EASY PEASY

MICROECONOMICS

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PREFACE

The Easy Peasy Microeconomics (volume 1) is designed to assist students taking basic economics courses. Written in simple and easy-to-understand language with an in-depth explanation of economics theories and concepts.

This eBook covers the topics; Introduction to Microeconomics, Demand and Supply Theory, Market Equilibrium, and Price Elasticity of Demand and Supply.

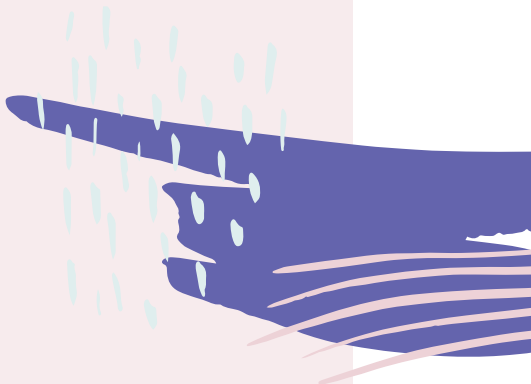
Each topic is supported with an example to give students a clear overview and self-enrichment questions to test students' understanding.

Furthermore, the end of each topic is equipped with tutorial exercises to enable students to relate and apply what they have learned.

We hope this eBook will help students to explore economics concepts better and enjoy their study.

TABLE OF

CONTENTS



TOPIC 1: INTRODUCTION TO MICROECONOMICS

LEARNING OUTCOMES

At the end of this session, student should be able to:

1. Elaborate microeconomics in general.
2. Elaborate economic problems.

1.0 Introduction to Microeconomics in General

1.1 Microeconomics in General

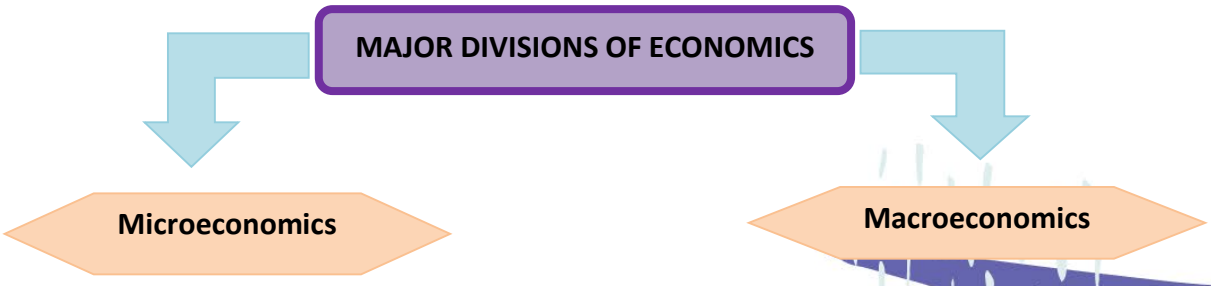
1.1.1 Define Microeconomics

Economics

Economics is a social science that studies individual and societal human behaviour in the distribution and allocation of limited factors of production to maximize the production of goods and services to meet man's unlimited wants and demands.

K.E Case and R.C Fair

A study or how people use their limited resources try to fulfil unlimited wants and involve alternatives or choices.

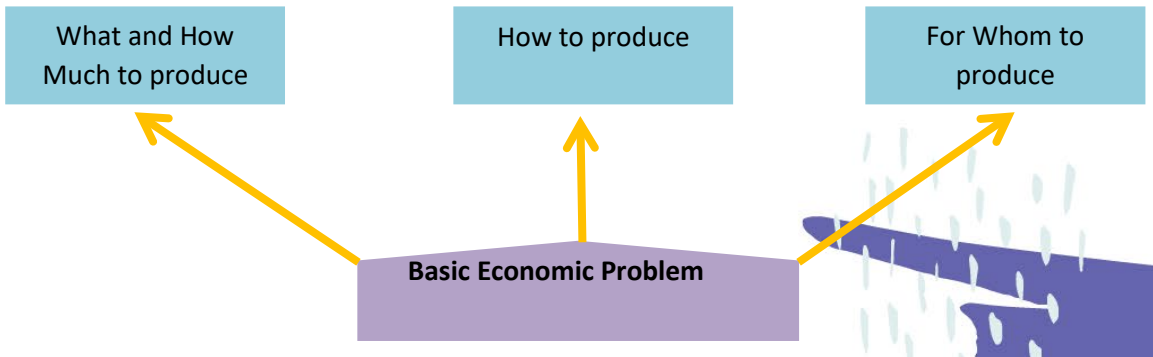


1.1.2 Micro and Macro Economics

MICROECONOMICS	MACROECONOMICS
• The study of small economic units, such as an individual or a firm.	• The overall study of a country's economic activities.
• The branch of economics that studies the behaviour of an individual decision-making unit such as an individual firm's decision in the market, how an individual uses his/her income to maximize satisfaction.	• The branch of economics concerned with aggregate economic decisions or behaviour of an economy as a whole, such as inflation, unemployment, and balance of payment deficit.
• The study of how individuals, households, and firms decide how to allocate limited resources, typically in a market where goods or services are bought and sold.	• The branch of economics concerned with the overall performance, structure, and behaviour of a national or regional economy.
• Focus on how individual, consumer or firm make the decisions in fulfilling their objective.	• Study all aspects of national income, general price level, unemployment, international trade and balance of payment.

1.2 Economic Problems

1.2.1 Three Basic Economic Problems



- ***What and how much goods and services will be produced?***

  Because there are insufficient economic resources to satisfy man's unlimited wants, society must choose which goods will be produced and which must be foregone at a given time. Every society must decide on the type and quantity of goods and services it will produce.

  The determination of the quantity of goods to be produced is crucial, because an increase in one goods production invariably results in a decrease in the production of another goods. As a result, society must ensure sufficient production of all types of goods to meet the needs of the economy as a whole. Due to the scarcity of production factors. Not all of the goods that a society requires can be produced.

  A producer must identify the quantity of demand in the market. If there is a high demand for a particular goods, the producer will increase the production. If there is low demand, the producer must decrease the production. To avoid over supply or under supply in the market, a producer must make accurate decisions about the quantity of goods to be produced.

  Example: Should more clinics be built than schools? How many cars should be produced?

- ***How is output produced?***

  This refers to the most cost-effective method of production. Production techniques are classified as labour-intensive or capital-intensive. A production technique is chosen by a producer based on the relative costs of labour and capital.

  If the labour cost is less than the capital cost, the producer chooses the labour-intensive production method. When the cost of capital is lower than the cost of labour, the producer will choose capital-intensive production.

- ***For whom should the product be produced?***

This refers to distribution. For who are goods and services produced? Generally, a producer produces a goods for people who can afford the price of the goods. This means that those with a higher income can afford more goods, while those with a lower income can afford fewer goods.

1.2.2 Concept of economics problems: Scarcity, Choice, and Opportunity Cost

- Human wants are unlimited, but resources are limited. Limited or scarce resources force individuals and societies to choose. Choices involve sacrifice. When peoples make a choice, opportunity costs will occur.

Scarcity

Scarcity can be defined as desires that always exceeding limited resources available to satisfy them. The needs or wants are unlimited but the world has only a limited supply of natural, time, energy, finances and production factors. Scarcity occurs when goods and services are limited in comparison to man's unlimited wants and desires.

Choice

When there is a scarcity of resources, decisions must be made. Because no one can have everything they want, so they have to choose from the available alternatives. Consumers must make a decision in order to maximize satisfaction, while producers must make a decision in order to maximize profit. Governments must make decisions based on priorities in order to meet the needs of society.

Opportunity Cost

Is the second best alternative that has to be forgone for another choice which gives more satisfaction.

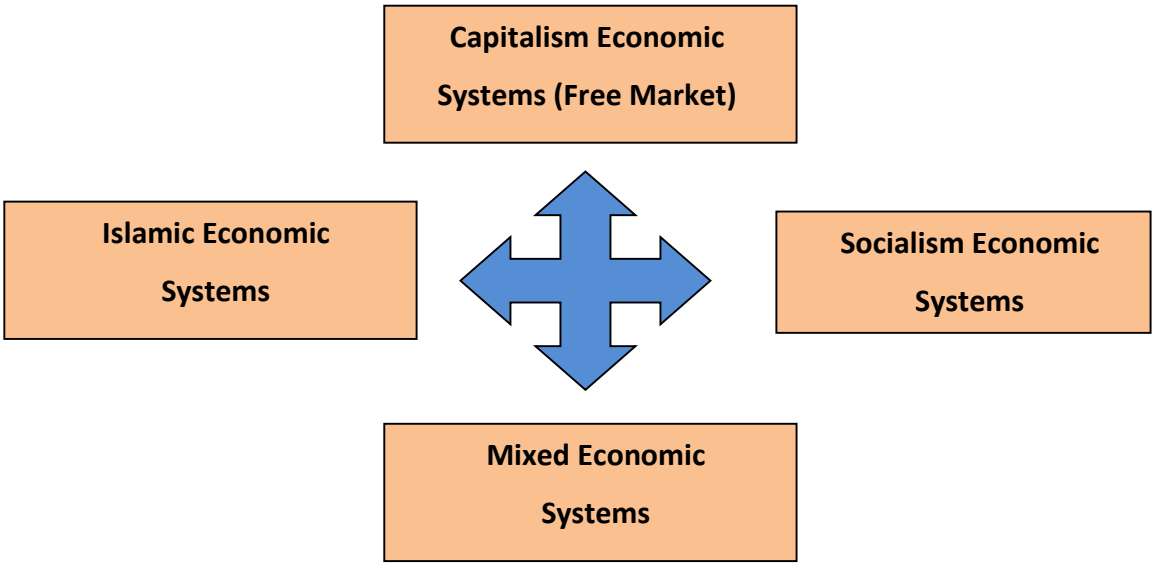
Example

Hayyin has RM350,000 and he would like to open two new businesses: a cafe and boutique. However, he can only open one business because his capital is not enough to support two businesses. In this case, the capital is a **scarcity**.

Hayyin need to make a **choice** either to open a cafe or a boutique that would satisfy his needs.

If Hayyin chooses the cafe than the boutique is the **opportunity cost** because it is the second best alternative that he has to forgo.

1.3 World Economy Systems



1.3.1 Characteristic of World Economic Systems

a) Capitalism/ Laissez-faire Economies: The Free Market

- The term laissez-faire, which literally translates from French as "allow (them) to do."
- Individuals make all major economic decisions in this type of economy, with no government intervention.
- It gives private property rights to individuals, and relies on market forces to coordinate economic activity. (the what, how, and for whom problems are solved by the market)

Characteristics

- Private ownership of resources – resources can be owned by private individuals or private institutions.
- Competition – firms are free to compete with one another (the product will be of high quality).
- Government intervention – government intervention is minimal.
- Price system – price mechanism is used to make economics decisions.

b) Socialism

- To different people, socialism means different things.
- An economic system in which the government or a central authority makes all economic decisions.
- An economic system based on individuals' goods will toward others, not on their own self-interest; in principle, society decides what, how, and for whom to produce.

- The what, how, and for whom problems are solved by government planning boards.

Characteristics

- Public ownership of resources –the government owns the resources.
- Central planning authority – for making decisions.
- Price mechanism lesser importance – prices are set by the government rather than by demand and supply.
- Central control and ownership – government controls production, consumption, and the distribution of goods and services.

c) Mixed Economy

- An economic system that combines both capitalism and socialism systems to solve basic economic problems.
- Both the public and private sectors play a role in the economy.
- In the real world, most countries practice a mixed economy.

Characteristics

- Public and private ownership of resources - Both public and private sectors play important roles.
- Price mechanism and economic plans in making economic decisions – the price mechanism is used to price both goods and services. However, products such as sugar, oil, and rice are declared as controlled items in Malaysia and government fixes the prices.

- The government helps to control income disparity – through income tax and welfare payments.
- Co-operation between the government - public and business sectors leading to economic development.
- Government control of monopolies – to avoid customers being exploited by monopolists, the government will regulate the power of monopolists.

d) Islamic Economy

Characteristics

- Both private and public properties are acknowledged.
- Attain 'falah' in this world and in the hereafter.
- Private and public ownership by God.
- Price mechanism and limited government interventions.
- Distribution of wealth.
- Prohibition of interest (Riba).
- Freedom of economics enterprise.

Table 1.1: Summary of Characteristics of World Economics System

Characteristics	Capitalism/ Laissez-Faire	Socialism	Mixed Economy	Islamic Economy
Resources Ownership	Private institutions/ Private individuals.	Government.	Public (government)/ private.	By god (ALLAH).
Decision Making	Price mechanism.	Central planning authority.	Price mechanism and central planning authority.	Price mechanism.
Price Setter	Price mechanism.	Government.	Price mechanism and central planning authority. fixed price for controlled items e.g sugar, oil, and rice.	Price mechanism.
Production Setter	Private.	Government.	Both private sector and public.	Private.
Government Intervention	Limited.	Full.	Partially.	Limited.

1.3.2 Advantage and Disadvantages of World Economic System

a) Capitalism

Advantages	Disadvantages
Production is based on consumer demand.	Inequality in wealth and income distribution – the gap between the rich and the poor (the rich get richer and the poor get poorer).
Economic freedom – entails the ability to earn and keep property.	Lack of social welfare – social welfare is disregarded. Employees are not provided with pension, social security, or accident benefits by the owners.
Efficient utilization of resources – competition creates efficiency in production. Consumers can obtain high quality goods at a lower cost since production techniques are more efficient.	Miss-allocation of resources – producers only produce products with the highest profit margins. Only make high-end products (for rich people).
Variety of consumer goods – as a result of freedom of enterprise (consumers will enjoy a wide variety of the same product).	Social costs – bad environment caused by improper disposal of factory wastes (pollution).
Enhance trade, business, and research and development (R&D) – producers always lookout for new innovations to compete with others producers.	The unnecessary variety and wasteful competition.

b) Socialism

Advantages	Disadvantages
Production based to basic needs – producing the basic needs of the people.	Lack of incentive and initiative by individuals – they are not motivated to work harder.
Income and wealth are distributed equally – there is no disparity between the rich and the poor.	Absence of competition – as a result of the lack of competition, low quality products are produced.
There is no significant unemployment or inflation.	Due to a lack of competition in the economy, technological development and innovation are not encouraged.
Better allocation of resources – the resources are used efficiently.	Individual freedom is limited. There is no freedom in private ownership because the government owns all of the properties and factors of production.
Social welfare – government providing full social security benefits such as pensions, accident benefits, and so on.	There is a lack of competition and an absence of individual effort.

c) Mixed Economy

Advantages	Disadvantages
Co-operation between the public and private sectors. Solving basic economic problems leads to more efficient resource allocation and a higher quality of life.	Individuals (the private sector) and the government have different viewpoints.
More options/choices. In a mixed economy, more goods will be produced than in a free market or socialism.	Possibility of the market and economic instability.
Efficient resource allocation. In a mixed economy, the government and private sectors compete with each other to obtain resources and produce goods.	Possibility of inefficiency in the use of resources.
Social welfare prioritized.	Possibility of conflict between the private sector and the government.
Prevention - control of monopolies.	

d) Islamic Economy

Advantages
A priority of safety and happiness on earth and in the afterlife.
Eliminates economic activities having elements of interest (riba).
Ensures social welfare.
Prohibits monopolies.
Distributes wealth and income fairly.

1.3.3 Solving Basic Economic Problems

a) What goods and services should be produced?

Economic System	Solution
Free Market Economy	Determined by the power of demand or consumer spending habits.
Central Planned Economy	Determined by the ruling authority or government through a central planning institution. An individual does not have the freedom to determine the types and quantity of goods to be produced.
Mixed Economy	Determined by price mechanisms. The government produces goods that are not produced by the private sector.
Islamic Economy	Determined by price mechanisms. Individuals are free to choose or manufacture the types of goods to be produced, subject to Islamic laws.

b) How much goods and services should be produced?

Economic System	Solution
Free Market Economy	Based on the price determined by the market demand.
Central Planned Economy	An individual does not have the freedom to determine the types and quantity of goods to be produced. Priority is given to the production of basic necessities and public goods.
Mixed Economy	The private sector produces goods based on price mechanisms. The government will supply public goods for the use of all members or society.
Islamic Economy	Determined by price mechanisms. The government will supply goods that are not produced by the private sector.

c) How should goods be produced?

Economic System	Solution
Free Market Economy	Firms will choose a combination of production factors to minimize costs.
Central Planned Economy	Based on the government's goal.
Mixed Economy	Firms will choose the production method that will maximize profits and minimize costs.
Islamic Economy	Firms will try to minimize production costs by using the most efficient production techniques.

d) For whom should goods be produced and distributed?

Economic System	Solution
Free Market Economy	Determined based on an individual's purchasing power or income.
Central Planned Economy	Goods are distributed fairly. The government controls prices to ensure that each individual is able to enjoy goods that are produced.
Mixed Economy	Determined by price mechanisms. The income gap can be resolved through taxation and subsidy policies.
Islamic Economy	Goods are distributed based on purchasing power and individual income.

TUTORIAL EXERCISES

Tutorial 1

a. State whether each of the statement is **microeconomics** or **macroeconomics.**

Honda had increased the production of new hybrid car since June 2010.	
The numbers of workers in foods industry has increased tremendously over the last five years.	
The unemployment rate in China had decreased since the implementation of open economy.	
The price of meat has decreased as a result of lower tariff rate.	
It is anticipated that demand for house will rise since the government had raise the income of civil servants.	
The inflation rate of Malaysia is 2.9% in year 2009.	
Rice imports from Thailand and Vietnam have increased as domestic consumption has increased.	

Tutorial 2

a. Define Economics.

b. The field of economics is divided into **TWO (2)**. State the field of economics.

c. Differentiate between microeconomics and macroeconomics.

Tutorial 3

a. State **THREE (3)** types of economic problems:

b. For each of the following statements, answer **TRUE or FALSE.**

   i. Because resources are scarce, products and services are scarce.

   ii. Microeconomics is concerned with the overall functioning of the economic system.

   iii. Basic economic problems are what and how much to produce, how to produce and for whom to produce.

   iv. Macroeconomics explains the behaviour of individual households and businesses.

c. Give the meaning of economics.

Tutorial 4

a. Define the opportunity cost.

b. Economics problem arising from the human desires is unlimited compare with the factors of production are limited. Based on this statement, explain **THREE (3)** basic economics problems.

c. Explain **THREE (3)** advantages of mixed economic system.

Tutorial 5

a. What is the meaning of mixed economic system?

b. Explain **FIVE (5)** characteristics of mixed economy.

c. State **THREE (3)** demerits of Socialism economy.

Tutorial 6

a. Differentiate between free market and centrally planned economy characteristics.

b. Explain **FIVE (5)** advantages of capitalism.

TOPIC 2: THE DEMAND AND SUPPLY THEORY

LEARNING OUTCOMES

At the end of this session, student should be able to:

1. Illustrate and explain the demand theory.
2. Illustrate and explain the supply theory.

2.1 Demand Theory (DD)

2.1.1

Demand

Demand refers to the desire of a consumer or buyer to obtain a quantity of goods or services, supported by the willingness or ability to purchase and pay for the goods or services at a particular price in a given period of time (ceteris paribus).

This refers to how much (quantity) of a product or service is desired by buyers.

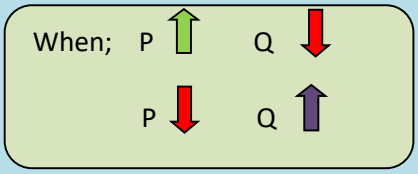
Quantity demanded refer to the quantity of goods or services that are purchased at a certain price in a given period of time.

2.1.2

Law of Demand

With the assumption of other factors remain constant – When price increase, quantity demanded will decrease. When price decrease, quantity demanded will increase.

A **negative relationship** between price and quantity demanded.



2.1.3 Demand Curve

A ***demand curve*** is a curve describing the quantities of a goods a consumer is willing and able to buy at alternative prices in a given time period.

It illustrates the relationship between quantity demanded and the price of goods and services.

The demand curve will move **downward from left to the right.**

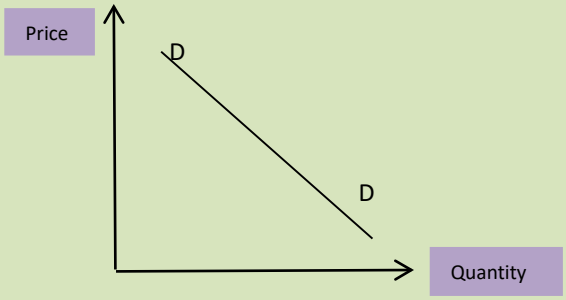


Table 2.1: Demand Schedule

Price (RM)	Quantity Demanded (kg)
1	50
2	40
3	30
4	20

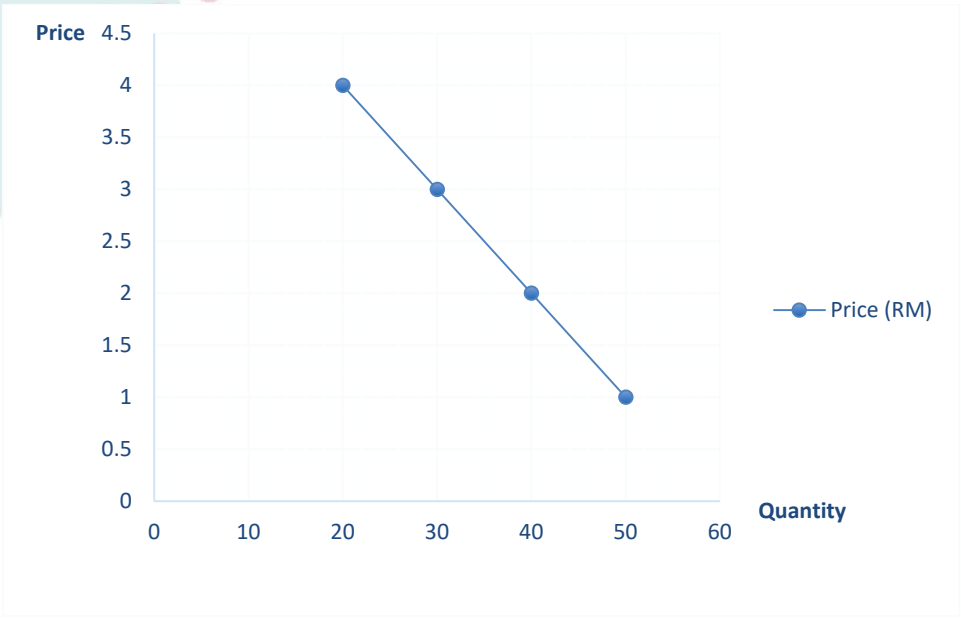


Figure 2.1: Demand Curve

2.1.4 Compare Between Individual demand and market demand curve

Individual Demand	Market Demand
Demand of an **individual consumer** for a specific goods at a certain price in a given period of time.	Quantity of goods demanded by **all individuals or consumers** in a market at a certain price in a given period of time.

Table 2.2: A Individual and Market Demand Schedule

Price (RM)	Quantity Demanded			Total Quantity Demanded/ Market Demand
	YAYA	PIPI	PAPA ZOLA	
5	10	12	8	(10 + 12 + 8) = 30
4	20	23	17	60
3	35	39	26	100
2	55	60	39	154
1	80	87	54	221

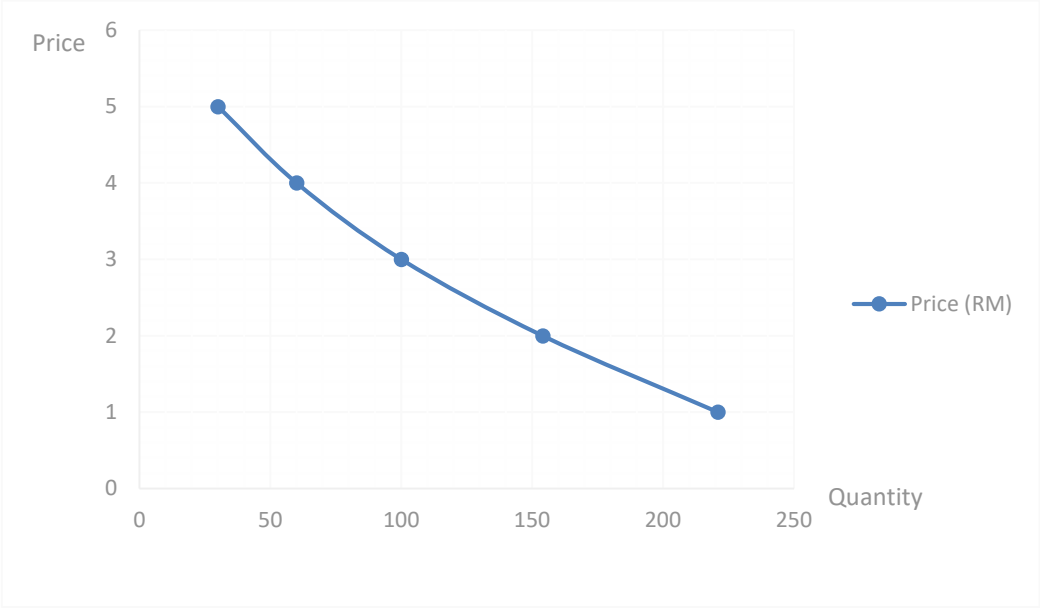


Figure 2.2: Market Demand Curve

2.1.5 Calculate the Demand Function

Demand function – relationship between quantity demanded and price in a mathematical form.

Qd = a – bP

Qd : quantity demanded.

a : the quantity of the demand when the price (P) is zero.

- : the negative symbol that indicates the inverse relationship between the price and quantity demanded.

b : the gradient of the demand curve.

P : the price of the goods.

Example:

The table below shows the quantity demand of a goods at various prices. Find the demand function.

Price (RM)	Quantity Demanded (units)
1	40
2	38
3	36
4	34

STEP 1

Using simultaneous equations:

Qd = a – bP

(-) 40 = a – 1b …… (1)

38 = a – 2b …… (2)

STEP 2

Equation (1) minus equation (2)

2 = 0 + b

Therefore, **b = 2**

STEP 3

Substituting b = 2 into equation (1)

40 = a – 1(2)

40 = a – 2

a = 40 + 2

a = 42

LAST

Therefore, the demand function is;

Qd = a – bP

Qd = 42 – 2p

Let's have a try

Question:

The table below shows the quantity demand of a goods at various prices. Find the **demand function.** *(answer : Qd = 80- 6p)*

Price (RM)	Quantity Demanded (units)
1	74
2	68
3	62
4	56
5	50

Question:

The table below shows the price and quantity demanded goods T. Based on the demand function Qd = 100 – 5p, complete the table below.

Price (RM)	Quantity Demanded (units)
2	
4	
6	
8	
10	

2.1.6 The factors that influencing demand/ Determinants of Demand

a) Internal factor

Price of Goods

- Assuming that all other factors remain constant, changes in the price of a goods will affect the quantity demanded for the goods.
- When the price of goods falls, the quantity demanded goods will increase.

b) External Factors

i. Society's income

- The effect is determined by the type of goods (normal goods or inferior goods).
- Normal goods – when consumer income increases, demand for these goods increases. When consumer income decreases, demand for these goods decreases. (for instance; cars, shirts, books, and others).
- Inferior goods - when consumer income increases, demand for these goods decreases. When consumer income decreases, demand for these goods increases. (example; low-grade rice).

ii. Change in consumer's tastes

- A favourable change in tastes indicates that people now prefer these goods more than before, which will increase demand (shift the curve to the right).
- An unfavourable change indicates that people now like this good less than before, which will decrease demand (shift the curve to the left).
- Coffee and Nescafe are two examples.

iii. Expectations on future price and income

- Specifically, about future prices.
- If there is a belief that prices will increase in the future, people will buy more today while it is relatively cheaper. This will shift the demand curve to the right.
- If there is a belief that prices will fall in the future, people will consume less today and more tomorrow. This will shift the demand curve to the left.

iv. Number of buyers

- If the number of buyers increases, the demand curve will shift to the right.
- When the number of buyers decreases, the demand curve will shift to the left. (shift the market demand curve, but not the individual demand curve)

v. Festive Seasons and Climate/Weather

- During festive seasons, different products will be high in demand.
- For example, demand for mandarin oranges will be higher during Chinese New Year, and demand for lemang will be higher during Hari Raya.

vi. Interest Rate

- When the housing loan interest rate rise, the cost of taking out a loan will increase.
- The availability of credit or payment instalment facilities will cause the demand for a goods to increase even if the price of the goods does not change.

- The low interest rate will encourage more credit expenditure or loans. For example, the demand for durable and expensive goods such as cars and houses will increase.

vii. Government Policies

- Government policies such as taxation and subsidies can have an impact on demand.
- When the government rises the taxation rate on imported goods, demand for import goods falls as prices rise, and vice versa.
- When the government subsidizes the production of a goods, the demand for that goods will increase. This is because the price of the goods will decrease due to subsidy and vice versa.

viii. The price of other goods

a) Substitutes Goods

- Substitutes are goods that can be substituted for one another – goods that are consumers consume as alternatives to one another, such as coffee and Nescafe, apples and oranges, coke and Pepsi, and so on.
- Substitutes are pairs of goods where an increase in the price of one goods causes an increase in the demand for the other and a decrease in the price of one goods causes a decrease in the demand for the other.
- Example: When the price of Milo increases, the quantity demanded of Milo will decrease and the demand for Chocolate will increases, ceteris paribus.

b) Complementary Goods

- These are goods that are consumed together, such as cars and petrol, camera and film, pen and ink.
- Complements are pairs of goods where an increase in the price of one causes a decrease in the demand for the other and a decrease in the price of one causes an increase in the demand for the other.
- Example: When the price of tennis racket increases, the quantity demanded of the tennis racket will decrease and the demand for tennis ball will decrease, ceteris paribus.

2.1.7 Movement Along the Demand Curve and Shift in The Demand Curve

a) Change in quantity demanded or Movement Along Demand Curve

- Changes in quantity demanded are expected to occur as a result of changes in the price of goods. When the price of goods increases, the quantity demanded will fall. This referred as the contraction of demand. When the price falls, the quantity demanded will increases. This referred as the expansion of demand.

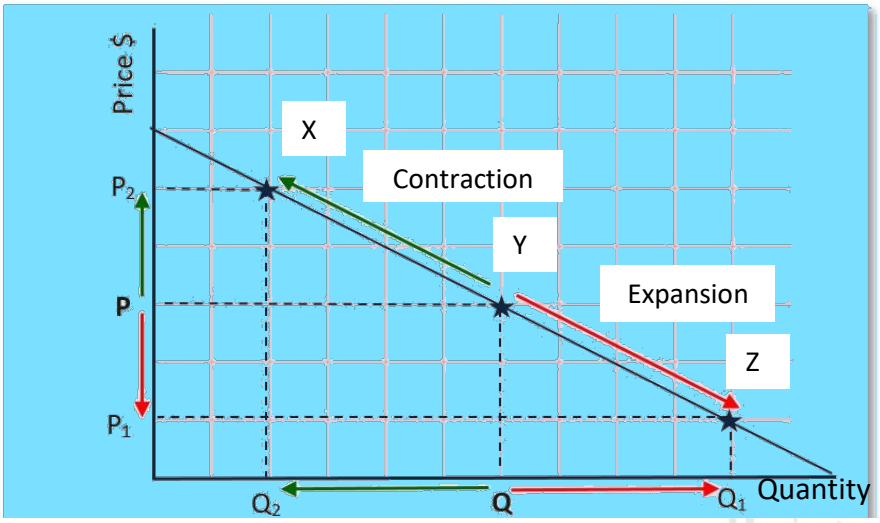


Figure 2.3 (a) Change in quantity demanded

- A movement refers to a change along a curve. This happens when the price of product changes and there is movement along the demand curve, ceteris paribus.
- In other words, a movement occurs when a change in the quantity demanded is solely due to a price change.
- From figure 2.3 (a) when price increase from P to P2, the quantity demanded decrease from Q to Q2. However, if the price falls from P to P1, the quantity demanded will increase from Q to Q1.
- As a result, the movement from point Y to point X on the demand curve is known as a contraction of demand, while the movement from point Y to point Z is known as expansion of demand.
- The inverse relationship between price and quantity demanded is shown by the negative slope of the demand curve, as shown in figure 2.3 (a)
    i. The change in quantity demanded caused by the changed price of the goods. An increased in price will cause a decreased quantity demanded for the goods and a decreased in price will cause in increased quantity demanded for the goods.
    ii. The changing quantity demanded caused by the changing price of goods occurs on the same demand curve. Therefore, changes in quantity demanded are known as movements along a demand curve due to changing in prices.
- An upward movement along the demand curve – decrease in quantity demanded.
- A downward movement along the demand curve – increase in quantity demanded.

b) Change in Demand or Shift in a Demand Curve

- Changes in demand occur due to changes in factors other than the price of the goods. The demand curve will shift to the right when demand increases or left when demand decreases.
- If the demand curve shifts to the right, it is known as increased in demand. However, if the demand curve shifts to the left, it is known as decreased in demand.

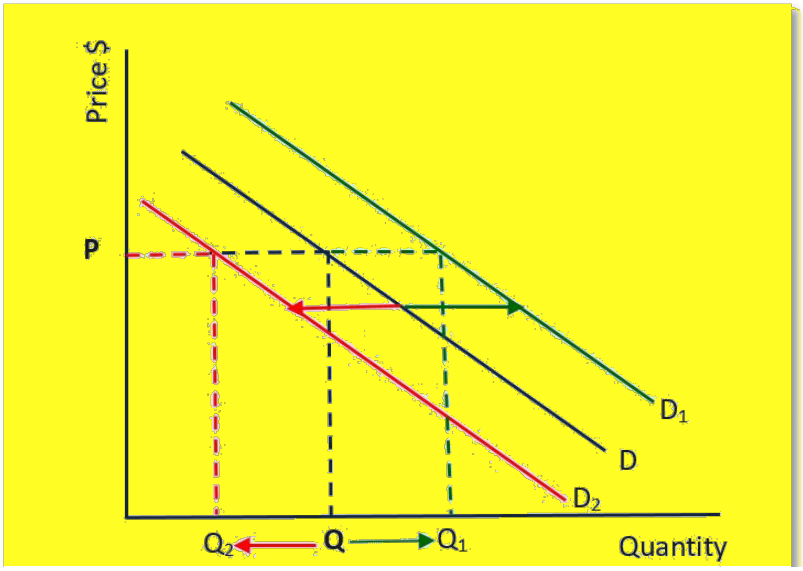


Figure 2.3 (b) Changes in demand

- From figure 2.3 (b), curve (DD) is the demand curve for petrol. The original price and quantity are P and Q respectively. If the price of cars falls and ceteris paribus, the quantity demanded cars will increase. The increased demand for cars will cause increases in the demand for petrol. Thus the demand curve for petrol will shift to the right from D to D1.
- At the price P, the demand for petrol increases from Q to Q1. The shift of the demand curve to the right is known as increased in demand.

- However, if the price of cars increases and ceteris paribus, the quantity demanded cars will fall. The decreased demand for cars will cause the demand for petrol to fall correspondingly. Thus, the demand curve for petrol will shift to the left from D to D2.

- At the price P, the demand for petrol will decrease from Q to Q2. The shift in the demand curve to the left from D to D2 is known as decreased in demand.

2.1.8 Exceptional Demand Curve

- Exceptional demand is where as the price of a product increases, the demand for it will also increase (the normal demand curve shows that when price increases, quantity demanded will decrease and when price decreases, the quantity demanded will decrease)

a) Status Symbol Goods

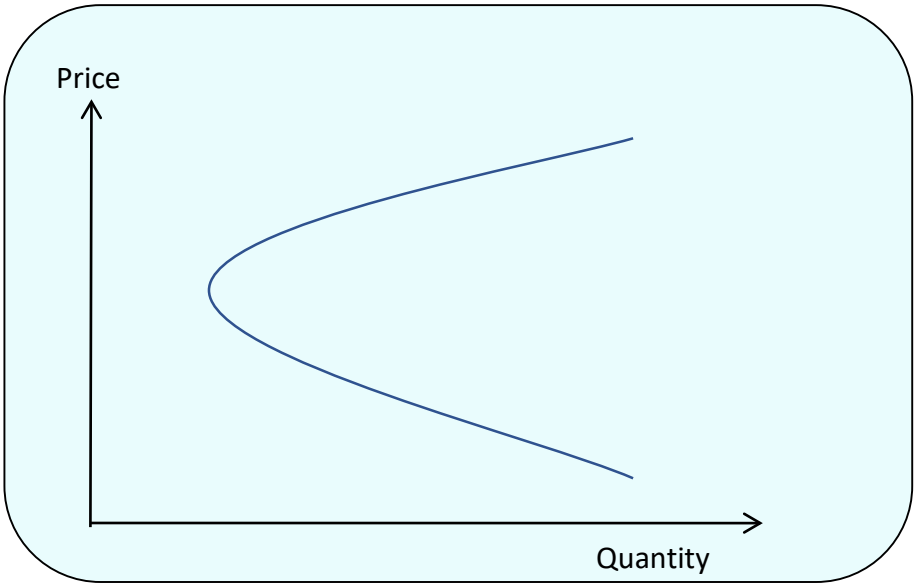


Figure 2.4 (a): Exceptional Demand Curve (Symbol Status Goods)

b) Inferior Goods

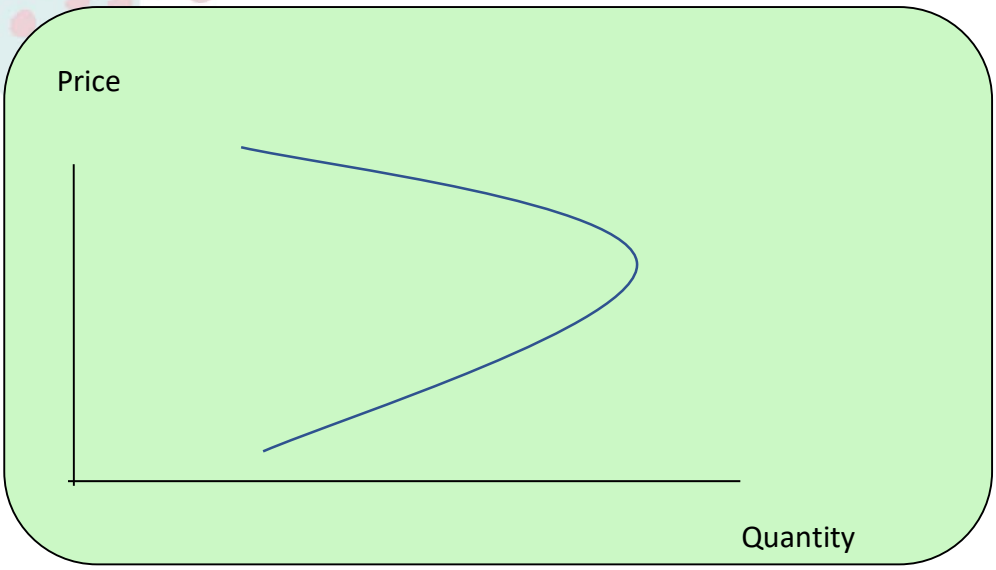


Figure 2.4 (b): Exceptional Demand Curve (Inferior Goods)

2.2 Supply Theory

2.2.1

Supply

Supply is the total quantities of a goods that sellers are willing and able to sell at alternative prices in a given time period, ceteris paribus.

It represents how much the market can offer.

Quantity supplied the amount a producer or group of producers are willing and able to sell at a given price.

2.2.2 Law of Supply

When price increase, quantity supplied will increase. When price decrease, quantity supplied will decrease.

A **positive relationship** between price and quantity supplied.

This means that the higher the price, the higher the quantity supplied. Producers supply more at a higher price because selling a higher quantity at a higher price increases revenue.

When;

P ↑ Q ↑

P ↓ Q ↓

2.2.3 Supply Curve

The supply curve is a graphic representation of the correlation between the cost of a goods or service and the quantity supplied for a given period.

It illustrates the relationship between quantity demanded and the price of goods and services.

The supply curve will move **upward from left to the right.**

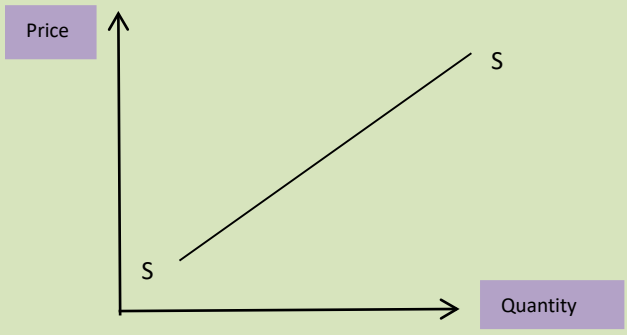


Table 2.3: A Supply Schedule

Price (RM)	Quantity Supplied (kg)
1	5
2	10
3	15
4	20
5	25

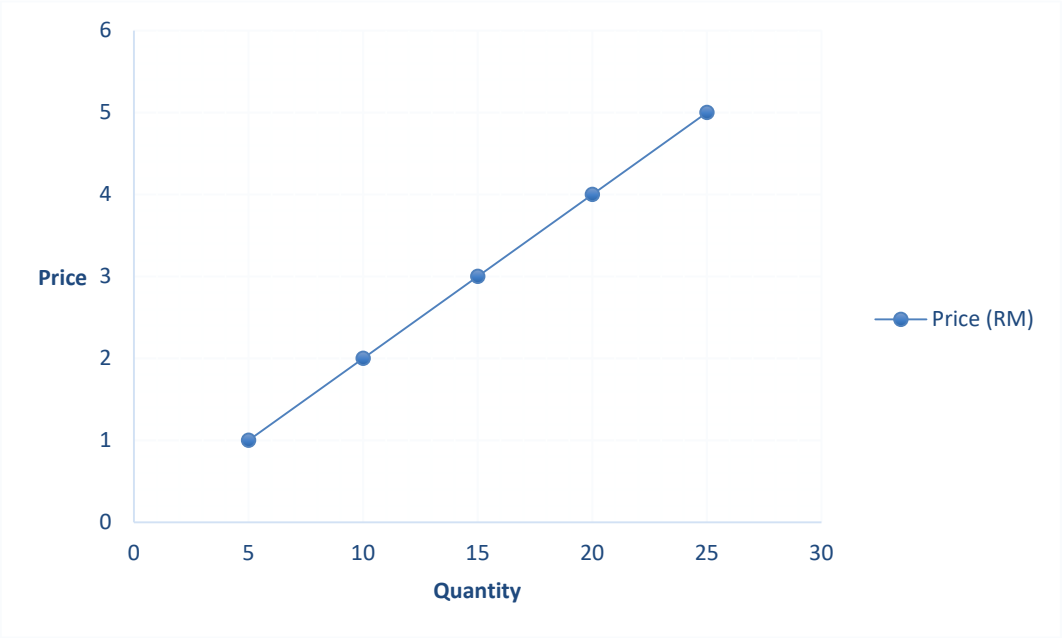


Figure 2.5: A Supply Curve

2.2.4 Firm and Industrial Supply Curve (Firm and industrial Supply)

Firm Supply	Industrial Supply
Quantity of goods or services that **a producer** is able and willing to produce or supply at a certain price in a given period.	Industry/ Market supply is the total quantity of goods and services that **all firms** in an industry or market are able and willing to produce at a certain price in a given period.

Table 2.4: Market Supply Schedule

Price (RM)	McDonald	KFC	Industrial Supply
1	3	4	(3 + 4) = 7
2	6	8	14
3	9	12	21
4	12	16	28
5	15	20	35

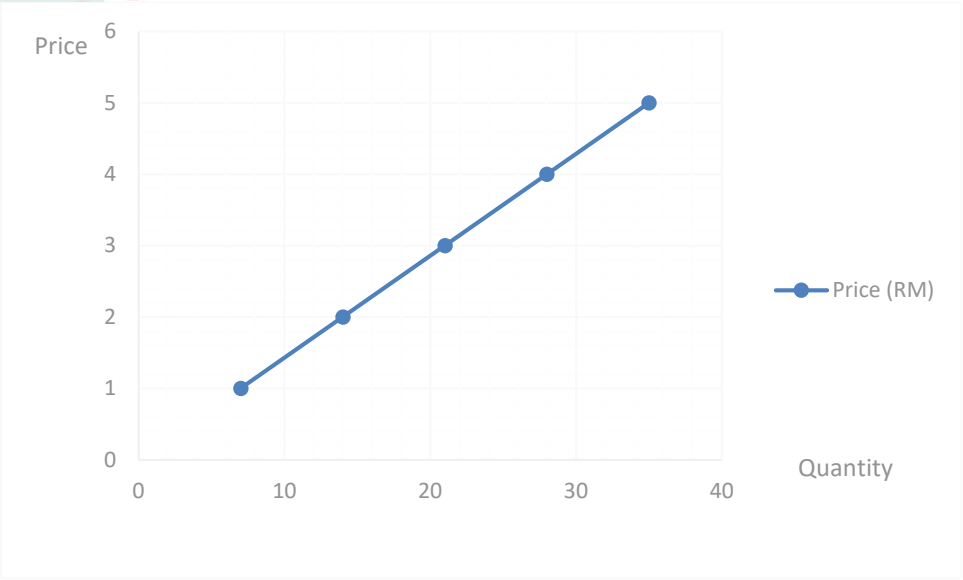


Figure 2.6: Industrial Supply Curve

2.2.5 Calculate Supply Function

Supply function – the relationship between quantity supplied and price in a mathematical form.

Qs = C + dP

Qs : quantity supplied.

C : the quantity of the supply when the price (P) is zero.

+ : the positive symbol that indicates the inverse relationship between the price and quantity supplied.

d : the gradient of the supply curve.

P : the price of the goods.

Example:

Price (RM)	Quantity Supplied (units)
1	30
2	34
3	38
4	42

STEP 1

Qs = C + dP

30 = C + 1d ….(1)

34 = C + 2d ….(2)

STEP 2

Equitqtion (1) minus equation (2)

-4 = -d

Therefore,

d = 4

STEP 3

Substitute d=4 into equitation (1)

30 = C + 1(d)

30 = C + 1(4)

30 = C + 4

C = 30 – 4

C = 26

LAST

Qs = C + dP

Qs = 26 + 4p

Let's have a try

Question:

The table below shows the quantity supplied of a goods at various prices. Find the **supply function.** *(answer : Qs = 10+15p)*

Price (RM)	Quantity Supplied (units)
1	25
2	40
3	55
4	70
5	85

The table below shows the price and quantity supplied Goods K. Based on the supply function Qs = 50 + 4p complete the table below.

Price (RM)	Quantity Supplied (units)
20	
40	
60	
80	
100	

2.2.6 The factors that influence the supply/determinants of Supply.

a) Internal Factor

Price of Goods

- The higher the price of goods will be, the higher the quantity that will be supplied, and vice versa.

b) External Factor

i. Technology

- An improvement in technology means that the same amount of output can be produced at a lower cost.
- This will increase the amount supplied and at the same time will shift the supply curve to the right.

ii. Prices of related goods

a) Substitute Goods

- If the price of a substitute product rises, the supply of that product will fall.
- When the price of Pepsi increases, the quantity supplied of Pepsi will increase and the supply of Coke will decrease (supply curve will shift to the left)

b) Complementary Goods

- An increase in the price of a product will increase the supply of a complementary product. For examples car and petrol.
    - When the price of cars increases, the quantity of cars supplied will increase and the supply of petrol will also increase (supply curve will shift to the right) since both are complementary goods.

iii. Expectations about future prices

- If the producer expects the price of their goods to rise in the future, they will sell fewer goods today in order to make a larger profit tomorrow (the supply curve will shift to the left).

If a producer believes that the price of their goods will fall in the future, they will sell more goods today (the supply curve will shift to the right).

iv. Number of producers

- If the number of seller increases, the supply curve will shift to the right.
- If the number of seller falls, the supply curve will shift to the left.

v. Cost of input

- Supply will change in response to the factors of production; labor, capital or land. When the cost of production increases, the quantity supplied will decrease and vice versa.
- If the price of inputs increases, the supply curve will shift to the left.
- If the price of inputs falls, the supply curve will shift to the right.

vi. Government policy

- Government policies on taxation and subsidies will affect supply.
- If government imposes taxes on goods, the cost to produce the goods will increase. Therefore, producer will decrease production of the goods.
- If the government provides subsidies to produce goods, the cost to produce the goods will decrease. Therefore, the producer will increase production of the goods.

vii. Weather

- Weather condition such as storm, winds and floods will affect the supply of goods from certain industries such as agriculture and fishing.

viii. Producer's objective

- To maximize profits or to maximize the productions.
- If the producer's objective to maximize profit – the supply curve will shift to the left, and
- If the producer's objective to maximize production – the supply curve will shift to the right.

2.2.7 Movement along the supply curve and shift in the supply curve

a) Movement along the supply curve

- Changes in quantity supply or movement along a supply curve occur due to the price of the goods itself.
- When the price of the goods increase, the quantity supply will increase. This is known as the expansion of supply. However, when the price of the goods decrease, the quantity supply will decrease. This is known as a contraction of supply.
- The expansion or contraction of supply due to price fluctuation only occurs along a supply curve.
- Figure 2.7(a), when the price rises from P to P1, the quantity supply will rise from Q to Q1. However, if the price falls from P to P2, the quantity supply will decrease from Q to Q2. Therefore, the movement from point A to point B along supply curve (SS) is known as expansion of supply, while the movement from point A to point C along the supply curve (SS) is known as the contraction of supply.

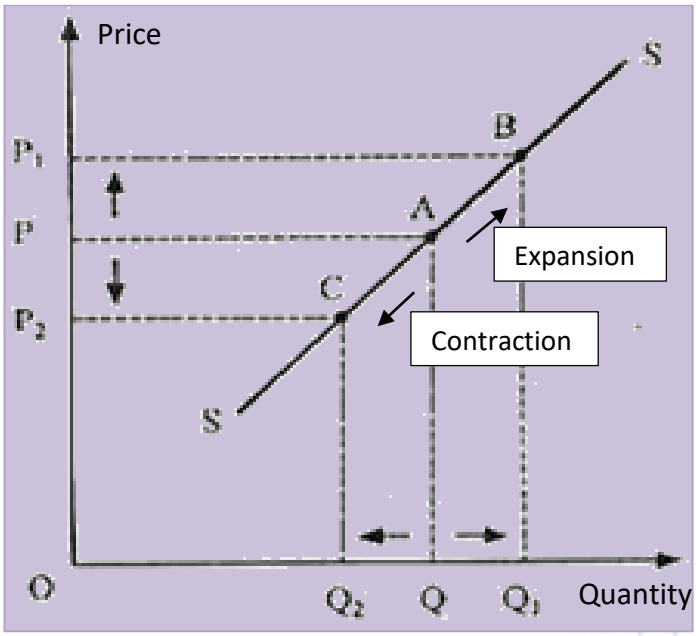


Figure 2.7 (a): Change in quantity supply

b) Shift in a supply curve

- Change in supply occurs when the supply curve shifts to the right to left due to changes in a factor other than the price of the goods itself.
- The supply curve will shift to the right when the supply increases and the supply will shift to the left when the supply decrease.
- The shift in the supply curve to the right is known as increase supply. However, the shift in the supply curve to the left is known as decreased supply.
- Figure 2.7(b) shows the supply curve for coffee. When the price of tea falls, the quantity supply for tea will decrease. Because tea and coffee are substitute goods, the decreased quantity supply of tea will result in an increase supply of coffee. At price level of P, the supply curve for coffee will shift to the right from S to S1 is known as increase supply. Thus the supply of coffee will increase from Q to Q1.
- However, when the price of tea increases, the quantity supply of tea will increase correspondingly. The increased quantity supply of tea will result in a decreased supply of coffee. At price of P, the supply curve for coffee will shift to the left from S to S2 is known as decrease supply. Thus, the supply of coffee will decrease from Q to Q2.

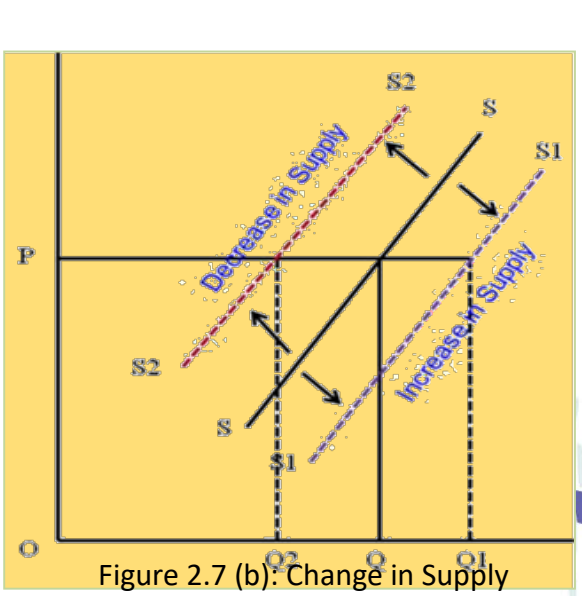


Figure 2.7 (b): Change in Supply

2.2.8 Exceptional Supply Curve

The exceptional – when the price of a product increases and the supply decrease.

The normal supply curve – when the price increases, quantity supplied will increase and when price decreases, quantity supplied will decrease.

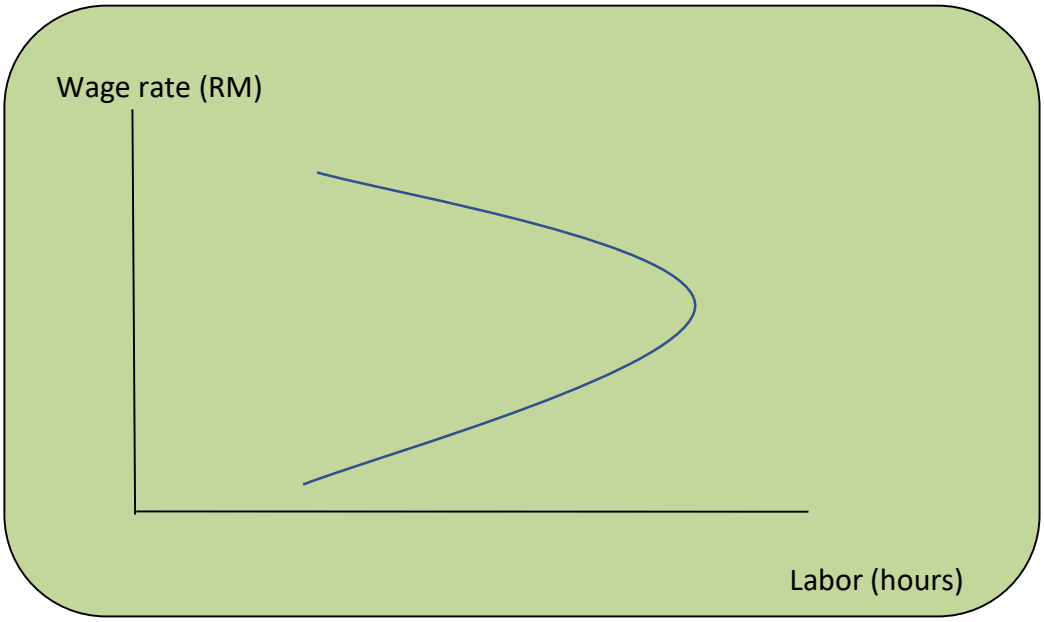


Figure 2.8: Exceptional Supply Curve

TUTORIAL EXERCISES

Tutorial 1

The table below shows the quantity of *Tteokbokki* demanded by 2 individuals.

Price Per *Tteokbokki* (RM)	Quantity Of *Tteokbokki* Demanded (Units)	
	Irfan's Demand	Zikri's Demand
10.00	4	8
9.00	8	10
8.00	12	12
7.00	14	16

a. Calculate the market demand for *Tteokbokki* for each level of price.

b. Draw the market demand curve to show the relationship between price and quantity demand of *Tteokbokki*.

c. Derive the market demand function. *(Qd=72-6p)*

d. What will happen to the quantity demand of *Tteokbokki* if the price decreases to RM 4.00?(*48 units*)

Tutorial 2

The table below shows the quantity of moon cake supplied by 2 sellers.

Price Per Moon Cake (RM)	Quantity Of Moon Cake Supplied (pieces)	
	Its Me Bakery	You Too Bakery
9.00	39	45
8.00	38	40
7.00	35	37
6.00	34	32
5.00	30	30

a. Calculate the market supply of moon cake above.

b. Draw the market supply to show the relationship between price and quantity supplied of moon cake.

c. Derive the market supply function. (*Qs=30+6p*)

d. What will happen to quantity supply of moon cake if the price increases to RM12.00? (*102 pieces*)

Tutorial 3

The following is the individual supply schedule at each price level for eggs.

Price of Eggs (RM Dozen)	Quantity Supplied by Nour Market (Dozen)	Quantity Supplied by Nayla Market (Dozen)	Market Supply (Dozen)
3.20	80	150	
3.00	70	140	
2.80	60	130	
2.60	50	120	
2.40	40	110	
2.20	30	100	

a. Plot the individual supply curve on the graph paper.

b. Fill in the market supply value and construct the market supply curve.

c. Assume that the government imposes taxes for eggs and as a result, the market supply falls by 20 dozen at each price level. Indicate the changes in the graph.

Tutorial 4

a. Define the meaning of demand.

b. With the aid of a diagram, explain the law of demand.

c. The table below shows the market demand and supply of a product.

Price	Quantity Demanded	Quantity Supplied
1.00		7
2.00		10
3.00		13
4.00		18
5.00		19

i. Complete the table above if the demand function for the product is Qd = 25– 3P.

ii. Sketch the demand and supply curves.

iii. Build the supply function. (*Qs=4+3p*)

iv. Illustrate why RM4 is not an equilibrium price? State your reason.

Tutorial 5

Price (RM)	Quantity Demanded			Quantity Supplied	
	M	N	O	X	Y
1	30	5	10	15	4
2	25	4	9	20	5
3	20	3	8	25	6
4	15	2	7	30	7
5	10	1	6	35	8

a. Based on the table above, determine the market demand and market supply.
b. Calculate the demand and supply functions.
c. Draw the market demand and market supply curves. Determine the market demand and market supply at the price RM 3.50.

Tutorial 6

a. With the aid of a diagram, explain the law of demand.
b. Explain five factors that influence demand.

Tutorial 7

a. What is the definition of demand and supply?
b. What is the meaning of individual demand and market demand?
c. List **FOUR (4)** factors that determine demand.

Tutorial 8

a. Give the definition of individual demand and market demand.
b. Differentiate between the change in quantity demand and the change in demand with suitable diagrams.

Tutorial 9

a. With the aid of a diagram, explain the law of supply.
b. Explain five factors that influence supply.

Tutorial 10

a. Give the definition of individual supply and market supply.
b. Explain the differences between the following concepts:
    i. Movement along a supply curve.
    ii. Shift in a supply curve.

CHAPTER 3: MARKET EQUILIBRIUM

LEARNING OUTCOMES

At the end of this session, student should be able to:

1. Demonstrate the market equilibrium process.
2. Discuss the government intervention in the market.

3.1.1 Definition of Market equilibrium

- Market equilibrium is a situation when the quantity of demand and quantity of supply are equal and there is no tendency for price or quantity to change. (Qd = Qs).
- When a market is in equilibrium, the quantity that sellers are willing to sell exactly balances the quantity that buyers are willing to buy, and there is no tendency for the market price to increase or decrease.
- The point where the demand and supply curves intersect.

3.1.2 How to identify the value of equilibrium price and equilibrium quantity?

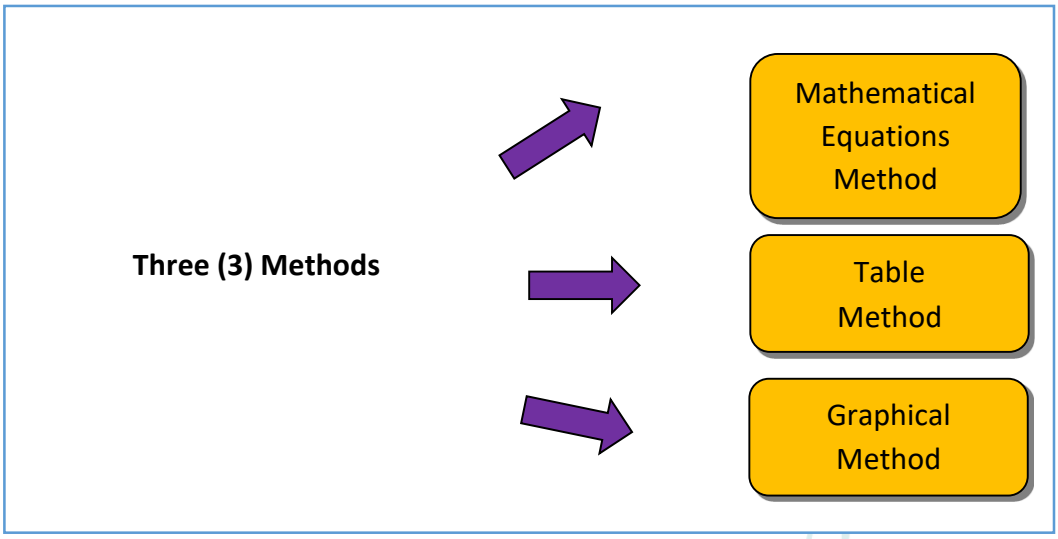


Figure 3.1: Method to identify equilibrium price and equilibrium quantity

i. **Mathematical Equations Method**

Quantity demanded equal to quantity supplied (Qd=Qs)

Example:

Demand equation is: **Qd = 130-4p**

Supply equation is: **Qs = 70+6p**

Where

Qd = quantity demanded

Qs = quantity supplied

P = price

Step 1: Find the value of the equilibrium price.	**Step 2: Find the value of equilibrium quantity**
Set the quantity demanded equal to quantity supplied (Qd = Qs) Qd = Qs 130 – 4P = 70 + 6P -4P – 6P = 70 – 130 -10P = -60 P = 60/10 P = 6 ***Thus, the equilibrium price is RM6***	Substitute price (P) with RM6 in either the demand or supply equation Qd = 130 – 4P = 130 – 4(6) = 130 – 24 = **106 units** Or Qs = 70 + 6P = 70 + 6(6) = 70 + 36 = **106 units** **Qd = Qs**

Conclusion: equilibrium price = RM6 and equilibrium quantity is 106 units.

Exercise:

Qd = 800 – 30P

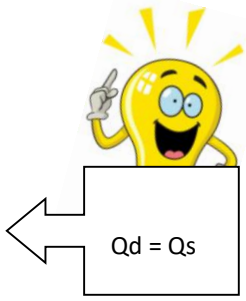
Qs = 100 + 40P

Determine the market equilibrium price and equilibrium quantity using the **mathematical equation method**. *(Pe: RM10, Qe: 500 units)*

ii. Identify the Value of Equilibrium Price and Quantity Using Table Method

Table 3.1 Quantity Demand and Supply

Price (RM)	Quantity Demand (Units)	Quantity Supply (Units)
250	500	2500
200	1000	2000
150	**1500**	**1500**
100	2000	1000
50	2500	500



A Bobo Theater has estimated the level of demand and supply at different ticket prices. Identify the equilibrium price and equilibrium quantity for the ticket.

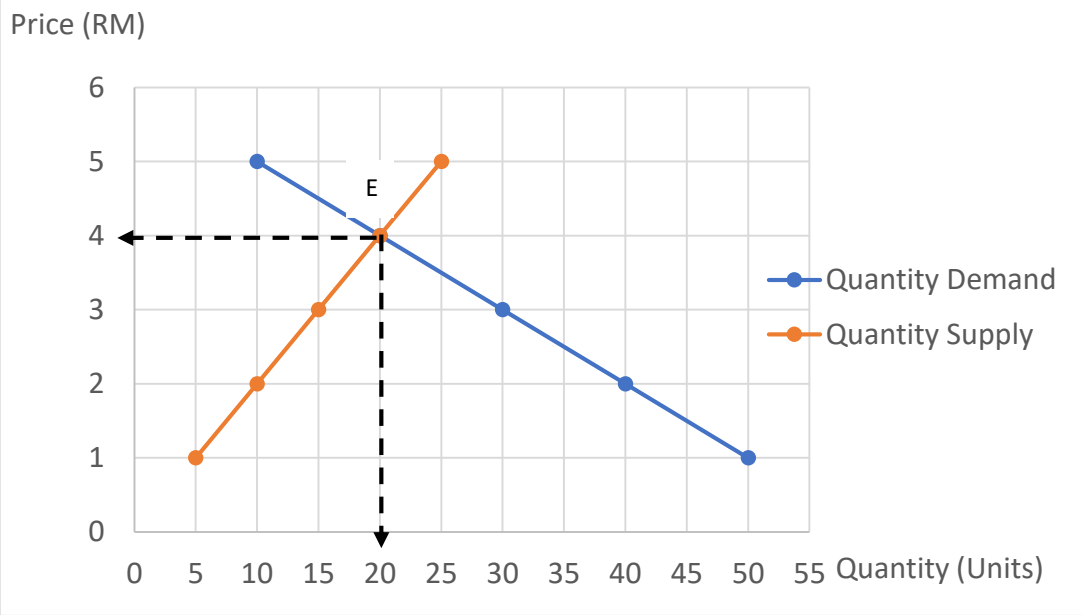
Conclusion: Equilibrium price = RM150 and equilibrium quantity = 1500 units.

iii. Identify the Value of Equilibrium Price and Quantity Using Graphical Method

Table 3.2 Quantity Demand and Supply

Price (RM)	Quantity Demanded (units)	Quantity Supplied (units)
5	10	25
4	20	20
3	30	15
2	40	10
1	50	5

The table above shows the quantity demanded and quantity supplied for Sandwich at Fola Cafe. Identify equilibrium price and equilibrium quantity for that product using Graphical Method.



Conclusion: Equilibrium price = RM4 and equilibrium quantity = 20 units.

3.1.3 Sketch the market equilibrium graph

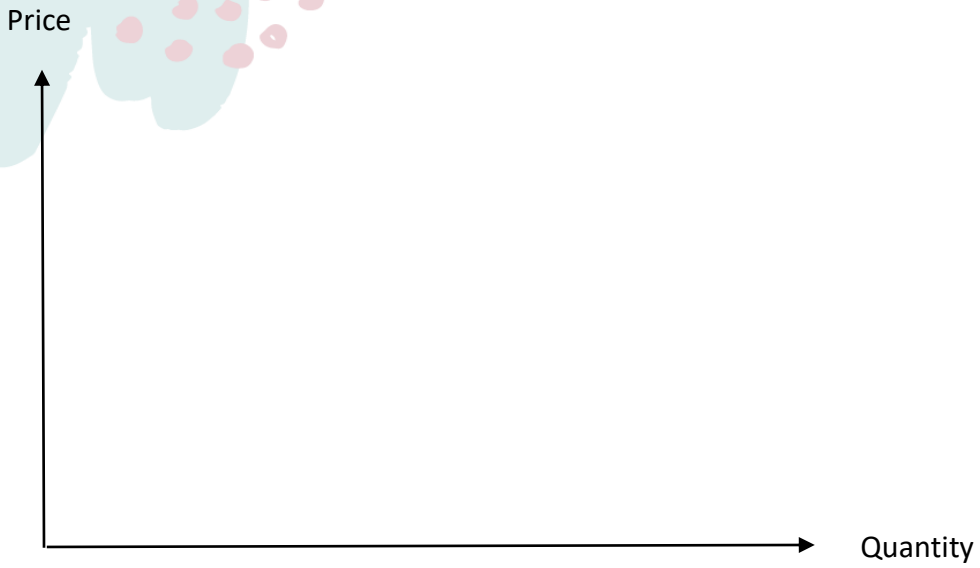


Figure 3.2: Market Equilibrium Graph

Pe = *RM*_____

Qe = _____ *units*

Notes: *Market equilibrium occurs when the demand curve and the supply curve interest. (Qd=Qs)*

3.1.3 Market Condition

Table 3.3: Market Condition

Market Condition	Relationship between quantity demanded (Qd) and quantity supplied (Qs)
Equilibrium	Qd = Qs
Shortage	Qd > Qs
Surplus	Qd < Qs

Equilibrium	• The quantity demand of products or services is equal to the quantity supply of that product or service. • If the quantity demanded is not equal to the quantity supplied, market will not be in equilibrium.
Shortages or Excess Demand	• The quantity of demand is greater than the quantity of supply. • The quantity of supply by sellers will increase (following the law of supply) until it reaches an equilibrium where there is no shortage. • When the price increase, the quantity of demand by buyers will decrease (following the law of demand).
Surplus or Excess Supply	• The quantity of supply is greater than the quantity of demand. • When the price decrease, the quantity of demand by buyers will increase (following the law of demand). • The quantity of supply by the sellers will decrease (following the law of supply) until it reaches an equilibrium where there is no surplus.

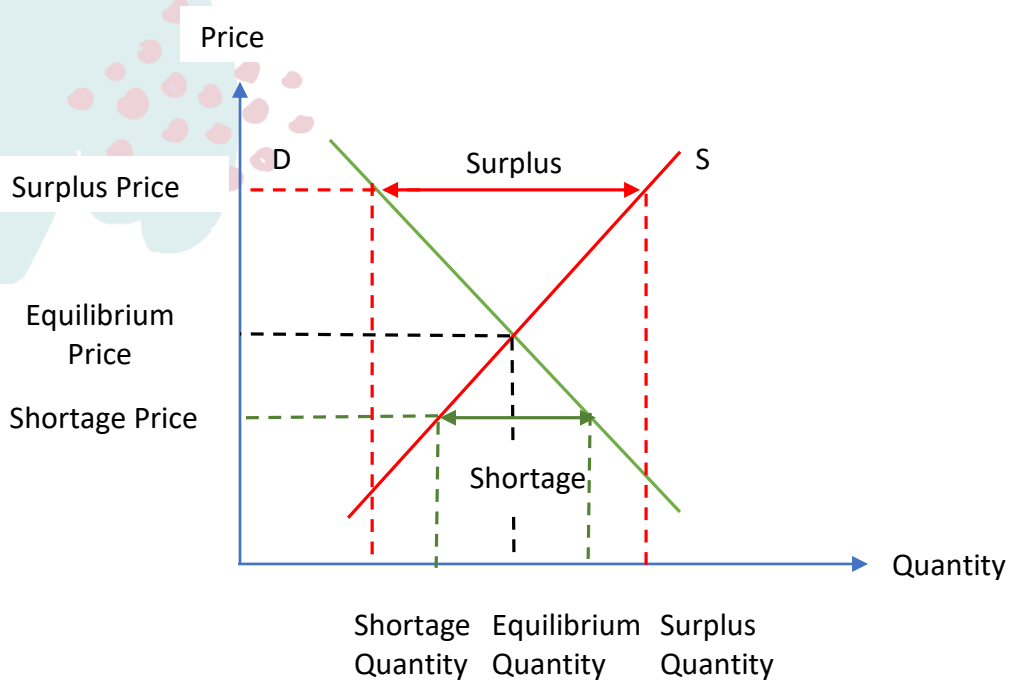


Figure 3.3: Market Condition Graph

Note :

Shortage = Qd > Qs

Surplus = Qd<Qs

Equilibrium Qd=Qs

Price = equilibrium price

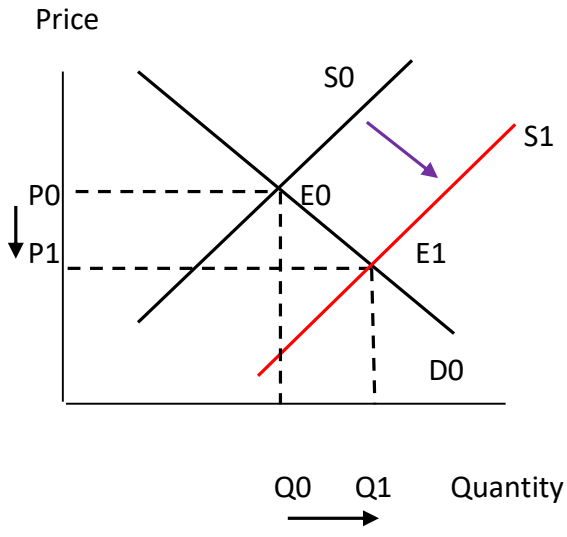
Quantity = equilibrium quantity

3.1.5 The Effects of market equilibrium changes to the price and quantity equilibrium.

a) Increased supply
b) Increased demand
c) Decreased demand
d) Decreased supply
e) Increases in supply are greater than the decrease in demand
f) Increase in supply is smaller than the increase in demand
g) Increase in supply and decreased demand in equal magnitude
h) Increase in demand and supply in equal magnitudes
i) Decrease in demand and supply in equal magnitudes
j) Increase in demand and decrease in supply in equal magnitudes
k) Increase in demand greater than the increase in supply
l) Decrease in demand greater than the decrease in supply
m) Decrease in demand is smaller than the increase in supply

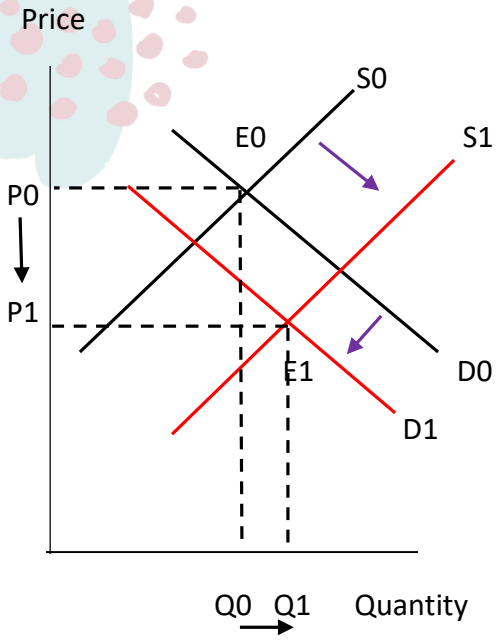
Examples:

a) Increased supply



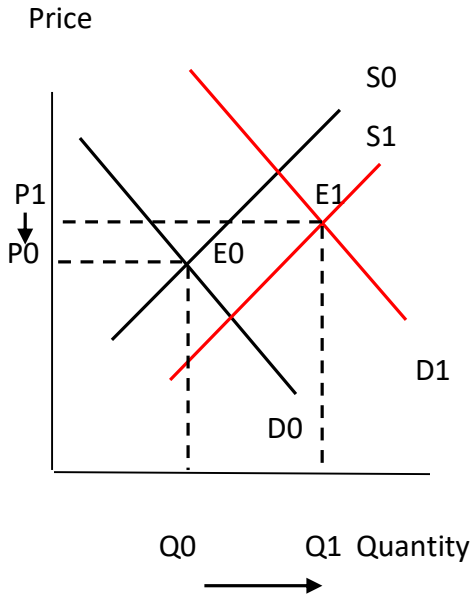
- When the supply for products or services increases, the **supply curve** will **shift to the right from S0 to S1**.
- The **equilibrium point** will change from **E0 to E1.**
- The **equilibrium price** will **decrease** from **P0 to P1.**
- **The equilibrium quantity** will **increase** from **Q0 to Q1**.

e) Increases in a supply greater than the decrease in demand.



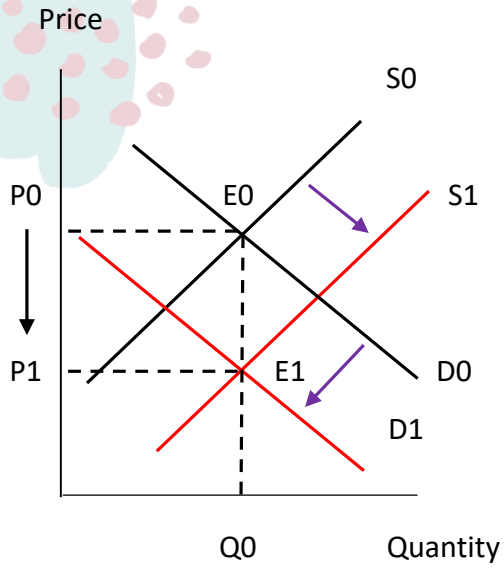
- Increases in a supply are greater than the decrease in demand, the **supply curve will shift to the right** from **S0 to S1** and **the demand curve will shift to the left** from **Do to D1.**
- The **equilibrium point will change** from **E0 to E1.**
- The **equilibrium price** will **decrease from P0 to P1.**
- The **equilibrium quantity** will **increase from Q0 to Q1.**

f) Increase in supply smaller than the increase in demand



- Increases in supply greater than the decrease in demand, **the supply curve will shift to the right** from **S0 to S1.**
- The **demand curve will shift to the left** from **Do to D1.**
- The **equilibrium point** will **change from E0 to E1.**
- The **equilibrium price** will **decrease** from **P0 to P1.**
- The **equilibrium quantity** will **increase from Q0 to Q1.**

g) Increase in supply and decreased in demand in equal magnitudes



- The supply increase and the demand decrease in equal magnitudes, the **supply curve** will **shift to the right from S0 to S1** and the **demand curve** will **shift to the left** from **D0 to D1**.
- The **equilibrium point** will **change from E0 to E1.**
- The **equilibrium price** will **decrease from P0 to P1.**
- The **equilibrium quantity** remains **constant Q0.**

Notes: Please do your graph for other effect market equilibrium to show your understanding.

3.2 Government Intervention

Table 3.3: Government Intervention

Ceiling Price	Floor Price
A ceiling price is a government-imposed maximum on the price of goods or services that sellers are authorized to charge for that product.	A floor price is a government-imposed minimum on the price of goods or services that buyers must pay for commodities.
Setting the price below the market equilibrium to keep the price of commodities below the market equilibrium.	Setting the price above the market equilibrium to keep the price of commodities above the market equilibrium.
It creates an excess in demand or shortages of a commodity since the quantity demanded exceeds the quantity supplied.	It creates a surplus of a commodity since the quantity supplied exceeds the quantity demanded.
Purpose: to protect customers.	Purpose: to protect sellers.
Known as a maximum price.	Known as a minimum price.
Goods: Necessity goods like oil, rice, and et.	Goods: Normal goods like agricultural price and et.

TUTORIAL EXERCISES

Answer all the questions below. Choose one correct answer.

Tutorial 1

Demand and supply functions are given as follows:

Qd = 400 – 30p

Qs = 300 + 10p

Price (RM)	Quantity demanded (units)	Quantity Supplied (units)
1		
2		
3		
4		
5		

a) Complete the table above.

b) Draw the demand and supply curves on graph paper.

c) Show the equilibrium price and quantity.

Tutorial 2

There are 10 producers and 20 consumers in a market. Assume that each producer's supply function is Qs = 100 + 10p, and each consumer's demand function is Qd = 200 – 10p.

a) Determine the market supply and market demand functions.

b) Calculate the equilibrium price and equilibrium quantity.

c) Market price level increase 10 percent, determine the market condition either excess demand or excess supply.

Tutorial 3

The relationship between quantity demand and quantity supply for Coffee Latte at Lala Cafe is shown in the table below.

Price (RM)	Quantity demanded (cups)	Quantity supplied (cups)
3	16	8
4	14	10
5	12	12
6	10	14
7	8	16

a) Derive the demand and supply functions for Coffee Latte.

b) By using graph paper, show the equilibrium price and quantity.

c) If the quantity demand increase by 4 cups at each price level, calculate the new demand function for Coffee Latte.

d) In the same graph paper, draw the new demand curve and show the new equilibrium point.

Tutorial 4

a) Rubber is used to make tires. Discuss how a rise in the price of rubber will impact the equilibrium price and quantity for tires? Give your answer with a relevant diagram.

b) Potatoes are an inferior product. Elaborate the changer of equilibrium price and quantity when a consumer's income goes down?

Tutorial 5

The data below shows the market demand and supply of Olympic Tickets for the year 2021.

Price (RM)	Quantity demanded (Units)	Quantity supplied (Units)
20	70	20
30	60	30
40	50	40
50	40	50
60	30	60
70	20	70

a) Show the market equilibrium using graphical method.

b) Derive the demand and supply function.

c) Calculate equilibrium price and quantity by using a mathematical approach.

d) Determine at what price does surplus occur in the market and why.

e) Based on your opinion, why RM30 is not an equilibrium price? Discuss your reason.

Tutorial 6

The table shows demand and supply schedules of Ice Cream for a month:

Price (RM)	Quantity supplied (units)		Quantity demanded (units)	
	Household supplied	Market supplied	Individual demanded	Market demanded
7	80		30	
6	70		45	
5	60		60	
4	50		75	
3	40		90	
2	30		105	
1	20		120	

There are 20 households purchasing and 40 sellers selling Ice Cream in the market.

a) Determine the market demand and market supply of Ice Cream.
b) In one diagram, plot market demand, and market supply curves Ice cream.
c) What are the equilibrium price and quantity of Ice Cream in the market?
d) The government-imposed sales taxes of RM1 for each unit of Ice Cream sold. Show the effect of the sales tax on the same diagram.

Tutorial 7

a) Define equilibrium.
b) Sketch the equilibrium diagram.
c) Compare **FIVE (5)** differences between shortage and surplus.
d) Sketch the diagram to show the shortage and surplus.

Tutorial 8

Explain the effect on equilibrium based on the situation below:

a) Increase in demand and decrease supply in equal magnitude.
b) A decrease in demand is smaller than a decrease in supply.
c) Increase in supply.
d) Increase in demand and decrease in supply.
e) An increase in demand is bigger than a decrease in supply.

Tutorial 9

Using the demand and supply function below,

Qd = 200 - 12P

Qs = 56 + 6P

a) Calculate the quantity demand and supply for the price from RM 1 to RM 7.
b) Identify the value of equilibrium price and quantity using the mathematical method.
c) Explain what will happen at RM10.

Tutorial 10

a) With the aid of a diagram, discuss the market equilibrium.

b) Using a demand and supply analysis, explain what might happen to the equilibrium price and quantity based on the scenario below:

   i. Customers expect the price of the iPhone to decrease next week. What will happen to the equilibrium price and equilibrium quantity for this week?

   ii. Meat and chicken are substituted goods. Explain the changer toward equilibrium price and equilibrium quantity if the report from the Minister of Healthy shows that beef will be badly affected our skin.

c) Using a demand and supply analysis discuss the impact of price equilibrium, quantity equilibrium, and equilibrium point based on the situation below:

   i. Honda has increased their technology in car production. Based on this situation, explain the demand situation for petrol.

   ii. Elaborate the equilibrium change in demand and supply ticket for Jet Airline during to Pandemic Covid 19.

   iii. Discuss the effect of market chicken if few farms are closed because of an economic downturn during the Pandemic Covid 19 season.

TOPIC 4: PRICE ELASTICITY OF DEMAND AND SUPPLY

LEARNING OUTCOMES

At the end of this session, student should be able to:

1. Demonstrate the demand theory.
2. Demonstrate the supply theory.

4.1 The elasticity of Demand Theory

Definition of Elasticity

- The percentage change in quantity is divided by percentage change in some variable that affects demand or supply. in economics, it is a concept that measures the responsiveness of one variable to another one.

Definition of variable

- Factor or determinant that affects the quantity demanded or quantity supplied consumer's income or the price of other goods with the assumption of ceteris paribus.

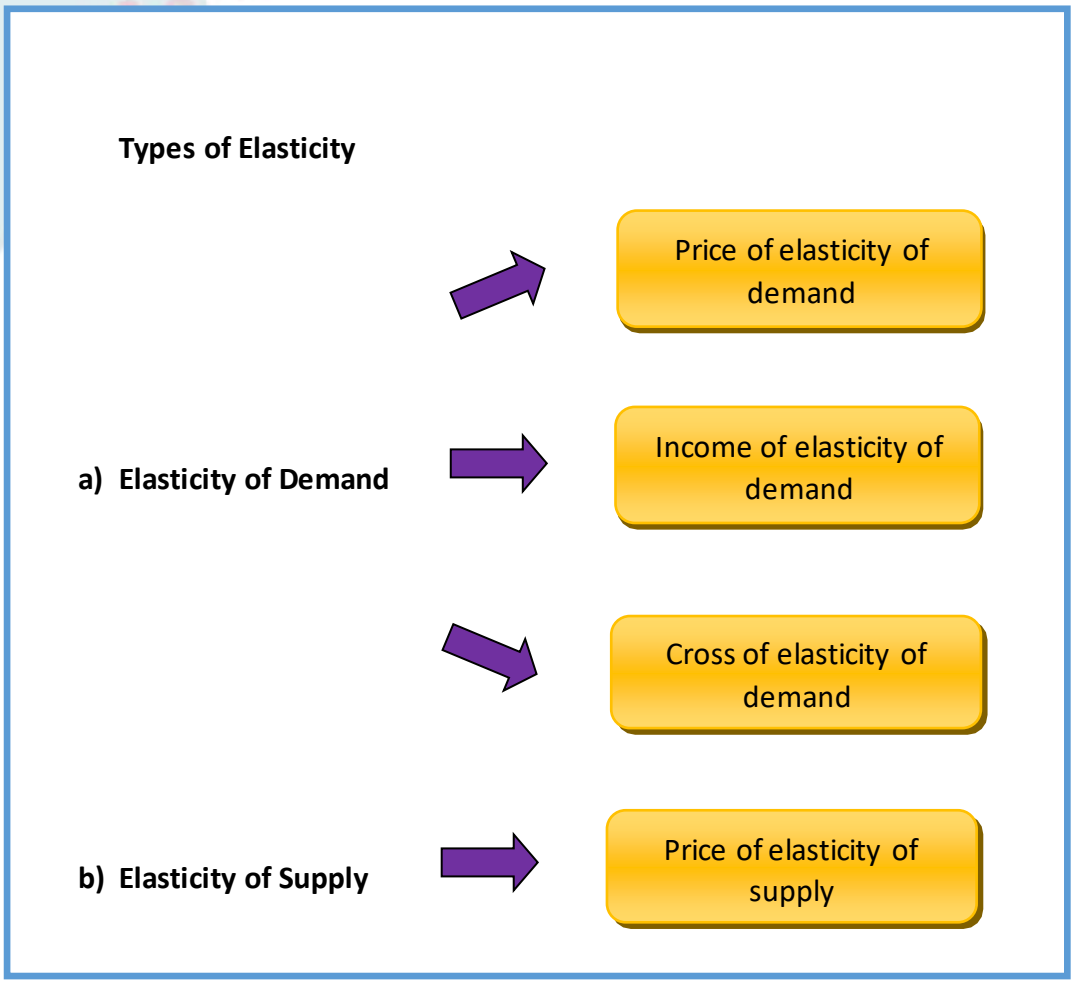


Figure 4.1: Types of Elasticity

4.1.1 Definition of Elasticity of Demand

Elasticity of demand

An elasticity that measures the responsiveness of quantity demanded to a change in price, income, and change in the price of other goods.

Price Elasticity of Demand (Ed)

Definition: Measures the responsiveness of the quantity demanded due to a change in its price.

In other words, it's a way to figure out the responsiveness of consumer to fluctuations in price.

4.1.2 Calculate the price elasticity of demand

Table 4.1: Point-price Elasticity of demand

Price Elasticity of Demand (Ed) =	**Percentage change in quantity demand** **Percentage change in price**
Where; **Qo = initial quantity (old)** **Q1 = final quantity (new)** **Po = initial price (old)** **P1 = final price (new)** **** Note: ignore the negative sign when analyzing price elasticity of demand.***	$\frac{\frac{Q1 - Q0}{Q0}}{\frac{P1 - P0}{P0}}$ OR $\frac{Q1 - Q0}{Q0} \times \frac{P0}{P1 - P0}$

** Because of the negative slope of the demand curve and the inverse relationship between price and quantity demanded, the price elasticity of demand is always negative.*

Table 4.2: Arc Price Elasticity of demand/midpoint method

Price Elasticity of Demand (Ed) =	**Average percentage change in quantity demand** **Average percentage change in price**
Where; **Qo = initial quantity (old)** **Q1 = final quantity (new)** **Po = initial price (old)** **P1 = final price (new)** **** Uses average price and average quantity***	$\frac{Q1 - Q0}{(Q0 + Q1)/2}$ $\frac{P1 - P0}{(P0 + P1)/2}$

Examples:

Find the value of the price elasticity of demand when the price of ice cream rises from RM5 to RM6. *(Answer: -1.67)*

Price of Ice Cream	Quantity demanded of Ice Cream
4	3000
5	2400
6	1600
7	800

Exercise:

Price of Shoes (RM)	Quantity demanded of Shoes
20	3100
50	2880
80	2550
120	2400
150	1800

The table above is quantity of demanded shoes for each level price. Calculate the price elasticity for demand if:

i. Price increase from RM50 to RM120 *(Answer: -0.12, Inelastic)*

ii. Price decrease from RM150 to RM80 *(Answer: -0.89, Inelastic)*

4.1.3 Degrees of price elasticity of demand

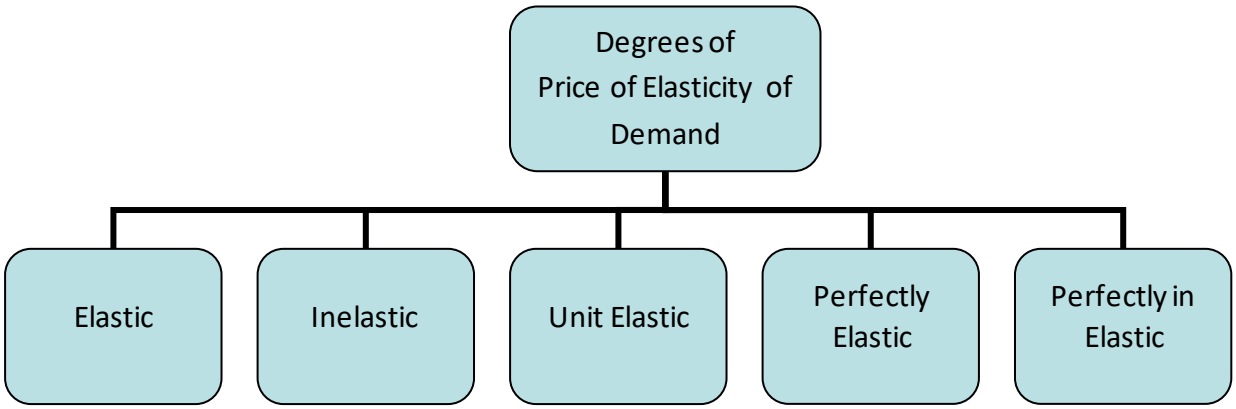


Figure 4.2: Degrees of Price Elasticity of Demand

Table 4.3: Degrees of Price Elasticity of Demand

Degree of Elasticity	Coefficient	Detail
Elastic **Price**  **Quantity**	• ***(1 < Ed < ∞)*** • When the price elasticity of the demand coefficient is greater than one but less than infinity.	• A percentage change in price will bring about a larger percentage change in quantity demanded. • Small price changes will cause large changes in quantity demanded (demand is sensitive to price change).
Inelastic **Price**  **Quantity**	• ***(0 < Ed < 1)*** • When the price elasticity of the demand coefficient is less than one but more than zero.	• A percentage change in price will bring about a smaller percentage change in quantity demanded. • Large changes in price will cause small changes in quantity demanded (demand is not

		sensitive to price change).
Unit Elastic **Price**  **Quantity**	• ***(Ed = 1)*** • When the price elasticity of the demand coefficient is exactly equal to one.	• A percentage change in price will lead to a change in quantity demanded by the same proportion. • Change in price and change in quantity demanded is equal.
Perfectly inelastic **Price**  **Quantity**	• ***(Ed = 0)*** • When the price elasticity of the demand coefficient is exactly equal to zero.	• A price change would not affect the quantity demanded.

Perfectly elastic **Price**  **Quantity**	• ***(Ed = ∞)*** • When the price elasticity of the demand coefficient is exactly equal to infinity.	• A fall in price would lead to an infinity increase in quantity demanded while a price rise would lead to the quantity demanded becoming zero.

4.1.4 Factor Affecting Price Elasticity of Demand / Determinants of Price Elasticity of Demand

a. Existence of substitutes

- Because customers are very responsive to price changes, demand for products with a lot of substitutes is more elastic. A small increase in price can lead to a larger percentage fall in quantity demanded.
- In contrast, demand is relatively inelastic if close substitutes are difficult to be found.

b. The proportion of the expenditure on a product

- When goods take up a large proportion of our income, then a change in their price can have a large impact on the overall income. So, the demand for this goodwill is relatively elastic.
- If the items are only a small part of the income, however, demand is rather inelastic.

c. Nature of goods

- When compared to the demand for less important commodities, which is more elastic, demand for necessities is inelastic.

d. Income level

- Higher-income people are more likely to have inelastic demand because they are less responsive to price changes.
- Any increase in commodity prices will not affect the quantity demanded by this set of consumers.
- Consumers with lower incomes, on the other hand, will be affected by the same price increase (elastic demand).

e. Time

- The longer the time, the more elastic the demand.
- Short-term price adjustments will result in inelastic demand because there isn't enough time to explore alternatives, and purchasers will be less responsive to the price change.
- Because purchasers would have more information about the availability of substitute items, price adjustments, in the long run, will have an elastic demand.

f. Habits

- The demand for cigarettes and alcohol will be inelastic among smokers and drinkers. Because demand is inelastic, a price rise will have minimal effect on the quantity sought.

4.2 Income Elasticity of Demand

4.2.1

Definition:

The measure of the responsiveness of quantity demanded of a goods to a change in Income. (Indicates the sensitivity of quantity demanded to change in income).

4.2.2 Calculate Income Elasticity of Demand

Table 4.4: Income Elasticity of Demand's Formula

Income Elasticity of Demand (Ei) =	$\frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$
Where; Qo = initial quantity (old) Q1 = final quantity (new) Yo = initial income (old) Y1 = final income (new)	$\frac{\frac{Q1 - Q0}{Q0}}{\frac{Y1 - Y0}{Y0}}$ OR $\frac{Q1 - Q0}{Q0} \times \frac{Y0}{Y1 - YO}$

4.2.3 Degree of Income Elasticity of Demand

Table 4.5: Degree of Income Elasticity of Demand

Degree	Sign	Types of goods
Positive	Ei > 0	Normal goods
Negative	Ei < 0	Inferior goods
Greater than 1	Ei > 1	Luxury goods
Zero	Ei = 0	Necessity / essential

Examples:

a) Demand at the start of the period is 2000 units and 4000 units at the end of the period. In the same period, income increased from 1500 to 3000. *(Answer: 1)*

b) If disposable incomes rise by 4% and the income elasticity of demand is known to be 3, what change in demand would we expect to see? *(Answer: 12)*

Exercise:

The table shows the quantity demanded goods K, L, M, and O.

Income	Quantity demanded (units)				
	K	**L**	**M**	**N**	**O**
2500	18	20	17	50	60
3500	15	20	25	60	84

a) Identify the income elasticity of demand value for K, L, M, N, and O when the income increases from RM2500 to RM3500. *(Answer: K: -0.42, L:0, M:1.18, N:0.5, O:1.00)*

b) Identify what types of products are K, L, M, N, and O.

4.3 Cross Elasticity of Demand

4.3.1 Definition:

Definition:

The measure of the responsiveness of quantity demanded a goods (goods A) to a change in the price of another goods (goods B). (Indicates the sensitivity of the demand for one goods (A) to changes in the price of another goods (B))

4.3.2 Calculate Cross Elasticity of Demand:

Table 4.6: Cross Elasticity of Demand's Formula

Cross Elasticity of Demand (Ex) =	$\frac{\text{Percentage change in quantity demanded of Good A}}{\text{Percentage change in the price of Good B}}$
Where; QA0 = initial Qd of good A (old) QA1 = final Qd of good A (new) PB0 = initial price of good B (old) PB1 = final price of good B (new)	$= \frac{QA1 - QA0}{QA0} \div \frac{PB1 - PB0}{PB0}$ OR $= \frac{QA1 - QA0}{QA0} \times \frac{PB0}{PB1 - PB0}$

4.3.3 Degree of Cross Elasticity of Demand

Table 4.7: Degree of Cross Elasticity of Demand

Degree	Sign	Types of goods
Positive	Ex > 0	Substitute goods
Negative	Ex < 0	Complementary goods
Zero	Ei = 0	No relation goods

Example:

Price of Product X (RM)	Quantity Demanded (units)		
	Product R	Product S	Product T
2	15	15	25
3	11	23	25

a) Calculate the value of cross elasticity of demand for product R, S, and T, when the price of Product X increases from RM2 to RM3.

(Answer: X and R: -0.53, X and S: 1.06, X and T: 0)

b) Identify the relationship between:

i) X and R

ii) X and S

iii) X and T

Exercise:

a) The price of goods P increased from RM1.00/kg to RM1.50/kg and the quantity of goods D demanded goes up from 250kg per week to 500kg per week. Calculate the cross-price elasticity of demand. Identify the relationship between goods P and goods D. *(Answer: 2.0)*

b) If the quantity demand for goods R increases by 15% when the price of goods T decreases from RM50 to RM40, calculate the cross elasticity of demand between goods R and T and state their relationship. *(Answer: 0.75)*

4.3 Elasticity of Supply

Price Elasticity of Supply

4.4.1 Definition:

Definition: A measure of the responsiveness of quantity supplied of a goods to a change in its price.

4.4.2 Calculate Price Elasticity of Supply

Table 4.8: Price Elasticity of Supply's Formula

Price Elasticity of Supply (Es)	$\frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$
Where; Qo = initial quantity (old) Q1 = final quantity (new) Po = initial price (old) P1 = final price (new)	$= \frac{\frac{Q1 - Q0}{Q0}}{\frac{P1 - P0}{P0}}$ OR $= \frac{Q1 - Q0}{Q0} \times \frac{P0}{P1 - P0}$

Example:

The price of shoe increases from RM200 to RM300 and the quantity supplied increases from 400 to 500 units, calculate the price elasticity of supply. *(Answer: 0.50)*

4.4.3 Degrees of price elasticity of supply

Degree of Elasticity	Coefficient	Detail
Elastic **Price**  **Quantity**	• ***(1 < Es < ∞)*** • When the price elasticity of the supplied coefficient is greater than one but less than infinity.	• Small changes in price will cause large changes in quantity demanded (demand is sensitive to price change) • Small changes in price will cause large changes in quantity supplied (supply is sensitive to price change)
Inelastic **Price**  **Quantity**	• ***(0 < Es < 1)*** • When the price elasticity of the supplied coefficient is less than one but more than zero.	• A percentage change in price will bring about a smaller percentage change in quantity supplied. • Large changes in price will cause small changes in quantity supplied (supply is not sensitive to price change).

Unit Elastic **Price**  **Quantity**	• ***(Ed = 1)*** • When the price elasticity of the supplied coefficient is exactly equal to one.	• A percentage change in price will lead to a change in quantity supplied by the same proportion. • Change in price and change in quantity supplied is equal.
Perfectly inelastic **Price**  **Quantity**	• ***(Es = 0)*** • When the price elasticity of the supplied coefficient is exactly equal to zero.	• A price change would not affect the quantity supplied.

Perfectly elastic **Price**  **Quantity**	• ***(Ed = ∞)*** • When the price elasticity of the supplied coefficient is exactly equal to infinity.	• A rise in price would lead to an infinity increase in quantity supplied while a fall in price would lead to the quantity supplied becoming zero

4.4.4 Factors Affecting the Price Elasticity of Supply /Determinants of Price Elasticity of Supply

a. Production cost

- When large costs are required to enhance production, the supply of commodities is elastic; however, when small costs are required to increase production, the supply of goods is inelastic.

b. Availability and mobility of factors of production

- The supply of product/services is inelastic of the factors of production necessary for the production of goods that are limited in supply and difficult to obtain.
- However, if the factors of production required for the manufacturing of product/service are widely available and easy to obtain, the supply of goods is elastic.

c. Time period

- There are three types of time periods: very short term, short term, and long term.
- In the very short term – Supply is perfectly inelastic because production cannot be increased immediately when there are changes in demand and price.
- In the short term – Supply is inelastic because certain factors of production cannot be increased easily.
- In the long term – Supply is elastic because all factors production can be increased.

d. Numbers of firms in an industry

- When an industry has a big number of firms, it may create a greater number of goods (supply is elastic).
- If an industry has a small number of firms, it will only generate a small number of goods (supply is inelastic).

e. Production time

- When it takes a long time to make a product, the supply of that product becomes less elastic.
- If the goods required produced in a limited amount of time (short time), the supply will become more elastic.

TUTORIAL EXERCISES

Tutorial 1

a. A Dudu Café observed an increase in the demand for tea following a rise in the price of a cup of coffee from RM1.60 to RM2.10 per kg. The cross-price elasticity of demand for tea will to a change in the price of coffee is 0.8, what the value of demand for the coffee have increased.

b. When the income increases from RM3000 to RM2500, the quantity demanded changed from 500 units to 350 units.
    i. Calculate the income elasticity of demand.
    ii. Identify the type/category of that goods.

c. The monthly demand for cheap garments went down from 3500 pieces to 1500 pieces as the level of income increased from RM60 per week to RM 120 per week. Calculate the income elasticity of demand based on the given information above.

Tutorial 2

Price per pair of sport shoes (RM)	Quantity Demanded	Quantity Supplied
45	100	40
75	80	50
100	60	60
125	40	70
160	20	80

a. Show the value of:

    i. Price elasticity of demand when the price decreases from RM45 to RM100.

ii. Price elasticity of supply when the price increases from RM75 to RM125.

b. Product K's price increase from RM200 to RM250 and product J's quantity demand increase from 20 to 25. Calculate the cross-price elastic of demand. What is the relationship between goods K and goods J?

Tutorial 3

Table below shows the combination for the price of goods L and the quantity demanded of goods M, N, and O.

Price of Goods L	Quantity Demanded (units)		
	Goods M	Goods N	Goods O
5	15	30	35
10	20	25	35

a. If the price of goods L increase from RM5 to RM10, calculate the value of cross elasticity of demand between;

i. Goods L and goods M.

ii. Goods L and goods N.

iii. Goods L and goods O.

b. Based on the values of cross elasticity of demand in (a), determine the relationship between goods L and

i. Goods M.

ii. Goods N.

iii. Goods O.

Tutorial 4

The price per box of Pizza decreases from RM20 to RM25, the quantity demanded increases from 200 to 350 cartons per week, and the demand for goods F decreases from 280 to 210 pieces per week. Calculate:

a. The price elasticity of demand using the midpoint formula.
b. The cross elasticity of demand between Pizza and goods F. Explain the relationship between Pizza and goods F.

Tutorial 5

a. Define Price elasticity of demand and income elasticity of demand.
b. Elaborate the degree of price elasticity of supply.
c. Elaborate on the determinant price elasticity of supply.

Tutorial 6

a. Show the value of cross-elasticity coefficient and the relationship between Goods DPR and Goods ABC by using the data below.

% Change in price of Goods DPR	% Change in quantity demanded of Goods ABC	Cross Elasticity of Demand	Relationship
20%	-10%		
-8%	-20%		
30%	0%		
40%	20%		
-11%	11%		

b. The price of product P increase RM27 to RM37. As a result, the quantity demanded product T changed from 220 units to 210 units. Based on this information calculated cross-price elasticity. Identify the relationship between product P and product T.

Tutorial 7

Price of Goods S (RM)	Quantity demanded for Goods S (kg)	Quantity demanded for Goods Z (kg)	Consumer Income
30	400	400	4000
35	320	600	3800
40	240	800	3600
45	160	1000	3400

i. Calculate the cross elasticity of demand for Goods Z when the price of goods S increases from RM30 to RM35 per kg.

ii. State the relationship between goods S and goods Z?

iii. Find the value of income elasticity of demand for goods S when income change from RM4000 to RM3600. What is the type of goods S?

Tutorial 8

a. The table below shows the relationship between the price of Donut and the quantity demanded Curry puff, Pizza, and Donut demanded by a household at Kedah.

Price of Donut (RM)	Quantity demanded (unit) Curry puff	Quantity demanded (unit) Pizza	Quantity supplied (unit) Donut
10	80	100	100
20	60	90	120
30	40	80	140
40	20	70	160
50	0	60	180

i. If the price of Donut decreases from RM30 to RM 50, calculate the cross elasticity of demand for :

- ✓ Donut and Curry puff.
- ✓ Donut and Pizza.

ii. Identify the price elasticity of supply for Donut when the price decrease from RM40 to RM30.

Tutorial 9

a. Define cross elasticity of demand and income elasticity of demand.

b. Explain **THREE** determinants of elasticity of supply.

c. Using an appropriate diagram, explain the **FIVE** degrees of price elasticity of demand.

d. Explain **THREE** types of elasticity of demand.

e. Differentiate between elastic and inelastic in price elasticity of supply. Give an example between both.

f. Industrial products have a more elastic supply compared to agricultural products. Explain why.

Tutorial 10

Price	Supplied Quantity
4	15
5	20
6	25
7	30
8	25
9	40

a. Calculate the price of elasticity of supply when price:

   i. Price increase from RM6 to RM9.

   ii. Price increase from RM4 to RM8.

   iii. Price decrease from RM7 to RM5.

   iv. Price decrease from RM5 to RM4.

b. Based on the answer to the question below, identify the degree of elasticity for each price change.

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