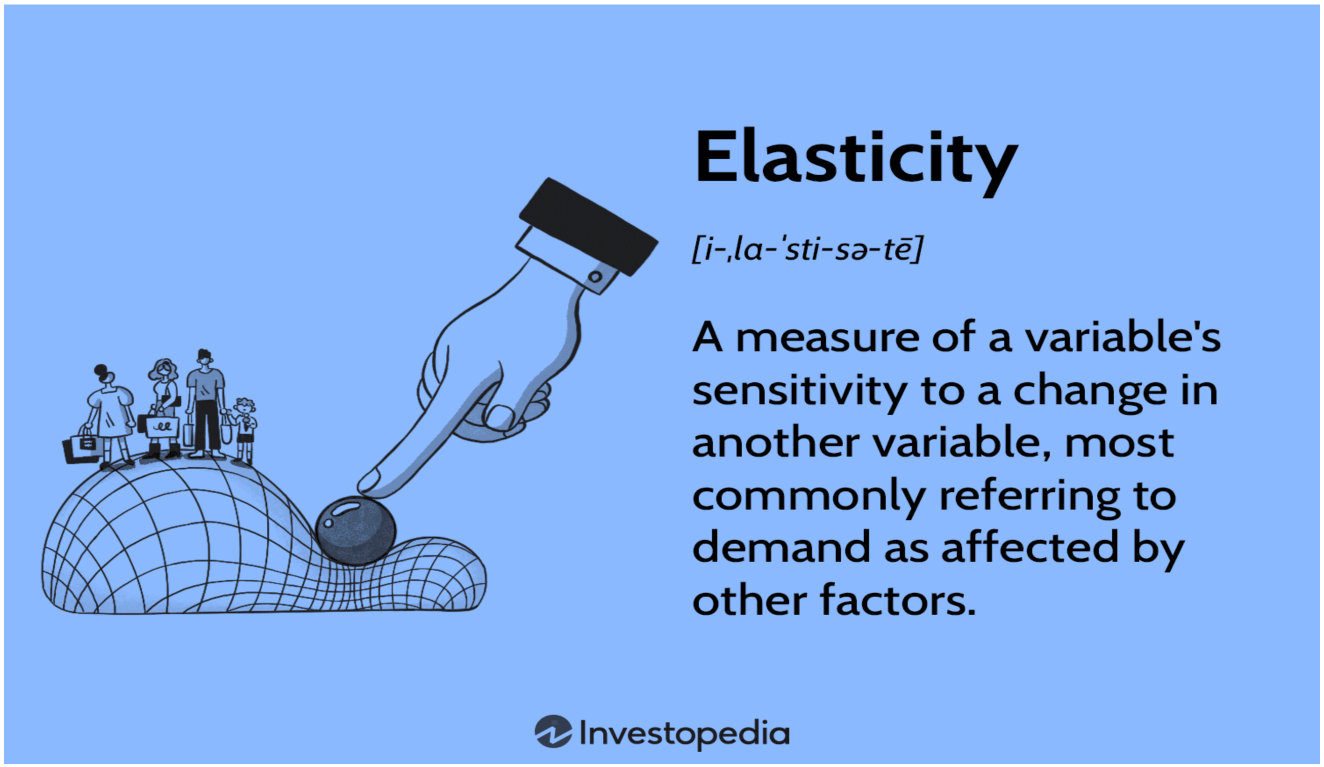
Elasticity



Dr. Omnia Elmahdy

- **Elasticity allows us to analyze supply and demand with greater precision.**
- **It is a measure of how much buyers and sellers respond to changes in market conditions**

- Elasticity is defined as the **responsiveness** of a **dependent** variable to **changes** in another **variable**,

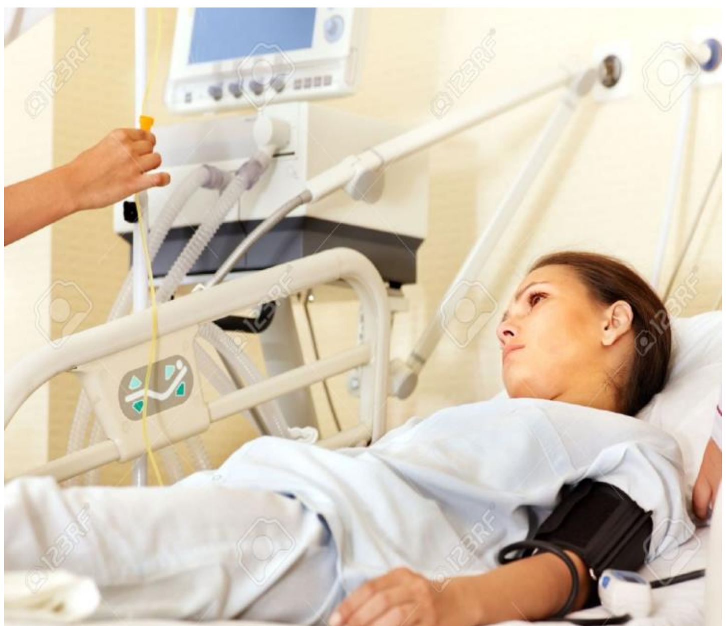
Elasticity measures are free of units of measurement

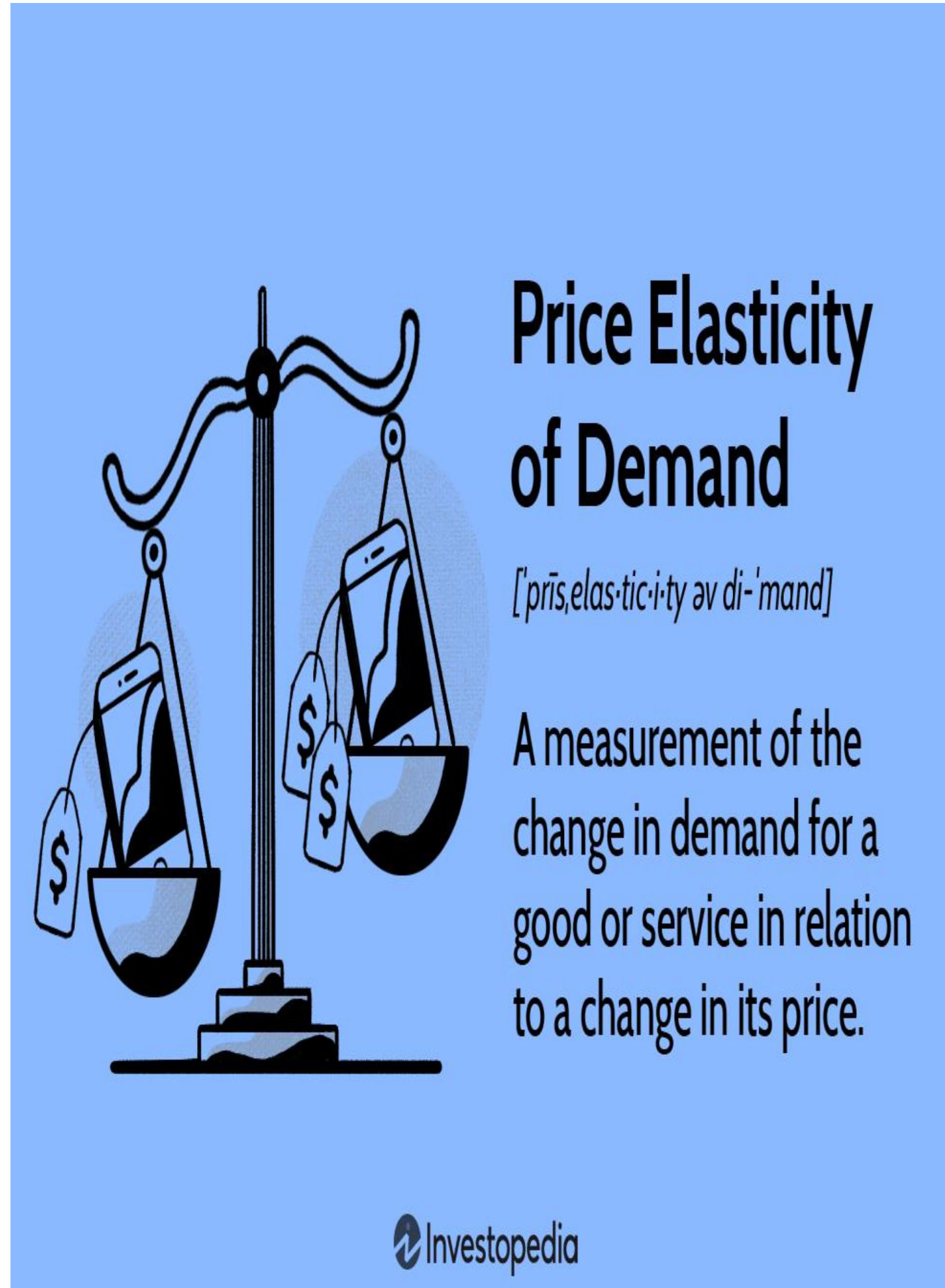
ELASTICITY OF DEMAND

- **Price elasticity of demand** is a measure of how much the **quantity demanded** of a good responds to a change in the price of that good.

- Price elasticity of demand is the **percentage change in quantity demanded** **given** **a percent change in the price**.

Most experts believe that health care demand is **<u>fairly inelastic</u>**. **If you are sick, you will not be very price sensitive**.

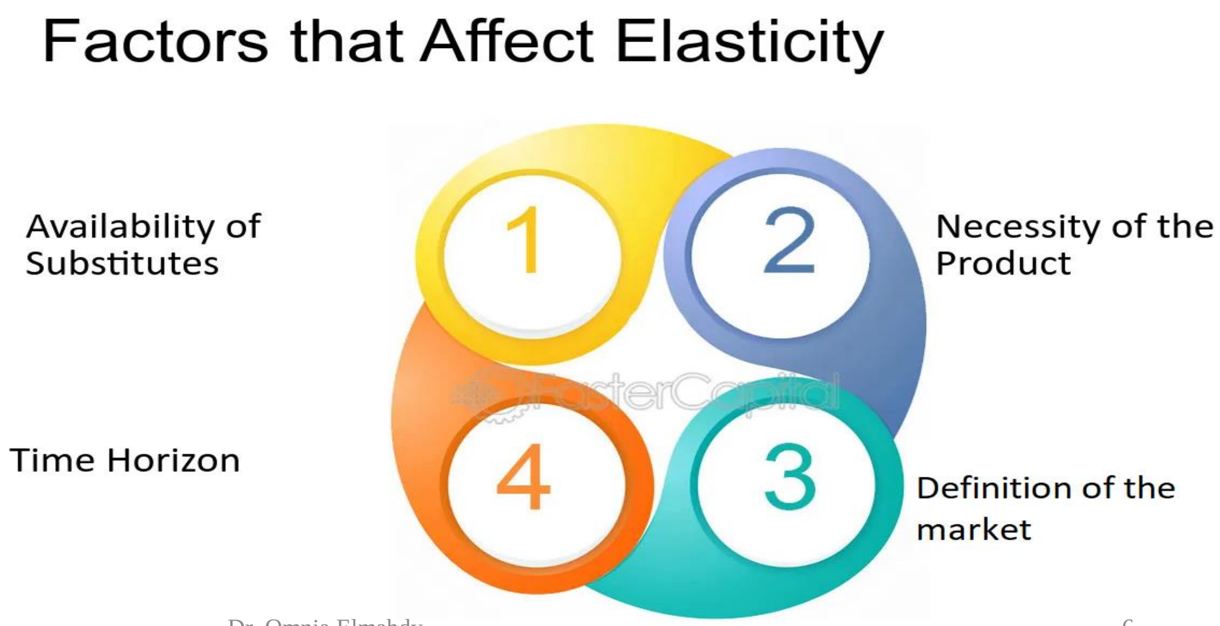




There are **exceptions** to this rule (e.g., **elective** surgery such as ***plastic surgeries***) but **most studies find that patients are fairly insensitive to changes in health care prices.**

Price Elasticity of Demand and Its Determinants

- Availability of Close Substitutes
- Necessities versus Luxuries
- Definition of the Market
- Time Horizon

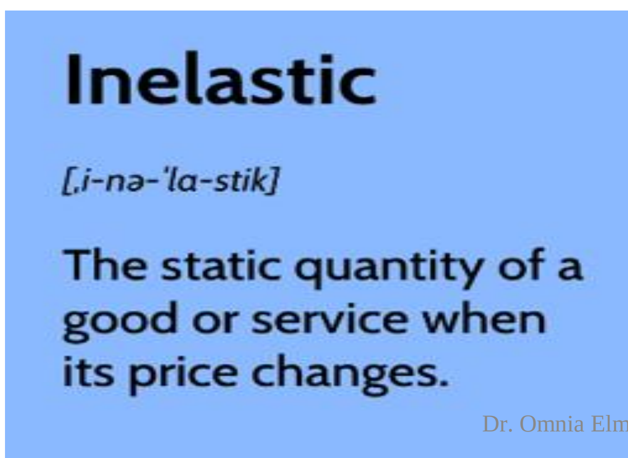


1. Availability of Close Substitutes:

The **more substitutes** a good has, the **more elastic** its demand.

2. Necessities versus Luxuries:

Necessities are more price inelastic.



- Insulin vs. Star Cruises
- The prices of both of these goods rise by 20%. For which good does Q_d drop the most? Why?

- To millions of diabetics, insulin is a necessity. A rise in its price would cause little or no decrease in demand.
- A cruise is a luxury. If the price rises, some people will forego it.
- Lesson: Price elasticity is higher for luxuries than for necessities.

How can the knowledge on elasticity of demand affects government's tax policy?

Tax charges **raise the price** of the goods affected, **governments tend to charge taxes** on goods that have a relatively **inelastic demand**, i.e. petrol and tobacco.

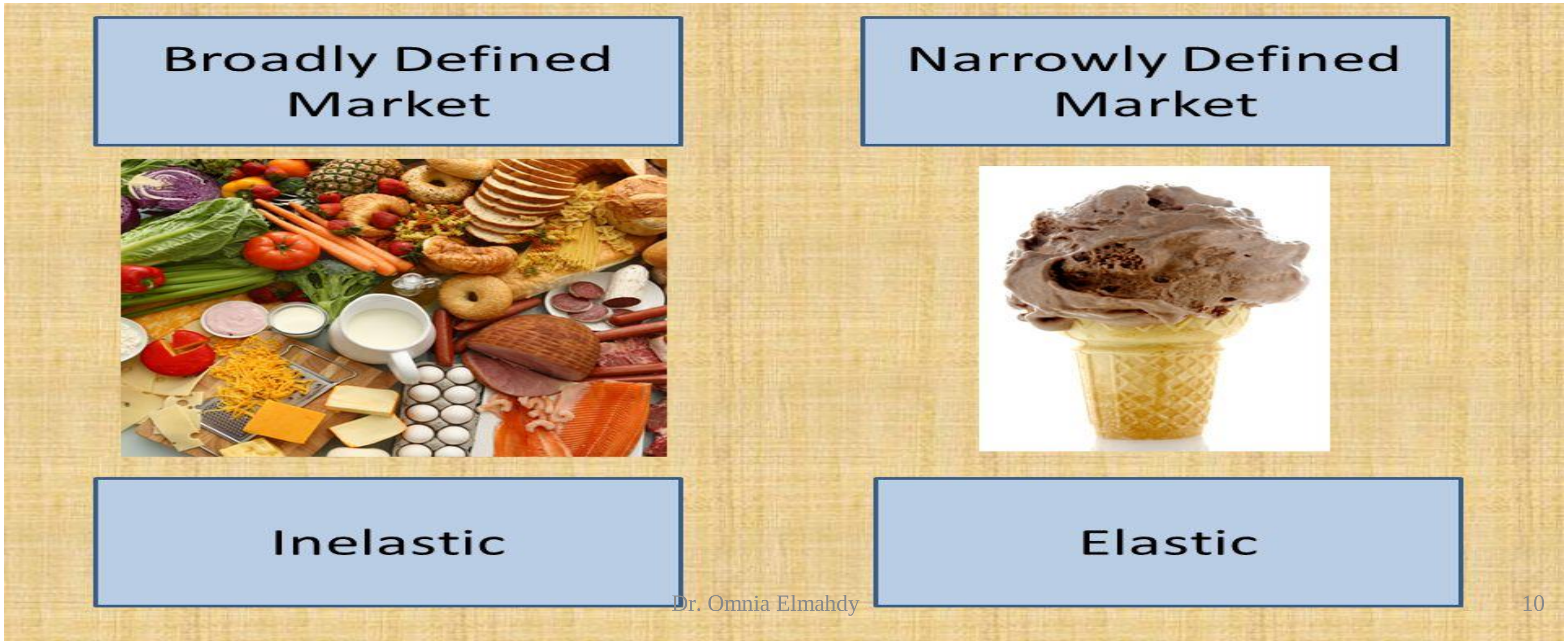
If the government were to impose it on good or services which its demand is relatively elastic, a small increase in price caused by the tax would lead to a large drop in sales, thus may not raise revenue to government.

3. Definition of the market:

Narrowly defined markets have **more elastic demand** than broadly defined markets.

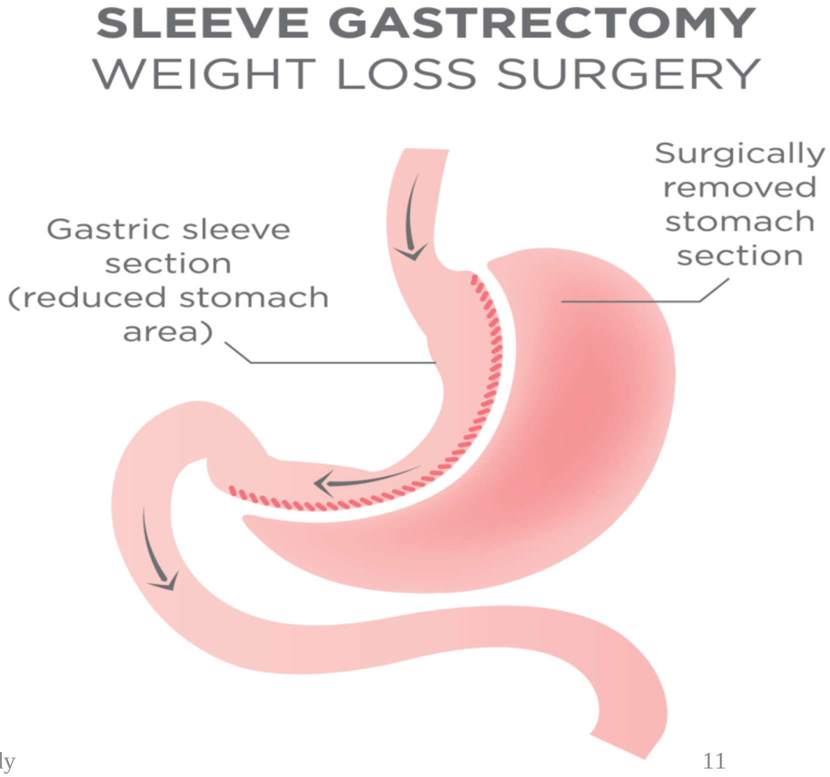
This is because, generally, it is easier to find substitutes for narrowly defined goods.

Food as a broad category, ice cream as a narrow category.



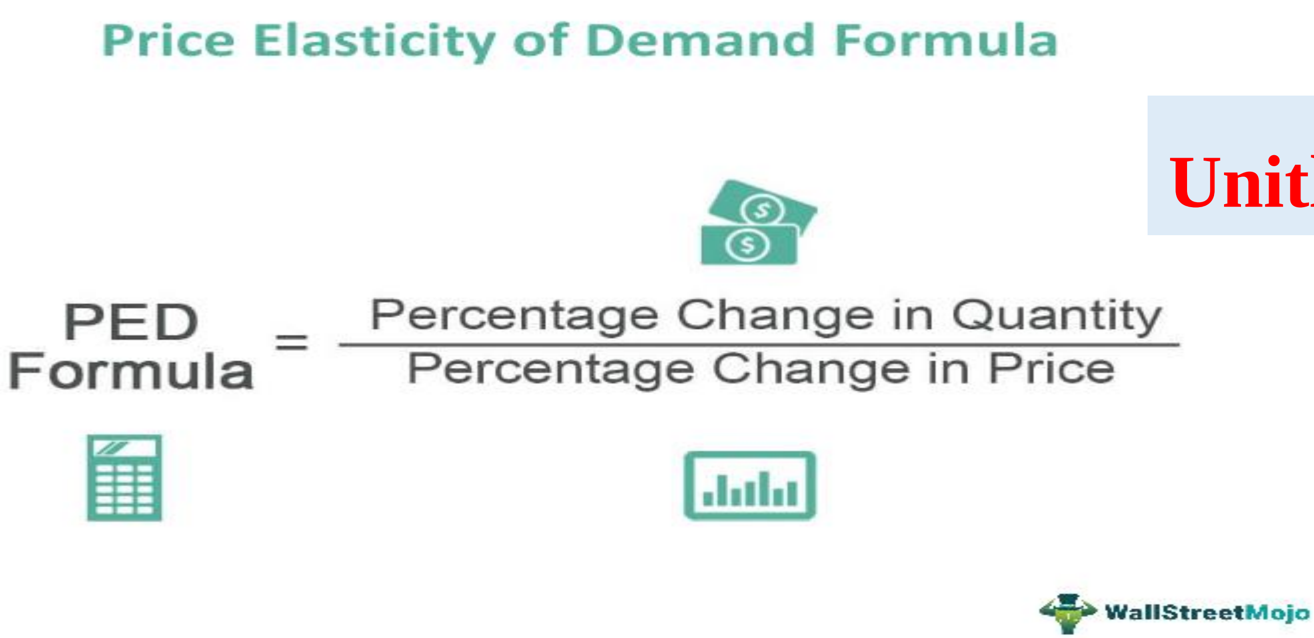
4. Time Horizon:

Goods/ products / services tend to have **more elastic demand over longer time horizons** (new technologies, innovations, better quality).



Computing the Price Elasticity of Demand

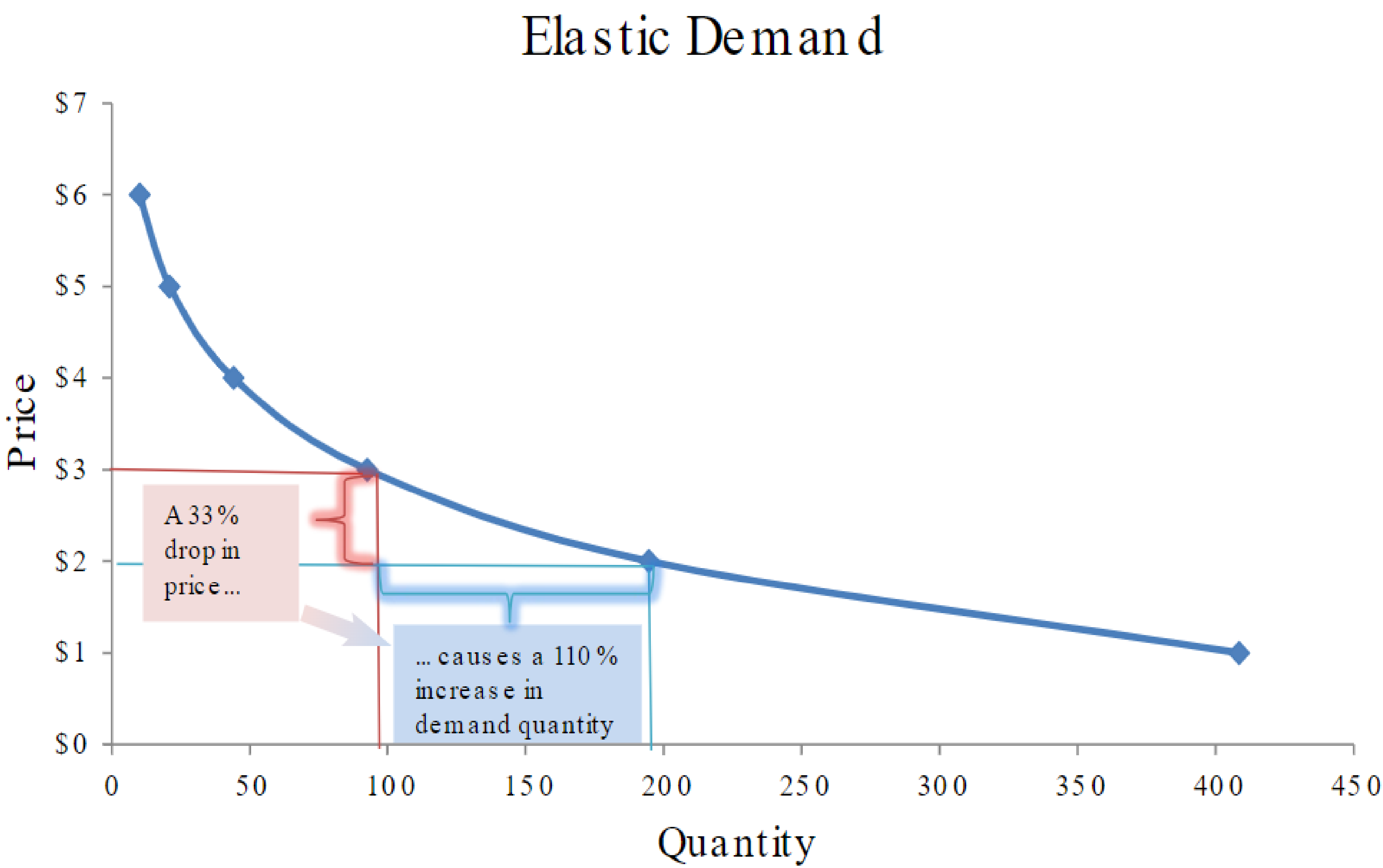
The price elasticity of demand is computed as the **percentage change in the quantity demanded** **divided by** the **percentage change in price**.



Unitless

Example: If the **price** of an ice cream cone **increases** from $2.00 to $2.20 and the amount you **buy falls** from 10 to 8 cones, then your **elasticity of demand** would be calculated as:

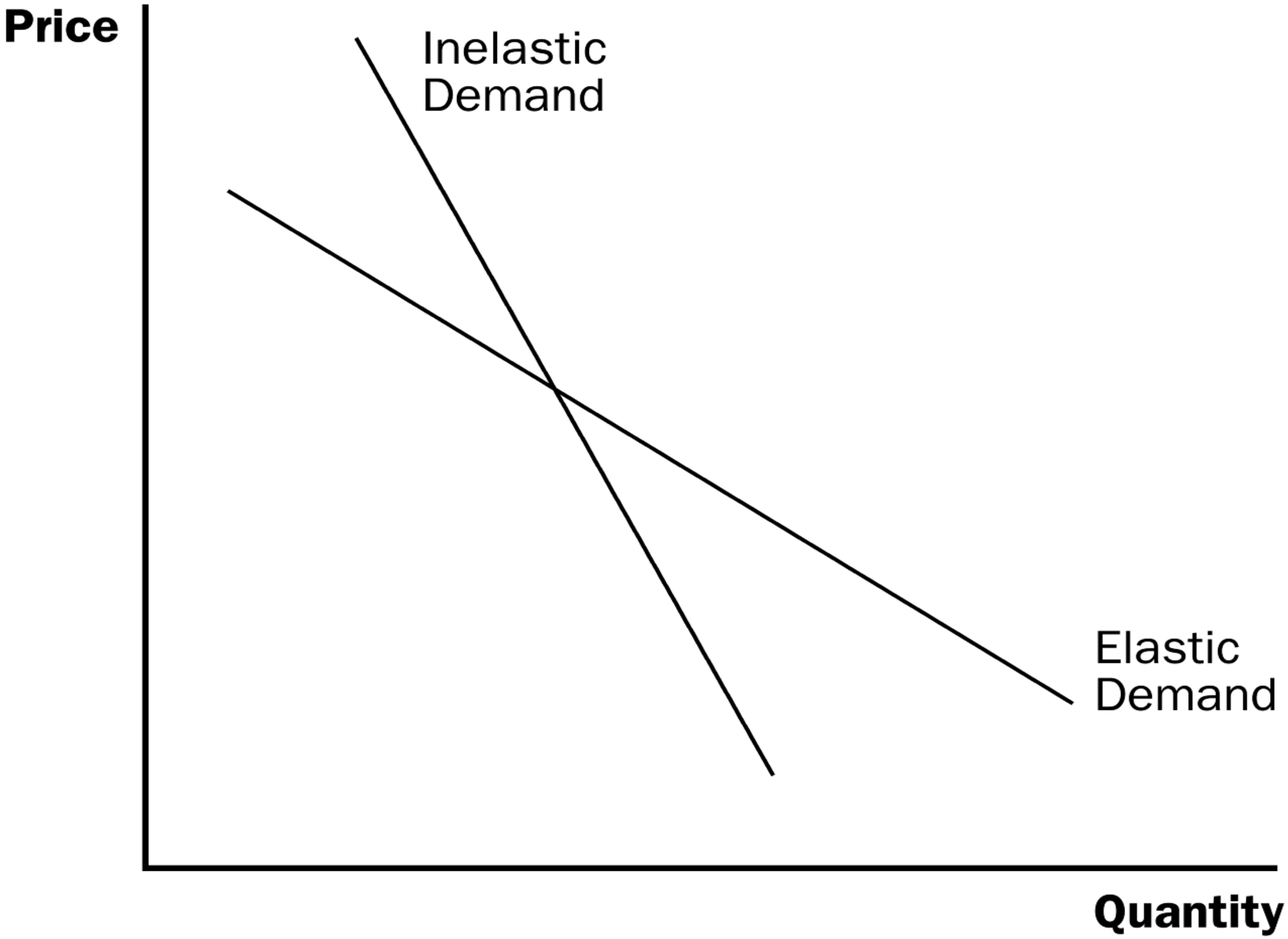
$$\frac{\dfrac{(10-8)}{10}\times 100}{\dfrac{(2.20-2.00)}{2.00}\times 100}=\frac{20\%}{10\%}=2$$


Elastic Demand
Price
$7
$6
$5
$4
$3
$2
$1
$0
A 33% drop in price...
... causes a 110% increase in demand quantity
0
50
100
150
200
250
300
350
400
450
Quantity

Most academics believe that the price elasticity for medical services is between **0 and -1**. This means that if prices increase by 10%, the demand for medical services decreases, but by less than 10%. **This means that medical goods are inelastic.**

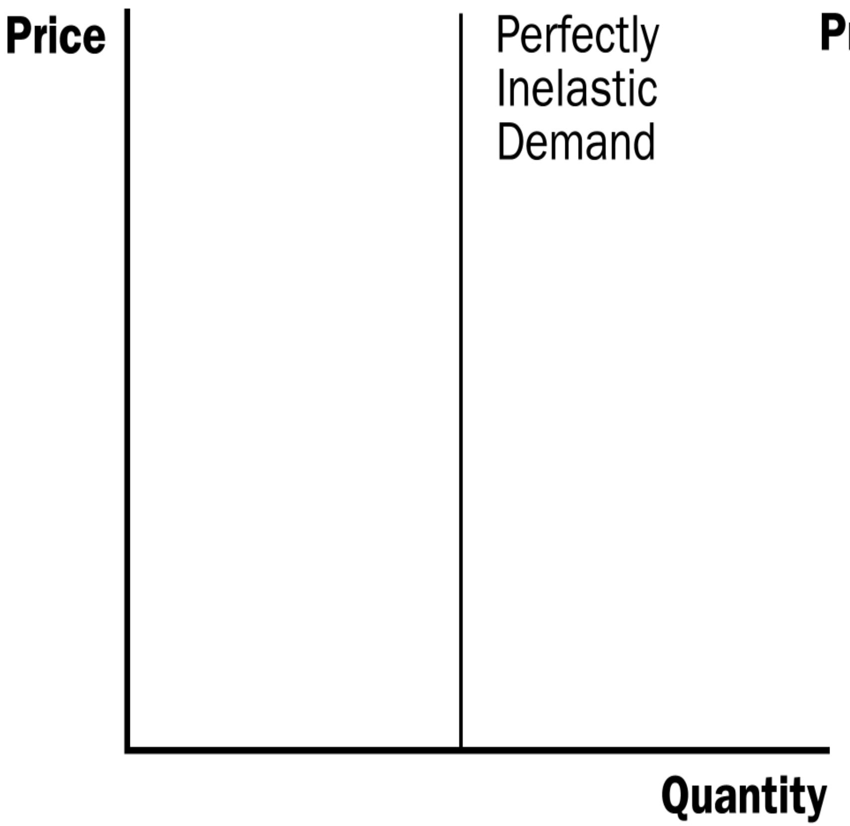
The Variety of Demand Curves

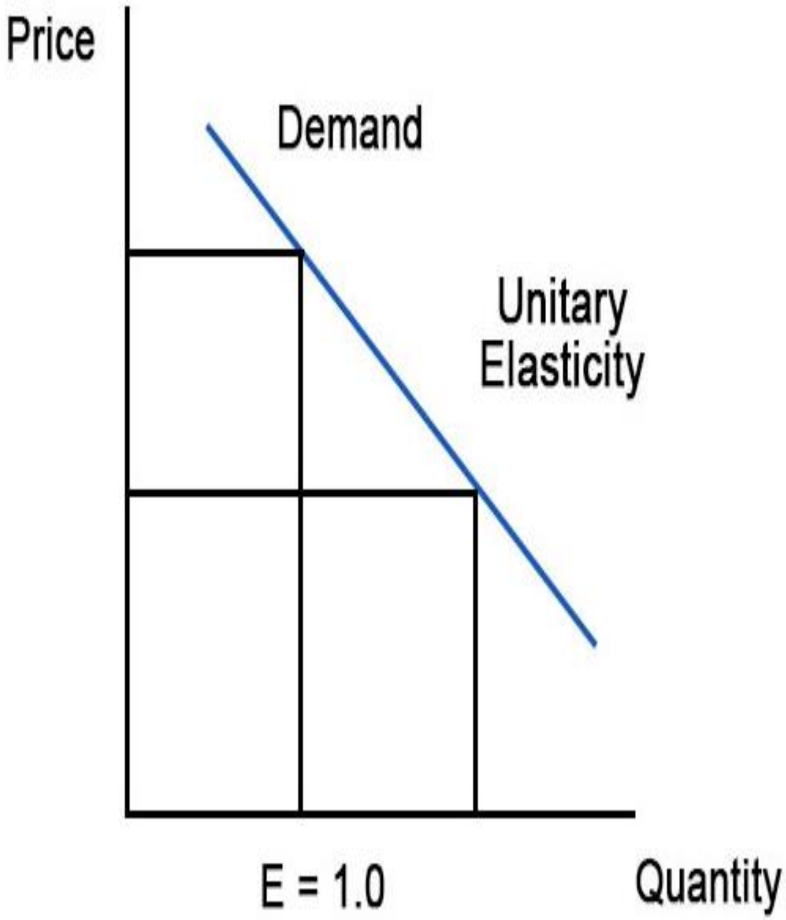
- **Inelastic Demand**
  - Quantity demanded **does not respond strongly** to price changes.
  - ***Price elasticity of demand is less than one.***
- **Elastic Demand**
  - Quantity demanded **responds strongly** to changes in price.
  - ***Price elasticity of demand is greater than one.***


Price
Inelastic
Demand
Elastic
Demand
Quantity

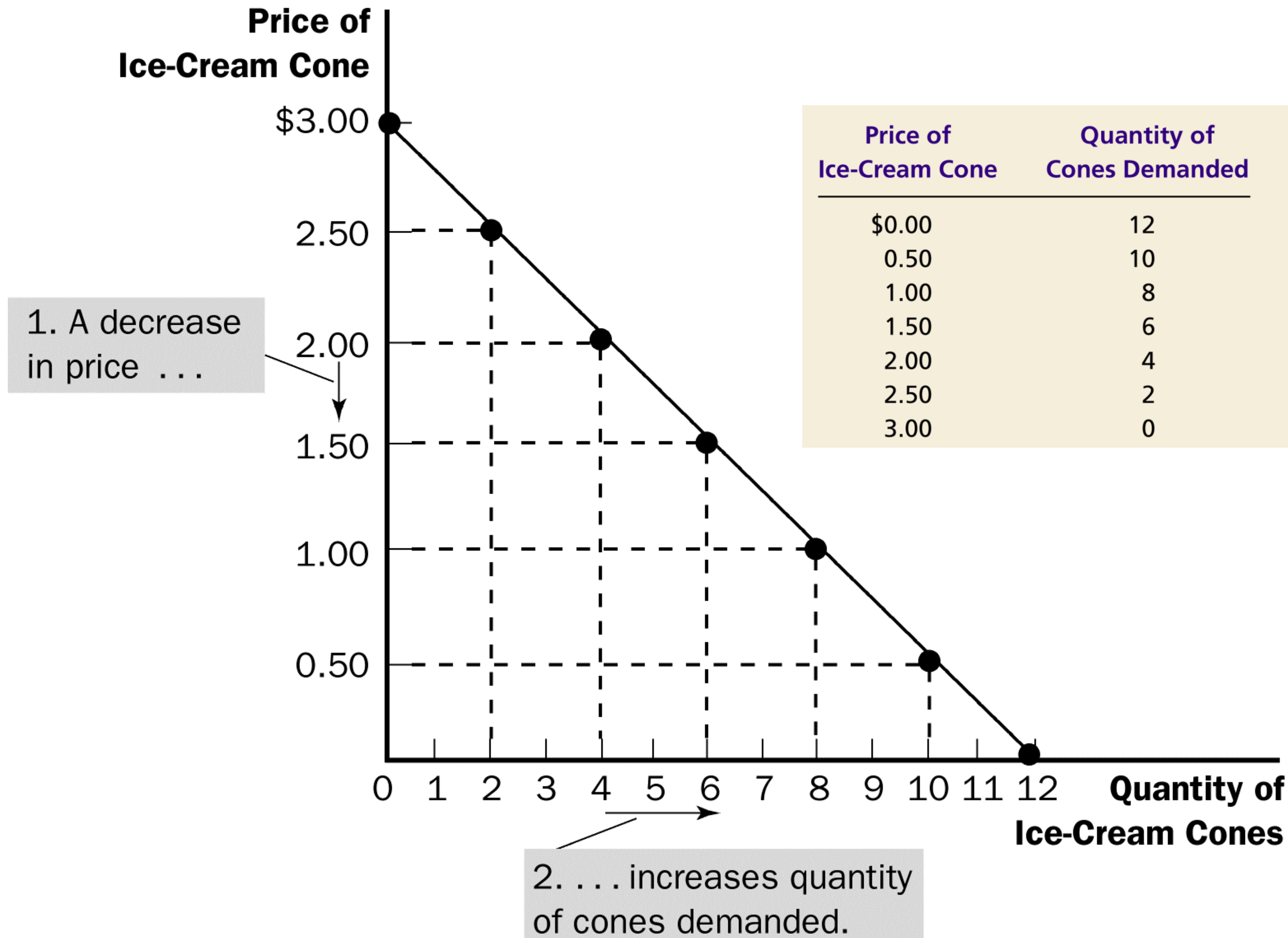
Slope of demand curve:

- When the elasticity is equal to **zero**, the demand is **perfectly inelastic** and is a vertical line
- When the elasticity is **infinite**, the demand is **perfectly elastic** and is a horizontal line





- **Perfectly Inelastic:** Quantity demanded **does not respond** to price changes. (E = 0)
- **Perfectly Elastic:** Quantity demanded **changes infinitely** with any change in price. (E = ∞)
- **Unit Elastic:** Quantity demanded **changes by the same percentage** as the price. (E = 1)



Price of Ice-Cream Cone	Quantity of Cones Demanded
$0.00	12
0.50	10
1.00	8
1.50	6
2.00	4
2.50	2
3.00	0

Applications

- The **price** of ice cream **rises by 10%** and **quantity demanded falls by 20%.** (Inverse relationship)
- **Price elasticity of demand = (20%)/(10%) = 2**
- The price elasticity of demand is sometimes reported as a negative number.
- Ignore the minus sign and **concentrate on the absolute value of the elasticity**

Larger elasticities (in absolute value) imply greater sensitivity and responsiveness

1. How much would a 10% price increase for the good affect a consumer's total budget?

2. What substitutes are available for the good?

3. Do consumers think of this good as a necessity or a luxury?

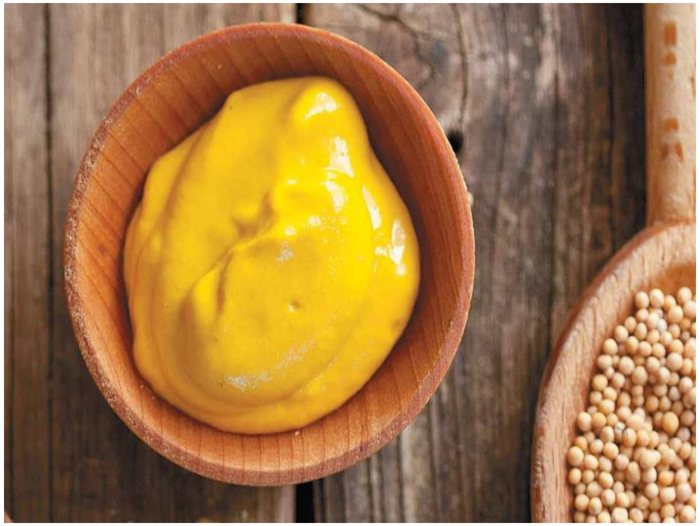
1. **Vacation in Dubai** (luxury, many other vacation destinations, expensive)
2. **Honda Accord** (luxury, expensive, many substitutes including used cars)
3. **Steak** (perceived luxury, moderate expense, other cuts of beef are close substitutes)



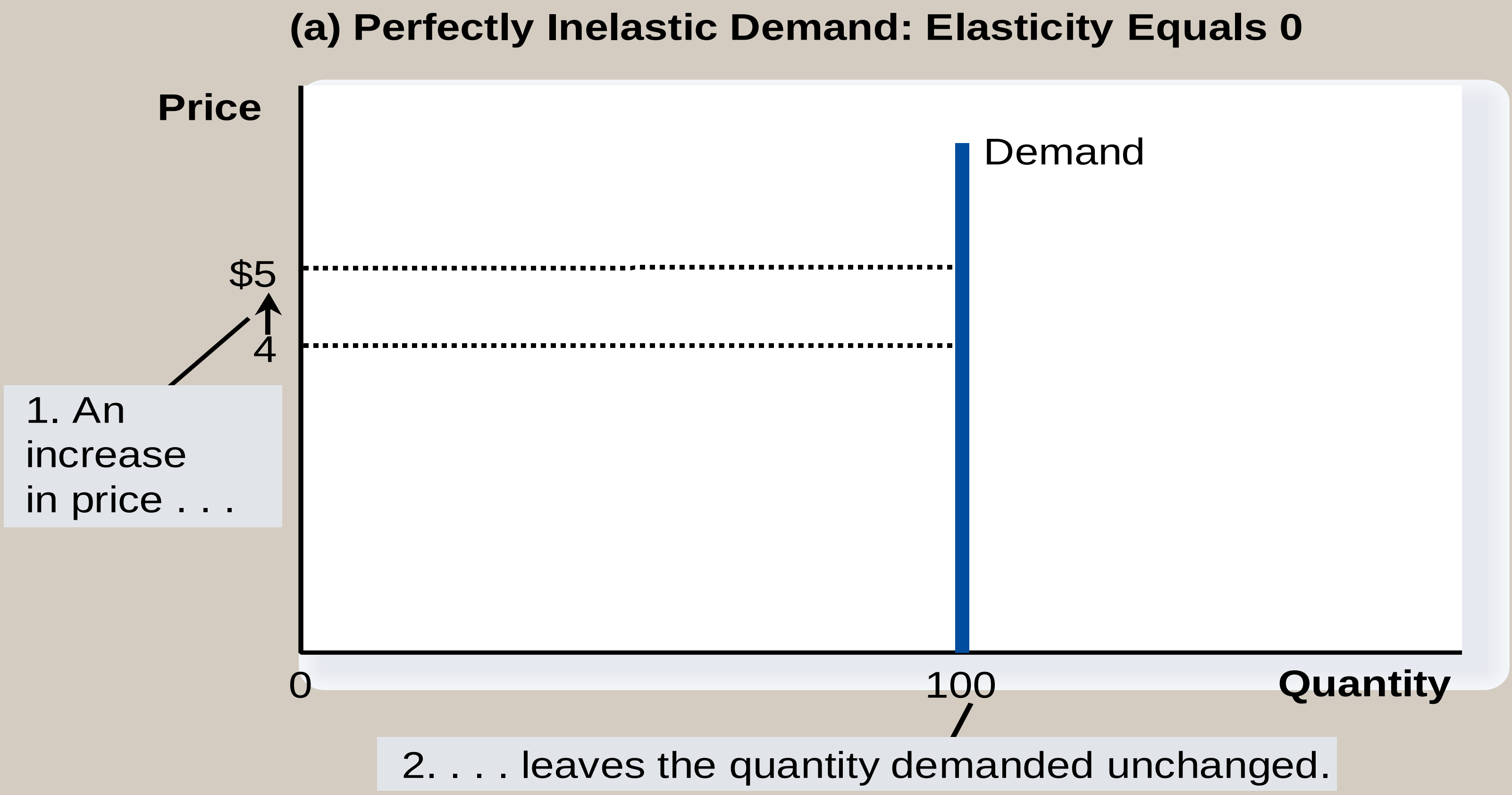
4. **Mustard** (perceived luxury, inexpensive, other types of mustard may be close substitutes.)

5. **Beef** (moderate expense, chicken is a substitutes)

6. **Salt** (inexpensive, necessity, no close substitutes)



The Price Elasticity of Demand



The Price Elasticity of Demand

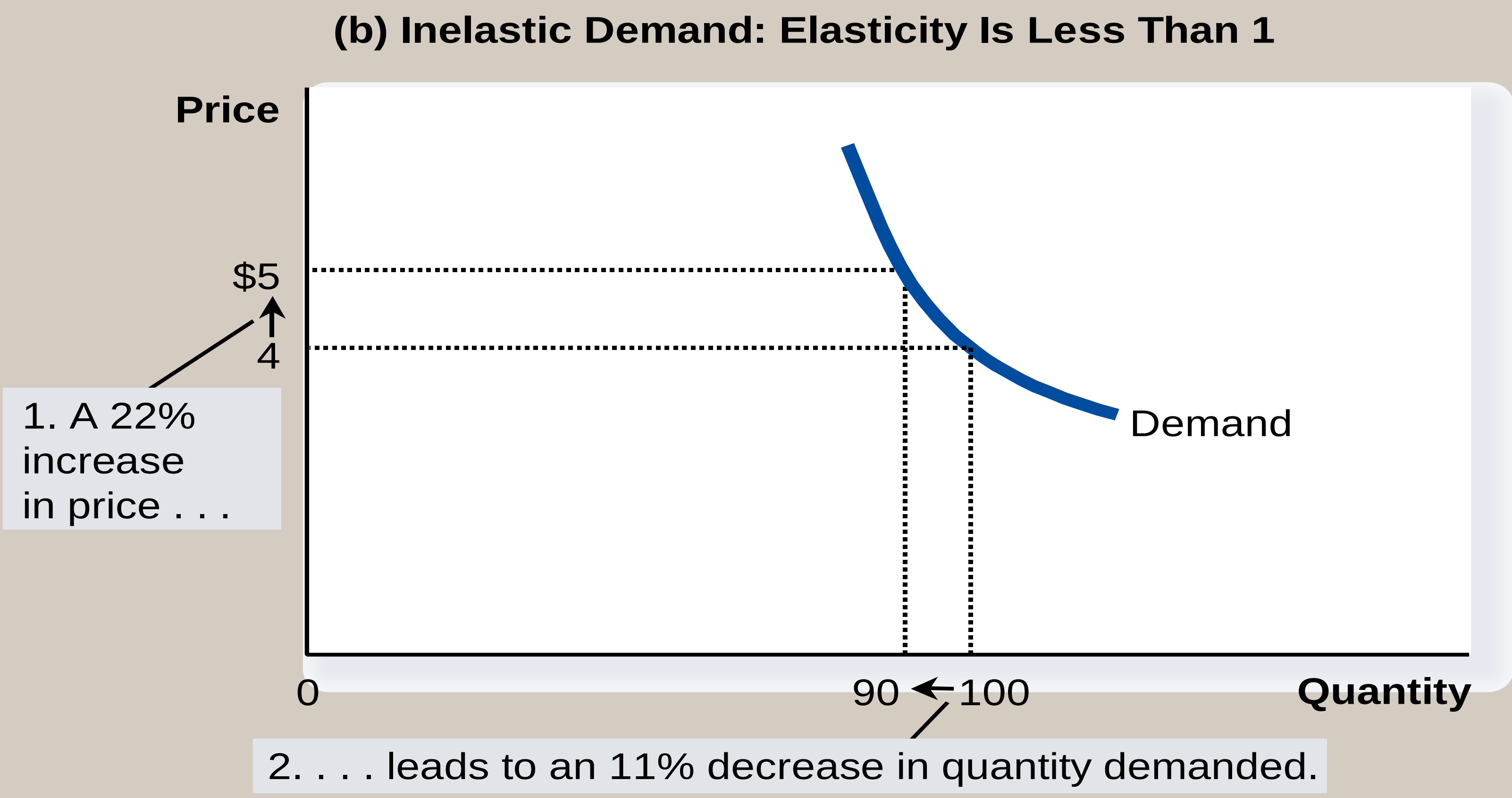
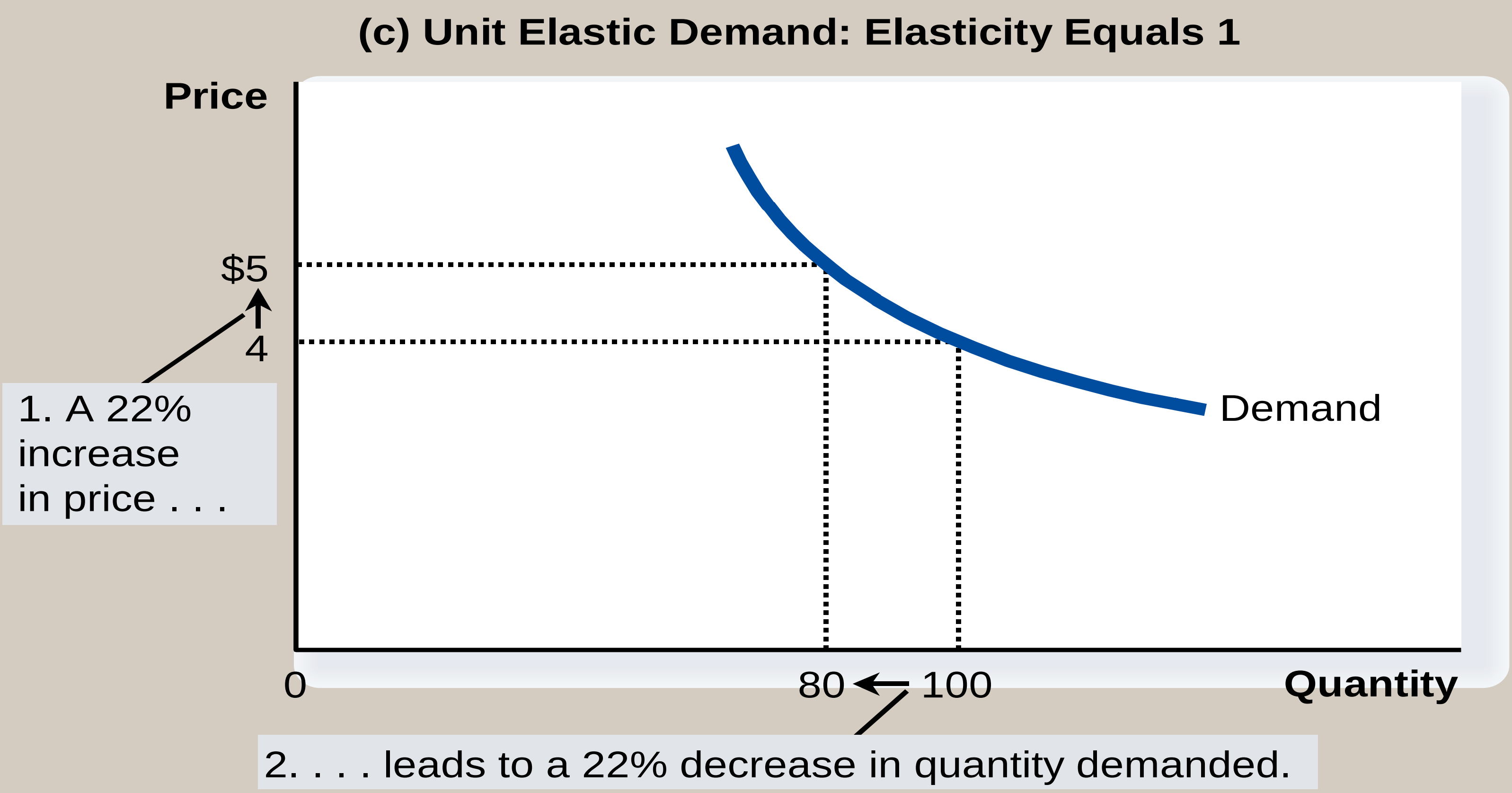
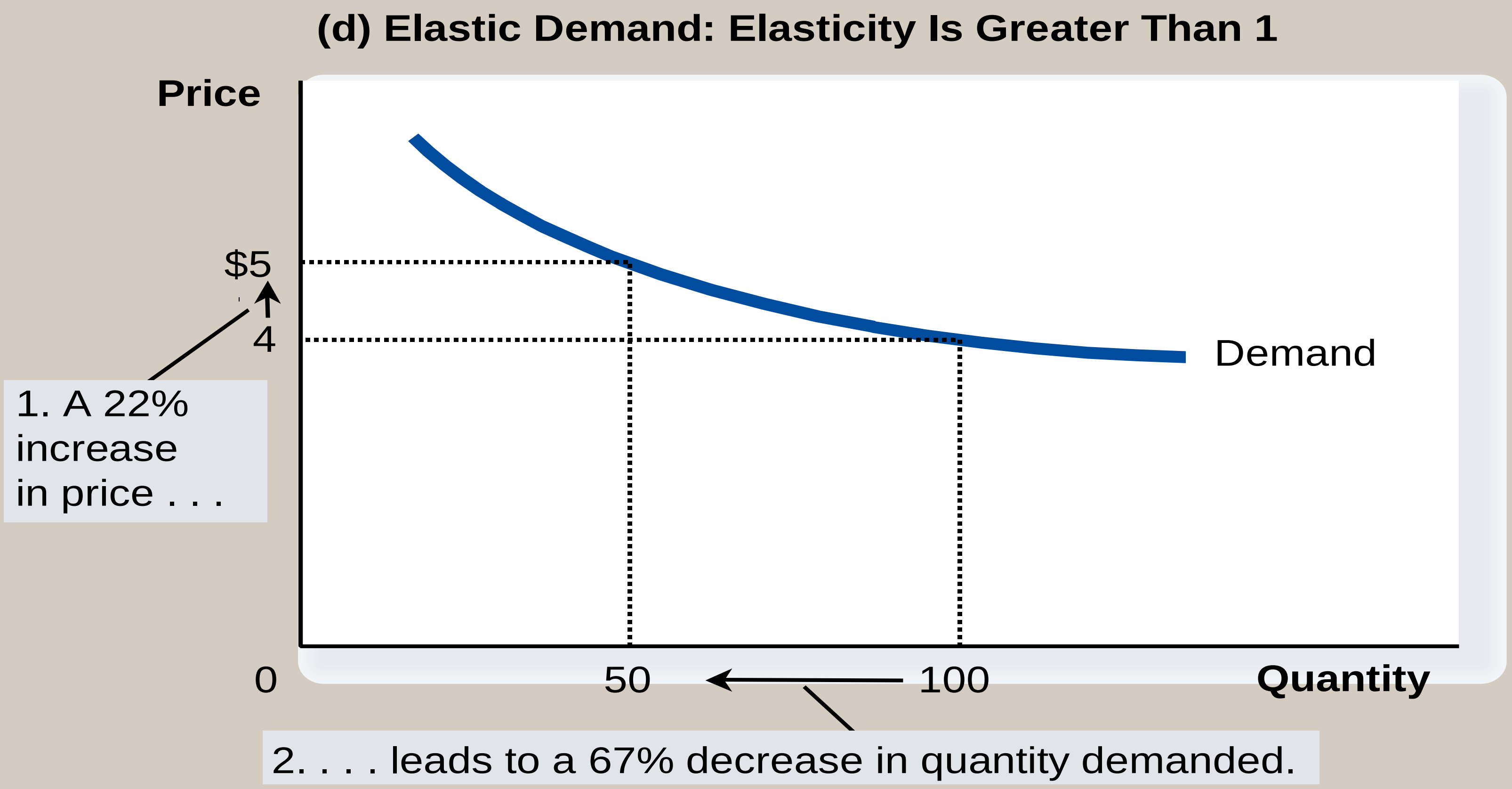


Figure 1 The Price Elasticity of Demand

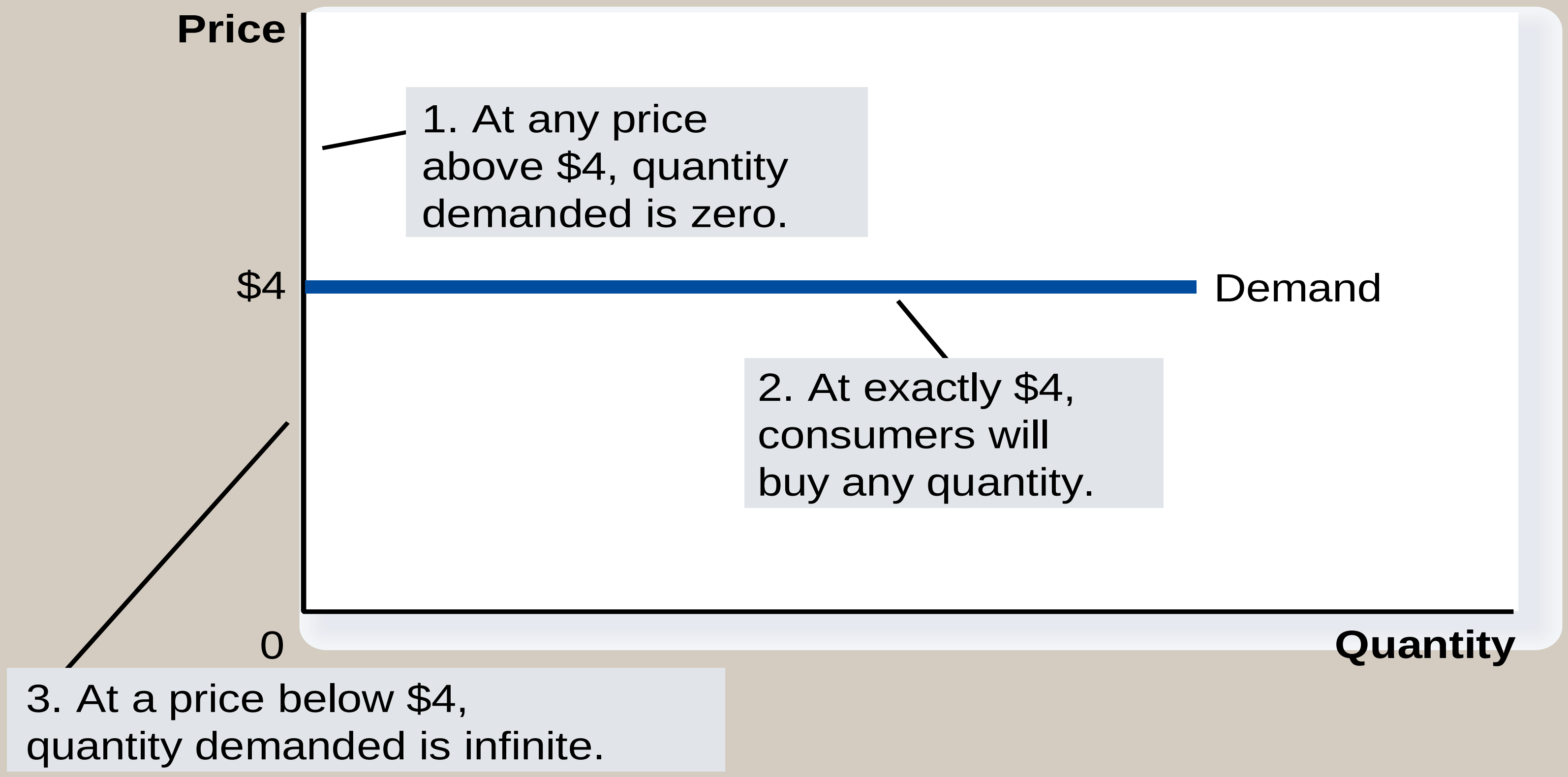


The Price Elasticity of Demand



The Price Elasticity of Demand

(e) Perfectly Elastic Demand: Elasticity Equals Infinity



Total Revenue and the Price Elasticity of Demand

- **Total revenue** الدخل الكلى is the amount **paid by buyers** and **received by sellers** of a good.

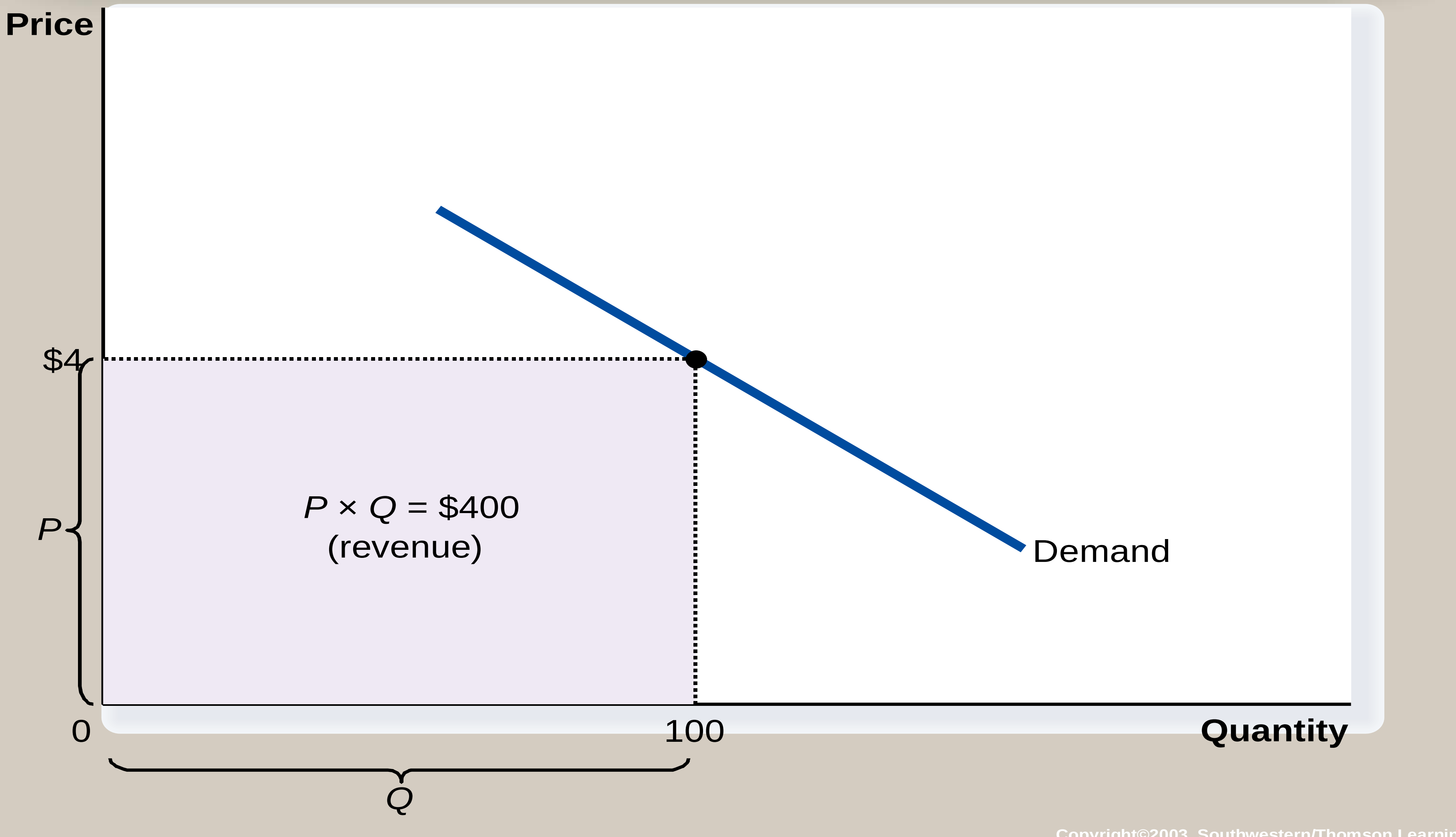
- Computed as the price of the good times the quantity sold.

Total Revenue Formula

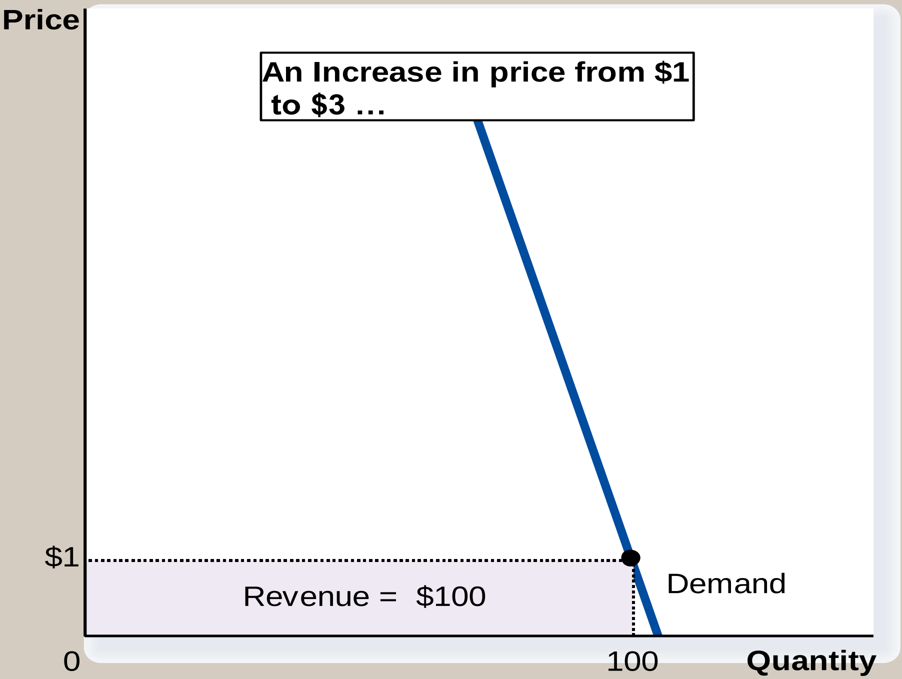
Total Revenue = Price x Quantity Sold

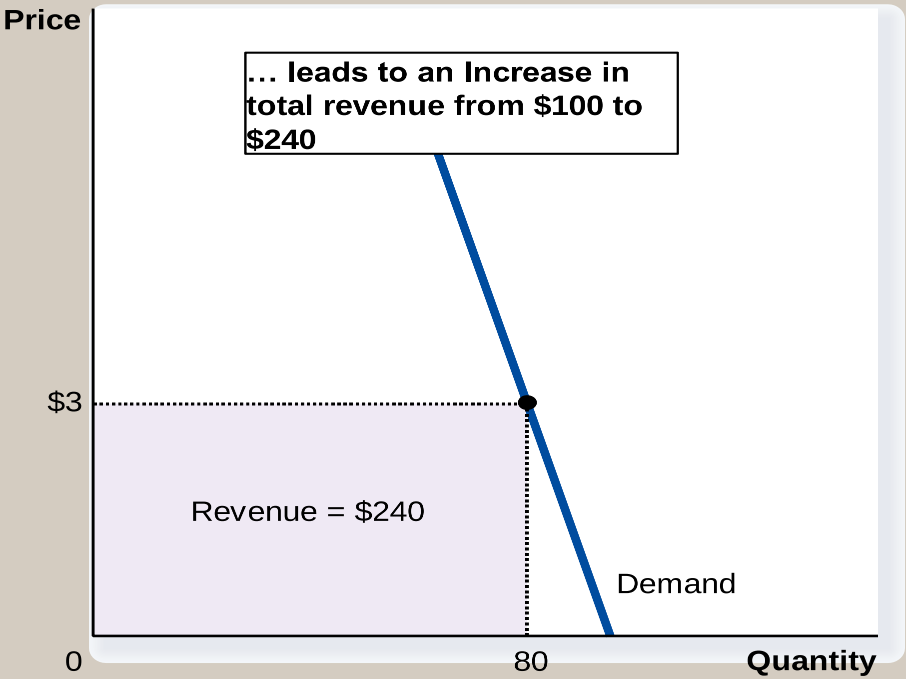
www.economicsonline.co.uk

Total Revenue



How Total Revenue Changes When Price Changes: Inelastic Demand



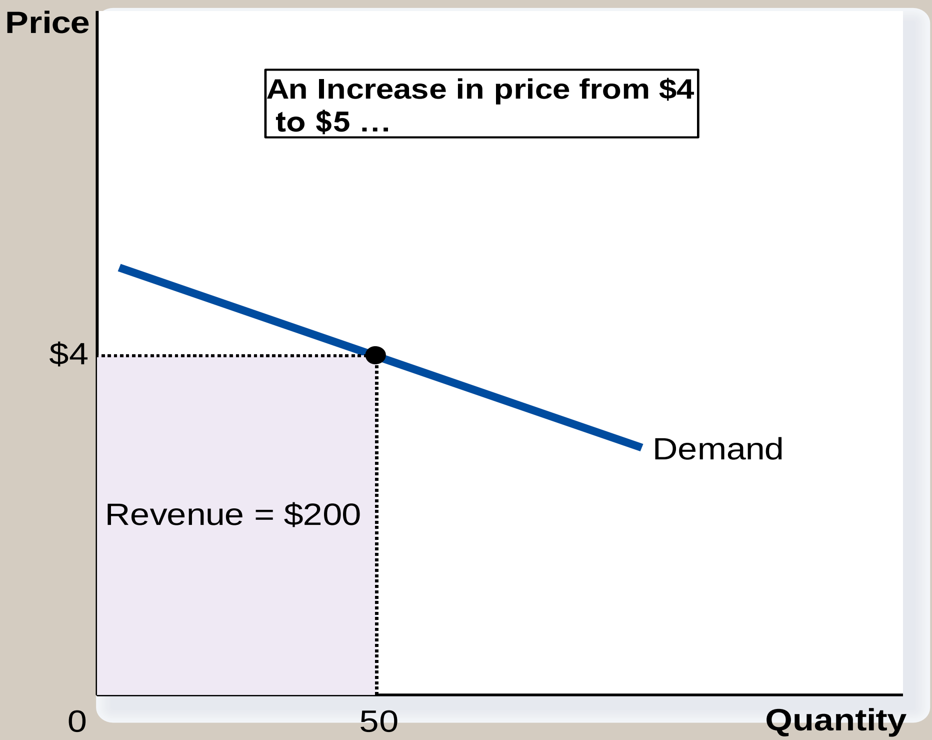


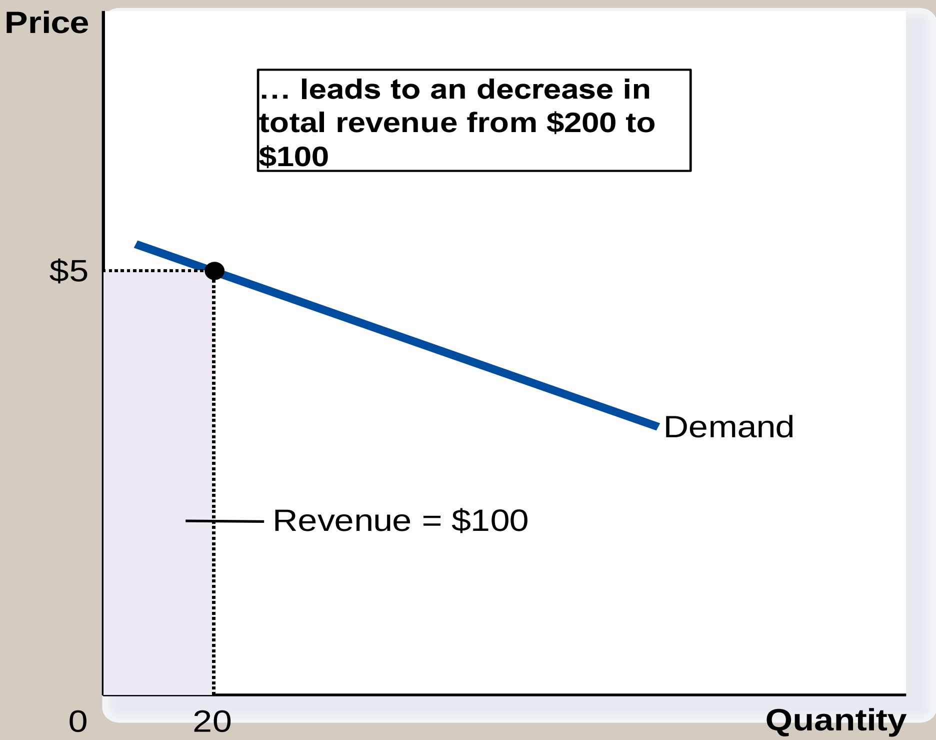
Inelasticity and Total Revenue

With an **inelastic demand curve**, an increase in price leads to a decrease in quantity that is **proportionately smaller.**

Total revenue increases

How Total Revenue Changes When Price Changes: Elastic Demand





Elasticity and Total Revenue

- With an **elastic demand curve**, an increase in the price leads to a decrease in quantity demanded that is **proportionately larger.**

Total revenue decreases