

# Supply and Demand

ECO 120: Global Macroeconomics

# Goals

1 / 29

## Unit Goals

- Define demand and identify what influences demand
- Define demand and identify what influences demand
- Predict how prices and quantities are determined by supply and demand.
- Use these skills to make predictions about changes in price and quantity.

## Learning Objectives

LO 2: Use the supply and demand model to predict price and quantity outcomes for markets for products and services.

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## Reading and Exercises

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- Textbook: Demand, Module 5
- Textbook: Supply and Equilibrium, Module 6
- Textbook: Changes and Equilibrium, Module 7
- **Canvas Quiz due Wed 11:59 PM.**  
Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts
- **Homework/In-class Exercise due Friday 11:59 PM.** We will work together in class on Thursday.

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# Demand

3 / 29

- The **quantity demanded** of a good or service is the amount consumers are willing and able to buy in a given time period at a particular price.
- **Law of demand:** All other things remaining equal, the higher (lower) the price of the good, the smaller (higher) is the quantity demanded.

# Demand

3 / 29

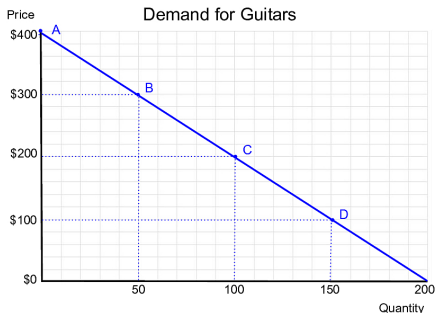
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# Demand

## Demand Schedule For Guitars

Point	Price	$Q_D$
A	\$400	0
B	\$300	50
C	\$200	100
D	\$100	150

## Demand Curve for Guitars



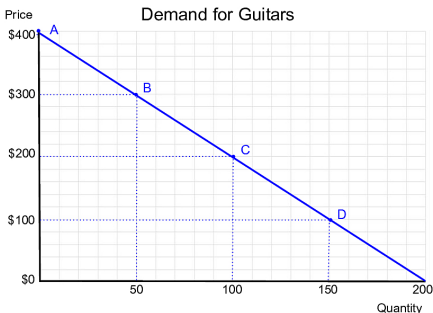
- Law of demand makes the demand curve **downward sloping**.
- **Change in quantity demanded:** when there is a **change in price** causing a **movement** from one point on the demand curve to another point.

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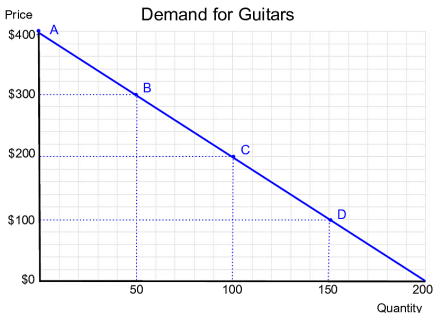
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## Income and Substitution effects

- The demand curve is downward sloping because of the income and substitution effect.
- **Substitution effect:** when the price of a good rises, people may buy substitute goods instead.
- **Income effect:** When the price of a good rises, the real purchasing power of your income decreases. When the real value of your income decreases, you buy less of everything.
- Close to correct. More on the income effect later.

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# Supply

6 / 29

- The **quantity supplied** of a good or service is the amount producers are willing and able to produce and sell in a given time period at a given price.
- **Law of supply:** All other things remaining the same, the higher (lower) is the price of a good, the higher (lower) is the quantity supplied.

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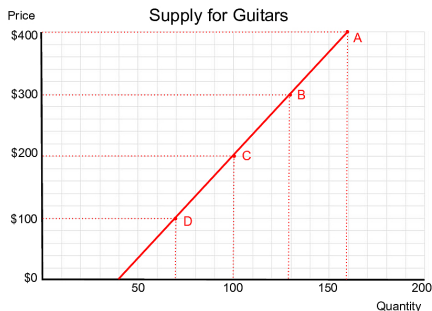
# Supply

7 / 29

## Supply Schedule For Guitars

Point	Price	$Q_S$
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## Supply Curve for Guitars



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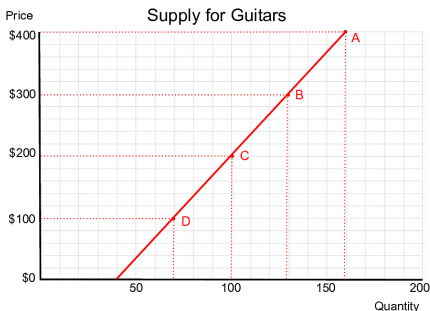
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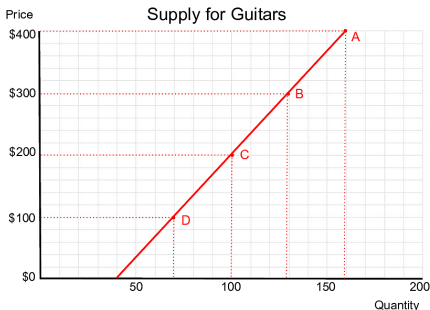
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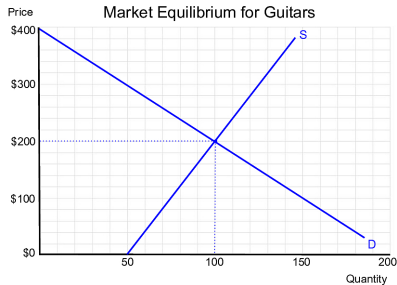
# Equilibrium

8 / 29

## Equilibrium Definition

- The **equilibrium price** is the price where the quantity supplied is equal to the quantity demanded.
- The **equilibrium quantity** is the corresponding quantity.
- This is the price and quantity that will prevail in an unregulated market.

## Graphical Equilibrium



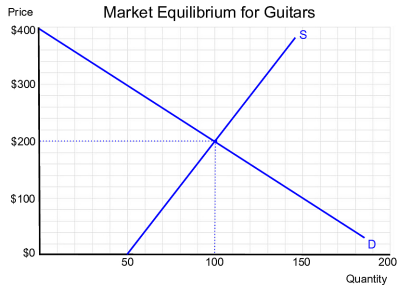
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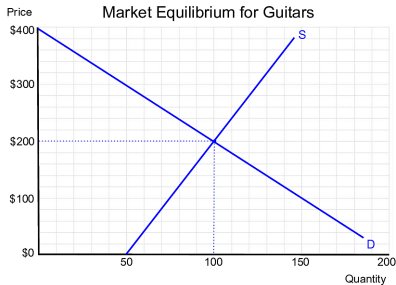
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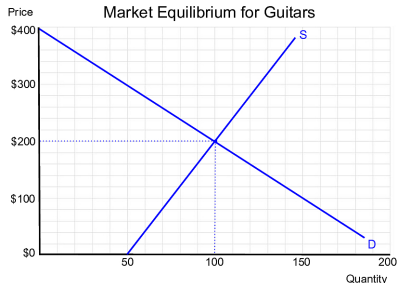
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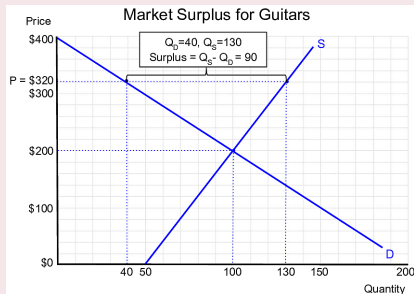
# Surplus

9 / 29

## Surplus Definition

- When the prevailing price is **above** equilibrium price, quantity supplied exceeds quantity demanded
- Difference is the surplus
- In an unregulated market, market forces will push price lower toward equilibrium

## Graphical Surplus



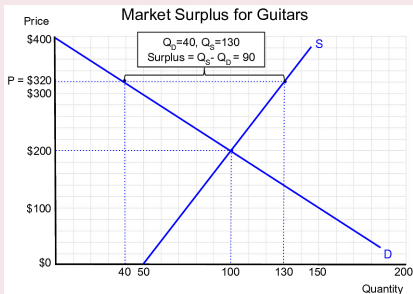
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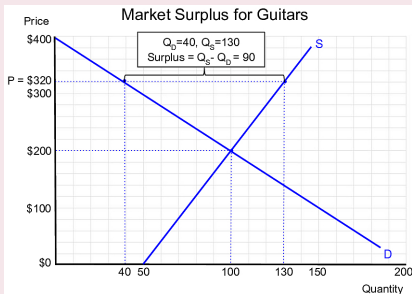
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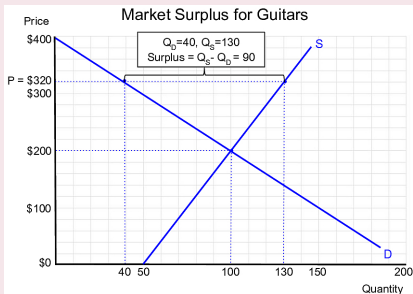
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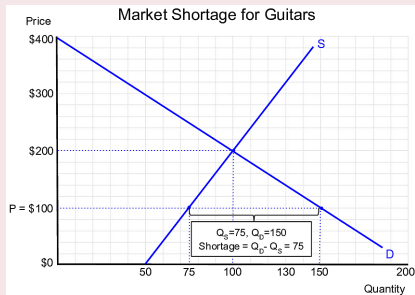
# Shortage

10 / 29

## Shortage Definition

- When the prevailing price is **below** equilibrium price, quantity demanded exceeds quantity supplied
- Difference is the shortage
- In an unregulated market, market forces will push equilibrium price higher

## Graphical Shortage



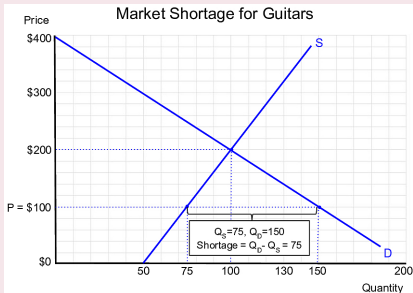
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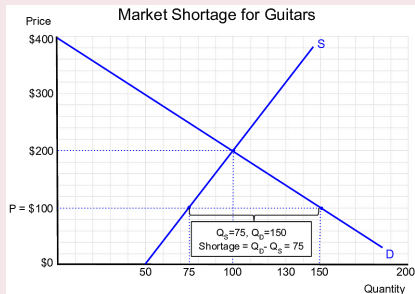
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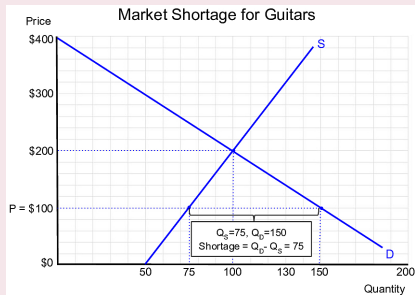
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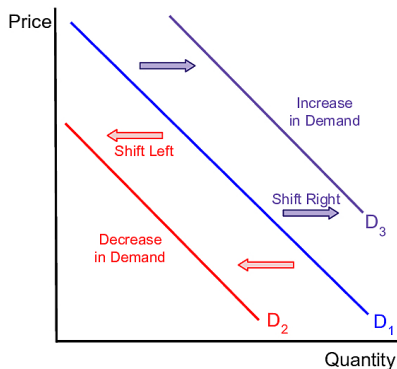
# Demand Curve Shifts

11 / 29

## Shifts in Whole Demand Curve

- When something *besides the price of the good* effects demand, we say there is a *change or shift in demand*.
- Something that **increases** demand shifts the demand curve to the **right**
- Something that **decreases** demand shifts the demand curve to the **left**

## Shifts in Demand



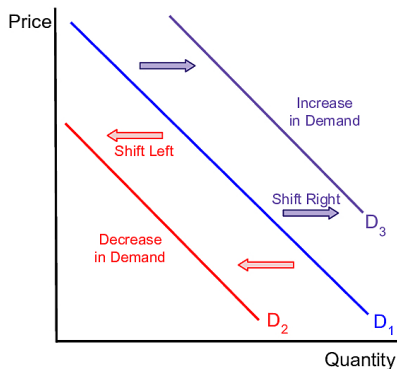
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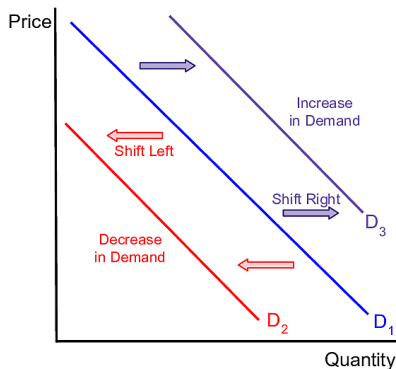
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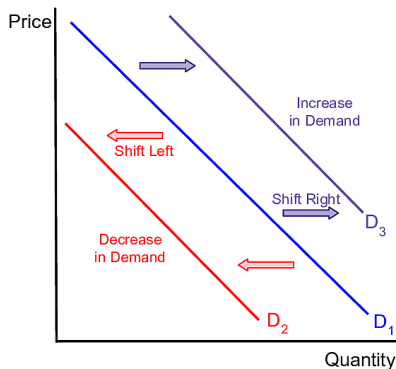
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## Substitute Goods

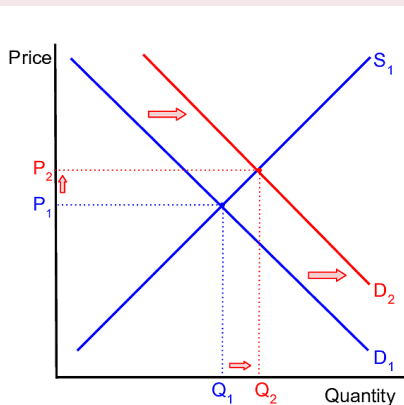
12 / 29

### Price of Substitute Goods

- **Substitutes:** a substitute good is a good that can be consumed instead of another good.
- Examples: hamburgers and hot dogs, iPhones and Samsung smartphones, E-books and print books
- If the price of a **substitute increases**, this will **increase demand** for a good
- Eqm price increases, quantity increases

### Price of Samsung phones increase

#### Market for iPhones



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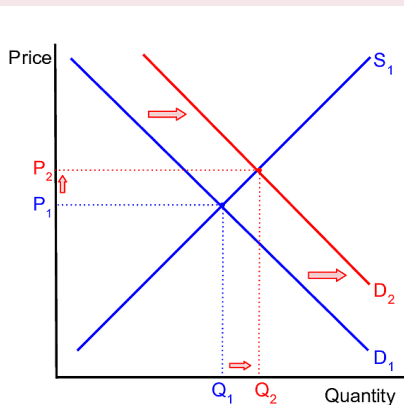
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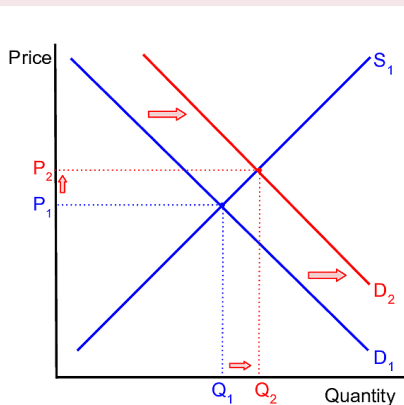
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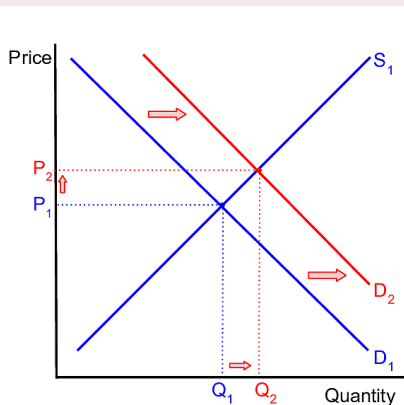
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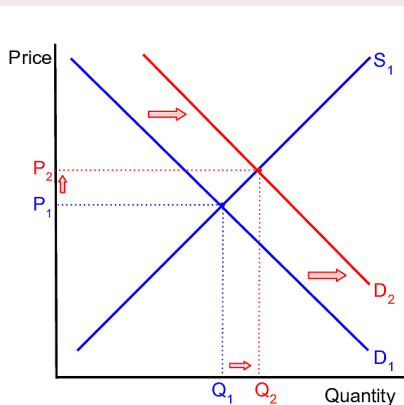
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## Complement Goods

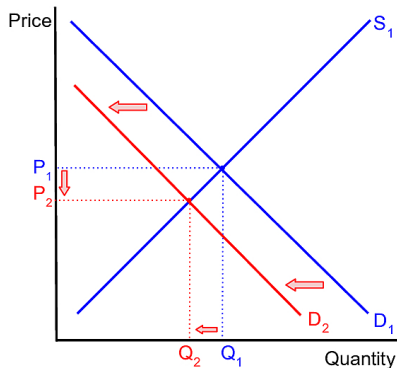
13 / 29

### Price of Complement Goods

- **Compelement:** a complement good is a good that is often consumed together with another good.
- Examples: peanut butter and jelly, iPads and Ebooks, smartphones and apps
- If the price of a **complement increases**, this will **decrease demand** for a good
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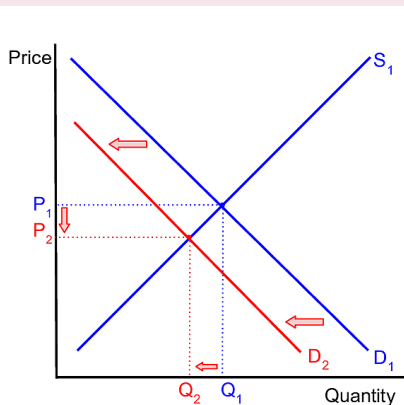
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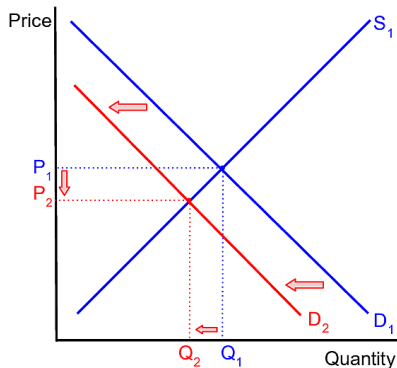
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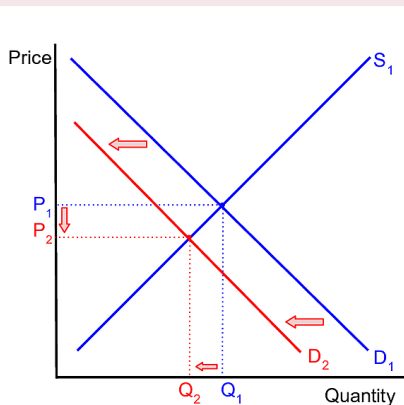
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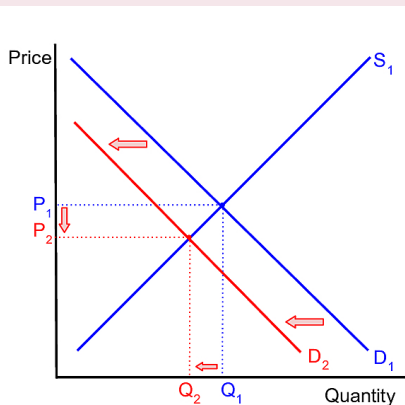
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## Changes in Income

14 / 29

- **Normal good:** a good whose demand increases when consumers' incomes increase.
- **Inferior good:** a good whose demand decreases when consumers' incomes increase.
- Can you think of examples of an inferior good?

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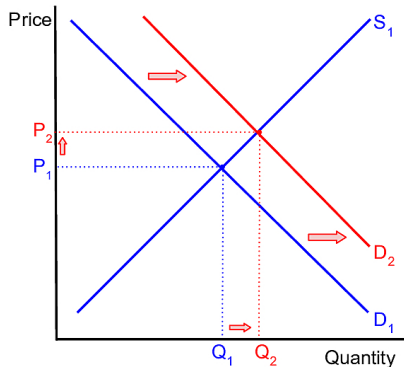
15 / 29

### Income Effect on Normal Goods

- **Normal good**: a good whose demand increases when consumers' incomes increase.
- Examples: Most things, computers, automobiles, restaurant meals
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### Increase in Income

#### Market for Automobiles



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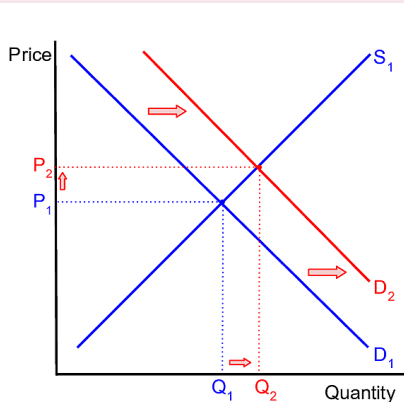
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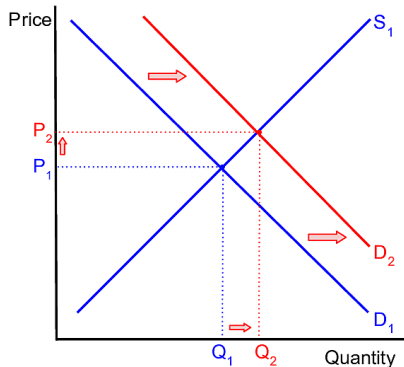
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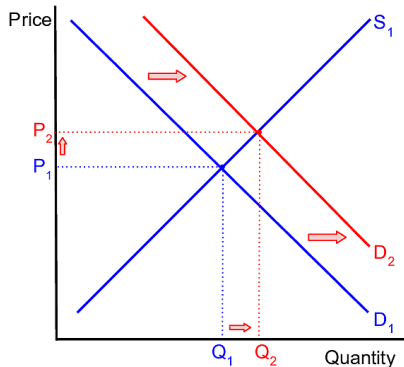
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- If **income increases**, this will **increase demand** for a normal good
- Eqm price increases, quantity increases

### Increase in Income

#### Market for Automobiles



## Changes in Income: Normal Goods

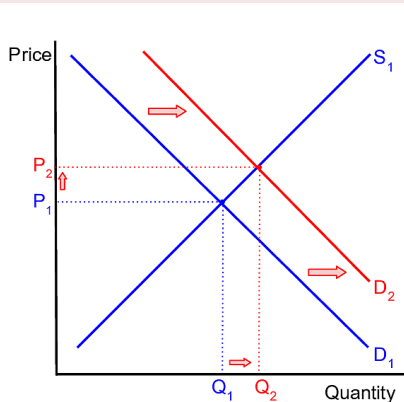
15 / 29

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## Changes in Income: Inferior Goods

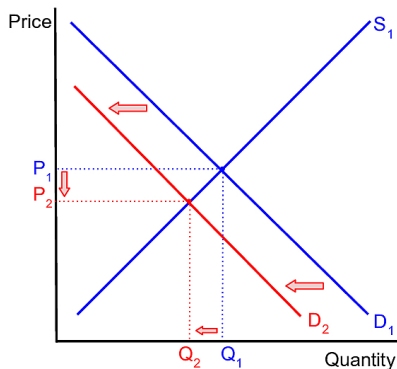
16 / 29

### Income Effect on Inferior Goods

- **Inferior good**: a good whose demand **decreases** when consumers' incomes increase.
- Examples: Used clothing, Ramen noodles
- If **income increases**, this will **decrease demand** for an inferior good
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### Increase in Income

#### Market for Used Clothing



## Changes in Income: Inferior Goods

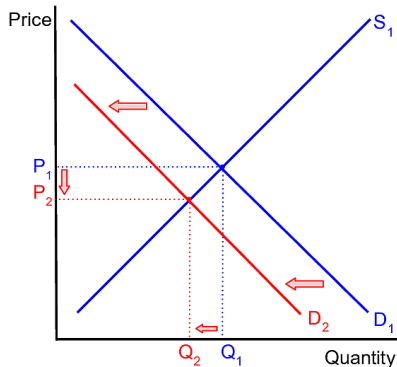
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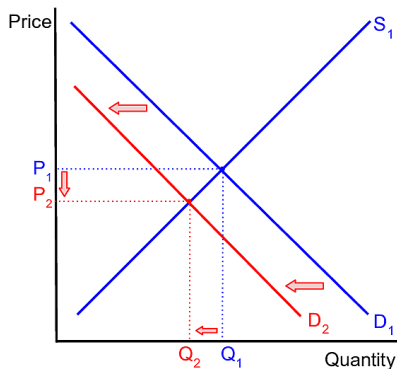
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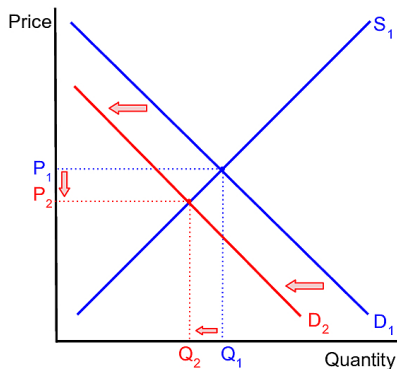
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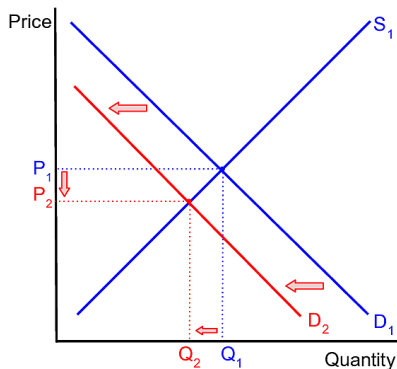
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## Consumers Expect Price Increase

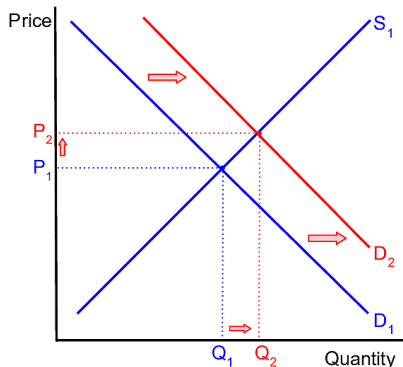
17 / 29

### Expectation of Price Increase

- If consumers expect a price will increase in the future, demand will increase in the present
- The expectation can be well-informed or even unfounded speculation
- Results in higher price, higher quantity
- *Self-fulfilling expectations are possible!*

### Expectation of a Price Increase

#### Market for Gasoline on 9/11/2001



## Consumers Expect Price Increase

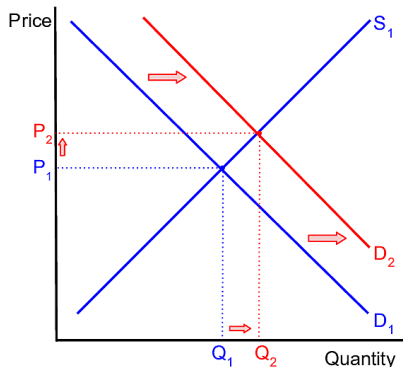
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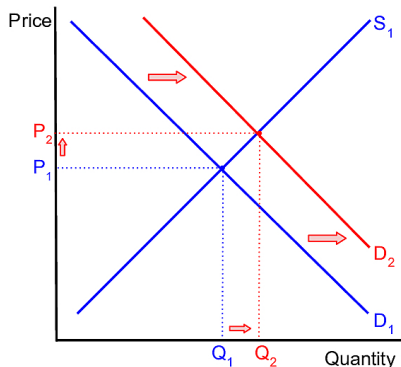
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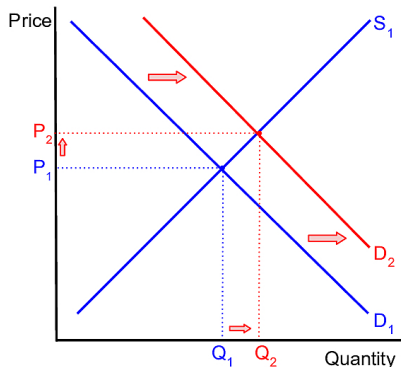
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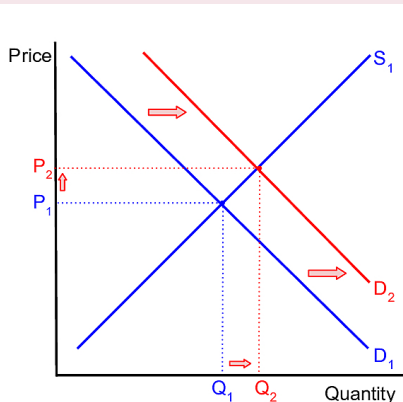
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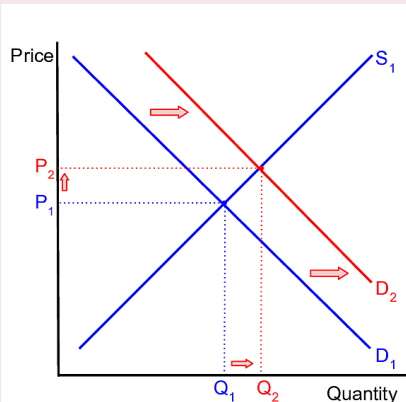
18 / 29

### Expectation of Increase in Income

- If consumers expect higher future income, demand may increase immediately for normal goods
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- Why consumer confidence is so important for macroeconomy

### Expectation of Higher Income

#### Market for Automobiles (Normal Good)



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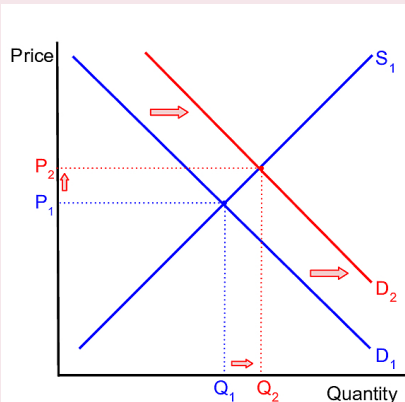
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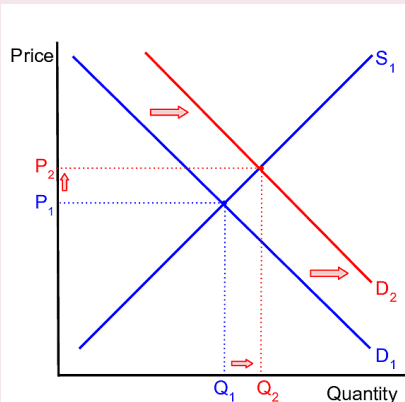
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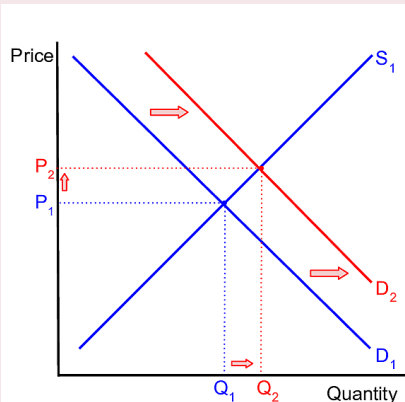
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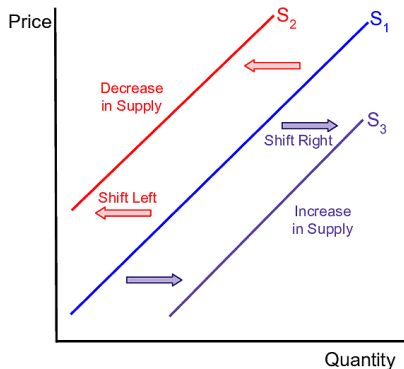
# Supply Curve Shifts

19 / 29

## Shifts in Whole Supply Curve

- When something *besides the price of the good* effects supply, we say there is a *change or shift in supply*.
- Something that **increases** supply shifts the demand curve to the **right**
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## Shifts in Supply



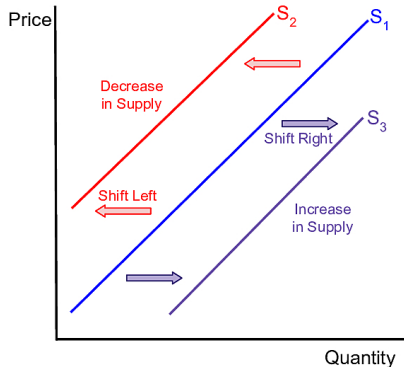
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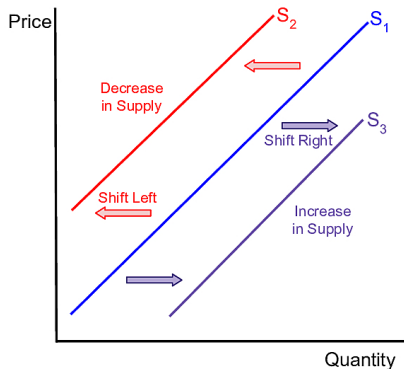
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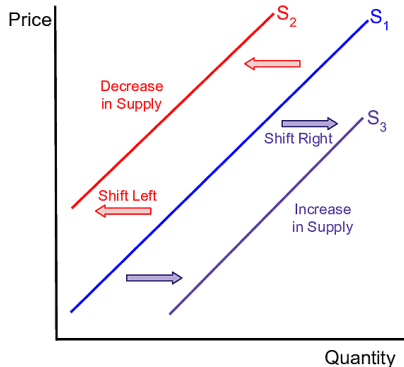
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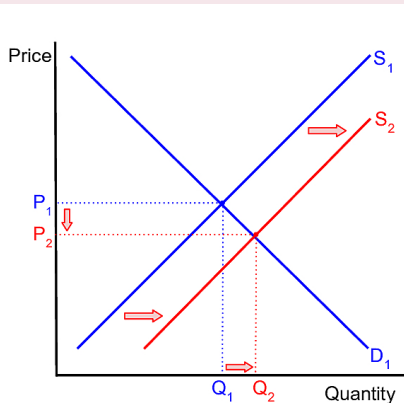
20 / 29

## Improvements in Technology

- Improvements in technology can make it possible to produce more
- Improvements in technology can make production easier or less costly
- Shift supply to the right
- Eqm quantity increases, price decreases

## Improvement in Technology

### Market for Computers



# Improvements in Technology

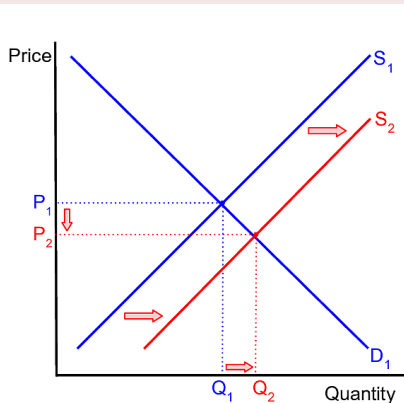
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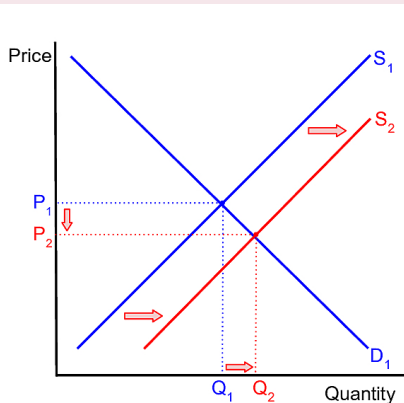
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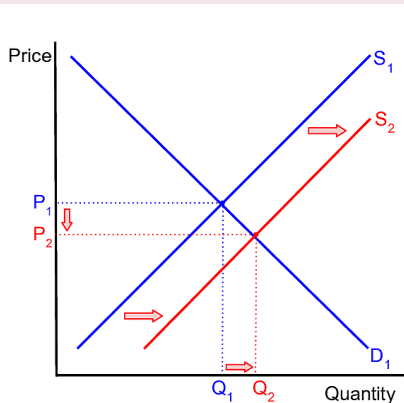
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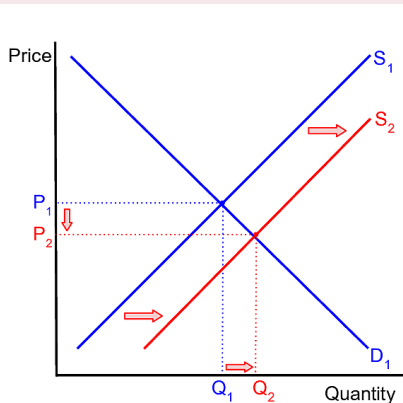
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## Increase in Production Costs

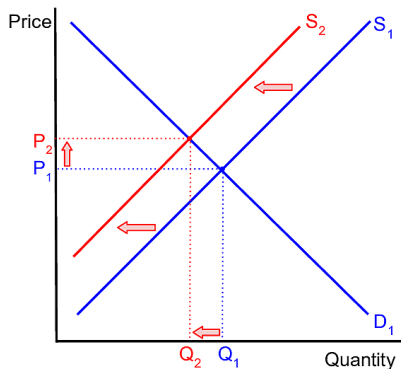
21 / 29

### Increase in Production Costs

- Any increase in production costs causes supply to shift to the left
- For example: Increase in price of lumber for construction of new housing
- Eqm quantity decreases, price increases

### Increase in Production Costs: Lumber Used in Construction

#### Market for New Housing





## Increase in Production Costs

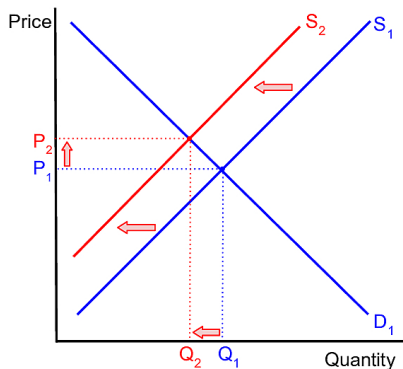
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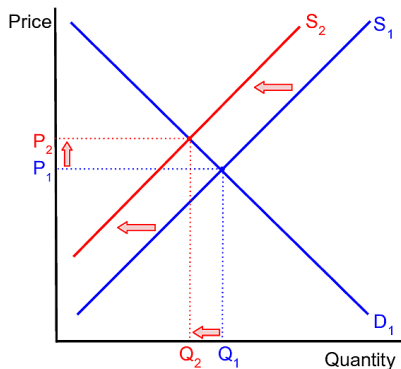
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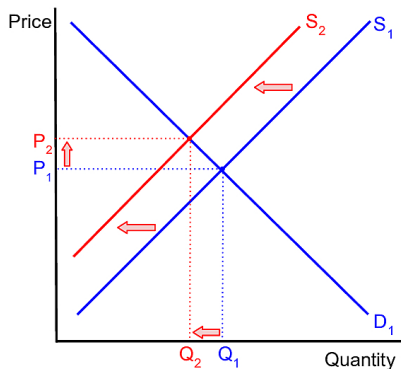
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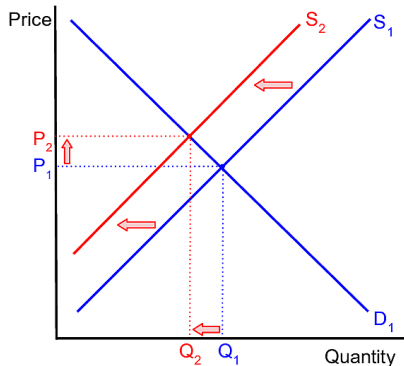
22 / 29

## Producer Expectations

- If producers expect an increase in prices, may hold back production or sales until prices are higher
- Easier for goods that can be stored or warehoused
- For example: Agriculture producers expects an increase in price of grain
- Store grain to sell later, supplying less today, supply shifts left
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- *Can lead to self-fulfilling expectations*

## Expectation of Higher Price

### Market for Grain



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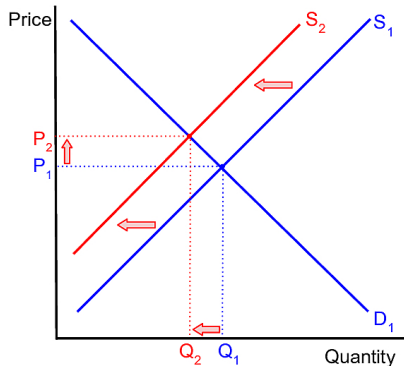
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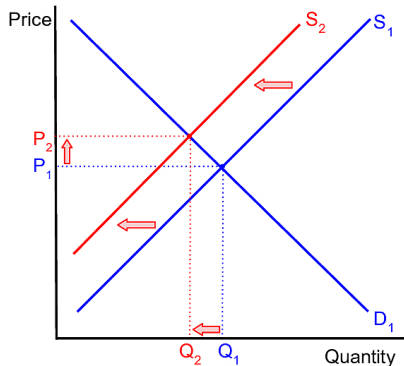
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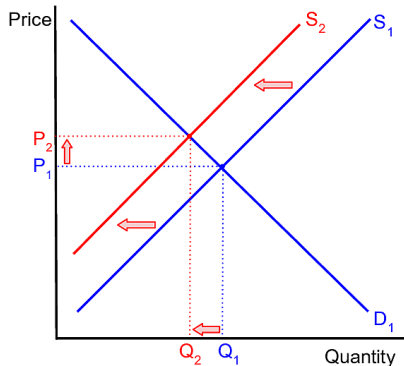
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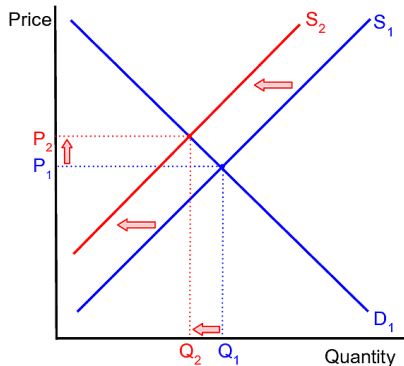
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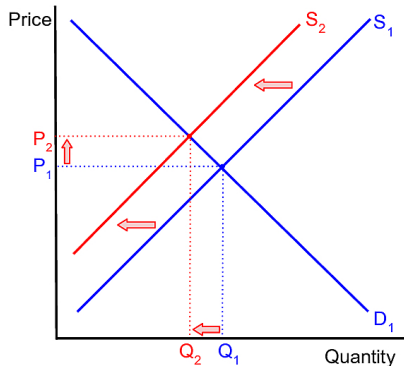
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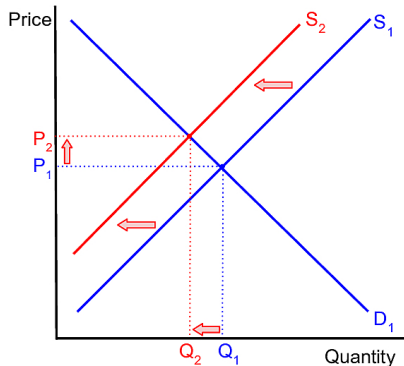
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# Subsidy on Ethanol Production

23 / 29

## Scenario

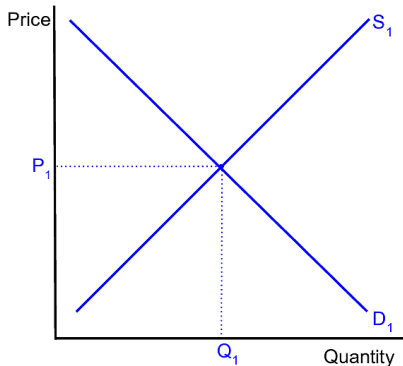
Suppose the government increases the subsidy to gasoline producers for blending ethanol into gasoline.

## Impact

- Supply for gasoline with ethanol increases
- Eqm quantity increases, price decreases

## Supply and Demand

### Market for Gasoline with Ethanol



# Subsidy on Ethanol Production

23 / 29

## Scenario

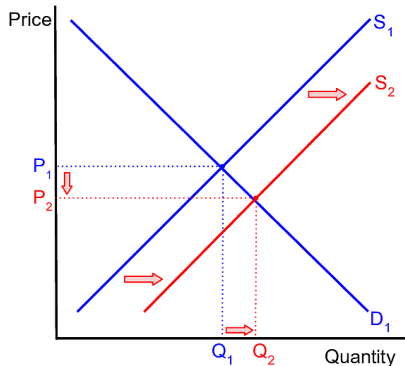
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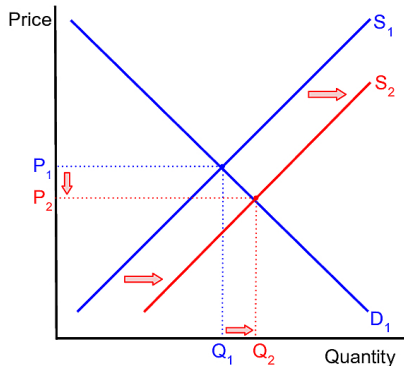
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Market for Gasoline with Ethanol



# Taxes on Goods and Services

24 / 29

## Scenario

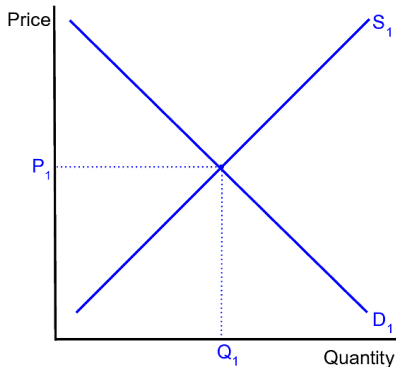
Suppose the government increases the taxes on cigarettes.

## Impact

- Demand for cigarettes decreases
- Eqm quantity decreases, price decreases

## Supply and Demand

### Market for Cigarettes



# Taxes on Goods and Services

24 / 29

## Scenario

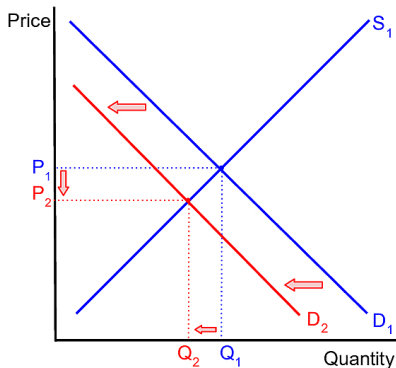
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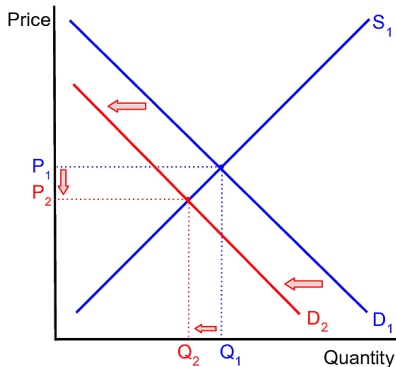
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## Supply and Demand

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# Changes in Opinions and Preferences: Peloton

25 / 29

## Scenario

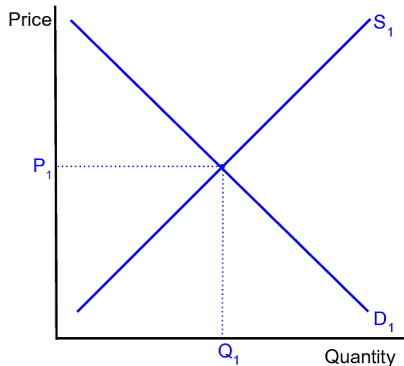
Suppose the Mr. Big dies while working out on his Peloton bike, and this leads people to think that Peloton bikes are dangerous.

## Impact

- Demand for Peloton bikes decreases
- Eqm quantity decreases, price decreases

## Supply and Demand

### Market for Peloton Bikes



# Changes in Opinions and Preferences: Peloton

25 / 29

## Scenario

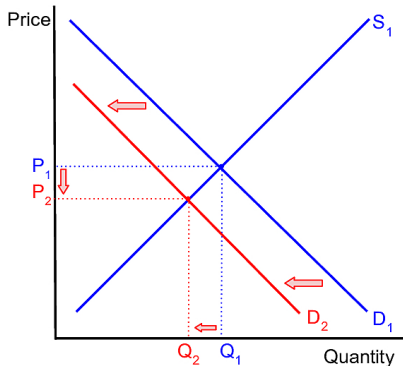
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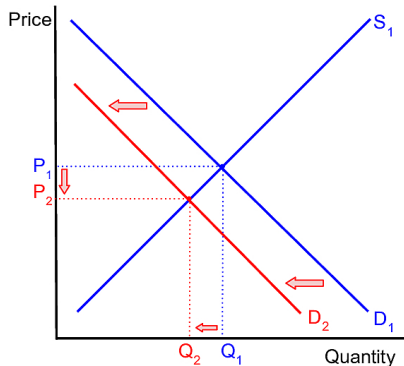
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# Changes in Preferences: Christmas Trees

26 / 29

## Scenario

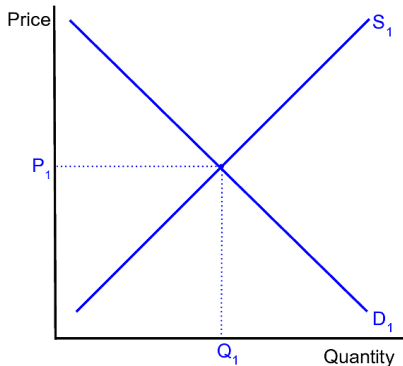
After a difficult year in 2020, more people decided to celebrate the holiday season with real Christmas trees.

## Impact

- Demand for Christmas trees increases
- Eqm quantity increases, price increases

## Supply and Demand

Market for Christmas Trees



## Changes in Preferences: Christmas Trees

26 / 29

### Scenario

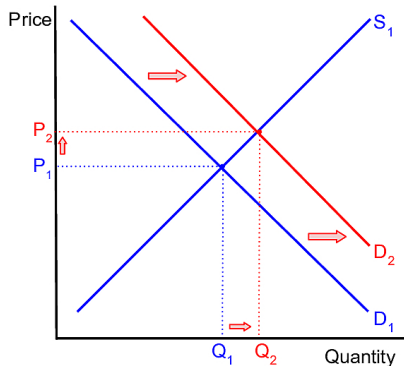
After a difficult year in 2020, more people decided to celebrate the holiday season with real Christmas trees.

### Impact

- Demand for Christmas trees increases
- Eqm quantity increases, price increases

### Supply and Demand

Market for Christmas Trees



## Changes in Preferences: Christmas Trees

26 / 29

### Scenario

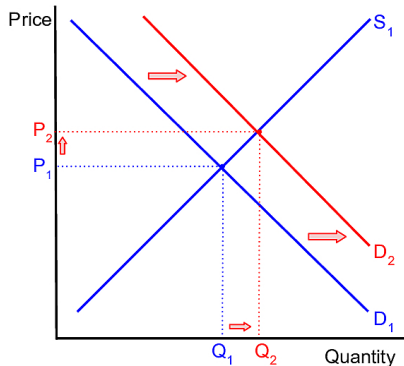
After a difficult year in 2020, more people decided to celebrate the holiday season with real Christmas trees.

### Impact

- Demand for Christmas trees increases
- Eqm quantity increases, price increases

### Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 29

## Scenario

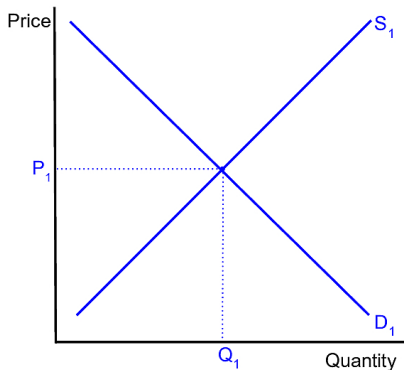
- During a very difficult recession in 2009-2010, many Christmas tree farmers did not invest in planting new trees. It takes about 10-11 years for trees to grow to typical room height.
- Also, after a difficult year in 2020, more people decided to celebrate the holiday season with real Christmas trees.

## Impact

- Demand for Christmas trees increases
- Supply for Christmas trees decreases
- Equilibrium price increases
- Change in equilibrium quantity is indeterminate

## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 29

## Scenario

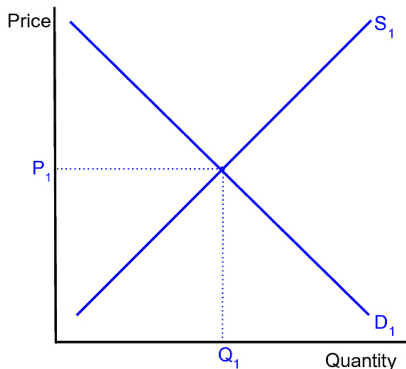
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## Supply and Demand

Market for Christmas Trees





# Changes in Supply and Demand: Christmas Trees

27 / 29

## Scenario

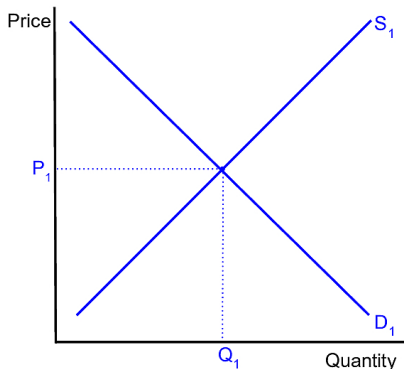
- During a very difficult recession in 2009-2010, many Christmas tree farmers did not invest in planting new trees. It takes about 10-11 years for trees to grow to typical room height.
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## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 29

## Scenario

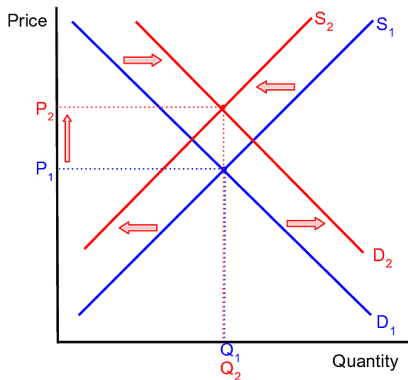
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## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 29

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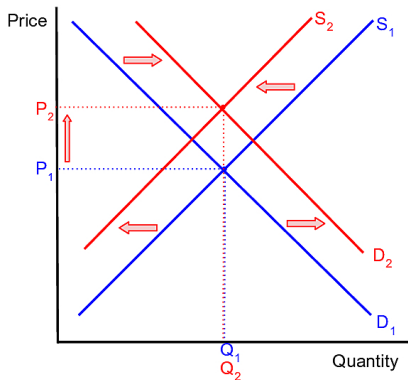
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## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 29

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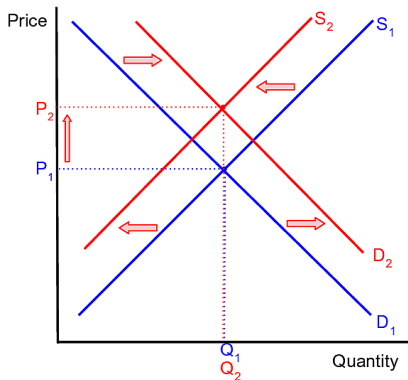
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- Equilibrium price increases
- Change in equilibrium quantity is indeterminate

## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: New Homes

28 / 29

## Scenario

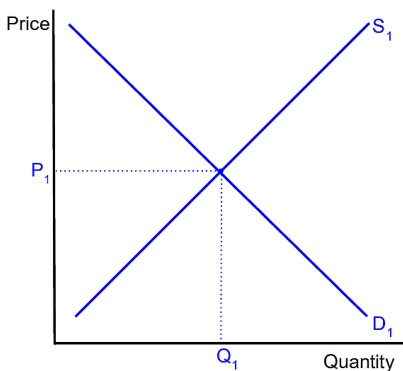
- Suppose that global supply chain problems cause a decrease in availability for construction materials
- Suppose also that the country is in a recession and people have lower incomes

## Impact on Market for Homes

- Demand for new homes decreases
- Supply for new homes decreases
- Equilibrium quantity decreases
- Change in equilibrium price is indeterminate

## Supply and Demand

### Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 29

## Scenario

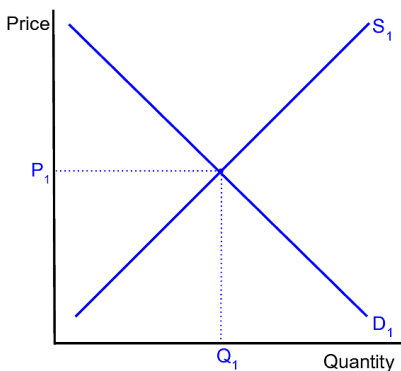
- Suppose that global supply chain problems cause a decrease in availability for construction materials
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## Impact on Market for Homes

- Demand for new homes decreases
- Supply for new homes decreases
- Equilibrium quantity decreases
- Change in equilibrium price is indeterminate

## Supply and Demand

### Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 29

## Scenario

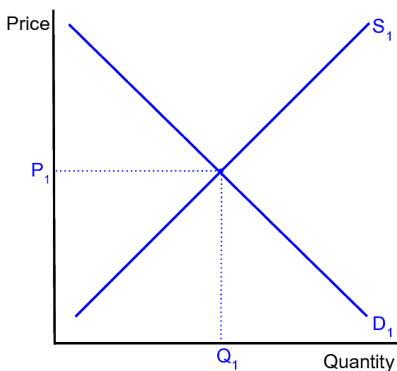
- Suppose that global supply chain problems cause a decrease in availability for construction materials
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## Impact on Market for Homes

- Demand for new homes decreases
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- Change in equilibrium price is indeterminate

## Supply and Demand

### Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 29

## Scenario

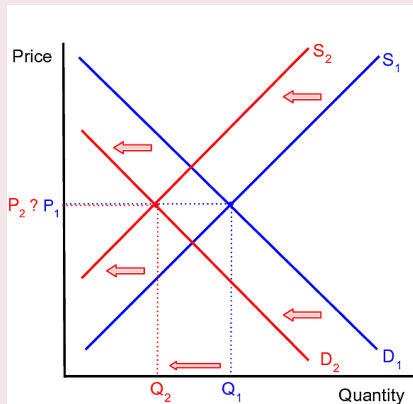
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## Supply and Demand

### Market for New Homes





# Changes in Supply and Demand: New Homes

28 / 29

## Scenario

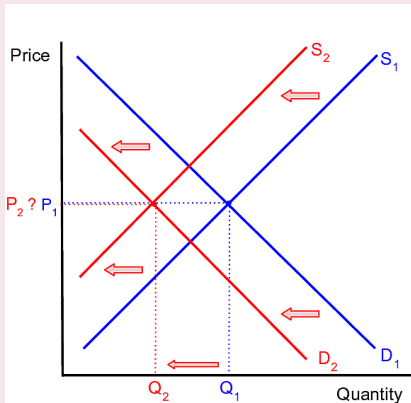
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## Supply and Demand

### Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 29

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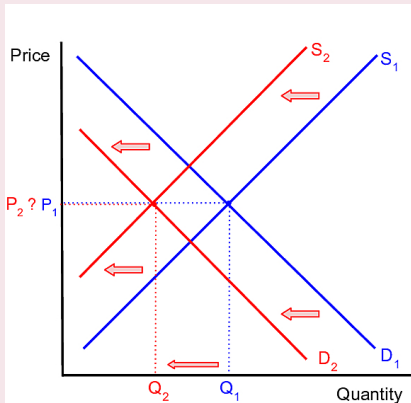
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## Supply and Demand

### Market for New Homes



## Reading and Exercises

29 / 29

- Textbook: Demand, Module 5
- Textbook: Supply and Equilibrium, Module 6
- Textbook: Changes and Equilibrium, Module 7
- **Canvas Quiz due Wed 11:59 PM.**  
Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts
- **Homework/In-class Exercise due Friday 11:59 PM.** We will work together in class on Thursday.
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