

**GRADE 11**

**ECONOMICS**

**UNIT MODULE 3**

**MANAGING THE ECONOMY; A MICRO-ECONOMIC FOCUS**

**TOPIC 1: PRICE THEORY; DEMAND**

**TOPIC 2: PRICE THEORY; SUPPLY**

**TOPIC 3: ELASTICITIES OF DEMAND AND SUPPLY**

**TOPIC 4: GOVERNMENT INTERVENTION IN THE PRICE MECHANISM**

**TOPIC 5: MARKET STRUCTURE**



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**DIANA TEIT AKIS**

PRINCIPAL



Flexible Open and Distance Education  
Papua New Guinea

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## SECRETARY'S MESSAGE

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Achieving a better future by individual students and their families, communities or the nation as a whole, depends on the kind of curriculum and the way it is delivered.

This course is a part of the new Flexible, Open and Distance Education curriculum. The learning outcomes are student-centred and allows for them to be demonstrated and assessed.

It maintains the rationale, goals, aims and principles of the national curriculum and identifies the knowledge, skills, attitudes and values that students should achieve.

This is a provision by Flexible, Open and Distance Education as an alternative pathway of formal education.

The course promotes Papua New Guinea values and beliefs which are found in our Constitution, Government Policies and Reports. It is developed in line with the National Education Plan (2005 -2014) and addresses an increase in the number of school leavers affected by the lack of access into secondary and higher educational institutions.

Flexible, Open and Distance Education curriculum is guided by the Department of Education's Mission which is fivefold:

- To facilitate and promote the integral development of every individual
- To develop and encourage an education system satisfies the requirements of Papua New Guinea and its people
- To establish, preserve and improve standards of education throughout Papua New Guinea
- To make the benefits of such education available as widely as possible to all of the people
- To make the education accessible to the poor and physically, mentally and socially handicapped as well as to those who are educationally disadvantaged.

The college is enhanced to provide alternative and comparable pathways for students and adults to complete their education through a one system, many pathways and same outcomes.

It is our vision that Papua New Guineans' harness all appropriate and affordable technologies to pursue this program.

I commend all those teachers, curriculum writers, university lecturers and many others who have contributed in developing this course.

**UKE KOMBRA, PhD**

Secretary for Education



## 11.3: MANAGING THE ECONOMY: A Micro-Economic Focus

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### INTRODUCTION

This unit talks about the importance of the price mechanism in the allocation of resources. In a market economy, the prices are determined by the interaction of consumers and producers behaviours'. This is represented on demand and supply curves. These curves are used to illustrate how prices are determined and explain price changes and the effect of price changes on quantity traded.

Students will study economic problems and develop the knowledge and skills about various systems that can enable them to solve or overcome them. Economics builds on learning from the lower secondary business studies which focuses on developing and understanding the interaction between producers, consumers, government, financial institutions and other organisations as they conduct their business both locally and globally.

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### Broad Learning Outcomes

On successful completion of this module, students will be able to:

- analyse and evaluate the effectiveness of the market system in determining prices
  - describe and use the main tools of micro-economic management
  - describe and analyse a chosen local industry in terms of its contribution to the local community
- 



### Time Frame

This unit should be completed within 10 weeks.

If you set an average of 3 hours per day, you should be able to complete the unit comfortably by the end of the assigned week.

Try to do all the learning activities and compare your answers with the ones provided at the end of the unit. If you do not get a particular exercise right in the first attempt, you should not get discouraged but instead, go back and attempt it again. If you still do not get it right after several attempts then you should seek help from your friend or even your tutor. Do not pass any question without solving it first.



## Specific Learning Outcomes

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On successful completion of this topic, students will be able to analyse and evaluate;

- the role of price in the market system
  - Limitation of price theory
  - Demand and Demand Schedules and demand Curves
  - Extension and Contraction of demand
  - Factors affecting Demand
-



Price Theory is a part of economics that explains how prices are determined and some of the factors that may cause prices to change over time.

## **TOPIC 1: PRICE THEORY**

### **11.3.1.1: The Role and Importance of Price**

Price plays an important role in determining the allocation of resources. Allocation refers to the distribution of resources. By now you know very well that resources are scarce and participants' that is buyers and sellers in the market want to get the most out of these scarce resources. How can these scarce resources be efficiently distributed? These resources can only be distributed efficiently when there is a price.

To understand the importance of price to resource allocation, let us find out what price theory is. Price is part and partial of the price theory. We will firstly study the definition of price theory.

#### **What is Price Theory?**

Price theory is the study of how price for any specific good or service is reached by the relationship between the forces of supply and demand. We will use the term price mechanism. Price mechanism is a process by which resources are allocated according to the supply and demand for goods and services, which in turn determines market prices and the quantity of these goods that will be produced.

What are the forces of supply and demand? Forces of supply and demand refer to the optimal or agreed market price for a good or service. For example, consumers are willing to forgo their K5.00 to pay for a heap of kaukau whilst the kaukau suppliers see that K5.00 is a fair price to give up or exchange for their kaukau. There is no intervention from the government agencies or authorities. This means government does not decide on the prices. Therefore, this situation is referred to as the market forces of supply and demand. Optimal market price for a good or service is the point at which the benefits gained from those who demand the good or service meets the sellers marginal cost of producing this good or service.

However, here in Papua New Guinea prices are not solely determined by the market forces of supply and demand. There is some degree of government intervention. For instance, the Independent Consumer and Competition Commission fix price for certain goods or services that are seen as necessities. For example, fuel.

#### **Limitations of Price Theory**

In the real world in any economy, market forces of supply and demand does not work purely as we have studied earlier. There are some forms of government intervention in fixing prices. This comes about as a result of the following limitations or struggles by such countries like ours, Papua New Guinea.

- *Unfair distribution of resources*- most goods are produced for consumers who can pay more. This can mean that scarce resources are diverted to the production of luxuries for high income earners at the cost of producing necessary goods for low income earners.





- *Non-provision of public goods*- the price theory or mechanism does not encourage producers to produce public goods. Public goods are those goods that the people consume collectively for example, roads, street lighting, health and public schools and libraries.
- *Failure to provide merit goods to the society*- merit goods are good and beneficial when consumed not only by the consumer, but also by the entire society. Examples include health and education. If education were supplied by the price system only through the market, very few people would receive education. This would also apply to health services. If allocation of a service such as surgery was determined purely by the free price mechanism, operations would only be available to those who could pay most for it. Demerit goods are those considered harmful to society like alcohol and cigarette.
- *Non-recognition of externalities*- externalities are the side effects of the production or consumption of goods and services which affect people other than just the producer and consumer. For example, the development of a new highway will bring costs and benefits to those who may not necessarily use that highway. The price mechanism does not recognise externalities. Therefore, price does not reflect all the costs and benefits associated with production and consumption.
- *Imperfect information flow*- for the market to operate perfectly there should be a free flow of information between producers and consumers, between buyer and seller. A perfect market assumes everyone makes decision rationally and that consumers will choose the best products and that the market will reward those who make the best products because their sales will be higher. That is physically impossible. The reality is that information flows are imperfect in the market and efficient transactions do not always occur.
- *Market instability*- price fluctuations or changes are inevitable in any market. This may lead to market instability or political instability. Inevitable means impossible to avoid or to prevent it from happening.
- *Wastes of resources-producers in a market economy compete* with each other to maximise profit. This can create duplicate or inefficiencies or competitors may invest in expensive advertisement which, in turn, diverts money from other investment that might be more worthwhile
- *Failure to address poverty*- the price mechanism fails to directly address widespread poverty in market economy. For instance, certain basics or goods perceived as necessities for the general population like rice and tinned fish are priced higher. This could be unaffordable for some people eventually leading to certain degree of poverty.

### **Importance of Price Theory**

Price theory as we have studied earlier is about price being determined by the market forces of supply and demand. Though it may not exist purely in any one economy it plays an important role in all economies, developed and developing, capitalist, socialist and mixed. What are some of the importance of price theory?

- *Price determines the decisions of production in capitalist economy*-In a capitalist economy sometimes referred to as free-enterprise economy price mechanism



determines what goods are produced, in what quantities they are produced and how resources are allocated between different uses. Capitalist economy or capitalism is an economic system based on the private ownership of factors of production. That is there is freedom for people to buy what they want, work for whom they wish and produce what they want largely due to their desire to increase their income or wealth. However the government still intervenes in a lot of work of the economy and the lives of the people.

- *Price serves best interest of societies*-Prices agreed to by both the consumer and the supplier should be in the best interest of a society for the following reasons.
  - The actual prices of final goods and services should reflect the benefits obtained from the goods by the society. This means that quality goods and services should result in higher prices than others.
  - Prices of goods and services should reflect their absolute scarcities. This means that scarce resources used to produce goods should command higher prices whilst those in abundance should have lower prices.
- *Price influences how goods are produced*- The varying cost of different factors of production influences entrepreneur's or business persons decisions on the best way to use these factors of production to gain maximum profit. Factors of production refer to land, labour, capital and enterprise. For instance, if labour cost is low, entrepreneur will use less capital-intensive methods of production. Capital intensive refers to usage of more machinery and tools than labour or other factors in the factors of production. So entrepreneur's should not purchase anymore of capital goods. Competition between producers keep prices as low as possible and this encourages them to continually find methods of reducing costs of production. Cost of production refers to things that assist production, for example; machines used to produce something or money used to pay for raw materials.
- *Price influences people's ability to pay for goods and services*- the price that people obtain for the productive factors have to offer for sale influences their ability to pay for goods and services thus, will influence the distribution of production among individuals within society.

### **Invisible-Hand of the Market**

We have studied earlier that in a free market, prices of goods and services are determined by the market forces of demand and supply. You can turn to page 8 to recap on what a free market is.

What is the invisible hand of the market? The invisible hand of the market is actually the market forces of demand and supply for goods and services which determines the prices for these goods and services. Refer to page 7 to see the example on the heap of kaukau. There is no government intervention. Government agencies and authorities like Independent Consumer and Competition Commission or Internal Revenue Commission do not set the prices for all goods and services. In the real world, the buyers or consumers and the sellers or suppliers reach a stage where the buyer gains maximum satisfaction from consuming these resource whilst the seller is able to meet its marginal costs. Marginal costs refer to the extra cost involved in the production of an additional unit of output. For instance, a business



normally produces 10 items at a total cost of K50. However it decides to produce one more extra item. So the output increase to 11. The total cost now increases to K54. This means the extra cost taken to produce this one item is K4. That is the difference between K54 and K50.

### **11.3.1.2: Demand, Demand Schedules and Demand Curves**

You have just learnt that price influences supply and demand for goods. In this topic we will study effect of price on demand.

#### **What is Demand?**

Demand is the quantity or the number of goods and services that people are willing and able to buy at a given price and at a given time.

We all know that when prices of goods or services increases less number of these goods and services will be bought and vice versa. That is, when price decreases more of these goods and services will be bought.

The basic law of demands states that as price falls the quantity demanded will rise and as price rises the quantity demanded will fall.

You will see this clearly when we draw a demand curve from a demand schedule. Before we can draw the demand schedule and curve. Let's find out what demand schedule and demand curves are.

#### **What is Demand Schedule?**

Demand schedule is a table showing the quantity of good and services that consumers are able and willing to buy at various prices over a given period of time.

#### **What is Demand Curve?**

A demand curve is a graph showing the quantity of a good or service that consumers are able and willing to buy at various prices over a given period of time.

There are two types of demand. They are individual demand and market demand. Let's find out what they are.

##### *1. Individual Demand*

Individual demand is the quantity of a particular good or service that a consumer is willing and able to buy at different prices during a period of time.

##### *2. Market Demand*

Market demand is the quantity of a good that all consumers in a market are willing and able to buy at different prices during a period of time.

We will now construct or draw demand schedules and demand curves. As mentioned earlier demand schedule gives information for one to draw the demand curves and graphs.

Firstly, let's go through the steps to draw up a demand schedule.

When we are drawing up the demand schedule everything (consumer's taste, consumer's income, the price of other goods and others) except the price of the goods in the schedule is held constant. This is known as *ceteris paribus*. *Ceteris paribus* is a Latin phrase which means 'hold everything constant'. So in this case, we assume all other factors that affect quantity



demand do not change. For example, if we examine one factor, it is assumed that other factors such as income and prices of other goods are constant or remain the same.

### How to Prepare a Demand Schedule

*Step 1.* Draw a table with two columns. One column for the price and the other for the quantity. As we proceed on you will be able to see the law of demand clearly in the table where increasing prices leads to fall in quantity demanded whilst decreasing prices leads to rise in quantity demanded.

Left hand column should be labeled price	Right hand column should be labeled quantity
↓	↓
<b>Price (k)</b>	<b>Quantity demanded (kg)</b>

*Step 2.* Give the schedule a title. Always have a title for your schedule.

Title ↓	
<b><u>Individuals demand schedules for kaukau</u></b>	
<b><u>(for the first week of April)</u></b>	
<b>Price (kina)</b>	<b>Quantity demanded (kg)</b>

The demand schedule must be drawn and labelled correctly. When it is drawn up well you can be able to work out the law of demand easily.

*Now, turn to the next page to continue on with the third step.*



Step 3. Enter the price and the quantity demanded respectively.

### DEMAND SCHEDULE

<u>Market demand schedule for kaukau</u> <u>(for the first week of April)</u>	
<u>Price (kina)</u>	<u>Quantity demanded (kg)</u>
30	6
25	7
20	8
15	13
5	20

Enter price

Enter quantity

So, for you to draw a correct demand schedule follow the steps and the illustration we have just gone through.

Let us go through the demand schedule shown above.

When reading from top to bottom you will notice that as the kaukau becomes cheaper, the consumer is not only able and willing to buy more but the amount of extra kaukau this person is able and willing to buy increases as the price falls. If the price for kaukau falls from K30 to K25/kg, demand will only rise by 1 kg/week. If the price of kaukau falls from K10 to K5, demand rises by 7kg/week. Similarly, if you read from the bottom up you will notice that, as kaukau becomes expensive the consumer will not be able and willing to buy more. There will be a huge fall in the demand for kaukau from 20kg to 13kg which is a 7 kg fall when price for kaukau increases from K5 to K15. All in all whichever way you read the demand schedule the figures reflect the demand pattern or the law of demand.

Let us now look at how to construct a demand curve.

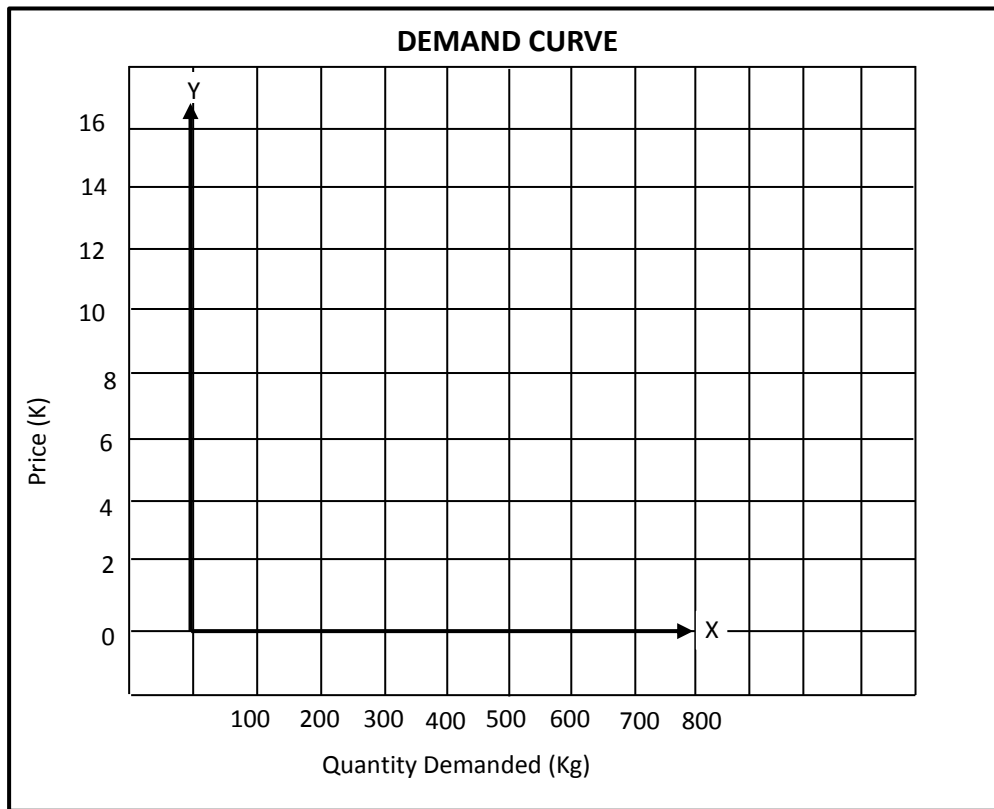
#### **How to Construct a Demand Curve**

The information from a demand schedule can be graphed to show the law of demand more clearly. When a demand schedule is graphed, it becomes a demand curve, even if it is a straight line.

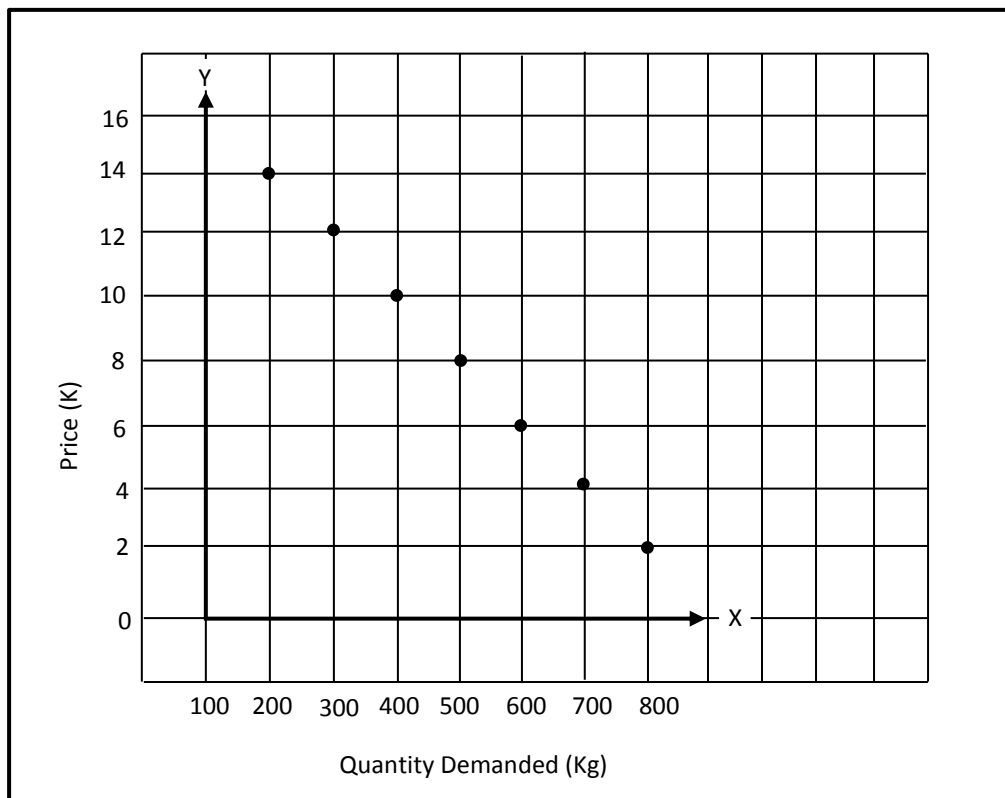
Let us go through the steps to draw the demand curve.

Step 1: Take a sheet of grid or graph paper. Mark prices on the y-axis and quantities along the x-axis. Select an appropriate scale. The scales on each axis do not have to be the same, but each scale must be even.

*Turn to the next page to see what has just been mentioned.*

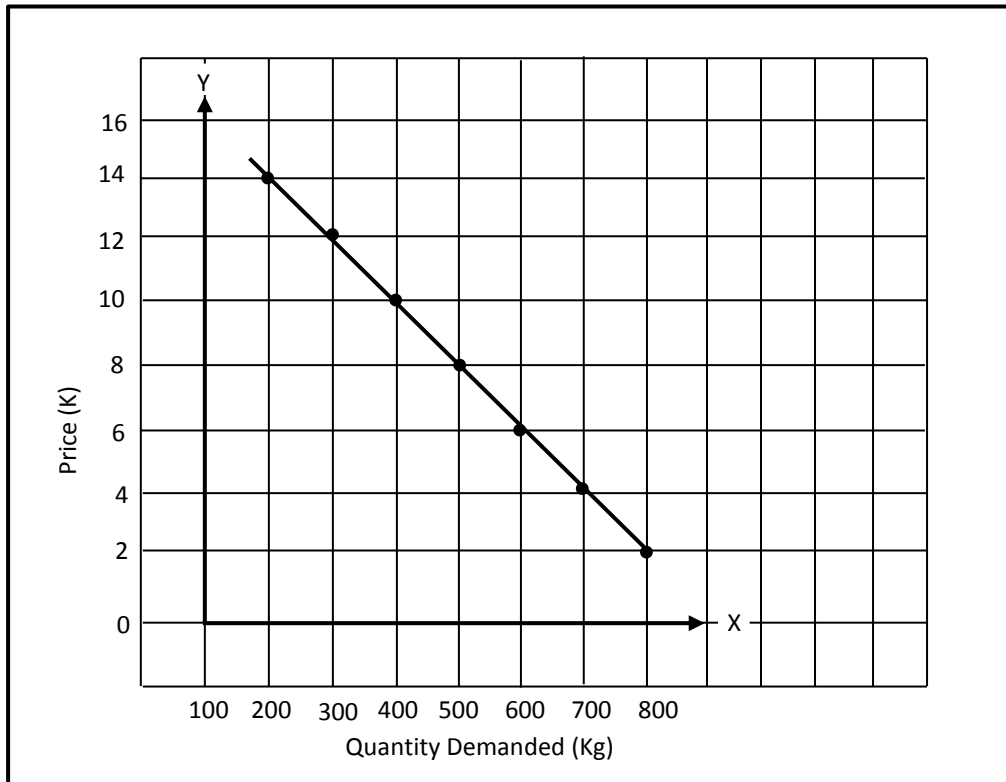


Step 2: Plot the points of the demand curve.

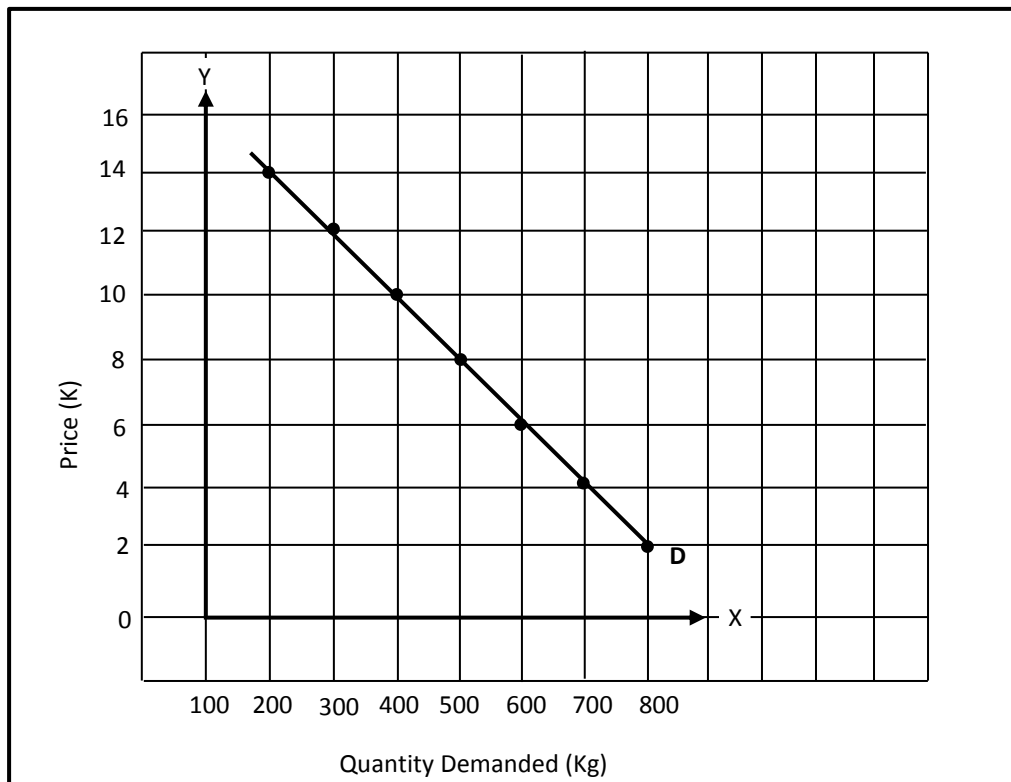




Step 3: Connect the points and draw the demand curve.



Step 4: Label the demand curve *D*, the x-axis as Quantity (unit or kg) and the y-axis as Price (K).





Let us now go through the demand curve shown on page.

Data or the figures used to draw the demand curve is taken from the demand schedule. A demand curve slopes downward from left to right, showing an inverse relationship between price and the quantity demanded. What is inverse? Inverse means moving in the opposite direction. This means, there is a negative relationship where one variable increases the other decreases and vice versa. The variable in this case refers to price and quantity of the good.

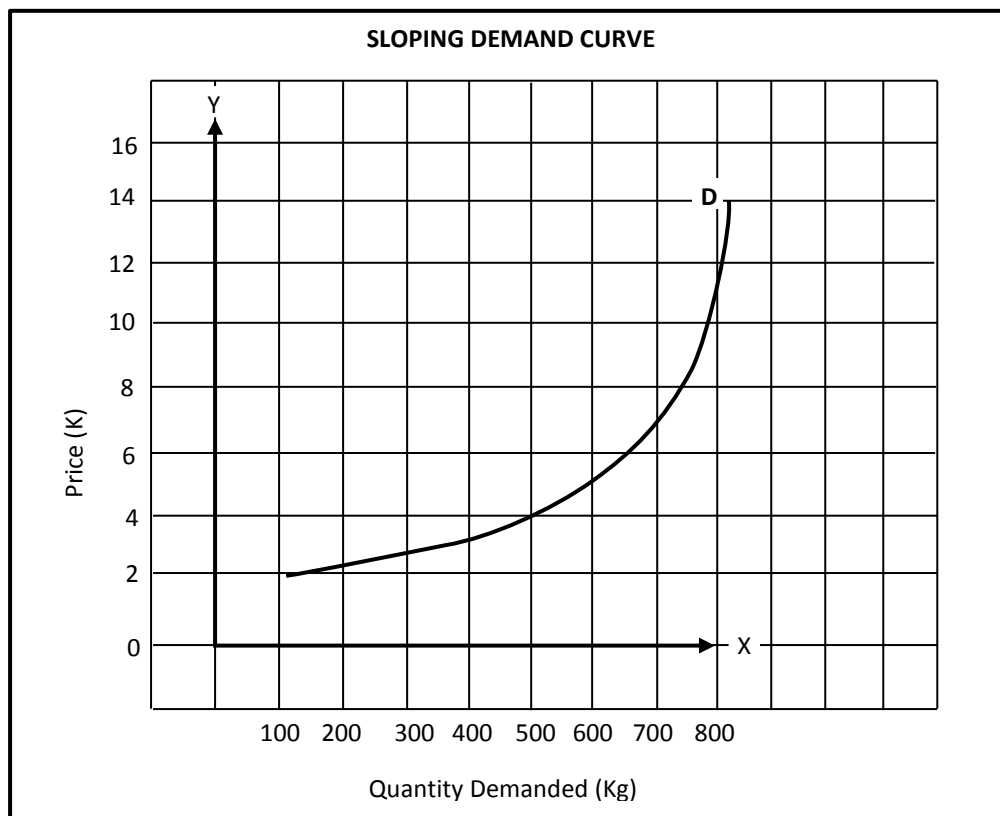
Looking at the graph you can clearly see that as price increases demand decreases. This is the inverse relationship. The y-axis of the graph shows prices whilst the x-axis shows quantities demanded.

### Reasons for Upward Sloping Demand Curve

Usually demand curves slopes downwards from left to right. Occasionally, the curves may slope upwards.

The reason for upward sloping curve is because as prices increases the demand for the good increases as well. What could be the reason for this movement?

Now, look below to see the illustration and the reasons for a sloping demand curve.







## Factors which cause an Upward Sloping Demand Curve

### 1. Conspicuous Consumption

Sometimes people like to consume certain goods (expensive clothes and cars) to impress others. As the price of these goods increases even more people wish to buy them. An example would be Rolls Royce car. Even though it is very expensive, demand exceeds supply; and as it becomes more expensive, more people want to buy one.

### 2. Goods bought for Speculative Reasons

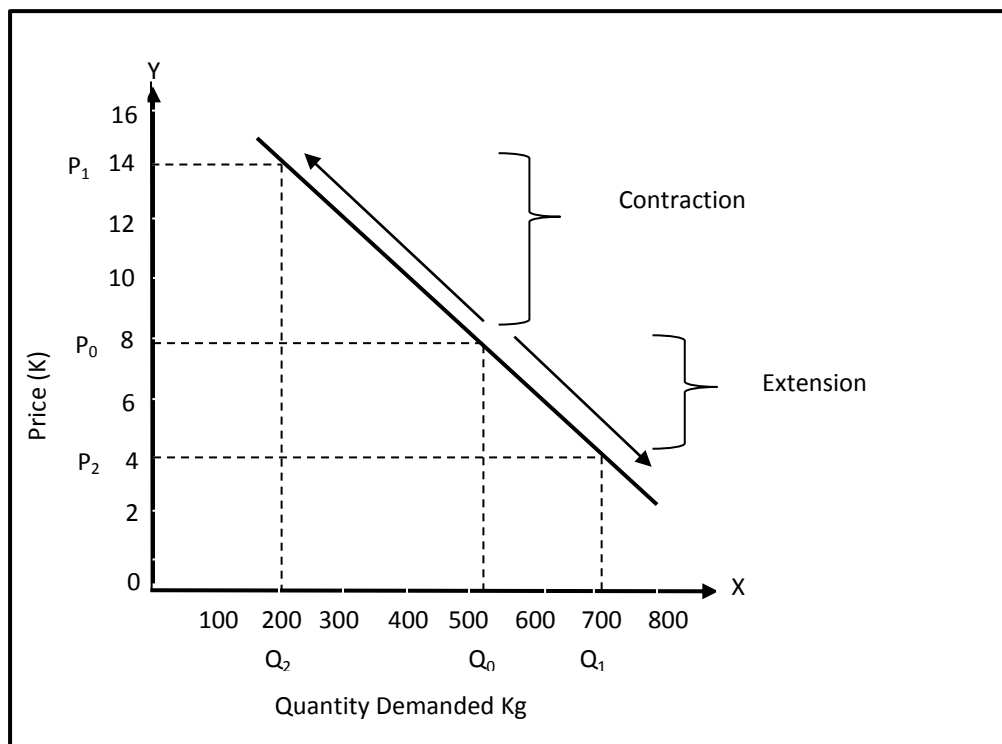
Sometimes goods are bought and kept in the hope that their price will later rise, so they can be sold again and earn a large profit. The demand for a good with the price of which is rapidly increasing may rise as speculators see the chance to earn large profits. For example, house and land.

### 11.3.1.3: Extensions and Contractions of Demand

#### Difference between Extensions and Contractions of Demand

It is important to distinguish between two types of change affecting demand curves. One causes a movement along a demand curve, while the other causes a shift of the whole curve. We will look at the change causing movement along the demand curve. When this happens we call these the contraction and the extension of demand curves. (We will see these when we construct extension and contraction of the demand curve.)

Below shows what is meant by extension and contraction of the demand curve.





Extensions and contractions happen when changes in prices affect quantity. That is the effect of the change in price on quantity results in a movement along a demand curve. Only the changes in price and not the other factors affecting demand. You will study the other factors that affect demand as we proceed on.

Contraction happens when there is a movement up along the demand curve. This shows that quantity demanded has decreased due to increase in price. As you can see when price increases from  $P_0$  to  $P_1$  the demand is stretched along the curve from  $Q_0$  to  $Q_2$ . There has not been a change in the intensity of demand so the demand curves have not shifted. Likewise for extension. Extension happens when there is a movement downward along the demand curve. This shows that quantity demanded has increased due to decrease in price. As you can see when price decreases from  $P_0$  to  $P_2$  the demand is stretched along the curve from  $Q_0$  to  $Q_1$ . The extension and contraction of demand is due to change in price other than the factors of production.

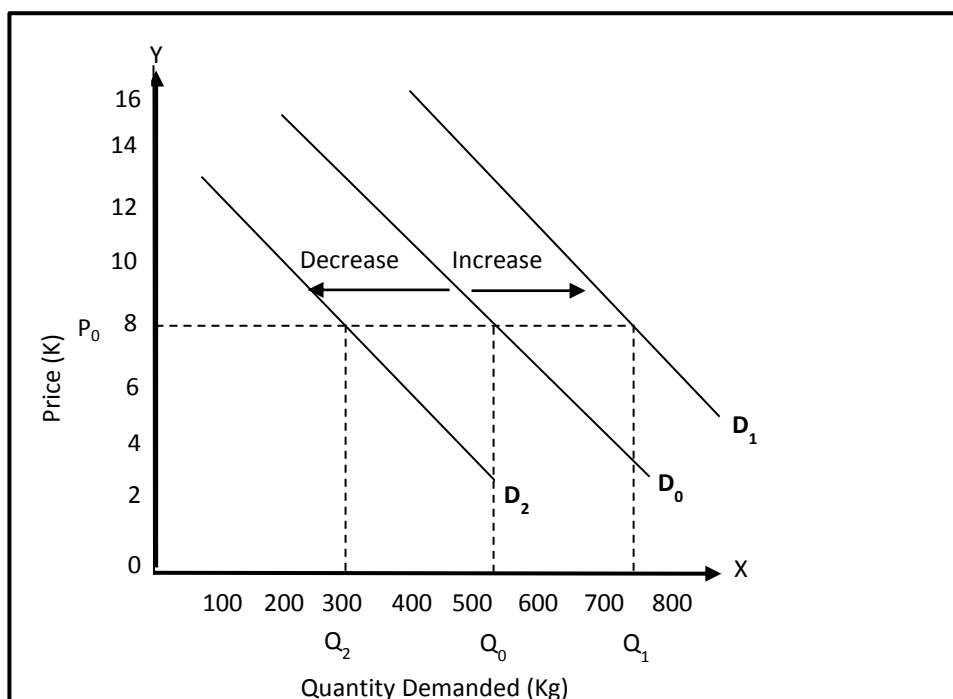
### Difference between the Increases and Decreases of Demand and Extensions and Contractions of Demand

The difference between increase and decrease of demand and extension and contraction of demand is that;

- Increase and decrease of the demand curve occurs when there is a change in demand. The change in the demand curve causes the demand curve to shift either to the left or right of the original curve. This happens largely due to the factors affecting demand other than price. For example, either an increase or decrease in consumers income. When people's income increase they demand more goods and vice versa.

Note here that there is no change in the prices.

Look below to see the increase and the decrease of the demand curve.





A change in demand causes a shift in the existing demand curve demand to the right or left as price remains constant at  $P_0$ . Demand decreases when quantity moves to the left from  $Q_0$  to  $Q_2$ . Demand increases when quantity moves to the right from  $Q_0$  to  $Q_1$ . These changes in demand is referred to as changes in the conditions of demand. As mentioned earlier increase and decrease of demand is due to the changes in the factors affecting demand other than price.

- Extension and contraction of the demand curve occurs when there is a change in quantity demanded as result of change in price. These will cause movement along the demand curve either upwards or downwards. There are no changes in factors affecting demand.

You can recap on the extension and contraction of the demand curve.

#### 11.3.1.4: Factors Affecting Demand

Demand for a particular good is determined by a number of factors. These factors are referred to as determinants. Let us go through these factors.

##### 1. The Price of the Goods

The demand for a particular good is determined by its price. If we are considering demand for rice, the price of rice is a determinant. Similarly, if we are considering demand for tea the price of tea is a determinant. In terms of the law of demand, the price of a particular good and its price have an inverse relationship if all other factors influencing demand remain constant. This means two other variables move in opposite direction. For instance, when price increases, the quantity demanded decreases. In opposite, when price decrease, the quantity demanded increases.

Let us take a look at the table given below to understand this situation.

An increase in price from 1kg of rice from K4.50 to K5.00 will see a decrease in the quantity demanded for 10 000kg to 5000 kg. On the other hand, a decrease in the price of rice from K6.00 to K5.50 per kg, will result in an increase of the quantity demanded from 2600kg to 3000kg. What is shown in the table is the market demand which is made up of combined demands of individuals.

**MARKET DEMAND FOR RICE**

Price per kg (K)	Quantity demanded (kg)
4.50	10 000
5.00	5 000
5.50	3 000
6.00	2 600

##### 2. Prices of Related Goods

The prices of other goods can affect the demand of a particular good. This will depend on whether the other goods are;

- a) Substitute goods
- b) Complementary goods



### (a) Substitute Goods

What are substitute goods? Substitute goods are goods or services that can be a need or want in place of another good or service. For example, bread and scones.

Let us take a look at ox and palm and tinned fish. When the price of ox and palm rises many consumers will decrease their demand for ox and palm and shift to tinned fish and vice versa. That is when the price of ox and palm falls, many tinned fish consumers will shift to ox and palm. Such goods are referred to as substitutes. Margarine is a substitute for butter to the extent that it can satisfy needs and desires of consumers who buy butter. Another example is coffee and tea. When the price of tea rises, consumers tend to demand less tea and more coffee. In this case, an increase in demand for coffee is determined by the price of tea and vice versa. Other examples are pepsi and coke, snax biscuit and em nau biscuit and gas stoves and electric stoves.

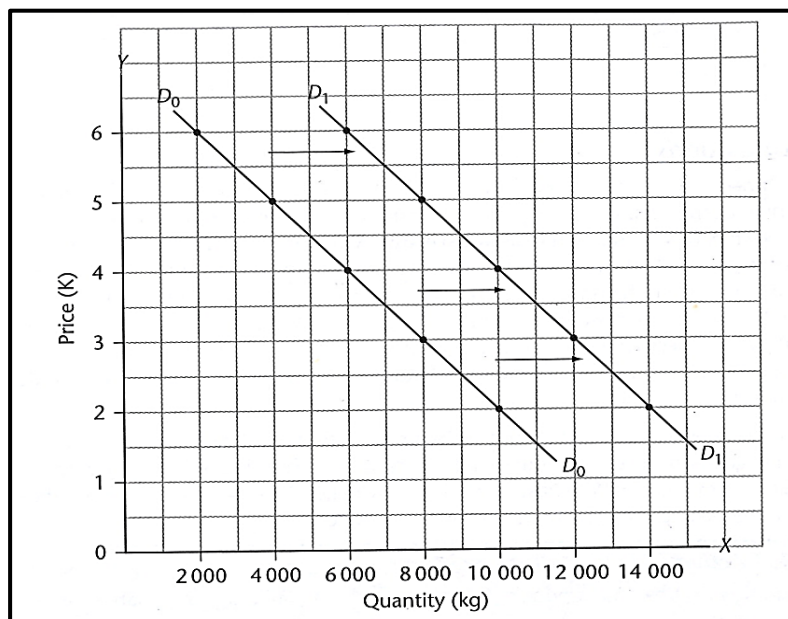
By now you must know that two goods are substitutes if the demand for one rises falls when the price of the other rises falls.

Look at the table below to showing changes in demand for coffee as a result of an increase in the price of tea.

Changes in coffee demand when the price of tea changes		
Price of coffee, per kg (K)	Qty demanded for coffee prior to increase in tea prices (kg)	Qty demanded for coffee after increase in tea prices (kg)
2.00	10 000	14 000
3.00	8000	12 000
4.00	6000	10 000
5.00	4000	8 000

This is illustrated in the graph given.

### THE EFFECT OF AN INCREASE IN THE PRICE OF A SUBSTITUTE GOOD ON THE DEMAND CURVE



**(b) Complementary goods**

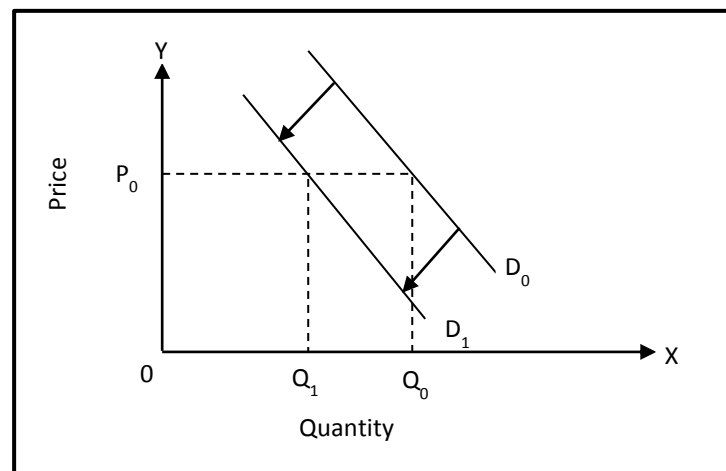
What are complementary goods? Complementary goods are goods jointly used. An example is motor vehicle and fuel. Increases in fuel prices decrease the demand for motor vehicles. On the other hand fall in fuel prices increases the demand for motor vehicles. As a result, it can be concluded that fuel prices are a determinant of demand for motor vehicles.

Therefore, the demand for a complementary good determines the demand for other goods. For example, gas stoves and gas, shoes and leather, betel nut and lime, electricity and electrical goods, photocopiers and paper and mobile phones and SIM cards.

Two goods are complementary if the demand for one rises when the price of the other falls. Look at the table below which shows the relationship between fuel prices and motor vehicle demand.

Change in demand- fuel prices and motor vehicles		
Car price per unit (K)	Motor vehicles- quantity demanded prior to increase in fuel prices (units)	Motor vehicles – quantity demanded after increase in fuel prices (units)
12 000	250 000	230 000
15 000	220 000	200 000
20 000	180 000	120 000
23 000	150 000	100 000

Below here, is a simple graph showing effect of price on demand for complementary goods.



*Let's go through the graph.*

The original demand curve is  $D_0$  the price  $P_0$  and quantity demanded is  $Q_0$ . As the fuel price rises, the car demand shifts to the left, showing a decrease in demand. The new demand curve is  $D_1$  and the new quantity demanded decreases to  $Q_1$ .



### 3. Consumer Income

The demand for a good depends on the level of consumers' incomes. Generally, as income rises the demand for goods also rises. On the other hand a decrease in income results in a decrease in demand. However, this may not always hold true. Changes in income do not always affect demand for goods the same way. These will depend on whether the goods are;

- a) Normal
- b) Inferior

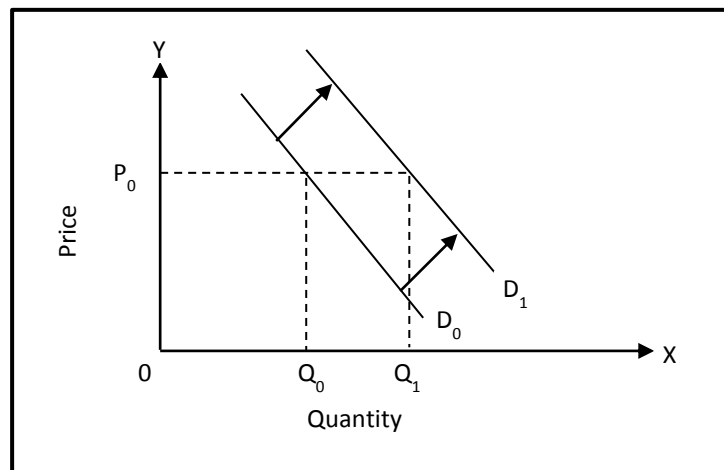
What is the difference between inferior and normal goods?

Inferior goods are those goods that tend to be demanded less as people's income increases. Demand for inferior goods decrease as income rises and vice versa. Consumers buy certain goods because of their low incomes. They are substitutes, duplicates or low quality. For example, people buy second-hand clothes as they cannot afford to buy new clothes. As their income rises they shift to new clothing and reduce demand for second-hand. The income level of consumers is the factor that determines whether a good is inferior or normal.

Normal goods are goods that tend to be demanded more when income increases.

As income rises, the demand curve for normal goods shifts to the right. As income falls, the demand curve shifts to the left.

The graph below shows the effect of an increase in income on normal goods.



Demand for mobile phones (normal goods) rises as income rises. In this diagram prior to increase in income, consumers demanded  $Q_0$  mobile phones at  $P_0$  price. The original demand curve was  $D_0$   $Q_0$ . It has shifted to the right  $D_0D_1$ , as a result of the increase in income. This shows that as income rises, the demand curve for normal goods shift to the right.

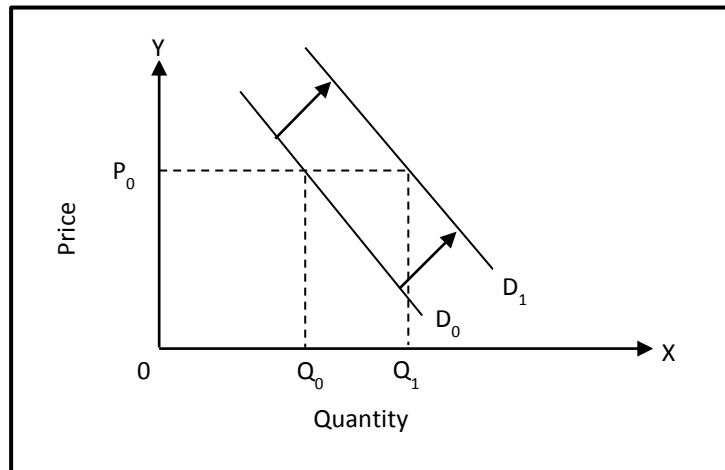
### 4. Consumers Expectations

Consumers decide to either buy or sell by foreseeing things happening around them. For instance, they decide to buy more cigarettes today if they anticipate or foresee that the price of cigarette will go up in the coming weeks. This is to avoid paying more lately. When floods destroy rice farms in rice-growing countries, people expect increases in rice prices in the near future and buy more today. When a new computer or mobile phone is introduced, the price is often high; people know through experience that the price may come down after a few months. They will not buy until price is lowered, thus, consumer expectations either increase or decrease the demand for a good.



If consumers buy more today, the demand curve will shift to the right. If they postpone purchase for a future date, the demand curve shifts to the left.

Look at the graph below on how consumers' expectations affect the demand curve of a good.

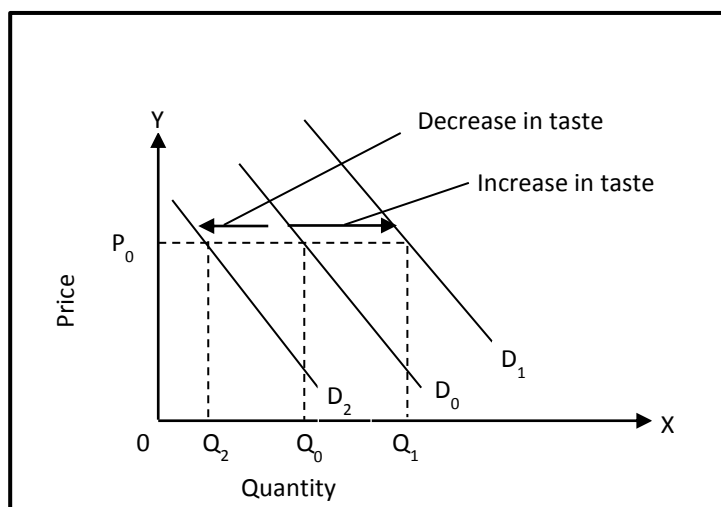


*Let's go through the graph.*

When consumer expects that price for the cigarette will rise in the near future then surely their demand will increase today. The original quantity is  $Q_0$  at price  $P_0$ . The original demand curve of  $D_0$  will now shift to  $D_1$  increasing the quantity to  $Q_1$ .

### 5. Tastes and Preferences

Consumers taste and preferences cover a wide variety of goods. This may be based on style, fashion, sport or culture. Consumers change in tastes and preferences results in either an increase or decrease in demand whilst other factors remain constant. Assume that there are two brands of rice: A and B. If many people prefer the improved taste of A, demand for A will rise and demand for B will fall. Some examples are changes in preference from button phones to touch screen phones, LCD to LED televisions, PCS to laptops and sedans to jeep.



*Let's go through the graph.*

The original demand curve is  $D_0$ . Price and quantity were  $P_0$  and  $Q_0$ . If consumer taste and preference increases for the product, example mobile phone, quantity increases to  $Q_1$



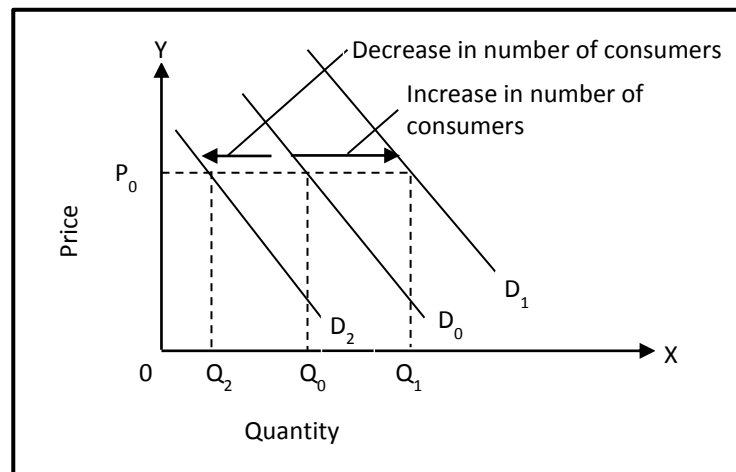
shifting demand curve to the right as  $D_1$ . If consumers taste and preference decreases, the product quantity will decrease to  $Q_2$  and the demand curve will shift to the left as  $D_2$ .

### 6. Number of consumers

Market demand is made up of combined individual demands. As the number of consumers increases demand for goods also increases. For example, an increase in the number of students will create an increase in the number of exercise books demanded.

A change in the number of consumers will cause a shift in the demand curve. An increase in the number of consumers will shift the demand curve to the right and a decrease will shift the demand curve to the left.

Look at the simple graph given on the effect of the number of consumers for goods on the demand curve.



*Let's go through the graph.*

Consumer's demand  $Q_0$  quantity of bread at  $P_0$  price. The existing market demand curve is  $D_0$ . As a result of an increase in the number of consumers, quantity is increased to  $Q_1$  and the demand curve shifts to the right as  $D_1$ . A decrease in the number of consumers decreased the demand to  $Q_2$  and the demand curve shifts to the left as  $D_2$ .

Remember these two important points;

1. When a factor other than price changes, the whole demand curve will move or shift (increase or decrease)
2. When price and only price changes, there is a movement along the demand curve (extension or contraction)





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## Summary: 11.3.1

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- Price is an important tool in determining the allocation of resources. Scarce goods fetch higher prices due to its limited supply whilst goods in abundance are charged at normal price as there are surplus of them.
- Price theory is the study of how price for any specific good or service is reached by the relationship between the forces of supply and demand.
- The limitation of price theory;
  - a) unfair distribution of resources
  - b) Non-provision of public goods
  - c) Failure to provide merit goods to the society
  - d) Non-recognition of externalities
  - e) Imperfect information flow
  - f) market instability
  - g) Waste of resources
  - h) Failure to address poverty
- Importance of price theory;
  - Price determines the decisions of production in capitalist economy
  - Price influences goods produced
  - Price influences people's ability to pay for goods and services
- Price is largely determined by the market forces of demand and supply or the invisible hand of the market.
- Demand is the numbers of goods and services consumers are able and willing to buy at a given price at a particular time.
- A demand curve is a graph showing the quantity of a good or service that consumers are able and willing to buy at various prices over a given period of time.
- Demand increases as price decreases and vice versa.
- Demand sloped upward due to; (a) conspicuous consumption & (b) goods bought for special reasons.
- Extension and contraction of the demand curve occurs when there is change in price whilst all other factors remain constant. Extension occurs when there is movement downward along the curve when price rises whilst contraction occurs when there is movement upward along the curve due to decrease in price.
- Increase and decrease of the demand curve occurs when the original curve shifts or move to either the left or the right. Increase occurs when demand curve shifts to the right and decrease results in the curve moving to the left. These movements are due to changes in the factors affecting demand other than price.
- Factors affecting demand are;
  - (a) The price of the goods
  - (b) Price of related goods
  - (c) Tastes and preferences
  - (d) Consumer income
  - (e) Consumer expectations
  - (f) Number of consumers



### Learning Activity 11.3.1

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1. Define the following words;

(a) Demand \_\_\_\_\_

(b) Supply \_\_\_\_\_

(c) Individual demand \_\_\_\_\_

(d) Market demand \_\_\_\_\_

2. (a) Explain the difference between the extension and contraction of the demand curve to the increase and the decrease of the demand curve.

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(b) And draw simple graphs illustrating the extension and the contraction of the demand curve and the increase and the decrease in the demand curves.





3. Refer to the schedule given below to construct a demand curve.

<b>Demand schedule for tinned fish</b>	
<b>Price per kg (K)</b>	<b>Quantity demanded (kg)</b>
1.00	700
1.50	550
2.00	400
2.50	200
3.00	50

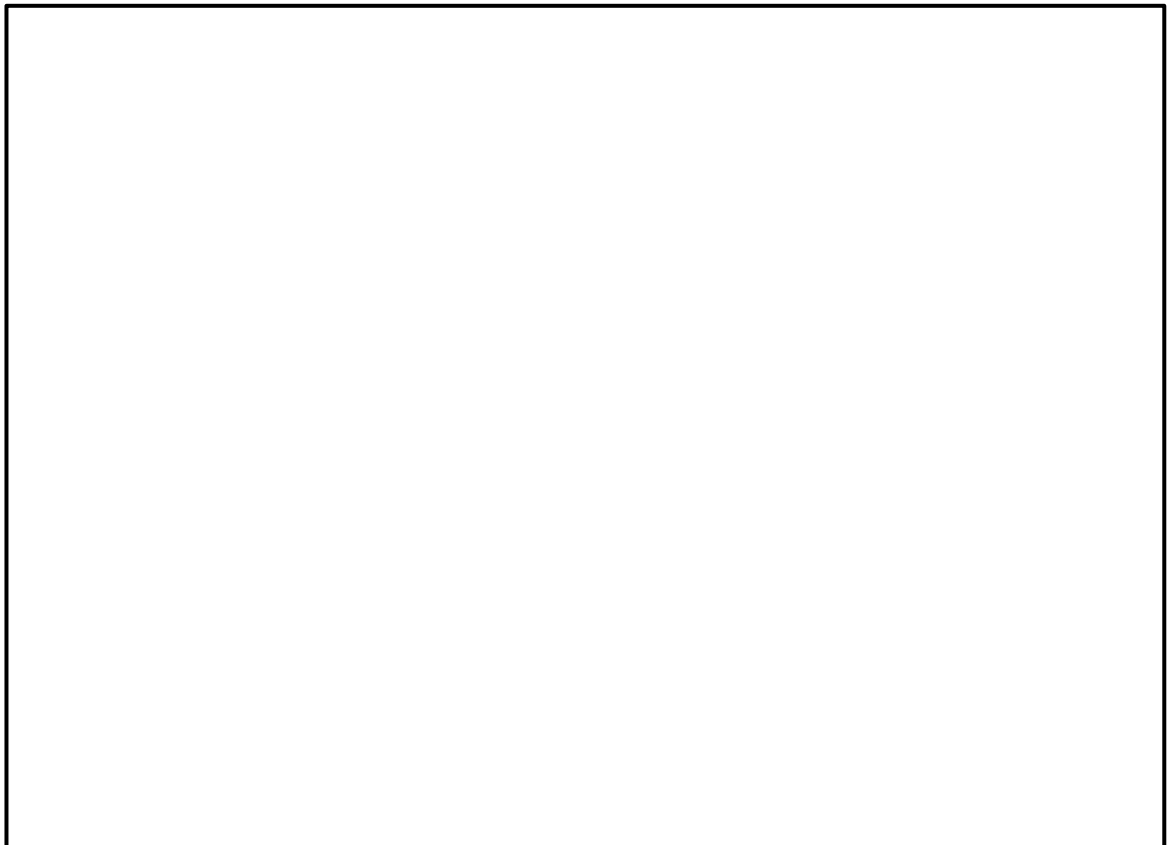
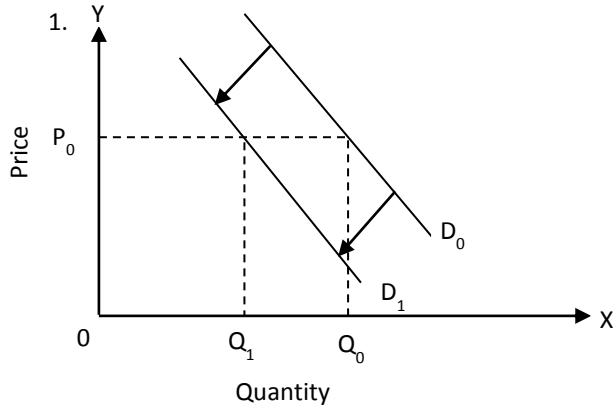
3. (a) List four of the six factors that cause a shift in the demand curve and give examples that cause the demand curve to shift.

<b>Factors</b>	<b>Examples</b>
1. Prices of goods	Original price of rice is K4.00. If increases to K5.00 its demand will fall.



(b) Than draw 2 simple graphs illustrating increase in the consumers' income and decrease in number of consumers. (One has been done for you)

**Decrease in consumers' expectations**





## TOPIC 2: PRICE THEORY: SUPPLY

In the previous topic we learnt about demand. That is the number of goods and services people are willing and able to buy at given price in a given period of time. We looked at the consumer's point of view. We will now look at the suppliers or producers point of view.



### Specific Learning Outcomes

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On successful completion of this topic, students will be able to analyse and evaluate;

- Supply and Supply Determinants
- Supply schedules and supply curves
- Interaction of supply and demand or equilibrium
- Factors affecting supply



### 11.3.2.1: Supply, Supply Schedules and Supply Curves

#### What is Supply?

The number of goods suppliers are willing and able to supply at a given price at a given period of time.

People sometimes use the words supply and stock to have the same meaning. This is not true in economics. The word stock refers to the goods that producers have in their factories, warehouses and shops ready for use.

The general view of supply is when prices of goods increases, suppliers will supply more however, when prices decreases suppliers will supply less of this products.

The law of supply states that the higher the price, the higher the quantity supplied and the lower the price, the lower the quantity supplied.

You will see this clearly when we draw a supply curve from a supply schedule. Before we can draw the supply schedule and curve let's find out what supply schedule and supply curve are.

#### What is Supply Schedule?

Supply schedule is the table showing the quantities of goods supplied at a given price, at a given period of time, whilst others factors remain constant. Other factors refer to the factors that affect supply. For example, costs of production. You will learn more about this as we proceed on.

#### What is Supply Curve?

Supply curve is the graph showing the quantities of goods supplied at a given price at a given period of time, whilst other factors are being held constant.

Like demand there are two types of supply. They are individual supply and market supply. Let's find out what they are.

##### 1. Individual Supply

Individual supply refers to the quantity of goods offered at a range of prices by a single supplier in the market during a specific time period, other things being equal.

##### 2. Market Supply

Market supply is derived from individual supply. Market refers to the total quantity of goods offered at a range of prices by all suppliers during a specific time period, other things being equal.

*Turn to the next page to see what a supply schedule is.*



Title  
↓

<b>SUPPLY SCHEDULE</b>	
<b>Price per kg (K)</b>	<b>Quantities supplied (kg)</b>
10.00	10 000
15.00	15 000
20.00	20 000
25.00	25 000

Left column: This should be labelled price.

Price can be shown in descending or ascending order.

Right column: This should be labelled quantity supplied.

The supply schedule is similar to demand schedule, in that it has two column table, with the heading Price (k) and quantity supplied, then the prices in either ascending or ascending order depending on the quantities supplied shown for each price.

The two variables included in the supply schedule are;

- The different prices of a good
- The quantities supplied

The supply schedule corresponds to the law of supply. As price rises, the quantity supplied also rises, and as price falls, the quantity supplied also falls.

Let's go through the supply schedule given above.

At K10.00 per kilo, the lowest price, the quantity supplied is 1,000kg as price rise to K15 the suppliers are more than willing to supply quantity of K15, 000.00 an additional quantity of 5000kg supplied. So you can see clearly that suppliers are willing to supply at higher prices. Suppose the price falls from K25 to K20 the suppliers will reduce their supply from 25 000kg to 20 000kg. Suppliers will sell less when prices are low.

Let us now look at how to construct a supply curve. The supply curve can be drawn for individual suppliers and market supply. It is derived from supply schedule and drawn in accordance with the law of supply. It will show an increase in quantity supplied as prices rise and a decrease in quantity supplied as prices fall.

### **How to Construct a Supply Curve**

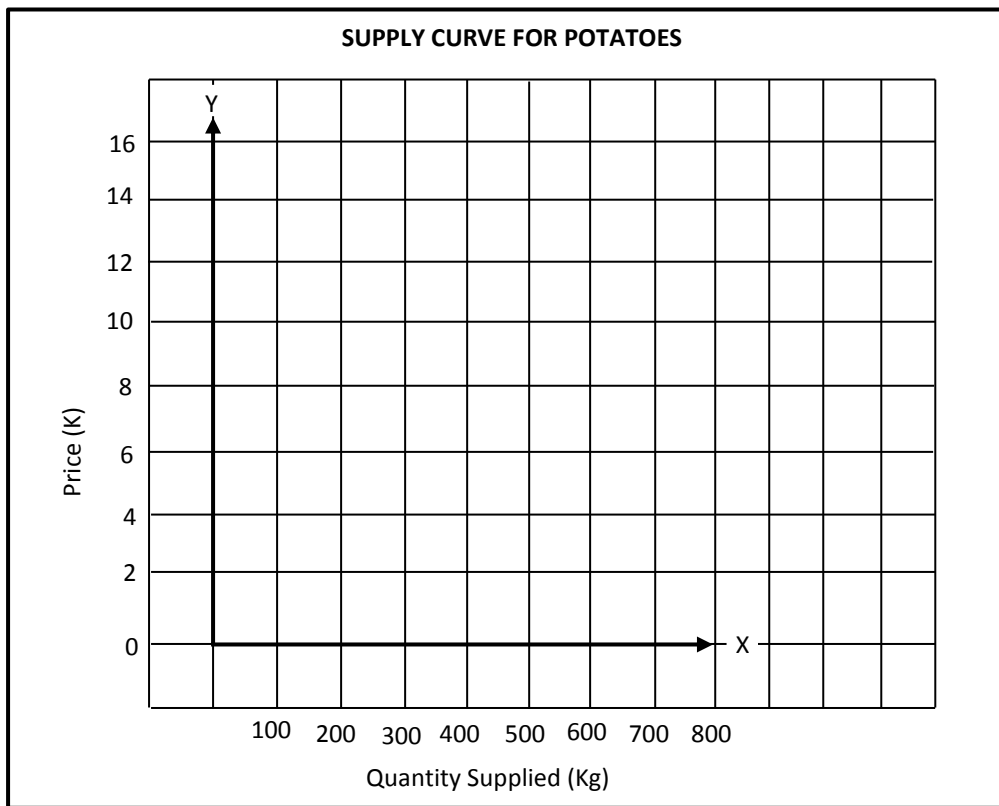
The information from a supply schedule can be graphed to show the law of supply more clearly. When a supply schedule is graphed, it becomes a supply curve, even if it is a straight line.

Let us go through the steps to draw the supply curve.

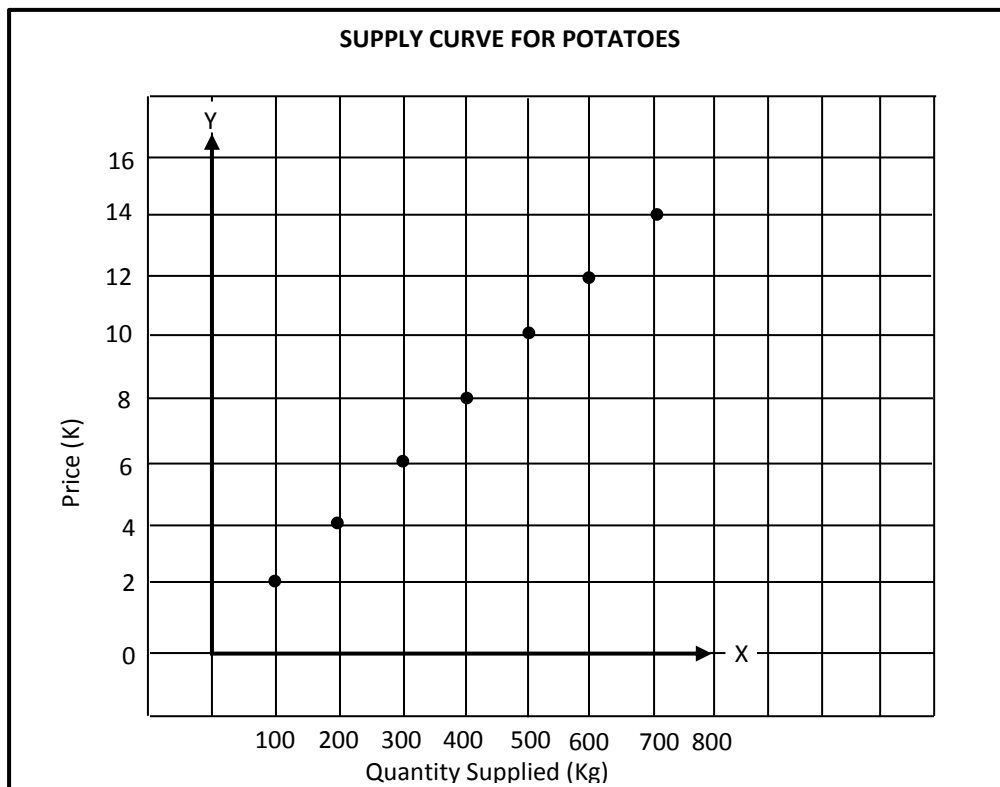
*Turn to the next page to start.*



Step 1: Take a sheet of grid or graph paper. Mark prices on the y-axis and quantities along the x-axis and select an appropriate scale.



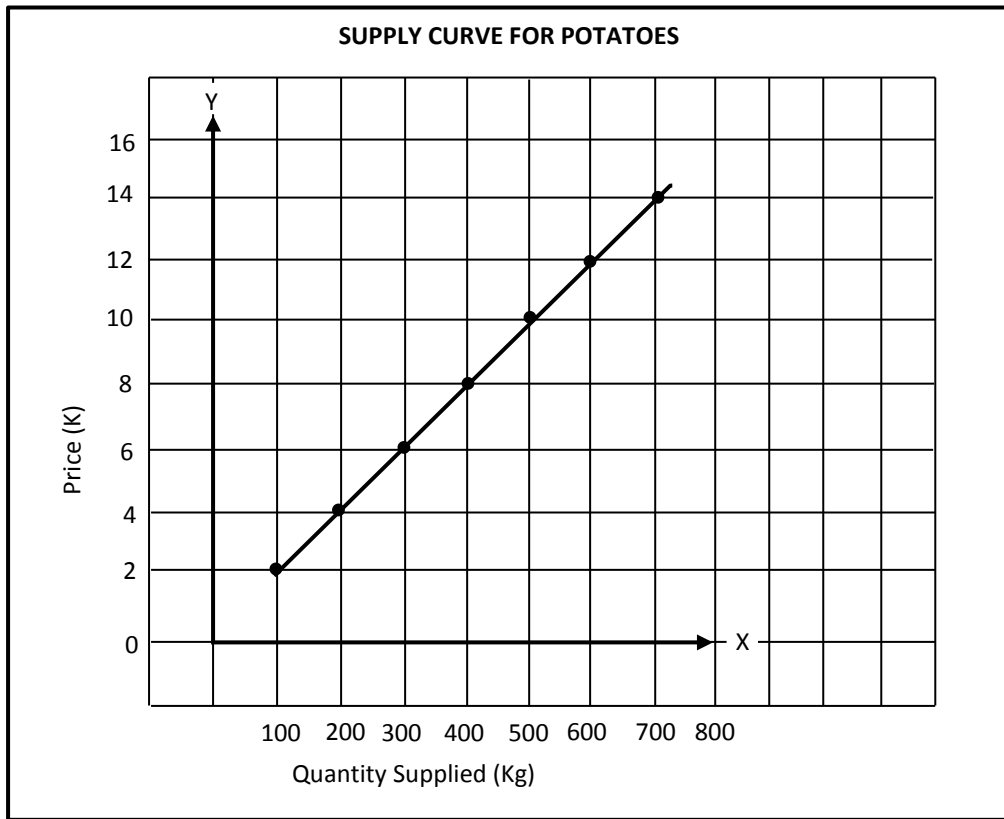
Step 2: Plot the points of the supply curve.



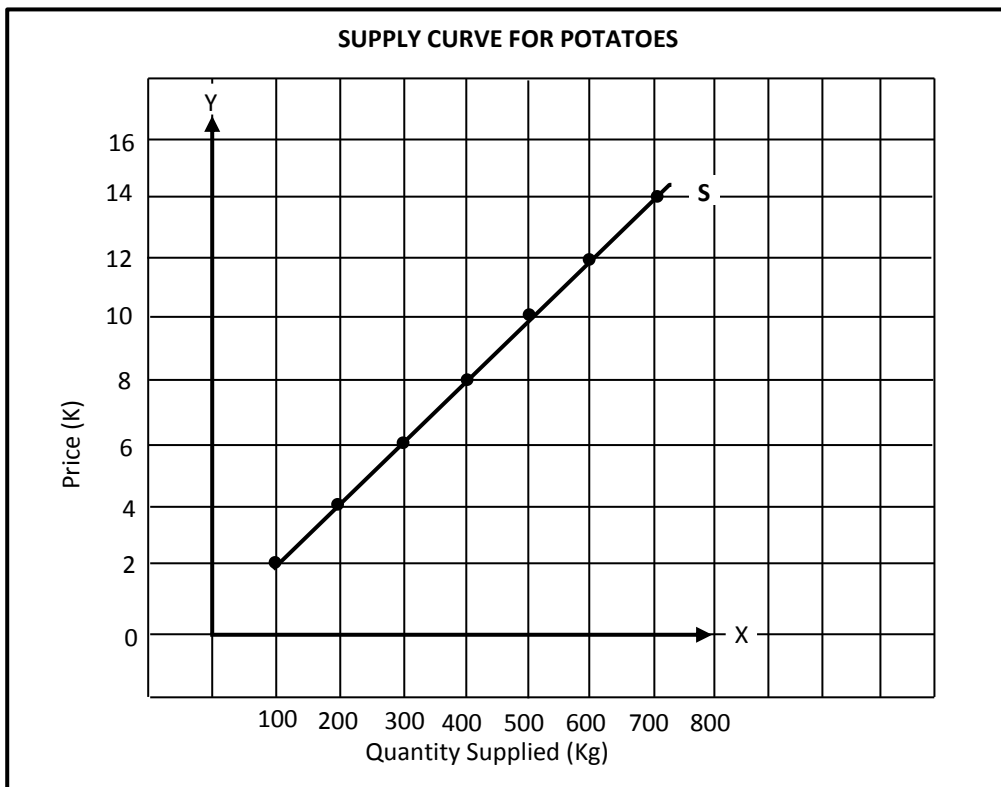




Step 3: Connect the points and draw the supply curve.



Step 4: Label the supply curve S, the x-axis as Quantity (unit or kg) and the y-axis as Price (K).





Let us go through the graph illustrated on page33.

When the price of the good is set at K2.00 the suppliers supply a quantity of 100kg. As price rises to K3.00 the supplier now increases the supply to 200kg. They are happy to supply an extra 100kg. On the other end if the set price was K14.00 and reduced to K12.00 the supplier will reduce supply from 600kg to 500kg.

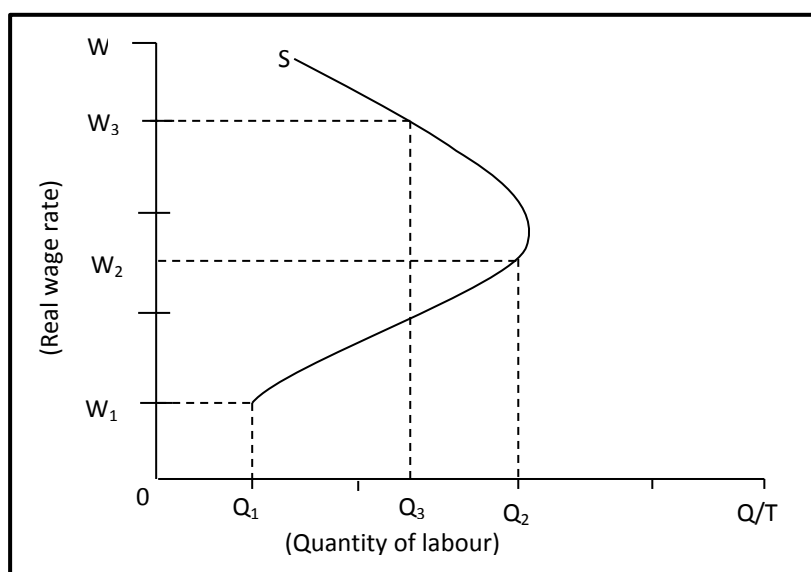
So you can clearly see that as price rises supply increases and likewise if price falls supply decreases. The aim of the supplier is to meet the cost of production and earn a profit.

To demonstrate the law of supply, a supply curve should always slope upwards to the right, showing that the quantity supplied increases as price rises, ceteris paribus. Ceteris paribus as mentioned in topic one means hold everything constant. In this case only price is changing whilst other factors affecting supply do not change.

### Backward Sloping Supply Curves

A backward sloping curve results from supply of labour. That is the manpower needed in the market to produce goods. What does the backward sloping curve look like?

#### BACKWARD SLOPING SUPPLY CURVE



There are certain times labour may have a backward sloping supply curve. The supply of labour entering the market gradually rises as real wage rates increase. For example, during times of low real wage children are likely to continue longer at school in the hope that the 'extra' education will enable them to have high wage rise rates later; many women prefer to work at home, rather than seek employment in the formal sector. As wages rises the number of workers entering the workforce will also rise. Beyond a certain point, however, many families will find that it is no longer necessary for the wife to work and that they can afford to pay for their children to stay longer at school or university-the supply of labour may start to fall again.

Let's go through the backward sloping supply curve. The supply of labour rises from  $Q_1$  to  $Q_2$  as real wages rise from  $W_1$  to  $W_2$ . As real wages rise from  $W_2$  to  $W_3$  the supply of labour may start to fall again.



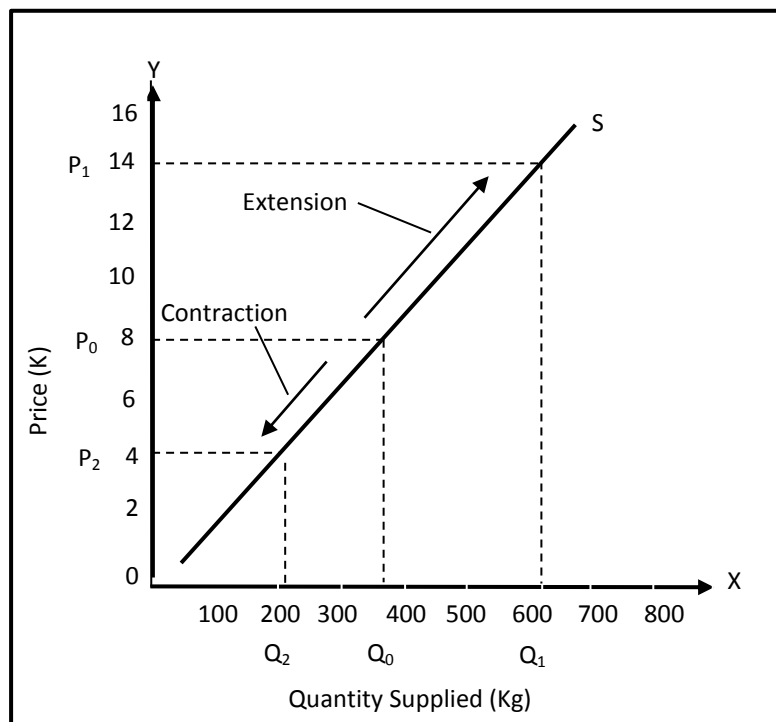
### 11.3.2.2: Extensions and Contractions of Supply

You have studied earlier on the topic of demand that there are two situations and they are; a change in quantity demanded and a change in demand. The same also applies for supply. It is important to understand these two issues to avoid confusion.

#### Factor which causes extension and contraction of supply

Extensions and contractions occur when there is a change in quantity supplied. A change in quantity supplied is the amount of goods supplied when the price changes. As price increases, the quantity increases and vice versa. The only factor affecting change in the quantity supplied is the price of the good. This means that an increase in price leads to an upward movement along the supply curve which is an extension. On the other hand, a decrease in the price leads to a downward movement along the supply curve which is a contraction.

Look below to see the extension and contraction of the supply curve.



*Let's go through the graph.*

As price rises from  $P_0$  to  $P_1$  the quantity supplied increases from  $Q_0$  to  $Q_1$  by an upward movement along the supply curve. As price falls from  $P_0$  to  $P_2$  the quantity supplied decreases from  $Q_0$  to  $Q_2$  and there is a downward movement along the supply curve.



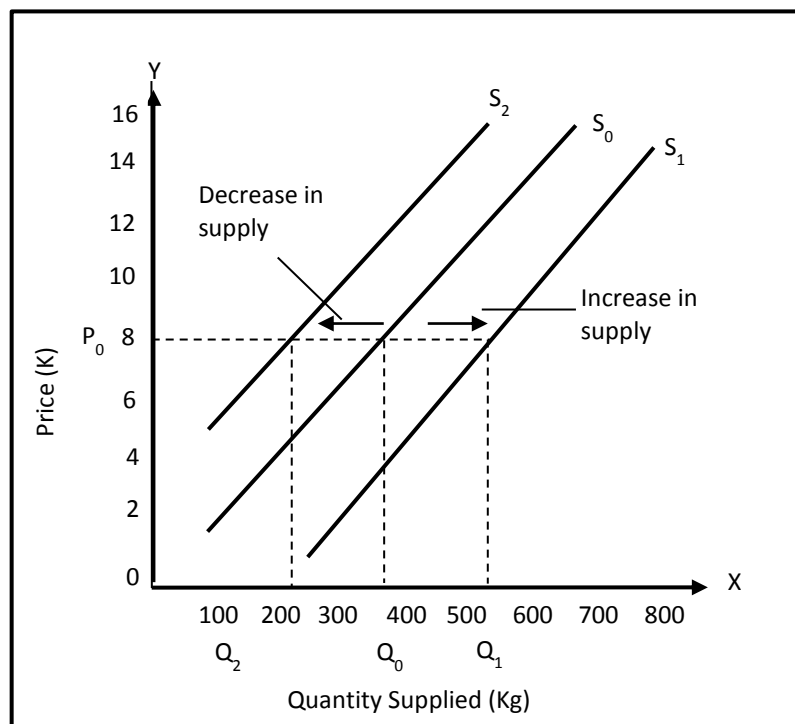
### Difference in the Increase and Decrease of Supply and Extension and Contraction of Supply

We have just discussed the extension and contraction of supply. We will now look at the increase and the decrease in supply. How does increase and decrease of supply curve occur?

The increase and the decrease of supply occurs when there is a change in supply as a result of changes in any one of the factors that determines the supply of a good other than price. Changes in supply cause the supply curve to shift to the left or right. A leftward shift indicates a decrease in supply and rightward shift indicates an increase in supply.

Note here that there is no change in price only the factors affecting supply.

Look at the illustration given below to understand better.



*Let's go through the graph.*

An increase in supply from  $Q_0$  to  $Q_1$  results in a shift in the supply curve  $S_0$  to  $S_1$ . A decrease in supply from  $Q_0$  to  $Q_2$  shifts the supply curve from  $S_0$  to  $S_2$ .



### 11.3.2.3: Factors Affecting Supply

Factors that affect supply of a particular good are known as supply determinant. Following are some determinants of market supply;

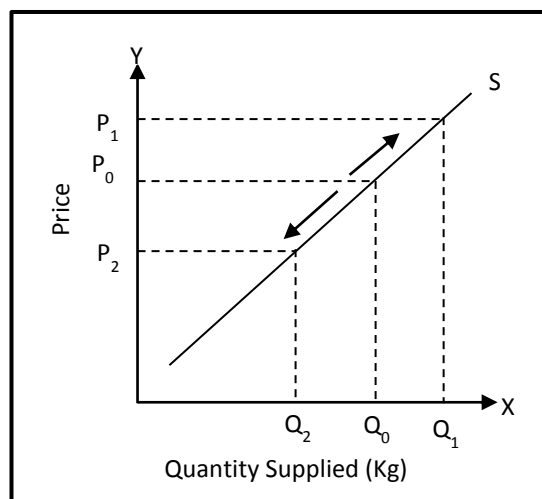
1. The price of a good
2. Prices of other goods
3. Costs of production
4. Supplier's expectations
5. The number of suppliers
6. Weather
7. Availability of resources to produce goods
8. Technological change
9. Government actions (taxes, subsidies, import restrictions)

#### 1. Price of a good

The price of a good determines the quantity. For example, the price of coffee determines the quantity of coffee supplied. As you have already learnt, as the price of a good increases the quantity supplied will be increased and vice versa. Therefore, the price of a good and the quantity supplied changes in the same directions, that is, the supply curve slopes upwards from left to right.

The illustration below shows the change in the price of a good which causes movement along the supply curve.

**SUPPLY CURVE FOR COFFEE**



*Let us go through the graph.*

The existing price for coffee is  $P_0$  and the quantity is  $Q_0$ . As price rises from  $P_0$  to  $P_1$  the quantity supplied has increased to  $Q_1$ . A fall in price from  $P_0$  to  $P_2$  will result in a decrease in quantity supplied from  $Q_0$  to  $Q_2$ .



## 2. Prices of Other Goods

Prices of goods refer to mainly substitutes and complementary goods. Here we look at these two types of goods from a supplier's point of view.

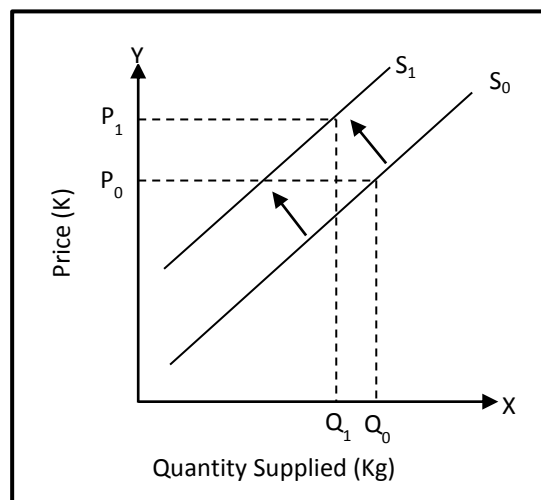
If you have forgotten what these two words mean turn to page 19 and 29 to recap.

### Supply Substitutes

A change in the prices of supply substitutes affects the supply of a particular good. Producers will supply more of a substitute good if it earns good profit compared to the other good. For example, if English potato fetches higher profit, then the producers will opt to supply more English potato than sweet potato (kukau), assuming the same amount of resources is used to produce this two items.

Price changes in supply substitute shifts the supply curve to the right or left. A shift to the right shows an increase in supply and a shift to the left shows a decrease in supply.

### SUPPLY CURVE FOR SWEET POTATOES- A SUBSTITUTE FOR ENGLISH POTATOES



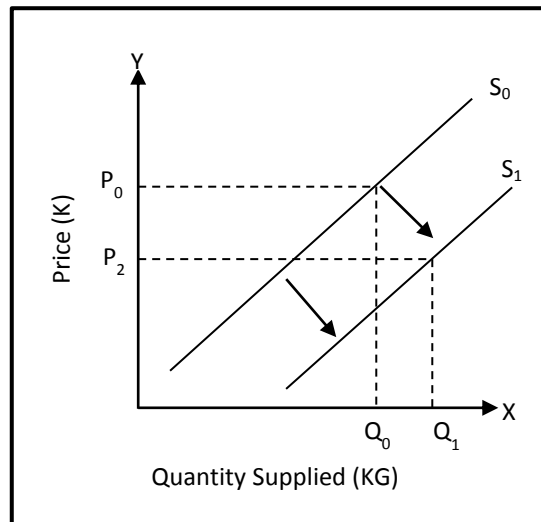
Let us go through the graph.

A decrease in the supply of sweet potatoes is caused by an increase in the price of English potatoes. The original supply curve for sweet potatoes is  $S_0$ . The supply curve shifts to the left as a result of increase in the price of English potatoes. The new supply curve is  $S_1$ .

### Complementary products

A change in prices of complementary products will affect the quantity supplied of a particular good. If we consider the supply of leather, an increase in beef prices will lead to an increase in supply of leather. As beef prices rise, suppliers will increase the beef supply. Since beef and leather are produced jointly, there will be an increase in the supply of leather as a result of an increase in beef prices. This may occur when one product is the by-product of another good. For example, petrol and diesel, and petrol and kerosene oil fall into this category.

Changes in prices of complementary products shift the supply curve either to the right or left. A shift to the right shows an increase in supply and a shift to the left shows a decrease in supply.

**SUPPLY CURVE FOR LEATHER – A COMPLEMENTARY PRODUCT OF BEEF**

Let us go through the graph given above

The increase in the supply of leather is caused by the increase in the price of beef. The supply curve for leather shifts from a  $S_0$  to  $S_1$  as a result of an increase in the supply of beef.

**3. Cost of Production**

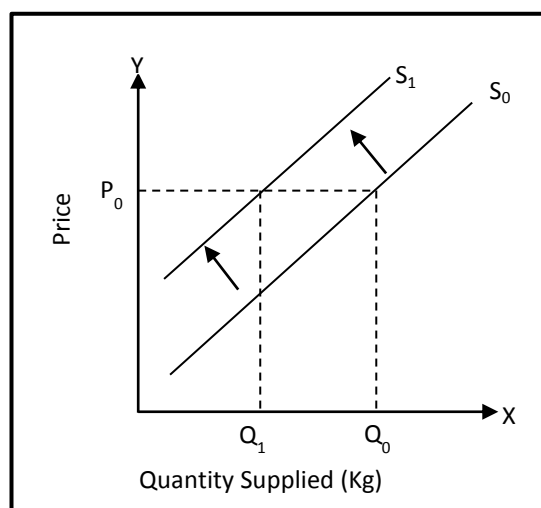
The cost of production is determined by input prices, technology and government policies

**Input Prices**

Input is also referred to as factors of production. It includes labour services, raw materials, power bill, rentals, interest on capital and other resources that helps production to take place. An increase in fuel prices, electricity prices and wages will result in an increase in production costs. As input prices rise, suppliers will offer smaller quantities at given prices. On the other hand a fall in input prices will decrease the cost of production, enabling suppliers to supply more.

An increase in the cost of inputs will shift the supply curve to the left and decrease in the cost of production will shift the supply to the right.

Look below to see an increase in input prices affecting the supply.

**INCREASE IN INPUT COSTS AND THE SUPPLY CURVE**

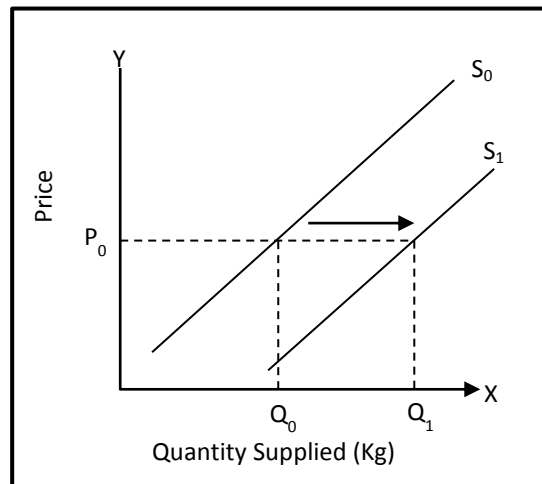


Let's go through the graph given above.

An increase in the cost of production decreases supply. The existing price and quantity are  $P_0$  and  $Q_0$ . As input cost increases, quantity decreases to  $Q_1$  and the supply curve shifts to the left as  $S_1$ .

Turn to the next page to see the effect of reduced cost of production on the supply curve.

#### A FALL IN THE COSTS OF PRODUCTION BRINGS ABOUT AN INCREASE IN SUPPLY



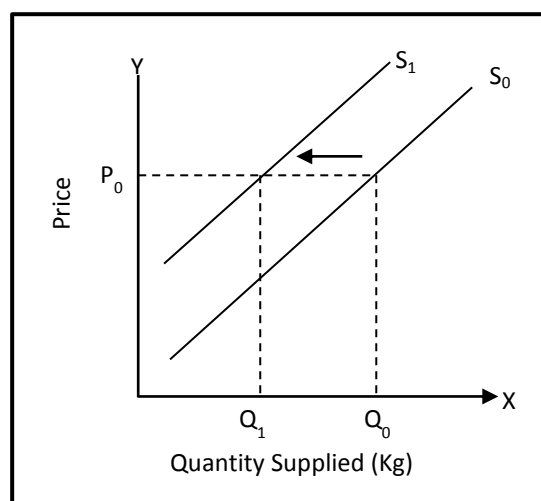
Let us go through the graph.

When the supply curve moves to the right, more will be supplied at the same price. If at price  $P_0$  the producer was originally willing to supply quantity  $Q_0$  now, with the reduction in costs they will be prepared to supply  $Q_1$  - but price has not changed.

Rise in the cost of production will lead to decrease in the supply.

Look at the illustration given.

#### A RISE IN THE COSTS OF PRODUCTION BRINGS ABOUT A DECREASE IN SUPPLY



Let us go through the graph.

At the original quantity of  $Q_0$  when the cost of production rises, supply decreases by shifting to the left from  $S_0$  to  $S_1$ .



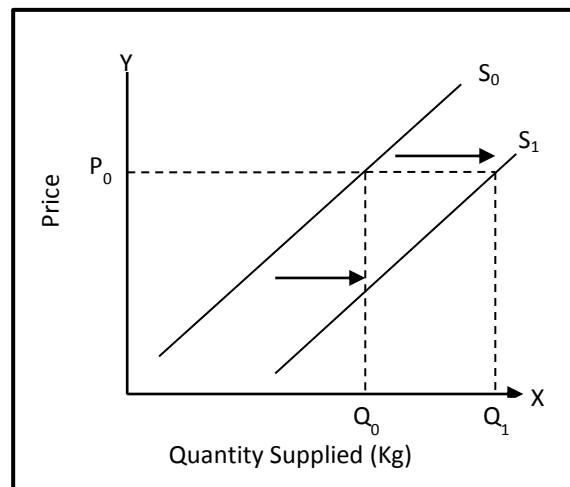


#### 4. Technology

The term technology refers to the production methods, processes, techniques and machines used in producing goods. Latest and improved technology enhances production and lowers the cost of production thus producers are able to increase supply of goods. If technology is out-dated this will lead to increased cost of production as these machines will need to be repaired thus costing producers more money and time. Suppliers will be forced to reduce supply.

Turn to the next page to see the illustration of these shifts.

#### IMPROVED TECHNOLOGY AND THE SUPPLY CURVE



Improved technology increases price.  $Q_0$ . At the price of  $P_0$  suppliers are willing to supply at  $S_0 Q_0$ . But improved technology increases supply to right from  $S_0$  to  $S_1$  and  $Q_0$  to  $Q_1$ .

#### 5. Government Policies

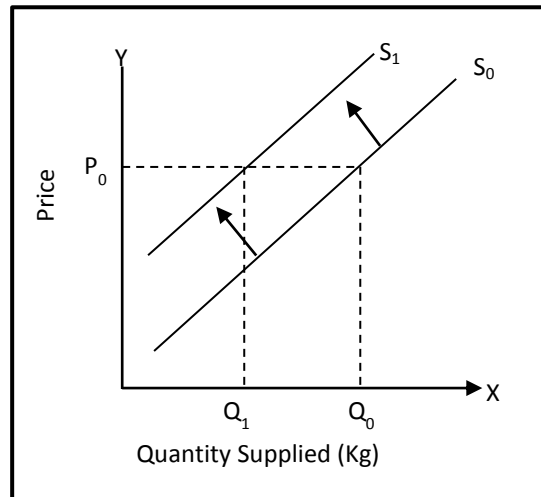
Government policies can have an impact on the supply of a good. For example, changes to import duties, the import quota system, sales tax, subsidies and grants to producers. The following table gives some examples of how this works.

Policy Change	Effect on supply
Increased import duties	Decrease
Decreased import duties	Increase
Imposed import quotas	Decrease
Removed import quotas	Increase
Increased sales tax	decrease
Decreases sales tax	increase
Increases producer subsidies and grants	Increase
Decreased producer subsidies and grants	Decrease



By now you should know that an increase in supply will cause the supply curve to shift to the right and a decrease in supply will cause the curve to shift to the left. The following graph shows the effect of an increase in import duty on the supply curve.

### IMPORT DUTY AND THE SUPPLY CURVE



*Let's go through the graph.*

Quantity decreases from  $Q_0$  to  $Q_1$  at the same price. The supply curve shifts to the left from  $S_0$  to  $S_1$  showing a decrease in supply.

### 6. Suppliers' Expectations

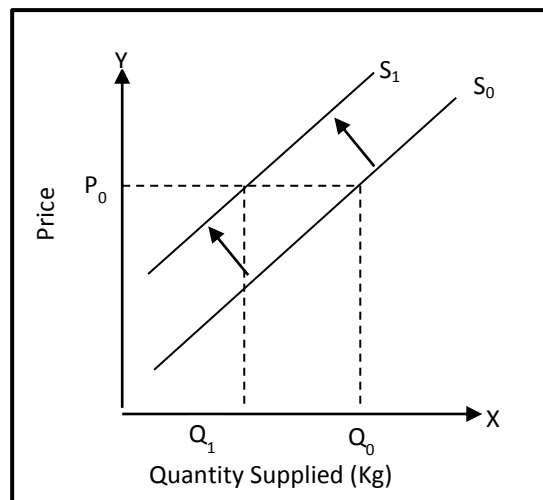
Suppliers by looking at the future market of the product, the supplier will either increase or decrease the supply of their goods. Their aim is to be able to make profit.

Below shows situations relating to suppliers expectations;

- Whether there will be a fall in the price of agricultural products during harvest time and a rise during the post-harvest period.
- Whether a prevailing drought will increase future prices of agricultural products.
- Whether conflict in oil-producing countries will increase future fuel prices.
- Whether new car models will decrease the demand for old car models.
- Whether the growing elderly population will increase the demand for medicines for age related sicknesses.

Suppliers will limit the number of goods sold now and later sell at a higher price from their expectations. This action will cause supply to fall.

*Turn to the next page to see the illustration of supplier's expectation on supply.*

**SUPPLIERS' EXPECTATIONS AND THE SUPPLY CURVE**

Let us go through the graph.

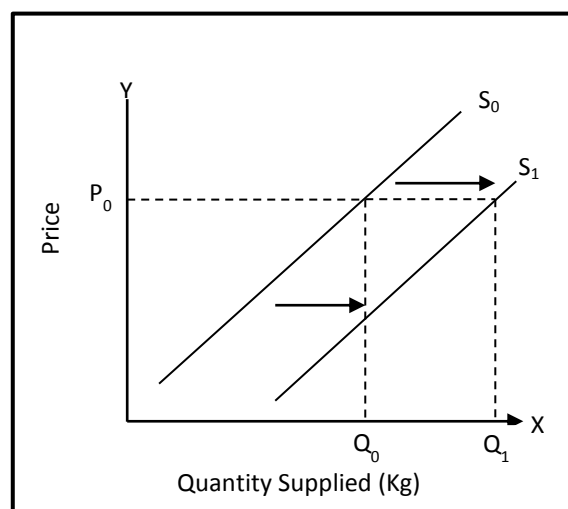
Supplier's expectations of a rise in price, results in a shift in the supply curve to the left for the moment. The graph shows how suppliers' expectations of a rise in the price of liquor after the budget due to an increase in liquor tax. The original curve  $S_0$  has shifted to the left to  $S_1$ . The Quantity decreased from  $Q_0$  to  $Q_1$ .

**7. Number of Suppliers**

Number of suppliers refers to the combined individual suppliers who make up the market supply. When there are many suppliers supply increases and when there are fewer suppliers supply decreases.

An increase in suppliers shifts the supply curve to the right and a decrease shifts the curve to the left.

In the graph given, the supply curve shifts to the right as a result of an increase in the number of suppliers in the market.

**INCREASE IN NUMBER OF SUPPLIERS AND THE SUPPLY CURVE**



The supply for a product will increase as the number of suppliers in the market increases at the set price of  $P_0$ . This results in a shift in the supply curve from  $S_0$  to  $S_1$ . The quantity increases from  $Q_0$  to  $Q_1$ .

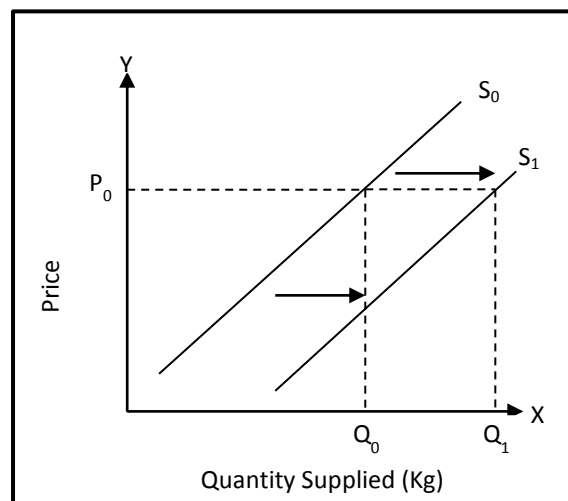
### 8. Weather conditions

Weather conditions are important to agriculture, especially in PNG. If weather conditions are favourable, then supply of products will increase. On the other hand, supply will decrease if weather conditions are unfavourable. Natural disasters such as floods, tornados, cyclones and landslides also contribute to breakdown of supply chains.

Favourable weather conditions shifts the supply curve to the right and unfavourable weather conditions to the left.

Look below to see the graph showing a shift in the supply curve to the right as a result of favourable weather conditions.

**FAVOURABLE WEATHER CONDITIONS AND THE SUPPLY CURVE**



*Let us go through the graph.*

At the set price of  $P_0$  suppliers are supplying  $Q_0$  quantity and the supply curve is  $S_0$ . As a result of favourable weather conditions, the quantity increases to  $Q_1$  and the supply curve shifts to the right as  $S_1$ .

In summary, a shift of the supply curve to the right shows an increase in supply and shift to the left indicates a decrease in supply, as illustrated in the previous graphs.

#### 11.3.2.4: Intersection of Supply and Demand; Equilibrium

What is equilibrium? Equilibrium means being equal. The price of a good or service will be determined by the interaction of demand and supply. The continuous interactions of suppliers and consumers finally reach a situation where the quantity demanded equals the quantity supplied at a particular price. This situation is referred as market equilibrium.

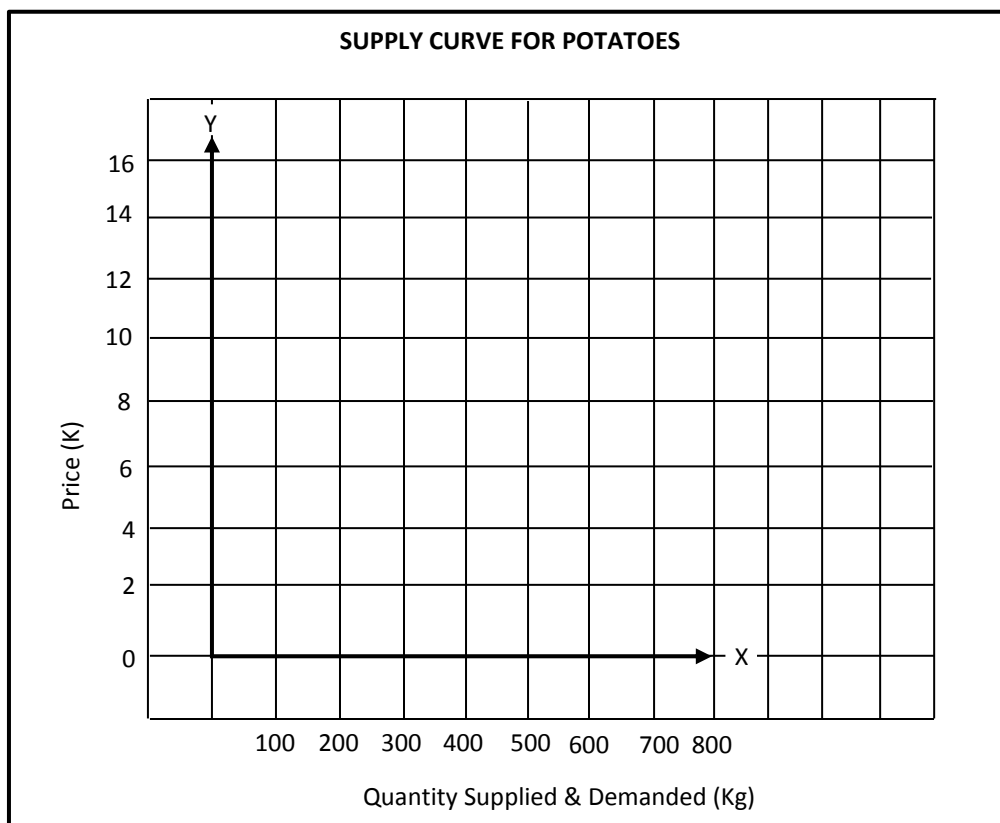
What is equilibrium price? The price at which quantity demanded equals quantity supplied. The quantity supplied and demanded at equilibrium price is the equilibrium quantity. The equilibrium price is agreeably determined by the consumers and suppliers. It is the price that both suppliers and consumers are willing to accept. Once the market reaches equilibrium only that one price is sold for and paid by.



## How to Construct Interaction of Demand and Supply (Equilibrium) Graph

Let us go through the steps on how to construct an equilibrium demand and supply on the demand and supply graph.

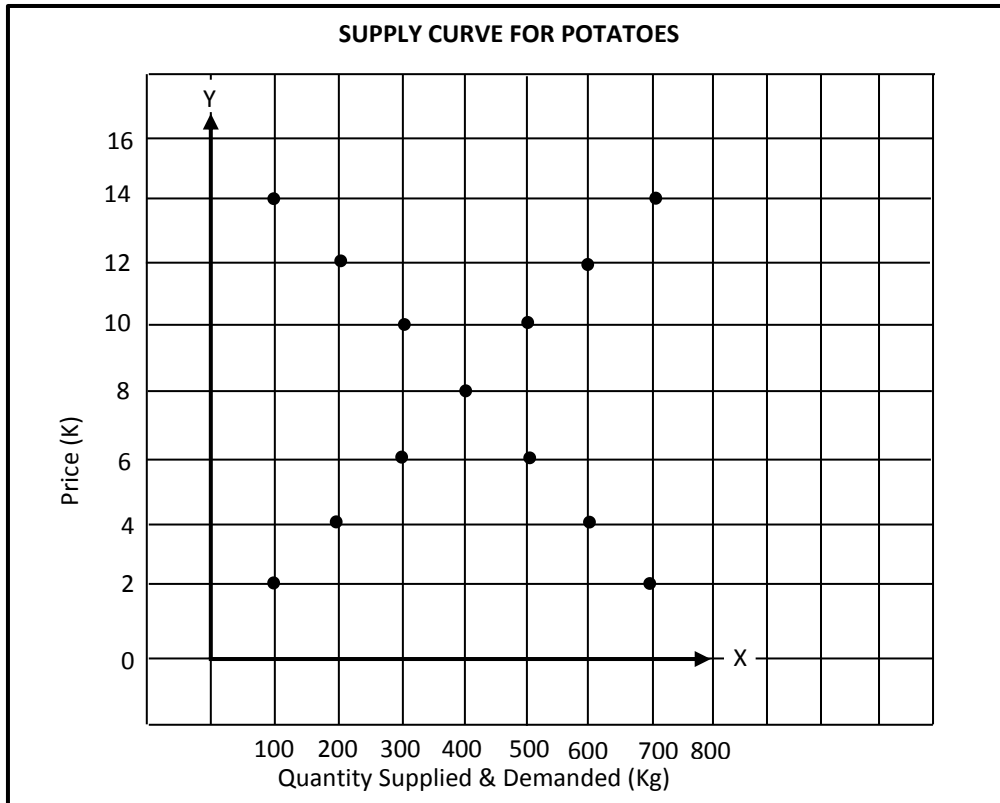
**Step 1:** Take a sheet of grid or graph paper. Mark prices on the y-axis and quantities on the x-axis and select an appropriate scale. The scales on each axis do not have to be the same, but each scale must be even.



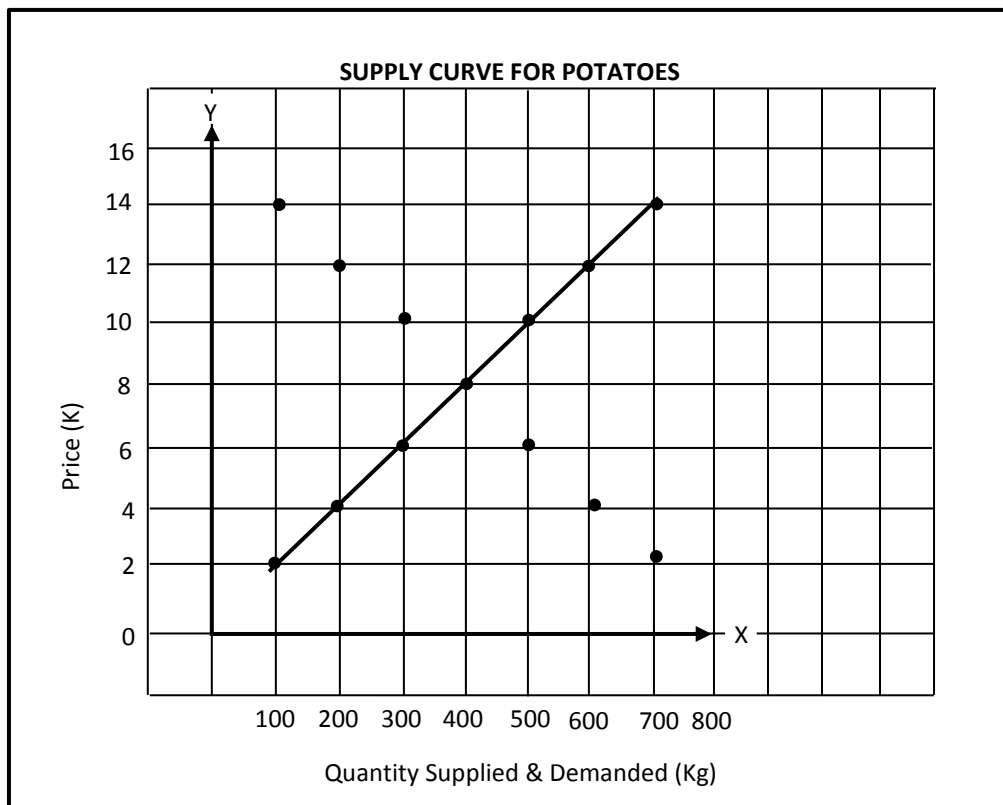
*Turn to the next page to continue on with step 2.*



Step 2: Plot the points of the demand and supply curve.

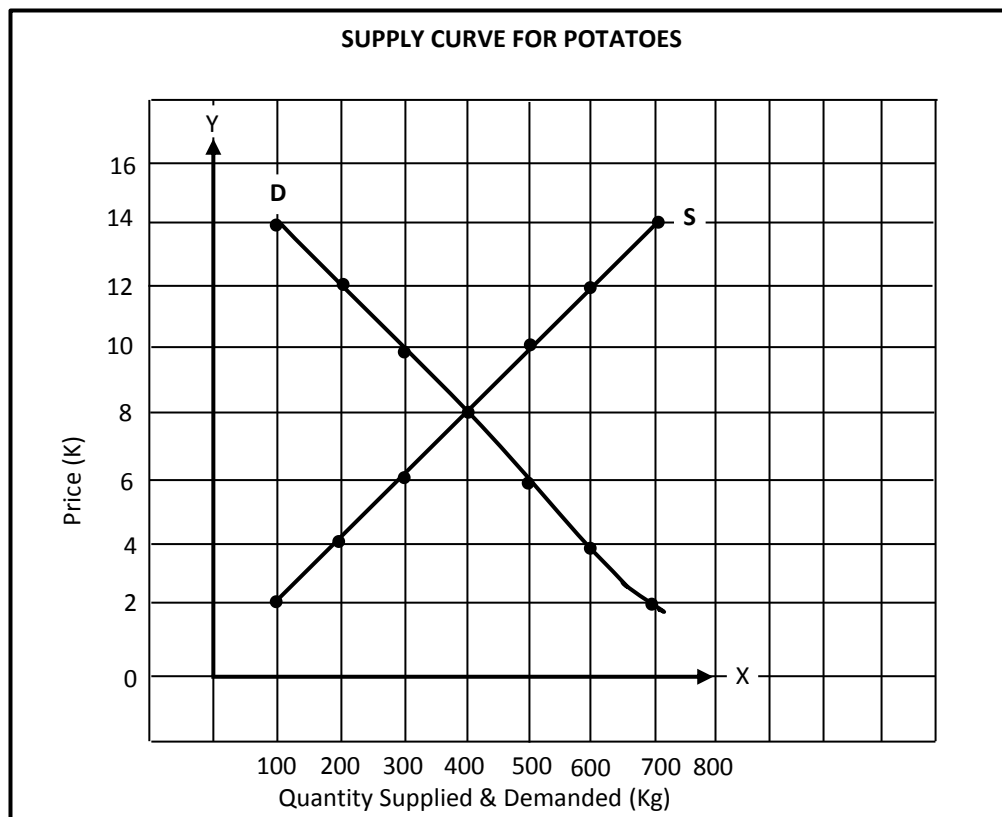


Step 3: Connect the points and draw the demand and supply curve.

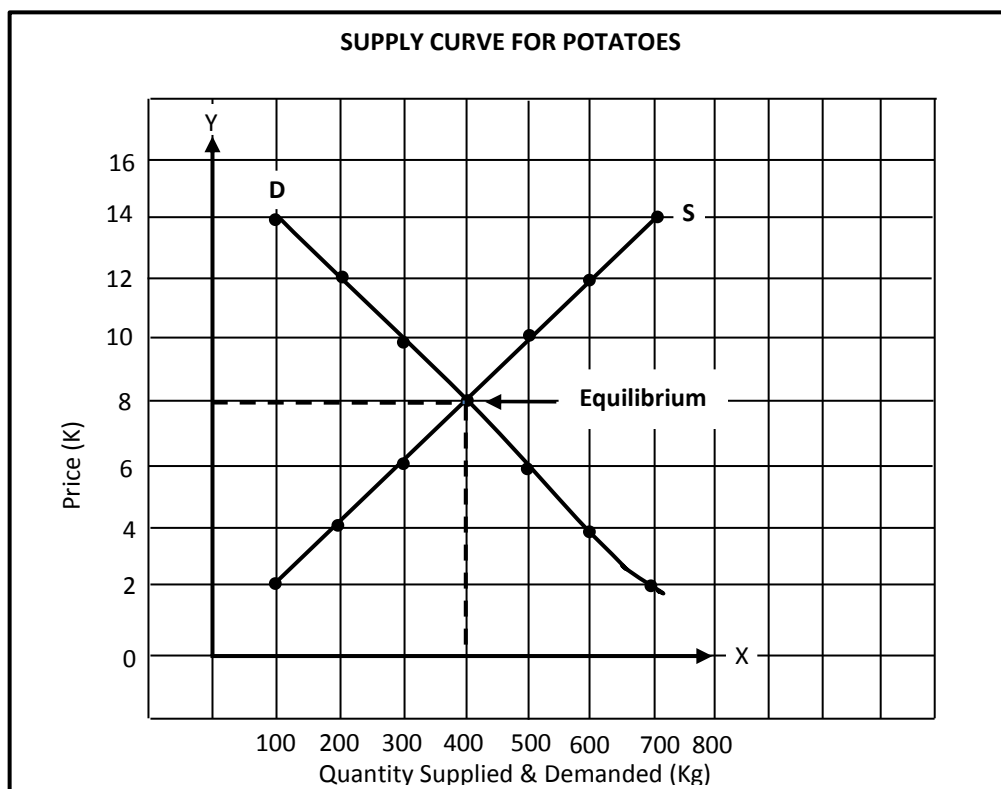




Step 4: Label the demand curve *D*, the supply curve *S*, the x-axis as Quantity (unit or kg) and the y-axis as Price (K).



Step 5: Label the point where the demand and supply meet as equilibrium.



To further understand this interaction let's proceed on with the table given below.



Let us take a look at the table below to understand what we have just gone through potato on the previous page.

The following example about potato shows how the two market forces, demand and supply, interact and determine equilibrium price and quantity.

Market demand and supply for potato per week					
(1) Price per kg (K)	(2) Quantity supplied (kg)	(3) Quantity demanded (kg)	(4) Excess demand (kg)	(5) Excess Supply (kg)	(6) Effect on price
4.00	100	700	600	0	Increase
6.00	200	600	400	0	Increase
8.00	300	500	200	0	Increase
10.00	400	400	0	0	Stable
12.00	500	300	0	200	Decrease
14.00	600	200	0	400	Decrease

This table combines the demand and supply schedule. Column 1 shows price for demand and supply whilst columns 2 and 3 shows quantities for supply and demand. At price of K4.00 the quantity supplied by suppliers is 100kg. However, the quantity demanded by consumers is 700 kg. At this price there is an excess demand of 600kg ( $D 700 - S 100 = 600\text{kg}$  excess demand). Excess demand is the quantity in excess of the quantity supplied. The excess demand adds pressure to prices to increase.

At price of K14.00 the quantity supplied 600kg exceeds the quantity demanded 200kg, creating an excess supply of 400kg ( $S 600 - D 200 = 400\text{ kg}$  excess supply). Excess supply is the quantity supplied in excess of demand.

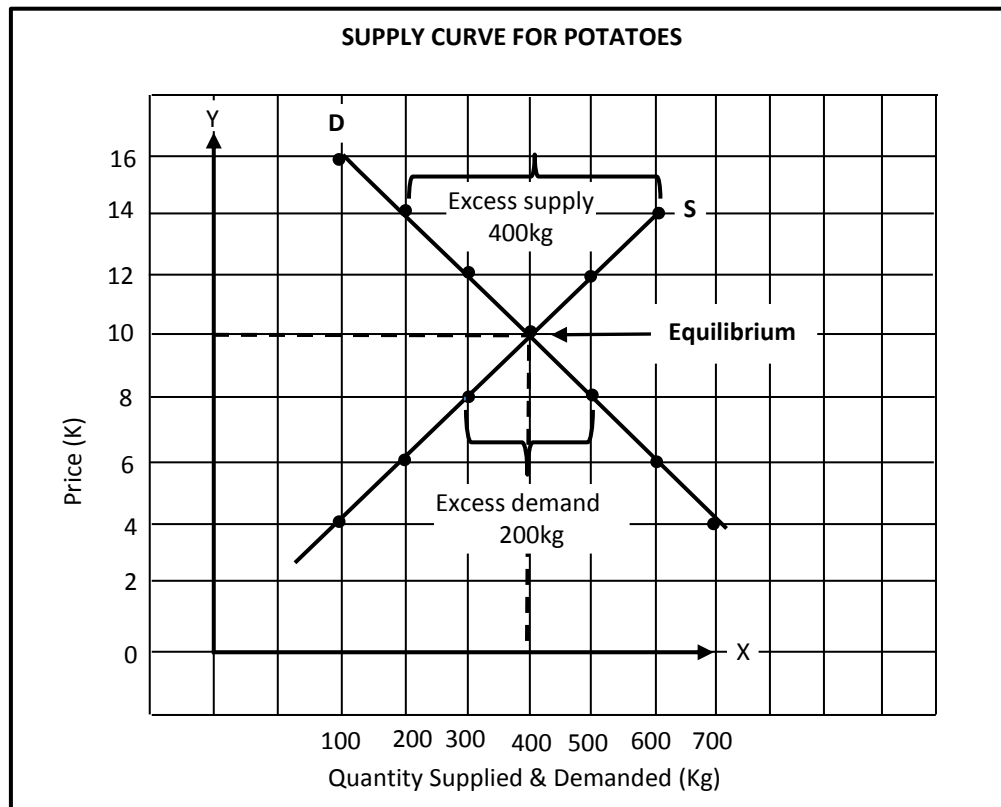
An excess supply is a signal to reduce price, as K14.00 is too high. Excess supply brings on the pressure to decrease the price. This process continues for some time and finally market reaches the price of K10.00. At this price there is no excess supply or excess demand. Therefore, K10.00 is the equilibrium price and 400kg is the equilibrium quantity.

#### **Difference between Excess Supply (Surplus) and Excess Demand (Shortage)**

Excess supply occurs when producers increase their supply due to higher prices however, consumers can afford only some of it. The excess supply is called surplus. Excess demand occurs when producers decrease their supplies due to lower prices however, consumers demand more of it. The excess demand causes what is called shortage.

*Turn to the next page to see the illustration of what we have just seen on excess demand and shortage.*





*Let us go through the explanation.*

The demand curve D intersects in the supply curve S at point E. This is equilibrium point. The equilibrium price is K10.00 and the equilibrium quantity is 400kg. The gap between the demand curve and the supply curve below equilibrium price indicates excess demand. The gap between the demand and the supply curve above equilibrium indicates excess supply.

**Equilibrium Price** is the price at which the quantity demanded equals the quantity supplied.

**Calculating Excess Supply:**

At the market price of K14, there is excess supply of 400 units.

E.g. Quantity Supplied – Quantity Demanded  
=600 units – 200 units  
=400 units excess

**Calculating Excess Demand:**

At the market price of K8, there is excess demand of 200 units.

E.g. Quantity Demanded- Quantity Supplied  
=500 units - 300 units  
=200 units excess

**Summary: 11.3.2**

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- Supply is the number of goods and service suppliers are able and willing to offer for sale at a given price at a particular time.
- Extension and contraction of supply occurs due to changes in the prices of goods other than factors affecting production. Extension occurs when there is movement upwards along the supply curve due to price rise. Contraction occurs when there is movement downward along the supply curve as a result of price being reduced.
- Increase and decrease of supply occurs due to changes in factors of production other than price causing the curves to either shift to the left or right. Increase occurs when demand curve shifts to the right when price increases whilst decreases occurs when the curve shifts to the left when price rises.
- Factors affecting supply;
  - a) the price of a good
  - b) costs of production
  - c) suppliers expectation
  - d) the number of suppliers
  - e) weather
  - f) Availability of resources to produce goods
  - g) technological change
  - h) Government action
- Price elasticity of supply is the measure of responsiveness of quantity supplied to a change in the price of a good





7. List the factors that affect supply.

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8. Choose two factors from the list and construct simple graphs showing their effects both increase and decrease on the supply curve.

9. Use the data given in the table to prepare a supply curve.

<b>Watermelon supply for a week</b>	
<b>Price per unit</b>	<b>Quantity supplied (kg)</b>
1.00	600
2.00	700
3.00	800
4.00	1000
5.00	1500

10. (a) Explain the difference between excess demand and excess supply.

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(b) Draw simple graphs showing excess demand and excess supply.



### TOPIC 3: ELASTICITY OF DEMAND AND SUPPLY

In this topic we will study the Price elasticity of demand and supply. We will start by looking at the price elasticity of demand. As we proceed on we will study the elasticity of supply.



#### Specific Learning Outcomes

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On successful completion of this topic, students will be able to analyse and evaluate;

- The Calculation of Price Elasticity of Demand
- The type of Elasticity
- Factors affecting the price elasticity of demand
- Cross elasticity of demand
- Income elasticity of demand
- Price elasticity of supply
- Factors affecting the price elasticity of supply



### 11.3.3.1: Calculation of Price Elasticity of Demand

What is elasticity of demand? Elasticity of demand is the measure of responsiveness of the quantity demanded of a good to the changes in variable that influences the demand of a good. There are three concepts or ideas that economists have developed to measure the elasticity of demand based on changes in price of a good, price of the related goods and consumer income. These three concepts are;

- a) Price elasticity of demand
- b) Income elasticity of demand
- c) Cross elasticity of demand

Before we look at these three concepts let us look at the meaning of price elasticity.

#### What is Price Elasticity?

Price elasticity of demand is the measure of responsiveness of the quantity demanded of a good caused by a change in its price.

#### Importance of price elasticity of demand

It is very important for government and private suppliers to take into consideration price elasticity of demand for economic decision-making.

The following are the importance of price elasticity of demand;

1. The government uses the price elasticity of demand for the following reasons.
  - Sales taxes increase the price of goods. In order to increase tax revenue the government imposes this tax on elastic goods. For example, rice and tinned fish.
  - *Tariffs such as import duties and taxes increase the prices of goods.* The government may impose tariffs on inelastic goods to increase tax revenue. For instance, imported goods like cars.
  - *Devaluation of currency to promote export and discourage imports.* In such situations government need to know the elasticity of demand for exports and imports. Devaluation refers to lowering the value of money in our case kina.
  - *Subsidies for producers to reduce the cost of production and provide some relief to consumers.* If subsidies are to benefit consumers government should subsidise inelastic goods. For example, agriculture produces like coconut and coffee.
2. When suppliers need to revise their product prices demand elasticity is an import consideration. If a supplier wants to increase price and revenue, the decision is easier with inelastic goods and more difficult with elastic goods. The following points are important:
  - By increasing the price of an inelastic good, a supplier can increase total revenue.
  - By decreasing the price of an elastic good, a supplier can increase total revenue.
  - By changing the price of a good with unitary elasticity, a supplier cannot change total revenue.



## Relationship between Price Elasticity and the Demand for a Product

According to the law of demand, there is an inverse relationship between quantity demanded of a good and its price. What this means is that, as price rises the quantity demanded will fall and vice versa. But the degree of responsiveness may vary from one good to another.

Let's take a look at one example; the responsiveness of demand for thumb pins to a change in price of 10% is less than the responsiveness of demand for television to a 10% increase in price. Thumb pins are inexpensive and absorb a small proportion of total consumer income; thus there will be no significant effect on the quantity demanded if the price changes by 10%. However, for the televisions they are expensive items and an increase in the price of 10% would have an effect on the quantity demanded. The degree of responsiveness in the quantity demanded of a good to a change in price will vary depending on the type of good. Therefore, it is important to know how consumers respond to a change in the price of different goods.

### Methods used in the Calculation of the Coefficient of Price Elasticity of Demand

There are two methods of calculating the co-efficiency of price elasticity demand. They are;

1. Arc elasticity method
2. Total outlay method

What is co-efficiency of demand? Co-efficiency of demand refers to the amount of the responsiveness of peoples demand to change in price.

#### 1. Arc Elasticity

Arc method is a method for calculating the price elasticity of demand or supply over a small section of a supply or demand curve. The arc elasticity formula is often referred to as the mid-point formula.

$$\begin{aligned}\text{Arch Elasticity Formula:} &= \frac{\% \text{ change in quantity of goods demanded}}{\% \text{ change in price}} \\ &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1}\end{aligned}$$

Where: P 1= original price

P2 = New Price

Q1 = Original Quantity

Q2 = New Quantity

*Now, turn to the next page to learn how to calculate the co-efficiency of demand using the arch method.*

**Demand Schedule for milk powder (200g packet)**

Price (K)	Quantity demanded per (units)
7	40
8	30

$$P_1 = K7 \quad Q_1 = 40$$

$$P_2 = K8 \quad Q_2 = 30$$

$$= \frac{Q_2 - Q_1}{Q_2} \div \frac{P_2 - P_1}{P_2}$$

$$= \frac{30 - 40}{40} \div \frac{8 - 7}{7}$$

$$= \frac{10}{40} \div \frac{1}{7}$$

$$= \frac{1}{4} \times \frac{7}{1}$$

$$= \frac{7}{4}$$

$$= 1.75 \text{ (Elastic)}$$

The elasticity of demand is elastic. You will learn more about the types of elasticity and their values as you proceed on.

Let us now look at the other method of calculating price elasticity of demand.

**2. Total Outlay Method**

Total outlay method is a method used to calculate price elasticity of demand measuring changes to total outlay as price changes. What is total outlay? Total outlay refers to the total amount of money spent on a particular good or service. This will be equal to the total revenue earned by all producers of that item.

Total outlay method formula: Price  $\times$  Quantity

Turn to the next page to see the table that will be used to work out the price elasticity of demand.

Note: The total outlay method cannot be used to calculate the numerical value given to the elasticity.



**Total outlay method of calculating elasticity**

	Increase in price	Decrease in price
Elastic	Total Outlay falls	Total outlay rises
Unit Elastic	No Change in total outlay	No change in total outlay
Inelastic	Total Outlay rises	Total outlay falls

Price (Kina/good)	Quantity (Goods/week)	Total Outlay (kina)	Elasticity
4	32	128	
5	30	150	Inelastic
6	25	150	Unit elastic
7	15	105	Elastic
8	12	96	Elastic

*Let's go through the table together.*

At the price of K4, the total outlay will be K128 ( $K4 \times 32$  goods). If the price rises to K5 (an increase in prices of 25%) the quantity sold falls from 32 to 30 goods (by less than 25%). Total outlay ( $K5 \times 30$  goods) has risen to K150. Demand is inelastic.

When the price increases from K5 to K6 outlay remains constant at K150. The contraction in demand from 30 to 25 goods per week is proportionately equal to the change in prices. Demand is unit elastic.

At a price of K7 or more demand is elastic. The quantity of goods demanded will change by a proportion that is larger than the change in price. Total outlay will fall.

The total outlay method can only be used as an approximation to determine whether demand will be elastic, unit elastic or inelastic.

**11.3.3.2: Types of Elasticity**

You have already learnt about how to calculate demand elasticity. You will now learn about the different types of price elasticity of demand. There are five types of price elasticities.

Depending on the coefficient, price elasticity of demand is classified as follows;

Coefficient	Types of price Elasticity
Less than 1 ( $E < 1$ )	Inelastic
Equal to 1 ( $E = 1$ )	Unitary elastic
Greater than 1 ( $E > 1$ )	Elastic
0	Perfectly inelastic
$\infty$ (infinite)	Perfectly elastic

*Turn to the next page to find out more on the types of demand elasticity.*



### 1. Elastic demand

The price elasticity of demand for a good is elastic if the coefficient is greater than 1 ( $E > 1$ ). That is the percentage increase in demand for a product is greater than the percentage increase in price. Usually, the demand for non-essential goods, (normal goods) that is, goods whose demand increases as income increases have an elastic demand

Demand elasticity can be illustrated using a demand schedule and demand curve.

Price	Quantity demanded (units)
15t	500
20t	300

The elasticity of demand when price increases from 15t to 20t can be calculated as follows;

$$P_1 = 15t \quad Q_1 = 500$$

$$P_2 = 20t \quad Q_2 = 300$$

$$= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1}$$

$$= \frac{300 - 500}{500} \div \frac{20 - 15}{15}$$

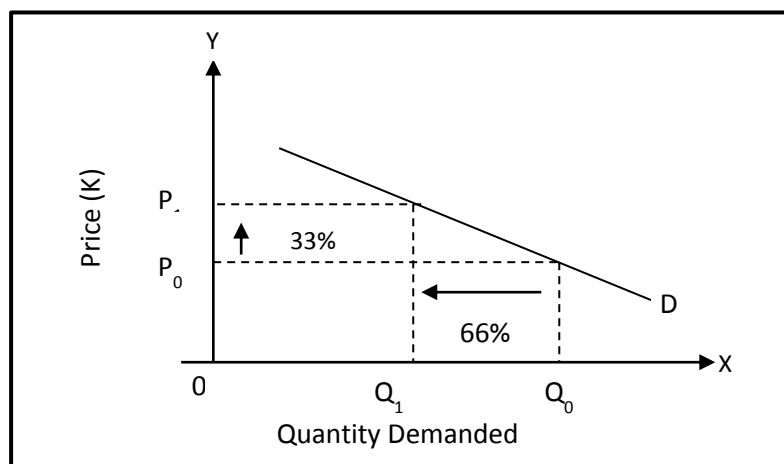
$$= \frac{200}{500} \div \frac{5}{15}$$

$$= \frac{2}{5} \times \frac{3}{1}$$

$$= \frac{6}{5}$$

$$= 1.2$$

Below is a simple graphical illustration of elastic demand.





Let us go through the explanation of the graph on the next page.

If the price of this good increased from 15t to 20t that is  $P_0$  to  $P_1$ , the number of goods demanded would fall from 500 to 300 which are  $Q_0$  to  $Q_1$ . That is, a change in price (33% increase) has brought an even larger (66%) change in demand. When the elasticity of demand is greater than 1 it is called elastic demand.

## 2. Inelastic demand

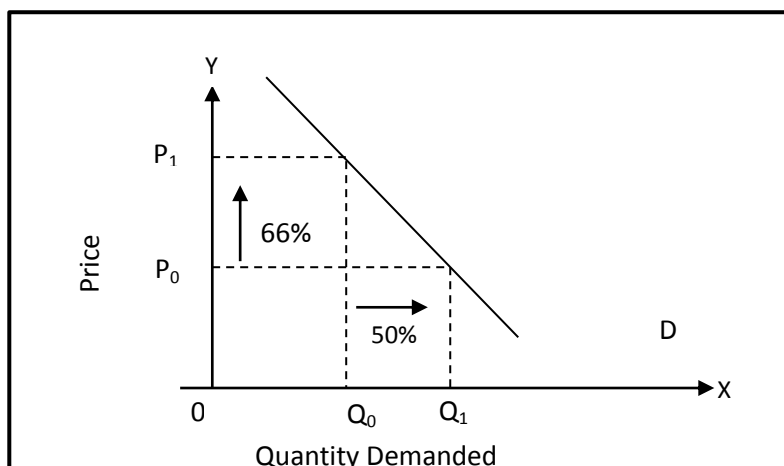
The price elasticity of demand for a good is inelastic if the coefficient is less than ( $E_d < 1$ ). That is percentage increase in demand is less than the percentage of increase in price. Usually, demand for essential goods has an inelastic demand.

Inelastic demand can be illustrated using the following demand schedule and demand curve.

Price	Quantity demanded (units)
30t	200
50t	100

$$\begin{aligned} P_1 &= 30t & Q_1 &= 200 \\ P_2 &= 50t & Q_2 &= 100 \\ &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\ &= \frac{100 - 200}{200} \div \frac{50 - 30}{30} \\ &= \frac{100}{200} \div \frac{20}{30} \\ &= \frac{1}{2} \times \frac{3}{2} \\ &= \frac{3}{4} \\ &= 0.75 \end{aligned}$$

Below is a simple graphical illustration of elastic demand.





Let us go through the explanation of the graph presented on page 59.

If the price of this good increased from 30t to 50t that is  $P_0$  to  $P_1$ , the number of goods demanded would fall from 200 to 100 which is  $Q_0$  to  $Q_1$ . That is, a change in price (66% increase) has brought a smaller (50%) change in demand. When the elasticity of demand is less than 1 it is called inelastic demand.

### 3. Perfectly Elastic Demand

Demand is perfectly elastic when its coefficient is infinite ( $E_d = \infty$ ). The demand curve is a horizontal straight line. At a given price level, consumers would demand an unlimited amount of good. Here, the producers would be able to sell all their produce at the market price, but would be unable to sell any at prices higher than this. No producer would be able to sell at below the market price because in a perfect market all goods would already be produced in the cheapest and most efficient way.

Firms operating in perfectly competitive markets are known as price –takers.

Let us take a look at this example.

Price (K)	Quantity Demanded
10.00	1000
10.00	1500

$$P_1 = K10 \quad Q_1 = 1000$$

$$P_2 = K10 \quad Q_2 = 1500$$

$$= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1}$$

$$= \frac{1500 - 1000}{1000} \div \frac{K10 - K10}{K10}$$

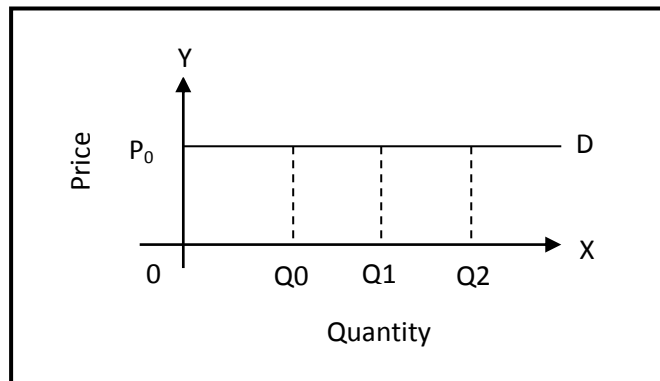
$$= \frac{500}{1000} \div \frac{0}{10}$$

$$= \frac{5}{10} \times \frac{10}{0}$$

$$= \frac{50}{0} \quad (\text{This cannot be divided therefore answer is infinite})$$

$$= \infty$$

Turn to the next page to see the graphical illustration of perfectly inelastic demand.



Let's go through the graph.

In this graph, at  $P_0$  different quantities  $Q_0$ ,  $Q_1$  and  $Q_2$  are demanded. When different quantities are demanded at the same price  $P_0$ , the demand curve is parallel to the x-axis showing infinite or perfectly elasticity demand.

#### 4. Perfectly inelastic demand

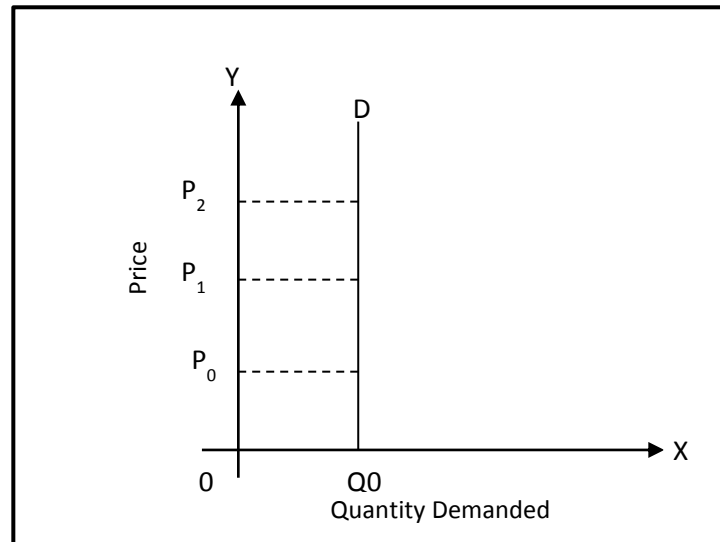
Perfectly inelastic demand means that the quantity demanded is not affected by any change in price. The demand curve is a vertical straight line. Demand is perfectly inelastic when its coefficient is 0. It means a specific quantity will be demanded at any price. As a result, the only variable in this situation is the price. The quantity remains unchanged.

This is unlikely to happen in the real world in the market as a whole or even for individuals, it may happen for certain products or individual over certain price ranges.

Let us take a look at this example.

Price (K)	Quantity demanded (units)
10.00	10 000
15.00	10 000

$$\begin{aligned}
 P_1 &= \text{K}10 & Q_1 &= 10\,000 \\
 P_2 &= \text{K}15 & Q_2 &= 10\,000 \\
 &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\
 &= \frac{10\,000 - 10\,000}{10,000} \div \frac{\text{K}15 - \text{K}10}{\text{K}10} \\
 &= \frac{0}{0} \div \frac{5}{10} \\
 &= \frac{0}{0} \times \frac{10}{5} \\
 &= 0/0 \\
 &= 0
 \end{aligned}$$



Let us go through the graph.

In the above graph at prices  $P_0$ ,  $P_1$ , and  $P_2$ , a specific quantity  $Q_0$  is demanded irrespective of price. The demand curve is parallel to  $y$ -axis showing zero value elasticity.

### 5. Unitary elasticity of demand

Demand is unitary elasticity when its coefficient equals 1. In this situation, consumers' total outlay remains the same; that is quantity demanded changes at the same rate as price. The shape of the unitary elastic demand curve is non-linear, as shown in the figure on page 58. Therefore, every point in the demand curve represents the same elasticity.

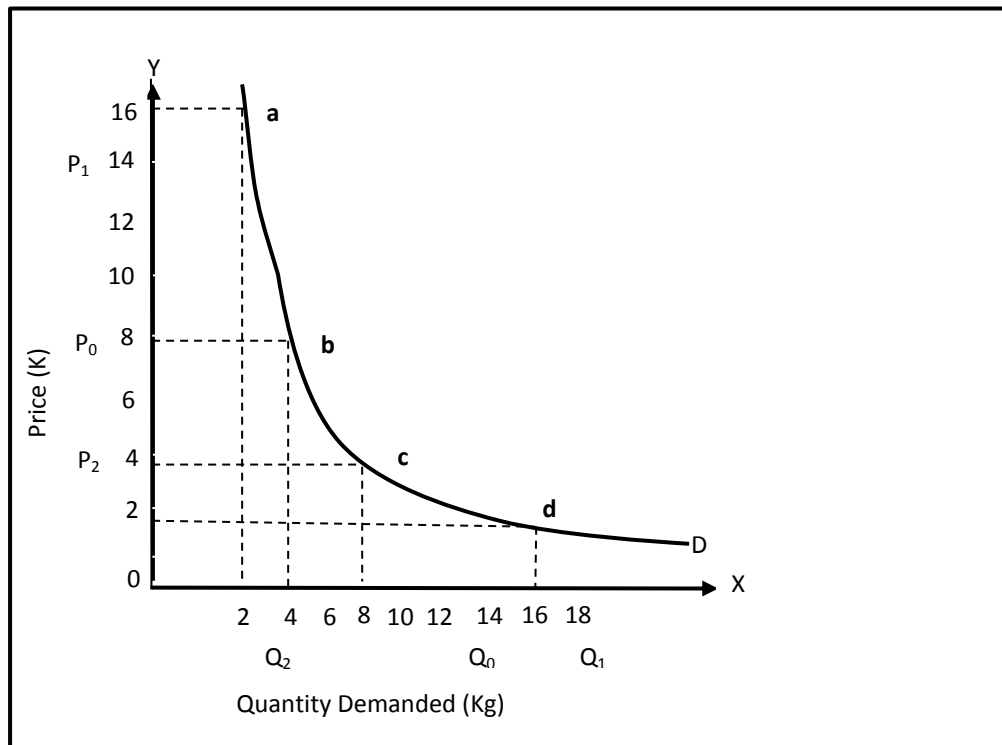
Let us look at this example.

Price (K)	Quantity demanded (units)
2.00	80
4.00	40

$$\begin{aligned}
 P_1 &= K_2 & Q_1 &= 80 \\
 P_2 &= K_4 & Q_2 &= 40 \\
 &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\
 &= \frac{40 - 80}{80} \div \frac{K_4 - K_2}{K_2} \\
 &= \frac{40}{80} \div \frac{2}{2} \\
 &= \frac{1}{2} \times \frac{2}{2} \\
 &= \frac{2}{2} \longrightarrow = 1
 \end{aligned}$$



The diagram below shows an illustration of unit elasticity.



Let us go through the graph.

The shape of this demand curve is called 'rectangular hyperbola'. Every point on the demand curve shows unitary elasticity. When you multiply the quantity demanded by price at every point, the outlay figure will be the same. For example, at point c total outlay is  $(4 \times 8) = K32.00$  and at point A  $(16 \times K2) = K32$ . It is the same. At the other points you will get the same answer.

### 11.3.3.3: Factors affecting the Price Elasticity of Demand

The following are the factors affecting price elasticity of demand.

- 1. Substitutes:** If a product has many close substitutes, the price elasticity of demand will be elastic. Goods with a smaller number of close substitutes will have elastic demand. Where close substitutes are available, even a small change in price is likely to lead to a larger change in demand as people switch to buying more or less of the substitute.
- 2. Necessity:** Essential goods have inelastic demand because consumers regardless will still purchase them. For example rice.
- 3. Proportion of total income spent on that commodity:** The demand for commodities or goods that absorb only a small portion of total income is usually less elastic (e.g. paper) than for those that absorb a large proportion of total income (e.g. car).
- 4. Use of goods:** When a good has a number of uses, such as cotton, its demand is elastic. However, if a good has limited number of uses, it has inelastic demand. For example, soap can be used for variety purposes. When its price rises consumers can minimise some usage and reduce demand. Petrol has limited number of uses; therefore, it is difficult to reduce its



demand as its price rises, since it also has a number of important uses. Petrol has inelastic demand.

**5. Habit:** Habit forming goods such alcohol cigarette, have inelastic demand – consumers cannot go without even when their prices rise.

**6. Durability:** Durable goods such as household furniture usually have a fairly high elasticity of demand. Because such goods last for a long time, consumers are often prepared to go without or have their old items repaired when the price of a replacement is considered too high.

**7. Advertising:** Advertisements that are successful will both increase the level of demand and make demand more inelastic. Later on, changes in price will have little effect on demand.

**8. Complement:** The demand for expensive complementary goods is often more elastic than the demand for less expensive complements. The demand for an expensive complement such as an essential car part is inelastic because it represents only a small cost by comparison with the total value of the car. For example, tyre.

#### 11.3.3.4: Cross-Elasticity of Demand

##### What is cross elasticity of demand?

Cross elasticity of demand is a measure of the responsiveness of quantity demanded to changes in the prices of related goods; and related goods are either substitutes or complementary goods.

##### The Formula used to calculate the Cross-Elasticity of Demand

The following formulas are used to calculate cross elasticity of demand

$$\text{Formula for Cross elasticity of demand (CE}_{d}) = \frac{\% \text{ Change in Quantity demanded of X}}{\% \text{ Change in price of Y}}$$

Let us use the information in the table to calculate cross elasticity of demand.

Tea price per (K)	Quantity demanded of coffee (kg)
10.00	10 000
12.50	13 000

$$\begin{aligned} \% \text{ change in price} &= \frac{2.50 \times 100}{10.00} \\ &= 25\% \end{aligned}$$

$$\begin{aligned} \% \text{ Change in quantity} &= \frac{3000 \times 100}{10\ 000} \\ &= 30\% \end{aligned}$$

$$\text{Cross Elasticity of demand} = 30/25 = 1.2$$





### Difference between Substitutes and Complementary Goods

Substitutes are goods or services that can be used to satisfy a need or want in place of another good or service whilst complements are goods and services that are used together for example, cars and petrol.

### Relationship between Demands for Substitute Goods and Complementary Goods to Price Changes

#### Effect of price changes on Substitutes

A rise in the price of a good will cause an increase in demand for its substitutes. A fall in the price of a good will cause a decrease in demand for its substitutes. For example, if the price of coffee falls, some people who could only afford to buy a small amount previously can now buy more coffee and may spend less on substitutes such as tea.

The relationship for substitute goods is positive. This is because as price of one substitute increase, the demand for the other substitute good increases and vice versa.

#### Effect of price changes on Complementary goods

A fall in the price of an item may lead to an increase in demand for its complements, and vice versa. When the price of an item rises, complementary goods will have negative cross-elasticity. This is because as price of a complementary good increases the demand for the other complementary good decreases. Where the two goods bear little relations to each other their cross-elasticity will be close to zero.

Price of petrol per litre (K)	Motor vehicles, quantity demanded (units)
3.00	10 000
4.00	6000

$$\begin{aligned}\% \text{ change in price} &= \frac{1.00 \times 100}{3.00} \\ &= 33.3\%\end{aligned}$$

$$\begin{aligned}\% \text{ Change in quantity} &= \frac{4000 \times 100}{10\,000} \\ &= 40\%\end{aligned}$$

$$\text{Cross Elasticity of demand} = \frac{33.3}{40} = 0.8325$$

The cross elasticity of demand value can either be zero, one, infinity or greater than one or less than one.

*Turn to the next page to see table summarising the cross elasticity of demand between two theoretical products.*



Value	Conclusion
Zero	The two goods are not related
Greater than zero, but less than one	The two goods are related, but no close relationship exists
Greater than one	The two goods are closely related
Negative	The two goods are complementary goods
Positive	The two goods are substitutes

### Importance of cross Elasticity of Demand

Here are the importance of the price elasticity of demand.

1. Helps to determine the relationship between two goods, that is, whether they are substitutes or complementary goods. For substitutes, cross elasticity is positive as both price and quantity move in the same direction for instance, when price of one substitute increases the demand for the other increases.

Complementary goods will always have negative cross elasticity since price increase of one complementary good will lead to the decrease in the demand of the other complementary good.

2. Suppliers should be able to outsmart their competitors if the kinds of goods that they produce are close substitutes to their rivals. They can be able to come up with the best marketing strategies to gain the upper hand in the market for their good. Therefore, it is important that they know the cross elasticity of demand for their product. Since cross elasticity of demand will show them how consumers respond to changes in price.

3. As well as for the complementary goods the suppliers should know the cross elasticity of demand for their products so that they can develop good marketing strategies. Knowing the cross elasticity of demand for their goods will enable them to know how the consumers respond to changes in price especially for their good.

#### 11.3.3.5: Income-Elasticity of Demand

##### What is income elasticity of demand?

Income elasticity of demand is a measure of responsiveness of the quantity demanded to a change in consumer income. Low-income earners are able to purchase more and varied items compared to their previous purchases as their income increases. For example, instead of tinned fish now they can purchase ox and palm. Since ox and palm is a quality tinned meat and is also expensive.

As for the high income earners their other needs and wants will increase as their demand increase. They will demand for holidays and luxury items like latest models of phones or vehicles for instance.

Turn to the next page find out more on the formula used to calculate the income elasticity of demand.

**Formula used to calculate the Income Elasticity of Demand**

Formula to calculate

Income elasticity of demand ( $YE_d$ ) =  $\frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$   
Y stands for income

$$= \frac{Q_2 - Q_1}{Q_1} \div \frac{Y_2 - Y_1}{Y_1}$$

Where:  $Q_1$  = original quantity $Q_2$  = new quantity $Y_1$  = original income $Y_2$  = new income**Note:** If income elasticity of demand is greater than 1, demand is income elastic.

If income elasticity is less than 1 demand is income inelastic.

*Let us take a look at this example.*

Weekly income (kina)	Quantity kaukau demanded (kg) number	Eggs demanded (number)
K50	8	20
K60	12	22

First example; when weekly income increases from K50 to K60, the income elasticity of demand for kaukaku will be;

$$\begin{aligned}
 &= \frac{Q_2 - Q_1}{Q_1} \div \frac{Y_2 - Y_1}{Y_1} \\
 &= \frac{12 - 8}{8} \div \frac{60 - 50}{50} \\
 &= \frac{4}{8} \div \frac{10}{50} \\
 &= \frac{1}{2} \times \frac{5}{1} \\
 &= \frac{5}{2} \\
 &= 2.5 \text{ income elastic}
 \end{aligned}$$

The income elasticity of egg will be;

$$\begin{aligned}
 &= \frac{Q_2 - Q_1}{Q_1} \div \frac{Y_2 - Y_1}{Y_1} \\
 &= \frac{22 - 20}{20} \div \frac{60 - 50}{50} \\
 &= \frac{2}{20} \div \frac{10}{50} \\
 &= \frac{1}{10} \times \frac{5}{1} \\
 &= \frac{5}{10} \longrightarrow = 0.5 \text{ income inelastic}
 \end{aligned}$$



### **Difference between Inferior and Normal Goods**

Inferior goods are goods which are demanded less as income increases. For example, chicken will be preferred than tinned fish when peoples' income increases. Normal goods are goods which are demanded more when income rises for example, fresh meat.

### **Relationship between Demand for Normal Foods and Inferior Goods as Income Changes**

Inferior goods have negative relationship. For instance, when income increases demand for inferior goods decrease. As for normal good, the relationship is a positive one that is as income increases demand for normal good increases.

The following points are important;

- Income elasticity of demand is positive for normal goods
- Income elasticity of demand is negative for inferior goods

### **11.3.3.6: Price Elasticity of Supply**

#### **What is price elasticity of supply?**

Price elasticity of supply is the measure of the responsiveness of quantity supplied to a change in the price of a good. Like demand elasticity, there are factors that make up the supply elasticity as well.

#### **Importance of price elasticity of supply**

Here is the importance of the price elasticity of supply.

##### **1. Change in price**

Suppliers need to respond to a change in demand by changing their price. Price elasticity of supply is useful for determining how much prices will change when there is a change in demand. Regardless of the value of elasticity of supply, the suppliers' total revenue ( $Q_S \times P$ ) must always rise when price rises and vice versa. However, total revenue rises more for a given change in price if supply is elastic, and vice versa.

##### **2. Tax**

Suppliers must know the elasticity of supply in order to set correct price on goods sold, for example goods and services tax (GST).

##### **3. Subsidies**

Subsidy refers to assistance given to producers by the government. Government subsidises producers due to the relative elasticity of demand and supply. Producers are provided subsidy when the cost of producing this goods are high. This is to encourage production.



### Relationship between price elasticity and the supply of product

As you have already learnt, regardless of the price elasticity of supply, the suppliers' total revenue must always rise when price rises and vice versa. Suppliers aim to earn enough to cover costs.

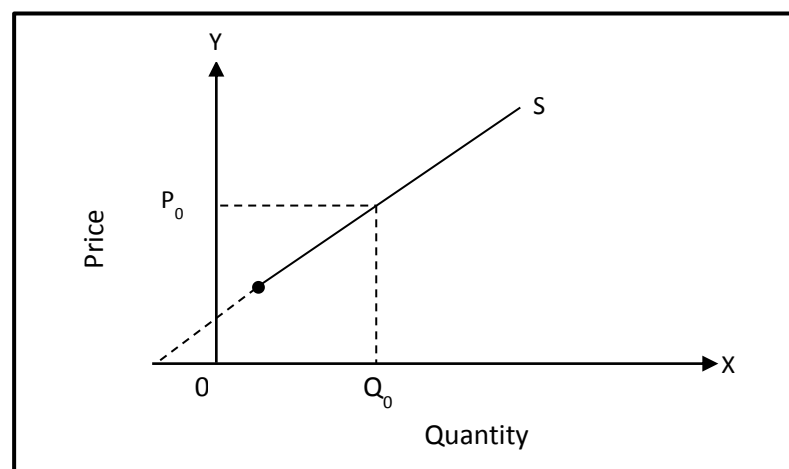
### Graphical illustration of elasticity of supply

These are the types of price elasticity of supply.

#### 1. Elastic Supply

Supply is elastic if the coefficient is greater than one. This means that suppliers increase and decrease their supply of their goods at a greater percentage than the percentage change in price.

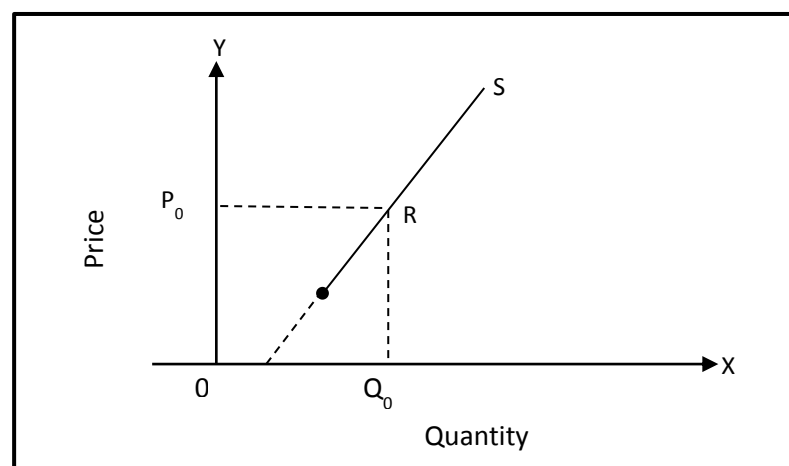
Look at a simple graph of the elastic supply given.



#### 2. Inelastic supply

Supply is inelastic if the coefficient is less than one. This means that suppliers change the quantity of products they supply at a smaller percentage than the percentage of price change.

Look below at a simple graph of the inelastic supply given.

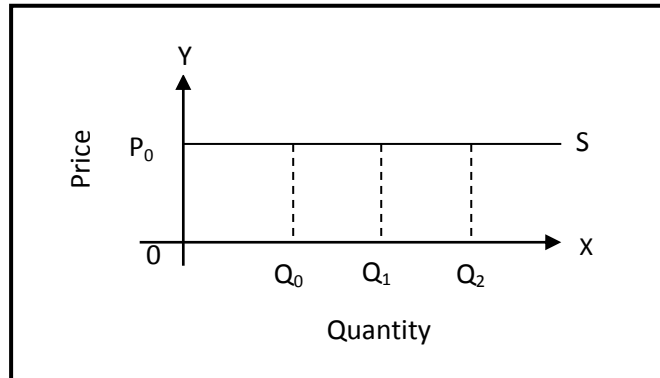




### 3. Perfectly elastic supply ( $E_S = \infty$ )

This occurs when suppliers provide any quantity of the goods they produce at the same price. Under these situations the coefficient is infinity. The supply curve is a horizontal line.

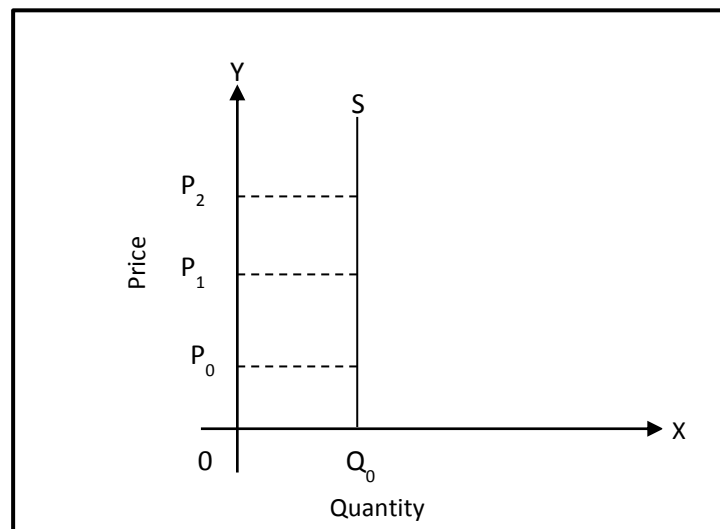
Look below at a simple graph of the inelastic supply given.



### 4. Perfectly inelastic supply

This occurs when a fixed quantity is supplied at all prices. The coefficient is equal to zero. The supply curve is a vertical line.

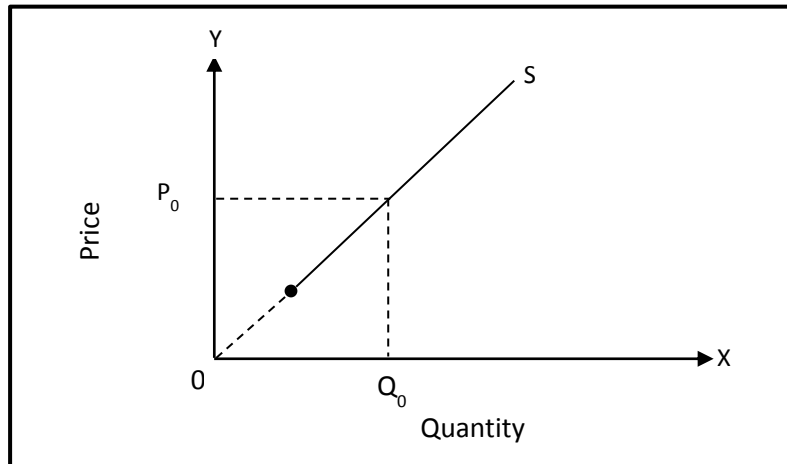
Look below at a simple graph of the inelastic supply given.



### 5. Unitary Elastic Supply

Supply elasticity is said to be unitary elastic if its coefficient is equal to one ( $E_S = 1$ ). This is a result of a change in quantity supplied that equals a percentage change in price.

*Turn to the next page to see the simple illustration of the unitary elastic supply.*

**Formula for calculating the price elasticity of supply**

Price elasticity of supply is calculated using only the arc elasticity method.

Formula

$E_s = \frac{\% \text{ change in quantity of goods supplied}}{\% \text{ Change in price}}$

$$= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1}$$

Let's go through this example to calculate coefficient of supply.

Price(K)	Quantity supplied (units)
10	100
12	110

$$\begin{aligned} &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\ &= \frac{100 - 110}{100} \div \frac{12 - 10}{10} \\ &= \frac{10}{100} \div \frac{2}{10} \\ &= \frac{1}{10} \times \frac{5}{1} \\ &= \frac{5}{10} \\ &= 0.5 \end{aligned}$$

- When supply is relatively elastic,  $E_s$  is greater than 1;  $E_s > 1$ .
- When supply is relatively inelastic,  $E_s$  is less than 1;  $E_s < 1$ .



Example:

The price of computers falls from K1800 to K1500 per unit, and the number of computers at Able Computing sales is prepared to stock falls from 4 per week to 3 per week. Calculate the elasticity of supply of computers for Able computing sales.

$$\begin{aligned} P_1 &= 1800 & Q_1 &= 4 \\ P_2 &= 1500 & Q_2 &= 3 \end{aligned}$$

$$\begin{aligned} &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\ &= \frac{3 - 4}{3} \div \frac{1500 - 1800}{1800} \\ &= \frac{1}{3} \div \frac{300}{1800} \\ &= \frac{1}{3} \times \frac{6}{1} \\ &= \frac{6}{3} \\ &= 2 \end{aligned}$$

The elasticity of supply for computer is relatively elastic.

### 11.3.3.7: Factors affecting the Price Elasticity of Supply

The following are the factors that affect price elasticity of supply.

#### 1. Durability

Perishable goods, goods that do not last long, such as fruit and vegetable, are inelastic. This is because suppliers are unable to respond quickly to a change in price. Durable goods, such as long life milk and milk powder are elastic because they can be stored during fall in price and released when prices rise.

#### 2. Productive capacity of an industry

Excess capacity refers to a situation in which a firm is able to increase output, using existing resources. When firm is able to produce greater than its demand, it quite often does not utilise its resources well. Firms that have excess capacity are able to easily increase output thus will have elastic supply. That is, they are able to produce efficiently when there is change to price.

On the other hand, firms that operate at full capacity that is all resources are fully employed means it will take them longer to increase output leading to supply elasticity being inelastic. That is change in price means there will be small change in quantity produced.





### **3. Flexibility of changing factors of production (Factor Mobility)**

If an industry is able to change its factors of production quickly, supply is elastic. If it takes a long time to acquire factors of production to increase production, supply is inelastic in the short run. For example, a fall in the price of oranges will not necessarily result in a rapid decrease in supply. Since the farmer has orange trees, it is not easy to change quickly to another type of fruit production. In this situation, farmers will be forced to harvest and sell oranges at lower prices rather than do without income.

### **4. Quantity of stock on hand**

If large quantity supplies of stock are available in warehouses, the suppliers can increase supply if price rises, this will lead to elastic supply. However, if the stock is limited, then the elasticity price will be inelastic since suppliers won't be able to respond quickly to price change as it has limited supply of stocks.

### **5. Warehouse capacity**

The more space there is in the warehouse, supply is more elastic since there is plenty of space for suppliers to respond to price changes. If there is only limited space available, such goods have inelastic supply, since suppliers are unable to build up stocks of their products.

### **6. Time taken to supply**

Elasticity of supply depends on the time period allowed for adjustments to the market. If the suppliers respond quickly or in the short run, the supply is elastic. If more time is required to change supply, the elasticity of supply is inelastic in the short run.

### **7. Expectation**

When suppliers believe that the price of their products will increase in the future they stock them up and sell when price rises this leads to inelastic supply. On the other hand, if they believe price will fall in the future, they will sell as many goods as they can for now this will lead to elastic supply.

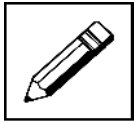


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**Summary: 11.3.3**

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- Price elasticity of demand is the measure of responsiveness of the quantity demanded of a good caused by a change in its price.
- The government uses the price elasticity of demand for the following reasons.
  - Sales taxes increase the price of goods.
  - Tariffs such as import duties and taxes increase the prices of goods.
  - Devaluation of currency to promote export and discourage imports.
  - Subsidies for producers to reduce the cost of production and provide some relief to consumers.
- When suppliers need to revise their product prices demand elasticity is an important consideration. If a supplier wants to increase price and revenue, the decision is easier with inelastic goods and more difficult with elastic goods. The following points are important:
  - By increasing the price of an inelastic good, a supplier can increase total revenue.
  - By decreasing the price of an elastic good, a supplier can increase total revenue.
  - By changing the price of a good with unitary elasticity, a supplier cannot change total revenue.
- There are two methods of calculating the co-efficiency of price elasticity demand. They are;
  - 1. Arc elasticity method
  - 2. Total outlay method
- Factors affecting the Price Elasticity of Demand;
  - Substitute, Necessity, portion of total income spent on that commodity, use of goods, habit forming goods, durability, advertising and complement.
- Price elasticity of supply is the measure of the responsiveness of quantity supplied to a change in the price of a good. Like demand elasticity, there are factors that make up the supply elasticity as well.
- Factors affecting the Price Elasticity of Supply;
  - a) Durability
  - b) Productive capacity of an Industry
  - c) Factor Mobility
  - d) Quantity of Stock on Hand
  - e) Warehouse Capacity
  - f) Time taken to Supply
  - g) Expectation

**Learning Activity 11.3.3**

1. Explain the following;

(a) Price elasticity of demand \_\_\_\_\_

(b) Price elasticity of supply \_\_\_\_\_

2. List factors that affect the price elasticity of demand and supply.

Price elasticity of demand	Price elasticity of supply

3. A consumer purchased 100 packets of chicken drumsticks at K5.00 per unit. When the price fell to K4.00, he purchased 120 packets. Find the price elasticity of demand using the arch method.

4. A demand schedule for a product is given below.

Price per unit (K)	Quantity demanded (units)
8.00	1000
6.00	1250

Calculate the price elasticity of demand using arch method.



5. A demand schedule for milo powder.

Price per unit (K)	Quantity demanded (units)	Consumer Outlay (K)
8.00	150	
7.00	200	
6.00	300	
5.00	360	
4.00	450	
3.00	550	
2.00	700	

(a) Complete the last column.

(b) Use the outlay method to calculate the elasticity of demand with the following price ranges;

- K8.00 – K6.00
- K6.00 – K4.00
- K4.00 – K2.00

6. When the price of X increased from K20.00 to K25.00, demand for Y increased from 20 000 units to 30 000 units.

(a) Find the cross elasticity of demand.

(b) State whether the two goods are substitute or complementary goods. \_\_\_\_\_

7. When the price of increased from K20 000 to K30 000 the demand for a product increases from 12 000 to 20 000 units.

(a) Calculate the cross elasticity of demand.

(b) State whether the good is a normal or inferior good. \_\_\_\_\_

8. As income rises from K3000 to K4000 the demand for a product decreases from 10 000 to 6000 units.

(a) Calculate the income elasticity of demand.

(b) State whether the product is a normal or inferior good. \_\_\_\_\_



9.

(i) Product	(ii) % change in price	(iii) % change in quantity demanded	(iv) Coefficient of price elasticity of demand
X	10	10	_____
Y	12	8	_____
Z	10	12	_____

(a) Complete column iv of the table.

(b) State whether the demand for each product is elastic, inelastic or unitary elastic.

X: \_\_\_\_\_

Y: \_\_\_\_\_

Z: \_\_\_\_\_

10. Using the arch method of calculating supply elasticity.

(a) As the price of a product rises from K20.00 to K25.00 per unit, the quantity supplied increases from 150 to 250 units.

(b) As price of a product falls from K6.00 to K5.80 per unit, the quantity supplied decreases from 400 to 300 units.

(c) The supply schedule for product X per week is as follows.

Price per unit (K)	Quantity demanded (units)
8.00	1000
6.00	1250

Calculate the price elasticity of supply.

**TOPIC 4: GOVERNMENT INTERVENTION IN THE PRICE MECHANISM**

Here, we will study the government's involvement in determining price. We will begin by looking at sales tax.

**Specific Learning Outcomes**

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On successful completion of this topic, students will be able to analyse and evaluate;

- Sales tax /Goods and Services tax
- Subsidy
- Price Control /Price ceiling
- Price Support/Price Floor
- Minimum Wage Policy
- The Organisation Of Petroleum Exporting countries (OPEC)



### 11.3.4.1: Sales Tax/Goods and Services Tax

#### What is sales tax or goods and services tax?

A sales tax is a tax or duty that the government places on items at their final point of sale.

#### Reasons for imposing sales tax or goods and services tax

There are two main reasons why the government imposes sales tax. They are;

1. To earn revenue
2. To restrict production and consumption. This is placed on goods such as cigarette and alcohol.

#### Effects of Sales Tax on Demand and Supply of Products

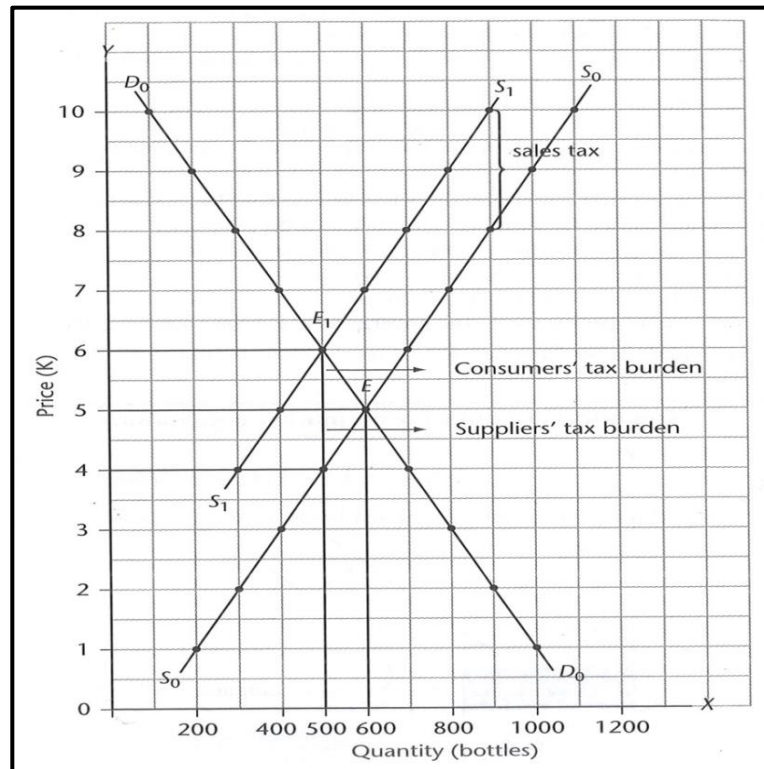
Producers will pass the burden of tax onto the consumers. For example, goods and services tax or GST. The proportion of the sales tax paid by consumers will depend on the price elasticity of demand.

*Let us look at the table below to understand better.*

The demand and supply schedule for shampoo after sales tax			
Price per bottle (K)	Quantity supplied		Quantity demanded (bottles)
	Prior to tax (bottles)	After tax (bottles)	
10	1100	900	100
9	1000	800	200
8	900	700	300
7	800	600	400
6	700	500	500
5	600	400	600
4	500	300	700
3	400	200	800
2	300	100	900
1	200	0	1000

Before the sales tax was imposed suppliers supplied 900 bottles of shampoo at K8.00. But when K2.00 sales tax is imposed on each bottle of shampoo, the suppliers supply 900 bottles at K10.00. This means the supplier is now supplying the same quantity at a higher price. The supplier is supplying 900 bottles at K10.00 instead of 1100. Basically, this means the supply of shampoo decreased after sales tax was imposed.

It can be seen that equilibrium price before sales tax was imposed is K5.00 and equilibrium quantity of 600 bottles. The new equilibrium price after the sales tax being imposed is K6.00 and the new equilibrium quantity is 500 bottles.

**EFFECT OF SALES TAX ON DEMAND AND SUPPLY**

The following conclusions can be drawn from the graph.

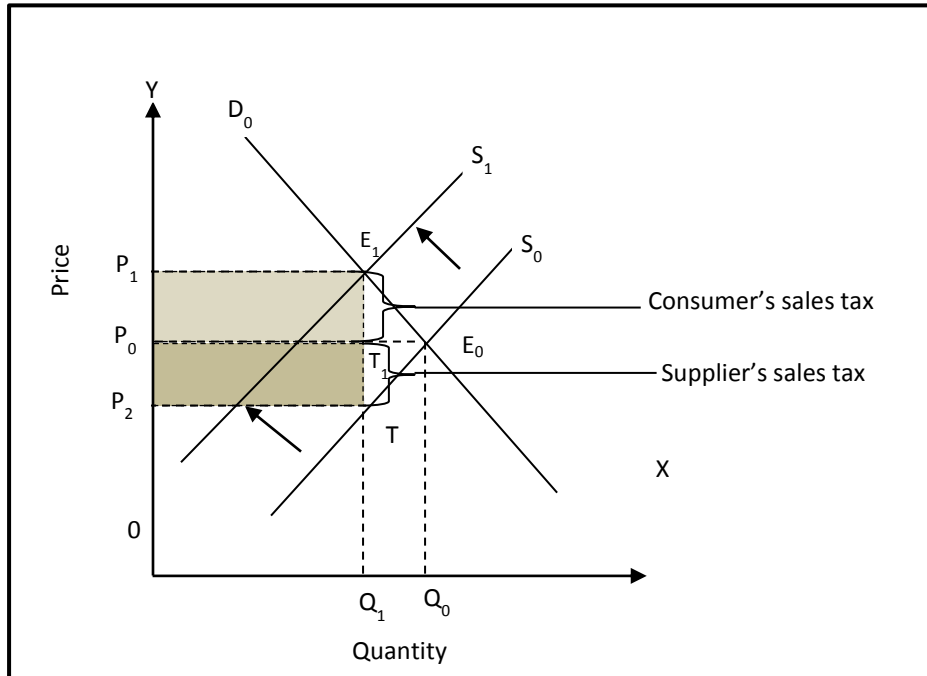
1. The demand and supply curves prior to the imposition of the sales tax are shown as  $D_0$  and  $S_0$  respectively.
2. The equilibrium price prior to the imposition of the tax was K5.00 and equilibrium quantity was 600 bottles. The equilibrium point was at E.
3. With the new tax, the quantity supplied under each price has decreased. Therefore, the supply curve has shifted to the left. The new supply curve is  $S_1$ .
4. The new equilibrium point after imposition of sale tax is  $E_1$ . The new equilibrium price is K6.00, which is K1.00 higher than the previous equilibrium price. The new equilibrium quantity is 500 bottles which is 100 bottles less.
5. The sales tax per bottle of K2.00 can be found by measuring the vertical distance between the new and old supply curve.
6. Although sales tax is K2.00 per bottle, the price is only K1.00. This is because the tax burden has been divided between the consumer and supplier. In this case the tax amount has been shared equally. The price received by suppliers has decreased by K1.00 (K5.00 – K4.00)
7. The total revenue earned by the suppliers before tax: K3000 (K600 × 5).
8. The total revenue earned by suppliers after tax; K3000 (500 × 6)
9. Tax revenue for the government; K1000 (K500 × 2)
10. The total tax paid y the suppliers;
11. Total tax paid by suppliers: K500 (3000 – 1000)





12. The net revenue after paying tax to the government: K2000 (3000 – 1000)

The graph below is a simple graph illustrating the effects of sales tax on demand and supply.



*Let us go through the graph.*

Total tax is made up of the shaded box which extends from  $P_0$  to  $P_1$  and  $P_1$  to  $P_2$ .  $P_0$  to  $P_1$  gives the tax component paid by the consumer whilst  $P_0$  to  $P_2$  gives the component paid by the suppliers. According to this graph both the supplier and the consumer pay equal amount of tax which shows that the demand and supply is unit elastic.

In order for the government to raise its revenue it must look at the elasticity of the demand and supply. Its revenue can be raised efficiently by imposing sales tax on goods that are relatively inelastic in nature though it may be an inefficient way of discouraging production and consumption. Goods such as alcohol and cigarettes, which have relatively inelastic demand, are popular targets for sales taxes. The government knows that even a tax that results in larger increase will have little effect on demand and is able to earn considerable income.

Sales tax paid by the suppliers and the consumers also depends on the elasticity of demand and supply.



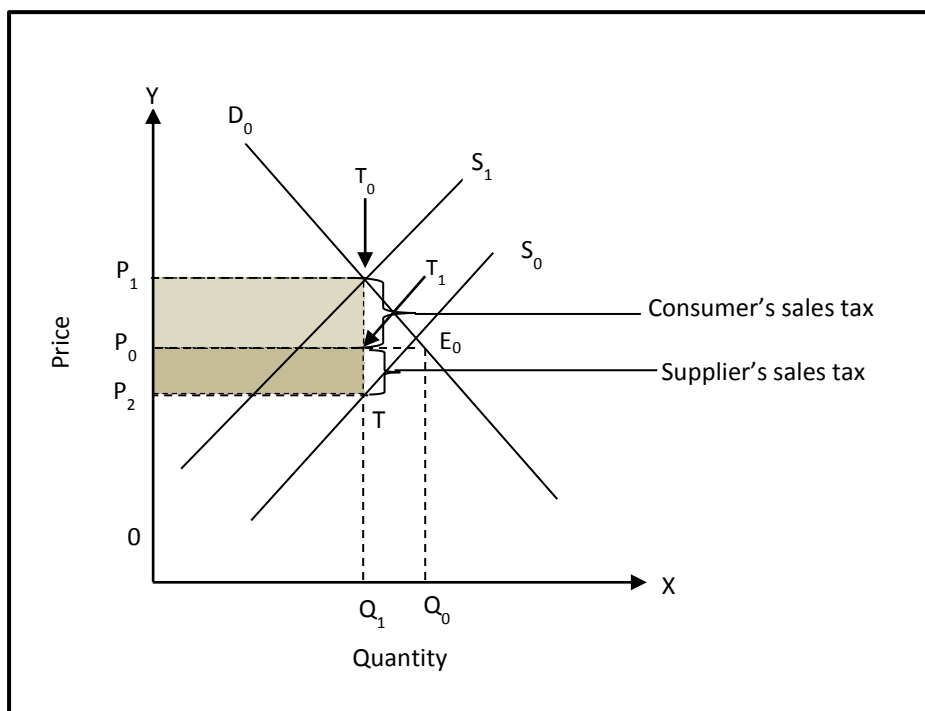
The table on the next page (82) shows the level of sales tax to be paid by suppliers and consumers based on the elasticities of the demand and supply.

DEMAND	SUPPLY	DEMAND AND SUPPLY
<ul style="list-style-type: none"> <li>Perfectly elastic demand – the supplier pays the entire tax.</li> </ul>	<ul style="list-style-type: none"> <li>Perfectly elastic supply – the consumer pays entire tax.</li> </ul>	<ul style="list-style-type: none"> <li>Unitary elastic demand and supply – both the consumer and the supplier share the tax equally.</li> </ul>
<ul style="list-style-type: none"> <li>Perfectly inelastic demand – the consumer pays the entire tax.</li> </ul>	<ul style="list-style-type: none"> <li>Perfectly inelastic supply – the supplier pays the entire tax.</li> </ul>	
<ul style="list-style-type: none"> <li>Inelastic demand – the consumer pays a higher proportion of the tax.</li> </ul>		
<ul style="list-style-type: none"> <li>Elastic demand – the supplier pays a higher proportion of the tax.</li> </ul>		

**Inelastic Demand and Sales Tax**

The following graphs show effects of sales tax on elasticity of demand.

**EFFECT OF SALES TAX ON INELASTIC DEMAND**



The original demand and supply is at  $D_0$  and  $S_0$ . The quantity demanded and supplied is at  $Q_0$  and  $P_0$ . But when the government impose a sales tax, the supply curve shifts to the left to  $S_1$ .



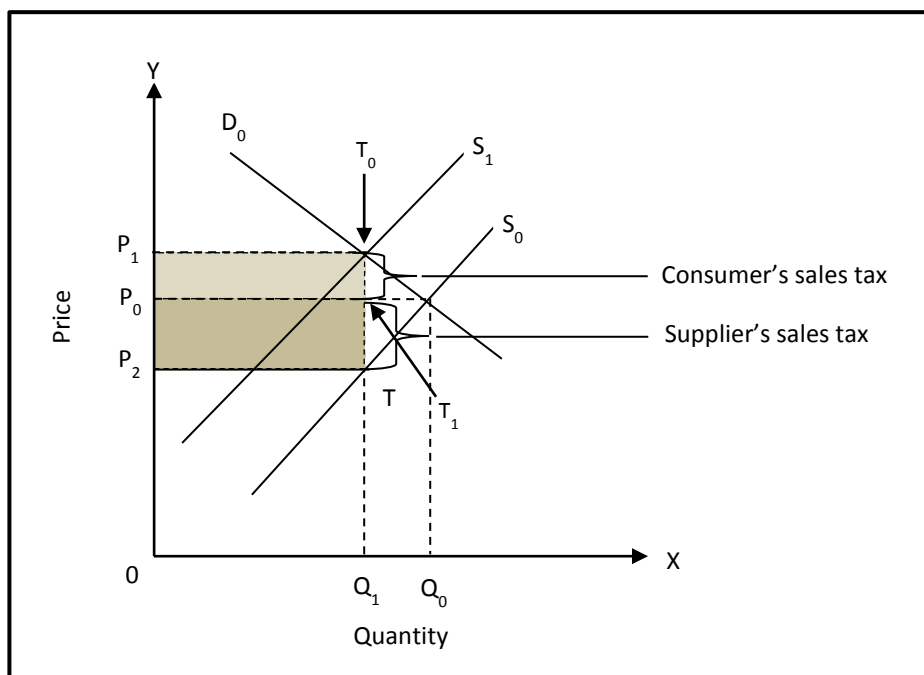
This shows that suppliers will sell less at each price. The new equilibrium price and quantity after the sales tax are  $P_1$  and  $Q_1$ .

The graph on page 75 shows that a larger portion of the sales tax is borne by the consumers and a smaller portion is borne by the suppliers. Borne means to carry. This shows that the demand is inelastic since consumers respond less to price increases. Consumers reduce quantity demanded by a small percentage when demand is inelastic even though producers may pass much of the sales tax to the consumers to pay. Consumers will still demand the same amount of good. For example, a SP 6 pack beer is selling at K72. The original sales tax paid by the supplier is K2.00 on the cost of K70. If the government were to impose a 10% tax on the beer, (10% of K70= K7.20) the price will now increase to K77.20. The producer will pass the sales tax of K5.20 to the consumer. Consumers will still pay this price regardless of the increase in price.

### Elastic Demand and Sales Tax

The graph below shows effects of sales tax on elastic demand.

**EFFECT OF SALES TAX ON ELASTIC DEMAND**



Let us go through the graph.

The original demand and supply is at  $D_0$  and  $S_0$ . The quantity demanded and supplied is at  $Q_0$  and  $P_0$ . But when the government imposes a sales tax, consumers reduce the quantity demanded by a larger percentage compared to the percentage change in price. The new equilibrium price and quantity after the sales tax are  $P_1$  and  $Q_1$ .

The graph shows that a smaller portion of the sales tax is borne by the consumers and a larger portion is borne by the suppliers. This shows that the demand is elastic since consumers respond greatly to price increase. Consumers reduce quantity demanded by a larger percentage when demand is elastic even though producers pay a higher sales tax.

Suppliers collect Goods and Services Tax (GST) from consumers and pass to the government.



### 11.3.4: Subsidy

#### What is subsidy?

A subsidy is a payment by the government to producers to encourage production and consumption and lower the price at which a commodity is offered for sale.

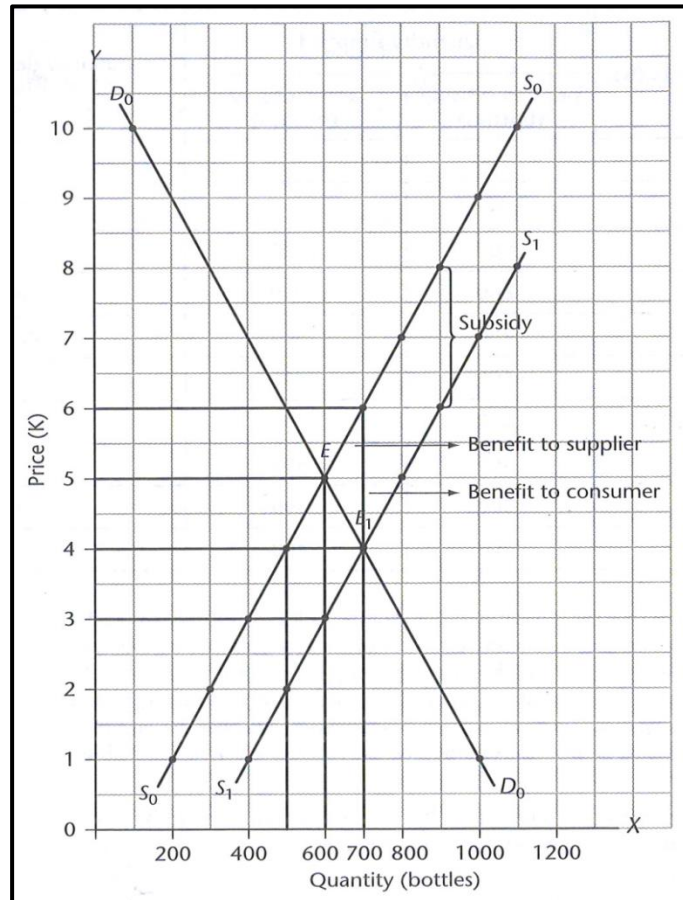
#### Reasons for providing subsidy by the government

The government provides subsidy is to reduce the cost of production. This will encourage production and consumption at lower prices affordable to the consumers.

Let us look at the table below on how subsidy works.

Demand and supply schedules for peanut butter after a government subsidy			
Price per bottle (K)	Quantity supplied		Quantity demanded (bottles)
	Prior to subsidy (bottles)	After subsidy (bottles)	
10	1100		100
9	1000		200
8	900	1100	300
7	800	1000	400
6	700	900	500
5	600	800	600
4	500	700	700
3	400	600	800
2	300	500	900
1	200	400	1000

The table assumes that the government has granted a K2.00 subsidy for each bottle of honey supplied. In our example, 1100 bottles of honey were supplied at K10.00 prior to the subsidy. After, the subsidy 1100 bottles were supplied at K8.00. Similarly, 900 bottles were earlier supplied at K8.00, but after the subsidy, the same quantity is now supplied at K6.00. This means the quantity supplied at each price has increased and that the original quantities are supplied at lower prices. In this example, the subsidy has given rise to a shift in the supply curve to the right.

**EFFECT OF PRODUCER SUBSIDY ON DEMAND AND SUPPLY**

The effects of the subsidy can be shown by way of demand and supply curves. The following graph is drawn using data given from the above table.

The above graph illustrates the following:

1. Demand and supply curves prior to the subsidy  $D_0$  and  $S_0$ .
2. The equilibrium point prior to the subsidy was E.
3. The equilibrium quantity and equilibrium price were 600 units and K5.00.
4. The supply curve shifted to the right  $S_1$ , after the subsidy.
5. The new equilibrium after the subsidy is E1.
6. The equilibrium quantity and price are 700 and K4.00.
7. The subsidy per unit is the vertical distance between the two supply curve  $S_0$  and  $S_1$ .
8. The total revenue prior to the subsidy was K3000 ( $600 \times 5$ )
9. The total revenue after the subsidy is K2800 ( $700 \times 4$ )
10. The total subsidy is K1400 ( $2 \times 700$ )
11. Prior to the subsidy consumers paid K5.00 per unit and now they are paying only K4.00 per unit, receiving a benefit of K1.00 per unit.



12. Prior to the subsidy suppliers received K5.00 per unit and now they are receiving a K6.00 per unit, benefiting K1.00 per unit.

13. After the subsidy the supplier's price is K6.00. This means that a K2.00 subsidy is received for each unit that was sold for K4.00. But now suppliers receive K6.00 instead of K5.00, limiting the final benefit of K1.00.

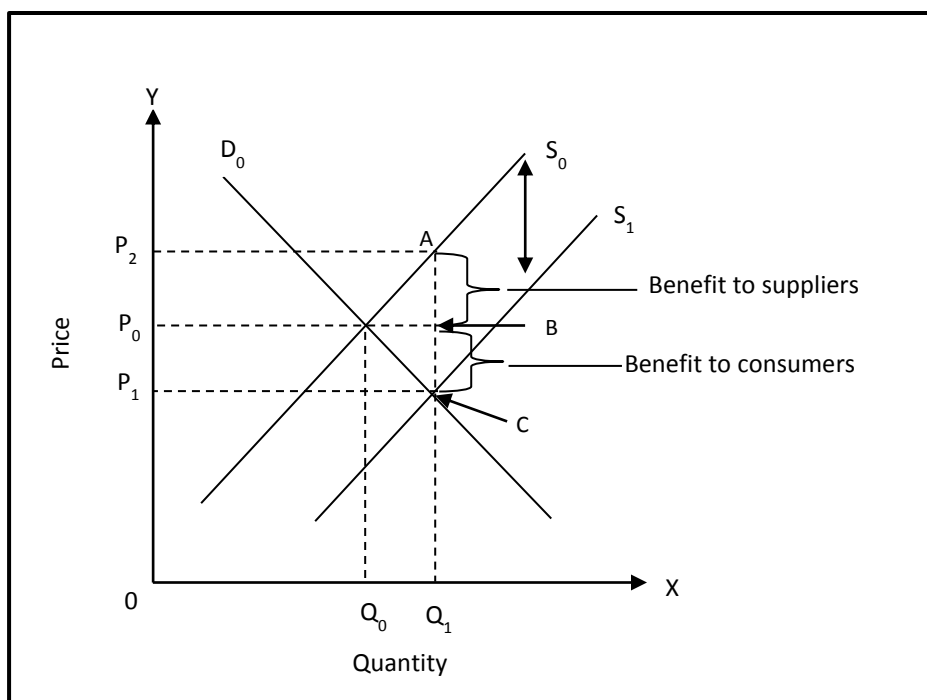
The following conclusions can be drawn from the above figure and analysis.

1. A subsidy shifts the supply curve to the right (increase in supply)
2. A subsidy allows the equilibrium price to fall.
3. The benefits of the subsidy are divided between consumers and suppliers. However, depends on the elasticity of demand and supply.

Subsidy determines the elasticity of demand.

Look at the graph below. It shows the effect of subsidy on the elasticity of elastic demand.

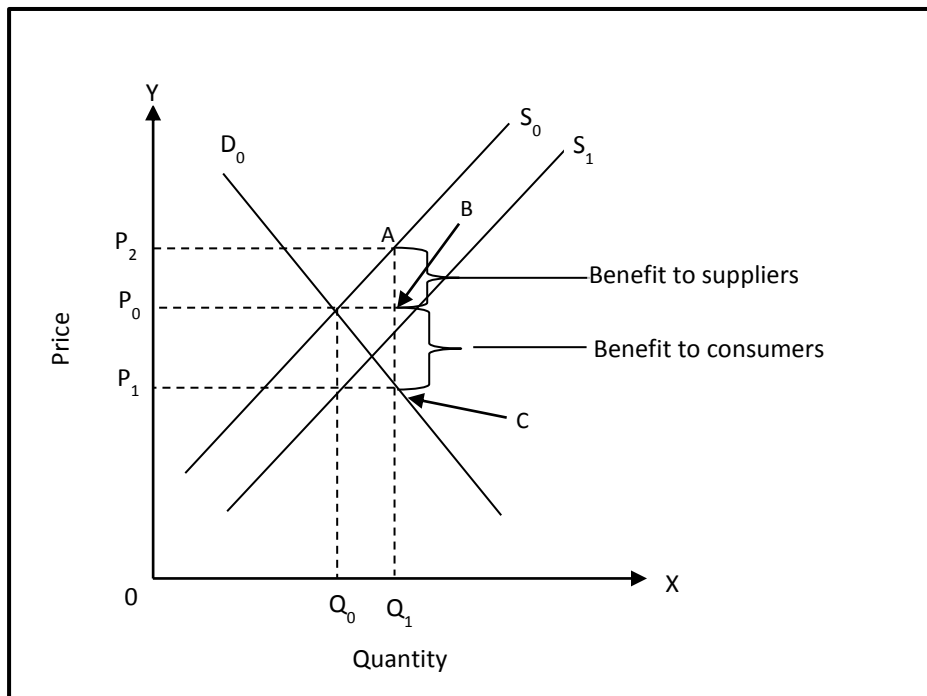
### EFFECTS OF SUBSIDY ON ELASTIC DEMAND



The original price and demand is  $P_0$  and  $D_0$ . As a result of subsidy the supply curve shifts to the right from  $S_0$  to  $S_1$ . The new price and quantity is  $P_1$   $Q_1$  which is lower than the original price.

The above graph shows that the demand curve is elastic. This means that the percentage change in quantity demanded is greater than the percentage change in price. This means consumers receive less benefit from a subsidy compared to suppliers. In other words, a smaller benefit goes to consumers and a larger benefit to suppliers.

*Now, turn to the next page to see the effect of subsidy on inelastic demand.*

**EFFECT OF SUBSIDY ON INELASTIC DEMAND**

Let us go through the graph.

The original price and demand is  $P_0$  and  $D_0$ . As a result of subsidy the supply curve shifts to the right from  $S_0$  to  $S_1$ . The new price and quantity is  $P_1$   $Q_1$  which is lower than the original price.

The diagram above shows that the demand curve is inelastic. When price falls as a result of subsidy, the quantity demanded increases at a lesser percentage than the percentage decrease in price. Here the consumer benefits more than the supplier.

**11.3.4.3: Price Control/Price Ceiling****What is Price Control?**

Price Control or price ceiling is the law set by the government setting the maximum price that can be charged for an item.

**Reasons for Imposing Price Control**

The purpose of a price control is to provide relief to consumers and reduce the cost of living. The government intervenes and helps consumers through organisations such as Independent Consumers and Competition Commission (ICCC).

**Major Problems that Arises as a result of Price Control**

The immediate market reactions to price controls can result in;

- Excess demand in the market because consumers want to purchase more goods at lower prices and suppliers can't supply less at lower prices.
- Suppliers either sell the available quantity at existing prices on a first-come-first serve basis or to friends and relatives



- Excess demand increases prices. Some consumers are willing to pay more for essential goods. This will create a black market. A black market is where goods are sold at a higher price than the legally controlled price.

So this is what happens when government intervenes. For example, price of fuel is K2.40 per litre however the government decides that it should be sold at K1.40.

### Ways to Overcome the Problem of Shortage (Excess Demand) as a Result of Price Control

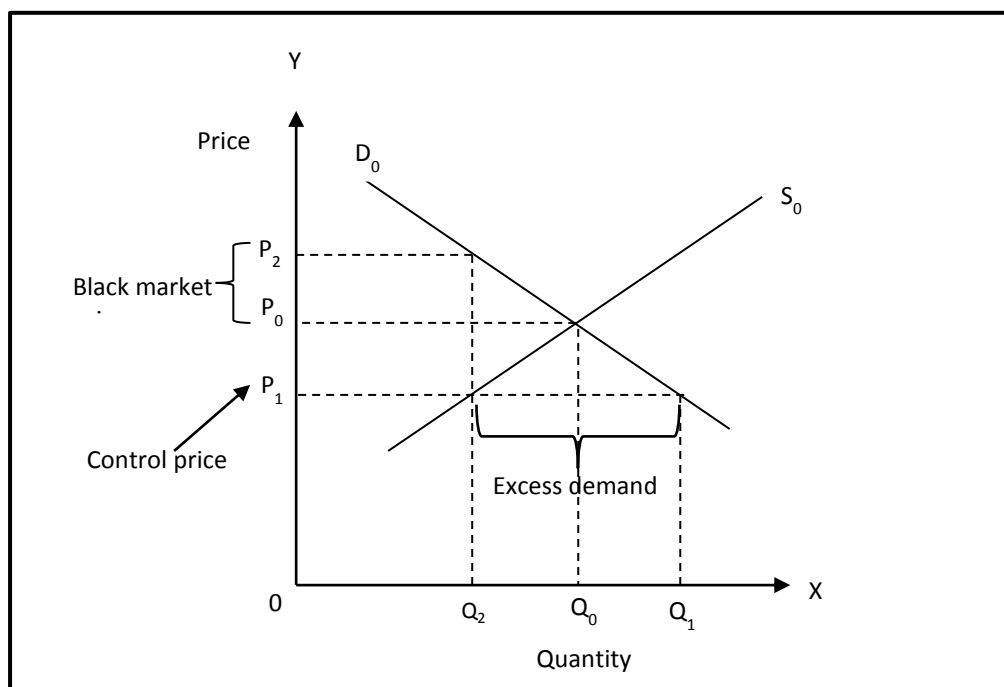
The problem of shortage can be overcome through the following measures;

1. Government to impose price control law and force suppliers to supply goods at controlled prices.
2. Ration system

The first measure is quite difficult and expensive to enforce thus the government can apply the second on the ration system. What is ration system? Ration system is a process of fair distribution during times of shortage. For example, during times of severe drought or famine when there is food shortage.

Look at the graph given on the effects of price control.

### EFFECTS OF PRICE CONTROL



Let us go through the graph.

The original price and demand are  $P_0$  and  $D_0$ . The equilibrium price is  $P_0$  and quantity is  $Q_0$ . The control price imposed by the government,  $P_1$ , is below the existing market price. At this price the consumers are willing to purchase  $Q_1$ , whereas the quantity offered by suppliers is  $Q_2$ . This leads to excessive demand (shortage of supply) of  $Q_1$  to  $Q_2$ . The price that the consumers are willing to pay for is  $P_1$  to gain  $Q_1$ . At any price as of  $P_0$  to  $P_2$  gives rise to a black market situation. Some consumers are willing to pay even  $P_2$  if quantity is supplied at  $Q_2$ . Any price above  $P_1$  is a black market price.



**Methods used when Applying Price Control**

As you have learnt earlier there are two methods that governments can use to control price. Rationing is the most applicable. It is applied to reduce the problem of shortage or excess demand by the government.

**11.3.4.4: Price Support /Price Floor****What is price support?**

Price support or floor price is the legal minimum price set to help producers sell their products.

**Reasons for Imposing Price Support**

The government imposes price support in the market to prevent prices falling from a certain level and so helping producers receive enough income for their produces.

Price support schemes are common in the agriculture sector because of the instability of market therefore there has to be intervention from the government.

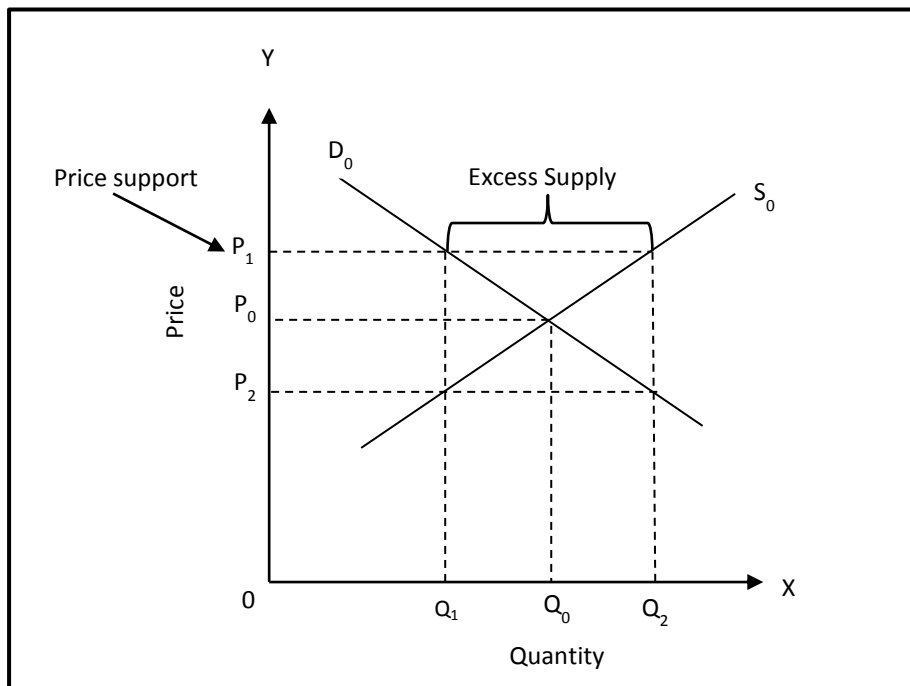
The government aims that consumer must buy at the set legal minimum price.

**Major Problems that Arise As a result of Price Support**

The following problems arise as a result of price support.

- There will be excess supply as the quantity demanded will fall and the quantity supplied will increase.
- An excess supply will result in a fall in price, which is against the goal of the scheme.

*Now, turn to the next page to see the illustration of the effect of price control.*

**EFFECTS OF PRICE SUPPORT**

Let us go through the graph.

The original demand and supply is  $D_0$  and  $S_0$  and the equilibrium price and quantity are  $P_0$  and  $Q_0$ . With the introduction of the new price,  $P_1$ , the quantity demanded decreases to  $Q_1$  and the quantity supplied at this price increases to  $Q_2$  creating excess supply. The point extending from  $Q_1$  to  $Q_2$  is the excess supply. Excess supply brings the price down to  $P_2$ , which is lower than the market price that existed prior to price support.

**Ways to Overcome the Problem of Surplus (Excess Supply) as a Result of Price Support**

The following can help overcome the problem of surplus as a result of price support.

- Government agencies purchase any excess supplies to release in periods of short supply.
- Excess supplies can be exported to other countries
- Excess supplies could be destroyed
- Production could be rationed to avoid excess supply
- A campaign could be launched to promote the sale of excess supply



### 1.3.4.5: Minimum Wages Policy

#### What is minimum wages?

Minimum wage is a legal minimum payment established by the government to protect workers.

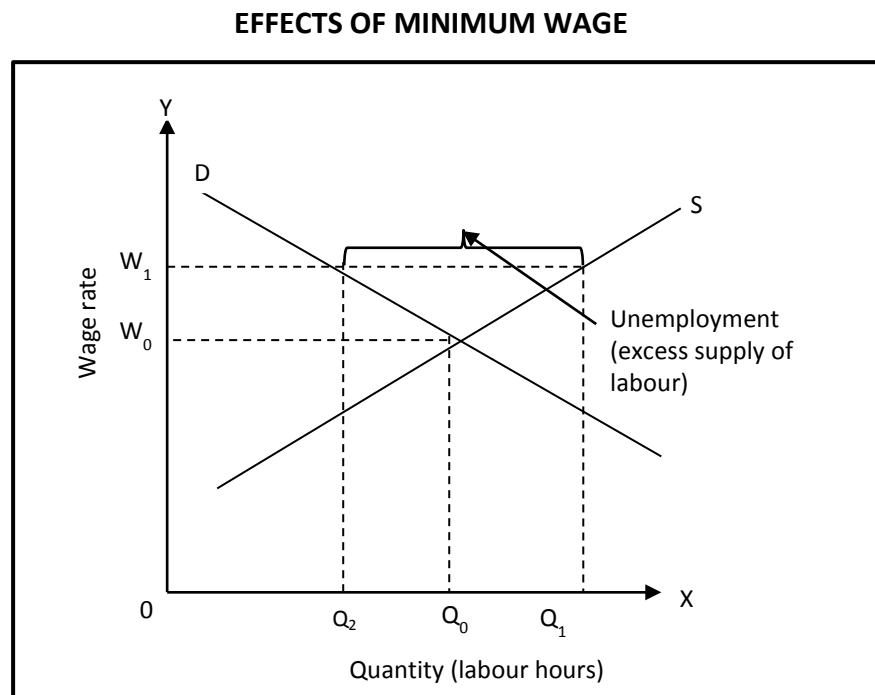
#### The Isaac and the Cochrane Report on Minimum Wage

The Isaac report argued that wages in rural areas should be increased, in the hope that this would encourage more people to accept work in such areas. The Cochrane report proposed that a Wages, Prices and Incomes Board be established to set minimum wages which until that time had been set up by the House of Assembly. This recommendation led to the creation of the minimum Wages Board in March 1972.

#### Illustration of Supply And Demand Graph for Labour to Show the Effect of Minimum Wage

Employers are legally bound to pay a minimum wage so that workers can afford the necessities of life and live well. One of the main aims of determining the minimum wage rate is to raise workers' standards of living and to reduce poverty levels.

Look at the graph given showing the effects of minimum wage.



Let us go through the graph.

The equilibrium wage rate determined by the market forces is  $W_0$  and equilibrium quantity of labour (labour hours) is  $Q_0$ . With the introduction of a minimum wage rate,  $W_1$ , there will be an increase in the labour supply from  $Q_0$  to  $Q_1$  and a reduction of labour demanded from  $Q_0$  to  $Q_2$ .



### **Measures taken to improve the Minimum Wage**

When wage rates are increased either more workers will join the workforce or existing workers offer more hours of work. Increasing the number of workforce will increase the cost of production for employers. Thus employers may reduce the number of labour hours or workers employed.

This leads to excess labour supply meaning the situation of unemployment arises. One of the disadvantages of imposing minimum wage rates is unemployment. More people will want to work at the minimum rate than there are jobs available- the result is involuntary unemployment. These people are willing to work at the going wage rate, but there are not enough jobs on the offer at the wage that is available.

#### **11.3.4.6: The Organisation of Petroleum Exporting Countries (OPEC)**

##### **What is OPEC?**

OPEC stands for the Organization of Petroleum Exporting Countries. It is a permanent, intergovernmental organization, founded and created in Baghdad, Iran in September 14 1960. Five countries that are the founding members of this organization are Iran, Kuwait, Saudi Arabia and Venezuela.

##### **Ways in Which Oil Prices are influenced**

The OPEC crude oil price is defined or set based on the price of the so called OPEC (Reference) Basket. What is OPEC Basket? It is an average of prices of petroleum blends or mixtures which are produced by OPEC members. Some examples of oil blends are; Sahara Blend from Algeria, Basra Light from Iraq, Arab Light from Saudi Arabia and BCF 17 from Venezuela. By increasing and decreasing its oil production, OPEC tries to keep the price between given low /high price to the world oil prices.

By the early 1970's members of the OPEC cartel produced over 50% of the world's oil. What is OPEC cartel? This refers to a group of producers that has considerable influence and over out and of prices oil.

##### **Major Oil Producing Countries and the Importance of Oil to Their Economy**

The following countries are members of this organization; Algeria, Angola, Ecuador, Indonesia, Iraq, Qatar, Kuwait, Libya, Nigeria, Saudi Arabia, Venezuela, and United Arab Emirates. The aim of the OPEC is to coordinate the oil policies of its states.

Oil plays an important role in the economies of OPEC countries hence it generates income for their economy. This major source of income Avenue has greatly boosted OPEC countries economic capabilities. They have the power to control and set prices for their oil on the global oil market. This is largely due to the huge demand for their resource by the world.

##### **Importance of Oil in the Modern World**

Crude oil is the most important natural resource for especially the industrialized and developed world. This resource generates heat, drive machinery and fuel vehicles and airplanes. Its components are used to manufacturer almost all chemical products, such as plastics, detergents and even medicines.

Thus OPEC countries capitalize on this resource to boost their economy hence it is highly demanded.



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**Summary: 11.3.4**

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- A sales tax is a tax or duty that the government places on items at their final point of sale.
- There are two main reasons why the government imposes sales tax. They are;
  1. To earn revenue
  2. To restrict production and consumption. This is placed on goods such as cigarette and alcohol.
- A subsidy is a payment by the government to producers to encourage production and consumption and lower the price at which a commodity is offered for sale.
- The government provides subsidy is to reduce the cost of production. This will encourage production and consumption at lower prices affordable to the consumers.
- Price Control or price ceiling is the law set by the government setting the maximum price that can be charged for an item.
- The purpose of a price control is to provide relief to consumers and reduce the cost of living. The government intervenes and helps consumers through organisations such as Independent Consumers and Competition Commission (ICCC).
- The following problems arise as a result of price support.
  1. There will be excess supply as the quantity demanded will fall and the quantity supplied will increase.
  2. An excess supply will result in a fall in price, which is against the goal of the scheme.
- Minimum wage is a legal minimum payment established by the government to protect workers.
- OPEC stands for the Organization of Petroleum Exporting Countries. It is a permanent, intergovernmental organization, founded and created in Baghdad, Iran in September 14 1960. Five countries that are the founding members of this organization are Iran, Kuwait, Saudi Arabia and Venezuela.

**Learning Activity 11.3.4**

1. Define the following terms.

- (a) Sales tax \_\_\_\_\_  
 (b) Subsidy \_\_\_\_\_  
 (c) Price Control \_\_\_\_\_  
 (d) Price Support \_\_\_\_\_

2. (a) The initial OPEC stands for \_\_\_\_\_

(b) What are OPEC countries? \_\_\_\_\_

3. Explain the following;

- (a) Excess demand \_\_\_\_\_  
 (b) Excess Supply \_\_\_\_\_

4. Fill in the table by listing the reasons for the following being imposed by the government.

Methods Imposed	Reasons
Sales tax	
Subsidy	
Price control	
Price support	
Minimum wages	

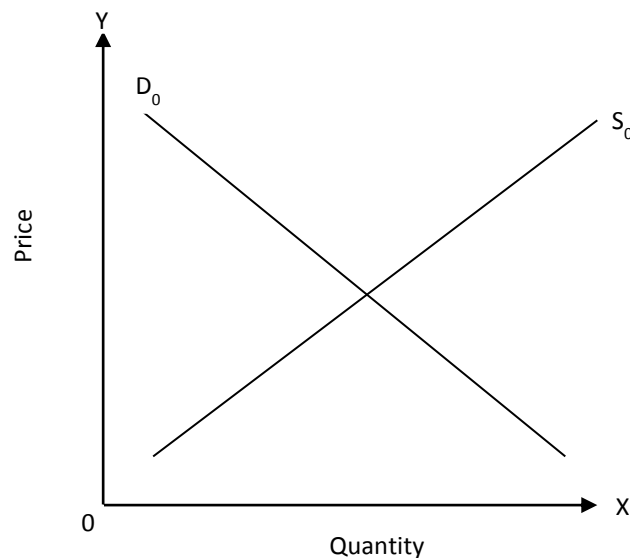
5. Demand and supply schedule of a product for a period is given below.

Price (K)	Quantity demanded (units)	Quantity supplied (Units)
8.00	600	900
7.00	650	800
6.00	700	700
5.00	750	600
4.00	800	500
3.00	850	400
2.00	900	300
1.00	950	200



- (a) Draw demand and supply curves and label them  $D_0$  and  $S_0$ .
- (b) Find the equilibrium point and mark it E.
- (c) Mark the equilibrium price and quantity in your diagram.  
Assume the government imposes a sales tax of K3.00 per unit supplied.
- (d) Draw the new supply curve after tax and label it  $S_1$ .
- (e) Find the new equilibrium price point and mark it  $E_1$ .
- (f) Mark the new equilibrium price and quantity in your graph.
- (g) Mark the amount of tax to be carried by the consumers on the graph.
- (h) Mark the amount of tax to be carried by the suppliers in your graph.

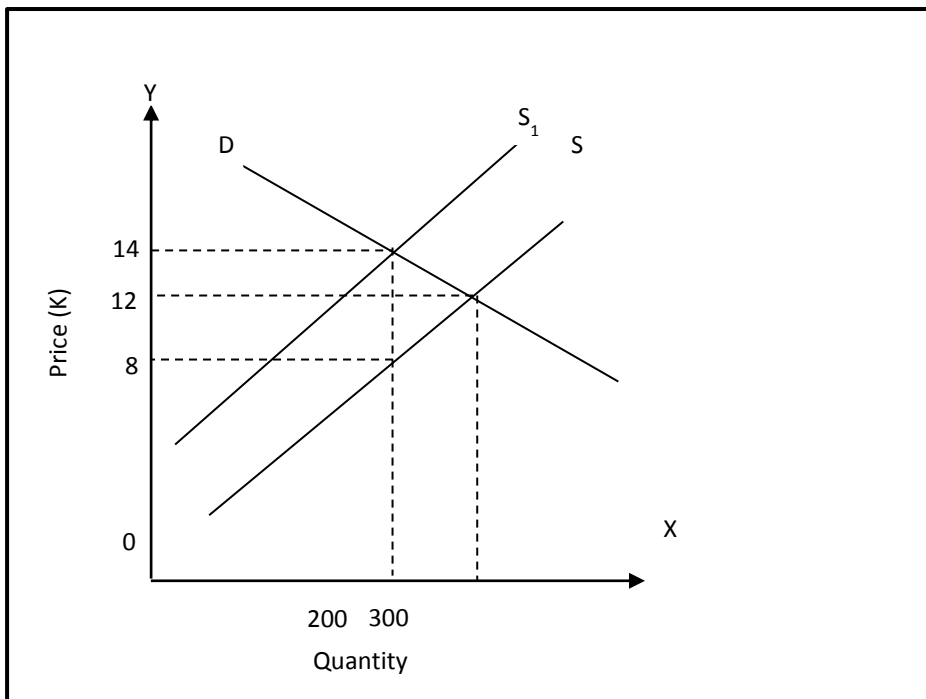
6. Using the graph below answer the following questions.



- (a) Find equilibrium price and label it as  $P_0$  in the graph.
- (b) Find the equilibrium quantity and label it as  $Q_0$  in the graph.  
Assume that the government imposes a sales tax on the suppliers of this product.
- (c) Draw the new supply curve and label it  $D_1$  on the graph.
- (d) Find the new equilibrium price and label it  $P_1$  on the graph.
- (e) Find the equilibrium quantity and label it  $Q_1$  on the graph.



7. The following graph shows that the government imposes a sales tax on the production of a product, the market supply curve shifts from  $S$  to  $S_1$ .



How will the tax affect customers and producers?

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**TOPIC 5: MARKET STRUCTURE**

Many different types of markets can be found within most economies. Market in this context can be referred to as competition. So we will use the term market and competition interchangeably.

Understanding how markets work and how they differ helps you to understand the behaviour of firms in the real world.

**Specific Learning Outcomes**

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On successful completion of this topic, students will be able to analyse and evaluate;

- Perfect market or Competition and its Features
- Imperfect markets and their features
- Types of market structure reforms in Papua New Guinea



### 11.3.5.1: Perfect Market and Its Features

Firstly let's define what market is.

#### What is Market?

Market refers to any place or process involved with the exchange of goods and services.

There are 6 types of market and they are;

1. Perfect competition
2. Monopolistic competition
3. Oligopoly
4. Duopoly
5. Monopoly
6. Monopsony

These market types can be classified as perfect market or imperfect market based on their competitiveness. Before we look at the six types of market, let's study the difference between perfect market and imperfect market.

#### Perfect Competition

Perfect competition has a large number of buyers and sellers, each of whom has no influence over prices, homogeneous products, perfect knowledge, and freedom of entry of new firms into the market and consumer sovereignty.

#### Difference between Perfect and Imperfect Market

##### Perfect Market/competition

Perfect competition occurs where the following market conditions exist;

- There are a large number of buyers and sellers in the market
- Products are homogeneous.
- There is free entry and free exit in the industry
- There is perfect knowledge on the part of buyers and sellers about the prevailing price and other market conditions.

**Large number of buyers and sellers in the market**

Suppose the total product of an industry is 2000 units of a particular product and there are 500 firms producing these units. This means that an average of only 4 units is produced by each firm, which has a very insignificant proportion of the total market. No individual firm can change the market price by its dependent action. In a perfect market a single firm is required to sell its products at the given market price. Therefore, individual firms are price-takers and the throughout the market is the same. For this reason, the demand curve of a firm under perfect competition is perfectly elastic. It is a straight line parallel to the x-axis.

The presence of a large number of firms is an essential condition for the market to be perfect. For the same reason the number of buyers should also be large in such a market, so that no single buyer can influence the market price with purchases.

**Homogeneous Product**

The products sold by a large firm in a perfect market is similar to those sold by another firm. There will be no differentiation of product by way of quality, shape, size, colour, design or packaging. In this situation there is no reason why a buyer would be loyal to a brand or attached to a particular product.

**Free Entry and Free Exit of Firms**

There are no barriers preventing a firm from entering or exiting a market. There is no authority or mechanism to stop firms for doing so. When firms earn super profits, new firms will enter the market freely and will exit at any time they wish.

**Perfect knowledge among buyers and sellers about market conditions**

In a perfect market all firms know the price being charged for the product by the other firms. In the same way all buyers also have a perfect knowledge of the prices charged by these firms. This ensures that the same price prevails throughout the market for a product.

A market is imperfect when the above conditions and the features to be mentioned below are present in a market.

**Features of a Perfect Market**

The following are features of perfect market.

1. Prices are set by demand and supply in a market free from any external influences such as government regulation. There will be only one price ruling in the market- the market price.
2. There are very large number of sellers, none of which is sufficiently large to have any influence on the market – they are price takers not price makers.
3. There are no barriers to entry to the market or exit from the market. Anyone can enter the market and compete freely. Similarly, if a seller cannot compete or cannot cover their costs, no one will help them and they will be forced out.
4. Sellers can sell all they want at this price. If they raise their price, they will sell nothing, and no sensible (rational) person would drop their price if they can already clear all their output at a higher price.
5. There is perfect knowledge in the market place. If one seller raises their price, everyone will know about it and avoid them There is no need for any seller to advertise.



6. There is a very large number of buyers, none of whom can influence the market on their own. No one can negotiate a better price than anyone else.

7. All sellers are selling an identical product, that is, they are selling a homogeneous product. In the 18th century, wheat was the same type and quality no matter whom you bought it from, milk was milk, and cabbages were cabbages. Today, there are many varieties of wheat, milk and even cabbages- sellers have tried to move out of this 'perfect market' No seller under perfect competition can gain an advantage over a competitor by being able to claim (legitimately) that they have a superior or different product.

As for the imperfect market it exists if some conditions of perfect market are missing.

The following market types are imperfect market.

#### **11.3.5.2: Monopolistic Competition**

Monopolistic competition occurs when a large number of firms price and sell differentiated products that are close substitutes to each other.

##### **Features of Monopolistic Competition**

The following are features of monopolistic competition.

1. Many firms: There is relatively large number of firms in the market. Such firms produce close substitutes and compete with each other. Stiff competition exists between firms and they share market demand.
2. Product differentiation: the products produced are not identical. They are slightly different from each other. Despite this, they remain close substitutes, therefore, their prices are similar.
3. Freedom of entry and exit: As in perfect competition, businesses have freedom to enter and exit an industry. When existing firms make super profits, the new firms enter the industry to produce close substitutes and exit once these super profits are no longer available. Because of this firms in the market earn normal profits in the long run.
4. Non-price competition: Business use means other than price to complete. This is a common feature in monopolistic competition, so companies spend a large amount of money on advertising and sales promotion campaigns.

##### **Types of Products Sold in Monopolistic Competition**

The types of products sold in monopolistic competition are products that are close substitute to each other. For example; washing powder like Omo and klina, canned tinned fish like Dianna tuna and ocean blue and biscuits like snax and em nau.

##### **Examples of monopolistic competition in Papua New Guinea**

Firms that are in involved in monopolistic competition are; tinned fish producer like RD tuna Cannery and South Sea Tuna, Lae Biscuits, Paradise food Limited, South Pacific Brewery and Vitas Industry.

**Advantages and Disadvantages of Monopolistic Competition**

The following are its advantages and disadvantages.

<b>Advantages</b>	<b>Disadvantages</b>
1. Since products are only slightly differentiated, each firm will have to take the price of its competitors into account.	1. If firms raise its price it will lose some sales to its rivals. Loyal customers of the differentiated products will continue to buy but existence of close substitutes will cause sales to fall.
2. If it lowers price it will pick up some sales from its rivals	2. Firms in monopolistic competition tend to spend a lot of money on advertising and packing to achieve.

**11.3.5.3: Oligopoly**

An oligopoly is a market dominated by a few large firms. It falls between a monopoly and monopolistic competition. In this market, a small number of firms account for a large proportion of output and employment. Firms within the oligopoly produce branded goods and each seller competes with the others. The actions of one firm can influence the actions of its competitors. This is called rivalry. Advertising and marketing are important features of competition. A high degree of dependence exists among the businesses in their decision-making: firms in the market react to the behaviour of their competitors. They compete for market share using price and non-price competition. Price competition involves discounts. Non-price competition includes special services to customers such as loyalty cards, home deliveries, extensions of opening hours, special offers and entertainment facilities in shopping outlets. High entry barriers exist because existing firms have achieved economies of scale.

**Features of Oligopoly Market**

1. A relatively small number of firms in the industry that dominate the market.
2. Differentiated products
3. Mutual interdependence of businesses
4. Relatively high barriers to entry due to economies of scale
5. Businesses in the market earn super profits in the long run

These are example of international companies. In PNG, the telecommunication market has oligopoly characteristics.

**Types of products sold in an Oligopoly Market**

Examples of oligopolies include:

- Nike and Reebok- sports shoe products
- Coca Cola and Pepsi – soft drinks

**Examples of Oligopoly market in Papua New Guinea**

Some examples would be Air Niugini, Travel Air and Airlines PNG, Ford Niugini, Ela motors and Boroko Motors.

**Advantages and Disadvantages of Oligopoly**

<b>Advantages</b>	<b>Disadvantages</b>
1. Oligopolist has more control over output and price than the firms in monopolistic competition	1. Firms try to predict the reactions of their competitors. There is uncertainty unless the firms come to some sort of arrangement with each other.
2. Consumers gain when there is price wars between firms	2. Oligopoly firms if reduces its price would have a detrimental effect on the sales of its rivals. This will cause other firms to consider retaliation if they wish to maintain their share of the market.
	3. Entry of new firms into the industry would force down profits.
	4. Oligopoly avoids price comparison. If one firm undercuts the others then it is possible that the other firms will follow suites. This leads to each firm maintaining its share of the market but earning lower profits than before.
	5. When price wars end, consumers will suffer with prices at extremely high level.

**11.3.5.4: Duopoly**

A duopoly is a market situation in which there are only two sellers. There is little product differentiation and entry of new firms to the market is restricted. Producers have considerable influence over the price charged for their products.

**Features of Duopoly**

1. There are two sellers
2. Entry into the market is restricted
3. There is little difference in products sold
4. Seller has all control over prices

**Types of Products Sold in Duopoly**

Types of products provided in duopoly would be telecommunication services.

**Examples of Duopoly Markets in Papua New Guinea**

Examples of duopoly markets in Papua New Guinea are Digicel PNG and Telecom PNG.

**Advantages and disadvantages of duopoly**

Advantages	Disadvantages
1. Firms have complete control over price and gain huge profits.	1. Massive and expensive advertisements
2. The price wars of the two firms lowers prices thus helping the consumers	2. Freedom of entry into market is restricted
	3. Continuous price wars may lead to profit loss for business as they try to outsmart each other.

**11.3.5.5: Monopoly**

In a monopoly market a single producer or seller of a product that has no close substitutes controls the market. This is the least competitive situation, so it is very hard for a true monopoly to exist. A monopolist has no competitors.

**Feature of Monopoly**

The following are the features of a monopoly market.

1. Strong barriers to entry. It is usually very difficult to keep others out of a market which is capable of earning super profit, such as a monopoly. Government intervention may be needed in the form of legal barriers. Other legal barriers may be formed by the use patents. Financial barriers, due to a very high capital set-up cost, may also exist, giving rise to a natural monopoly.
2. Imperfect knowledge
3. No advertising. There is no need to defer customers away from a competitor, as there is no close substitute good or service.
4. One seller
5. The sole seller offers a product for which there is no close substitute. This makes it particularly hard for a true monopoly to exist (eg if someone objects to postal charges rising, they could use a courier or email.)
6. Strong control over price or quantity. The monopolist can exercise considerable control over price, but not even a competitor- can dictate to the market both the price and the quantity sold. Monopolists must choose whether to dictate price or quantity – they cannot dictate both.

**Single producer or seller of product**

A single product or seller controls the market. Therefore, there is no difference between the firm and the market. A monopolist can control the output and price of the product to maximise profits. Therefore, a monopolist is a price-setter and not a price-taker. A monopolist faces a downward-sloping demand curve, indicating that it sells large quantities of products at a lower price and small quantities at higher prices.

**No Close Substitutes of Product Produced or Sold**

The product produced or marketed by the monopolist is unique. There are no close substitutes to compete with, this is essential to a monopoly. If there were close substitutes, a monopolist would have to face competition and a reduction in monopoly power.

**Types of Products**

Types of products sold in monopoly would be electricity and mails.

**Examples of Monopoly markets in Papua New Guinea**

An example of a monopolist's market would be PNG Power Limited, Post PNG and Ramu Sugar Limited.

<b>Advantages</b>	<b>Disadvantages</b>
1. Firms with large markets may earn considerable excess profits.	1. Fewer consumers tend to be satisfied with monopoly than with competition
2. Can sometimes benefit consumers. That is firms may achieve economies of scale and avoid unnecessary duplication of resources that occur if there were more than one producer, allowing goods to be produced and sold to consumers with greater efficiency and at a lower cost.	2. Too few resources are employed in the monopoly industry and too many resources are utilised elsewhere.
	3. Market is difficult to enter. This leads to a redistribution of income in favour of the firm with monopoly power. This leads to fewer consumers' wants which tends to be satisfied through monopoly than competition.



**11.3.5.6: Monopsony**

Market in which there is only one buyer of a commodity produced by many sellers who have little influence over the price that they receive.

**Features of a Monopsony Market**

The following are the features of monopsony market.

- Many sellers
- One buyer, Freedom of entry into the market.
- Goods are homogeneous
- Buyers may have considerable control over prices, sellers have none.

**Examples of Monopsony Market**

Examples of monopsony market are agricultural products on small holder like oil palm, coffee, cocoa, rubber, teas and coffee.

**Example of Monopsony Markets in Papua New Guinea**

Examples of monopsony markets in Papua New Guinea are; New Britain palm oil, Higaturu palm oil, Kongo coffee and Kumul tea.

**Advantages and Disadvantages of Monopsony Markets**

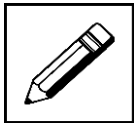
<b>Advantages</b>	<b>Disadvantages</b>
1. One buyer who has control over price and can earn huge profit.	1. Sellers are price-takers



### Summary 11.3.5

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- There are 6 types of market and they are;
  1. Perfect competition
  2. Monopolistic competition
  3. Oligopoly
  4. Duopoly
  5. Monopoly
  6. Monopsony
- Monopolistic competition occurs when a large number of firms price and sell differentiated products that are close substitutes to each other.
- An oligopoly is a market dominated by a few large firms. It falls between a monopoly and monopolistic competition
- A duopoly is a market situation in which there are only two sellers. There is little product differentiation and entry of new firms to the market is restricted. Producers have considerable influence over the price charged for their products.
- In a monopoly market a single producer or seller of a product that has no close substitutes controls the market. This is the least competitive situation, so it is very hard for a true monopoly to exist. A monopolist has no competitors
- Market in which there is only one buyer of a commodity produced by many sellers who have little influence over the price that they receive.
- Perfect competition has a large number of buyers and sellers, each of whom has no influence over prices, homogeneous products, perfect knowledge, and freedom of entry of new firms into the market and consumer sovereignty.



### Learning Activity 11.3.5

1. What is market? \_\_\_\_\_
2. Explain homogenous product. \_\_\_\_\_
3. Fill in the table with the correct information.

Types of market	Features	Advantages	Disadvantages



## Answers to Learning Activities 11.3.1 to 11.3.5

### Learning Activities 11.3.1

1. (a) Demand is the quantity or the number of goods and services consumers are able and willing to buy at a given price at a given period of time.

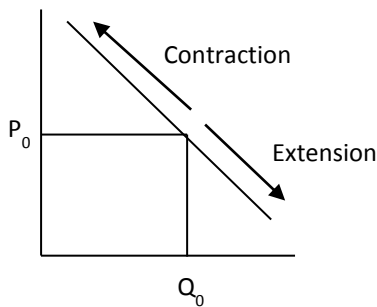
(b) Individual demand is the quantity of good demanded by individual customers.

(c) Market demand Market demand is the combined quantity of goods demanded by all individuals.

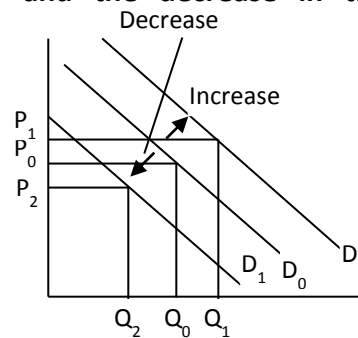
2. (a) Extension and contraction of the curves occurs when there is movement along the demand curve either upward or downward due to changes in price other than the factors of production. Increase and decrease in the demand curves occurs when the demand curve shifts either to the left or right of the original demand curve due to changes in the factors of production other than price.

(b)

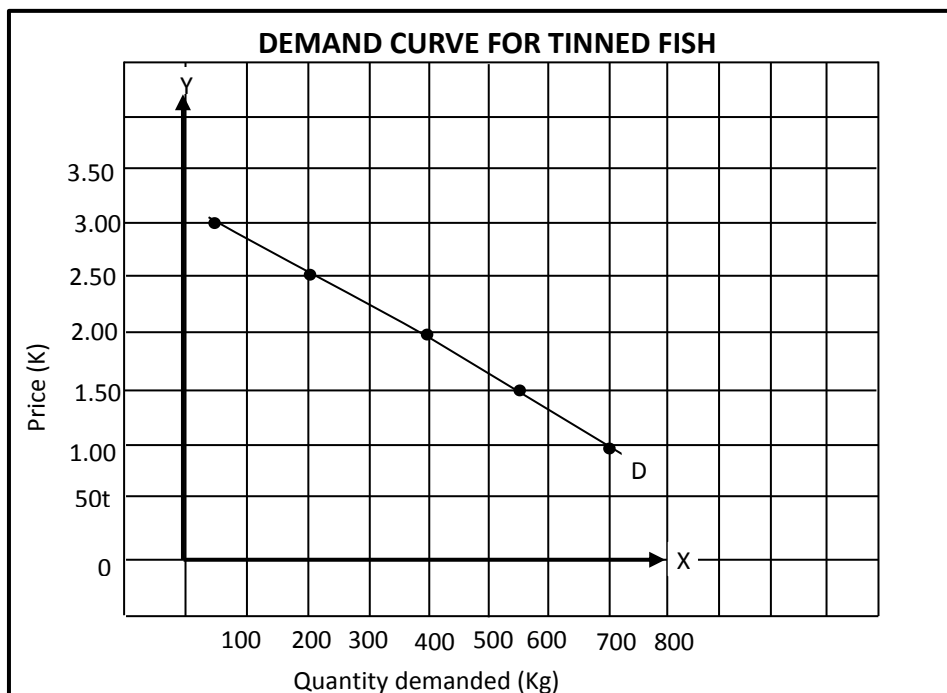
**Extension and the contraction curves**



**Increase and the decrease in the demand curves**



3.

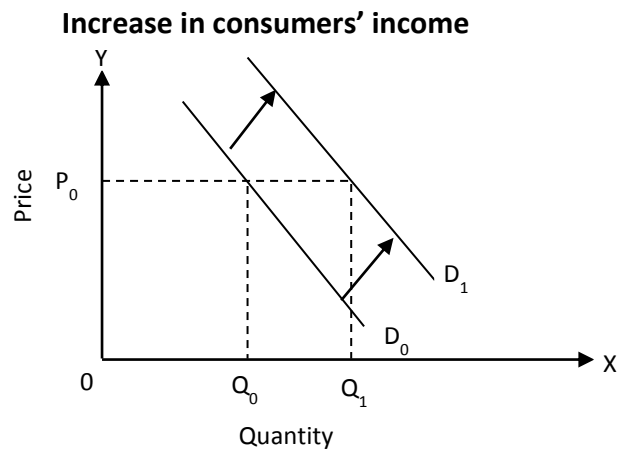
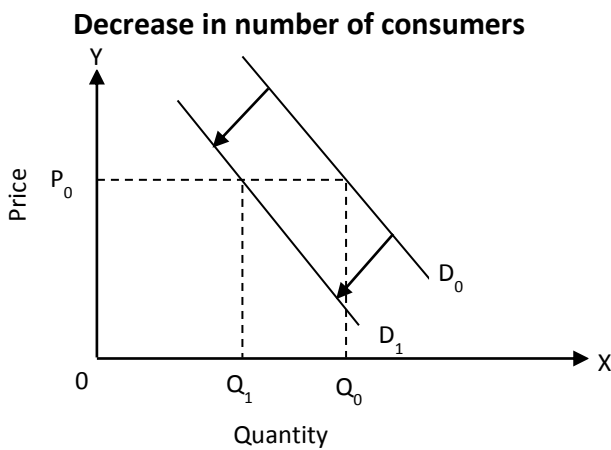




3. (a)

Factors	Examples
1. Prices of goods	Original price of rice is K4.00. If increases to K5.00 its demand will fall. Or if price decreases to K3.00 demand will increase.
2. Prices of related goods	When price of one substitute good increases the demand for the other increase and vice versa.  If price of one supplementary good increases the demand for the other decreases.
3. Consumer income	When come increases peoples demand increases and vice versa.
4. Consumer Expectation	When people expect price of one good to increase in the future they demand more of it now and vice versa.
5. Taste and preference	When people like one good they demand more of it and when they don't like it they demand less of it.
6. Number of consumers	When the number of consumers increase demand decreases and vice versa.

(b)





### Learning Activity 11.3.2

1. (a) Supply is the number of goods and services that supplier are able and willing to supply at a given price at a given period of time.

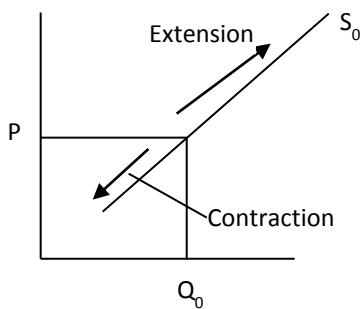
(b) Individual supply is the number of goods and services that one individual supplier is able and willing to offer for sale at a given price at a given period of time.

(c) Market supply is the combine supply of goods and services that all individuals' suppliers are able and willing to offer for sale at a given price at a given period of time.

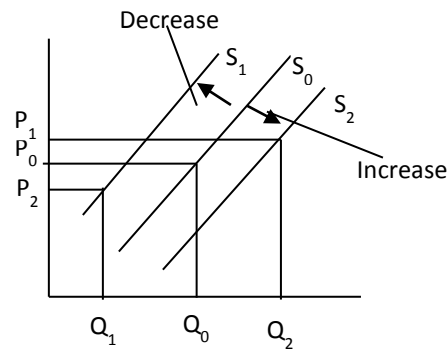
2. Extension and contraction of supply occurs when there is movement along the supply curve. This is due to an increase in price whilst other things remain constant. When price rises supply extends downwards and when price decreases supply contracts upward along the supply curve. Increase and decrease in supply occurs when the supply curve shifts away from the original demand curve. A shift to the left shows a decrease in supply and a shift to the right shows an increase in supply.

(3)

#### Extension and the contraction



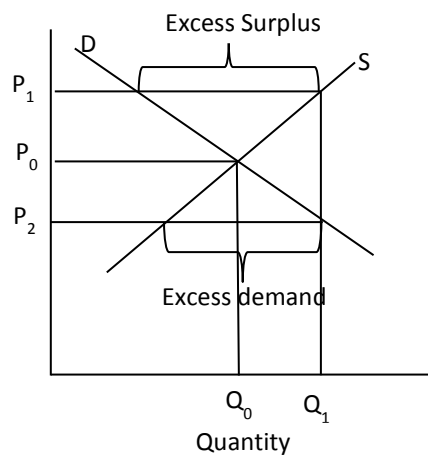
#### Increase and the decrease in the supply curves



4. Equilibrium price is the agreed price reached by consumers and suppliers at an agreed quantity. (price at which quantity demanded equals quantity supplied.)

5. (a) Excess demand refers to the shortage in supply of a good due to high demand by consumers. Excess supply refers to surplus of goods due to less demand for the products.

(b)

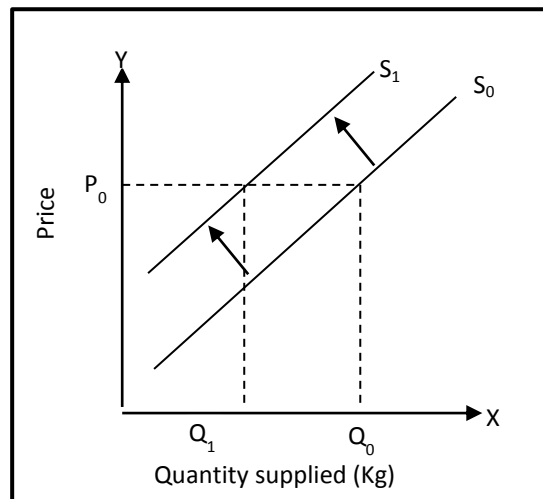




6. So that they are able to meet the cost of producing their goods and are able to make profit.

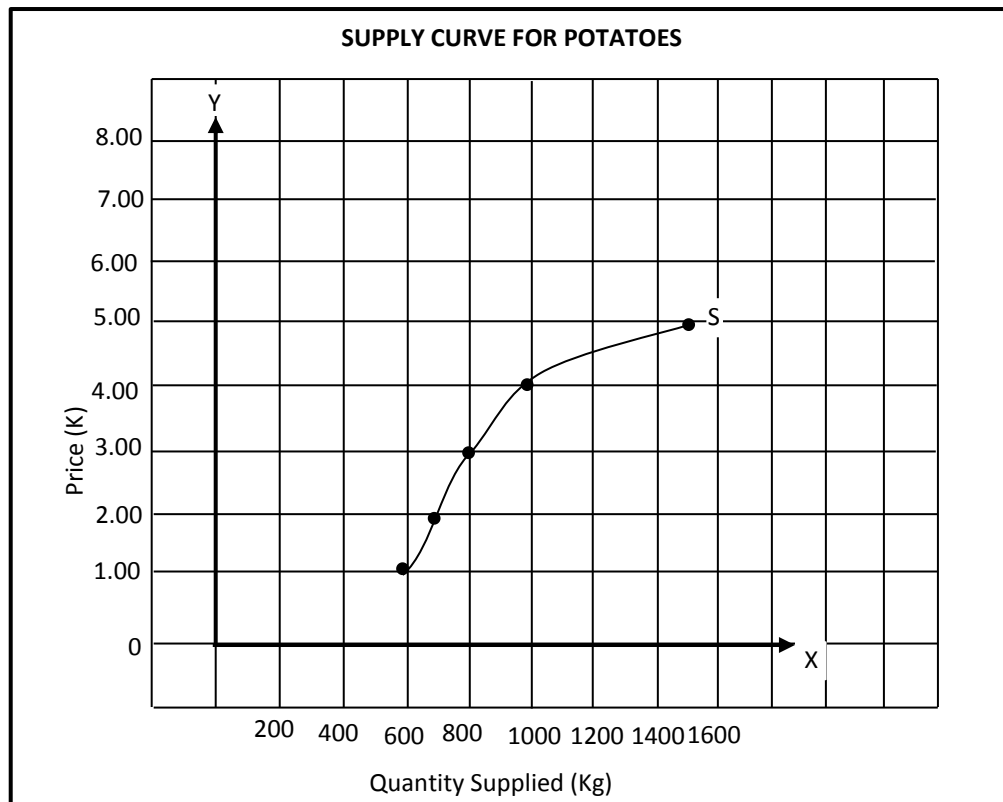
7.
  1. The price of a good
  2. Prices of other goods
  3. Cost of production
  4. Suppliers expectation
  5. The number of suppliers
  6. Weather
  7. Availability of resources to produce goods
  8. Technological change
  9. Government actions (taxes, subsidies, import restriction)

8. **DECREASE IN SUPPLIERS' EXPECTATIONS AND THE SUPPLY CURVE**





9.



### Learning Activity 11.3.3

1. (a) Price elasticity of demand refers to the measure of responsiveness of the quantity demanded of a good caused by a change in its price
- (b) Price elasticity of supply is a measure of the responsiveness of quantity supplied to a change in price of a good.

2.

Price elasticity of demand	Price elasticity of supply
Substitute	Change in price
Necessity	Tax
Proportion of total income spent on commodities	Subsidies
Use of goods	
Habit	
Durability	
Advertising	
complement	





3.

$$P_1=K5 \quad Q_1=100$$

$$P_2=K4 \quad Q_2=120$$

$$= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1}$$

$$= \frac{120-100}{100} \div \frac{4-5}{5}$$

$$= \frac{20}{100} \div \frac{1}{5}$$

$$= \frac{1}{5} \times \frac{5}{1}$$

$$= \frac{5}{5}$$

= 1 (unit elastic)

4.

$$P_1=K8 \quad Q_1=1000$$

$$P_2=K6 \quad Q_2=1250$$

$$= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1}$$

$$= \frac{1250-1000}{1000} \div \frac{6-8}{8}$$

$$= \frac{250}{1000} \div \frac{2}{8}$$

$$= \frac{1}{4} \times \frac{4}{1}$$

$$= \frac{4}{4}$$

= 1 (unit elastic)

5. (a)

**A demand schedule for milo powder**

Price per unit (K)	Quantity demanded (units)	Consumer Outlay (K)
8.00	150	1200
7.00	200	1400
6.00	300	1800
5.00	360	1800
4.00	450	1800
3.00	550	1650
2.00	700	1400

(b)

- K8.00 – K6.00 - Elastic Demand
- K6.00 – K4.00 – Unit Elastic
- K4.00 – K2.00 – Inelastic demand

$$6. (a) \text{ \% change in price} = \frac{5.00 \times 100}{20.00} = \mathbf{25\%}$$

$$\text{\% change in quantity} = \frac{20\ 000 \times 100}{30\ 000} = \mathbf{66.67\%}$$

$$\text{Cross Elasticity of demand} = 66.67 \div 25 = \mathbf{2.67}$$

(b) Complementary goods



7. (a)

$$\begin{aligned} &= \frac{Q_2 - Q_1}{Q_1} \div \frac{Y_2 - Y_1}{Y_1} \\ &= \frac{20\,000 - 12\,000}{12\,000} \div \frac{30\,000 - 20\,000}{20\,000} \\ &= \frac{8\,000}{12\,000} \div \frac{10\,000}{20\,000} \\ &= \frac{2}{3} \times \frac{2}{1} \\ &= \frac{4}{3} \\ &= \mathbf{1.33 \text{ income elastic}} \end{aligned}$$

(b) Normal good

8. (a)

$$\begin{aligned} &= \frac{Q_2 - Q_1}{Q_1} \div \frac{Y_2 - Y_1}{Y_1} \\ &= \frac{4\,000 - 3\,000}{3\,000} \div \frac{6\,000 - 10\,000}{10\,000} \\ &= \frac{1\,000}{3\,000} \div \frac{4\,000}{10\,000} \\ &= \frac{1}{3} \times \frac{4}{10} \\ &= \frac{5}{6} \\ &= \mathbf{0.83 \text{ inelastic income}} \end{aligned}$$

(b) Inferior good

9.

(i) Product	(ii) % change in price	(iii) % change in quantity demanded	(iv) Coefficient of price elasticity of demand
X	10	10	1
Y	12	8	1.5
Z	10	12	0.83

(b) X: unitary elastic  
Y: elastic  
Z: inelastic



10. (a)

$$\begin{aligned} & \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\ &= \frac{250 - 150}{150} \div \frac{25 - 20}{20} \\ &= \frac{100}{150} \div \frac{5}{20} \\ &= \frac{2}{3} \times \frac{4}{1} \\ &= \frac{8}{3} \\ &= \mathbf{2.67 \text{ (elastic)}} \end{aligned}$$

(b)

$$\begin{aligned} &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\ &= \frac{300 - 400}{400} \div \frac{5.80 - 6.00}{6.00} \\ &= \frac{100}{400} \div \frac{0.20}{6.00} \\ &= \frac{1}{4} \times \frac{3.00}{0.10} \\ &= \frac{3}{0.4} \\ &= \mathbf{7.5 \text{ (elastic)}} \end{aligned}$$

(c)

$$\begin{aligned} &= \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} \\ &= \frac{10\,000 - 11\,000}{11\,000} \div \frac{12 - 10}{10} \\ &= \frac{1000}{11\,000} \div \frac{2}{10} \\ &= \frac{1}{11} \times \frac{5}{1} \\ &= \frac{5}{11} \\ &= \mathbf{0.45 \text{ (inelastic)}} \end{aligned}$$

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### Learning Activity 11.3.4

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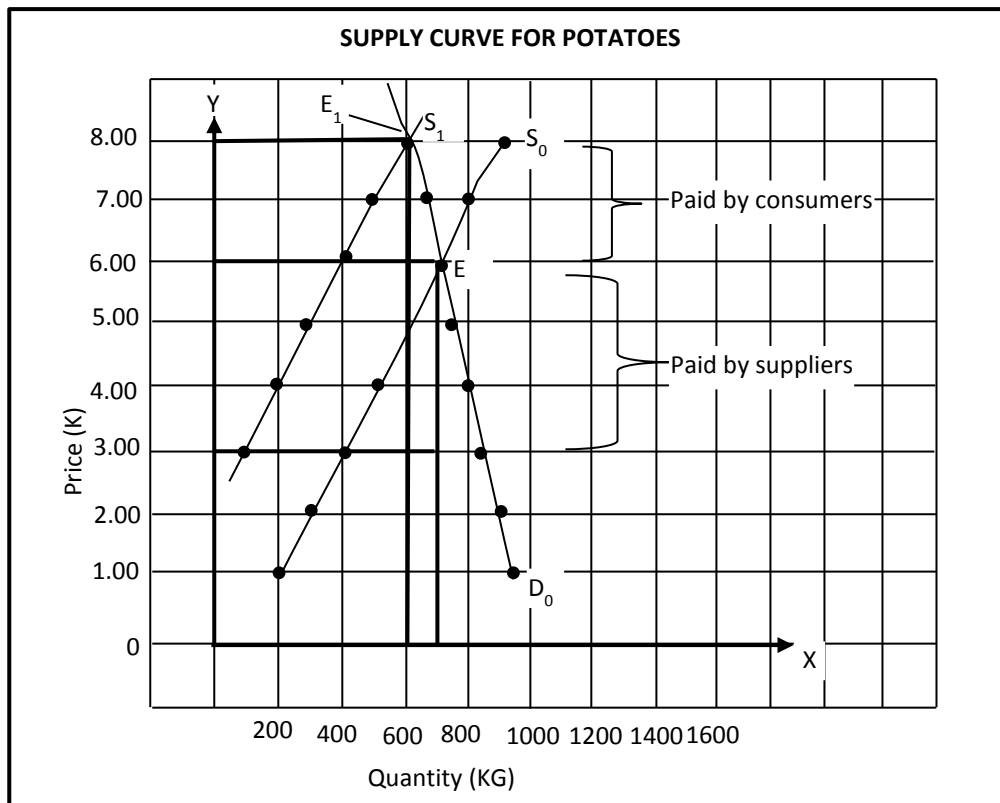
- (a) Sales tax is a tax or duty that the government places at their final point of sale.  
(b) Subsidy is a payment by the government to producers to encourage production and consumption and lower prices affordable to the consumers.  
(c) Price Control is a law set by the government setting the maximum price that can be charged for an item.  
(d) Price Support is the legal maximum price set to help producers sell their products.
- (a) The initial OPEC stands for Organization of Petroleum Exporting Countries
- (a) Excess demand is a situation where demand is higher than the supply creating shortage.



(b) Excess Supply is a situation where supply is more than demand creating surplus.  
4.

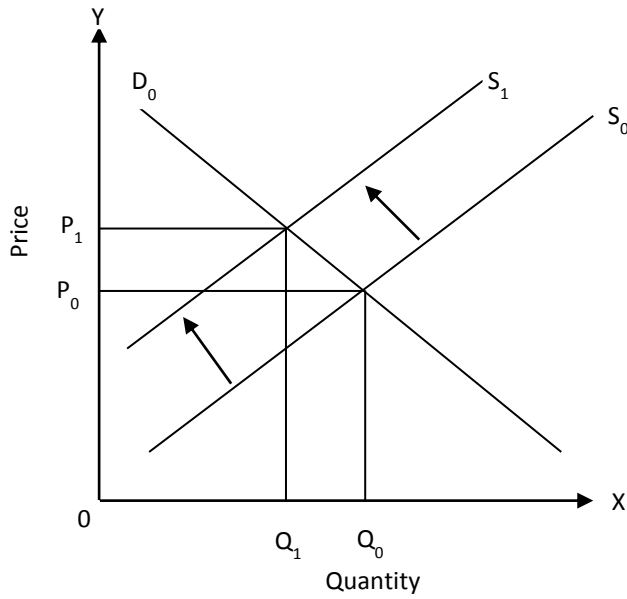
Methods Imposed	Reasons
Sales tax	To help government earn its revenue and restrict production and consumption of certain goods
Subsidy	To help producers
Price control	To protect consumers
Price support	To support suppliers
Minimum wages	To protect workers

5.

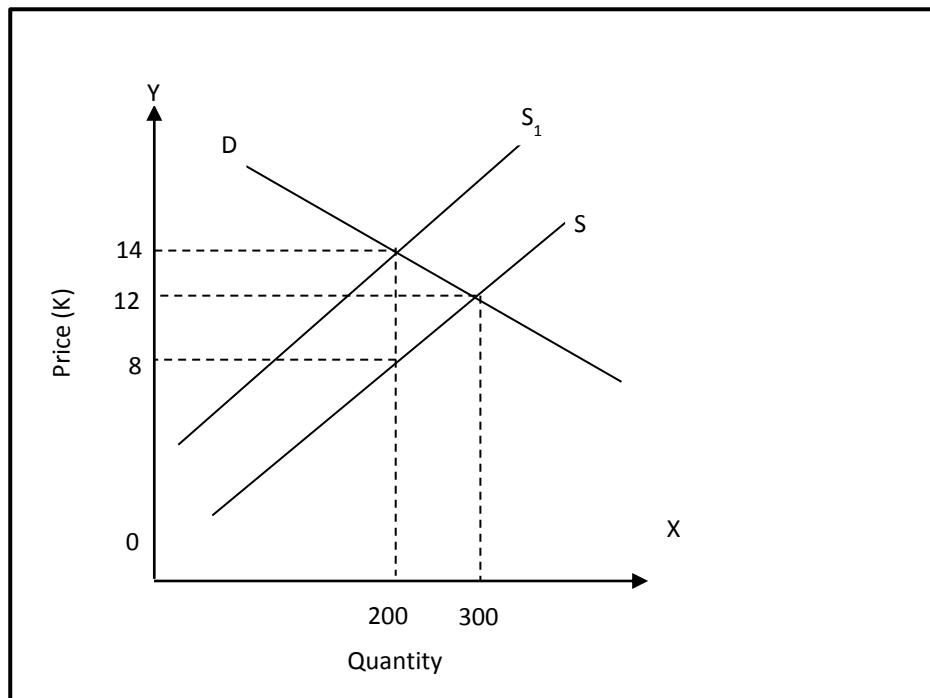




6.



7.



Consumers will benefit the most since they will pay less tax (K2.00) compared to the supplier whilst suppliers will decrease the supply of their product since they will pay an excess of K4.00 as tax.



### Learning Activity 11.3.5

1. Market is any place or process involved with the exchange of goods and services
2. Homogenous products are products that have little or no differentiation in their quality, shape, size, color, designer and packaging.
- 3.

Types of market	Features	Advantages	Disadvantages
Perfect market	<ul style="list-style-type: none"><li>-Prices are set by the market forces of demand and supply</li><li>-Large number of sellers who are price takers</li><li>-No barrier to entry or exist in this market type</li><li>-Sellers sell their products at given set price</li><li>-Perfect knowledge in the market place</li><li>-Large number of buyers none of whom can influence prices</li><li>-All sellers sell identical products</li></ul>	<ul style="list-style-type: none"><li>-freedom of entry and exist</li><li>-perfect knowledge of buyers and sellers on market prices and conditions.</li></ul>	<ul style="list-style-type: none"><li>- Sellers must sell their products at set prices, no more or no less.</li></ul>
Monopolistic competition	<ul style="list-style-type: none"><li>-Many firms</li><li>-Product differentiation</li><li>-Freedom of entry and exist of entry</li><li>-Non-price competition</li></ul>	<ul style="list-style-type: none"><li>-Slightly differentiated products</li><li>-if price is lowered, it is able to pick up sales from its rivals</li></ul>	<ul style="list-style-type: none"><li>-If firms raise its products, it will lose some to its rivals.</li><li>-Firms tend to spend a lot more money on advertisement and packaging.</li></ul>
Oligopoly	<ul style="list-style-type: none"><li>- A relatively small number of firms in the industry</li><li>-Differentiate products</li><li>-Mutual</li></ul>	<ul style="list-style-type: none"><li>-Has more control over that dominate price.</li><li>-Consumers gain when there is price wars</li></ul>	<ul style="list-style-type: none"><li>- Firms try to predict the reactions of their competitors</li><li>-When oligopoly</li></ul>



	<p>interdependence of business</p> <ul style="list-style-type: none"> <li>-High barriers to entry due to economies of scale</li> <li>-Businesses in the market earn supper profits in the long run</li> </ul>	<p>between firms.</p>	<p>firms reduce their prices this will greatly affect the sales of their rival business.</p> <ul style="list-style-type: none"> <li>-Entry of new firms in to the industry would force profit down.</li> <li>-Oligopoly avoids price comparison</li> <li>-When price wards end consumers will suffer with prices at extremely high level.</li> </ul>
Duopoly	<ul style="list-style-type: none"> <li>-Two sellers</li> <li>-Entry into the market is restricted</li> <li>- Little difference in the market</li> <li>-Sellers have control over price</li> </ul>	<ul style="list-style-type: none"> <li>-Firms have complete control over price and gain huge profit</li> <li>-the price wars of the two firms lowers prices thus helping the consumers</li> </ul>	<ul style="list-style-type: none"> <li>- Massive and expensive advertisement</li> <li>-Freedom of entry into market is restricted</li> <li>-Continuous price may lead to profit loss for business as they try to outsmart each other</li> </ul>
Monopoly	<ul style="list-style-type: none"> <li>-Strong barriers to entry</li> <li>-Imperfect knowledge</li> <li>- No advertising</li> <li>-One seller</li> <li>-No close substitute</li> <li>-Strong control over price and quantity</li> </ul>	<ul style="list-style-type: none"> <li>-Firms with large markets are able to earn considerable excess profit.</li> <li>-Can sometimes benefit consumers.</li> </ul>	<ul style="list-style-type: none"> <li>-Fewer consumers tend to be satisfied with monopoly than with competition</li> <li>-too few resources are utilized</li> <li>-Market is difficult to enter.</li> </ul>
Monopsony	<ul style="list-style-type: none"> <li>-Many sellers</li> <li>-One buyer</li> <li>-Freedom of entry into market is free</li> <li>-Goods are homogenous</li> <li>-buyers have considerable power over price</li> </ul>	<ul style="list-style-type: none"> <li>-One buyer who has control over price and can earn significant profit.</li> </ul>	<ul style="list-style-type: none"> <li>-Sellers are price-takers</li> </ul>



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3. O'Neil Edgar, 'Principles of Economics', 1996, Dellasta Pacific, Victoria, Australia.





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2	KEREMA	P. O. Box 86, Kerema	72228124	77522842	Mr David Saria	72229049
3	CENTRAL	C/- FODE HQ	72228110	77522843	Mr Aubi Elodo	72229050
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**SUBJECTS AND GRADE TO STUDY**

Grade Levels	Subjects
<b>Grades 7 and 8</b>	1. English Language
	2. Mathematics
	3. Science
	4. Social Science
	5. Making a Living
	6. Personal Development
<b>Grades 9 and 10</b>	1. English
	2. Mathematics
	3. Science – Biology/Chemistry/Physics
	4. Social Science
	5. Business Studies
	6. Personal Development
	7. Design and Technology- Computing
<b>Grades 11 and 12</b>	1. English - Applied English/Language and Literature
	2. Mathematics - Mathematics A/Mathematics B
	3. Science – Biology/Chemistry/Physics
	4. Social Science – History/Geography/Economics
	5. Business Studies
	6. Personal Development
	7. ICT

**REMEMBER**

- For **Grades 7 and 8**, you are required to do all six (6) courses.
- For **Grades 9 and 10**, you must study English, Mathematics, Science, Personal Development, Social Science and Commerce, Design and Technology-Computing is optional.
- For **Grades 11 and 12**, you are required to complete seven (7) out of thirteen (13) courses to be certified.
- For **Matriculation**, you must successfully complete 8 courses; 5 core and 3 optional courses.

**Matriculation Certificate**

**CORE COURSES**

- Basic English
- English 1
- English 2
- Basic Maths
- Maths 1
- Maths 2
- History of Science & Technology

**OPTIONAL COURSES**

- Science Stream:  
Biology, Chemistry and Physics
- Social Science Stream:  
Geography, Introduction to Economics, and Asia and the Modern World