Economics Theme 1

Introduction to Markets and Market Failure

Course companion 2

Teacher 1

Demand & Supply

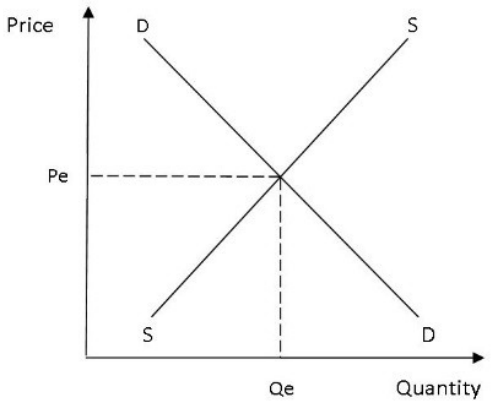
Price determination

Consumer and producer surplus

Price elasticity of demand & supply

Income elasticity of demand

Cross elasticity of demand



Name: **Teacher:**

Tutor group:

PLEASE BRING YOUR COURSE COMPANION ALONG TO ALL LESSONS

Key Terms

Market	Any convenient set of arrangements by which buyers and sellers communicate to exchange goods and services
Ceteris paribus	The assumption that all other variables within the model remain constant whilst one change is being considered. 'All other things being equal.'
Demand	The quantity of a good or service that consumers are willing and able to buy at a given price
Demand curve	A graph showing how much of a good will be demanded by consumers at any given price.
Effective demand	Willingness to buy at a given price, backed by the ability to do so 'willing and able'
Law of demand	A law that states that there is an inverse relationship between quantity demanded and the price of a good or service, ceteris paribus
Extension of demand	Price fall causes an increase in quantity demanded (ceteris paribus). A movement along the demand curve.
Contraction of demand	Price rise causes a fall in quantity demanded (ceteris paribus). This is a movement along the demand curve.
Movement along the demand curve	Caused by price changes
Shifts of demand curve	Factors which cause the whole demand curve to shift - an increase or decrease in demand. (e.g. TISC)
Disposable income	Disposable income is defined as income after taxes have been paid and benefits received
Substitutes	Two goods where the quantity demanded for good A is likely to rise if the price of good B rises. (e.g. Xbox and Playstation)
Complements	Two goods where if the price of good A rises, the quantity demanded for good B falls. E.g. Cereal and milk.
Supply	The quantity supplied (QS) is the amount producers are willing and able to supply at any given price.
Supply curve	A graph showing the quantity supplied by a firm at any given price.
Total revenue	The income gained from selling a product. Price x quantity sold
Profit/loss	Total revenue – Total costs
Production costs	Costs which firms must pay to provide a good or service, they can be fixed or variable costs
Movement along supply curve	A price change will result in a movement along the supply curve
Extension of supply	A price rise will cause a movement along the supply curve to the right (a rise in quantity supplied)
Contraction of supply	A price fall will cause a movement along the supply curve to the left (a fall in quantity supplied)
Shifts of supply curve	Changes in any of the factors other than price cause the entire supply curve to shift
Indirect tax	A tax on expenditure. 2 types: specific and ad valorem.
Subsidies	A government grant given to producers in order to encourage production
PED definition	The responsiveness of quantity demanded to a change in the price
Price elastic demand	The % change in price will lead to a greater proportionate change in QD
Price inelastic demand	The % change in price will lead to a smaller proportionate change in QD

Unitary elastic demand	A % change in price will lead to the same % change in QD
PES definition	The price elasticity of supply measures the responsiveness of supply to a change in price
Price elastic supply	The percentage change in supply is greater than the percentage change in price of the good.
Price inelastic supply	The percentage change in supply is less than the percentage change in price of the good.
YED definition and formula	The responsiveness of quantity demanded to a change in income
Normal goods	A good for which quantity demanded increases when consumer income increases. Positive YED
Inferior goods	A good for which quantity demanded decreases when consumer income increases, e.g. value brands, bus journeys. Negative YED
Luxury goods	A good for which as income rises, consumers spend proportionally more on the good, e.g. foreign holidays, luxury cars. YED is positive and > 1 for luxury goods
XED definition and formula	The cross elasticity of demand measures the responsiveness of demand for one good following the change in the price of another good
Positive XED	The two goods are substitutes
Negative XED	The two goods are complements.
XED = 0	There is no relationship between the 2 goods
Price mechanism	The mechanism through which price is determined in a free market system
Invisible hand	Term used by economic thinker **Adam Smith** to describe the way in which resources are allocated in a market economy to the advantage of everyone – free market forces of demand and supply
Market equilibrium	The equilibrium price and quantity is determined by the intersection of the demand and supply curve. i.e. it is where QD = QS
Excess supply	When price is set above the equilibrium price, there will be too much supply in relation to demand (S>D). (Surpluses, gluts)
Excess demand	When price is set below the equilibrium market price leading to a situation where demand > supply. (Shortages, queues)
Short run	A period in which at least one factor of production is fixed
Long run	A period of time in which all factors of production are variable
Consumer surplus	The difference between the amount a consumer is willing to pay and the amount they actually pay for the good
Producer surplus	The difference between the price producers are willing to supply a good for and the actual market price

Demand and supply

Markets

A market is any convenient set of arrangements by which buyers and sellers communicate to exchange goods and services. Buyers **demand** goods from the market whilst sellers **supply** goods to the market.

Examples of markets:

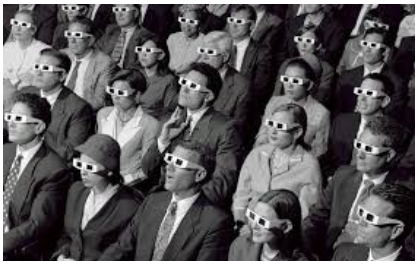
Demand

The quantity demanded is the quantity of a good that consumers wish to buy at a given price.

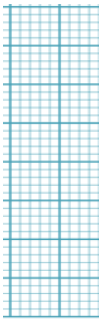
Constructing an **individual demand curve** for cinema tickets:

How many cinema tickets would you be prepared to buy at the following prices?

Ticket price (£)	Number of visits (annual)
6	
8	
10	
12	
14	
16	



Plot your individual demand curve with Price (P) on the Y axis and Quantity demanded (QD) on the X axis:



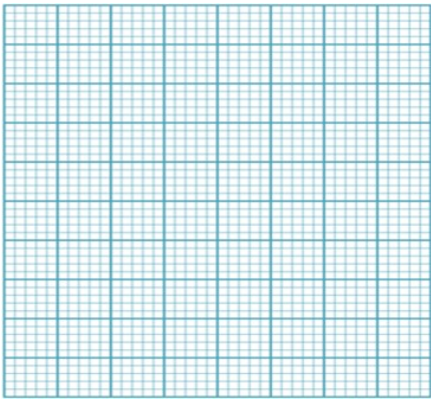
How would you explain this relationship between price and QD?

Constructing a **market demand curve** for chocolate bars

Market demand is the **sum** of all individual demand curves. Suppose the following figures represent the demand for chocolate bars of all consumers in the UK.

Price (P)	Quantity demanded (QD)
10	90
20	70
30	50
40	30
50	10

On graph paper, plot price on the y-axis and plot Quantity Demanded/Supplied on the x-axis.



'ACE' your diagrams:

Remember to label:

Axes

Curves

Equilibrium (price and quantity)

Explaining the downward-sloping demand curve

The law of demand states that there is **an inverse relationship** between quantity demanded and the price of a good or service, ceteris paribus. If the average price of a car were to fall from £15,000 to £10,000, then quantity demanded of cars would rise and vice versa. The demand curve is downward sloping from left to right, showing that as price falls, quantity demanded rises and vice versa. The demand curve shows the quantity demanded at any given price. The demand curve shows **effective demand**, i.e. how much consumers are willing and able to buy, not how much they would like to buy if they had unlimited resources. The concept of **diminishing marginal utility** also influences the shape of the demand curve. (We will look at this later).

Extension work:

Economists argue that the inverse relationship between price and quantity is true of nearly all goods. However, there are a few examples of goods which might have upward sloping demand curves, e.g. Giffen goods.

Income and substitution effects and the downward sloping demand curve:

Consumers will buy more of a cheaper product as they can afford to buy more with their income (income effect) and the good has become cheaper relative to other products (substitution effect)

Extension reading: Income and substitution effect; Giffen goods: Sloman ch 2; Anderton p81 

Supply

The quantity supplied is the quantity of a good that suppliers wish to sell at a given price. As the price rises, firms will have an incentive to produce more of a good. This relationship can be illustrated using a supply curve.

Plot the following figures on the **same diagram** on which you have drawn the demand curve above. (We will look at supply in more detail later)

Price (P)	**Quantity Supplied (QS)**
10	10
20	30
30	50
40	70
50	90

Equilibrium price

The equilibrium price is where demand is equal to supply. In your diagram, what is the

equilibrium price? _____ equilibrium quantity? _____

Price mechanism

The functions of the price mechanism are **signalling, incentives and rationing (SIR)** The market forces will cause price to adjust until demand = supply. Adam Smith called this the 'invisible hand' of the market. (We will look at functions of price mechanism again later)

Open University video clip - 60 seconds adventure in economics – to illustrate the invisible hand

https://www.youtube.com/watch?v=ulyVXa-u4wE

Operation of market forces to eliminate excess demand and excess supply:

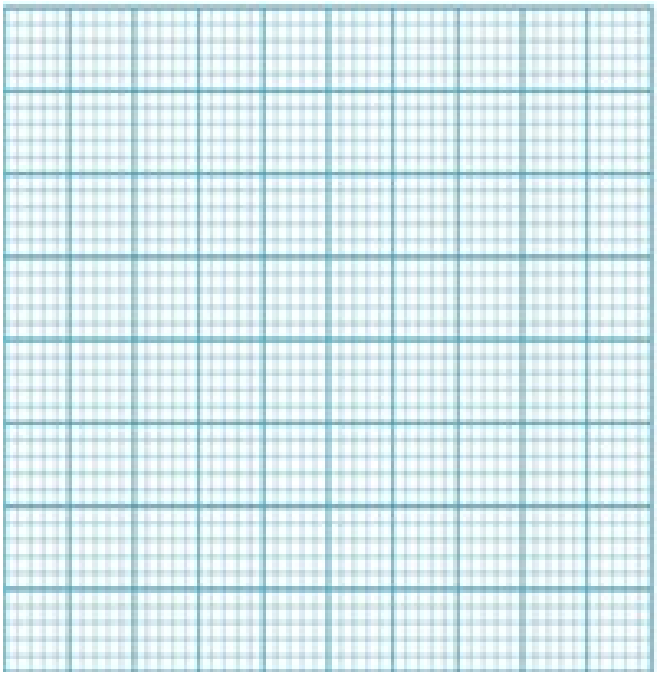
It is called equilibrium price because when supply and demand are equal there is no tendency for price to change. If the price is ever above or below equilibrium, then there will always be a movement towards equilibrium.

To see why this is the case, consider the following:

The demand and supply schedule for mushrooms:

Price 000s kilos (£)	**Quantity demanded (QD)**	**Quantity Supplied (QS)**
50p	100	20
£1.00	80	40
£1.50	60	60
£2.00	40	80
£2.50	20	100

i) Construct a demand and supply diagram using the above figures. Label your axes and curves accurately, clearly showing the equilibrium price and quantity.



Equilibrium price =

Equilibrium quantity =

ii) Set the market price at £2 on your diagram

What is the QD at this price? _____

What is the QS at this price? _____

Calculate the excess supply at this price _____

What does excess supply lead to? _____

How will firms behave in this situation? _____

In this case, there would be **excess supply** of the good. (Supply greater than demand). This would lead to **surpluses** or gluts. In this case, price will tend to fall back to equilibrium, eliminating the surpluses.

iii) Set the market price at £1 on your diagram

What is the QD at this price? _____

What is the QS at this price? _____

Calculate the excess demand at this price _____

What does excess demand lead to? _____

How will firms behave in this situation?

_____

In this case, there would be **excess demand** for the good. (Demand greater than supply). This would lead to **shortages** or queues and disappointed customers. Price will tend to go back up to equilibrium (this is the rationing function of the price mechanism).

Movements along the demand curve

A price change will result in a movement **along** the demand curve. A price rise will cause a movement **along** the demand curve to the left. This is called a **contraction** of demand (fall in quantity demanded). This assumes 'ceteris paribus', i.e. that other factors are held constant, such as income.

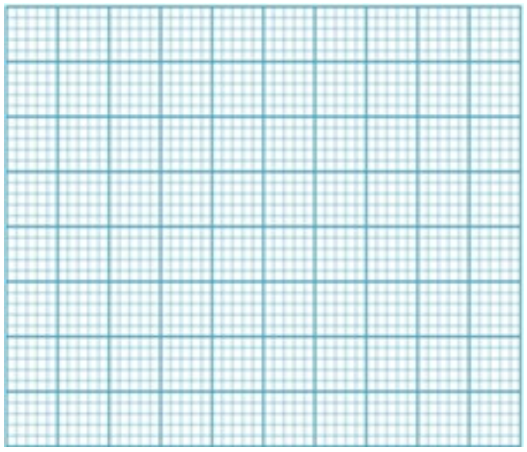
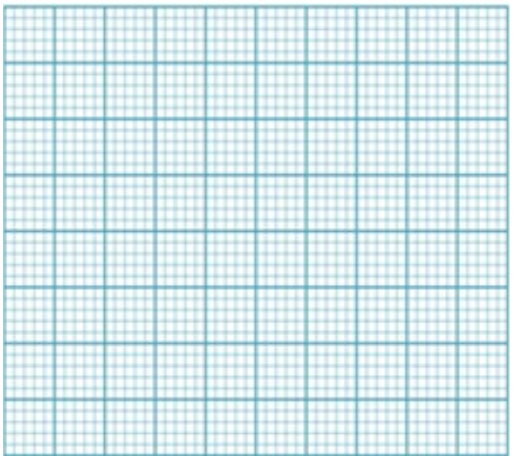
A price fall will cause a movement **along** the demand curve to the right. This is called an **extension** of demand (rise in quantity demanded) – assuming ceteris paribus.

Draw a demand diagram to show:	
An extension of demand:	**A contraction of demand:**

Shifts of the demand curve

The demand curve is drawn assuming **ceteris paribus**. This means that all factors affecting demand are held constant, except the price.

Changes in any of the factors **other than price** cause the demand curve to shift position. For example, if there is a change in income, this will affect quantity demanded at any given price.

Draw diagrams to show:	
An increase in demand: 	**A decrease in demand:** 

Factors that cause the demand curve to shift (the conditions of demand)

An increase in demand means that the quantity demanded will rise at any given price. This will cause the demand curve to shift to the _____ A fall in demand means that the quantity demanded will fall at any given price. This will cause the demand curve to shift to the _____. There are several factors that may cause the demand curve to shift:

Changes in real income

Disposable income is defined as income after taxes have been paid and benefits received. If there is a rise in income the demand for a good will rise and if there is a fall in income the demand for a good will fall.

What factors would cause a rise in disposable income?

Changes in tastes and fashions

The demand for a good may rise if it becomes more fashionable or if there is a successful advertising campaign. On the other hand, a health scare may cause the demand for a good to fall.

Give examples of goods that have risen in demand in recent years

Prices of other goods

Substitutes

Substitutes are goods that can be consumed as an alternative. They are in *competitive demand*. For example, a substitute for beef could be lamb. If the price of lamb increases, the demand for beef will _____

Give 3 examples of goods which are substitutes (try to give examples of goods rather than brands):

Complements

Complements are goods that are consumed together. For example, pasta and pasta sauce. If the price of pasta increases the demand for pasta sauce is likely to

Give 3 examples of goods which are complements (try to give examples of goods rather than brands):

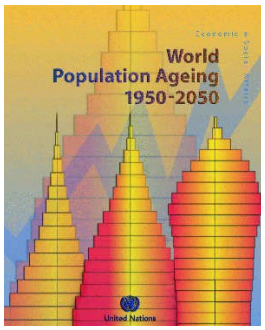
Other factors:

Advertising and branding

Advertising has a very powerful influence on consumer demand as it seeks to influence consumer choice.

Changes in the size and age distribution of the population

An increase in population is likely to _____ demand for goods. A fall in population is likely to lead to a _____ in the demand for goods. Changes in population (or 'demographic') structure is also likely to influence demand patterns. For example, an ageing population would lead to an increase in demand for age-related products, for example, winter cruises, stair-lifts. More students in the population would lead to an increase in demand for student housing.



Social trends:

The rise in the number of single households could increase the demand for goods and services such as _____

Can you think of any other social trends which might affect spending patterns?

Expectations of future prices

If consumers expect the price of a good to rise in the future, current demand is likely to _____. If consumers expect the price of a good to fall in the future, current demand is likely to _____ .

Examples:

Task:

Sketch some demand curves for the following situations, and think about how you would expect the demand curve to change (if at all):

a the demand for chocolate following a campaign highlighting the dangers of obesity

b the demand for oranges following an increase in the price of apples

c the demand for oranges following a decrease in the price of oranges

d the demand for Blu-ray discs following a decrease in the price of Blu-ray players

e the demand for private transport following an increase in consumer incomes

f the demand for public transport following an increase in consumer incomes

(a)L	(d) R (complements, -ve)
(b)R (if subs, +ve)	(e) R (normal/luxury)
(c) CAREFUL!!! extension of demand NOT decrease! (movement along demand curve)	(f) L (inferior? Except into London!)

Extension and further reading:

Anderton Unit 6; Economic Review Sept 13 – 'Demand and Supply'

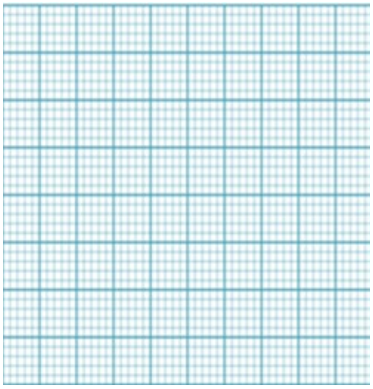
SUPPLY

The supply curve is upward sloping from left to right.

The supply curve has a **positive** relationship between quantity and price. In a competitive market, the higher the price the more suppliers are willing to produce as we assume firms are **profit maximisers.** As the price of a good rises, suppliers will have an incentive to increase their quantity supplied as they will gain a higher revenue for each unit they sell. The underlying assumption of rational economic decision making is that firms aim to maximise PROFIT. The supply curve slopes upwards from left to right because, as price rises, rational profit maximising producers will supply more because profits should rise.

The supply curve

Price (P)	Quantity supplied (QS)
2	10
4	20
6	30
8	40
10	50



a) Why is the supply curve upward sloping from left to right?

P rises, QS rises (direct relationship) and vice versa

b) Why is there a positive relationship between quantity supplied and price?

Profit maximisers

c) Profit is calculated by:

TR - TC

d) The definition of revenue is:

P x Q

e) If revenue exceeds cost, then a _____is made. If costs exceed revenue, a _____ is made. The higher the price that firms can achieve, the bigger the profits (depending on costs).

Extension: Example to explain the shape of the supply curve:

There are five copper mines in the southern African country of Symondia. The price of copper fluctuates on the world market and copper deposits are only mined if the price that the copper can be sold for on the world market **exceeds** the cost of mining it. Mining costs vary between the five mines. Each mine produces **200** tonnes of copper per month when in use.

Calculate the production costs for each mine below, the first has been done for you…

Mine	**Mining cost per tonne ($)**	**Cost ($)**
Symond Rift	1,600	1,600 x 200 = 320,000
Diggin Deep	2,900	
Tennyson	2,400	
Cedar	900	
Anglo-Symond	1,200	

Calculate the revenue at each price for the mines below, the first has been done for you…

Price per tonne ($)	Revenue = Price x output (200 tonnes) ($)
1,000	1,000 X 200 = 200,000
1,500	
2,000	
2,500	
3,000	

Copper deposits are **only** mined if the price that the copper can be sold for on the world market exceeds the cost of mining it.

Complete the following table:

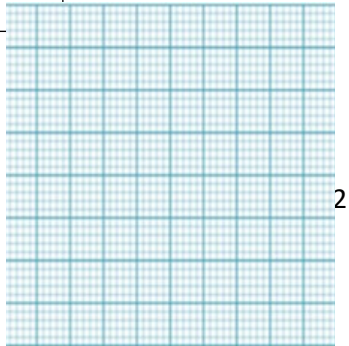
	Cost of producing 200 tonnes	At what price does each mine make enough revenue to cover costs?
Symond Rift	320,000	2,000 (at this price revenue is $400,000, so costs are covered)
Diggin Deep		
Tennyson		
Cedar		
Anglo-Symond		

Complete the chart below showing how much copper will be supplied in total at the following prices on the world market:

Price per tonne ($)	Which companies will be prepared to supply 200 at the following prices?	Tonnes supplied per month (total)
1,000	Cedar	200
1,500		
2,000		
2,500		
3,000		

1) Which mine is a) most efficient ……

b) least efficient?.....



2) Explain your answers

3) Use the data in the chart above to draw a supply curve

Stretch yourself:

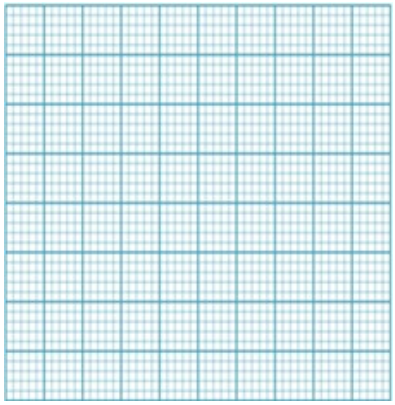
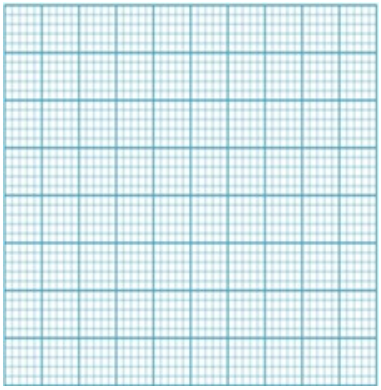
Calculate the monthly profit when the world price of copper is $2,000 per tonne, for a) cedar and b) Anglo-Symond:

Movements along the supply curve

As with the demand curve, there are other factors affecting the quantity supplied. This means that all factors affecting supply are held constant, except the price.

A price change will result in a movement **along** the supply curve. A price rise will cause a movement along the supply curve to the right. This is called an **extension** of supply (increase in quantity supplied).

A price fall will cause a movement **along** the supply curve to the left. This is called a **contraction** of supply (fall in quantity supplied).

Draw diagrams to show:	
An extension of supply:	**A contraction of supply:**
	

Shifts of the supply curve

The supply curve represents the quantity of a good that suppliers wish to sell at any given price. As the price of a good rises, suppliers will have an incentive to increase their quantity supplied as they will gain a higher revenue for each unit they sell. Therefore, the supply curve slopes upwards from left to right. The supply curve is drawn **ceteris paribus**. This means that all factors affecting supply are held constant, except the price. If there is a change in a relevant factor other than the price then the supply curve will shift position. If there is a change in production costs, this will affect the quantity supplied at any given price.

Draw diagrams to show:

An increase in supply:	A decrease in supply:

Factors causing the supply curve to shift (The conditions of supply)

1. **Change in production costs**

If there is a rise in the cost of the factors of production (land, labour or capital), then the supply curve will shift to the _____ because producers will try to pass on the additional cost as higher prices to the consumer. If they cannot charge higher prices, then profits will fall and firms will produce less of the good or even stop producing it altogether.

_____

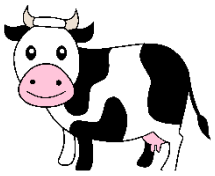
2. **Improvement in production methods, e.g. introduction of new technology**

The use of new machinery, computers or production methods may reduce the cost of production. This may cause the supply curve to shift to the _____ because each quantity may be supplied at a _____ price.

3. Changes in prices of other goods

For example, barley may be grown as an alternative to wheat. Farmers may switch from producing wheat to producing barley if the price of barley increases. Therefore, the supply of wheat will _____ and the supply of barley will _____

4. Goods in joint supply



A good is in joint supply with another when it is supplied for two different purposes. A _____in the price of beef will lead to an increase in the supply of leather. This is because farmers will produce more cattle if the price of beef _____

5. Weather or natural disasters

The supply of some goods, such as agricultural crops may be very dependent upon factors such as rain, temperature, floods, natural disasters. E.g. favourable weather may lead to a bumper crop. This would lead to a _____ in supply

6. The aims and objectives of producers

A firm's strategy/objective may be to increase market share even if this means reducing prices and also profit margins in the short run. If a business aims to increase market share then the supply curve of that company would shift to the _____

7. Expectations of future prices

If firms expect the price of a good to rise in the future, there are potentially two opposite effects. Firms may decide to increase stocks. This will mean that current supply will _____as firms store goods for the future. Alternatively, if firms believe prices will rise in the future, they may increase capacity by acquiring additional labour, fixed capital, components and raw materials. This will enable the firm to produce more efficiently and therefore, the supply curve will shift to the _____

8. Indirect taxes and subsidies

A subsidy is a government grant given to firms. This will enable firms to produce a given quantity at a _____ price. A subsidy reduces production costs. Therefore, the supply curve will shift to the _____Indirect taxes such as VAT (an ad valorem tax) and excise duty (a specific, unit tax) are taxes on expenditure collected by the firm and have to be paid by the firm to the government. Indirect taxes will increase production costs. If a tax on a particular good increases, then firms would have to pass on the cost to the consumer (this will depend on price elasticity of demand which we will look at later). The supply curve would shift to the _____ (We will be studying indirect taxes and subsidies later)

9. New firms enter or leave the industry

If new firms enter an industry, maybe to take advantage of profits, supply will increase. If firms decide to leave, maybe due to falling profits, supply will _____

10. An increase in the factors of production, e.g. labour

If there is an increase in labour, e.g. due to immigration, this is likely to increase supply as more workers become available

Using supply and demand diagrams to show how shifts in demand and supply curves cause equilibrium price and quantity to change:

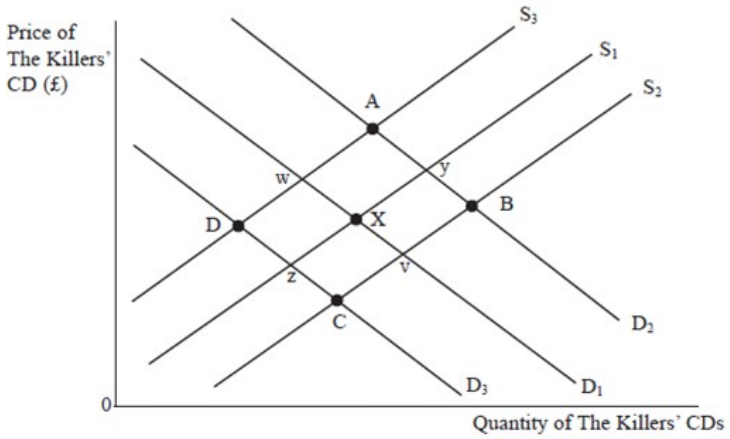
Draw demand and supply diagrams for each of the scenarios below in the WHEAT market. In each case, fully label your axes, curves and initial and new equilibrium points. **Explain the effects on price and quantity in each case:**

1. Wage rises for agricultural workers **Increased CoP, S curve shifts left; increase in Yd shifts D curve right**	2. An increase in demand for weetabix following a successful advertising campaign by Kelloggs. **D curve shifts left (demand for wheat is derived from Weetabix)**	3. A spell of wet weather damages the wheat crop **S curve shifts left**
4. A fall in the price of wheat fertiliser **S curve shifts right**	5. There is a significant increase in the price of barley **S curve shifts left as wheat and barley in COMPETITIVE SUPPLY**	6. A fall in demand for wheat products following health scares about gluten **D curve shifts left**

Exam practice for section A:

a)

Market for The Killers' CDs



The diagram shows the demand for and supply of The Killers' latest CD. The band embark on a successful concert tour of Europe and at the same time there is an increase in the cost of producing CDs.

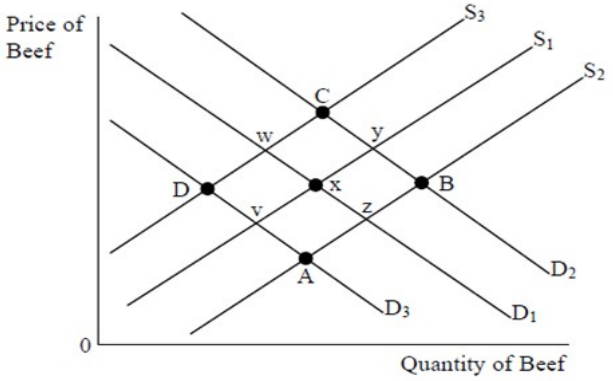
If the initial equilibrium point is X, which of the following points, **A**, **B**, **C**, **D** shows the likely new equilibrium point for the album?

(a) **Answer** ☐

(1)

b)

Market for Beef



The diagram relates to the market for beef, a substitute for chicken. The initial equilibrium position is indicated by point X.

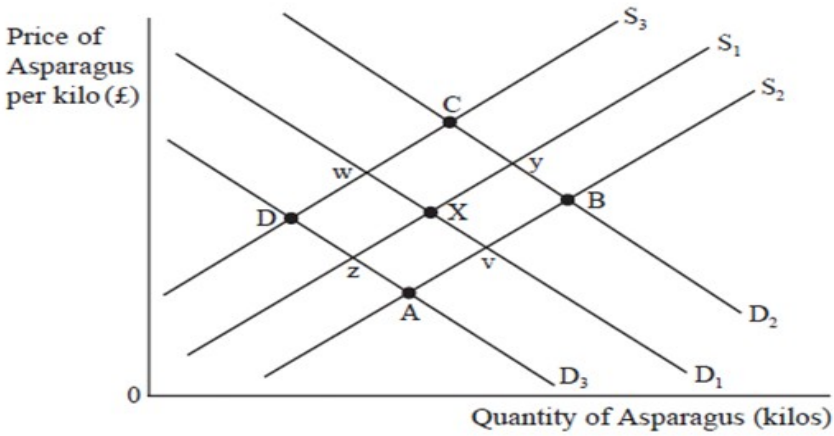
An outbreak of Bird Flu results in the demand for chicken falling and, at the same time, the ban on the sales of beef older than three years is removed. What will be the new equilibrium point (**A**, **B**, **C or D**)?

(a) **Answer** ☐

(1)

c)

Market for Asparagus



The diagram shows the market for asparagus. The initial equilibrium position is indicated by point **X**.

Following a successful advertising campaign for asparagus by the celebrity chef Jamie Oliver and a sustained period of rain which damaged the asparagus crop, what would be the new equilibrium point (**A**, **B**, **C** or **D**)?

(a) **Answer** ☐

(1)

Using demand and supply diagrams, explain the effects on the XBOX market of the following. **In each case, show the change in equilibrium price and quantity:**

1.Increased advertising budget for XBOX	2. An increase in production costs at XBOX factory	3. Government survey linking violent crime with excessive game playing
4. Fall in the retail price of PSP games consoles	5. Rise in productivity in Microsoft factory due to introduction of new technology	6. Fall in the price of raw materials used in XBOX production

The market for oil

Watch the clip from CNN News - Why are oil prices rising?

http://money.cnn.com/video/news/2018/05/04/why-are-oil-prices-rising-orig.cnnmoney/index.html

Exam practice:

Explain why the price of oil is rising. Include a supply and demand diagram in your answer.

(5 marks)

_____

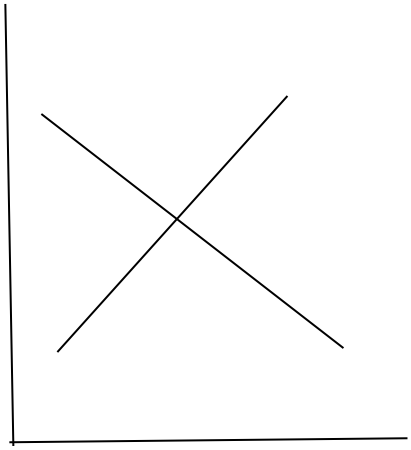
_____

_____

_____

_____

_____



Link to article on tutor 2u – price of vanilla

https://www.tutor2u.net/economics/blog/why-vanilla-is-so-expensive

Kenyans cash in on avocado craze….

https://www.bbc.co.uk/news/world-africa-46035330

…..and fuels a crime wave in New Zealand:

https://www.bbc.co.uk/news/blogs-news-from-elsewhere-45169917

Interrelated markets, i.e. goods related to each other

Complements

Complements or goods that are in **joint demand** are two goods that are consumed *together*. If a consumer demands more of one good it is likely that more of a complementary good will also be demanded. For example, economic theory predicts that an increase in the quantity of cars demanded will lead to a rise in demand for petrol.

Substitutes

Substitutes or goods that are in **competitive demand** are two goods that are *alternatives* to the consumer. For example, economic theory predicts that an increase in the price of tea will result in an increase in the demand for coffee.

Derived 

demand

Many goods are demanded because they are needed in the production of other goods. The demand for a good is derived from the demand for the good it produces. For example, an increase in the demand for cars, will result in an increase in demand for steel used in the production of cars. An increase in house building, will lead to an increase in demand for builders.

Extension: **Joint Supply**

A good is said to be in joint supply with another good when it is supplied for two different purposes. This often occurs when a good is produced as a by-product in the production of another good. For example, a fall in the demand for beef will result in a fall in the supply of leather as fewer cattle are reared. Another example is the diversion of land used in supplying food to producing bio-fuels and the impact this has had on global food prices.

Extension: **Composite demand**

This is when a good is used for two or more purposes. Therefore, there is competition for the use of this good. If more of the good is used for one purpose, then less of this good is available for another purpose. For example, oil may be used to make petrol or chemicals. An increase in the demand for chemicals will result in a rise in the price of oil. Therefore, the cost of producing petrol will rise and there will be a fall in the supply of petrol.

Match the following pairs of goods with the terms described above:

Timber & wooden fencing	1. Complements
Leather & shoes	2. Substitutes
Oil & gas	3. Derived demand
Golf clubs & golf balls	4. Composite demand
Plastic & paper shopping bags	

Extension:

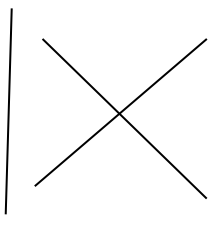
Milk for yoghurt & milk for cheese_____

Labour & capital _____

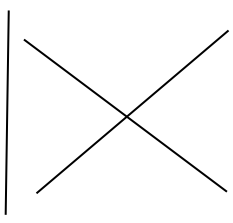
Interrelated markets – Explain the relationship between the goods in each case

1. Show the effects of an improvement in technology for car production on the diagrams below:

P



P

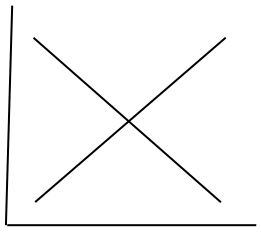


Q Cars

Q Petrol

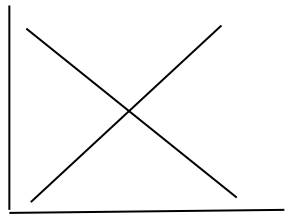
2. Show the effects of the failure of the Tea harvest on the diagrams below

P



Q Tea

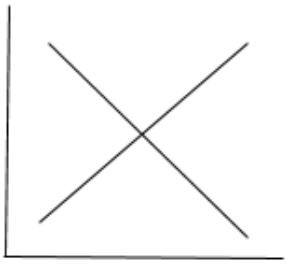
P



Q Coffee

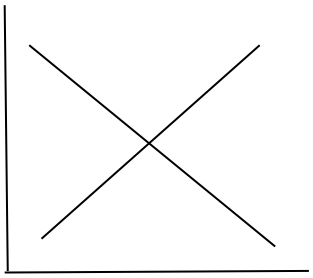
3. Show the effects of a change in tastes in favour of driving on the diagrams below:

P



Q Cars

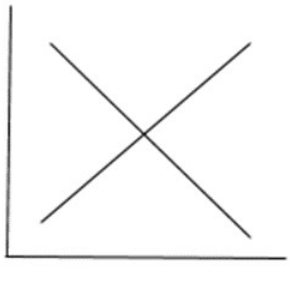
P



Q Steel

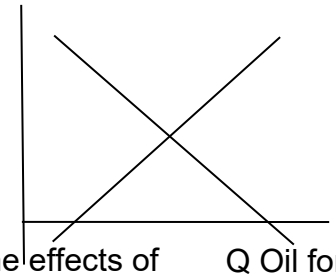
4. Show the effects of an increase in demand for chemicals on the diagrams below:

P



Q Oil for chemicals

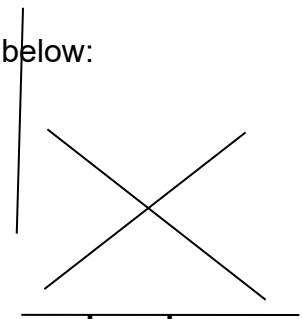
P



Q Oil for petrol

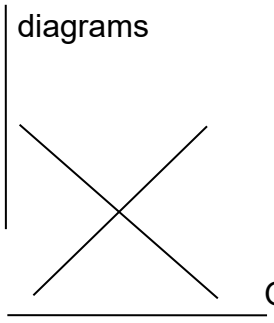
5. Show the effects of a beef health scare on the diagrams below:

P



Q Beef

P



Q Leather

Consumer and producer surplus

Consumer surplus is the difference between the amount a consumer is willing to pay and the amount they actually pay for the good. (Area between the market price and the demand curve). **Producer surplus** is the difference between the price producers are willing to supply a good for and the actual market price (area between the market price and the supply curve)

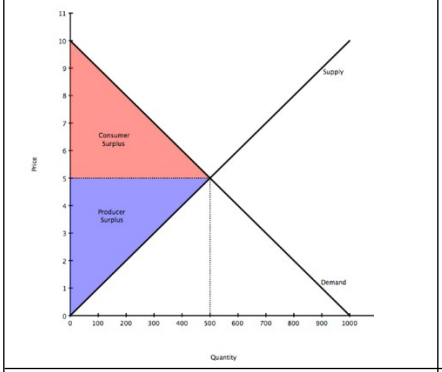
P

Q

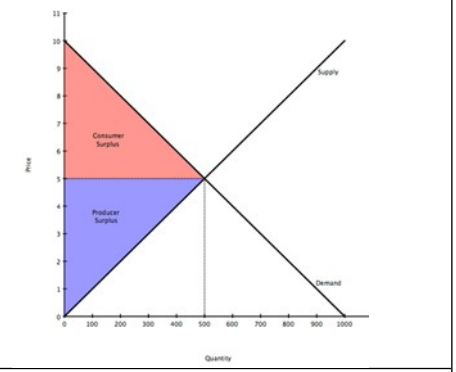
When there is a change in the demand or supply this will change the area of consumer and producer surplus.

Show changes in consumer and producer surplus if:

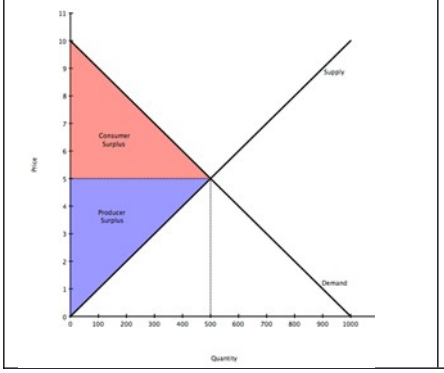
a) demand increases



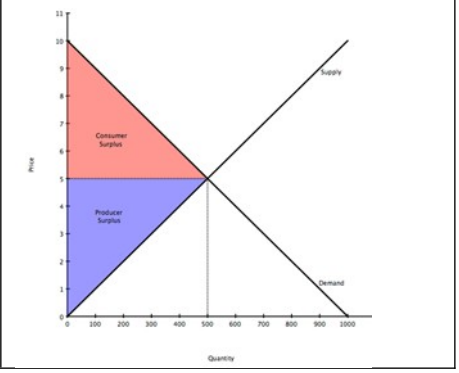
b) supply increases



c) demand decreases



d) supply decreases

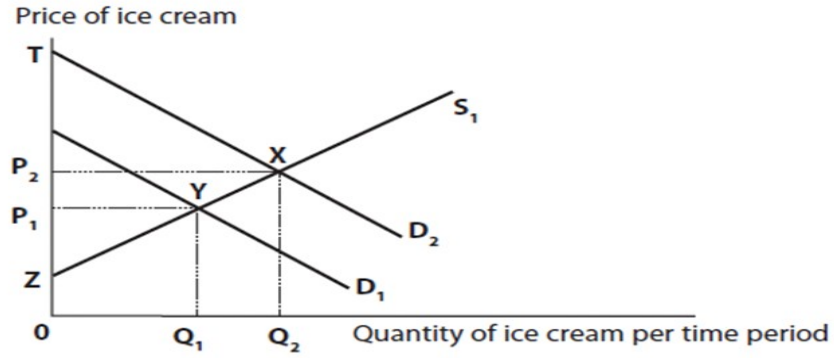


Watch the clip from economics online: ‘consumer and producer surplus’

http://www.economicsonline.co.uk/Videos.html

Exam practice for section A:

a)



The diagram shows the market for ice cream. In the winter demand is represented by D_1 and supply by S_1, with the equilibrium price at $0P_1$. In the summer demand increases to D_2, raising price to $0P_2$ and causing a gain in producer surplus equal to the area:

A P_2XT.

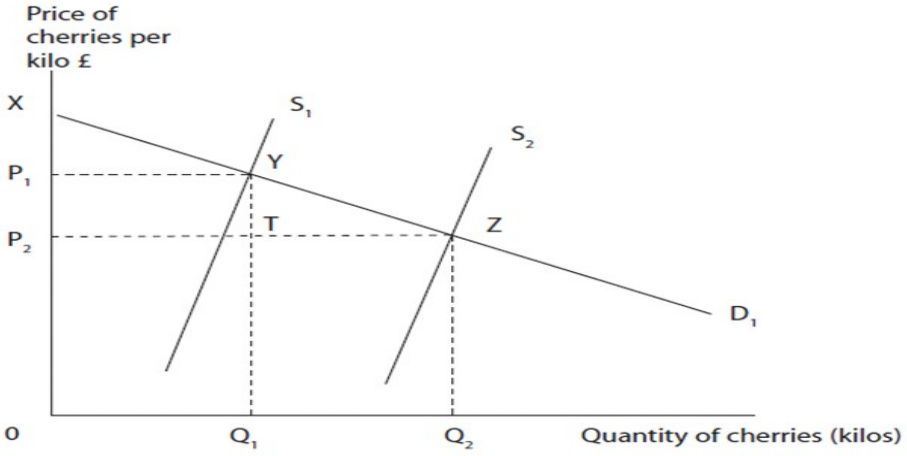
B P_1P_2XY.

C P_2XQ_20.

D P_1YZ.

(a) **Answer** ☐ (1)

b)



The diagram shows the market for cherries. In year 1 demand is represented by D_1 and supply by S_1. In year 2, the supply of cherries increases to S_2. This causes consumer surplus to increase to the area:

(1)

A XYP_1

B YTZ

C P_1YTP_2

D XZP_2

Answer ☐

Elasticity

A measure of the responsiveness of one variable to changes in another variable.

The law of demand states that as the price of a good rises, the quantity demanded will fall. However, when the price rises, **by how much** will the quantity demanded fall?

Suppose there is a 20% price increase in each of the goods listed below. Estimate whether you think the quantity demanded will fall by a greater or smaller % than the price rise of 20%. Justify your decisions:

1. Litre of unleaded petrol

2. Non-branded trainers

3. Nike trainers

4. Packet of 20 cigarettes

If the quantity demanded changes by a greater % than the price then demand is price _____

If the quantity demanded changes by a smaller % than the price then demand is price _____

What factors would determine if demand is price elastic or price inelastic?

You need to understand 4 types of elasticity, including price elasticity of demand (PED), income elasticity of demand (YED), Cross elasticity of demand (XED) and price elasticity of supply (PES).

Price elasticity of demand (PED)

Define:

PED formula:

You must know how to calculate a percentage change. This is how you do this:

You must always put quantity demanded on top and price underneath. You can remember it goes this way round using the following method (s):

Calculate the following:

A 10% increase in price leads to a 20% fall in QD

Calculate the following changes:

1. A price change from £10 to £12

2. A change in quantity demanded from 20,000 to 25,000

Interpretation of PED result

PED value	Elasticity	Explanation	Interpretation
PED > 1	Price elastic	The % change in price will lead to a **greater** proportionate change in QD	
PED < 1 (between 0 and 1)	Price inelastic	The % change in price will lead to a **smaller** proportionate change in QD	
PED = 1	Unit elastic	A % change in price will lead to the **same** % change in QD.	
PED = 0	Perfectly inelastic	The % change in price will lead to no change in QD	
PED = ∞ infinity	Perfectly elastic	QD is infinite at a particular price	

Use of negative numbers

The price elasticity of demand will always be a negative number because as price rises, quantity demanded falls or vice versa. There is an *inverse* relationship between price and quantity demanded. **Always ignore the negative sign when you interpret the answer to the price elasticity of demand.**

Calculate the following:

i) Calculate the price elasticity of demand if the price rises from £4 to £5 and the quantity demanded falls from 50 to 25 and interpret the result:

ii) Calculate the PED and interpret the result if the price rises from £8 to £10 and the QD falls from 50 to 45

iii) Calculate the PED and interpret the result if price rises from £15 to £20 and the QD falls from 100 to 90

Draw demand curves to show the following elasticities and in each case, indicate how much quantity demanded changes following a price **increase:**

Relatively price elastic demand:	Relatively price inelastic demand:

PED =	PED =
Perfectly price elastic demand: PED =	Perfectly price inelastic demand: PED =
Unitary price elastic demand: PED =	Suggest examples of goods or services which are likely to have : a) Relatively elastic PED b) Relatively inelastic PED Justify your reasons

What determines the price elasticity of demand?

Interpret the PED for each product and give reasons:

Good/service	Estimated PED	Elastic or inelastic?	Reasons?
Salt	-0.1		
Tobacco products	-0.45		
Restaurant meals	-2.3		
Petrol	-0.2		
Kit Kat	-1.6		

Determinants of the price elasticity of demand

Availability of substitutes

If there are many substitutes (alternatives), demand is more likely to be _____ as customers can switch, e.g. if the price of apples rises, they might buy pears instead, so the quantity demanded for pears rises**.** Whereas, if there are few substitutes, demand is more likely to be _____ e.g. petrol

Evaluation point – Broad categories of goods/services, e.g. 'fruit' tends to be fairly inelastic but specific fruits, e.g. oranges are likely to be more elastic following a price change, this is because there are few substitutes for 'fruit' as a whole but several substitutes for pears, apples, etc

Is the good a necessity or luxury?

If the good is a necessity, demand will tend to be _____ e.g. potatoes. If it is a luxury good, demand will tend to be more _____ e.g. luxury cruises

The proportion of income spent on the good

If only a small amount of income is spent on the good, e.g. salt, pepper, matches, demand is likely to be price _____ This is because we tend not to notice small changes in price of an inexpensive item which forms a small part of our overall spending. On the other hand, demand for leather sofas is likely to be _____if a high proportion of income is spent on leather sofas.

Habit forming goods

Products like alcohol and tobacco tend to be price _____ as buyers find it hard to stop buying even when prices of these products rise. If goods are addictive the demand is likely to be inelastic. For example, if the price of drugs such as heroin or crack cocaine increased it is likely that there would be a relatively small decrease in quantity demanded. Addicts would do whatever they could to obtain the money to buy the drugs they want.

Brand

Demand tends be more _____for branded goods as customers see a brand as a unique product without alternatives, e.g. Hollister, Vans trainers

Short or long run?

The price elasticity of demand is likely to change over time. For example, during the oil crisis of 1973, the price of a barrel of oil quadrupled. In the short-run the demand for oil was very inelastic. This is because there was no alternative to using oil for central heating or in power stations and there was no alternative to using petrol in care engines. However, in the long-run, coal fired power stations were built and gas fired central heating systems were installed. Also, car manufacturers developed more fuel-efficient engines that did not use as much petrol. As a result, the demand for oil because more elastic over time. PED increased.

Therefore, demand tends to be more _____in the short term. Whereas in the long term demand tends to be more _____ in time, people can adjust their spending habits.

Exam practice for Section A:

a)

A clothing retailer reduces the price of shirts from £50 to £40. As a result, quantity demanded rises from 20,000 to 24,000 per month. What is the best estimate for price elasticity of demand?

A –1.

B –2.5.

C +2.5.

D –2.

(a) **Answer** ☐

(1)

c) Show all of your workings for your calculations above: (2)

_____

_____

_____

The significance of Ped to firms and government

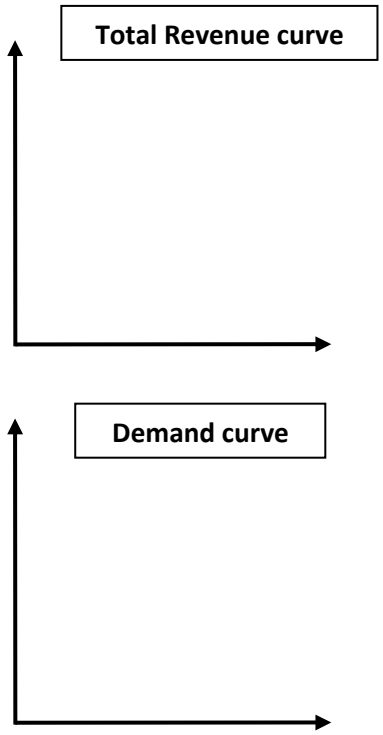
PED is important to firms in determining their pricing strategy. E.g. Price discrimination (theme 3). It is important to governments in terms of understanding the burden (or incidence) of taxation on producers and consumers. Similarly with subsidies (we will study indirect taxes and subsidies later).

Revenue and the price elasticity of demand

PED is important to businesses because it affects their **revenue**. Revenue is the income gained from selling a product. It is calculated by price x quantity

Calculate the revenue at each price in the table below:

Price	Quantity	Revenue
£20	200	
£18	280	
£16	360	
£14	440	
£12	520	
£10	600	
£8	680	
£6	760	



1a. Calculate the price elasticity of demand when price falls from £20 to £18

b. Is the demand price elastic or price inelastic?

c. Does total revenue rise or fall as a result of this price change?

2a. Calculate the price elasticity of demand when price falls from £10 to £8

b. Is the demand price elastic or price inelastic?

c. Does total revenue rise or fall as a result of this price change?

Summary of the relationship between price elasticity of demand and revenue

	Elastic	**Inelastic**
Price falls	Revenue will …….	Revenue will ……
Price rises	Revenue will ……..	Revenue will ..……

The significance of PED to firms

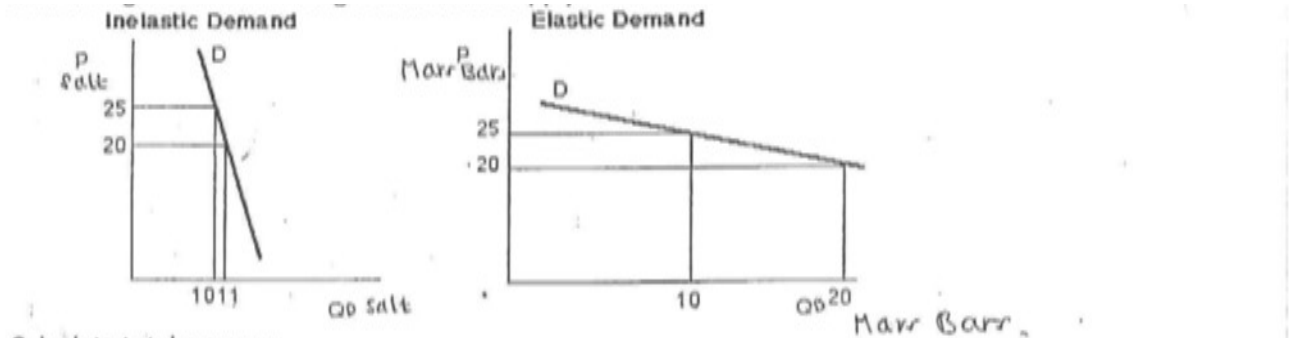
When PED is inelastic, a firm should _____ price because customers will still buy a similar amount at the higher price, therefore, the firm's TR would rise. (However, if they lower price, TR would fall)

When PED is elastic, a firm should _____ price because demand would rise by a larger amount than the price fall and TR would increase. (However, if they increase price, TR would fall).

Complete the table below and answer the question

Good	**PED**	**Type of elasticity**	**Effect on revenue if price rises**
Cars	-1.5		Revenue will …….
Telephone calls	-1		Revenue will be …….
Cinema tickets	-0.4		Revenue will ……..
Matches	0		Revenue will …….

Calculating the revenue using demand and supply curves:



Calculate total revenue:

Price	Total revenue (salt) Inelastic demand	Total revenue (Mars Bars) Elastic demand	Calculate the PED of a price fall from £25 to £20	
			Salt	Mars Bars
£20				
£25				

This example illustrates that if PED is elastic, an increase in price leads to a …….. in total revenue. Conversely, a fall in price leads to a …….. in total revenue.

If PED is inelastic, an increase in price leads to an ……. in total revenue. Conversely, a fall in price leads to a …….. in total revenue.

This example also illustrates that the **STEEPNESS** of the demand curve determines the elasticity.

PED also varies <u>along</u> the demand curve:

The price elasticity of demand varies along the length of any straight-line demand curve. As the price rises the price elasticity of demand will also rise. You can see this by measuring the price elasticity of demand for each price change in the table on the previous page.

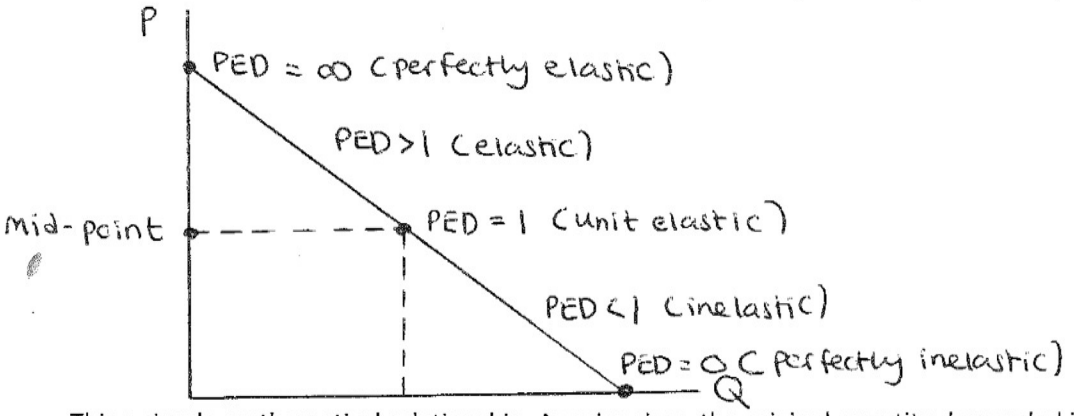
At the mid-point of the demand curve, the demand is unit elastic (the PED _____1)

Above the mid-point the demand is price elastic (the PED is _____ than 1)

Below the mid-point the demand is price inelastic (the PED is _____ than 1)

Where the demand curve touches the y-axis demand is perfectly elastic (the PED =_____)

Where the demand touches the x-axis demand is perfectly inelastic (the PED = _____

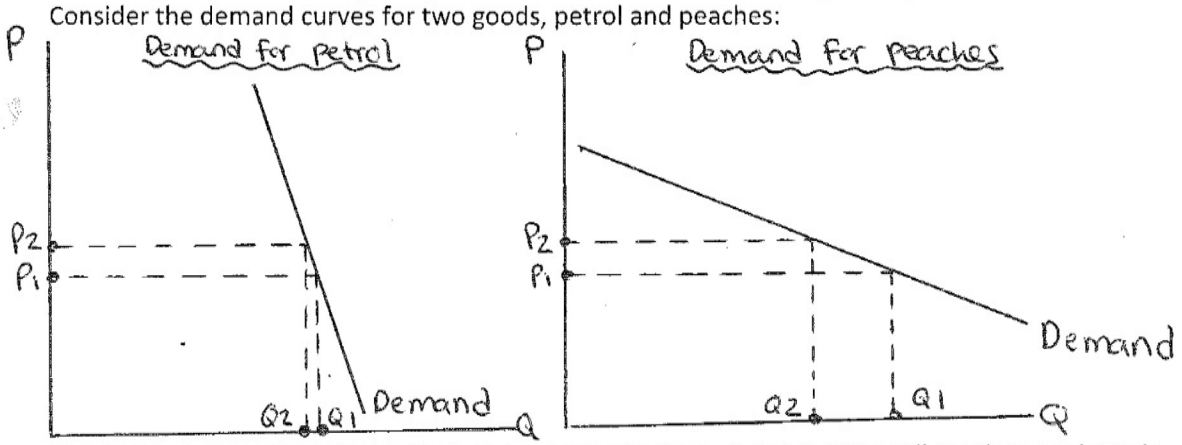


This a simple mathematical relationship. As price rises, the original quantity demanded is decreasing so the top of the fraction is getting bigger and bigger. Likewise as the price rises, the original price is increasing so the bottom of the fraction is getting smaller and smaller.

<u>The gradiant of the demand curve and the price elasticity of demand</u>

It is possible to compare the price elasticity of demand for two different goods by comparing the gradiant of two separate demand curves. For a given change in price the price elasticity of demand will be higher (more elastic) along a flatter demand curve than along a steeper demand curve.

Consider the demand curves for two goods, petrol and peaches:



The demand curve for petrol is likely to be relatively steep. A rise in price will result in a relatively small decrease in quantity demanded.

The demand curve for peaches is likely to be relatively flat. A rise in price will result in a relatively large decrease in quantity demanded.

Note that the price elasticity of demand will vary along the length of all demand curves regardless of the gradiant!

PED and revenue calculations: **Extension: – qn 2**

	Question 1: Price = £10, sales = 1000, PED = 0.5, Price increases to £11	Question 2: Price = £30, sales = 400, PED = 1.6, price falls to £29
Original revenue		
% change in price		
Formula for PED		
Known PED variables		
New level of sales		
New revenue		
Change in revenue		
	A price increase causes revenue to ……. therefore, elasticity is ……	A price fall causes revenue to …….. therefore, elasticity is …….

 Anderton,A. 5th ed. (2008). Unit 2; Smith Ch 2; Sloman Ch 2; Econ Today Sept 14 'How does elasticity affect revenues?'

Exam practice for section A:

1a)

A mobile phone company has 2 million customers for a package of services. Each customer pays a monthly fee of £25. The company conducts market research and estimates that price elasticity of demand for this package is –2.

If the company reduces monthly fees by £5, the change in total revenue is likely to be:

A + £6 million.

B – £3 million.

C – £6 million.

D + £3 million.

(a) **Answer** ☐ (1)

b) Show all of your calculations: (3)

_____

_____

Total marks = 4

2a)

A London theatre sells an average of 1,000 tickets per performance at a price of £20 each. There are still many empty seats for each performance. The owner conducts market research and finds that price elasticity of demand for the theatre's tickets is -2.

If the owner reduces the price of each ticket by 10%, the change in total revenue for each performance is likely to be:

A +£1600

B -£1000

C -£1600

D +£1000

Answer ☐ **(1)**

b) Show all of your calculations (3)

The price elasticity of supply (PES)

Definition:

Formula:

An increase in price will induce firms to increase supply to the market and vice versa. This is because _____

Therefore, PES is always _____

What determines PES for the following firms? You may like to look at short term and long term factors:

Very full Amazon warehouse

Overflowing commuter train

Agricultural products

Music festival tickets sold out

Bus journey

Interpretation of price elasticity of supply:

PES value	**Elasticity**	**Explanation**	**Interpretation**
PES > 1	Supply is price elastic	The % change in price will lead to a **greater** proportionate change in QS	
PES < 1	Supply is price inelastic	The % change in price will lead to a **smaller** proportionate change in QS	
PES = 1	Supply is unitary elastic	A % change in price will lead to the **same** % change in QS.	
PES =	Supply is	A % change in price will have **no**	

0	perfectly inelastic	**impact** on supply	
PES = infinity	Supply is perfectly elastic	A change in price will lead to an infinite amount being supplied	

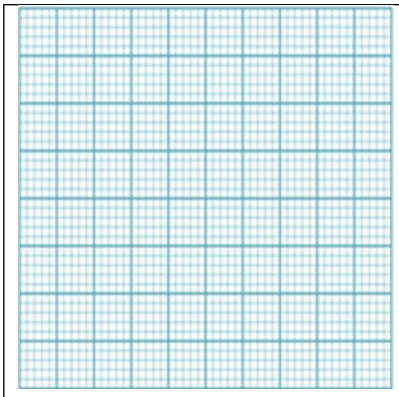
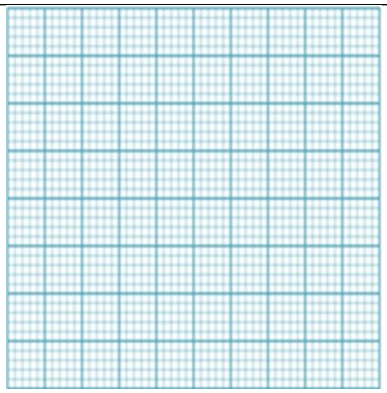
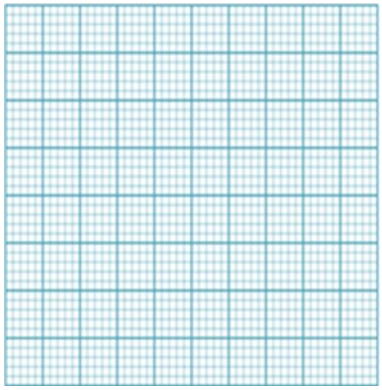
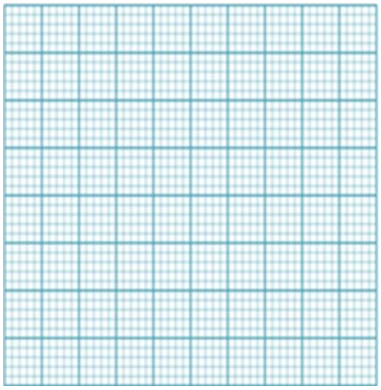
Calculations:

i) The price of a good increases from £10 to £12 and in response, firms increase quantity supplied from 2,000 to 2,200 units. Calculate PES:

ii) Calculate the PES if the price changes from £5 to £6 and the quantity supplied increases from 12 to 15 units and interpret the results.

Draw supply curves to show the following elasticities and in each case, indicate how much quantity supplied changes following a price **increase:**

Relatively price elastic supply:	Relatively price inelastic supply:

 PES =	 PES =
Perfectly price elastic supply:  PES =	Perfectly price inelastic supply:  PES =

Factors that influence price elasticity of supply

The level of spare capacity

If firms have spare capacity, this means that output can be increased quickly if price of a good increases. Therefore, supply of a good is likely to be _____ Empty factory floor space, land, etc means that production can be increased quickly.

On the other hand, if firms do not have any spare capacity, they may not be able to increase output if the price of a good rises. At full capacity supply tends to be _____

The state of the economy

In a recession, there are many unemployed resources, therefore, higher levels of spare capacity, making it easier to increase supply. This means supply would be more …….

How easily production can be switched to a different product

another model in the same range. However, carrots are not easily switched to from producing cars.

The level of stock

Firms with higher stock levels can increase supply quickly. This makes supply more ……However, if firms have little/no stock, supply tends to be ……..

Perishability of goods

Some goods cannot be stockpiled, eg. fruit and vegetables because they are perishable, therefore, these products tend to be inelastic in supply because not much stock can be kept. However, some manufactured goods can be kept in stock, e.g. toasters, therefore, supply tends to be more _____

Can new firms easily enter the market?

If producers can easily enter a new market the supply of a particular good is likely to be _____ for example, window cleaning would have low or no barriers to entry so would be more _____ However, supply would be more _____if high barriers to entry exist, e.g. costs of entering the industry are very high, such as the cost of developing a new iron ore mine. For example, if there was a rise in demand for jumbo jets, it would be difficult for new firms to enter the market for commercial aircraft as this would require massive investment in capital and also research and development. Therefore, supply would be more _____

Availability of substitutes

Substitutes in supply mean producer substitutes. These are goods which a producer can easily produce as alternatives, e.g. one bar of chocolate at Cadbury's may easily be switched for another. On the other hand, carrots cannot be easily switched for cars. A product with many substitutes mean producers can quickly and easily alter the pattern of production if prices rise or fall. This means elasticity will be _____ A product with few substitutes means producers will find it difficult to respond to price. PES will be _____

The significance of short run and long run for price elasticity of supply

In the short run a firm can only increase supply with its existing capacity. Supply can only increase if firms have stocks of the product to sell. Therefore, it is difficult to adjust production in the short run, making supply inelastic. This is because some factors of production are fixed.

Firms may not be able to recruit new workers or acquire new capital in the short run. The supply of many goods is therefore likely to be relatively _____ in the short run.

In the long run all factors can be adjusted so firms can increase production in response to price increases, making supply more elastic. For example, firms will be able to recruit more workers, acquire new machinery and build new factories. Also, firms may be able to diversify and move into new markets. Output can expand significantly if the price of a good remains high in the long run. Therefore, supply is likely to be relatively _____ in the long run.

Nature of the product

Agricultural products tend to be **inelastic** in the short run because the harvest depends on the amount of seed planted at the start of the year. Crops take a considerable amount of time to grow. It takes even longer to increase the supply of dairy products such as milk and meat such as beef because this involves nurturing animals over many years. Therefore, supply is likely to be _____

Likewise, it would take a long time to build nuclear power stations, aircraft carriers, etc so the supply is likely to be _____

The supply of minerals, such as, iron ore, copper and tin may also be **inelastic** in the short run due to the length of time required to explore and discover new deposits and then extract them. E.g. developing a new iron ore mine would require heavy machinery and construction of infrastructure, such as rail and road links.

If PES is _____suppliers will find it difficult to react to changes in prices.

If PES is _____suppliers can react quickly to changes in price

Supply is likely to be price inelastic if it is complex to make the good, if raw materials are scarce, if the production process is lengthy and if it is in the short run.

Supply is likely to be price elastic when the good is quick and easy to make and if it is in the long run.

The distinction between short run and long run:

Short run is a period in which at least _____ factor of production is fixed

In the long run all factors of production are _____

There is no set amount of time for the short run and it varies between different industries.

Exam practice for section A:

a) Explain why the price elasticity of demand and supply for many agricultural goods and commodities tends to be relatively inelastic.

(3)

_____

_____

_____

_____

b)

The price elasticity of supply of fresh lemons is likely to be

A negative and elastic in the short run.

B negative and elastic in the long run.

C positive and inelastic in the short run.

D positive and inelastic in the long run.

(a) **Answer** ☐

(1)

c)

Which of the following factors is most likely to cause the price of gold to fall without a shift in the demand curve?

(1)

A An increase in national income

B A decrease in the price of silver

C An increase in the wages of gold miners

D A decrease in the cost of machinery used in gold mining.

Answer ☐

Economics Today. Vol 20. March 2013. Why do we get confused by price elasticity of supply?

Anderton,A. 5th ed. (2008) – Unit 11

Income Elasticity of Demand (YED)

Definition:

YED Formula:

The magnitude of the figure:

The higher the number, the more responsive to a change in income quantity demanded is.

If YED is greater than 1, demand is income _____

If YED is less than 1, demand is income _____

Is YED positive or negative?

Unlike PED, YED may be either positive or negative, so in YED, the plus and minus signs are important because they show us whether a good is normal or inferior.

Most goods are normal goods, i.e. if income rises, demand rises or if income falls, demand falls:

For a NORMAL GOOD, YED will be _____

If consumer income increased by +10% and the demand for beer increased by + 5%.
YED = _____ this is a normal good.

However, a minority of goods are inferior goods, and in this case demand will fall as income rises, e.g. value brands, bus journeys:

For an INFERIOR GOOD, YED will be _____

E.g. If a +10% increase in income led to a -3% fall in demand for value beans.
YED = _____

LUXURY GOOD = YED is positive and _____

When income rises, consumers spend proportionally more on a luxury good, e.g. foreign holidays, luxury cars, caviar. If an increase in income of +10% led to an increase in demand of 25%.
YED = _____ (luxury good)

Calculate YED and interpret the result in the following table:

	Original	Original	New	New		Normal good/luxury

	quantity demanded	income	quantity demanded	income	YED	good/inferior good? Reason?
a)	100	10	120	14		
b)	15	6	20	7		
c)	50	25	40	35		
d)	12	100	15	125		
e)	200	10	250	11		

Diagram for normal good:

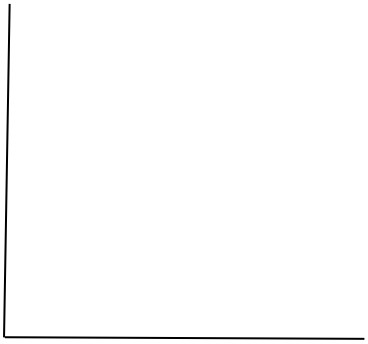
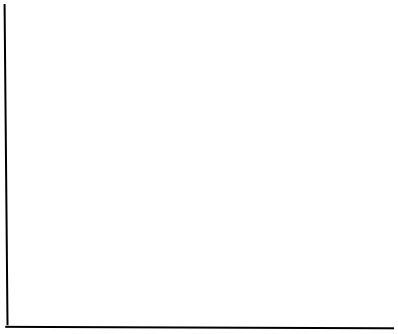


Diagram for inferior good:



Exam practice for section A

a)

Estimates of income elasticity of demand for selected soft drinks for the period 2001 – 2006:

Soft drink	Income elasticity of demand
Fizzy drinks	- 0.24
Fruit drinks	+ 0.16
Bottled water	+ 1.05

(Source: Nielsen/Britvic 2007)

From the data in the table it may be deduced that:

A An increase in consumer income will lead to a more than proportionate increase in demand for fruit drinks.

B A decrease in consumer income will cause a fall in the demand for all of the drinks.

C An increase in consumer income will lead to a decrease in demand for fizzy drinks.

D A decrease in consumer income will lead to a less than proportionate decrease in demand for bottled water.

(a) **Answer** ☐

(1)

b) The table shows the income elasticities of demand for selected UK holiday destinations

Holiday destination	Income elasticity of demand
Bournemouth	2.0
Newquay	0.6
Margate	-0.4

a) It may be deduced from the data in the table that:

A All the holiday destinations are normal goods

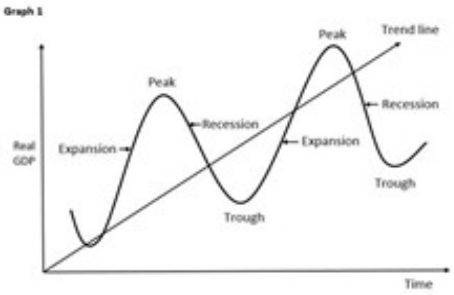
B Holidays in Bournemouth are price elastic in demand

C A decrease in real income will cause a decrease in demand for holidays in Newquay

D There is a negative cross elasticity of demand for holidays in Margate

(1)

Knowledge of YED helps firms predict the effect of an economic cycle on sales. Luxury products with high income elasticity see greater sales volatility over the **business cycle** than necessities where demand from consumers is less sensitive to changes in the cycle. (Link to macro)



The significance of YED to firms

Tutor2u

Task:

i) Which of the goods or services in the pictures above would experience a rise in sales during:

a) A period of economic growth:

b) A recession:

Exercises on the Income elasticity of demand

1. Calculate the YED and interpret the results:

a. If demand for foreign holidays goes up by 20% following a 5% rise in incomes

b. If the demand for holidays to Skegness falls by 20% following a 5% rise in income

c. If the demand for washing up liquid rises by 0.01% following a 5% rise in income

2. The income elasticity of demand for private dental services, rental movies services and 'own label' clothing available at supermarkets have been estimated to be +2.5, +0.8 and -1.5 respectively. Write an answer interpreting these results for income elasticity.

Exam practice for section B:

Extract 2 US faces sugar shortage

America's obesity problems may soon shrink amid fears that the makers of treats, such as Oreo cookies, Krispy Kreme doughnuts and Hershey bars, could run out of sugar. Leading food companies, including Kraft, Mars and Hershey, have warned the government that there may be a serious sugar shortage unless it allows more imports of the commodity into the country. The food companies blame the shortage on the government's policy of restricting imports of sugar in order to protect the incomes of US sugar farmers in the Midwest.

Rising sugar prices have affected the production costs of chocolate and other confectionery companies. However, there are many other costs to consider. At Mars, for example, sugar is third on its list of ingredient costs behind cocoa and milk. Moreover, the price of milk has been falling over recent years, helping to offset the increase in sugar costs.

Chocolate and other confectionery companies have experienced increased sales during the recession as people attempt to cheer themselves up by consuming more sugary treats.

(Source: adapted from 'Food groups say US is running out of sugar', by Alexandra Frean, *The Times*, 13th August, 2009 and 'Chasing a sugar rush: global deficit drives price rises', by Sean O'Grady, *The Independent*, 11th August, 2009.)

With reference to the last paragraph of Extract 2 and your own knowledge, assess whether chocolate and other confectionary are likely to be normal or inferior goods (10)

2k 2ap 2an 4ev (Level marked)

Plan:

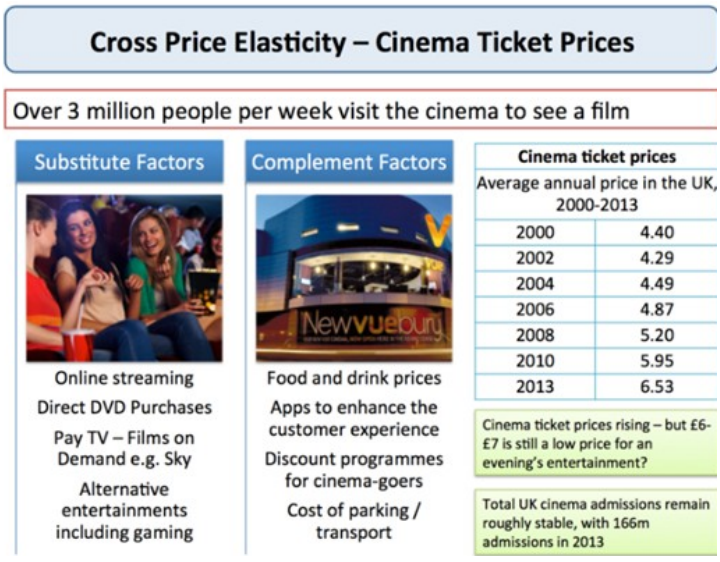
Level	Mark	Descriptor
	0	A completely inaccurate response.
Level 1	1–2	Displays isolated or imprecise knowledge and understanding of terms, concepts, theories and models. Use of generic or irrelevant information or examples. Descriptive approach which has no link between causes and consequences.
Level 2	3–4	Displays elements of knowledge and understanding of economic principles, concepts and theories. Applies economic ideas and relates them to economic problems in context, although does not focus on the broad elements of the question. A narrow response or the answer may lack balance.
Level 3	5–6	Demonstrates accurate knowledge and understanding of the concepts, principles and models. Ability to link knowledge and understanding in context using relevant and focused examples which are fully integrated. Economic ideas are applied appropriately to the broad elements of the question.

Level	Mark	Descriptor
	0	No evaluative comments.
Level 1	1–2	Identification of generic evaluative comments without supporting evidence/ reference to context. No evidence of a logical chain of reasoning.
Level 2	3–4	Evaluative comments supported by relevant reasoning and appropriate reference to context. Evaluation recognises different viewpoints and/or is critical of the evidence.

Cross elasticity of demand (XED)

Definition:

XED Formula:



Intepretation of results

1. The magnitude of the figure

If the XED is greater than 1, the demand for one good is cross _____ in response to a change in the price of another

If the XED is less than 1, the demand for one good is cross _____ in response to a change in the price of another

2. Is XED positive or negative?

If the two goods are substitutes, the answer will be _____

If the two goods are complements, the answer will be _____

Interpretation of XED

Substitutes have positive XED If Price of good A (apples) rises, QD of good B (bananas) rises If price of good A (apples) falls, QD of good B (bananas) falls
Complements have negative XED If Price of good A (Xbox) rises, QD of good B (Xbox games) falls If price of good A (Xbox) falls, QD of good B (Xbox games) rises
XED = 0 if there is **no relationship** between the 2 goods If price of good A (cars) rises, QD of blu-tack (good B) would not be affected
Magnitude of the figure – If the XED is greater than 1 the demand for one good is cross elastic in response to a change in the price of another good If the XED is less than 1 the demand for one good is cross inelastic in response to a change in the price of another good

Calculate the following and interpret the result:

1. A 10% increase in price of pears, leads to a 12% increase in quantity demanded of apples. Calculate XED. Is it positive or negative?

2. The price of cheese rises by +10%, leading to a fall in QD for macaroni of -5%. Calculate XED. Is it positive or negative?

3. If the price of Good X rises from £10 to £12 and demand for Good Y falls from 50 to 20 units

4. If the price of petrol rises by 5% and demand for cars falls by 1%

5. If the price of fresh peas rises by 5% and demand for frozen peas rises by 10%

6. If the price of paper rises by 5% and demand for cars does not change

7. A 10% rise in the price of Kit Kat leads to a 40% rise in QD of Twix

Do the following pairs of goods have positive or negative XED? Explain the relationship between each

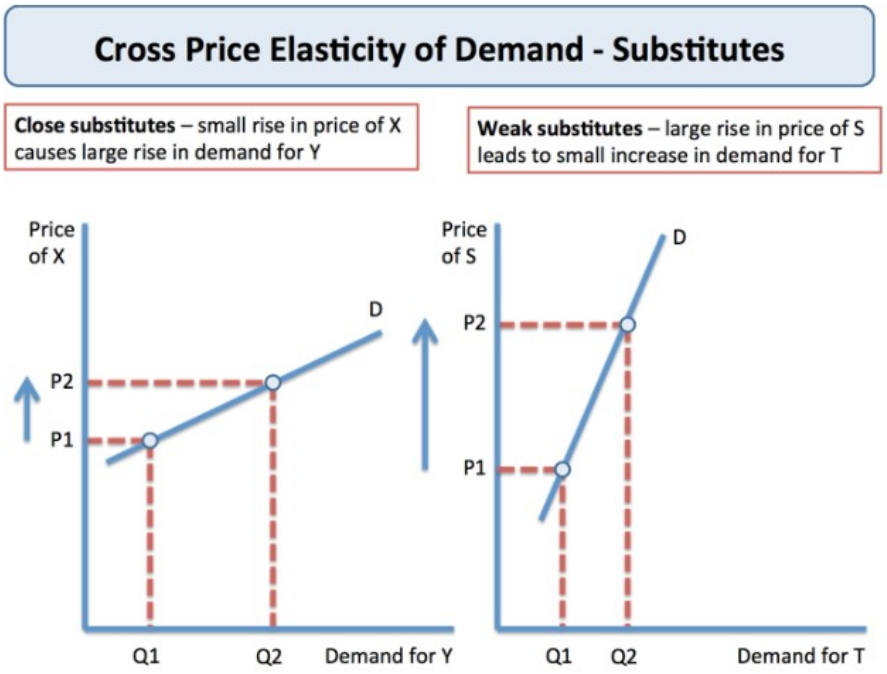
Gas and electricity

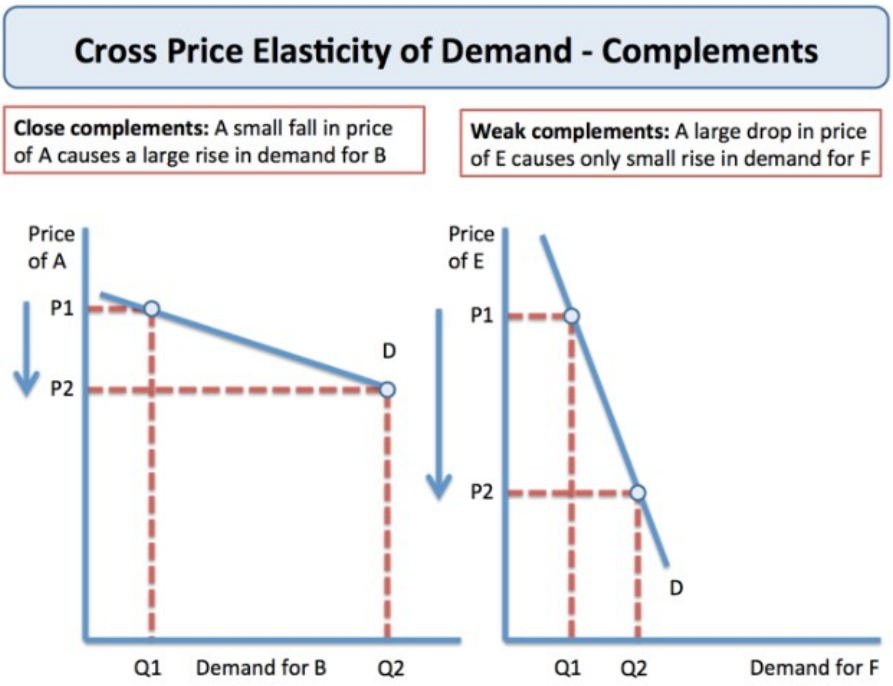
Tennis rackets and tennis balls

Luxury cars and petrol

Paper and socks

Tesco's own brand and Sainsbury's own brand baked beans





The stronger the relationship between two products, the **more elastic** is the XED.

Task:

Suggest examples of goods which may be:

Close complements:

Weak complements:

Close substitutes:

Weak substitutes:

Tutor 2u

Significance of XED to firms

XED will tell a firm how demand for their own product will change following a price change by their competitors or partners.

a)

The cross elasticity of demand for tea is likely to be

A negative following a change in the price of milk

B positive following an increase in income since tea is an inferior good

C negative following a change in the price of coffee

D positive following a decrease in income since tea is a normal good.

Answer ☐

b. Calculate the cross price elasticity of demand for good B in response to a change in the price of good A from the following data:

Original price of good A = £8

Original quantity of good B = 20 units

New price of good A = £7

New quantity of good B = 25 units

c. Are the goods substitutes or complements?

d. Calculate the XED and interpret the results:

e) If the demand for beef falls by 10% following a 15% fall in the price of chicken

f) If the demand for ipods rise by 10% following a 15% fall in the price of music downloads

g) If a 10% rise in the price of Tippex results in a 0% change in the demand for cars

h. How could cricket clubs use information on elasticities when setting ticket prices? Hint: Make sure you consider all types of elasticity, i.e. PED, PES, YED and XED

Task:

Imagine the following scenario. You are considering a pricing strategy for a bus company. The economy is heading into recession, and the company is running at a loss. Your local rail service provider has announced an increase in rail fares. How (if at all) do you use the following information concerning the elasticity of bus travel with respect to various variables to inform your decision on price? Do you raise or lower price?

- Price elasticity of demand −1.58
- Income elasticity of demand −2.43
- Cross-price elasticity of demand with respect to rail fares +3.21

Exam practice for section B:

10 The proposed expansion of Heathrow Airport

Extract 1 Should a third runway be built at Heathrow Airport?

London Heathrow is the world's third busiest airport and a major hub for the global economy. In 2011 it handled more than 476 000 flights and some 65 million passengers. However, the airport is operating at 99.2% of its capacity, making it vulnerable to any disruption. There is a shortage of runway capacity to meet the forecast increase in passenger demand of 15 million using Heathrow Airport by 2020.

Research by a business consultancy claims that Britain could lose out on an extra 140 000 jobs if capacity at Heathrow is not increased in the medium term. It estimates that £4.5 billion will be lost from Gross Domestic Product because of falling foreign investment, as businesses consider locating elsewhere in Europe, and £1.6 billion lost in trade with emerging markets by 2020.

However, a third runway at Heathrow would lead to a significant increase in external costs from the extra 900 flights per day over London. Expansion at Heathrow might be unnecessary as almost a quarter of flights are to destinations less than 300 miles away and already well served by train. Domestic flights and short flights to Europe could easily be carried out by train, especially with the continued expansion of Eurostar rail services to many more European cities. Substituting these flights for train services would reduce the need for extra capacity at Heathrow and have significant environmental benefits, as train travel creates one tenth of the pollution per passenger compared to air travel.

An alternative might be to develop other airports around London such as Gatwick, Stansted and Luton where significant spare capacity exists. In the long run a new super-sized airport in the Thames estuary might provide the best solution although the financial cost is expected to exceed £50 billion and take at least 15 years to build after planning permission has been received.

(Source: adapted from © Guardian News and Media Ltd, 2012 and © Greenpeace, 10 Reasons to Stop Heathrow Expansion (http://www.greenpeace.org.uk/blog/climate/10-reasons-to-stop-heathrow-expansion))