2 How markets work

1 Demand

Activity 1, page 54
a They underestimated demand for crab meat dinners. The evidence for this is that there were not enough tables.
b One possible reason is that incomes may have risen by more than expected. People spend more on expensive seafood and on eating out when their incomes rise.

Activity 2, page 54
a It would cause demand for petrol to rise. The lower price would make people more able and willing to buy petrol.
b In order to remain price competitive with Morrisons. If they had not cut their prices they may have lost customers to Morrisons.

Activity 3, page 55
a the meat market
b the food market

Activity 4, page 56
a Consumers’ expenditure is £7 x 50 = £350.

Activity 5, page 56
a It would have been likely to have caused a contraction in demand for train tickets from Q to Q1 as shown in Figure 10.

Activity 6, page 57
It is £3 on the first cake, £2.75 on the second, £2.25 on the third and £1.30 on the fourth, giving a total consumer surplus of £9.30.

Activity 7, page 57
a It causes an increase in demand for new football shirts. People buy more shirts, not because the price has fallen (it may even have increased) but because they want to have the latest design.
b An extension in demand, caused by a fall in price. However, it may not be a significant extension as many people would prefer to buy the new strip even if it is more expensive.

Activity 8, page 58
a shift – an increase in demand
b shift – a decrease in demand
c movement along – an extension
d shift – an increase in demand
e shift – an increase in demand
f shift – a decrease in demand

Multiple choice questions, page 60
1 Answer C
A change in the price of the product. A, B and D would all cause a shift in the demand curve.

2 Answer B
A rise in price will cause a fall in demand and a fall in price will cause a rise in demand.

3 Answer B
At a price of P, the consumer surplus is PRS. When the price falls to P1, the consumer surplus is P1RT. This is an increase of P1PST.

4 Answer A
A rise in the price of strawberries would cause demand for strawberries to fall. This would be represented by a movement to the left along the demand curve and is known as a contraction in demand. B, C and D would cause a decrease in demand. Cream and strawberries are complements, raspberries and strawberries are usually substitutes and strawberries are a normal good.

5 Answer D
If a substitute product becomes more expensive, some people will stop buying it and buy the original product instead. A would cause a movement along the demand curve (an extension in demand). B and C would cause a shift of the demand curve to the left (a decrease in demand).

6 Answer B
Travel by bus and train is, to a certain extent, a substitute for car travel. If travel by public transport becomes cheaper some people may use their car less, resulting in a decrease in demand for petrol. A, C and D would all cause demand for petrol to increase.
Data response questions, page 60

a i Audio cassettes and cassette players are complements. They are used together.

ii Audio cassettes and CDs are substitutes. They are rival products.

b Demand for audio cassettes in the UK and USA is decreasing significantly as people are switching to CDs. The demand curve for audio cassettes is shifting to the left as shown in Figure 12.

c It is likely to fall. As incomes rise in these areas, consumers are likely to buy CD players and switch from audio cassettes to CDs.

d Examples are advertising and changes in population size. A good advertising campaign for audio cassettes might offset the downward trend in demand for audio cassettes to a certain extent. A decrease in population size would cause demand for audio cassettes to fall further.

2 Supply

Activity 1, page 61
12, because this is the number of pictures that were offered for sale on the market. 200 represents the stock of his pictures.

Activity 2, page 61
a It was reduced. It was a contraction in supply as the decline was caused by a fall in price.

b It could increase without production rising if the existing stock of mobile phones is used.

Activity 3, page 62
Primary schools, secondary schools and universities.

Activity 4, page 62
a 70 \times £9 = £630.

Activity 5, page 62
a Supply would extend. Firms would raise the quantity they offer for sale as their willingness and ability to supply the product rises. Figure 10 shows that as the price of pet food rises from P to P1, the supply of the product rises.

b Supply would contract because firms would find it more difficult to cover costs and less profitable to supply air travel. Supply would contract from Q to Q1 as a result of a fall in price from P to P1 (see Figure 11).

Activity 6, page 63
It is £5 on the first unit, £3 on the second, £1 on the third and £0 on the fourth, giving a total producer surplus of £9.

Activity 7, page 63
a It would cause an increase in the supply of tomatoes. The rise in the number of tomatoes being offered for sale is the result of an influence other than a change in the price of tomatoes.

b It would result in an extension in the supply of tomatoes.

Activity 8, page 63
a shift – an increase in supply.

b shift – an increase in supply.

c shift – a decrease in supply.

d shift – an increase in supply.

e shift – a decrease in supply.

f movement along – an extension in supply.

Multiple choice questions, page 65

1 Answer D
A rise in price causes an extension in supply. There will be an increase in the quantity supplied.

2 Answer B
Producer surplus arises when firms are paid more than they were willing to accept in exchange for their products. It is shown by the area above the supply curve and below the price line.
3 Answer A
Figure 6 shows the supply curve shifting to the right, which represents an increase in supply. A reduction in indirect tax effectively reduces the cost of producing the product which causes an increase in supply. B, C and D would cause a decrease in supply.

4 Answer B
Advances in technology would cause an increase in supply as illustrated by a rightward shift of the supply curve.

5 Answer A
A rise in price causes a rise in supply (extension) and a fall in price causes a fall in supply (contraction).

6 Answer C
An outbreak of foot-and-mouth disease would reduce the number of cows and decrease the supply of beef. A, B and D would be likely to increase the supply of beef.

Data response questions, page 66

a i The fall in pork prices from 120p to 75p a kilo caused a contraction in the supply of pork (see Figure 12). Pig farmers found that with the lower price they could not cover their costs.

ii An increase in costs of production would cause a decrease in supply. Figure 13 shows that the supply curve of pork has shifted to the left.

b The supply of pork in the UK may have risen as a result of a rise in the supply of foreign pork to the UK market. If the supply of foreign pork rose by more than the supply of UK produced pork fell, the overall supply of pork would have risen.

c A subsidy to UK pig farmers would encourage them to supply more pork. This will cause the supply curve of pork to shift to the right (see Figure 14).

d The supply of pork is influenced by changes in the price of other agricultural products. For instance, a rise in the price of beef may encourage some pig farmers to stop keeping pigs and move into beef farming. This would reduce the supply of pork.

3 Price elasticity of demand

Activity 1, page 66
a Less – a 10% price rise will not be significant because milk has no close substitute and people are unlikely to reduce the amount they buy.

b More – because perfume is a luxury. A 10% price rise may put it outside some people's price range. They may switch to a cheaper brand.

c Less – a 10% price rise will not be significant and people do not easily switch from one newspaper to another.

Activity 2, page 67
The information suggests that demand for budget air travel is elastic. A 5% change in fares results in a greater percentage change in quantity demanded.

Activity 3, page 67
a 50% /–40% = –1.25
b –33.33%/33.33% = –1
c –75%/12.5% = –6
d 5% /–25% = –0.2
e 20.93% /–25% = –0.84
f –47.39% /15.40% = –3.08

Activity 4, page 68
a elastic
b unity
c elastic
d inelastic
e inelastic
f elastic

Activity 5, page 69
a inelastic – essential item with no close substitutes
b elastic – luxury item with substitutes (other types of drinks)
c elastic – luxury item with substitutes (other gifts)
d inelastic – essential item with no close substitutes

e elastic – close substitutes in the form of other brands

Activity 6, page 70
a Because the extent to which holiday makers perceive there are substitutes for holidays varies. Many people who go to Spain buy package holidays. They have a wide choice of travel agents offering holidays in Spain, and there are packages to other destinations at similar prices. If Spanish holidays become more expensive, many people are likely to switch to other travel agents and to take holidays in, for example, France or at home. Greek holidays are more distinctive, and it could be argued that there is no close substitute for a holiday in China and fewer travel agents offer holidays there. Holidays in China are expensive, but they take up a smaller proportion of the income of those considering this destination. Holidays in Spain are...
To increase revenue, the travel agent should lower the price of holidays in Spain and Greece and raise the price of holidays in China. Spanish and Greek holidays have elastic demand, so a fall in price would result in a greater percentage rise in demand and an increase in revenue. Demand for Chinese holidays is inelastic, so a rise in price would result in a smaller percentage fall in demand and revenue would rise.

### Multiple choice questions, page 71-2

1. **Answer D**
   A rise in the price of a product with inelastic demand will cause demand to fall by a smaller percentage. This will cause total spending on the product to rise. The fall in demand is caused by a change in the price of the product itself and so is represented by a movement along the demand curve, and not a shift.

2. **Answer C**
   If a change in price leaves total expenditure on a product unchanged, then demand and price must have changed by the same percentage. This means that PED is unity. A is incorrect because PED of 0 means that demand is perfectly inelastic and a change in price would cause no change in quantity demanded. With the same amount being bought at a lower price, total expenditure would fall.

3. **Answer A**
   A fall in price from $10 to $9 is a –10% change and a rise in demand from 40 to 50 is a 25% rise in demand. This gives a PED of \( \frac{25\%}{-10\%} = -2.5 \). B gives a PED of \( \frac{20\%}{-11.11\%} = -1.80 \), C gives \( \frac{16.67\%}{-12.5\%} = -1.33 \) and D gives \( \frac{14.29\%}{-14.29\%} = -1 \).

4. **Answer B**
   The main determinant of PED is the availability of close substitutes. The more close substitutes there are at a similar price, the more elastic demand will be. A, C and D would be likely to result in demand being inelastic.

5. **Answer D**
   Zero PED occurs when demand is perfectly inelastic. In this case a change in price leaves demand unchanged at Q. A shows elastic demand, B inelastic demand and C perfectly inelastic demand.

6. **Answer A**
   Demand falls by 25% and price rises by 50%, giving a PED of \( \frac{-25\%}{50\%} = -0.5 \).

### Data response questions, page 72

#### Activity 1, page 73

a. \( \text{XED} = \frac{\% \Delta QD \text{ of apples}}{\% \Delta P \text{ of ice cream}} \)

b. \( \text{XED} = \frac{\% \Delta QD \text{ of foreign holidays}}{\% \Delta P \text{ of air fares}} \)

#### Activity 2, page 74

a. \( \text{XED} = \frac{\% \Delta QD \text{ of sweets}}{\% \Delta P \text{ of train tickets}} \)

b. Fairly distant substitutes as the coefficient is relatively low.

#### Activity 3, page 74

a. \( \text{XED} = \frac{\% \Delta QD \text{ of foreign holidays}}{\% \Delta P \text{ of pears}} \)

b. Close complements as the coefficient is relatively high.

#### Activity 4, page 75

a. negative – complements
b. negative – complements
c. positive – substitutes
d. positive – substitutes
e. positive – substitutes
f. negative – complements

#### Activity 5, page 75

a. i. Substitutes as XED is positive.
   ii. Complements as XED is negative.

b. The XED indicates that the two products are complements. Therefore to raise the revenue it earns from French wine it should lower the price of Oxfordshire Mild. This would cause demand for Oxfordshire Mild to extend and demand for French wine to increase.

c. i. Oxfordshire Mild is a substitute to both the supermarket’s own brand of mild cheese and its own brand of mature cheese. The XED coefficient indicates that it is a closer substitute to the mild cheese. It competes more closely with mild cheese.
Oxfordshire Mild is a complement to both Spanish and French wine but a closer complement to French wine.

Multiple choice questions, page 76-7

1 Answer B
\[ \text{XED} = \frac{\% \Delta QD \text{ of } Z}{\% \Delta P \text{ of } Y} \]
\[-2 = -50\% \]

2 Answer A
Diagrm A shows that when the price of good Y rises, demand for good X will increase. Diagram B shows the relationship between two complements and diagram C illustrates the relationship between independent goods.

3 Answer C
Complements have negative XED. Substitutes have positive XED and independent goods have zero XED.

4 Answer A
Cross elasticity of demand is concerned with how demand for one product responds to a change in the price of another product. In this case it is a measure of how demand for X responds to a change in the price of Y.

5 Answer B
If PED for cream cakes is –2.0, then a 10% increase in the price of cream cakes would cause demand to fall by 20%. 
\[ -20%/10% = -2.0 \]
If XED between cream cakes and fruit cakes would cause demand for its substitutes, fruit cakes, to rise by 8% = 8%/10% = 0.8.

6 Answer A
Positive XED indicates that a change in the price of one product will cause demand for the other product to move in the same direction. An XED below 1.0 means that a change in the price of one product will cause a smaller percentage change in the demand for the other product.

Data response questions, page 77

a i PED = 40% = –4.0

ii The PED coefficient shows that demand for Porsche cars is very elastic. A rise in price causes a greater percentage change in demand.

b i Mercedes cars and Porsche cars are substitutes with positive cross elasticity of demand.

ii A cut in the price of Porsche cars would cause a decrease in demand for Mercedes cars (see Figure 7).

c i \[ \text{XED} = \frac{\% \Delta QD \text{ of Rolls-Royce cars}}{\% \Delta P \text{ of Porsche cars}} \]
\[ 0.3 = -3\% \]

ii The XED coefficient is positive, indicating that Rolls-Royce and Porsche cars are substitutes. The figure is relatively low which suggests they are not close substitutes.

b The cross elasticity of demand between the two products is determined by the relationship between the two products and the extent of that relationship. If the products are substitutes, they will have positive XED. If they are complements, they will have negative XED. The higher the coefficient, the stronger is the relationship.

5 Income elasticity of demand

Activity 1, page 78

a decrease – people will switch to other drinks
b increase
c increase – people will, for example, use hose pipes more
d increase

Activity 2, page 79

a It indicates that fruit juices are normal goods, with a positive income elasticity of demand. It also indicates that they have slightly income inelastic demand, with a rise in income resulting in a slightly smaller percentage change in quantity demanded.

b Yes, as peoples’ incomes rise, they tend to spend more on fruit juices. If their incomes fall, they are likely to switch from fruit juices to cheaper drinks.

Activity 3, page 80

a i It is income inelastic as the coefficient is less than 1.

ii Figure 9 shows that a rise in income from Y to Y1 causes a decrease in demand for tea from Q to Q1.

b i Because they are perceived as an inferior good. They have what is seen as a better quality substitute in the form of fresh vegetables.

ii Both have negative income elasticity of demand, making both inferior goods. They also have income inelastic demand, meaning that in each case a change in income will result in a smaller percentage change in demand. Demand for processed vegetables is more income inelastic than demand for tea.

Activity 4, page 80

a negative – people are likely to use buses less and cars more
b positive – swimming pools are expensive
c zero – as income rises demand tends not to change
d positive – people tend to spend more on books as their income rises
e positive – people drink more wine and less of some other alcoholic drinks as their income rises
**Activity 5, page 81**

a. Funeral services is a normal good, beauty salon treatments and books are superior goods and coal is an inferior good.

b. i. It would increase as a 10% rise in income would cause a 0.1% rise in demand.

ii. It would also increase but by a greater percentage as this time demand would increase by 22%.

c. i. A fall in income would cause a greater percentage decrease in demand for beauty salon treatments (see Figure 10). The fall in income from Y to Y1 results in a fall in demand from Q to Q1.

ii. A fall in income would cause an increase in demand for coal, an inferior good (see Figure 11). The decrease in income from Y to Y1 causes an increase in demand from Q to Q1.

---

**Multiple choice questions, page 82**

1. **Answer B**
   Figure B shows that as income rises, demand falls. Figure A illustrates positive income elasticity of demand and C zero income elasticity of demand.

2. **Answer B**
   Her income has risen by 25%. If her YED for food is 0.4, then her demand for food must have risen by:
   
   \[ 0.4 = \frac{?}{25\%} \]
   
   \[ 0.4 \times 25\% = 10\% \]
   
   Her spending was initially $50. It will rise by 10% to $50 + 10% = $55.

3. **Answer C**
   In this case, YED is inelastic, with demand changing by less than income.

4. **Answer C**
   Income rises from £20,000 to £25,000, which is £5,000/£20,000 x 100 = 25% increase. In C demand also rises by 25%, giving a YED of 25%/25% = 1. In A demand does not change, so YED is 0%/25% = 0%. In B demand rises by 5%, giving a YED of 5%/25% = 0.2. D has the greatest percentage change in demand, 50%, and the most elastic YED at 50%/25% = 2.

---

**Data response questions, page 83**

a. Income elasticity of demand measures the responsiveness of demand to a change in income.

b. Luxury goods, such as expensive chocolates, have a high positive income elasticity of demand. As income rises people spend more on luxury goods; their spending also rises by a greater percentage than income.

c. i. Apples and whisky both have positive YED. Demand for whisky, however, is much more income elastic than demand for apples. Whisky, with a YED greater than 1, can be regarded as a superior good.

ii. YED for Burberry coats was positive in 2001. A fall in income resulted in a fall in demand – the two were directly related.

   - YED for US domestic holidays was negative. A fall in income caused an increase in demand – an inverse relationship.

   - YED for food as a whole was zero. As income fell, demand remained largely unchanged.

d. i. Demand for a supermarket's box of luxury chocolates would change by:

   \[ 2.4 = \frac{?}{-5\%} \]

   \[ 2.4 \times -5\% = -12\% \]

   Demand for its own brand of baked beans would change by:

   \[ -0.4 = \frac{?}{-5\%} \]

   \[ -0.4 \times -5\% = 2\% \]

ii. A government report warning of the dangers of drinking too much whisky.

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**6 Price elasticity of Supply**

**Activity 1, page 84**

a. \(-16.67\%/-33.33\% = 0.5\)

b. \(-16.67\%/-11.11\% = 1.50\)

c. \(100\%/20\% = 5\)

d. \(0%/8.33\% = 0\)

e. \(33.33%/10\% = 3.33\)

**Activity 2, page 85**

a. inelastic

b. elastic

c. elastic

d. perfectly inelastic

e. elastic

**Activity 3, page 86**

a. inelastic – it takes time to adjust the supply of pork and other meats

b. elastic – short production period paper clips can be stored

c. inelastic – fresh strawberries take time to grow and cannot be stored

d. elastic – short production period and can be stored

e. elastic – short production period and can be stored

f. inelastic – a long production period
Multiple choice questions, page 87

1 Answer B
A straightforward definition of PES.

2 Answer C
Demand contracts by 16% as a result of a fall in price of 20%, giving a PES of $-16/-20 = 0.8$.

3 Answer D
If it is difficult for firms to enter or leave the industry, supply is unlikely to make a full adjustment to any changes in demand. A, B and C would tend to make supply elastic.

4 Answer D
Any straight line supply curve which passes through the origin depicts unity PES.

5 Answer B
The existence of spare capacity would make it easier for firms to adjust supply to changes in consumer demand. If demand increases, more could be produced by making use of previous idle machines and underemployed workers. A would make the industry’s supply curve inelastic. C and D would make demand, rather than supply, elastic.

6 Answer D
$0.8 \times 100\% = 80\%$. Supply will rise by 80%. 2,000 plus 80% is 3,600.

Data response questions, page 88

a Price elasticity of supply measures the responsiveness of supply to a change in price.

b i Price fell by $40/290 = -13.79\%$ and supply by 2% so PES was:

\[
-2\% = 0.145
\]

-13.79\%  

ii The supply of gold in the period was very inelastic.

c The supply of gold could change as a result of new discoveries, the closing of existing mines and existing holders of gold altering the quantity they offer for sale.

d Because if demand and price rise, it takes time to increase the capacity of existing mines and to find new ones. If demand and price fall, mine owners will be reluctant to close mines because they are difficult to reopen. Mining is capital intensive and firms will be reluctant to stop their machinery working.

e i Gold would be expected to have high YED. Gold is a superior good. A rise in income would cause a greater percentage change in quantity demanded as coin makers, jewellers, industry and other groups buy more gold.

ii Gold and silver, in jewellery and coins, are substitutes. They have positive XED.

7 Market price and output

Activity 1, page 89

a $4$ since this is where demand and supply are equal.

b 70

Activity 2, page 90

a 170 (270 – 100)

b 50 (from 270 to 220)

c 120 (from 100 to 220)

Multiple choice questions, page 91

1 Answer D
The equilibrium price occurs where demand and supply are equal. A is wrong because it is not the numbers of consumers and suppliers that are significant but the quantities they demand and supply.

2 Answer A
Excess demand will push up price and the rise in price will cause an extension in supply.

3 Answer C
A fall in price causes demand to extend and supply to contract as shown in the Figure 7.

4 Answer C
If price is set below the equilibrium price, demand will exceed supply. Stocks will run out and price will be pushed up by this excess demand. The higher price will cause an extension in supply.

5 Answer D
Equilibrium occurs when demand and supply are equal and the market clears. Price will be unchanged until market forces change. The price level, high or low, will be determined where demand and supply are equal.

6 Answer C
At a price of $30$ the quantity supplied is 42,000 and demand is only 20,000. As a result there are unsold stocks of 22,000. At $10$ there is a shortage of 22,000, at $20$ the market clears and at $40$ there are unsold stocks of 42,000.

Data response questions, page 92

a In 2001 demand for Indian cardamon was 10,500 tonnes. Supply was 9,900 tonnes – 9,000 tonnes harvested that year and 900 tonnes drawn from stocks. The market was in disequilibrium with a shortage of 600 tonnes (see Figure 8).

b Demand for cardamon exceeded supply in 2001. The excess demand would be expected to raise the price of cardamon at the end of the period.

c Favourable weather conditions (in this case an adequate supply of rain), an increase in the number of farmers growing cardamon and a subsidy given to cardamon farmers.

d They are likely to keep large stocks in the future. This is because in 2001 they found themselves in a situation where they could not meet demand.

Figure 7

Figure 8
8 Changes in price and output

Activity 1, page 93

a

b The increase in demand will push up the price until the market is again in equilibrium.
c Supply will extend in response to the higher price.

Activity 2, page 94

The decline in cod stocks is pushing up the price of cod and causing demand to contract.

Activity 3, page 94

a an increase in demand
b an increase in supply
c a decrease in demand

Activity 4, page 95

a

b An increase in supply causes price to fall and demand to extend. As demand for coffee is relatively inelastic, the fall in price is likely to result in a smaller percentage rise in demand. This will mean that the revenue of coffee producers is likely to fall.
As Figure 22 shows, the decrease in demand would have caused price to fall and the quantity supplied to contract. This would be likely to cause an increase in demand, as individuals and firms upgrade their machines. This would cause a rise in price and an extension in supply (see Figure 23).

This would increase supply, lower price and cause an extension in demand (see Figure 24).

Individuals’ demand for PCs is likely to be more elastic than firms’ demand because individuals do not have to own, or own the latest, computer. In contrast, most firms now rely on the use of computers, and to keep their costs low they need computers with the latest technology.

### Activity 1, page 98
Examples are wages, business rates and insurance.

### Activity 2, page 98

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### Activity 3, page 99

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### Activity 4, page 99

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**b** Marginal cost is below average cost when average cost is falling.<br>
**ii** Marginal cost is above average cost when average cost is rising.

### Activity 5, page 99

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### Activity 6, page 100

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**b** Marginal cost is below average cost when average cost is falling.<br>
**ii** Marginal cost is above average cost when average cost is rising.

### Activity 7, page 101

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### Activity 8, page 102

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### Multiple choice questions, page 103

**1 Answer A**<br>A straight forward definition. C defines average cost.

**2 Answer C**<br>The quantity of raw materials bought and used varies with output. A, B and D are fixed costs.

**3 Answer D**<br>
**AFC = £4.**<br>
**AFC = FC/output.** So £4 = £2,400/?. ? x £4 = £2,400. ? = £2,400/4. 600 = £2,400/£4.

**4 Answer A**<br>Fixed cost is £12 as this is the cost when output is zero. Average fixed cost is fixed cost divided by output, i.e. £12/6.

**5 Answer C**<br>When average cost is rising, marginal cost is higher. Increases in marginal cost push up average cost.

**6 Answer A**<br>In the short run some costs are fixed because not all factors of production can be changed.
The firm's initial total revenue was £18,000. A fall in price from £9 to £6 is a 33.33% reduction in price.

Activity 5, page 107
a A fall in price from £9 to £6 is a 33.33% reduction in price. As PED is \(-0.5\), this would cause demand to increase by \(-0.5 = ?/\) –33.33%. Demand would rise to \(2,000 + 16.67\% = \) 2,333.40. So total revenue would be \(= 14,000.40\).
b The firm's initial total revenue was \(= 18,000\). Its total cost was \(= 14,000\). So its profit, above cost, was \(= 14,000 – 18,000 = \) £4,000. After the price change, the firm is making a loss of \(= 999.60\). The price reduction was not a good move.

Activity 6, page 108
a A firm may move from earning a profit to making a loss if demand for its product decreases or if it experiences an increase in its average cost of production. b It would depend on what happens to BA's total revenue and total costs. Lower fares would be expected to increase sales volume. This will increase the firm's total costs. If demand is elastic total revenue will increase, and if it increases by more than total cost, profit will rise.

Multiple choice questions, page 109–110
1 Answer A
Both average revenue and price are equal to total revenue divided by sales. D defines marginal revenue.
2 Answer B
First calculate total revenue at 5 and 6 units by multiplying quantity sold by price. Then marginal revenue is found by calculating the change in price when one more unit is sold. When 5 units are sold, total revenue is \(\) £50, and when 6 units are sold, total revenue is \(\) £48. So marginal revenue is \(\) £48 – £50.
3 Answer C
Total revenue increases when marginal revenue is positive, reaches its peak when marginal revenue is zero and falls when marginal revenue is falling.
4 Answer A
Marginal revenue is the change in total revenue, \(\) £209 – £200.
5 Answer C
Total revenue has to be calculated first. When sales are 22, total revenue is \(\) £1,104. It rises to \(\) £1,104 when sales increase by one. So marginal revenue is \(\) £1,104 – £1,100.
6 Answer C
When a firm faces perfectly elastic demand, its average and marginal revenue are constant. This means that its total revenue rises by constant amounts.

Data response questions, page 110
a A loss occurs when total cost (including normal profit) exceeds total revenue (and so AR exceeds AC). By reducing costs and increasing its sales. Costs were cut by merging the company’s two head offices and ensuring that materials were bought from the cheapest sources. It increased sales by concentrating more on its traditional market of middle-aged women.
1 Answer A
Total revenue is \(\) £209 – £200.
2 Answer B
Total revenue has to be calculated first. When sales are 22, total revenue is \(\) £1,104. It rises to \(\) £1,104 when sales increase by one. So marginal revenue is \(\) £1,104 – £1,100.
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10 Revenue
Activity 1, page 104
a Average revenue is \(\) £180 divided by 20 which is \(\) £9.
b The marginal revenue of the 20th unit sold is \(\) £180 – £171 = \(\) £9.
Activity 2, page 105
<table>
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<th>Total revenue (£)</th>
<th>Marginal revenue (£)</th>
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Activity 3, page 106
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</table>
Activity 4, page 107
a Total revenue was initially \(\) 40 x £60 = £2,400. The fall in price causes revenue to change to \(\) 75 x £45 = £3,375. Total revenue has increased by \(\) £975 (£3,375 – £2,400).
b Total revenue has risen as a result of a fall in price. This suggests that demand is elastic.
Activity 5, page 107
a A fall in price from \(\) £9 to \(\) £6 is a 33.33% reduction in price. As PED is \(-0.5\), this would cause demand to increase by \(-0.5 \times -33.33\%\). Demand would rise to \(\) 2,000 + 16.67\% = 2,333.40. So total revenue would be \(\) 2,333.40 x £6 = £14,000.40.
b The firm's initial total revenue was \(\) 2,000 x £9 = £18,000. Its total cost was \(\) 2,000 x £7 = £14,000. So its profit, above cost, was \(\) £18,000 – £14,000 = £4,000. After the price change, the firm is making a loss of \(\) £999.60. The price reduction was not a good move.
11 Market structures
Activity 1, page 111
a perfect competition
b monopoly

Activity 2, page 112
a An access barrier. The independent petrol stations complained that they could not get access to petrol on equal terms with BP, Amoco, Esso and Royal Dutch Shell petrol stations.
b Large-scale advertising by the top firms and high start-up costs.

Activity 3, page 113
a many sellers and an identical product
b a few large buyers
c whether there are any barriers to entry and exit and the level of long run profits

Activity 4, page 114
a It is the only bus company operating on some routes.
b High fares and no choice.
c It may cut down on congestion.

Activity 5, page 115
Examples include a distinctive name, location, longer opening hours, different type of food and entertainment.

Activity 6, page 117
a To bring out similar products and/or to produce advertisements to outshine its rivals.
b It could cut its prices or it could collude. Both have the potential to increase profits but both run risks. The first may provoke a price war and the second may lead to a government investigation.

Multiple choice questions, page 119
1 Answer C
In perfect competition there are no barriers to entry and exit. Products are identical and so there are no different brands or advertising. In the long run normal profits are earned.

2 Answer A
In oligopoly there may be any number of firms but the market is dominated by a few large firms. B describes monopolistic competition. C and D are incorrect as in oligopoly a firm’s behaviour is influenced by that of its rivals and supernormal profits can be earned in the long run.

3 Answer B
In monopolistic competition there are slight differences in products. One way the products can be differentiated is by advertising in, for example, local newspapers. There are no or very low barriers to entry and exit and so only normal profits are earned in the long run.

4 Answer D
Firms are price makers under conditions of monopolistic competition, oligopoly and monopoly and have to lower price to sell more. This causes average revenue to fall and marginal revenue to fall even further. Firms operating under conditions of perfect competition are price takers and their average revenue and marginal revenue are equal.

5 Answer C
The existence of barriers to entry and exit permits firms producing under conditions of monopoly and oligopoly to earn supernormal profits in the long run.

6 Answer B
Oligopolists are often reluctant to lower price for fear of starting a price war. A lower price is likely to discourage the entry of new firms and demand becomes more inelastic as price falls. The thought that such an action would increase its long run profits would encourage rather than discourage a firm to lower its price.

Data response questions, page 119
a The three-firm concentration ratio was 59% and the five-firm concentration ratio was 76.4%.
b The data suggest that UK supermarkets operate in an oligopolistic market. There is a high degree of market concentration, with the three largest firms controlling more than half the market. The firms engage in non-price competition, including special deals and loyalty cards, and a price war had broken out, all features of oligopoly.
c By taking over another supermarket. For example, if Asda took over Safeway it would have a 26.7% share of the market. By undertaking an advertising campaign. Supermarkets frequently run advertising campaigns in both newspapers and on television, highlighting low-priced items, special offers and new lines.
d It may be able to attract more consumers, gain a larger market share and increase its profits. However, it is a high-risk strategy. Other firms may cut their prices and a price war may develop. The supermarket may itself be driven out of business if rival firms can undercut it. If the price war is called off before any of the firms have gone out of business, all the firms would have lost revenue. For the supermarket to believe it will benefit from cutting its prices, it must believe that it has lower costs than its rivals or can cross-subsidise any short-term losses experienced.

12 Objectives of firms
Activity 1, page 120
a Because it experienced falling demand.
b It may raise profits in the long run. By safeguarding jobs it may increase worker morale which in turn may increase labour productivity. Keeping skilled workers will also have kept it in a stronger position should demand rise in the future.

Activity 2, page 121
a Profit maximisation. Intelligent Finance seemed to be prepared to make a loss for a short time while it built up its customer base.
b In the short run, trying to attract customers may involve relatively high costs and low revenue. There may be high advertising costs and special discounts may mean that prices are low. However, if a sufficient customer base can be built up, profits may increase in the future as the firm will be in a stronger position to raise price and will be able to take advantage of economies of scale.

Activity 3, page 121
To calculate (a), (b) and (c) it is first necessary to calculate total revenue, total cost, marginal revenue and marginal cost.

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a Profit maximising output is 5 units as this is where MC = MR.
b The highest output at which the firm can break even is 7 units. At this level total revenue equals total cost.
c The sales revenue maximisation output is also at 7 units since this is where marginal revenue is zero and total revenue is at a maximum.
Activity 4, page 122
a There appear to be two main motives: to cut costs and to respond to religious groups’ pressure to adopt more environmentally friendly policies.
b This does not appear to conflict with profit maximisation because it may cut costs and is likely to attract more consumers. Even in cases where costs do rise because new equipment has to be purchased or more expensive raw materials used, the rise in sales is still likely to mean that profits will increase.

Multiple choice questions, page 123
1 Answer C
The most profitable output position is where MC = MR.
2 Answer B
In this case the manager is seeking to achieve not maximum profits but satisfactory profits.
3 Answer A
Total revenue is maximised where MR is zero. Profits are maximised where MC = MR. So if MR is zero, MC must be zero.
4 Answer A
A perfectly competitive firm cannot influence price. If its marginal cost is greater than its marginal revenue, it should lower output until MC = MR. This is shown in Figure 2 in the movement from Q to Q1.

Figure 2

5 Answer C
Supernormal profits are profits in excess of normal profits. For a firm to stay in the industry in the long run, it has to earn at least normal profits.
6 Answer D
To avoid making a loss, a firm has to ensure that it covers all its costs, including normal profit. This is achieved where total revenue equals total cost and so average revenue equals average cost.

Data response questions, page 124
a Sales maximisation is when a firm seeks to sell as large a volume as possible, normally while still covering its costs and so producing where AC = AR. Profit maximisation occurs where the highest level of profit possible is made and is achieved where MC = MR.
b One way, if the firm is a price maker, is to reduce price. In employing this strategy, the firm will have to take into account PED. If demand for its product is elastic, a fall in price will raise not only sales volume but also total revenue. Another way, often used in oligopolistic markets, is to undertake an advertising campaign. A good advertising campaign may attract new customers to the market and persuade other firms’ customers to switch to its products.
c i An oligopoly.
ii Because rival firms may cut their prices by as much or by more. In the first case, extra sales will not achieved and in the second case, sales may be lost. Price competition may even lead to the firms being driven out of the market.
d They may conflict in the short run because the firm is likely to try to produce beyond where MC = MR and to promote extra sales by cutting prices and/or spending more on advertising. However, if the search for higher sales is successful in increasing the firm’s market share, the two objectives may not conflict in the long run. This is because greater market power may enable the firm to raise its price in the future and the higher output may mean that it can take greater advantage of economies of scale.