CHAPTER 2

THEORY OF DEMAND, SUPPLY & MARKET EQUILIBRIUM

Classification of Goods and Services

- Free Goods : no production costs – gifts of nature
- Public Goods : Goods that benefit to everyone
- Economic of Goods and Services: involves cost of production

Definition of demand

- Demand is the ability and willingness to buy specific quantities of goods in a given period of time at a particular price, *ceteris paribus.*
- Demand differs from desire, want, wish and the like.
- Those who desires must have the ability to buy and willing to pay for that product then only it is called as demand.

Demand = willingness to buy + ability to buy

Consumer must have the money to buy the product

Law of demand

Law of demand states that :

- *the* ***higher the price*** *of a good****, the lower is the quantity demanded***

for that good ceteris paribus $P \uparrow \ Q_{dd} \downarrow$

Or

- *the* ***lower the price*** *of a good****, the higher is the quantity demanded,***

for that good ceteris paribus $P \downarrow \ Q_{dd} \uparrow$

Law of Demand

Assumption:

- Tastes and preferences of consumers remain unchanged.
- Consumers’ income remain the same.
- Price of related goods (complement/substitutes) should remain unchanged.
- Goods should not have any prestige value.

Due to law of demand :

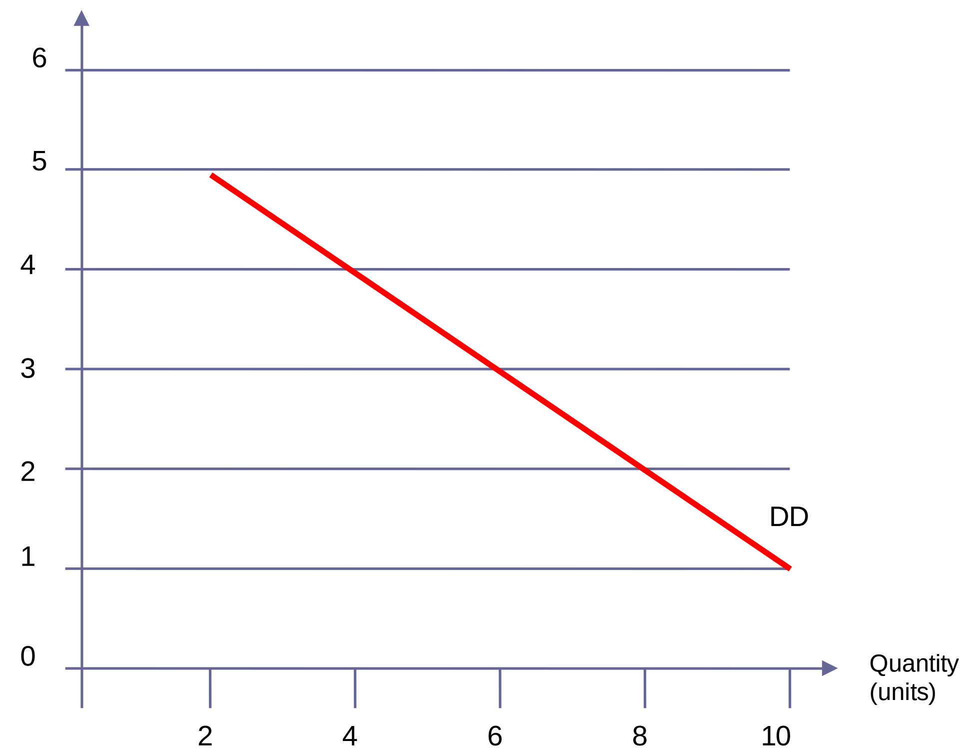
P ⟷ NEGATIVE RELATIONSHIP ⟷ **Q**

Demand Schedule and Demand Curve

Demand Schedule

Price	Quantity
5	2
4	4
3	6
2	8
1	10

Price (RM) **Demand Curve**



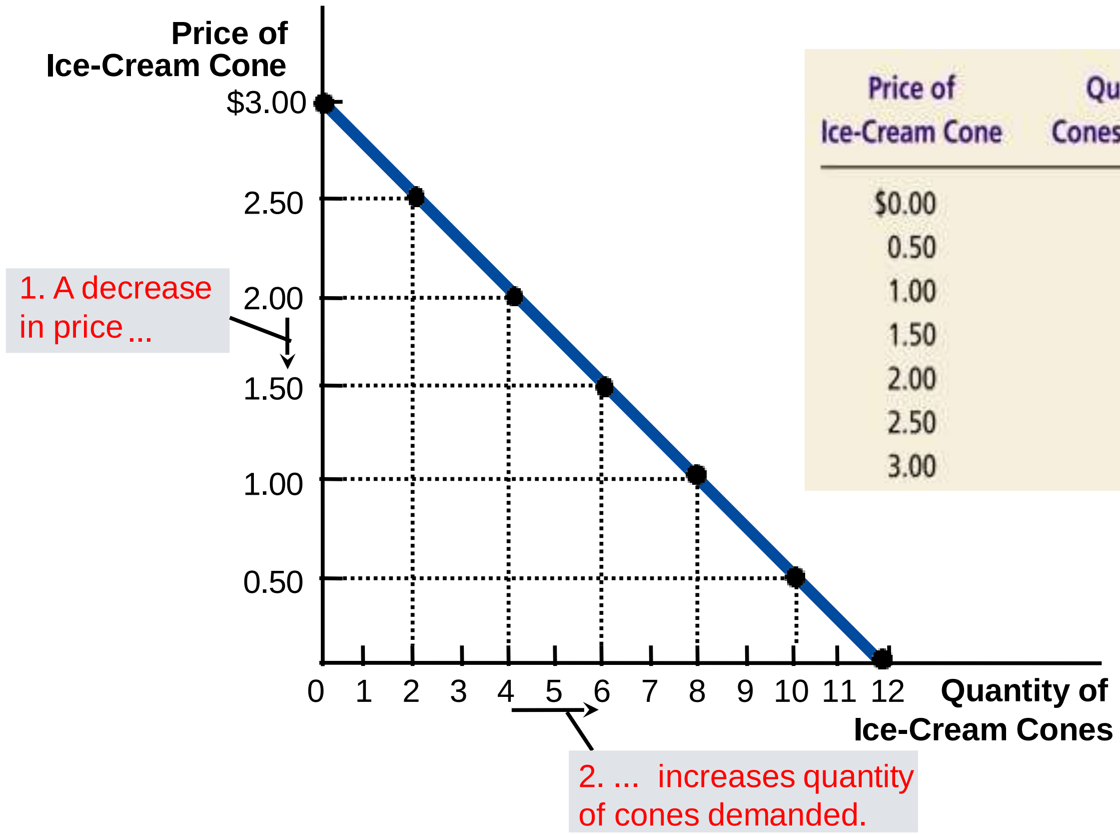
Demand Schedule and Demand Curve

- Catherine's Demand Schedule

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

- Plot the demand curve based on the demand schedule

Demand Schedule and Demand Curve



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

Individual Demand and Market Demand

INDIVIDUAL DEMAND

The relationship between the quantity of a good demanded by a ***single individual*** and its price.

MARKET DEMAND

The relationship between the total quantity of a good demanded by adding all the quantities

demanded by ***all consumers*** in the market and its price.

Individual demand 1 + Individual demand 2 = Market Demand

Or

Market Demand = ∑ Individual Demand

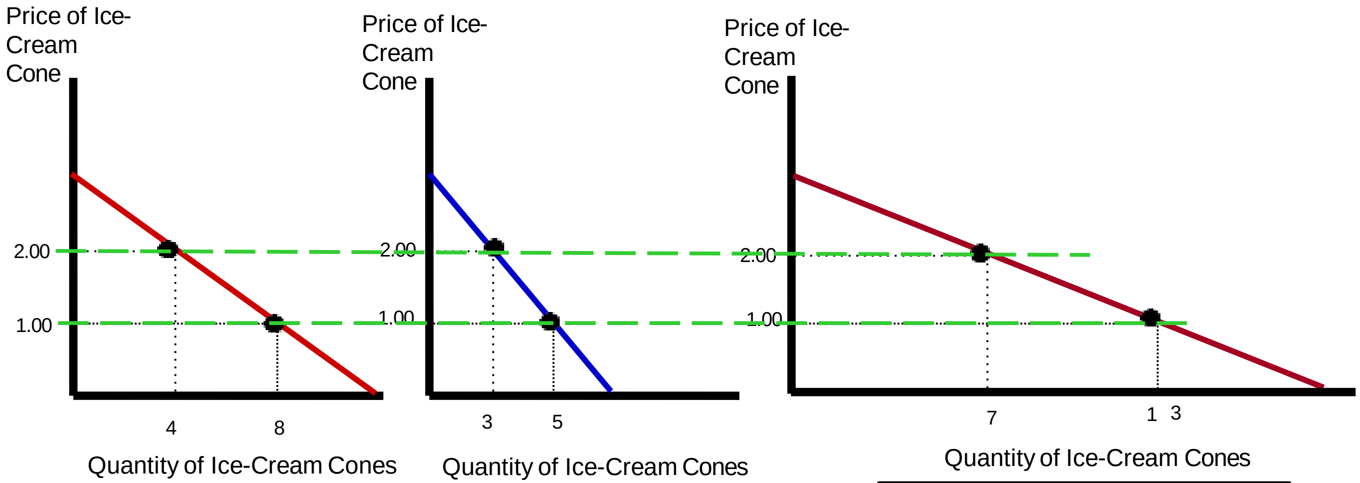
INDIVIDUAL AND MARKET DEMAND

When the price is $2.00, Catherine will demand 4 ice-cream cones.

When the price is $2.00, Nicholas will demand 3 ice-cream cones.

The market demand at $2.00 will be 7 ice-cream cones.

Catherine's Demand + Nicholas's Demand = Market Demand



When the price is $1.00, Catherine will demand 8 ice-cream cones.

When the price is $1.00, Nicholas will demand 5 ice-cream cones.

The market demand at $1.00, will be 13 ice-cream cones.

FACTORS AFFECTING DEMAND

1. PRICE OF RELATED GOODS
- Substitute goods
- Complementary goods

2. CONSUMERS' INCOME
- Normal goods
- Inferior goods

3. CONSUMERS' FASHION, TASTE AND PREFERENCES

4. POPULATION OR NUMBER OF BUYERS

5. EXPECTATION ABOUT FUTURE PRICES

6. ADVERTISEMENTS

7. FESTIVE SEASONS AND CLIMATE

8. LEVEL OF TAXATION

9. SUPPLY OF MONEY IN CIRCULATION

EXTERNAL FACTORS

Factors affecting Demand (Explanation)

1. Price of related goods

   A. Substitute – product that can be used in place of another products

      - Demand of products will increase when there is increase in the price of substitute
      - E.g. : coffee and tea

        $P_{coffee} \uparrow Q_{dd\ coffee} \downarrow DD_{tea} \uparrow$

        – Price of coffee increases, quantity demanded of cofffe decrease. Law of demand
        – The demand for tea increase

   B. Complementary – product that is used in conjunction with another product

      - Increase in the price of product will increase the supply of complementary product
      - E.g. : pen and ink

        $P_{pen} \uparrow Q_{dd\ pen} \downarrow DD_{ink} \downarrow$

        – Price of pen increases, quantity demanded of pen decrease. Law of demand
        – The demand of ink decrease

Factors affecting demand (Explanation)

2. Consumer's income
   A. Normal goods – product that increase in demand with an increase in income. Such as cars, shirt, books.
      – Income increase, demand for goods and services will increase
   B. Inferior goods – product that decrease in demand with an increase income. Such as low-grade rice, low grade potatoes, used cars
      – Income increase, demand for goods and services will decrease.

3. Consumer's fashion, taste and preferences.
   - Product becomes more fashionable, demand for it will increase.

4. Population and number of buyers.
   - A larger population creates greater demand for good and services.

Factors affecting demand (Explanation)

5. Expectation about future prices
   - The higher the expected future price of a product, the higher the current demand for the product.

6. Advertisement
   - They are aware of the existence of these products, thus higher demand because of awareness.

7. Festive Season and Climate
   - Festive season – certain products will be in a high demand.
   - E.g. : Chinese New Year – demand for mandarin oranges greater.

Factors affecting demand (Explanation)

8. Level of Taxation

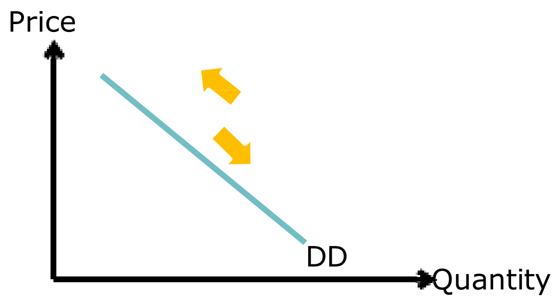
- The higher the taxes, the lower purchasing power of consumers and it lead to decrease in demand.
- If government reduce income tax by 10%, consumers will have more money to spend on goods and services. This causes increase in demand and vice versa.

9. Supply of money in circulation

– The larger the supply of money in circulation, the greater the demand for goods and services because consumers have more money to spend.

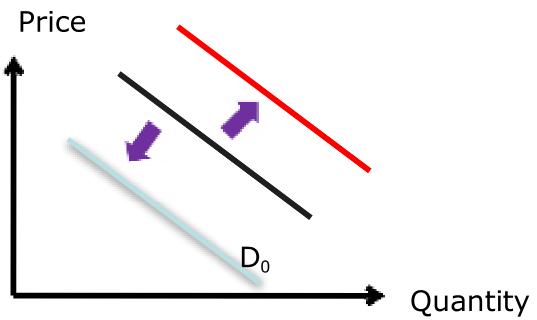
CHANGES IN QUANTITY DEMANDED VS. CHANGES IN DEMAND

CHANGES IN QUANTITY DEMANDED



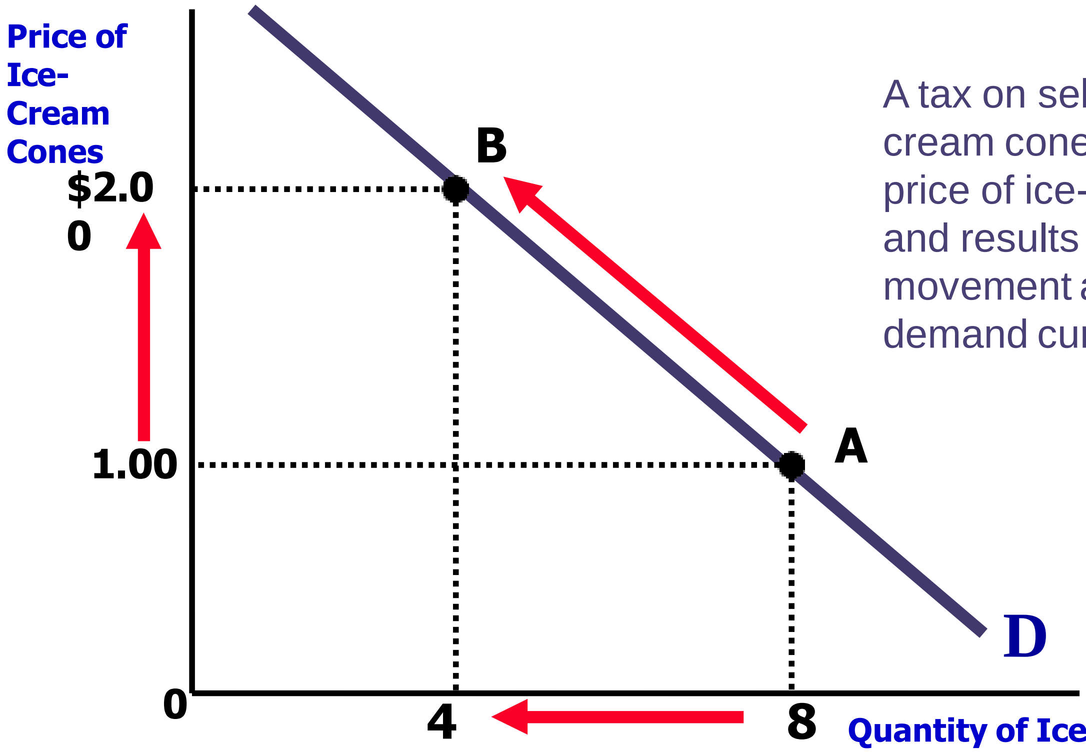
- Movement along DD curve
- Price changes and other factors are constant
- Upward movement □ *Decrease in* quantity demanded ***(Contraction)***
- Downward movement □ *Increase* in quantity demanded ***(Expansion)***

CHANGES IN DEMAND



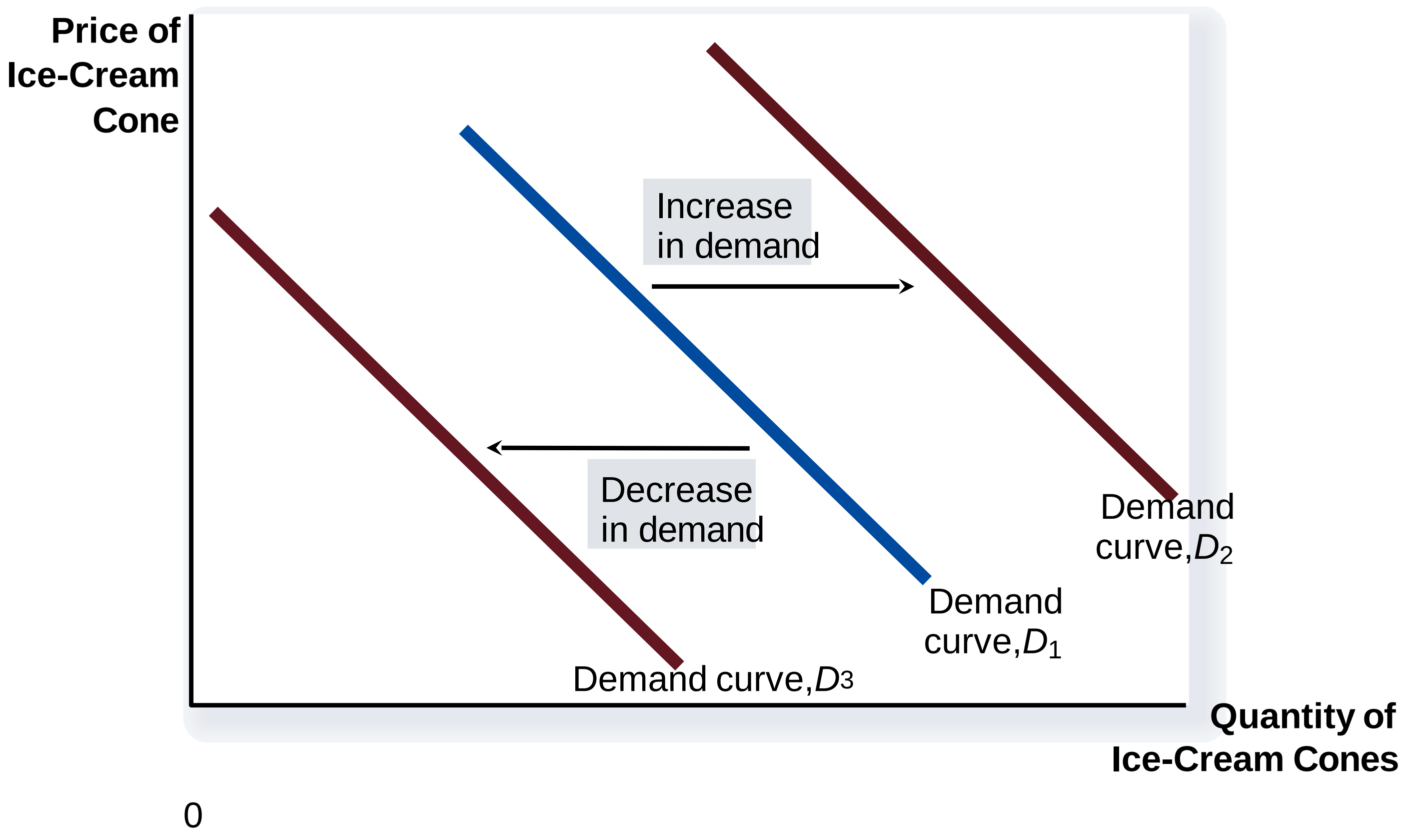
- **Shift** in the demand curve
- Occurs when there are ***changes in other factors,*** but price remains constant
- Increase in Demand ($D_0 \rightarrow D_1$)
- Decrease in Demand ($D_1 \rightarrow D_{2}$)

EXAMPLE OF CHANGES IN QUANTITY DEMANDED

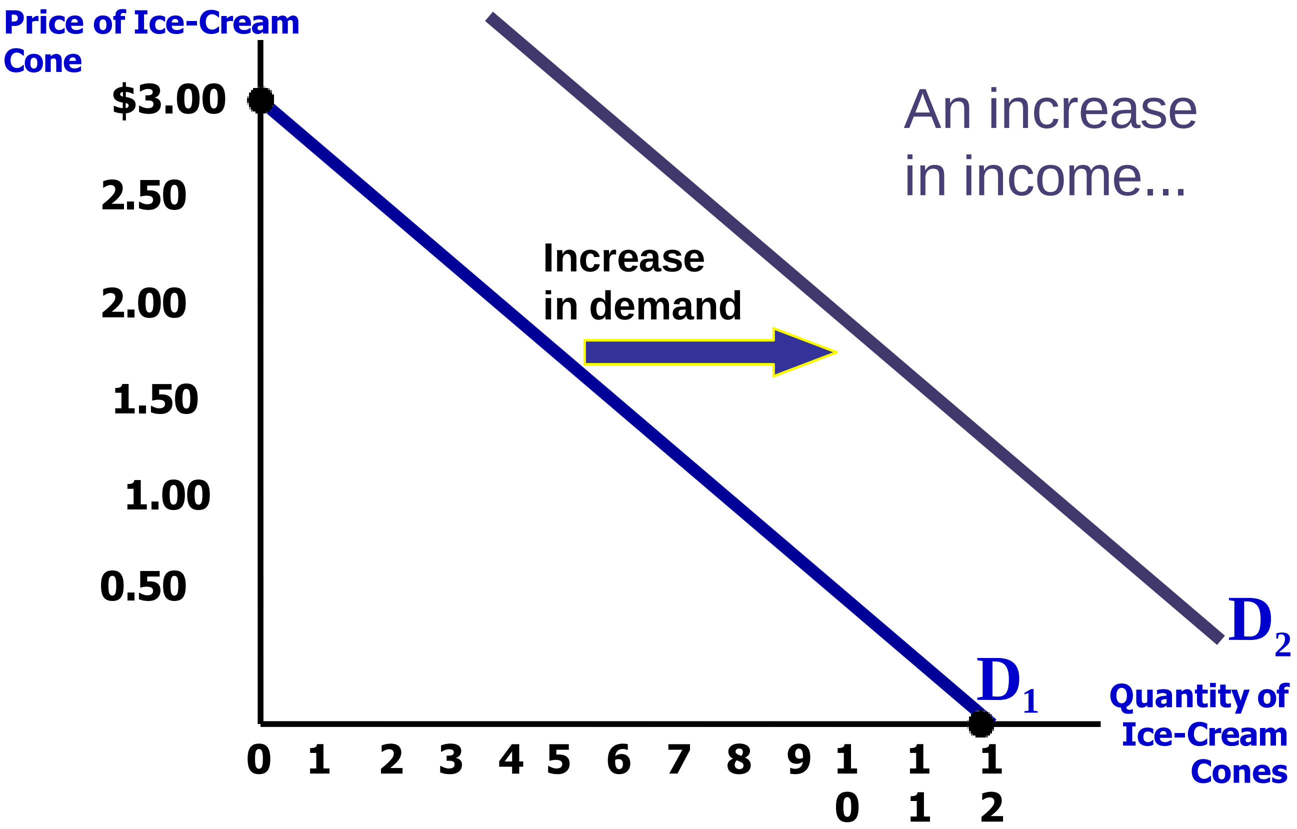


A tax on sellers of ice-cream cones raises the price of ice-cream cones and results in a movement along the demand curve.

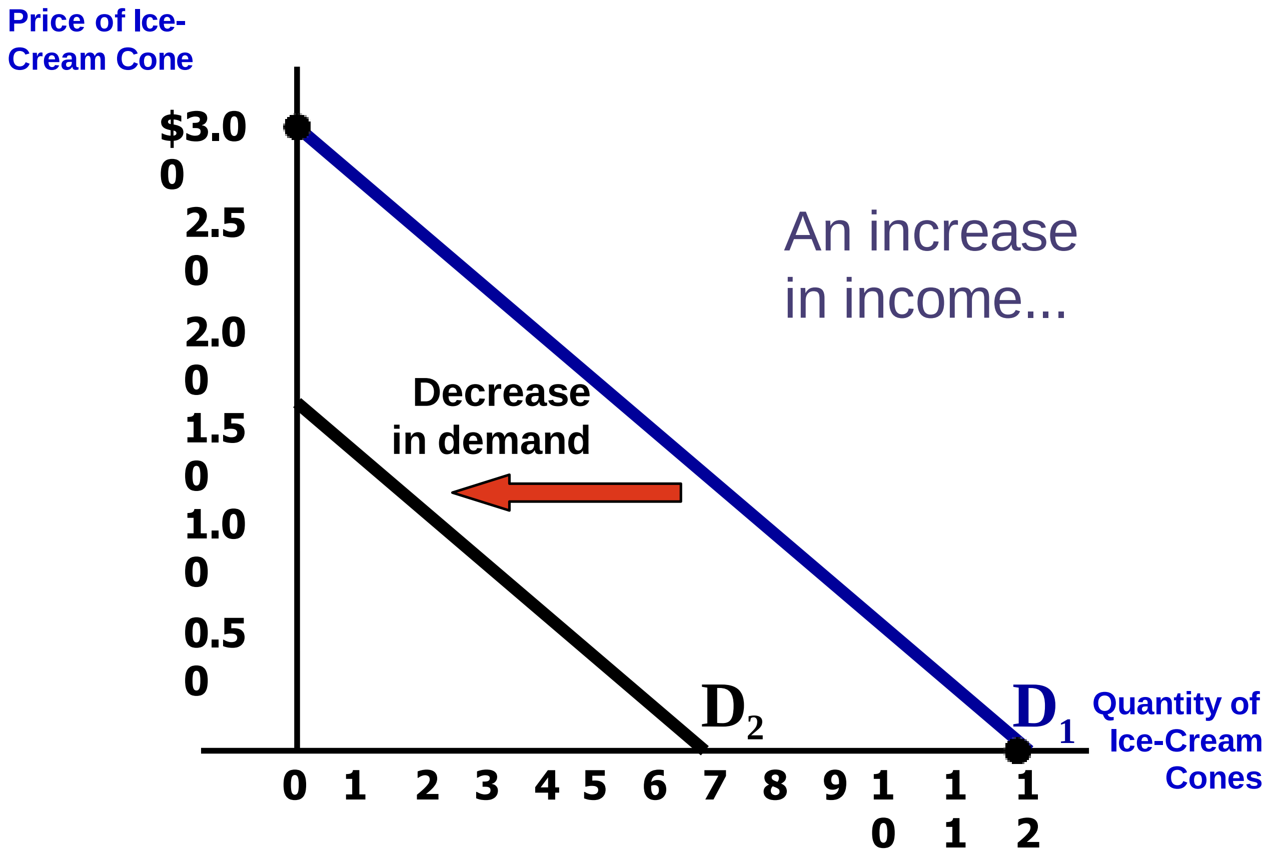
EXAMPLE OF CHANGES IN DEMAND



CONSUMER INCOME - NORMAL GOOD



CONSUMER INCOME - INFERIOR GOOD



ACTIVE LEARNING **1**:

Demand curve

Draw a demand curve for music downloads. What happens to it in each of the following scenarios? Why?

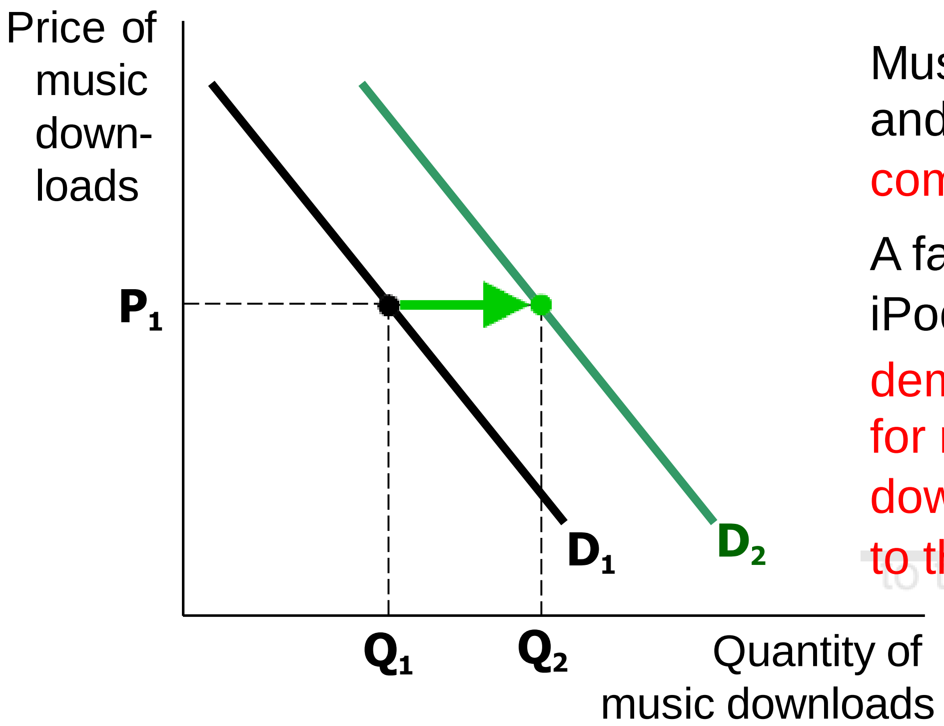
A. The price of iPods falls

B. The price of music downloads falls

C. The price of compact discs falls

ACTIVE LEARNING 1:

A. price of iPods falls



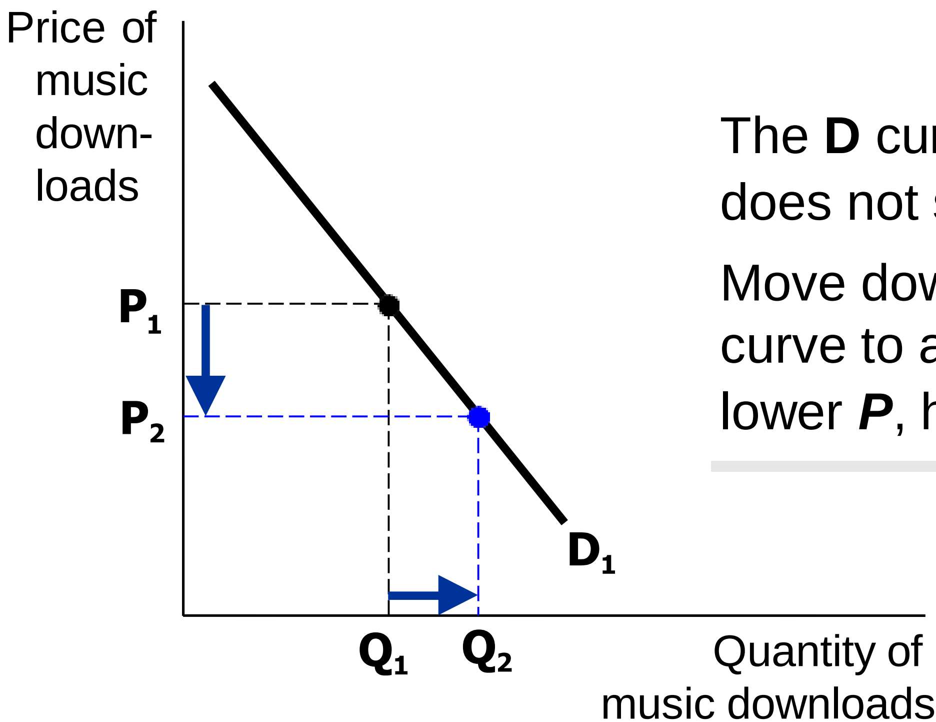
Music downloads and iPods are complements.

A fall in price of iPods shifts the demand curve for music downloads to the right.

to the right.

ACTIVE LEARNING 1:

B. price of music downloads falls

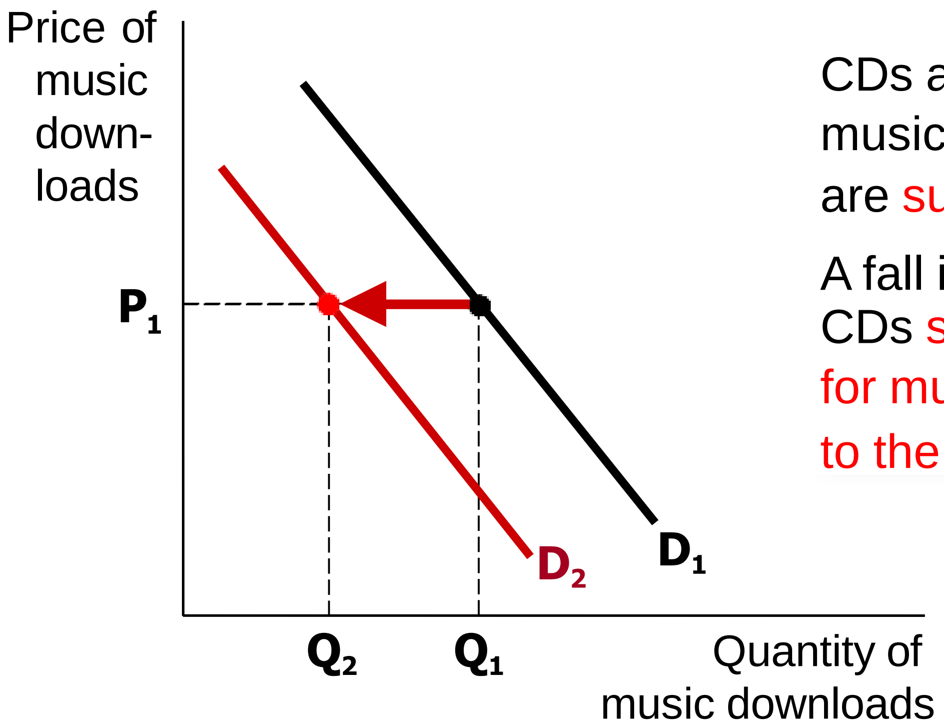


The **D** curve does not shift.

Move down along curve to a point with lower ***P***, higher ***Q***.

ACTIVE LEARNING 1:

C. price of CDs falls



CDs and music downloads are substitutes.

A fall in price of CDs shifts demand for music downloads to the left.

Definition of Supply

Supply is defined as the ability and willingness to sell or produce a particular product and services in a given period of time at a particular ***price***, *ceteris paribus.*

Law of Supply

Law of supply states that:

- *The **higher the price** of a good, **the greater is the quantity supplied** for that good , ceteris paribus*

  and

- *The **lower the price** of a good, **the lower is the quantity supplied** for that good, ceteris paribus.*

P ↑ Q_{ss} ↑

P ↓ Q_{ss} ↓

<u>Law of Supply</u>

Assumption:

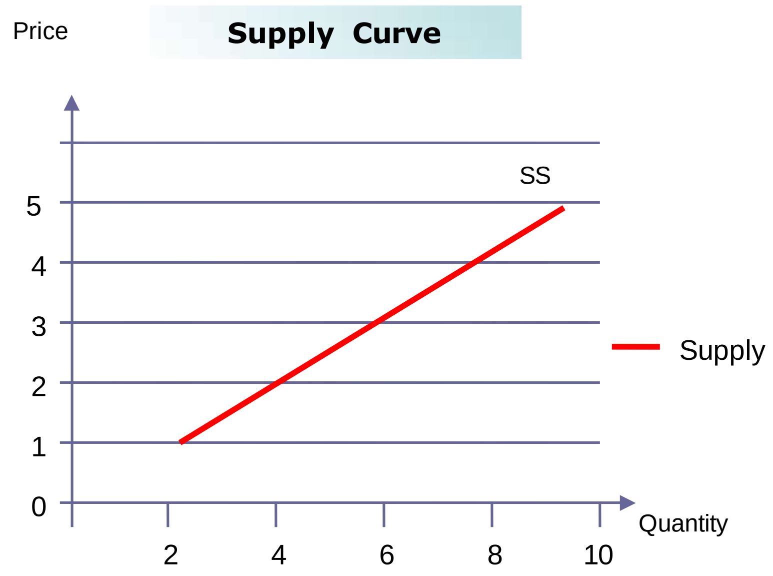
- Cost of production remains constant
- Number of sellers remains the same.
- Price of related goods (complement/substitutes) do not change.
- Availability of other inputs remains unchanged.

Due to law of supply : P ⟷ **POSITIVE RELATIONSHIP** ⟷ **Q**

Supply Schedule and Supply Curve

Supply Schedule

Price	Quantity
5	10
4	8
3	6
2	4
1	2

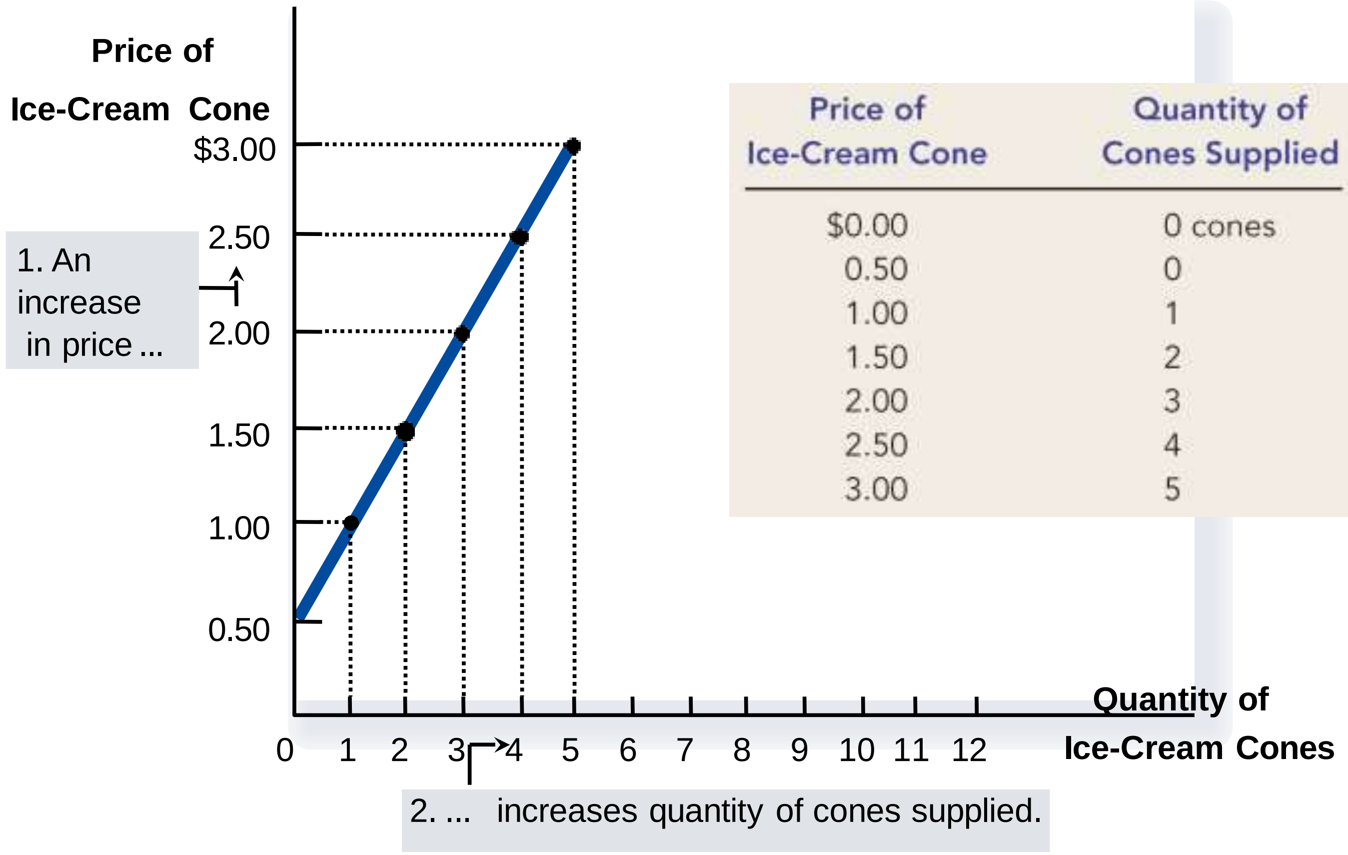


SUPPLY SCHEDULE AND SUPPLY CURVE

- Ben's Supply Schedule

Price of Ice-Cream Cone	Quantity of Cones Supplied
$0.00	0 cones
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5

SUPPLY SCHEDULE AND SUPPLY CURVE



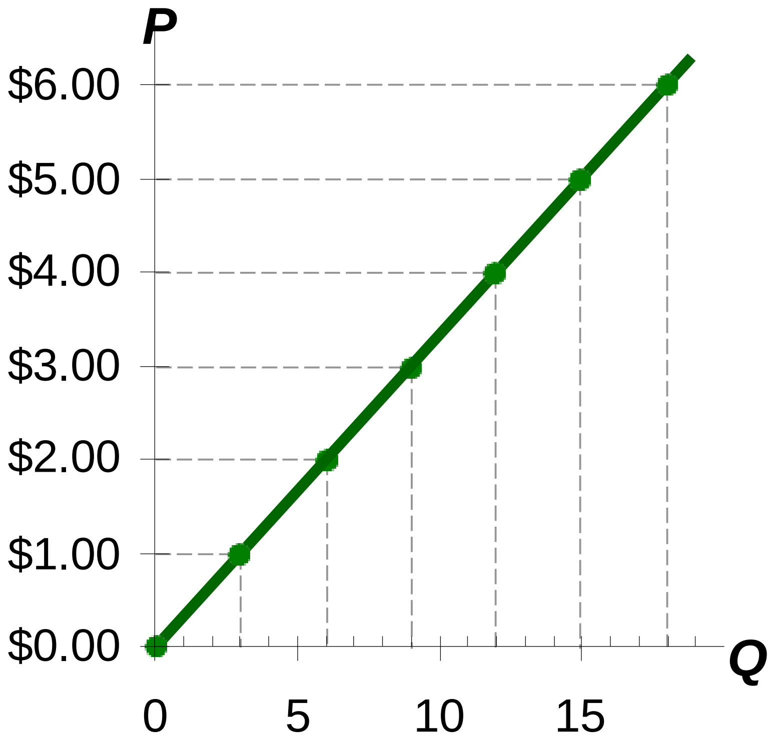
Price of Ice-Cream Cone	Quantity of Cones Supplied
$0.00	0 cones
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5

SUPPLY SCHEDULE AND CURVE

- Example:
  Starbucks' supply of lattes.
- Notice that Starbucks' supply schedule obeys the Law of Supply.

Price of lattes	Quantity of lattes supplied
$0.00	0
1.00	3
2.00	6
3.00	9
4.00	12
5.00	15
6.00	18

SUPPLY SCHEDULE AND CURVE



Price of lattes	Quantity of lattes supplied
$0.00	0
1.00	3
2.00	6
3.00	9
4.00	12
5.00	15
6.00	18

Individual Supply and Market Supply

INDIVIDUAL SUPPLY

The relationship between the quantity of a product supplied by a ***single seller*** and its price.

MARKET SUPPLY

The relationship between the total quantity of a product supplied by adding all the quantities supplied by ***all sellers*** in the market and its price.

Individual supply 1 + Individual supply 2 = Market Supply

Or

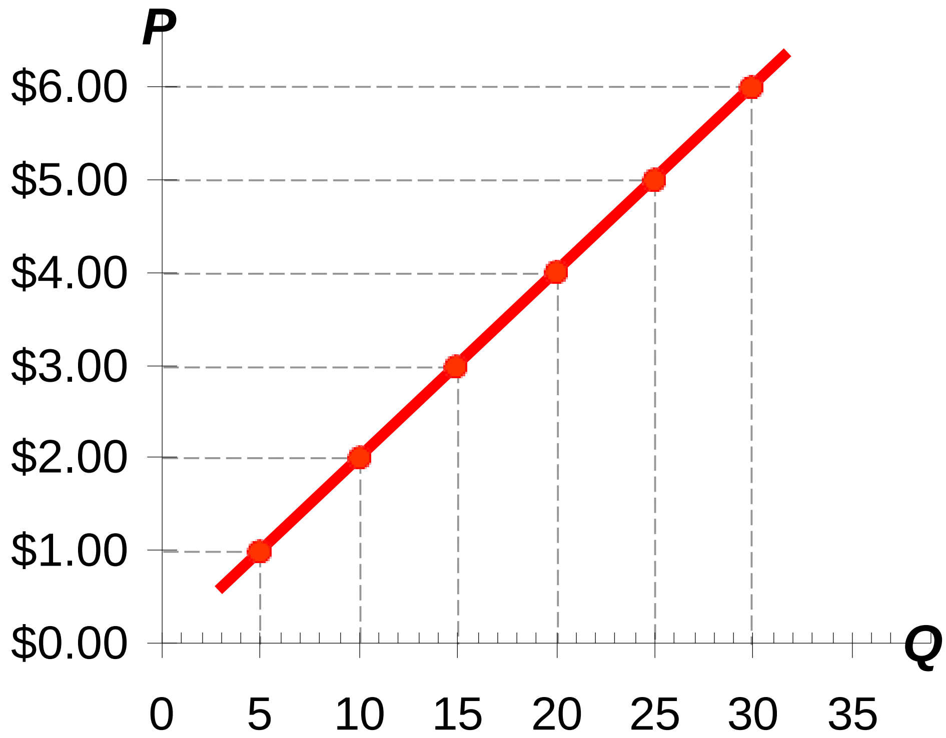
Market Supply = ∑ Individual Supply

INDIVIDUAL AND MARKET SUPPLY

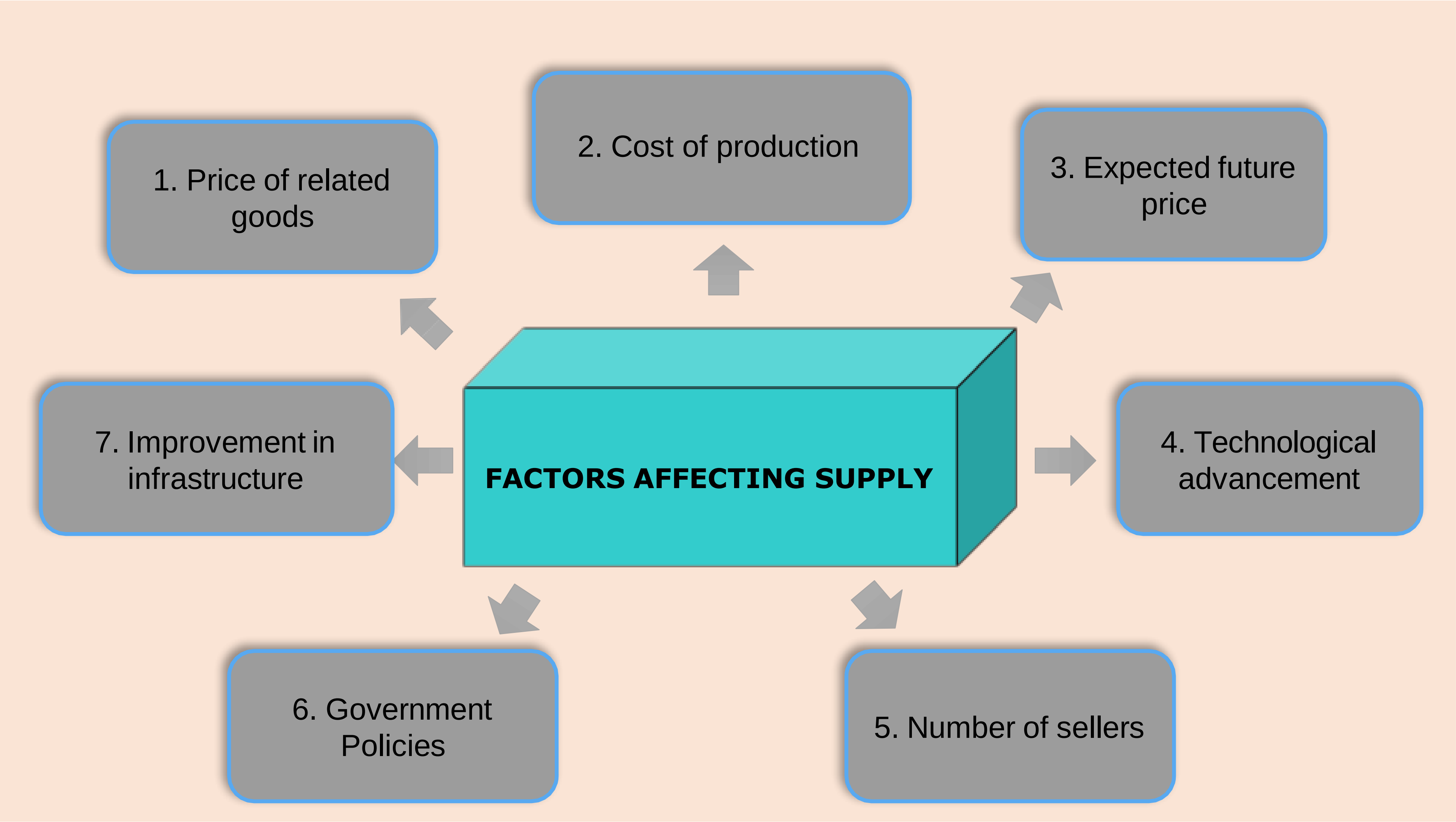
- Suppose Starbucks and Jitters are the only two sellers in this market.
- (Q^s = quantity supplied)

Price	Starbucks		Jitters		Market Q^s
$0.00	0	+	0	=	0
1.00	3	+	2	=	5
2.00	6	+	4	=	10
3.00	9	+	6	=	15
4.00	12	+	8	=	20
5.00	15	+	10	=	25
6.00	18	+	12	=	30

INDIVIDUAL AND MARKET SUPPLY



P	***Q**^s^* (Market)
$0.00	0
1.00	5
2.00	10
3.00	15
4.00	20
5.00	25
6.00	30


2. Cost of production
1. Price of related goods
3. Expected future price
FACTORS AFFECTING SUPPLY
7. Improvement in infrastructure
4. Technological advancement
6. Government Policies
5. Number of sellers

Factors affecting Supply (Explanation)

1. Price of related goods

   A. Substitute

   - Supply of products will increase when there is increase in the price of substitute
   - E.g. : coca cola and pepsi
     - Price of pepsi increases, quantity supplied of Pepsi increase follow (Law of Supply).
     - The supply of coca cola decrease

   B. Complementary

   - Increase in the price of product will increase the supply of complementary product
   - E.g. : pen and ink
     - Price of pen increases, quantity supplied of pen increase follow (Law of Supply.)
     - The supply of ink increase

Factors affecting Supply (Explanation)

2. Costs of production
    - When cost of production increases, supply will decrease
    - E.g. : increase in the wages of labour will increase the cost of production and reduce the supply of that good.

3. Expectation about future price
    - The higher the expected future price, the smaller the current supply of the product.

4. Technological advancement
    - New technologies enable producers to use fewer factors of production and thus lower cost of production and increase supply

Factors affecting Supply (Explanation)

5. Number of sellers

- The larger number of firms supplying a product, the larger the supply
- E.g. : increase in the number of cafeterias in a university campus, the supply of food and drinks increase

6. Government policies

A. Taxes : taxes will decrease supply – taxes discourage producers from producing extra which increase the cost of production.

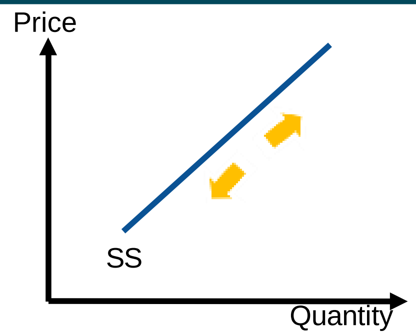
B. Subsidies : subsidies increase supply encourage producers to producing extra

7. Improvement in infrastructure

- Transportation and communication will facilitate free and fast movement of goods in countries, cause supply of the product increase

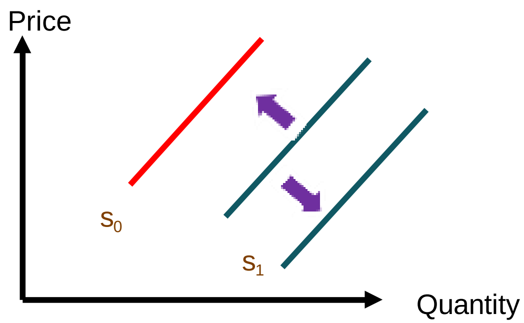
CHANGES IN QUANTITY SUPPLIED VS. CHANGE IN SUPPLY

CHANGE IN QUANTITY SUPPLIED



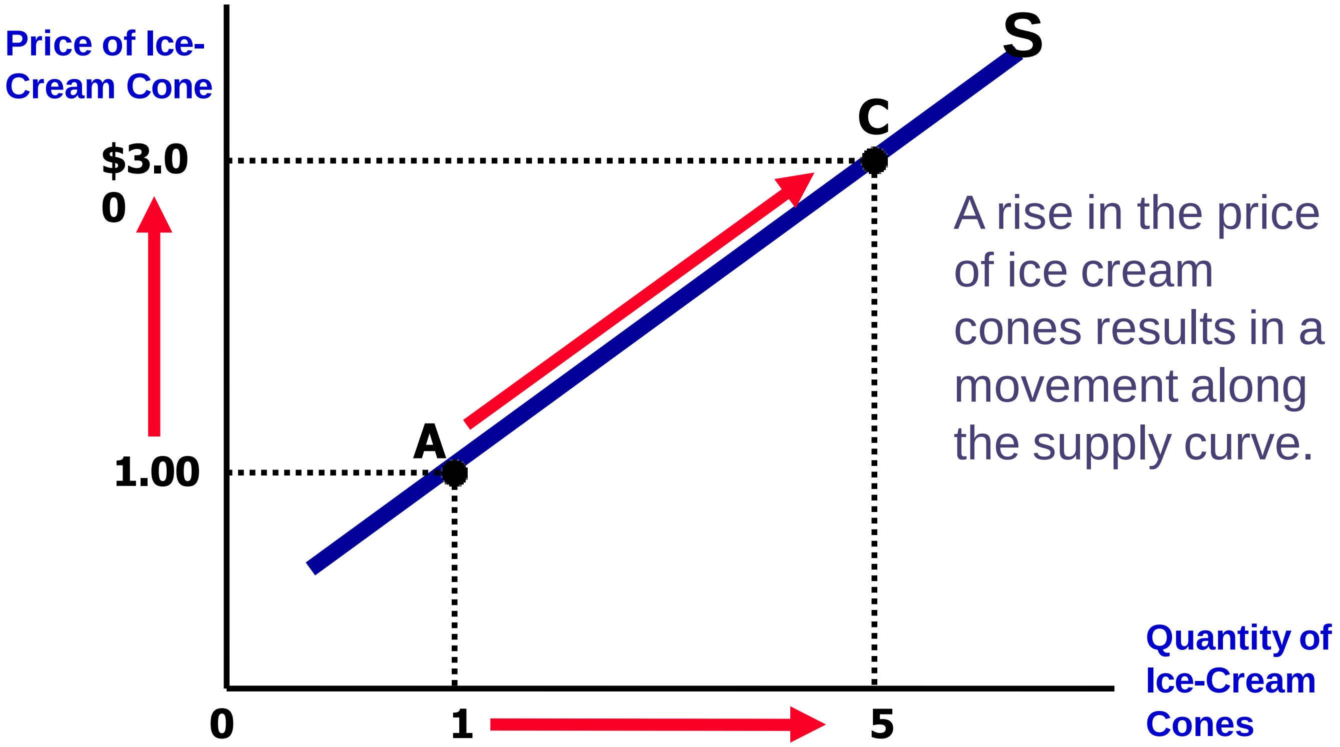
- Movement along supply curve
- Price changes and other factors are constant
- Downward movement □*Decrease in quantity supplied (Contraction)*
- Upward movement □Increase in quantity supplied (*Expansion)*

CHANGE IN SUPPLY



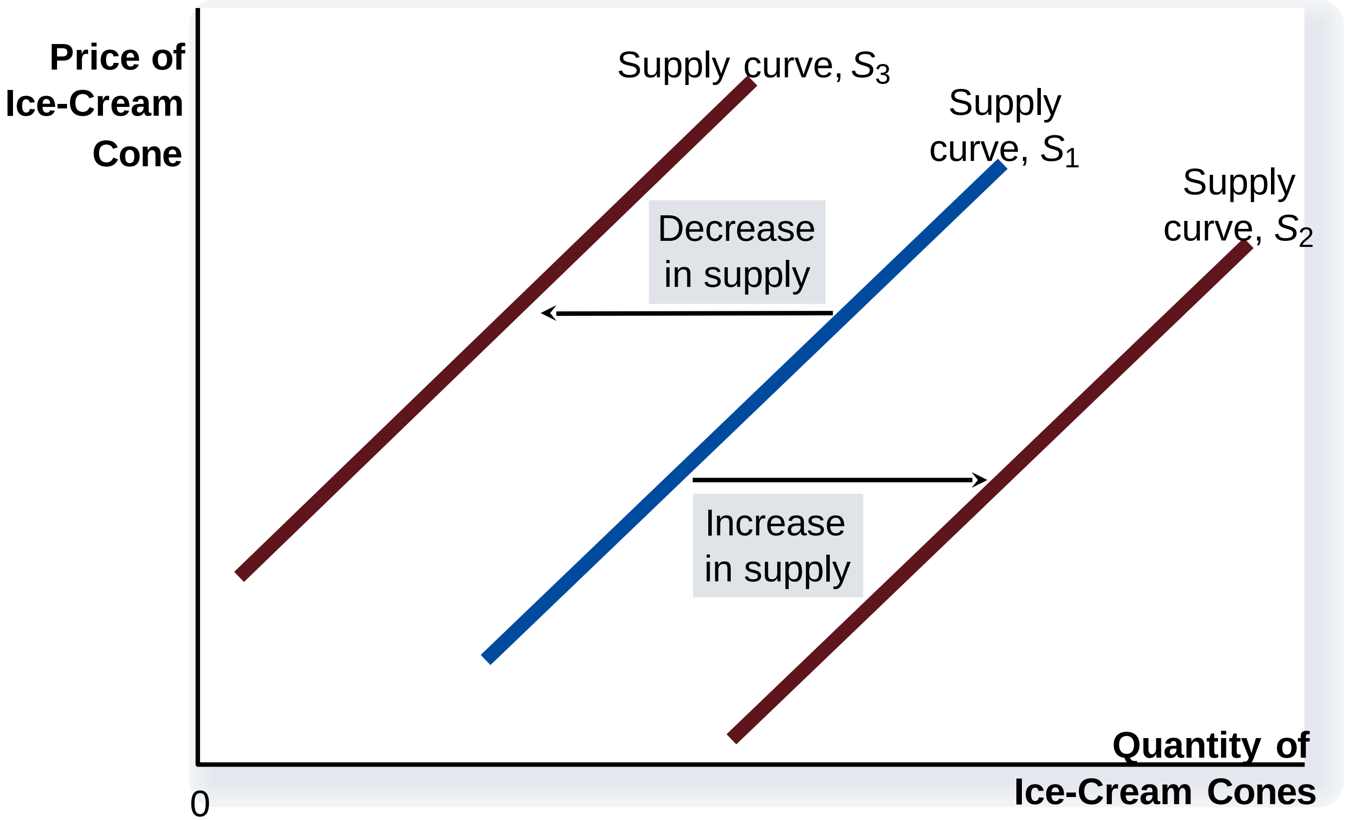
- **Shift** in the supply curve
- Occurs when there are ***changes in other factors*** but the price remains constant
- Increase in Supply ($S_0 \rightarrow S_1$)
- Decrease in Supply ($S_1 \rightarrow S_0$)

CHANGE IN QUANTITY SUPPLIED



A rise in the price of ice cream cones results in a movement along the supply curve.

SHIFTS IN THE SUPPLY CURVE



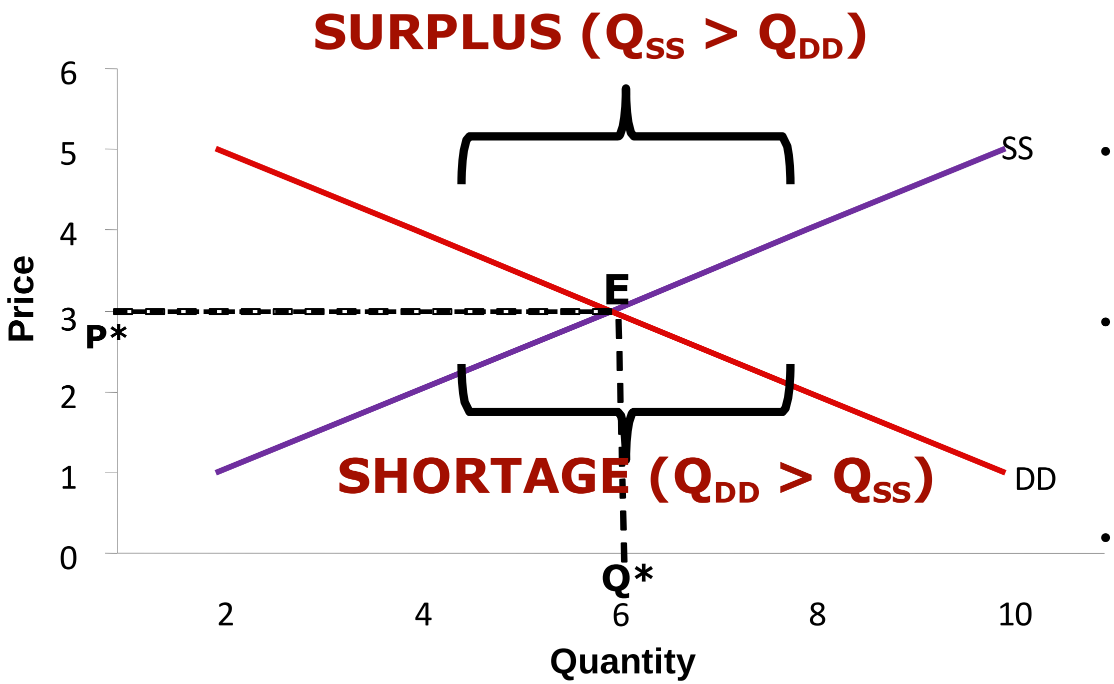
MARKET EQUILIBRIUM

<u>DEFINITION OF MARKET EQUILIBRIUM</u>

A market equilibrium is a situation when ***<u>quantity demanded</u>*** and ***<u>quantity supplied</u>*** are **equal** and there is no tendency for price or quantity to change.

$$\mathbf{Q_{DD} = Q_{SS}}$$

EQUILIBRIUM PRICE AND OUTPUT



- Market equilibrium is determined by the intersection of both demand and supply curves
- Point E indicates the equilibrium price and quantity
- How shortage exists
  - ✓ Quantity demanded greater than quantity supplied
- How surplus exists
  - ✓ Quantity supplied more than quantity demanded

EQUILIBRIUM PRICE AND OUTPUT

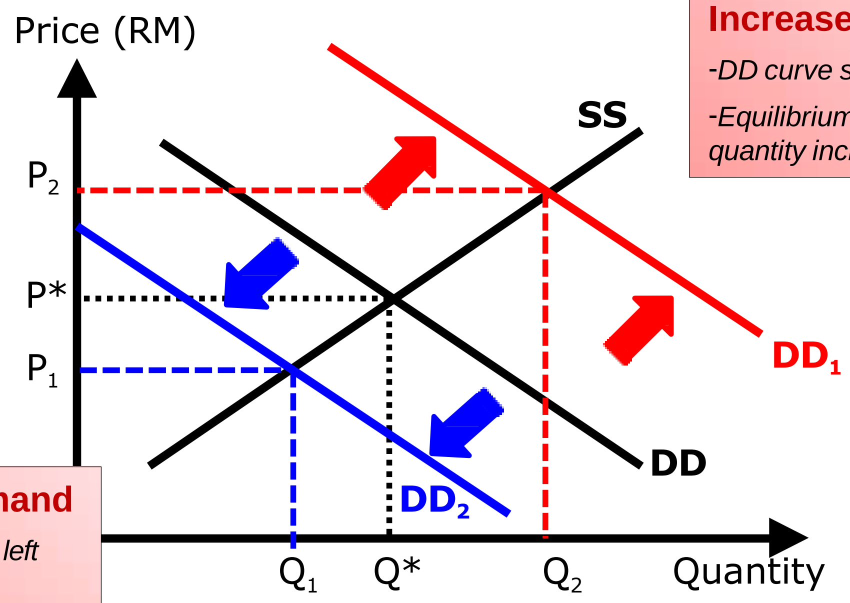
Price	Quantity Demanded	Quantity Supplied	Market Condition	Market Prices
5	2	10	SURPLUS	Falls
4	4	8	SURPLUS	Falls
3	6	6	EQUILIBRIUM	Equilibrium
2	8	4	SHORTAGE	Rises
1	10	2	SHORTAGE	Rises

CHANGES IN EQULIBRIUM PRICE AND QUANTITY

- Market equilibrium will change when there is a shifts in demand and supply curves.
- We will see what happens when:
  - – 1. the demand curve shifts, and supply remains constant
  - – 2. the supply curve shifts, and demand remains constant
  - – 3. both demand and supply curve shifts simultaneously.

EFFECT OF CHANGES IN DEMAND

Assume supply is constant



Increase in Demand

-DD curve shifts to the right

-Equilibrium price and quantity increase

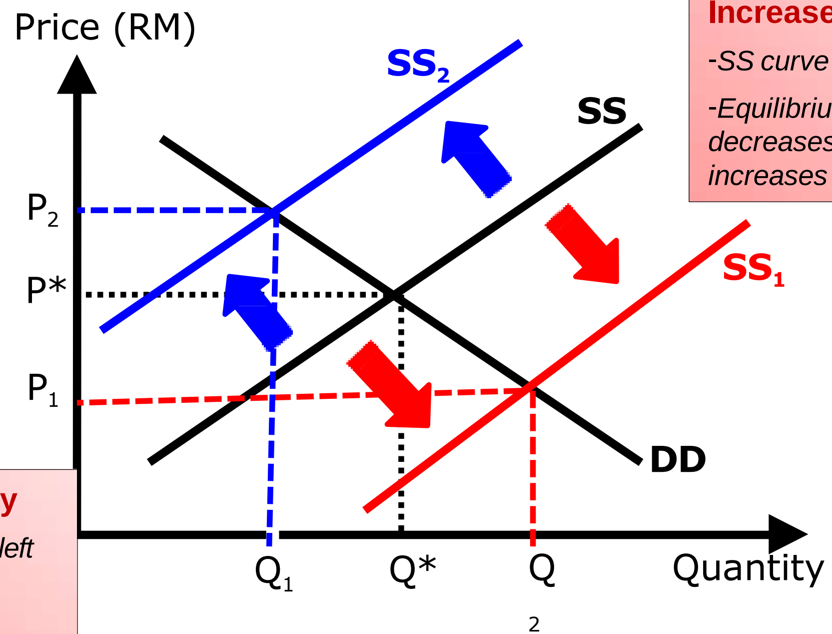
Decrease in Demand

-DD curve shifts to the left

-Equilibrium price and quantity decrease

EFFECT OF CHANGES IN SUPPLY

Assume demand is constant



Increase in Supply

-SS curve shifts to the right

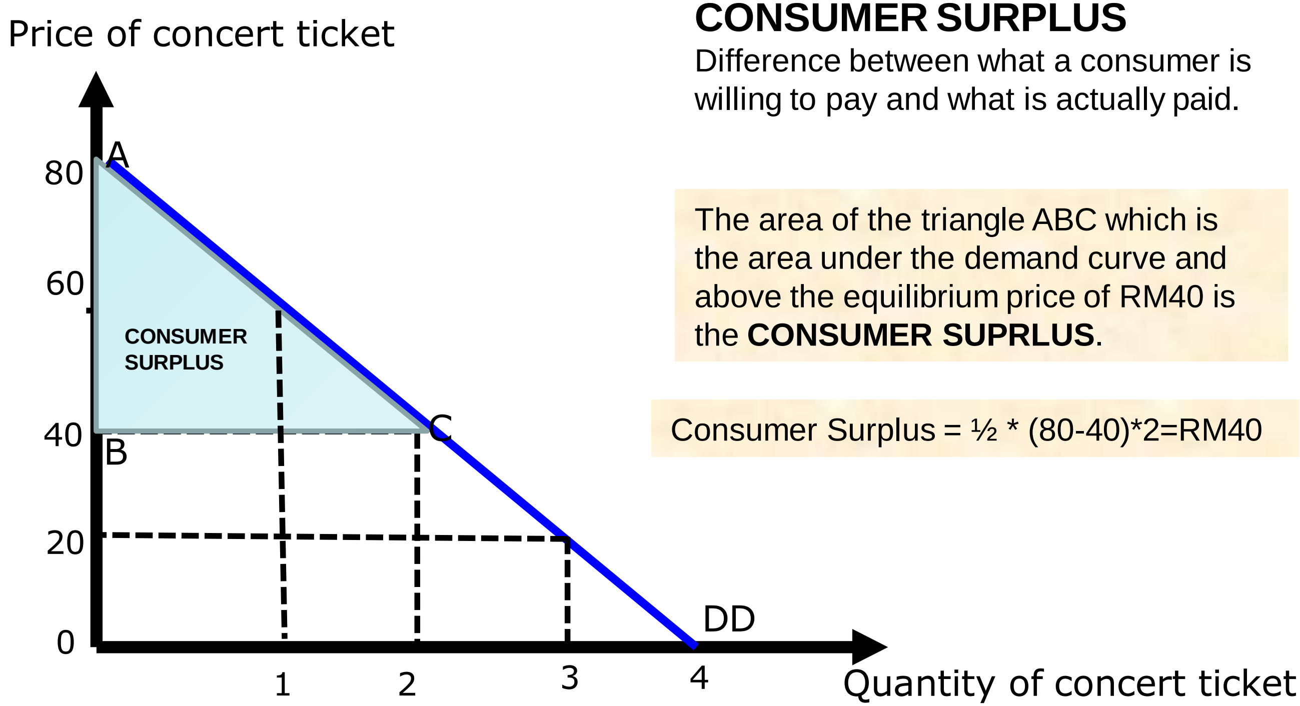
-Equilibrium price decreases and quantity increases

Decrease in Supply

-SS curve shifts to the left

-Equilibrium price increases and quantity decreases

CONSUMER SURPLUS

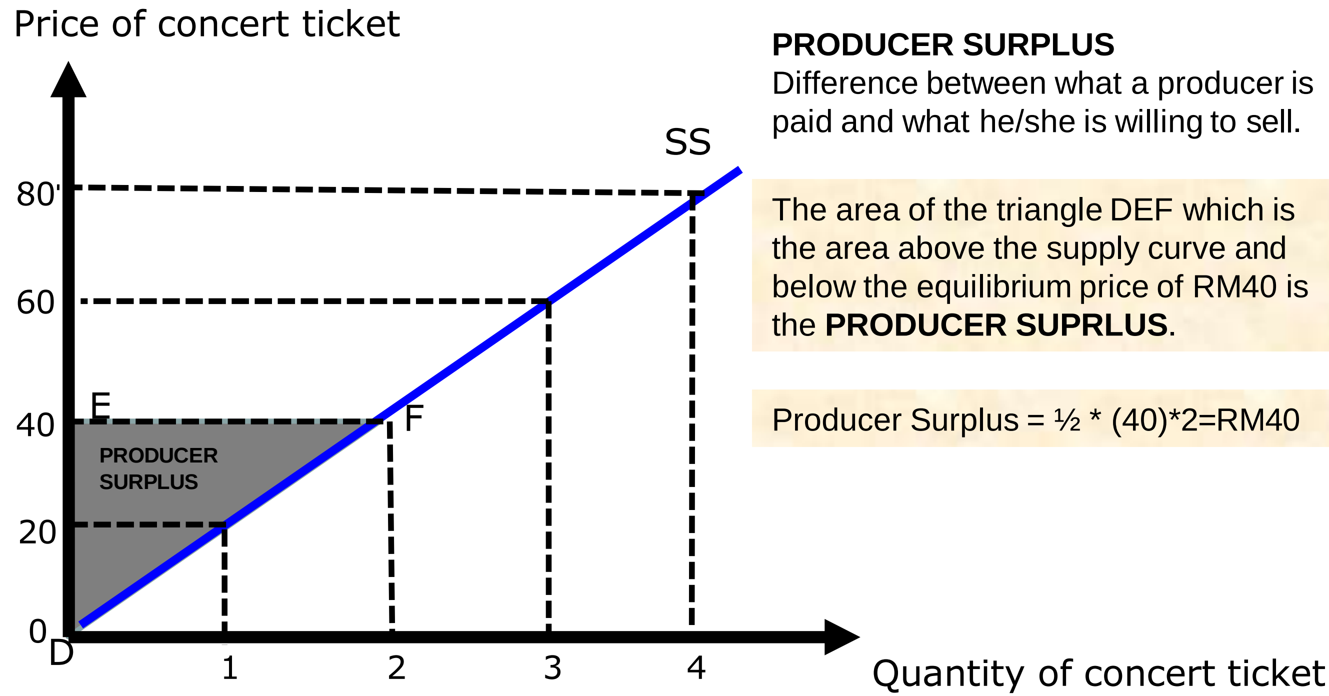


CONSUMER SURPLUS
Difference between what a consumer is willing to pay and what is actually paid.

The area of the triangle ABC which is the area under the demand curve and above the equilibrium price of RM40 is the **CONSUMER SUPRLUS**.

Consumer Surplus = ½ * (80-40)*2=RM40

PRODUCER SURPLUS

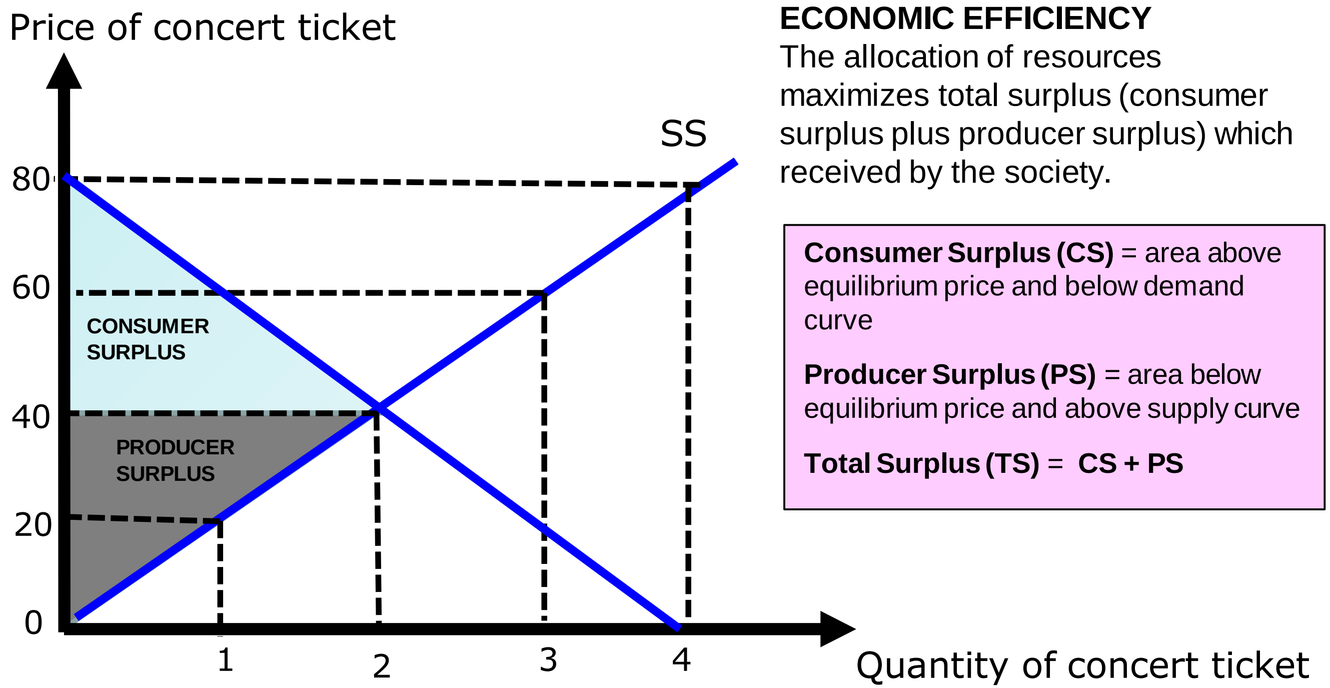


PRODUCER SURPLUS
Difference between what a producer is paid and what he/she is willing to sell.

The area of the triangle DEF which is the area above the supply curve and below the equilibrium price of RM40 is the **PRODUCER SUPRLUS**.

Producer Surplus = ½ * (40)*2=RM40

MARKET EFFICIENCY



ECONOMIC EFFICIENCY
The allocation of resources maximizes total surplus (consumer surplus plus producer surplus) which received by the society.

Consumer Surplus (CS) = area above equilibrium price and below demand curve

Producer Surplus (PS) = area below equilibrium price and above supply curve

Total Surplus (TS) = **CS + PS**

MAXIMUM PRICE

MINIMUM PRICE

GOVERNMENT INTERVENTION IN THE MARKET

TAXES

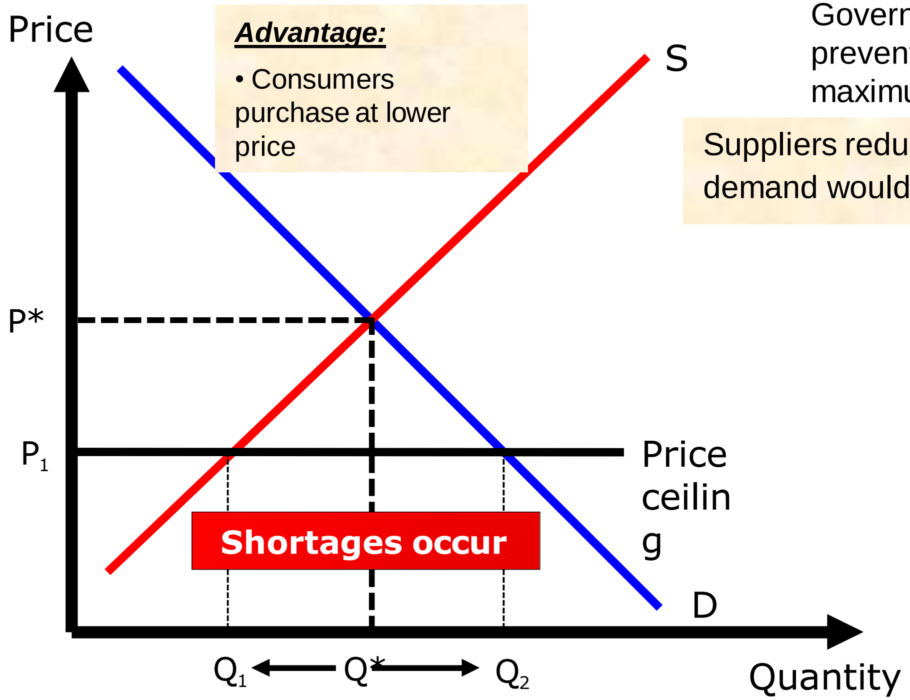
SUBSIDIES

GOVERNMENT INTERVENTION IN MARKETS

MAXIMUM PRICE/CEILING PRICE
Government-imposed regulations that prevent prices from rising above a maximum level

Advantage:

- Consumers purchase at lower price



Suppliers reduce the amount offered to Q_1, but demand would rise to Q_2 creating a shortage

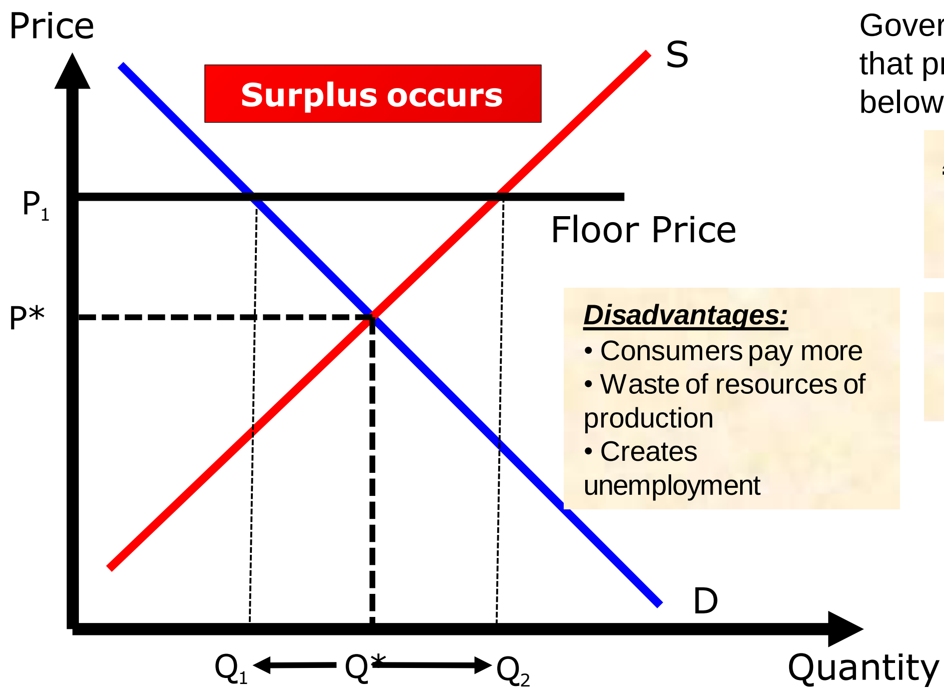
The equilibrium price is P* and the quantity is Q*

The government imposes a maximum price of P1

Disadvantages:

- Emergence of black market
- Reduction in quantity produced
- Producers tend to receive illegal payments from consumers

GOVERNMENT INTERVENTION IN MARKETS



MINIMUM PRICE/FLOOR PRICE
Government-imposed regulations that prevent prices from falling below a minimum level

Advantages:

- Protects the producer's income
- Higher wage rate

Disadvantages:

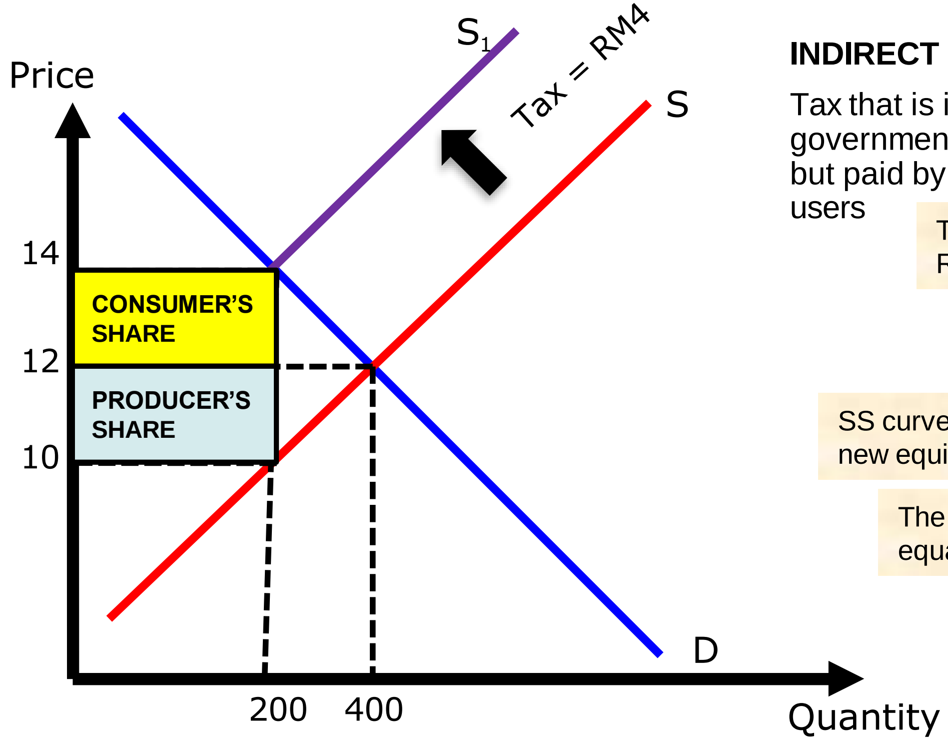
- Consumers pay more
- Waste of resources of production
- Creates unemployment

Suppliers increase the amount offered to Q_2, but demand drop to Q_1, creating a surplus

The equilibrium price is P* and the quantity is Q*.

The government imposes a minimum price of P1

EFFECT OF TAXATION



INDIRECT TAX

Tax that is imposed by the government on producers or sellers but paid by or passed on to end-users

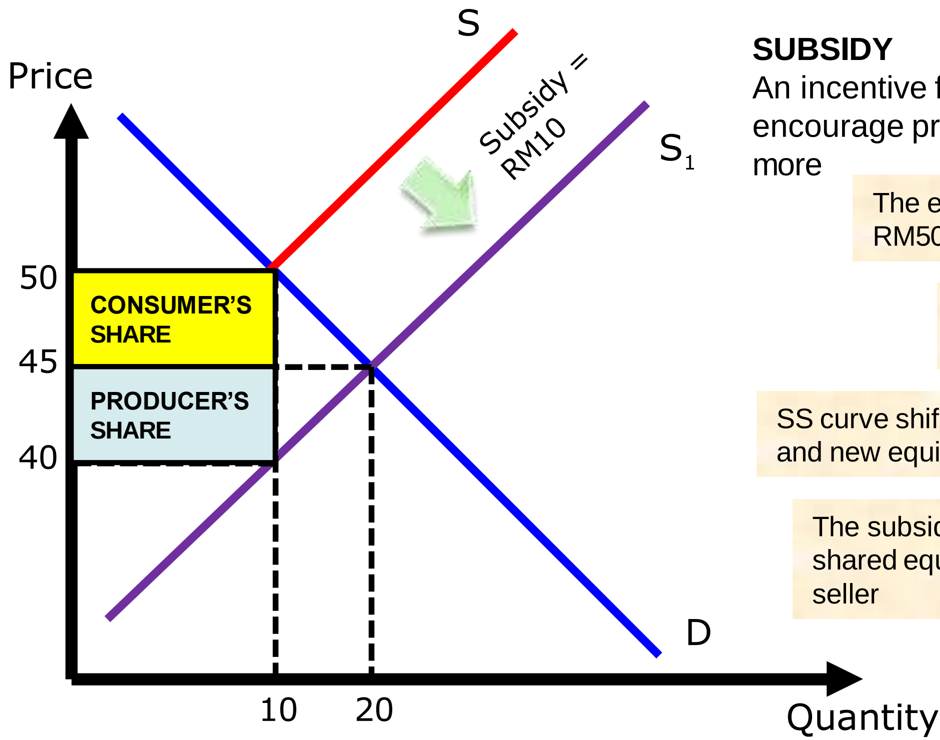
The equilibrium price is RM12, and the quantity is 400

The government imposes a sales tax of RM4 per carton

SS curve shift to left from S to S1 and new equilibrium is RM14 and 200 units

The tax amount of RM4 is shared equally between buyer and seller

EFFECT OF SUBSIDIES



SUBSIDY
An incentive from the government to encourage producers to produce more

The equilibrium price is RM50, and the quantity is 10

The government provides a subsidy of RM10 per unit

SS curve shifts to the right from S to S1 and new equilibrium is RM45 and 20 units

The subsidy amount of RM10 is shared equally between buyer and seller

MARKET FAILURE

- Market failure exists when a free market is unable to deliver an efficient allocation of resources which leads to a loss of economic efficiency.
- **Causes of market failure**

1. Externalities

- Costs or benefit received by third parties that are not directly involved in the economic transaction.
- **Negative externalities** – external costs by society

(A negative externality occurs if an activity creates costs (harm or discomfort) for uninvolved people. Examples of negative externalities: Cars and factories generate air pollution that affects people's health. Cars entering congested freeways impose time costs on other drivers, as all cars slow down as a result)

- **Positive externalities** – external benefit for society

(A positive externality occurs if an activity creates benefits for uninvolved people. Examples of positive externalities: People who get vaccinations against a communicable disease reduce other people's chances of getting the disease. People who improve their property may create benefits for their neighbors by creating a more pleasing neighborhood and increasing property values)

MARKET FAILURE

- **Causes of market failure**

2. Existence of monopoly power

- Producer/supplier has the ability to control the quantity and price of the goods due to absence or limited competition.

3. Public goods

- Goods provided to everyone without excluding any single person from consuming it.
- The marginal cost of providing an additional output to other consumers is zero.
- It is categorized as non excludable (non ability of producers to earn profit from the good) and non rival (the consumption of the good by one person cannot preclude the consumption of that good by another person).
- A free-market economy unable to distribute public goods at an efficient level due to the free rider issues.
- Some consumer tend to be free riders by enjoying the benefits of the goods without paying the costs of production.
- This hinders the markets from producing the goods efficiently, leading to under production.

MARKET FAILURE

- **Causes of market failure**

4. Incomplete information

- Consumer do not have adequate information about prices and quality of the product
- Lack of consumers demand will cause producers to produce large quantities of some products and less of others.
- As a result, consumer will end up consuming more products that do not actually benefit them and fewer products that are beneficial.
- E.g. more people spending their money on slimming pills to reduce weight, but these pills may not be effective and can sometimes lead to harmful side effects. This can be prevented if consumers have enough information about slimming pills.