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EDEXCEL INTERNATIONAL GCSE MATHS: QUESTIONS BY TOPIC

Rates, Growth & Compound Measures (R2)

International GCSE Mathematics A (4MA1) · Higher tier

68 questions · 231 marks · Mark schemes included

Past papers June 2018 - June 2025 · 2 sub-topics

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HOW TO USE THIS BOOKLET

Questions are grouped by sub-topic and run from the lowest to the highest mark tariff, then oldest paper first.

Click any row below to jump straight to that sub-topic or question.

On every question page, click ANSWER in the top-right corner to jump to its mark scheme; < QUESTION brings you back.

A gold bar in the left margin marks exactly where the question sits on the original page.

Diagrams, graphs, grids and tables are printed exactly as they appear in the original papers.

Each question is filed under its main topic; longer questions may also test skills from other topics.

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QUESTIONS

68 questions · 231 marks · 2 sub-topics

SUB-TOPIC R2a

SPEED, DENSITY, PRESSURE & RATES

Sub-topic R2a · 39 questions · 128 marks · lowest tariff first



- 9 The density of gold is 19.3 g/cm^3
A gold bar has volume 150 cm^3

Work out the mass of the gold bar.

..... g

(Total for Question 9 is 2 marks)

- 10 Change a speed of 50 metres per second to a speed in kilometres per hour.

..... kilometres per hour

(Total for Question 10 is 3 marks)



- 7 The mass of a silver coin is 48.3 g
The density of silver is 10.5 g/cm^3
Work out the volume of the silver coin.

..... cm^3

(Total for Question 7 is 2 marks)

- 8 The mean of 7 numbers is 60
The mean of 3 of the numbers is 46
Work out the mean of the other 4 numbers.

.....

(Total for Question 8 is 3 marks)



10 Solve

$$\begin{aligned}3x + 2y &= 15 \\10x - 4y &= 2\end{aligned}$$

Show clear algebraic working.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 10 is 3 marks)

11 Change a speed of 72 kilometres per hour to a speed in metres per second.

..... metres per second

(Total for Question 11 is 3 marks)



- 11** A solid metal sphere has radius 1.5 cm.
The mass of the sphere is 109.6 grams.

Work out the density of the sphere.
Give your answer correct to 3 significant figures.

..... g/cm³

(Total for Question 11 is 3 marks)



Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** x , 10 and y are three integers written in order of size, starting with the smallest integer.

The mean of x , 10 and y is 11

The range of x , 10 and y is 7

Work out the value of x and the value of y .

$x = \dots\dots\dots$

$y = \dots\dots\dots$

(Total for Question 1 is 2 marks)

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

- 2** A box is put on a table.

The face of the box in contact with the table is in the shape of a rectangle, 2 m by 1.25 m.

The pressure on the table due to the box is 42 newtons/m²

Work out the force exerted by the box on the table.

$\dots\dots\dots$ newtons

(Total for Question 2 is 3 marks)



- 5 Abelle flew by plane from Dubai to Rome.

The flight time was 6 hours 42 minutes.

The average speed of the plane was 650 kilometres per hour.

Work out the distance the plane flew.

.....kilometres

(Total for Question 5 is 3 marks)

- 6 Hiran invests 20 000 rupees in an account for 3 years at 1.5% per year compound interest.

Work out the total amount of money in the account at the end of 3 years.

Give your answer to the nearest rupee.

.....rupees

(Total for Question 6 is 3 marks)



- 5 The Shanghai Maglev Train takes 8 minutes to travel a distance of 30.5 kilometres.

Work out the average speed of the train.

Give your answer in kilometres per hour.

kilometres per hour

(Total for Question 5 is 3 marks)



- 6 The diagram shows a solid cuboid made from wood.

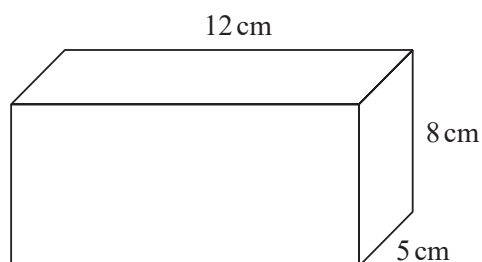


Diagram **NOT**
accurately drawn

The wood has density 0.7 g/cm^3

Work out the mass of the cuboid.

..... grams

(Total for Question 6 is 3 marks)



- 10 Change 22 metres per second to a speed in kilometres per hour.
Show your working clearly.

.....km/h

(Total for Question 10 is 3 marks)

- 11 3 years ago, the ratio of Tom's age to Clemmie's age was 2 : 7
Tom is now 15 years old and Clemmie is now x years old.

Find the value of x .

$x =$

(Total for Question 11 is 3 marks)



12

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

A box, in the shape of a cuboid, is going to be put on a table.

The whole of one face of the box will be in contact with the table.

The force exerted by the box on the table is always 105 newtons.

The box is 5 m by 4 m by 3 m.

The greatest pressure exerted by the box on the table is P newtons/m²

The least pressure exerted by the box on the table is Q newtons/m²

Work out the value of $P - Q$

.....
(Total for Question 12 is 3 marks)



- 7 30 students in a class sat a Mathematics test.
The mean mark in the test for the 30 students was 26.8

13 of the 30 students in the class are boys.
The mean mark in the test for the boys was 25

Find the mean mark in the test for the girls.
Give your answer correct to 3 significant figures.

.....
(Total for Question 7 is 3 marks)

- 8 Change a speed of x kilometres per hour into a speed in metres per second.
Simplify your answer.

.....m/s
(Total for Question 8 is 3 marks)



- 9 The density of gold is 19.3 g/cm^3
A gold bar has volume 150 cm^3

Work out the mass of the gold bar.

..... g

(Total for Question 9 is 2 marks)

- 10 Change a speed of 50 metres per second to a speed in kilometres per hour.

..... kilometres per hour

(Total for Question 10 is 3 marks)



- 4 The diagram shows a rectangle and a diagonal of the rectangle.

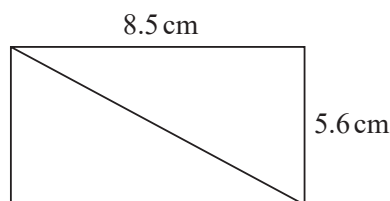


Diagram **NOT**
accurately drawn

Work out the length of the diagonal of the rectangle.
Give your answer correct to 1 decimal place.

..... cm

(Total for Question 4 is 3 marks)

- 5 A plane takes 3 hours 36 minutes to fly from the Cayman Islands to New York.
The plane flies a distance of 2470 km.

Work out the average speed of the plane in km/h.
Give your answer correct to the nearest whole number.

..... km/h

(Total for Question 5 is 3 marks)



- 9 The diagram shows a box in the shape of a cuboid.

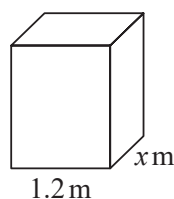


Diagram **NOT**
accurately drawn

The box is put on a table.

The face of the box in contact with the table has length 1.2 metres and width x metres.

The force exerted by the box on the table is 27 newtons.

The pressure on the table due to the box is 30 newtons/m²

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the value of x .

$x = \dots\dots\dots$

(Total for Question 9 is 3 marks)



- 5 (a) Write 5.7×10^{-3} as an ordinary number.

.....
(1)

- (b) Write 800 000 in standard form.

.....
(1)

- (c) Work out $\frac{3 \times 10^5 - 2.7 \times 10^4}{6 \times 10^{-2}}$

.....
(2)

(Total for Question 5 is 4 marks)

- 6 A rocket travelled 100 km at an average speed of 28 440 km/h.

Work out how long it took the rocket to travel the 100 km.

Give your answer in seconds, correct to the nearest second.

..... seconds

(Total for Question 6 is 3 marks)



- 8 Harold bought an antique clock for £1200
The clock increased in value by 8% per year.

Find the value of the clock exactly 3 years after Harold bought the clock.
Give your answer correct to the nearest £.

£

(Total for Question 8 is 3 marks)

- 9 A box is put on a horizontal table.

The face of the box in contact with the table is a square of side 1.5 metres.
The pressure on the table due to the box is 34.8 newtons/m²

Work out the force exerted by the box on the table.

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

..... newtons

(Total for Question 9 is 3 marks)



- 4 A train journey from Paris to Amsterdam took 3 hours 24 minutes.
The total distance the train travelled was 433.5 km.

Work out the average speed of the train.
Give your answer in kilometres per hour.

..... km/h

(Total for Question 4 is 3 marks)



Answer ALL TWENTY TWO questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** A train takes 6 hours 39 minutes to travel from New Delhi to Kanpur.
The train travels a distance of 429 km.

Work out the average speed of the train.

Give your answer in km/h correct to one decimal place.

..... km/h

(Total for Question 1 is 3 marks)



Answer all TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** A plane flew from Madrid to Dubai.

The distance the plane flew was 5658 km.

The flight time was 8 hours 12 minutes.

Work out the average speed of the plane.

..... km/h

(Total for Question 1 is 3 marks)

- 2** Here are the first 4 terms of an arithmetic sequence.

85 79 73 67

Find an expression, in terms of n , for the n th term of the sequence.

.....
(Total for Question 2 is 2 marks)



- 7 The diagram shows a solid cylinder made from iron.

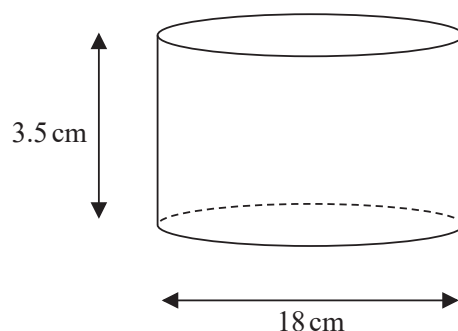


Diagram **NOT**
accurately drawn

The cylinder has diameter 18 cm and height 3.5 cm
The mass of the cylinder is 7.04 kg

Work out the density of the iron.
Give your answer in g/cm^3 correct to 2 significant figures.

..... g/cm^3

(Total for Question 7 is 3 marks)



- 3 An aeroplane travelled from New York City to Los Angeles.

The aeroplane travelled a distance of 3980 kilometres in 5 hours 24 minutes.

Work out the average speed of the aeroplane.

Give your answer in kilometres per hour correct to the nearest whole number.

..... kilometres per hour

(Total for Question 3 is 3 marks)

- 4 Show that $5\frac{1}{3} - 2\frac{6}{7} = 2\frac{10}{21}$

(Total for Question 4 is 3 marks)



- 6 The diagram shows triangle PQR .

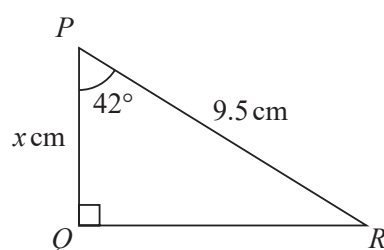


Diagram **NOT**
accurately drawn

Work out the value of x
Give your answer correct to one decimal place.

$x =$

(Total for Question 6 is 3 marks)

- 7 Change a speed of 81 kilometres per hour to a speed in metres per second.

..... metres per second

(Total for Question 7 is 3 marks)



Answer ALL TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Show that $3\frac{5}{7} \div 1\frac{5}{8} = 2\frac{2}{7}$

(Total for Question 1 is 3 marks)

- 2** Change a speed of 90 kilometres per hour to a speed in metres per second.
Show your working clearly.

..... m/s

(Total for Question 2 is 3 marks)



10 The diagram shows two solids, **A** and **B**, made from two different metals.

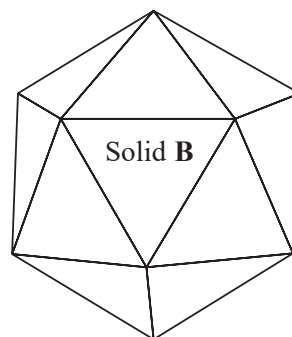
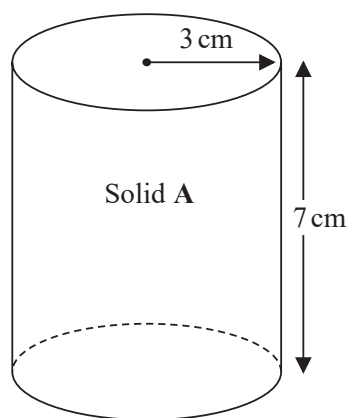


Diagram **NOT**
accurately drawn

Solid **A** is in the shape of a cylinder with radius 3 cm and height 7 cm

Solid **A** has a mass of 2000 g

Solid **B** has a mass of 3375 g

Solid **B** has a volume of 450 cm^3

All of the metal from Solid **A** and Solid **B** is melted down to make a uniform Solid **C**

Given that there is no change to mass or volume during this process

work out the density of Solid **C**

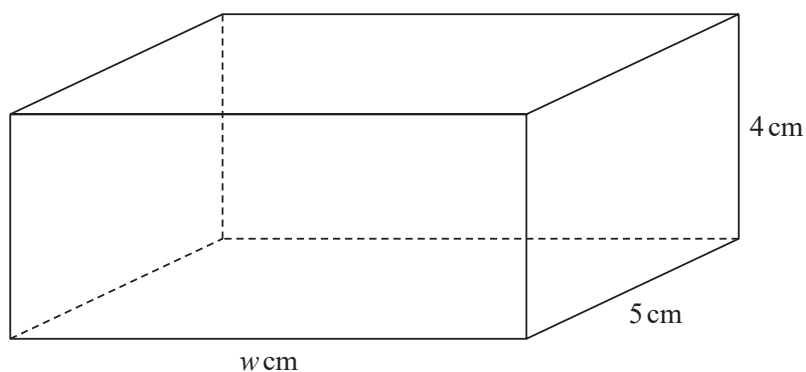
Give your answer correct to one decimal place.

..... g/cm^3

(Total for Question 10 is 3 marks)



- 11 The diagram shows a block of iron in the shape of a cuboid.



The block has length w cm, width 5 cm and height 4 cm

The density of iron is 7.8 g/cm^3

The mass of the block is 1950 g

Work out the value of w

$w = \dots\dots\dots$

(Total for Question 11 is 3 marks)

- 8 Charlotte buys a painting for \$680
The value of the painting increases by 4% each year.

Work out the value of the painting at the end of 3 years.
Give your answer correct to the nearest \$

\$.....

(Total for Question 8 is 3 marks)

- 9 Change a speed of 27 kilometres per hour to a speed in metres per second.

..... m/s

(Total for Question 9 is 3 marks)



- 3 Anjali travels on the Eurostar train from Paris to Amsterdam.

The distance the train travels between Paris and Amsterdam is 515 km.

The time taken by the train to travel between Paris and Amsterdam is 3 hours 18 minutes.

Work out the average speed of the train.

Give your answer in km/h correct to the nearest whole number.

..... km/h

(Total for Question 3 is 3 marks)

- 4 Here are the first four terms of an arithmetic sequence.

38 31 24 17

Find an expression, in terms of n , for the n th term of the sequence.

.....

(Total for Question 4 is 2 marks)



- 8 A cylinder is placed on a table.

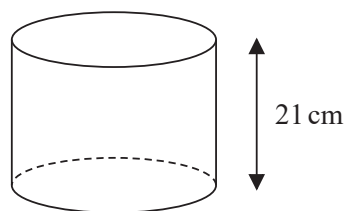


Diagram **NOT**
accurately drawn

The volume of the cylinder is 1575 cm^3

The force exerted by the cylinder on the table is 84 newtons.

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the pressure on the table due to the cylinder.

..... newtons/cm²

(Total for Question 8 is 3 marks)



- 3 A plane takes 9 hours 36 minutes to fly from New Delhi to Perth.

The plane flies at an average speed of 820 km/h.

Work out the total distance the plane flies.

..... km

(Total for Question 3 is 3 marks)

- 4 Show that $2\frac{4}{7} \times 3\frac{1}{9} = 8$

(Total for Question 4 is 3 marks)



- 5 The diagram shows triangle ABC

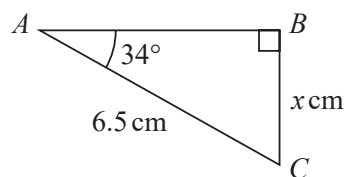


Diagram **NOT**
accurately drawn

Work out the value of x
Give your answer correct to one decimal place.

$x =$

(Total for Question 5 is 3 marks)

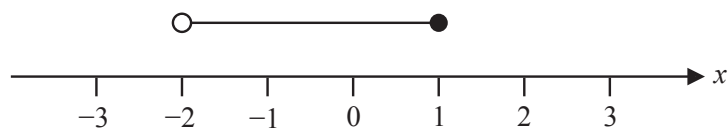
- 6 Change a speed of w metres per second to a speed in kilometres per hour.
Give your answer in terms of w in its simplest form.

..... kilometres per hour

(Total for Question 6 is 3 marks)



6



(a) Write down the inequality shown on the number line.

.....
(2)

(b) Solve the inequality $7a - 5 \leq 3a + 28$
Show clear algebraic working.

.....
(2)

(Total for Question 6 is 4 marks)

7 Change a speed of $50x$ metres per second to a speed in kilometres per hour.

..... km/h

(Total for Question 7 is 3 marks)



13 The diagram shows a solid cube.

The cube is placed on a table so that the whole of one face of the cube is in contact with the table.

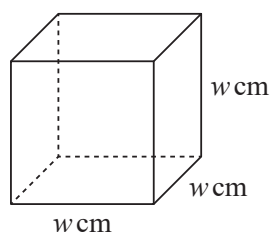


Diagram **NOT**
accurately drawn

The cube exerts a force of 56 newtons on the table.

The pressure on the table due to the cube is 0.14 newtons/cm²

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the volume of the cube.

..... cm³

(Total for Question 13 is 4 marks)



- 6 Point A has coordinates $(-3, 11)$
Point B has coordinates $(47, b)$
The midpoint of AB has coordinates $(a, -19)$

Find the value of a and the value of b .

$$a = \dots\dots\dots$$

$$b = \dots\dots\dots$$

(Total for Question 6 is 2 marks)

- 7 Pedro drove from Toulouse to Montpellier in 2 hours 42 minutes.
He drove at an average speed of 90 km/hour.
- Janine drove from Toulouse to Montpellier along the same route as Pedro.
The journey took her 3 hours.

Work out Janine's average speed for the journey.

..... km/hour

(Total for Question 7 is 4 marks)



7 Milly went on a car journey.

She travelled from Anesey to Breigh to Clando and then to Duckbridge.

For Anesey to Breigh, Milly drove the 245 km in 2.5 hours.

For Breigh to Clando, Milly drove the 220 km at an average speed of 80 km/h

For Clando to Duckbridge, Milly drove at an average speed of 72 km/h in 50 minutes.

Work out Milly's average speed, in km/h, for the journey from Anesey to Duckbridge.

Give your answer correct to one decimal place.

..... km/h

(Total for Question 7 is 4 marks)



- 7 A cylinder is placed on the ground.

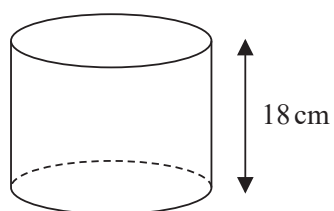


Diagram **NOT**
accurately drawn

The height of the cylinder is 18 cm.

The force exerted by the cylinder on the ground is 72 newtons.

The pressure on the ground due to the cylinder is 1.4 newtons/cm²

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the volume of the cylinder.

Give your answer correct to 3 significant figures.

..... cm³

(Total for Question 7 is 4 marks)



9 Pablo made a solid gold statue.

He melted down some gold blocks and used the gold to make the statue.
Each block of gold was a cuboid, as shown below.

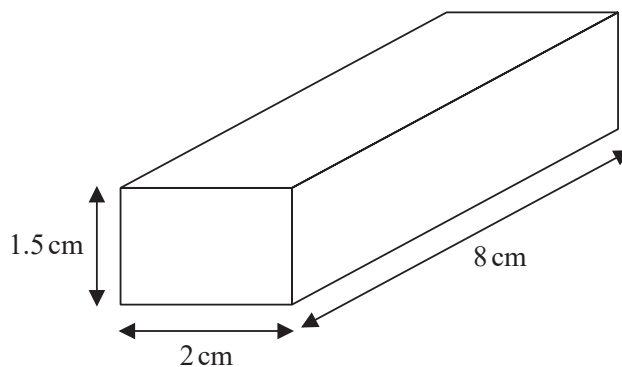


Diagram **NOT**
accurately drawn

The mass of the statue is 5.73 kg.
The density of gold is 19.32 g/cm^3

Work out the least number of gold blocks Pablo melted down in order to make the statue.
Show your working clearly.

(Total for Question 9 is 5 marks)



15 Platinum nuggets are in the shape of a solid cylinder.

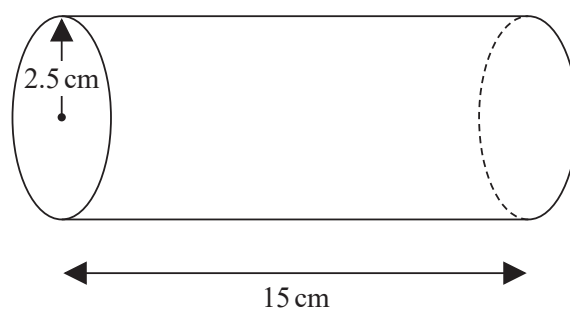


Diagram **NOT**
accurately drawn

The radius of each cylinder is 2.5 cm.

The length of each cylinder is 15 cm.

The density of platinum is 21.5 g/cm^3

The greatest mass that Jacques can carry is 30 kg.

Can Jacques carry 5 platinum nuggets at the same time?

You must show all your working.

(Total for Question 15 is 5 marks)



- 10 A solid aluminium cylinder has radius 10 cm and height h cm.

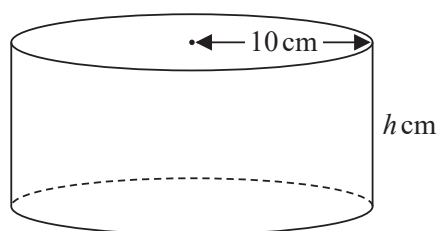


Diagram **NOT**
accurately drawn

The mass of the cylinder is 5.4 kg.

The density of aluminium is 0.0027 kg/cm^3

Calculate the value of h .

Give your answer correct to one decimal place.

$h = \dots\dots\dots$

(Total for Question 10 is 5 marks)



8 A block of wood has a mass of 3.5 kg.
The wood has density 0.65 kg/m^3

- (a) Work out the volume of the block of wood.
Give your answer correct to 3 significant figures.

(3) m^3

- (b) Change a speed of 630 kilometres per hour to a speed in metres per second.

(3) m/s

(Total for Question 8 is 6 marks)



SUB-TOPIC R2b

COMPOUND INTEREST, GROWTH & DECAY

Sub-topic R2b · 29 questions · 103 marks · lowest tariff first



- 5 Abelie flew by plane from Dubai to Rome.

The flight time was 6 hours 42 minutes.

The average speed of the plane was 650 kilometres per hour.

Work out the distance the plane flew.

.....kilometres

(Total for Question 5 is 3 marks)

- 6 Hiran invests 20 000 rupees in an account for 3 years at 1.5% per year compound interest.

Work out the total amount of money in the account at the end of 3 years.

Give your answer to the nearest rupee.

.....rupees

(Total for Question 6 is 3 marks)



- 9 Omar invests 6000 dirham for 4 years in a savings account.
He will get 1.5% per year compound interest.

Work out the total amount of interest Omar will have received by the end of 4 years.
Give your answer correct to the nearest dirham.

dirham

(Total for Question 9 is 3 marks)



7 (a) Write 5.7×10^6 as an ordinary number.

.....
(1)

(b) Write 0.004 in standard form.

.....
(1)

(c) Work out $\frac{2 \times 10^4 + 3 \times 10^5}{6.4 \times 10^{-2}}$

.....
(2)

(Total for Question 7 is 4 marks)

8 On 1st January 2016 Li bought a boat for \$170 000
The value of the boat depreciates by 8% per year.

Work out the value of the boat on 1st January 2019
Give your answer correct to the nearest dollar.

\$

(Total for Question 8 is 3 marks)



10 Henri buys a yacht for 150 000 euros.

The yacht depreciates in value by 18% each year.

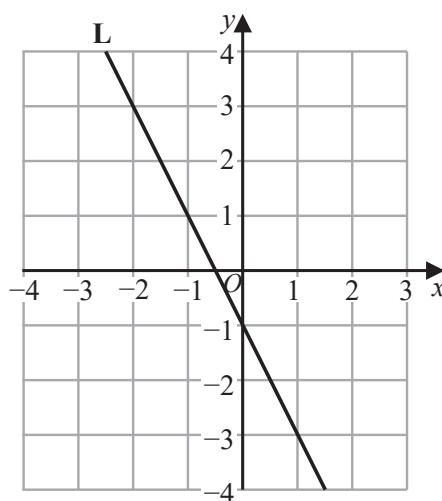
Work out the value of the yacht at the end of 3 years.

Give your answer correct to the nearest euro.

..... euros

(Total for Question 10 is 3 marks)

11 Line **L** is drawn on the grid.



Find an equation for **L**.

.....

(Total for Question 11 is 3 marks)



- 11** Max invests \$6000 in a savings account for 3 years.
The account pays compound interest at a rate of 1.5% per year for the first 2 years.

The compound interest rate changes for the third year.
At the end of 3 years, there is a total of \$6311.16 in the account.

Work out the compound interest rate for the third year.
Give your answer correct to 1 decimal place.

..... %

(Total for Question 11 is 3 marks)



7 Solve the simultaneous equations

$$\begin{aligned}3x + 5y &= 6 \\ 7x - 5y &= -11\end{aligned}$$

Show clear algebraic working.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 7 is 3 marks)

8 Hamish buys a new car for \$20 000
The car depreciates in value by 19% each year.

Work out the value of the car at the end of 3 years.
Give your answer to the nearest \$.

$$\text{\$} \dots\dots\dots$$

(Total for Question 8 is 3 marks)



13 Jan invests \$8000 in a savings account.

The account pays compound interest at a rate of $x\%$ per year.

At the end of 6 years, there is a total of \$8877.62 in the account.

Work out the value of x .

Give your answer correct to 2 decimal places.

$x = \dots\dots\dots$

(Total for Question 13 is 3 marks)



- 8 Harold bought an antique clock for £1200
The clock increased in value by 8% per year.

Find the value of the clock exactly 3 years after Harold bought the clock.
Give your answer correct to the nearest £.

£

(Total for Question 8 is 3 marks)

- 9 A box is put on a horizontal table.

The face of the box in contact with the table is a square of side 1.5 metres.
The pressure on the table due to the box is 34.8 newtons/m²

Work out the force exerted by the box on the table.

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

..... newtons

(Total for Question 9 is 3 marks)



- 7 Kuro invests 50 000 yen for 3 years in a savings account.
She gets 2.4% per year compound interest.

Work out how much money Kuro will have in her savings account at the end of the 3 years.
Give your answer correct to the nearest yen.

..... yen

(Total for Question 7 is 3 marks)



11 Himari invests 200 000 yen for 3 years in a savings account paying compound interest.

The rate of interest is 1.8% for the first year and $x\%$ for each of the second year and the third year.

The value of the investment at the end of the third year is 209 754 yen.

Work out the value of x

Give your answer correct to one decimal place.

$x =$

(Total for Question 11 is 3 marks)



- 5 Shane invests 7200 dollars for 3 years in a savings account.
He gets 2.5% per year compound interest.

How much money will Shane have in his savings account at the end of 3 years?
Give your answer to the nearest dollar.

..... dollars

(Total for Question 5 is 3 marks)



- 8 Jane bought a new car for \$18 000
The car depreciates in value by 15% each year.

Work out the value of the car at the end of 4 years.
Give your answer correct to the nearest \$

\$.....

(Total for Question 8 is 3 marks)

- 9 Solve the inequality $3 - 4x \leq 11$

.....

(Total for Question 9 is 2 marks)



- 9 Pasha invests 50 000 dollars in a savings account for 4 years.
He gets 1.3% per year compound interest.

Work out how much money Pasha will have in his savings account at the end of 4 years.
Give your answer correct to the nearest dollar.

..... dollars

(Total for Question 9 is 3 marks)



- 9 Kazi buys a car for 700 000 taka.
The value of the car depreciates by 12% each year.

Work out the value of the car at the end of 3 years.
Give your answer correct to the nearest taka.

..... taka

(Total for Question 9 is 3 marks)



- 8 Charlotte buys a painting for \$680
The value of the painting increases by 4% each year.

Work out the value of the painting at the end of 3 years.
Give your answer correct to the nearest \$

\$.....

(Total for Question 8 is 3 marks)

- 9 Change a speed of 27 kilometres per hour to a speed in metres per second.

..... m/s

(Total for Question 9 is 3 marks)



13 Feruzi invests 80 000 Kenyan shillings (KES)

He invests the money for 3 years at $x\%$ compound interest each year.

At the end of 3 years, the total interest he receives is 6151.25 KES

Work out the value of x

$x = \dots\dots\dots$

(Total for Question 13 is 3 marks)



6 Show that $3\frac{3}{7} \div 2\frac{2}{3} = 1\frac{2}{7}$

(Total for Question 6 is 3 marks)

- 7 Hermione buys a boat for \$26 800
The value of the boat depreciates by 8% each year.
- Work out the value of the boat at the end of 3 years.
Give your answer correct to the nearest dollar.

\$.....

(Total for Question 7 is 3 marks)



4 Show that $2\frac{1}{3} \div 5\frac{1}{4} = \frac{4}{9}$

(Total for Question 4 is 3 marks)

- 5 Slavomir invests 5200 euros in a savings account for 4 years.
He gets 2.5% per year compound interest.

Work out how much money Slavomir will have in the savings account
at the end of 4 years.

Give your answer correct to the nearest euro.

..... euros

(Total for Question 5 is 3 marks)



- 9 Giovanni invests 4500 koruna in a savings account for 4 years.
He gets 2.4% per year compound interest.

Work out how much money Giovanni will have in the savings account at the end of 4 years.

Give your answer correct to the nearest koruna.

..... koruna

(Total for Question 9 is 3 marks)



- 8 Kim puts 4 bananas in a bag.
The mean weight of the 4 bananas in the bag is 145 grams.

Andy puts one more banana into the bag.
The mean weight of the 5 bananas in the bag is 142 grams.

Work out the weight of the banana that Andy puts into the bag.

..... grams

(Total for Question 8 is 3 marks)

- 9 Nisha invests 20 000 euros for 3 years in a savings account.
She gets 3.5% per year compound interest.

Work out how much money Nisha will have in her savings account
at the end of the 3 years.

Give your answer correct to the nearest euro.

..... euros

(Total for Question 9 is 3 marks)



13 Charlotte bought an apartment for \$750 000

In the first year, the value of the apartment decreased by 4%

In the second year, the value of the apartment decreased by 6.5%

In the third year, the value of the apartment increased by $x\%$

At the end of the third year, the value of Charlotte's apartment was \$698 445

Work out the value of x

$x =$

(Total for Question 13 is 3 marks)



12 Osman buys a car for \$16 000

The car depreciates at a rate of 12% each year for the first 2 years.

In the third year, the car depreciates at a rate of $x\%$

At the end of 3 years, the value of the car is \$11 461.12

Work out the value of x

(Total for Question 12 is 3 marks)



- 7 Ali and Badia each have 25 000 dollars to invest.

Cyclone Bank	Tornado Bank
Invest 25 000 dollars 4.5% compound interest per year for 3 years	Invest 25 000 dollars Receive 1150 dollars interest each year for 3 years

Ali invests in the Cyclone Bank for 3 years.

Badia invests in the Tornado Bank for 3 years.

By the end of the 3 years, Ali will have received more interest than Badia.

How much more?

Show your working clearly.

Give your answer correct to the nearest dollar.

..... dollars

(Total for Question 7 is 4 marks)



8 Matteo is going to invest 5000 Swiss francs for two years.

He can invest his money in Bank **G** or in Bank **H**.

Bank **G**
1.6% per year
compound interest

Bank **H**
2.9% interest added after
two years

The total amount of interest Matteo would receive at the end of two years from Bank **G** is more than the amount of interest Matteo would receive at the end of two years from Bank **H**.

How much more?

..... Swiss francs

(Total for Question 8 is 4 marks)



- 11 Zhou invests some money for 2 years.
He invests \$2500 with Bank A and \$3000 with Bank B.

Bank A

Invests \$2500

amount of money : total amount of interest = 20 : 3
invested after 2 years

Bank B

Invests \$3000

4% per year compound interest for 2 years

Zhou receives more **interest** from Bank A than from Bank B.

How much more?

\$.....

(Total for Question 11 is 5 marks)



- 7 Chao bought a boat for HK\$160 000
The value of the boat depreciates by 4% each year.

- (a) Work out the value of the boat at the end of 3 years.
Give your answer correct to the nearest HK\$.

HK\$.....
(3)

Jalina gets a salary increase of 5%
Her salary after the increase is HK\$252 000

- (b) Work out Jalina's salary before the increase.

HK\$.....
(3)

(Total for Question 7 is 6 marks)



- 7 Jenny invests \$8500 for 3 years in a savings account.
She gets 2.3% per year compound interest.

- (a) How much money will Jenny have in her savings account at the end of 3 years?
Give your answer correct to the nearest dollar.

\$ (3)

Rami bought a house on 1st January 2015

In 2015, the house increased in value by 15%

In 2016, the house decreased in value by 8%

On 1st January 2017, the value of the house was \$687 700

- (b) What was the value of the house on 1st January 2015?

\$ (3)

(Total for Question 7 is 6 marks)



- 7 Chen invests 40 000 yuan in a fixed-term bond for 3 years.

The fixed-term bond pays compound interest at a rate of 3.5% each year.

- (a) Work out the value of Chen's investment at the end of 3 years.
Give your answer to the nearest yuan.

..... yuan
(3)

Wang invested P yuan.

The value of his investment decreased by 6.5% each year.

At the end of the first year, the value of Wang's investment was 30 481 yuan.

- (b) Work out the value of P .

$P =$
(3)

(Total for Question 7 is 6 marks)



- 9 Teresa invests \$2000 for 3 years in a savings account.
She gets 4% each year compound interest.

- (a) How much money will Teresa have in her savings account at the end of 3 years?
Give your answer correct to the nearest dollar.

\$.....
(3)

Sam invested \$ T

The value of his investment decreased by 9% each year.

At the end of the first year, the value of Sam's investment was \$1365

- (b) Work out the value of T

.....
(3)

(Total for Question 9 is 6 marks)



MARK SCHEMES

official mark schemes, in the same order as the questions



9	19.3×150		2	M1 for 19.3×150
		2895		A1 for 2895
				Total 2 marks

10	$50 \times 60 (= 3000)$ or $50 \div 1000 (= 0.05$ or $\frac{1}{20})$ or $50 \times 60 \times 60 (= 180\,000)$ or or $\frac{60 \times 60}{1000} (= 3.6)$ or $1000 \div 60 \div 60 (= 0.27777\dots$ or $\frac{5}{18})$		3	M1 for 50 with at least one of $\div 1000$ or $\times 60$ or $\frac{60 \times 60}{1000} (= 3.6)$ or $1000 \div 60 \div 60$
	$50 \times \frac{60 \times 60}{1000}$ oe eg $50 \div \frac{5}{18}$			M1 (dep) for a complete method
		180		A1 for 180 (SCB1 for both conversion factors correct but applying them wrongly eg $\frac{50 \times 1000}{60 \times 60}$)
				Total 3 marks

7	$10.5 = \frac{48.3}{v}$ or $10.5v = 48.3$ or $(v =) \frac{48.3}{10.5}$		2	M1 oe for substituting 10.5 and 48.3 correctly into a correct formula for density; may use any letter for the volume
	Correct answer scores full marks (unless from obvious incorrect working)	4.6		A1 allow $\frac{23}{5}$ or $4\frac{3}{5}$ oe
				Total 2 marks
8	$60 \times 7 (= 420)$ or $46 \times 3 (= 138)$		3	M1 may be embedded within an equation
	"420" – "138" (= 282)			M1 for a method to find the sum of the 4 numbers Allow this mark if they do further incorrect work using 282
	Correct answer scores full marks (unless from obvious incorrect working)	70.5		A1 allow $\frac{141}{2}$ oe eg $\frac{282}{4}$ or $70\frac{1}{2}$
				Total 3 marks
9	$1 - 0.15 (= 0.85)$ or $100(\%) - 15(\%) (= 85(\%))$ or $\frac{612}{85} (= 7.2)$ oe		3	M1 may be seen embedded Do not allow $(1 - 15\%)$ unless processed correctly
	$612 \div "0.85"$ oe or $612 \div "85" \times 100$ oe or "7.2" $\times 100$			M1 for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	720		A1
				Total 3 marks

10	$16x = 32$ or $32y = 144$	(2, 4.5)	3	M1 for a correct sequence of operations which leads to 1 equation in one unknown, allowing one arithmetical error
	$3 \times '2' + 2y = 15$ or $3x + 2 \times '4.5' = 15$			M1 (dep) substitute found value of one variable in one equation
				A1
				Total 3 marks

11	$72 \times 1000 (= 72000)$ or $72 \div 60 (= 1.2)$ or $72 \div 60 \div 60 (= 0.02)$ or $60 \div 60 \times 1000 (= 3.6)$	20	3	M1 for at least one of $\times 1000$ or $\div 60$
	$\frac{72}{60 \times 60} \times 1000$			M1 (dep) for a complete method
				A1
				Total 3 marks

12 (a)	$6 \times 25 + 6 \times 45 (= 150 + 270 = 420)$	20	4	M1 for $6 \times 25 (=150)$ or $6 \times 45 (=270)$
	"150" + "270" – 350 (= 70) or "420" – 350			M1
	$\frac{70}{350} \times 100$			M1 (dep on M2)
				A1
	Alternative scheme			
	$6 \times 25 + 6 \times 45 (= 150 + 270 = 420)$	20	4	M1 for $6 \times 25 (=150)$ or $6 \times 45 (=270)$
	$\frac{420}{350} \times 100 = 120$			M1
	"120" – 100			M1 (dep on M2)
				A1
(b)	$500\,000 \div 8 (=62\,500)$	6 250 000	3	M1
	$500\,000 \div 8 \times 100$			M1 for a complete method
				A1
				Total 7 marks

Question	Working	Answer	Mark	Notes
9	eg $7x + 7y = 105$ – $5x + 5y = 75$ + $7x - 5y = 3$ $7x - 5y = 3$		3	M1 Correct method to eliminate x or y: coefficients of x or y the same and correct operation to eliminate selected variable (condone any one arithmetic error in multiplication) or writing x or y in terms of the other variable and correctly substituting
	$7(15 - y) - 5y = 3$ or $7x - 5(15 - x) = 3$ oe			M1 dep Correct method to find second variable using their value from a correct method to find first variable or for repeating above method to find second variable
	"6.5" + y = 15 or x + "8.5" = 15 or $7 \times \text{"6.5"} - 5y = 3$ or $7x - 5 \times \text{"8.5"} = 3$			
		x = 6.5, y = 8.5		A1oe dep on first M1
Total 3 marks				
10 (a)	$\frac{2^3}{2^7}$ or $2^3 \times 2^{-7}$ or $\frac{1}{2^4}$ or $\frac{1}{16}$ and $16 = 2^4$		2	M1
		–4		A1 Accept 2^{-4}
(b)	$13^{-24} \times 13^5$		2	M1 for 13^{-24} or for $k = -6 \times 4 + 5$
		–19		A1 Accept 13^{-19}
Total 4 marks				
11	$V = \frac{4}{3} \times \pi \times 1.5^3$ (= 14.1(37)... or $\frac{9}{2} \pi$)		3	M1 Correct expression for volume.
	$D = \frac{109.6}{\frac{4}{3} \pi \times 1.5^3}$ oe			M1 dep
		7.75		A1 7.75 – 7.78
Total 3 marks				

International GCSE Maths				
Apart from questions 4d, 17a, 17b, 18, 19, 23 (where the mark scheme states otherwise) the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.				
Question	Working	Answer	Mark	Notes
1	eg $\frac{x+10+y}{3} = 11$ oe or $y - x = 7$ oe $3 \times 11 (=33)$	$x = 8, y = 15$	2	M1 for one correct equation in x and y OR finding the total of x , 10 and y OR two numbers with a sum of 23 OR two numbers with a range of 7 Note: condone non-integers for the award of M1
			A1	
	Total 2 marks			
2	(area =) $2 \times 1.25 (=2.5)$	105	3	M1
	$(F =) 42 \times "2.5"$ or $42 = \frac{F}{"2.5"}$		M1 Correct substitution into pressure formula	
			A1 cao	
			Total 3 marks	

Question	Working	Answer	Mark	Notes
5	6h 42 min = 6.7 h or $6\frac{42}{60}$ oe or 402 (mins) or 24120 (secs) OR 10.8(33...)(km)	4355	3	B1 for converting 6h 42min into hours or minutes or seconds OR finding distance travelled in 1 minute
	eg 6.7×650 or $(402 \times 650) \div 60$ or $(24120 \times 650) \div 3600$ or $6 \times 650 + 42 \times 10.8$			M1 use of $s \times t$, allow 6.42×650 (=4173)
				A1
				Total 3 marks

6	Eg $\frac{1.5}{100} \times 20\,000$ oe or 300	OR 20 000 $\times 1.015^3$	20 914	3	M1 for eg $\frac{1.5}{100} \times 20\,000$ oe or 300	OR M2 for $20\,000 \times 1.015^3$ or $20\,000 \times 1.015^4$ or 21 227.27.. (M1 for $20\,000 \times 1.015^2$ or 20 604.5)
	$\frac{1.5}{100} \times (20\,000 + '300') = 304.5$				M1 for completing method	
	$\frac{1.5}{100} \times (20\,000 + '300' + '304.5')$ = 20913.5675					
					Accept 1 + 0.015 as equivalent to 1.015 throughout	
					SC: If no other marks gained, award M1 for $20\,000 \times 1.045$ oe or 20900 or 900	
		A1			Answers in range 20 913– 20 914	
				Total 3 marks		

Question	Working	Answer	Mark	Notes	
5	$30.5 \div 8 (= 3.8125)$ OR $60 \div 8 (= 7.5)$ $"3.8125" \times 60$ OR $30.5 \times "7.5"$	228.75	3	M1 M1 A1	M2 for $30.5 \div \frac{8}{60}$ oe accept 229, 228.8
6	$3x + 10 = x + 52$ $3x - x = 52 - 10$ or $2x = 42$ or $x = 21$ $y = 180 - 2 \times ("21" + 52)$ or $y = 180 - 2 \times (3 \times "21" + 10)$ or $y = 180 - ("21" + 52) - (3 \times "21" + 10)$	34	4	M1 M1 M1 A1	for equating the expressions for angle <i>P</i> and angle <i>Q</i> for isolating the terms in <i>x</i> for a complete method dep on M2
7	eg $\frac{187}{147}$ or $\frac{147}{187}$ or $\frac{90}{187}$ or $\frac{187}{90}$ eg $90 \div \frac{187}{147}$ or $90 \times \frac{147}{187}$ or $147 \times \frac{90}{187}$ or $147 \div \frac{187}{90}$	71	3	M1 M1 A1	for an appropriate scale factor, candidates may work in either cm or m for a complete method, candidates may work in either cm or m 70.7 – 71



5		$2x + 0.18 + 2x + 3x + 0.26 + x = 1$ or $1 - (0.18 + 0.26) (= 0.56)$		4	M1
		$x = (1 - 0.18 - 0.26) \div (2 + 2 + 3 + 1) (= 0.07)$			M1
		eg $(0.18 + 4 \times "0.07") \times 200$ or 0.46×200 or $36 + 42 + 14$ oe			M1 dep on M2 and probabilities between 0 and 1 or $\frac{92}{200}$, oe with 92 seen
			92		A1
					Total 4 marks

6		$12 \times 8 \times 5 (= 480)$		3	M1
		"480" $\times 0.7$			M1 Dep on M1
			336		A1
					Total 3 marks



8	$10 \times 79.2 (= 792)$ or $3 \times 68 (= 204)$		3	M1
	$(10 \times 79.2 - 3 \times 68) \div 7$			M1
		84		A1
				Total 3 marks

9	(a)	t^6	1	B1
	(b)	w^{12}	1	B1
	(c)	$125x^3y^6$	2	B2
				(B1) for 2 correct terms as part of a product
				Total 4 marks

10	$22 \times 60 \times 60 (= 79\,200)$ oe or $22 \div 1000 (= 0.022)$ oe		3	M1 for converting from m/s to m/h or from m to km	M2 for 22×3.6 oe
	$22 \times 60 \times 60 \div 1000$ oe			M1 for a complete method	
		79.2		A1 oe, dep on at least M1	
				Total 3 marks	

11	$15 - 3 : x - 3 = 2 : 7$ or $(15 - 3) \div 2 (= 6)$	$(n =) (15 - 3) \div \frac{2}{2+7} (= 54)$ where n is the total age 3 years ago		3	M1	M2 for $\frac{(15-3) \times 7}{2} (= 42)$
	$\frac{x-3}{15-3} = \frac{7}{2}$ oe or $7 \times "6" (= 42)$	$"54" \times \frac{7}{2+7} (= 42)$			M1	
			45		A1	
					Total 3 marks	

12	$105 \div (5 \times 4) (= 5.25)$ oe or $105 \div (4 \times 3) (= 8.75)$ oe or $105 \div (3 \times 5) (= 7)$		3	M1
	"8.75" – "5.25"			M1 dep on previous M1. If M1 gained and they have worked out 3 pressures, award M1 for their highest minus their lowest.
		3.5		A1 oe
				Total 3 marks



8		$(x) \times 1000$ or $(x) \div 60$ or $(x) \div 60 \div 60$ or $(x) \times 1000 \div 60$ oe			M1 for at least one of $\times 1000$ or $\div 60$ or $\frac{5}{18}$ oe
		$x \times \frac{1000}{60 \times 60}$ oe			M1 (dep) for a complete correct method
			$\frac{5}{18}x$	3	A1 accept $0.2\bar{7}x$ or $0.2\bar{7}x$ or $\frac{x}{3.6}$ or $\frac{1}{3.6}x$
Total 3 marks					

Using elimination then substitution					
9		e.g. $x + 2y = -0.5$ $+ 6x - 2y = 32$ $(7x = 31.5)$	e.g. $3x + 6y = -1.5$ $- 3x - y = 16$ $(7y = -17.5)$		M1 for a correct method to eliminate x or y : coefficients of x or y the same and correct operation to eliminate selected variable (condone any one arithmetic error)
		e.g. $'4.5' + 2y = -0.5$ or $3 \times '4.5' - y = 16$	e.g. $x + 2 \times '-2.5' = -0.5$ or $3x - '-2.5' = 16$		M1 (dep) for substituting their value found of one variable into one of the equations or for repeating above method to find second variable
			$x = 4.5$ $y = -2.5$	3	A1 (dep on first M1) for both solutions
Total 3 marks					



Question	Working	Answer	Mark	Notes
4	$8.5^2 + 5.6^2 (= 103.61)$		3	M1
	$\sqrt{8.5^2 + 5.6^2}$			M1
		10.2		A1 Accept 10.1 to 10.2 or better
Total 3 marks				
5	3 hours 36 mins = 216 (mins) or 3.6 (hours) or $3\frac{36}{60}$ oe (hours)		3	M1
	$2470 \div 3.6$ or $2470 \div 3\frac{36}{60}$ or $2470 \div 216 \times 60$			M1 Allow $2470 \div 3.36 (= 735$ or better)
		686		A1 Accept 686.1 or better
Total 3 marks				
6		Fully correct perpendicular bisector with all relevant arcs shown.	2	B2 Fully correct bisector with all arcs. Correct arcs can be on the same side of AB. B1 for all correct arcs and no bisector drawn or for a correct bisector within guidelines but no arcs. NB: On tramlines = within tramlines.
Total 2 marks				
7	(adding) $10x = -5$ or $21x + 35y = 42$ $21x - 15y = -33$ then $50y = 75$		3	M1 Correct method to eliminate x or y Or making coefficients of x or y the same and correct operator has been applied to eliminate x or y (2 out of 3 terms correct implies a correct operator) or correct algebraic substitution for x or y into other equation
		$x = -0.5$ oe $y = 1.5$ oe		A1 Both A marks dep on M1
				A1
Total 3 marks				

Question	Working	Answer	Mark	Notes
8	$20\,000 \times 0.81^3$ oe			M2 M1 for $20\,000 \times 0.81$ oe (= 16 200) or $20\,000 \times 1.19$ oe (= 23 800) or $20\,000 \times 1.19^3$ oe (= 33 703.18)
		10 629		A1 Accept 10 628 → 10 629
Total 3 marks				
9	$30 = \frac{27}{1.2x}$		3	M1 Or for $\frac{27}{30}$ (= 0.9)
	$1.2x = \frac{27}{30}$ or $36x = 27$ or $22.5 \div 30$			M1
		0.75 oe		A1
Total 3 marks				
10 (a)		3.74×10^7	2	B2 B1 for 37 400 000 (oe but not in standard form) or 3.74×10^n ($n \neq 7$) or 3.7×10^7 or 3.8×10^7
(b)		11	1	B1 Allow 11 → 11.1
Total 3 marks				
11 (a)		-1, 0, 1, 2, 3, 4	2	B2 B1 for -2, -1, 0, 1, 2, 3, 4 or -1, 0, 1, 2, 3
(b)		$y \leq 6$ oe $x + y \geq 5$ oe $y \geq x - 3$ oe	2	B2 for 3 correct inequalities B1 for 2 correct inequalities SC B2 for $y \geq 6$ oe and $x + y \leq 5$ oe and $y \leq x - 3$ oe (In all cases allow < in place of ≤, and > in place of ≥)
Total 4 marks				



5	(a)	0.0057	1	B1
	(b)	8×10^5	1	B1
	(c)	$\frac{273000}{6 \times 10^{-2}}$	2	M1 for 273 000 or digits 455
		4 550 000		A1 for 4 550 000 or 4.55×10^6 oe
Total 4 marks				
6		$100 \div 28\,440 (= 0.0035\dots)$ or $28\,440 \div (60 \times 60) (= 7.9)$	3	M1
		'0.0035...' $\times 60 \times 60$ or $100 \div '7.9'$		M1
		13		A1 for 12.65 – 13
				Total 3 marks

9	e.g. $1.5 \times 1.5 (= 2.25 \text{ oe})$		3	M1 for calculating the area of the square, may be seen embedded within a calculation
	e.g. $34.8 \times "2.25"$			M1 for a complete method to find the force
		78.3		A1 oe
Total 3 marks				

10	e.g. $\frac{3}{10} \times 80 (= 24)$ or $\frac{2}{10} \times 80 (= 16)$ or $\frac{5}{10} \times 80 (= 40)$		5	M2 for a complete method to find the number of chocolate cakes or lemon cakes or fruit cakes "10" comes from $3 + 2 + 5$ (M1 for correct use of the ratio e.g. $80 \div "10" (= 8)$)
	e.g. $"16" \times \frac{3}{4} \times 1.7(0) (= 20.4(0))$ or $"40" \times \frac{7}{8} \times 2.4(0) (= 84)$			M1 for a method to find the profit for lemon cakes or fruit cakes
	e.g. $"24" \times 2 (= 48)$ and $"16" \times \frac{3}{4} \times 1.7(0) (= 20.4(0))$ and $"40" \times \frac{7}{8} \times 2.4(0) (= 84)$			M1 for a method to find the profit for all 3 cakes
		152.4(0)		A1
Total 5 marks				



4	3.4 or $\frac{17}{5}$ or $3\frac{2}{5}$ or $3\frac{24}{60}$ or 204 oe		3	B1
	$433.5 \div 3.4$ or $433.5 \div \frac{17}{5}$ or $433.5 \div 3\frac{2}{5}$ or $\frac{433.5}{204} \times 60$ oe			M1 for use of speed = distance $\div$ time Allow $433.5 \div 3.24$ (= 133.796...) for this mark only
		127.5		A1 oe allow 128
Total 3 marks				

5	a	$(x =) 270 \div (12 \times 5)$ (= 4.5) oe		3	M1
		$\pi \times '4.5'^2 \times 2 \times '4.5'$ (= 182.25 π oe)			M1 ft dep on M1
		573			A1 accept 572 – 573
	b	1 000 000	1	B1	or $(1 \times) 10^6$ or (one or 1) million oe
Total 4 marks					

6	a	e.g. $A + 5z = \frac{c}{y}$ oe or $Ay = c - 5yz$ oe		2	M1 for a correct first step e.g. add 5z to both sides or multiply all terms by y
		$c = y(A + 5z)$			A1 oe
	b	1	1	B1	
	c	$(x \pm 3)(x \pm 8)$		2	M1 or for $(x \pm a)(x \pm b)$ where $ab = 24$ or $a + b = -11$
		$(x - 3)(x - 8)$			A1
Total 5 marks					



International GCSE Maths				
Apart from questions 14a, 21 where the mark scheme states otherwise, the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.				
Question	Working	Answer	Mark	Notes
1	6 hrs 39 mins = 6.65 (hrs) or $6\frac{39}{60}$ or $6\frac{13}{20}$ or $\frac{133}{20}$ or 399 (mins)		3	B1
	Average speed = $\frac{429}{6.65}$ or eg $\frac{429}{399} \times 60$			M1 Use of $S = D \div T$ (use of their time in hours) [allow $429 \div 6.39$ if B0 awarded]
		64.5		A1 Awrt 64.5
				Total 3 marks
2		3, 7, 8, 8 and one of 4 or 5 or 6	3	B3 For a list of 5 correct numbers (B2 for a list of 5 numbers with 2 of: median of 7, mode of 8, range of 5 B1 for a list of 5 or 6 numbers with 1 of: median of 7, mode of 8, range of 5)
				Total 3 marks



International GCSE Maths					
Apart from questions 7b, 11a, 11b, 13, 14, 16, 20, 23, 26 (where the mark scheme states otherwise) the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.					
Question	Working	Answer	Mark	Notes	
1	For [8 hours 12 minutes =] 8.2 [hours] or $8\frac{12}{60}$ oe or $\frac{41}{5}$ oe or $8 \times 60 + 12 (= 492)$ [minutes]		3	B1	For correctly writing the time as a time in hours or minutes or for a correct calculation to do this
	[Average speed =] $\frac{5658}{8.2}$ oe eg $\frac{5658}{492} \times 60$ oe			M1	For use of speed = distance $\div$ time (use of their time in hours – if used minutes, then must multiply by 60) (allow $5658 \div 8.12 (= 696.79\dots)$ for this mark if B0 awarded (allow 696 – 697))
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	690		A1	
				Total 3 marks	

2			$91 - 6n$	2	B2	For a correct answer in any form eg $91 - 6 \times n$ or $-6n + 91$ or $85 + (n - 1)(-6)$ oe (B1 for $-6n + k$ oe (k may be zero or absent)) NB: award full marks for eg $x = 91 - 6n$ or n th term = $91 - 6n$ but only B1 for $n = 91 - 6n$
				Total 2 marks		



7	eg $(V=) \pi \times \left(\frac{18}{2}\right)^2 \times 3.5 (= 890.(64\dots) \text{ or } \frac{567}{2} \pi)$		3	M1	correct method to calculate volume
	eg $(7.04 \times 1000) \div "890.64"$			M1	correct method to calculate density (if volume is incorrect, their value can be used if clearly labelled) accept use of 7.04 or an incorrect conversion from kg to g for mass
		7.9		A1	accept 7.9 – 7.92
				Total 3 marks	

8	18000×0.15 (= 2700) oe or 18000×0.85 (= 15 300) oe		3	M1 for finding 15% or 85% of 18 000	M2 for 18000×0.85 ⁴ oe or 18000×0.85 ⁵ (= 7986.(69...)) oe
	eg 18000×0.85 ⁴ oe or "15300"×0.85×0.85×0.85 oe or "15300"×0.85(=13005) oe and "13005"×0.85(= 11054.25) oe and "11054.25"×0.85 oe			M1 (dep) for a complete method	
		9396		A1 awrt 9396	
					If no marks awarded, award SCB1 for or 18000 × 0.85 ² (= 13 005) oe or 18000×0.85 ³ (= 11 054.(25)) oe or 18 000 × 0.4 (= 7200) oe or 18 000 × 1.15 (= 20700) oe or 18 000 × 1.15 ⁴ (= 31482.(1125)) oe
				Total 3 marks	

3	For sight of 5 hrs 24 mins = 5.4 (hrs) or $5\frac{24}{60} (= 5\frac{2}{5})$ oe or 324 (mins) or 19440 (secs)		3	B1
	$3980 \div 5.4$ or $\frac{3980}{324} \times 60$ oe			M1 For distance $\div$ time that should give the correct speed in km/h. (SC allow $3980 \div 5.24 (= 759.5\dots$ or 760) for this mark unless mark has been awarded for 324 minutes or 5.4 hours oe)
		737		A1 awrt 737 (if no working shown, 738 gets SCB2)
				Total 3 marks



7	$\times 1000$ ($\div 60 \div 60$) or $\div 3600$ or sight of 81 000 or 1350 or 0.0225		3	M1 For one of $\times 1000$ (eg sight of 81 000) or ($\div 60 \div 60$) or $\div 3600$ oe
	$\frac{81 \times 1000}{60 \times 60}$ oe eg $\frac{81}{3.6}$ or $81 \times \frac{5}{18}$ oe			M1 For a fully correct method with correct use of brackets eg $81000 \div 60 \times 60$ is M1 only if not recovered
		22.5		A1 or $\frac{45}{2}$ or $22\frac{1}{2}$
				Total 3 marks



Question	Working	Answer	Mark	Notes	
2	$90 \times 1000 (=90\,000)$ or $\frac{90}{60 \times 60} (= 0.025 \text{ or } \frac{1}{40})$ or $\frac{1000}{60 \times 60} (= \frac{5}{18} = 0.277\dots)$ or sight of 1500		3	M1 For one of $\times 1000$ (eg sight of 90 000) or $(\div 60 \div 60)$ or $\div 3600$ oe ie correct conversion of distance units or of time units	M2 for $90 \div 3.6$ or $90 \times \frac{5}{18}$
	$\frac{90 \times 1000}{60 \times 60}$ oe eg $(1.5 \times 1000) \div 60$			M1 For a fully correct method with correct use of brackets eg $90\,000 \div 60 \times 60$ is M1 only if not recovered	
	<i>Working required</i>	25		A1 dep on M1	
				Total 3 marks	

10	eg $\pi \times 3^2 \times 7$ (= 63π or 197.9...)		3	M1 for method to find the volume of Solid A
	eg $\frac{2000}{[\text{vol A}]}$ or $\frac{3375}{450}$ (= 7.5 oe) or $\frac{2000 + 3375}{[\text{vol A}] + 450}$			M1 (indep) for method to find the density of Solid A , B or C , allow use of their volume for Solids A and C
	Correct answer scores full marks (unless from obvious incorrect working)	8.3		A1 accept 8.29 – 8.31
				Total 3 marks

11	$SCD = 128^\circ$ or $BCS = 32^\circ$ or $TSC = 180 - 128$ (= 52)		4	M1 angles need to be identified or may be seen marked on the diagram	M2 for $(BCD \Rightarrow) 128 + 32$ (= 160) or $(DCV \Rightarrow) 52 - 32$ (= 20) (may be seen marked on the diagram). To award these marks 160 or 20 must be clearly used or identified as the interior or exterior angle.
	eg (int $\angle \Rightarrow$) $128 + 32$ (= 160) or (ext $\angle \Rightarrow$) $180 - (128 + 32)$ (= 20) or (ext $\angle \Rightarrow$) "52" – 32 (= 20)			M1 (dep on previous M1) for method to find the size of one interior or exterior angle, may be seen marked on the diagram.	
	eg $180(n - 2) = "160"n$ or $360 \div "20"$			M1 for setting up an equation for the sum of interior angles or $360 \div "20"$	
	Working required	18		A1 dep on M2	
					Total 4 marks



10		Triangle with vertices (3, 6) (3, 9) (5, 6)	2	B2 for a fully correct shape with correct orientation and in the correct position. (B1 for a shape of correct size and orientation or 2 or 3 points plotted correctly)
				Total 2 marks

11	$(V =) \frac{1950}{7.8} (= 250)$ or $7.8 = \frac{1950}{w \times 5 \times 4}$ or $7.8 = \frac{1950}{w \times 20}$		3	M1 for correct method to find volume using mass $\div$ density or a correct equation with correct expression for volume (may be embedded in another calculation)
	eg $w = \frac{1950}{7.8 \times 5 \times 4}$ or $20w = \frac{1950}{7.8}$ or $20w = "250"$ or $4 \times 5 \times w = "250"$ OR eg $\frac{1950}{5 \times 4 \times 7.8}$ or $1950 \div (20 \times 7.8)$ or $1950 \div 156$ or $"250" \div 20$			M1 for a fully correct equation in w or a fully correct calculation to find the value of w (may be labelled eg x or L)
	Correct answer scores full marks (unless from obvious incorrect working)	12.5		A1
				Total 3 marks

9	For $27 \times 1000 (= 27\,000)$ or $\frac{27}{60 \times 60} (= 0.0075 \text{ or } \frac{3}{400})$ or $\frac{1000}{60 \times 60} (\frac{5}{18} = 0.27(7\dots))$ or sight of 450		3	M1 For one of $\times 1000$ (eg sight of 27 000) or $(\div 60 \div 60)$ or $\div 3600$ oe ie correct conversion of distance units or of time units or $\frac{1000}{60 \times 60}$	M2 for $27 \div 3.6$ or $27 \times \frac{5}{18}$
	$\frac{27 \times 1000}{60 \times 60}$ oe eg $(0.45 \times 1000) \div 60$ or $0.27\dots \times 27$			M1 For a fully correct method with correct use of brackets eg $27\,000 \div 60 \times 60$ is M1 only if not recovered	
	Correct answer scores full marks (unless from obvious incorrect working)	7.5		A1 oe eg $\frac{15}{2}$ or $7\frac{1}{2}$ oe	
				Total 3 marks	

3	3.3 or $\frac{33}{10}$ or $3\frac{3}{10}$ or $3\frac{18}{60}$ oe or $180 + 18$ or 198 oe		3	B1 for working out the time in hours or minutes
	$515 \div 3.3$ or $515 \div \frac{33}{10}$ or $515 \div 3\frac{3}{10}$ or $\frac{515}{198} \times 60$ oe			M1 Units must be consistent
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	156		A1 allow 156 – 156.1 SCM1 for $515 \div 3.18$ (= 161.9... or 162)
				Total 3 marks



7	(a)(i)		23, 24, 27, 29, 30, 31, 33	1	B1 in any order with no repeats
	(a)(ii)		27, 33	1	B1 in any order with no repeats
	(b)	eg 1. Yes, no members/numbers/values in common 2. Yes, nothing in common 3. Yes, no common members/numbers/values 4. Yes, they share no common members/numbers/values 5. Yes, there is not the same members/numbers/values in both sets 6. Yes, there is no intersection or there is nothing in B and C 7. Yes, as there are no members/numbers/values the same (in B and C) 8. Yes, no members/numbers/values in B are in C or vice versa 9. Yes, there are no members/numbers in B that are multiples of 3 10. Yes, there are no members/numbers/values in that empty set 11. Yes, 23, 29, 31 not in C 12. Yes, 24, 27, 30, 33 are not in B Allow sector for set This is not an exhaustive list Allow element(s) for members/numbers/values	Yes, there are no multiples of 3 in set B	1	B1 for Yes and a statement which indicates correct meanings of intersection and empty set. If no box is ticked, then the 'Yes' must be stated in the answer
	(c)		23, 25, 29, 31	2	B2 for the four correct numbers and no additions (B1 for three correct values with no more than one incorrect or for four correct values with no more than one incorrect)
Total 5 marks					

3	For 9 hrs 36 mins = 9.6 (hrs) or $9\frac{36}{60}$ (hrs) or $9\frac{3}{5}$ (hrs) oe or 576 (mins)		3	M1 For a correct conversion of time into hours or into minutes	Award M2 for $820 \times 9 + \frac{820}{60} \times 36$ (= 7380 + 492)
	eg $820 \times "9.6"$ or $820 \times \frac{576}{60}$ or $576 \times \frac{820}{60}$ or $576 \times \frac{41}{3}$ (allow 13.7 for $\frac{41}{3}$) oe			M1 For use of distance = speed $\times$ time in hours (eg allow use of 9.36 for this mark)	or $\frac{34560}{60 \times 60} \times 820$ oe
	Correct answer scores full marks (unless from obvious incorrect working)	7872		A1 SCB1 for 7675.2 if no other marks awarded	
				Total 3 marks	



6	For one of $w \div 1000$ or $w \div 10^3$ or $w \times 10^{-3}$ or $0.001w$ oe $(w \times 60 \times 60)$ oe or $w \times 3600$ or $w \div \frac{1}{3600}$ oe		3	M1 or $\frac{3600}{1000}$ or $\frac{18}{5}$ or 3.6 oe (without a link to w)
	$\frac{w \times 60 \times 60}{1000}$ oe eg $w \times \frac{3600}{1000}$			M1 For a fully correct method including w
	Correct answer scores full marks (unless from obvious incorrect working)	3.6w		A1 or $\frac{18}{5}w$ or $3\frac{3}{5}w$ allow $3.6 \times w$
				Total 3 marks



7	$50x \div 1000 (= 0.05x)$ oe or $50x \times 60 \times 60 (= 180\,000x)$ oe or $50x \div \frac{1}{3600} (= 180\,000x)$ oe or $50x \div 1000 \times 60 (= 3x)$ or $\frac{3600}{1000}$ or $\frac{18}{5}$ or 3.6 or $\frac{1000}{3600}$ or $\frac{5}{18}$ or 0.277(77...)		3	M1 Condone omission of x for this mark
	eg $\frac{50x \times 60 \times 60}{1000}$ oe or $50x \times 3.6$ oe or $50x \div \frac{1000}{3600}$ oe or 180			M1 for a complete method including x or for an answer of 180
	Correct answer scores full marks (unless from obvious incorrect working)	180x		A1
				Total 3 marks



12	(a)	E.g. $56 - 38$		2	M1 for subtracting readings from 60 and 20 oe
			18		A1 for answer in the range 17 – 19
	(b)	[40.5, 43]		3	B1
		'42' $\div$ 0.6 oe			M1 for complete method to find the number of men
			70		A1
Total 5 marks					

13		$0.14 = \frac{56}{w^2}$ oe or $56 \div 0.14 (= 400)$		4	M1 for using the given formula correctly
		$\sqrt{\frac{56}{0.14}}$ or $\sqrt{400}$ (=20)			M1 for a method to find w
		'20' $\times$ '20' $\times$ '20' oe			M1 (dep on M2) for a method to find the volume of the cube
			8000		A1
Total 4 marks					

14	(a)	$(0.5 \times) 9.3 \times 14.7 \times \sin 106$ or $(9.3 \times \cos 16) \times 14.7$ or $(9.3 \times \sin 74) \times 14.7$		2	M1 for applying the area of a triangle formula using correct values (to find half of the area of the parallelogram) or for a correct method to find the area of the parallelogram
			131		A1 awrt 131
	(b)	$(GE^2 =) 9.3^2 + 14.7^2 - 2 \times 9.3 \times 14.7 \times \cos 106$		3	M1 for the correct use of the cosine rule
		377(9....) or 378 or 86.49 + 216.09 + 75.3... or 302.58 + 75.3....			M1 (dep on M1) for the correct order of operations
			19.4		A1 for 19.4 – 19.5
Total 5 marks					

7	Use of 2 hrs 42 mins = 2.7 hrs or 162 mins		4	B1
	e.g. $90 \times 2.7 (= 243)$ or e.g. $\frac{90}{60} \times 162 (= 243)$ or e.g. $\frac{S}{90} = \frac{2.7}{3}$			M1 for use of $D = S \times T$ (accept use of their time e.g. 90×2.42) or for setting up an equation using proportion
	e.g. " 243 " $\div 3$ or ($S =$) $90 \times \frac{2.7}{3}$			M1 (dep on M1) for their $D \div 3$ or for solving their equation
		81		A1
				Total 4 marks

8	for 0.08×1200 oe (= 96) or 1.08×1200 oe (= 1296)	OR		3	M1 for 0.08×1200 oe (= 96) or 1.08×1200 oe (= 1296)	OR M2 for 1200×1.08^3 or 1200×1.08^4 (= 1632.59)
	$1.08 \times "1296"$ (= 1399.68) oe $1.08 \times "1399.68"$ (= 1511.6544) oe	1200×1.08^3			M1 for completing method to find total amount in the account	(M1 for 1200×1.08^2 (= 1399.68))
			1512		A1 accept 1511 – 1512	
					SC: if no other marks gained award M1 for 0.24×1200 oe or 288 or 1488 accept $(1 + 0.08)$ as equivalent to 1.08 throughout	
					Total 3 marks	

7	$220 \div 80 (= 2.75 \text{ or } \frac{11}{4})$ oe			M1 for a method to find the time from B to C
	$72 \times \frac{50}{60} (= 60)$ oe			M1 for a method to find the distance from C to D Allow 0.83(333...) to 2 dp truncated or rounded
	$\frac{245 + 220 + "60"}{2.5 + "2.75" + \frac{50}{60}} \left(= \frac{525}{\frac{73}{12}} \right)$ oe			M1 for a complete method to find the average speed for entire journey 0.83(333...) to 2 dp truncated or rounded 6.0(8333...) to 2 sf truncated or rounded
		86.3		A1 for 86.3 – 86.4
				Total 4 marks

8	(a)	50 000	1	B1
	(b)	6×10^{-5}	1	B1
	(c)	$2.5 \times 10^{512-700}$ or 2.5×10^n or 0.25×10^{-187} or $p \times 10^{-188}$ where $1 \leq p < 10$	2	M1
		2.5×10^{-188}		A1
				Total 4 marks

9	(a)	x^9	1	B1 cao
	(b)	$64y^6$	2	B2 for $64y^6$ (B1 for ky^6 where $k \neq 64$ or $64y^m$ where $m \neq 6$)
	(c)	$(n \pm 3)(n \pm 4)$	2	M1 for $(n \pm 3)(n \pm 4)$ or $(n + a)(n + b)$ where $ab = 12$ or $a + b = -7$ Condone use of a different letter to n
		$(n - 3)(n - 4)$		A1
				Total 5 marks

7	$1.4 = \frac{72}{(\text{area})}$ oe		4	M1
	$(\text{area} =) \frac{72}{1.4} (= \frac{360}{7} = 51.4\dots)$ oe			M1 (51.4 or better)
	"51.4..." $\times 18$ or $r = \sqrt{\frac{"51.4\dots"}{\pi}} (= 4.046\dots)$ and $\pi \times "4.046\dots^2 \times 18$			M1 allow use of πr^2 to find the radius and then using $\pi r^2 h$ to find the volume
		926		A1 Allow 925 – 928
				Total 4 marks

8	(a)	8.9×10^{-5}	1	B1
	(b)	83 400	1	B1
				Total 2 marks

9	(a)	8	1	B1
	(b)	11	1	B1 accept x^{11}
	(c)	$8k^6m^{12}$	2	B2 for all correct B1 for two correct from 8 or k^6 or m^{12}
				Total 4 marks



8	$28 \times 5 (= 140)$ OR $26.5 \times 2 (= 53)$			M1	or 87
	$(28 \times 5 - 26.5 \times 2) \div (5 - 2)$			M1	for a complete method
		29	3	A1	
					Total 3 marks
9	$1.5 \times 2 \times 8 (= 24 \text{ (cm}^3\text{)})$			M1	for finding the volume of the cuboid
	e.g. $(V =) \frac{5.73 \times 1000}{19.32} (= 296.58\dots)$			M2	complete method to find the volume of statue or the mass of one block, could work in g or kg (if not M2 then award M1 for correct use of density formula e.g. $19.32 = \frac{5.73 \times 1000}{V}$ or $19.32 = \frac{M}{24}$)
	or				
	$(M =) 19.32 \times "24" (= 463.68)$				
	e.g. $"296.58" \div "24" (= 12.3576\dots)$ or $"5730" \div "463.68" (= 12.3576\dots)$			M1	could work in g or kg
		13	5	A1	cao
					Total 5 marks
10	e.g. $6(x - 1) (= 6x - 6)$			M1	method to find expression for perimeter of hexagon
	e.g. $2(x + 5) + 2x - 3 (= 4x + 7)$			M1	method to find expression for perimeter of triangle
	$"6x - 6" = "4x + 7"$			M1	(dep on at least M1) for equating both expressions
	e.g. $6x - 4x = 7 + 6$			M1	(dep on previous M1 and equation of the form $ax + b = cx + d$) for rearranging the x terms on one side and the numerical terms on the other and all expansions correct.
		5.5	5	A1	oe (dep on M2)
					Total 5 marks

15	$\pi \times 2.5^2 \times 15 (= 93.75\pi = 294.5243\dots)$		5	M1 for using the formula for volume of cylinder
	$21.5 = \frac{m}{"294.5243"}$			M1 for using $d = \frac{m}{v}$ with <i>their</i> intended volume v
	$(m =) 21.5 \times '294.5243\dots' (= 6332.272692)$			M1 for rearranging for $m = d \times v$
	'6332.27269' $\div$ 1000 $\times$ 5 (=31.661...) or '6332.27269' $\div$ 6 $\div$ 1000 (= 1.055...) or '6332.27269' $\times$ 5 and 30 $\times$ 1000 (=30 000) or 30 $\div$ ('6332.27269' $\div$ 1000) (= 4.7376...)			M1 for a correct calculation that would enable a conclusion to be made based on mass
		No and correct comparable figure(s)		A1 for No oe and (31.6 to 31.7 or 1.05 to 1.06 or 4.70 to 4.74) seen
Total 5 marks				

Alternative Mark Scheme for Q15				
15	$\pi \times 2.5^2 \times 15 (= 93.75\pi = 294.5243\dots)$		5	M1 for using the formula for volume of cylinder
	$21.5 = \frac{30000}{v}$ or $21.5 = \frac{30000 \div 5}{v}$			M1 for using $d = \frac{m}{v}$ with given d and m
	$(v =) \frac{30000}{21.5} (=1395.34\dots)$ or $(v =) \frac{30000}{21.5 \times 5} (=279.069\dots)$			M1 for rearranging for $v = \frac{m}{d}$ for either one nugget, or all five nuggets.
	"1395.34" and "294.52" $\times$ 5 (= 1472.62) or "279.06" and "294.52"			M1 for correct calculations that would enable a conclusion to be made based on volumes
		No and correct comparable figure(s)		A1 awrt 3sf
Total 6 marks				

10	$0.0027 = \frac{5.4}{(V)}$ oe		5	M1 for correctly using density = $\frac{\text{mass}}{\text{volume}}$
	$(V \Rightarrow) \frac{5.4}{0.0027} = 2000$			M1 for correctly rearranging for V
	$\pi \times 10^2 \times h = 2000$ oe			M1ft their 2000 for $\pi \times 10^2 \times h = \text{their } V$
	$(h \Rightarrow) \frac{2000}{\pi \times 10^2}$ oe (= 6.3661...)			M1ft their 2000 dep on previous M1 for correctly rearranging for h
	Correct answer scores full marks (unless from obvious incorrect working)	6.4		A1 awrt 6.4
				Total 5 marks

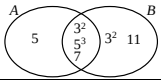
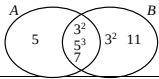
Question	Working	Answer	Mark	Notes
8 (a)	$0.65 = \frac{3.5}{V}$ $(V =) \frac{3.5}{0.65}$	5.38	3	M1 M1 A1 for answer in range 5.38 – 5.385 SCB1 for a “correct” equation involving V with digits 65 and 35 where units have been converted eg $V = \frac{3500}{0.65}$
(b)	$630 \times 1000 (=630\,000)$ $60 \times 60 (=3600)$ eg $630 \div 60 (=10.5)$ $630\,000 \div 60 (=10\,500)$ $1000 \div 60 (=16.66\dots)$ $1000 \div (60 \times 60) (=0.277\dots)$ $1 \div (60 \times 60) (=0.000277\dots)$ $\frac{630 \times 1000}{60 \times 60}$ oe	175	3	M1 for converting 630 km to m or 1 hour to seconds or for correct operation(s) using at least 2 of the numbers 630, 1000, 60, 60 M1 Fully correct method (M2 for $630 \div 3.6$)



Question	Working	Answer	Mark	Notes	
9	$6000 \times 0.015 (= 90)$ or $6000 \times 1.015 (= 6090)$ $(6000 + '90') \times 0.015 (= 91.35)$ $('6090' + '91.35') \times 0.015 (= 92.72)$ $('6090' + '91.35' + '92.72') \times 0.015$ $(= 94.11..)$	368.18	3	M1 or for $\frac{4 \times 1.5}{100} \times 6000$ $(= 360)$ or 6360 M1 for complete method (4 years) for total value or sight of 6368..... A1 accept 368 – 368.20	M2 for 6000×1.015^4

7	(a)		5 700 000	1	B1
	(b)		4×10^{-3}	1	B1
	(c)		5 000 000 or 5×10^6 oe	2	B2 If not B2 then award B1 for 320000 or 3.2×10^5 oe or 5×10^n oe where $n \neq 6$
					Total 4 marks

8		$0.08 \times 170\,000 (=13600)$ or $0.92 \times 170\,000$ (=156400)		3	M1 oe eg $170\,000 \div 12.5$	M2 for $170\,000 \times 0.92^3$
		e.g. $0.92 \times (0.92 \times "156400")$			M1 (dep)for a complete method	
			132377		A1 or 132376.96	
					(SCB2 for $170\,000 \times 0.92^4 (=121786.(810))$ (SCB1 for $170\,000 \times 0.24 (=40\,800)$ or $170\,000 \times 0.76 (=129\,200)$ or $170\,000 \times 1.08 (=183\,600)$ or $170\,000 \times 1.08^3 (=214151)$ or an answer of 129 200 or an answer of 214 151 – 214151.1(0))	
					Total 3 marks	

Question	Working	Answer	Mark	Notes
8	(a)		2	M1 3 ² × 5 ³ × 7 oe or correct Venn diagram
	(b)		2	M1 3 ⁴ × 5 ⁴ × 7 × 11 oe or correct Venn diagram
		7875		A1
		3 898 125		A1
				Total 4 marks
9	(a)	8.4 × 10 ⁵	1	B1
	(b)	$\frac{600000000}{0.08}$ or 750000000 oe (e.g 0.75 × 10 ⁹)	2	M1 A1 M1 for 60000000 or 0.08
		7.5 × 10 ⁸		
				Total 3 marks
10		150000 × 0.82 ³	3	M2 If not M2 then M1 for 1st year e.g 150000 × 0.82 (= 123000) or 150000 × 0.18 (= 27000) SC B1 for 150000 × 1.18 (= 177000) or 150000 × 1.18 ³ (= 246454.8) or 150000 × 0.54 (= 81000) or 150000 × 0.46 (= 69000) Accept 82705.2
		82705		A1
				Total 3 marks
11		Gradient = (-)4 ÷ 2 oe	3	M1 Correct method to work out the gradient (±) accept 4 ÷ 2 oe or "m" = 2
		y = - 2x - 1 oe		A2 If not A2 then A1 for L = - 2x - 1 or - 2x - 1 or y = 2x - 1 or y = - 2x + c
				Total 3 marks

10			$x \geq -1$ oe $x + y \leq 4$ oe $y \geq \frac{1}{3}x - 2$ oe	3	B3 for all 3 correct inequalities (B2 for two correct inequalities B1 for one correct inequality) (SC B3 for $x \leq -1$, $x + y \geq 4$ and $y \leq \frac{1}{3}x - 2$ oe) (If no marks gained B1 for understanding of equation $x + y = 4$ e.g. $y > 4 - x$) Accept $<$ for $\leq$ and $>$ for $\geq$ throughout
					Total 3 marks

11		$6000 \times 1.015^2 (= 6181.35)$ or $6000 + (0.015 \times 6000) + (0.015 \times (6000 +$ $'90')) (= 6181.35)$ or $(1.015)^2 (= 1.030225)$ or $\frac{6311.16}{6000} (= 1.05186)$		3	M1 for working out the total amount after two years or working out the compound interest multiplier after two years or working out the compound interest multiplier after three years
		$6311.16 \div '6181.35' (= 1.021) (\times 100)$ or $\frac{6311.16 - '6181.35'}{'6181.35'} (= 1.021) (\times 100)$ or $'1.05186' \div '1.030225' (= 1.021) (\times 100)$			M1 (dep on M1) for a complete method to find the compound interest multiplier ($\times 100$)
			2.1		A1 awrt 2.1
					Total 3 marks

13	$8000 \times \left(\frac{100+x}{100} \right)^6 = 8877.62$ oe or $8000 \times \left(1 + \frac{x}{100} \right)^6 = 8877.62$ oe or $8000 \times (1+x\%)^6 = 8877.62$ or $8000 \times y^6 = 8877.62$ oe		3	M1
	$\left(\frac{8877.62}{8000} \right)^{\frac{1}{6}} (=1.0175\dots)$ or $(1.1097\dots)^{\frac{1}{6}} (=1.0175\dots)$			M1
		1.75		A1
Total 3 marks				

14	$F = \frac{k}{v^2}$ or $Fv^2 = k$ oe		3	M1 (NB. Not for $F = \frac{1}{v^2}$) Constant of proportionality must be a symbol such as k M2 for $6.5 = \frac{k}{4^2}$ oe
	$6.5 = \frac{k}{4^2}$ or $k = 6.5 \times 4^2$ or $k = 104$			M1 For substitution of F and v into a correct formula
		$F = \frac{104}{v^2}$		A1 Award 3 marks if $F = \frac{k}{v^2}$ is on the answer line and the value of $k = 104$ is found
Total 3 marks				

7	$0.024 \times 50\,000 (= 1200)$ oe or $1.024 \times 50\,000 (= 51\,200)$ oe or $1.024^2 \times 50\,000 (= 52\,428.8)$ oe or $0.024 \times 50\,000 \times 3 (= 3600)$ oe $0.024 \times 50\,000 \times 3 + 50\,000 (= 53\,600)$ oe		3	M1	M2 for $50\,000 \times 1.024^3$
	$0.024 \times (50\,000 + '1200') (= 1228.8)$ oe and $0.024 \times (50\,000 + '1200' + '1228.8') (= 1258.2912)$ or $'1200' + '1228.8' + '1258.2912' (= 3687.(0912))$ or $1.024 \times '52\,428.8'$			M1 for completing method to find total amount in the account	
		53 687		A1 accept 53 687 – 53 688	
				accept $(1 + 0.024)$ or $\left(1 + \frac{2.4}{100}\right)$ as equivalent to 1.024 throughout	
				Total 3 marks	

10	(a)	eg $2y = -7x(+10)$		2	M1 for $2y = -7x(+10)$ or an answer of $-3.5x$ oe or an answer of 3.5 oe
			-3.5		A1 oe
	(b)		(0, 5)	1	B1 cao
Total 3 marks					

11	eg $200\,000 \times 0.018$ (= 3600) or $200\,000 \times 1.018$ (= 203 600)		3	M1 for method to find 1.8% or 101.8% of 200 000
	eg $\sqrt{209\,754 \div "203\,600"}$ (= 1.015000...)			M1 for a complete method to find the multiplier for the compound interest for 2 nd and 3 rd year
		1.5		A1 or better eg 1.500045971...
Total 3 marks				



4	360 ÷ 8 (= 45) or 360 ÷ 5 (= 72) or 180 – (360 ÷ 8) (= 135) oe or 180 – (360 ÷ 5) (= 108) oe		4	M1 finding interior or exterior angle of octagon or pentagon Angles may be seen on diagram – but must be obtuse if interior and acute if exterior.
	'72' – '45' (= 27) or '135' – '108' (= 27)			M1 (dep 1st M1) using a pair of interior or pair of exterior angles to find angle IBC Angle may be seen on diagram.
	$\frac{180 - '27'}{2}$ (= 76.5)			M1
		76.5		A1
Total 4 marks				
5	7200 × 0.025 (= 180) or 7200 × 1.025 (= 7380) oe or 7200 × 1.075 (= 7740) oe or 7200 × 0.075 (= 540) oe		3	M1
	(7200 + '180') × 0.025 (= 184.5) and (7200 + '180' + '184.5') × 0.025 (= 189.1125) and 7200 + '180' + '184.5' + '189.1...' (= 7753.6125)			M1 NB year end values are 7380 and 7564.5(0) 7753.6125
		7754		A1 answer in range 7753 – 7754
Total 3 marks				

9	50 000 × 1.013 (=50 650) oe Or 50 000 × 0.013 (= 650) oe (NB: accept $\left(1 + \frac{1.3}{100}\right)$ for 1.013 but not (1 + 1.3%))		3	M1 For finding 101.3% or 1.3% of 50 000	M2 for 50000×1.013 ⁴ or 50000×1.013 ⁵
	“50 650” × 1.013 (=51 308.45) “51 308.45” × 1.013 (=51 975.45...) “51 975.45...” × 1.013			M1 dep for a complete method	
		52 651		A1 awrt 52 651 if no marks awarded then SCB1 for 50 000 × 0.013 ³ 50 000 × 0.987 ⁴ (= 47450.....) 50 000 × 0.052 (= 2600) 50 000 × 1.052 (= 52600) 50000×1.013 ² (= 51308.45) 50000×1.013 ³ (= 51975.45...)	
				Total 3 marks	

8	(a)		0.0056	1	B1
	(b)	20 000 000 oe eg 20×10^6 or 0.2×10^8 or 2×10^n $n \neq 7$ or $\frac{6 \times 10^{(3+5)}}{21+9}$ or $\frac{6 \times 10^8}{30}$ or $\frac{6 \times 10^3}{3 \times 10^{-4}}$ or $\frac{6000}{0.0003}$ or $\frac{6000}{3 \times 10^{-4}}$		2	M1
		Correct answer scores full marks (unless from obvious incorrect working)	2×10^7		A1
					Total 3 marks

9	$0.12 \times 700\,000$ oe (= 84 000) or $0.88 \times 700\,000$ oe (= 616 000) or $700\,000 \times 0.88^2$ oe (= 542 080)		3	M1 for finding 12% or 88% of 700 000	M2 for $700\,000 \times 0.88^3$ or $700\,000 \times 0.88^4$ (= 419 786.75)
	$0.88 \times "616\,000"$ oe (= 542 080) and $0.88 \times "542\,080"$ oe (= 477 030.4)			M1 for completing method to find the value of the car	
	Correct answer scores full marks (unless from obvious incorrect working)	477 030		A1 accept 477 030 – 477 031	
				SC: if no other marks gained award M1 for $0.36 \times 700\,000$ oe or 252 000 or $0.64 \times 700\,000$ oe or 448 000 accept $(1 - 0.12)$ as equivalent to 0.88 throughout	
					Total 3 marks

8	for 0.04×680 oe (= 27.2) or 1.04×680 oe (= 707.2)		3	M1 For finding 4% or 104% of the value	or M2 for 680×1.04^3 or 680×1.04^4 or 795.50.....
	$1.04 \times "707.2" (= 735.488)$ oe and $1.04 \times "735.488" (= 764.90752)$ oe or $0.04 \times (680 + "27.2") = 0.04 \times "707.2" = 28.288$ $0.04 \times ("707.2 + 28.288 ") = 0.04 \times "735.488" = 29.41952$ "735.488" + "29.41952" = 764.90752....			M1 for completing the method	
	Correct answer scores full marks (unless from obvious incorrect working)	765		A1 or 764 – 765 (if a correct answer is seen in working and then rounded incorrectly, award full marks) SC: if no other marks gained award M1 for 1.12×680 oe or 761.6(0) (or 762) or 0.12×680 oe or 81.6 (or 82) or $0.96^3 \times 680$ oe or 601.62... (or 602) (accept $(1 + 0.04)$ as equivalent to 1.04 throughout but not $(1 + 4\%)$)	
				Total 3 marks	

13	$80\,000 \times \left(\frac{100+x}{100}\right)^3 = 80\,000 + 6151.25$ oe or $80\,000 \times \left(1 + \frac{x}{100}\right)^3 = 80\,000 + 6151.25$ oe or $80\,000 \times (1+x\%)^3 = 80\,000 + 6151.25$ oe or $80\,000 \times y^3 = 80\,000 + 6151.25$ oe or $\frac{80\,000 + 6151.25}{80\,000} (= 1.076\dots)$ oe or $\frac{86\,151.25}{80\,000} (= 1.076\dots)$ oe		5	M1
	$\sqrt[3]{\frac{80\,000 + 6151.25}{80\,000}} (= 1.025)$ oe or $\sqrt[3]{1.076\dots} (= 1.025)$ or $\left(1 + \frac{x}{100} = \right) \frac{41}{40} (= 1.025)$			M1
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	2.5		A1 Accept answers in the range 2.4 – 2.6 from correct working NB Do not allow an answer in the range 2.4 – 2.6 if it comes from awrt 7.6% oe or 7.7% oe divided by 3 Do not accept an answer if it is in the range that comes from a simple interest method
				Total 3 marks

Question	Working	Answer	Mark	Notes	
7	$26\,800 \times 0.08$ oe (= 2144) or $26\,800 \times 0.92$ oe (= 24 656)		3	M1 for finding 8% or 92% of the value	OR M2 for $26\,800 \times (1 - 0.08)^3$ or M2 for $26\,800 \times 0.92^4$ or 19 199... (M1 for $26\,800 \times 0.92^2$ or 22 683....)
	$0.92 \times "24\,656"$ (= 22 683.52) $0.92 \times "22\,683.52"$ or $0.08 \times (26\,800 - 2144) = 1972.48$ $0.08 \times (24\,656 - 1972.48) = 1814.6816$ $22\,683.52 - 1814.6816 (= 20\,868.8384)$			M1 for completing method	
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	20 869		A1 20 868 to 20 869 (inclusive) (SCB1 for $26\,800 \times 1.08^3 (= 33\,760....)$ or $26\,800 \times 0.08 \times 3 (= 6432)$ or $26\,800 - 3 \times 2144 (= 20\,368)$	
Total 3 marks					

5	$5200 \times 1.025 (= 5330)$ oe or $5200 \times 0.025 (= 130)$ oe		3	M1 for a method to find 2.5% or 102.5% of 5200	M2 for 5200×1.025^4 oe or for $5200 \times 1.025^5 (= 5883\dots)$ oe
	for “5330” $\times 1.025 (= 5463\dots)$ oe and “5463.25” $\times 1.025 (= 5599\dots)$ oe and “5599.83...” $\times 1.025 (= 5739\dots)$ oe			M1 for a complete method	
	Correct answer scores full marks (unless from obvious incorrect working)	5740		A1 5739 – 5740 SC: If no other marks awarded, award B1 for $5200 \times 0.1 (= 520)$ oe $5200 \times 1.1 (= 5720)$ oe $5200 \times 0.9 (= 4680)$ oe $5200 \times 0.975 (= 5070)$ oe $5200 \times 0.975^4 (= 4699\dots)$ oe (accept $(1 + 0.025)$ as equivalent to 1.025 throughout but not $(1 + 2.5\%)$)	
				Total 3 marks	

9	$4500 \times 1.024 (= 4608)$ oe or $4500 \times 0.024 (= 108)$		3	M1	M2 for 4500×1.024^4 or 4500×1.024^5
	“4608” $\times 1.024 (= 4718.592)$ and “4718.592” $\times 1.024 (= 4831.838\dots)$ and “4831.838” $\times 1.024 (= 4947.80\dots)$			M1	
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	4948		A1	4947 – 4948 if no other mark awarded, SCB1 for $4500 \times 0.024 \times 4 (= 432)$ $0.096 \times 4500 (= 432)$ or $4500 + 4500 \times 0.024 \times 4 (= 4932)$ $4500 \times 1.096 (= 4932)$ $0.976 \times 4500 (= 4392)$ or $0.904 \times 4500 (= 4068)$ or $0.976^4 \times 4500 (= 4083\dots)$ or $4500 \times 1.024^3 (= 4831.83\dots)$
				Total 3 marks	

9	$20\,000 \times 1.035$ (= 20 700) oe or $20\,000 \times 0.035$ (= 700) oe (NB: accept $\left(1 + \frac{3.5}{100}\right)$ for 1.035 but not $(1 + 3.5\%)$)		3	M1	For finding 103.5% or 3.5% of 20 000	M2 for $20\,000 \times 1.035^3$ [NB: $1.035^3 = 1.108717\dots$] or $20\,000 \times 1.035^4$ (= 22 950...)
	“20 700” $\times 1.035$ (= 21 424.5) “21 424.5” $\times 1.035$ oe eg $20700 \times 0.035 = 724.5$ & $20700 + 724.5 = 21424.5$ $21424.5 \times 0.035 = 749.85\dots$ & $21424.5 + 749.85\dots$			M1	dep for a complete method	
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	22 174		A1	Allow 22 174 - 22175 (if you see the correct answer and then 20 000 is subtracted to give 2174 - 2175 then award full marks 2174 – 2175 with no working gains 2 marks) SCB2 for $(2000 \times 1.035^3) = 2217\dots$ [misread] SCB2 for 22160 ($20\,000 \times 1.108$) SCB2 for 22180 ($20\,000 \times 1.109$) SCB1 if no marks awarded for any of these are seen (not necessarily the answer) $(20\,000 \times 1.035^n)$ $20\,000 \times 0.965^3 (= 17\,972\dots\dots)$ $20\,000 \times 0.105 (= 2100)$ $20\,000 \times 1.105 (= 22\,100)$ $20\,000 \times 1.105^2 (= 21\,424.5)$	
				Total 3 marks		

13	$750\,000 \times (1 - 0.04) (= 720\,000)$ oe and $“720\,000” \times (1 - 0.065) (= 673\,200)$ or $750\,000 \times (1 - 0.04) \times (1 - 0.065) (= 673\,200)$ or $750\,000 \times 0.96 \times 0.935 (= 673\,200)$		3	M1 (NB: accept $\left(1 - \frac{4}{100}\right)$ for 0.96 but not $(1 - 4\%)$ and accept $\left(1 - \frac{6.5}{100}\right)$ for 0.935 but not $(1 - 6.5\%)$) Calculations may be seen as part of an equation eg $750\,000 \times 0.96 \times 0.935 \times \left(1 + \frac{x}{100}\right) = 698\,445$ 1.0375 or 25245 imply M1
	eg $\frac{698\,445 - “673\,200”}{“673\,200”} (\times 100) (= 0.0375)$ or $\frac{698\,445}{“673\,200”} - 1 (= 0.0375)$ or $1.0375 - 1 (= 0.0375)$ oe or $\frac{698\,445}{“673\,200”} \times 100 (= 103.75)$			M1 for a method to reach value one step away from x ie a method leading to 0.0375 or 103.75
	Correct answer scores full marks (unless from obvious incorrect working)	3.75		A1 oe eg $3\frac{3}{4}$ or $\frac{15}{4}$
Total 3 marks				

12	$16\,000 \times \left(1 - \frac{12}{100}\right)^2 (= 12\,390.4)$ or $16\,000 \times 0.7744 (= 12\,390.4)$ oe or $16\,000 \times \left(1 - \frac{12}{100}\right) (= 14\,080)$ and $14\,080 \times \left(1 - \frac{12}{100}\right) (= 12\,390.4)$ oe or $\left(1 - \frac{12}{100}\right)^2 (= 0.7744)$ and $\frac{11461.12}{16000} \left(= \frac{4477}{6250} = 0.71632\right)$		3	M1 for a method to find the value of the car after two years or a method to find the overall percentage multiplier after two years and the overall percentage multiplier for the three years May be seen embedded, eg in an equation Do not allow $(1 - 12\%)$ unless processed correctly
	eg $\frac{12390.4 - 11461.12}{12390.4} (\times 100) (= 0.075)$ or $1 - \frac{11461.12}{12390.4} (\times 100)$ or $1 - 0.925 (= 0.075)$ or $\frac{11461.12}{12390.4} (\times 100) (= 0.925)$ or $\frac{0.71632}{0.7744} (\times 100) (= 0.925)$			M1 for a complete method to find the value of the decimal equivalent of x% or for a complete method to find the percentage multiplier for the third year May be seen embedded, eg within a correct equation rearranged to one of these equivalent forms
	Correct answer only scores full marks (unless from obviously incorrect working)	7.5		A1 oe SCB2 for answer –7.5
Total 3 marks				

7	$\frac{4.5}{100} \times 25\,000 (=1125)$ or $\frac{104.5}{100} \times 25\,000 (= 26\,125)$ or $1150 \times 3 (= 3450)$ or $25\,000 + 1150 \times 3 (= 28\,450)$ (allow $\frac{3 \times 4.5}{100} \times 25\,000 (= 3375)$ for this mark)		4	M1 finding 4.5% or 104.5% of 25 000 (allow for $3 \times 0.045 \times 25\,000$ oe) or the total interest for T bank or the total amount gained for T bank	M2 for $1.045^3 \times 25\,000$ (=28 529.(15313))
	$\frac{4.5}{100} \times (25\,000 + '1125') (= 1175.625 \text{ or } 1175 \text{ or } 1176)$ and $\frac{4.5}{100} \times (25\,000 + '1125' + '1175.625') (= 1228.529)$ or $\frac{104.5}{100} \times 26125 (= 27\,300.625)$ and $\frac{104.5}{100} \times 27\,300.625 (= 28\,529.15....)$			M1 completing the interest for C bank or completing the total amount for C bank	
	'1125' + '1176' + '1229' (= 3530) or '28 529' – 25 000 (=3529) and $3 \times 1150 (= 3450)$ or '28 529' and $25\,000 + '3450' (= 28\,450)$			M1 for total interest for C bank and total interest for T bank or total amount for C bank and total amount for T bank	
	Working required	79 or 80		A1 dep on M2 Allow 79 - 80	
					Total 4 marks

Question	Working	Answer	Mark	Notes	
8	$\frac{2.9}{100} \times 5000 (=145)$ oe or $1.029 \times 5000 (=5145)$ oe or $1.029^2 \times 5000 (= 5294....)$ oe or $0.058 \times 5000 (= 290)$ oe or $1.058 \times 5000 (= 5290)$			M1 Bank H	
	5000×0.016 oe (= 80) oe or 5000×1.016 oe (= 5080) oe or $5000 \times 0.032 (= 160)$ oe or $5000 \times 1.032 (= 5160)$ oe	M2 for 5000×1.016^2 (= 5161.28)	4	M1 Bank G	
	$(80 + 5000) \times 0.016 (= 81.28)$ oe or $5080 \times 1.016 (= 5161.28)$ oe			M1 Bank G	
	Correct answer scores full marks (unless from obvious incorrect working)	16.28		A1	
				Total 4 marks	



11	2500 ÷ 20 × 3 (= 375) oe or 125 × 3 (=375) or 7500 ÷ 20 (= 375) 3000 ÷ 20 × 3 (= 450) oe or 150 × 3 (= 450) or 9000 ÷ 20 (= 450)		5	M1 for a method to find the interest for Bank A 2875 or 3450 implies this method mark
	for 0.04 × 3000 oe (= 120) or 0.04 × 2500 oe (= 100) or 1.04 × 3000 oe (= 3120) or 1.04 × 2500 oe (= 2600)	OR 3000 × 1.04 ² (= 3244.8) or 2500 × 1.04 ² (=2704)		M1 for finding 4% or 104% of 3000 or 2500
	1.04 × “3120” oe (= 3244.8) 1.04 × “2600” oe (= 2704)			M1 for completing method to find the total amount for Bank B
	eg “3244.8” – 3000 (= 244.8) or “2704” – 2500 (= 204)			M1 for a complete method to find the interest for Bank B
	Correct answer scores full marks (unless from obvious incorrect working)	130.2(0)		A1
				SC: if none of the 2 nd or 3 rd M marks gained award SCM1 for 0.08 × 3000 oe or 240 or 1.08 × 3000 or 3240 or 0.08 × 2500 oe or 200 or 1.08 × 2500 or 2700 or 3000 × (1 – 0.04) ² (= 2764.8(0)) or 2500 × (1 – 0.04) ² (= 2304) accept (1 + 0.04) or $\left(1 + \frac{4}{100}\right)$ as equivalent to 1.04 throughout
				Total 5 marks

Question	Working	Answer	Mark	Notes	
7 a	$\frac{4}{100} \times 160\,000$ oe (=6400)	141 558	3	M1	M2 for $160\,000 \times 0.96^3$ or $160\,000 \times 0.96^4$ (=135 895.44..))
	$\frac{4}{100} \times (160\,000 - "6400")$ (= 6144) $\frac{4}{100} \times (160\,000 - "6400" - "6144")$ (= 5898.24) 160 000 – “6400” – “6144” – “5898.24”			M1 for a complete method (condone 4 years rather than 3)	If not M2 then award M1 for $160\,000 \times 0.96$ (=153 600) or $160\,000 \times 0.96^2$ (=147 456)
				accept $(1 - 0.04)$ in place of 0.96 throughout	
				A1 for 141 557.76 - 141 558	
				SC If no other marks gained, award B1 for $160\,000 \times 0.12$ oe (=19 200) or $160\,000 \times 0.88$ oe (=140 800) or an answer of 140 800 or an answer of in the range 179 978 – 179 978.24	
b	E.g. $252\,000 \div 1.05$	240 000	3	M2	If not M2 then M1 for $x \times 1.05 = 252\,000$ or $252\,000 \div 1.05$ oe
				A1	NB: An answer of 239 400 scores M0 M0 A0



Question	Working	Answer	Mark	Notes	
7	(a) $8500 \times 0.023 (=195.5)$ or $8500 \times 1.023 (=8695.5)$ $((8500 + "195.5") \times 1.023) \times 1.023$	9100	3	M1	M2 for 8500×1.023^3 (M1 for 8500×1.023^n)
	(b) $687\,700 \div 0.92 (=747\,500)$ or $687\,700 \div 1.15 (=598\,000)$ or $1.15 \times 0.92 (=1.058)$ $687\,7000 \div (0.92 \times 1.15)$			M1 A1 M1	complete method for 9100 – 9100.1 (answer for 600(.1) gains M2A0) a correct first step
		650 000	3	M1 A1	Dep on M1 for completely correct method



7	(a)	for $0.035 \times 40\,000$ oe (= 1400) or $1.035 \times 40\,000$ oe (= 41 400)	OR		3	M1 for finding 3.5% or 103.5% of 40 000	OR M2 for $40\,000 \times 1.035^3$
		$1.035 \times "41\,400"$ oe (= 42 849) $1.035 \times "42\,849"$ oe (= 44 348.72)	$40\,000 \times 1.035^3$			M1 for completing method to find total amount in the account	or $40\,000 \times 1.035^4$ (= 45 900.92) (M1 for $40\,000 \times 1.035^2$ (= 42 849))
				44 349		A1 accept 44 348 – 44 349	
						SC: if no other marks gained award M1 for $0.105 \times 40\,000$ oe or 4200 or 44 200 accept $(1 + 0.035)$ as equivalent to 1.035 throughout	
	(b)	e.g. $30\,481 \div (1 - 0.065)$ or $30\,481 \div 0.935$			3	M2 for a complete method (M1) for $30\,481 \div (100 - 6.5)$ (= 326) or $(100 - 6.5)\% = 30\,481$ or $93.5\% = 30\,481$ or e.g. $(1 - 0.065)x = 30\,481$	
				32 600		A1	
						Total 6 marks	

9	(a)	for 0.04×2000 oe (= 80) or 1.04×2000 oe (= 2080)	OR 2000×1.04^3 oe	3	M1	for finding 4% or 104% of 2000	OR M2 for 2000×1.04^3 oe or 2000×1.04^4 oe (= 2339.72)
		$1.04 \times \text{“2080”}$ oe (= 2163.2) $1.04 \times \text{“2163.2”}$ oe			M1	for completing method to find total amount in the account at the end of 3 years	
		<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	2250		A1	accept 2249 – 2250	
						SC: if no other marks gained award M1 for 0.12×2000 oe or 240 or 1.12×2000 oe or 2240 accept $(1 + 0.04)$ as equivalent to 1.04 throughout	
	(b)	eg $1365 \div (1 - 0.09)$ or $1365 \div 0.91$		3	M2	for a complete method	
					(M1)	for $1365 \div (100 - 9)$ (= 15) or $(100 - 9)\% = 1365$ or $91\% = 1365$ or eg $(1 - 0.09)T = 1365$ or eg $T - 0.09T = 1365$	
		<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	1500		A1		
						Total 6 marks	

