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EDEXCEL GCSE (9-1) MATHS: QUESTIONS BY TOPIC

Rates, Growth & Compound Measures (R2)

GCSE (9-1) Mathematics (1MA1) · Foundation tier

44 questions · 147 marks · Mark schemes included

Past papers June 2017 - 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

44 questions · 147 marks · 2 sub-topics

SUB-TOPIC R2a

SPEED, DENSITY, PRESSURE & RATES

Sub-topic R2a · 35 questions · 117 marks · lowest tariff first



29 Change 30 metres per second to kilometres per hour.

..... kilometres per hour

(Total for Question 29 is 2 marks)

30 The value of Michelle's car has decreased by 15%
The car now has a value of £13 600

Work out the value of Michelle's car before the decrease.

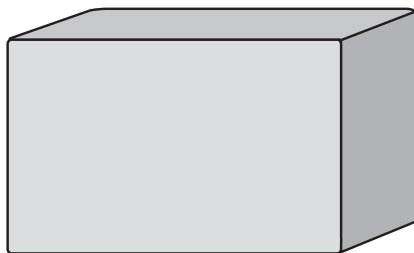
£.....

(Total for Question 30 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS



25



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

A storage tank exerts a force of 10 000 newtons on the ground.

The base of the tank in contact with the ground is a 4 m by 2 m rectangle.

Work out the pressure on the ground due to the tank.

..... newtons/m²

(Total for Question 25 is 2 marks)



27 A solid cuboid is made of metal.

The metal has a density of 9 g/cm^3

The volume of the cuboid is 72 cm^3

Work out the mass of the cuboid.

..... g

(Total for Question 27 is 2 marks)

28 (a) Write $(9 \times 10^4):(4.5 \times 10^6)$ in the form $1:n$ where n is an integer.

.....
(2)

(b) Write the following numbers in order of size.
Start with the smallest number.

$$5.625 \times 10^4$$

$$5625$$

$$56250 \times 10^{-3}$$

$$0.005625 \times 10^5$$

.....
(2)

(Total for Question 28 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS



25 A piece of glass has a mass of 27 g and a volume of 10 cm^3

Work out the density of the piece of glass.

..... g/cm^3

(Total for Question 25 is 2 marks)

26 Work out an estimate for $\frac{5.7 \times 8.2}{0.26}$

.....

(Total for Question 26 is 3 marks)



11 Rima is going to roll a fair 6-sided dice.

- (a) Choose the word that best describes the probability that the dice will land on the number 3

impossible

unlikely

evens

likely

certain

.....
(1)

- (b) Choose the word that best describes the probability that the dice will land on an odd number.

impossible

unlikely

evens

likely

certain

.....
(1)

(Total for Question 11 is 2 marks)

12 A car travels at an average speed of 37 miles per hour for 3 hours.

Work out the distance that the car travels in the 3 hours.

..... miles

(Total for Question 12 is 2 marks)



- 20** In London, 1 litre of petrol costs 108.9p
In New York, 1 US gallon of petrol costs \$2.83

1 US gallon = 3.785 litres

£1 = \$1.46

In which city is petrol better value for money, London or New York?
You must show your working.

(Total for Question 20 is 3 marks)

- 21** A gold bar has a mass of 12.5 kg.

The density of gold is 19.3 g/cm^3

Work out the volume of the gold bar.

Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 21 is 3 marks)



(c) Use your graph to find estimates of the solutions to the equation $x^2 - x - 6 = -2$

.....
(2)

(Total for Question 24 is 6 marks)

25 A force of 70 newtons acts on an area of 20 cm^2

The force is increased by 10 newtons.

The area is increased by 10 cm^2

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

Helen says,

“The pressure decreases by less than 20%”

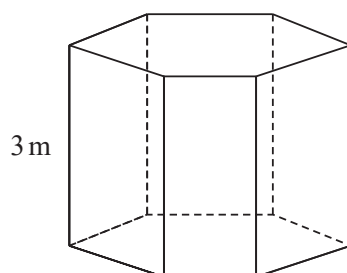
Is Helen correct?

You must show how you get your answer.

(Total for Question 25 is 3 marks)



27 The diagram shows a prism placed on a horizontal floor.



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

The prism has height 3 m

The volume of the prism is 18 m^3

The pressure on the floor due to the prism is 75 newtons/m^2

Work out the force exerted by the prism on the floor.

..... newtons

(Total for Question 27 is 3 marks)

28 Write these numbers in order of size.

Start with the smallest number.

6.72×10^5

67.2×10^{-4}

672×10^4

$0.000\,672$

.....

(Total for Question 28 is 2 marks)



- 24 Andy cycles a distance of 30 km at an average speed of 24 km/h.
He then runs a distance of 12 km at an average speed of 8 km/h.

Work out the total time Andy takes.
Give your answer in hours and minutes.

..... hours minutes

(Total for Question 24 is 3 marks)

- 25 A number, m , is rounded to 1 decimal place.
The result is 9.4

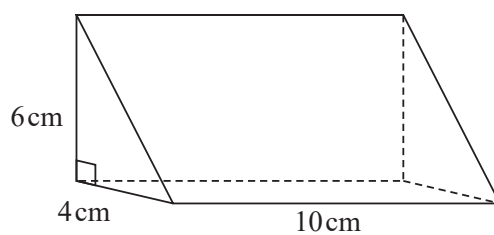
Complete the error interval for m .

..... $\leq m <$

(Total for Question 25 is 2 marks)



29 The diagram shows a solid triangular prism.



The prism is made from wood with a density of 0.8 g/cm^3

Work out the mass of this prism.

..... g

(Total for Question 29 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS



11 (a) Write 196 minutes in hours and minutes.

..... hours minutes
(2)

A train travels x miles in 2 hours.

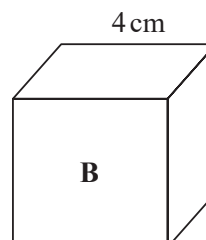
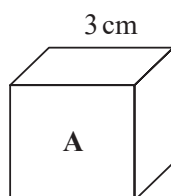
(b) Write down an expression, in terms of x , for the average speed of the train.

..... miles per hour
(1)

(Total for Question 11 is 3 marks)



29 Here are two cubes, **A** and **B**.



Cube **A** has a mass of 81 g.

Cube **B** has a mass of 128 g.

Work out

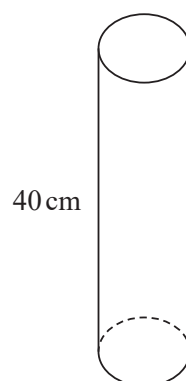
the density of cube **A** : the density of cube **B**

Give your answer in the form $a : b$, where a and b are integers.

(Total for Question 29 is 3 marks)



27 The diagram shows a solid cylinder on a horizontal floor.



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

The cylinder has a

volume of 1200 cm^3
height of 40 cm.

The cylinder exerts a force of 90 newtons on the floor.

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

..... newtons/cm²

(Total for Question 27 is 3 marks)



16 Paulo drives at an average speed of 56 km/h for 1 hour 45 minutes.

Work out the distance Paulo drives.

..... km

(Total for Question 16 is 3 marks)



25 Lava flows from a volcano at a constant rate of $11.9\text{ m}^3/\text{s}$

How many days does it take for $67\,205\,600\text{ m}^3$ of lava to flow from the volcano?
Give your answer correct to the nearest day.

..... days

(Total for Question 25 is 3 marks)



26 Riley travelled by car and by aeroplane.

He travelled 143 miles by car at an average speed of 55 miles per hour.

Riley then travelled for 5 hours and 20 minutes by aeroplane.

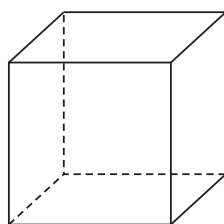
Work out, in hours and minutes, Riley's total travelling time.

..... hours minutes

(Total for Question 26 is 3 marks)



27 The diagram shows a solid cube placed on a horizontal table.



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

The pressure on the table due to the cube is 3.5 newtons/cm^2

The force exerted by the cube on the table is 504 newtons.

Show that the total surface area of the cube is less than 900 cm^2

(Total for Question 27 is 3 marks)



27 $1.25 \times 10^{-12} = k \times (4 \times 10^{-20})$

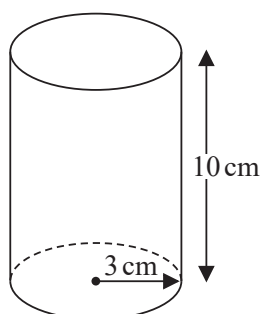
Work out the value of k .

Give your answer in standard form.

$k = \dots\dots\dots$

(Total for Question 27 is 2 marks)

28 The diagram shows a solid cylinder with base radius 3 cm and height 10 cm.



The cylinder is made from steel.

It has a mass of 2250 g.

Work out the density of the steel.

Give your answer correct to 3 significant figures.

$\dots\dots\dots \text{g/cm}^3$

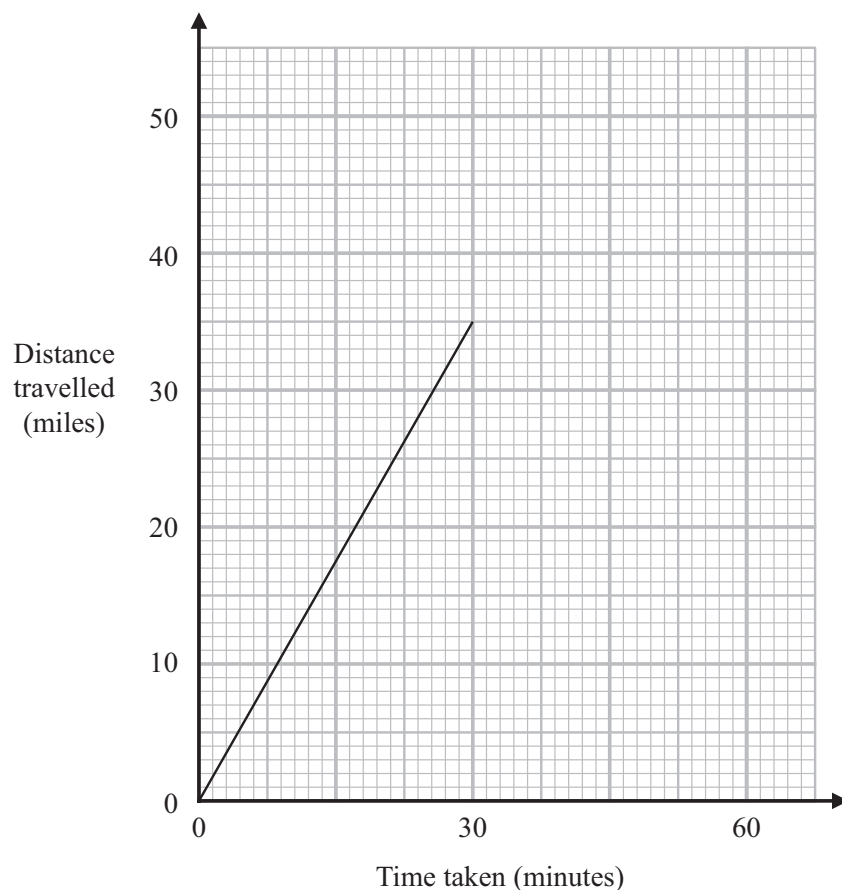
(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS



16 A train travels from Derby to Sheffield.

The travel graph shows information about the train's journey.



- (a) Work out the speed of the train.
Give your answer in miles per hour.

..... miles per hour
(2)

The train stays at Sheffield for 15 minutes.

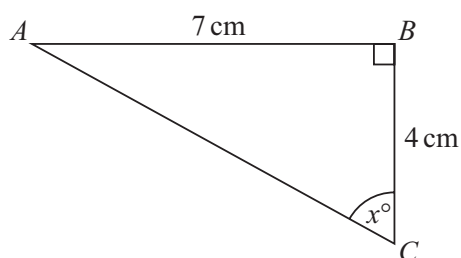
- (b) Show this information on the travel graph.

(1)

(Total for Question 16 is 3 marks)



26 ABC is a right-angled triangle.



Calculate the value of x .

Give your answer correct to 1 decimal place.

$x = \dots\dots\dots$

(Total for Question 26 is 2 marks)

27 Metal rods are made from steel with density 8 g/cm^3
Each metal rod has a volume of 1500 cm^3

The maximum mass of metal rods that can be put on a trolley is 300 kg .

Work out the greatest number of metal rods that can be put on the trolley.

$\dots\dots\dots$
(Total for Question 27 is 3 marks)



- 26 Karim rounds a number, n , to 1 decimal place.
The result is 23.8

Complete the error interval for n .

..... $\leq n <$

(Total for Question 26 is 2 marks)

- 27 A plane takes 2 hours 24 minutes to fly from Luton to Alicante.
The plane flies a distance of 1512 kilometres.

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

..... kilometres per hour

(Total for Question 27 is 3 marks)



20 The density of apple juice is 1.05 grams per cm^3 .

The density of fruit syrup is 1.4 grams per cm^3 .

The density of carbonated water is 0.99 grams per cm^3 .

25 cm^3 of apple juice are mixed with 15 cm^3 of fruit syrup and
280 cm^3 of carbonated water to make a drink with a volume of 320 cm^3 .

Work out the density of the drink.

Give your answer correct to 2 decimal places.

.....g/ cm^3

(Total for Question 20 is 4 marks)



22 A cycle race across America is 3069.25 miles in length.

Juan knows his average speed for his previous races is 15.12 miles per hour.
For the next race across America he will cycle for 8 hours per day.

(a) Estimate how many days Juan will take to complete the race.

.....
(3)

Juan trains for the race.
The average speed he can cycle at increases.
It is now 16.27 miles per hour.

(b) How does this affect your answer to part (a)?

.....
.....
(1)

.....
(Total for Question 22 is 4 marks)



9 Emily drives 186 miles in 3 hours.

(a) What is her average speed?

..... mph
(2)

Sarah drives at an average speed of 58 mph for 4 hours.

(b) How many miles does Sarah drive?

..... miles
(2)

(Total for Question 9 is 4 marks)

10 (a) Write down all the prime numbers between 20 and 30

.....
(2)

Catherine says,

“2 is the only even prime number.”

(b) Is Catherine right?

You must give a reason for your answer.

.....
.....
(1)

(Total for Question 10 is 3 marks)



24 Lara is a skier.

She completed a ski race in 1 minute 54 seconds.

The race was 475 m in length.

Lara assumes that her average speed is the same for each race.

- (a) Using this assumption, work out how long Lara should take to complete a 700 m race.
Give your answer in minutes and seconds.

..... minutes seconds
(3)

Lara's average speed actually increases the further she goes.

- (b) How does this affect your answer to part (a)?

.....
.....
(1)

(Total for Question 24 is 4 marks)



- 8 Write the following fractions in order of size.
Start with the smallest fraction.

$$\frac{1}{3} \quad \frac{3}{4} \quad \frac{1}{4} \quad \frac{7}{12} \quad \frac{1}{2}$$

.....
(Total for Question 8 is 2 marks)

- 9 Ruth left her home at 9 am and walked to the library.
She got to the library at 10 30 am.
Ruth walked at a speed of 4 mph.

(a) Work out the distance Ruth walked.

..... miles
(2)

Ruth got to the library at 10 30 am.
She stayed at the library for 50 minutes.
Then she walked home.

Ruth took $1\frac{1}{4}$ hours to walk home.

(b) At what time did Ruth get home?

.....
(2)

(Total for Question 9 is 4 marks)



26 Write 37 cm^3 in mm^3

..... mm^3

(Total for Question 26 is 1 mark)

27 Nimer was driving to a hotel.
He looked at his Sat Nav at 13 30

Time	13 30
Distance to destination	65 miles

Nimer arrived at the hotel at 14 48

Work out the average speed of the car from 13 30 to 14 48
You must show all your working.

..... mph

(Total for Question 27 is 4 marks)



24 A water tank is empty.

Anil needs to fill the tank with 2400 litres of water.

Company **A** supplies water at a rate of 8 litres in 1 minute 40 seconds.

Company **B** supplies water at a rate of 2.2 gallons per minute.

1 gallon = 4.54 litres

Company **A** would take more time to fill the tank than Company **B** would take to fill the tank.

How much more time?

Give your answer in minutes correct to the nearest minute.

..... minutes

(Total for Question 24 is 4 marks)



16 Savio leaves his home at 07 30 to drive to work.

He drives a distance of 50 miles.

Savio thinks he drives at an average speed of 40 miles per hour.

(a) If Savio is correct, at what time will he arrive at work?

.....
(3)

In fact, Savio's average speed was greater than 40 miles per hour.

(b) How does this affect your answer to part (a)?

.....
.....
.....
(1)

.....
(Total for Question 16 is 4 marks)



- 27 Jessica runs for 15 minutes at an average speed of 6 miles per hour.
She then runs for 40 minutes at an average speed of 9 miles per hour.

It takes Amy 45 minutes to run the same total distance that Jessica runs.

Work out Amy's average speed.

Give your answer in miles per hour.

..... miles per hour

(Total for Question 27 is 4 marks)



26 Habib has two identical tins.

He puts 600 grams of flour into one of the tins.

The flour fills the tin completely.

The density of the flour is 0.6 g/cm^3

Habib puts 600 grams of salt into the other tin.

The salt does **not** fill the tin completely.

The volume of the space in the tin that is **not** filled with salt is 700 cm^3

Work out the density of the salt.

You must show all your working.

..... g/cm^3

(Total for Question 26 is 4 marks)



- 10 20% of cars sold last year were electric cars.

Write down the ratio of

the number of electric cars sold last year to the number of non-electric cars sold last year.

Give your ratio in its simplest form.

.....
(Total for Question 10 is 2 marks)

- 11 Jamie drives his van for 150 minutes.
He stops for a rest.

Jamie then drives for a further 75 minutes.

- (a) Show that Jamie drives for less than 4 hours in total.

(2)

A car travels for 2 hours at a steady speed of 65 mph.

- (b) Work out the distance the car travels.

..... miles
(2)

(Total for Question 11 is 4 marks)



- 20** Olly drove 56 km from Liverpool to Manchester.
He then drove 61 km from Manchester to Sheffield.

Olly's average speed from Liverpool to Manchester was 70 km/h.
Olly took 75 minutes to drive from Manchester to Sheffield.

- (a) Work out Olly's average speed for his total drive from Liverpool to Sheffield.

..... km/h
(4)

Janie drove from Barnsley to York.

Janie's average speed from Barnsley to Leeds was 80 km/h.
Her average speed from Leeds to York was 60 km/h.

Janie says that the average speed from Barnsley to York can be found by working out the mean of 80 km/h and 60 km/h.

- (b) If Janie is correct, what does this tell you about the two parts of Janie's journey?

.....
.....
(1)

(Total for Question 20 is 5 marks)



14 Jenny drives from London to Swindon at an average speed of 54 miles per hour.

She drives for $1\frac{1}{2}$ hours.

(a) Work out the distance from London to Swindon.

..... miles
(2)

Aleksy is using a map.

The map has a scale of 1 : 25 000

On the map a road has a length of 6 cm.

(b) Work out the length, in kilometres, of the real road.

..... kilometres
(3)

(Total for Question 14 is 5 marks)



14 On Monday, Lizzie cycled 36 kilometres in 3 hours.

(a) Work out Lizzie's average speed.

..... kilometres per hour
(2)

On Tuesday, Lizzie cycled 36 kilometres at an average speed of 16 kilometres per hour.

Lizzie says that the total time she cycled on Monday and Tuesday was less than 5 hours 20 minutes.

(b) Is Lizzie correct?

You must show how you get your answer.

(3)

(Total for Question 14 is 5 marks)



SUB-TOPIC R2b

COMPOUND INTEREST, GROWTH & DECAY

Sub-topic R2b · 9 questions · 30 marks · lowest tariff first



- 24 Andrew invests £4500 in a savings account for 2 years.
The account pays compound interest at a rate of 3.4% per year.

Calculate how much Andrew has in this savings account at the end of the 2 years.

£.....

(Total for Question 24 is 2 marks)

- 25 Solve $5x - 14 = 52 - x$

$x =$

(Total for Question 25 is 3 marks)



22 Anil wants to invest £25 000 for 3 years in a bank.

Personal Bank

Compound Interest

2% for each year

Secure Bank

Compound Interest

4.3% for the first year
0.9% for each extra year

Which bank will give Anil the most interest at the end of 3 years?
You must show all your working.

(Total for Question 22 is 3 marks)

23 A number, n , is rounded to 2 decimal places.
The result is 4.76

Using inequalities, write down the error interval for n .

(Total for Question 23 is 2 marks)



- 25 Katy invests £200 000 in a savings account for 4 years.
The account pays compound interest at a rate of 1.5 % per annum.

Calculate the total amount of interest Katy will get at the end of 4 years.

£.....

(Total for Question 25 is 3 marks)



25 The points L , M and N are such that LMN is a straight line.

The coordinates of L are $(-3, 1)$

The coordinates of M are $(4, 9)$

Given that $LM : MN = 2 : 3$,

find the coordinates of N .

(....., ...)

(Total for Question 25 is 4 marks)

26 A new phone cost £679

The value of the phone decreases at a rate of 4% per year.

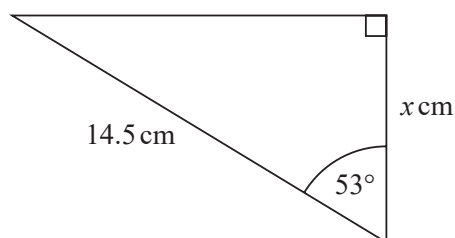
Work out the value of the phone at the end of 3 years.

£.....

(Total for Question 26 is 3 marks)



22



Work out the value of x .
Give your answer correct to 3 significant figures.

 $x = \dots\dots\dots$

(Total for Question 22 is 2 marks)

23 Ella invests £7000 for 2 years in an account paying compound interest.

In the first year, the rate of interest is 3%

In the second year, the rate of interest is 1.5%

Work out the value of Ella's investment at the end of 2 years.

 $\pounds \dots\dots\dots$

(Total for Question 23 is 3 marks)



- 26** Peter invests £4500 in a savings account for 3 years.
He gets 1.8% per year compound interest.

Work out the total amount of interest Peter gets.

£.....

(Total for Question 26 is 3 marks)



- 26 A number, d , is rounded to 1 decimal place.
The result is 12.7

Complete the error interval for d .

..... $\leq d <$

(Total for Question 26 is 2 marks)

- 27 Tamsin buys a house with a value of £150 000
The value of Tamsin's house increases by 4% each year.

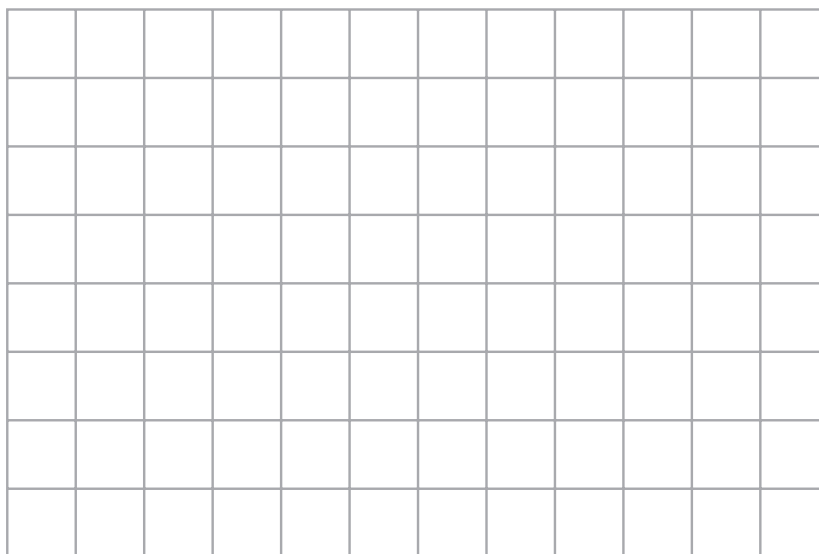
Rachel buys a house with a value of £160 000
The value of Rachel's house increases by 1.5% each year.

At the end of 2 years, whose house has the greater value?
You must show how you get your answer.

(Total for Question 27 is 4 marks)



(b) On the centimetre grid below, draw a plan of the solid prism.



(2)

(Total for Question 24 is 3 marks)

25 A company has 25 000 workers.

The number of workers increases at a rate of 6% per year for 3 years.

Calculate the total number of workers at the end of the 3 years.

(Total for Question 25 is 4 marks)



- 23 Northern Bank has two types of account.
Both accounts pay compound interest.

Cash savings account
Interest
2.5% per annum

Shares account
Interest
3.5% per annum

Ali invests £2000 in the cash savings account.
Ben invests £1600 in the shares account.

- (a) Work out who will get the most interest by the end of 3 years.
You must show all your working.

(4)

In the 3rd year the rate of interest for the shares account is changed to 4% per annum.

- (b) Does this affect who will get the most interest by the end of 3 years?
Give a reason for your answer.

(1)

(Total for Question 23 is 5 marks)



MARK SCHEMES

official mark schemes, in the same order as the questions



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
28	Complete chain of reasoning	M1	for (area of trapezium $TQRS = 0.5 \times 4x \times (2x + 3x)$ or for (area of rectangle $TUVS = 4x \times (3x + 5) (= 12x^2 + 20x)$	Evidence for the award of marks may be seen on the diagram
		M1	for (area of trapezium $QUVR = 4x(3x + 5) - 0.5 \times 4x \times (2x + 3x)$	Alternative methods may be seen.
		C1	for correct algebraic processing and simplification to the given form	
		M1	Alternative 1 for ($QU = 3x + 5 - 2x (= x + 5)$	
		M1	for (area of trapezium $QUVR = 0.5 \times 4x \times ((x + 5) + 5)$ or $0.5 \times 4x \times (x + 10)$	
		C1	for correct algebraic processing and simplification to the given form	
		M1	Alternative 2 for (area of triangle $= 0.5 \times (3x - 2x) \times 4x$ or for (area of rectangle $= 4x \times 5$	Accept x for $(3x - 2x)$
		M1	for (area of trapezium $QUVR = 0.5 \times (3x - 2x) \times 4x + 4x \times 5$	
29	108	C1	for correct algebraic processing and simplification to the given form	
30	16 000	M1	for $30 \times 60 \times 60$ (108000 metres per hour) or $30 \div 1000 (= 0.03 \text{ kilometres per second})$ or $60 \times 60 \div 1000 (= 3.6 \text{ scale factor})$	
		A1	cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	1250	P1	for process to use area of base in the formula, eg $\frac{10000}{2 \times 4}$	
		A1	cao	
26 (a)	$x > 6$	M1	for a correct first step, eg subtracts 3 from both sides or multiplies all terms by 2	Could be seen as an equation for both method marks, eg $5x + 6 = 36$ or $5x = 30$ First 2 marks may be awarded for critical value of 6, eg $x = 6$
		M1	(dep M1) for a correct second step, eg multiplies both sides by 2 or divides both sides by 5 or gives the critical value, 6.	
		A1	for $x > 6$	
		M1	for $(x \pm 1)(x \pm 9)$ or for $(x + a)(x + b)$ where product of a and $b = 9$, eg $(x + 3)(x + 3)$ or $(x - 3)(x - 3)$ or the sum of a and $b = 10$, eg $(x + 5)(x + 5)$ or $(x + 6)(x + 4)$	
(b)	$(x + 9)(x + 1)$	A1	for $(x + 9)(x + 1)$	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	648	M1 A1	for substitution into density formula eg 9×72 or $9 = \frac{m}{72}$ cao	
28 (a)	1 : 50	M1 A1	for an equivalent ratio eg $9 : 450$ or $9 : 4.5 \times 10^2$ or $90000 : 4500000$ oe or for $4500000 \div 90000$ or $\frac{4500000}{90000}$ (=50) For 1 : 50, accept $n = 50$	
(b)	56250×10^{-3} 0.005625×10^5 5625 5.625×10^4	M1 A1	for writing numbers correctly in a common format eg 56250, 56.25, 562.5 or a correct list with one error or correct list but in reverse order for correct list	Count an omission as one error. Accept alternative indications of the correct order.



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
23	144	P1	for using the ratio, eg $x = 2y$ or $2y + 2y + y (= 180)$ or $2 + 2 + 1 (= 5 \text{ (parts)})$	The first two marks may be awarded in either order Award P2 for $x = 72$ or $y = 36$
		P1	for using angle facts to give an equation, eg $x + x + y = 180$ or $2y + 2y + y = 180$ or $y + w = 180$ or $5x \div 2 = 180$ or $w = 2x$ or for $180 \div 5 (= 36)$	
		P1	for a complete process eg $180 - (180 \div 5)$	
		A1	cao	
24	2400	P1	for setting up an equation in x eg $x + (3x + 1) + (2x - 5) = 44$ or $6x - 4 = 44$ or $x = 48 \div 6 (= 8)$	
		P1	for substituting “8” into either $(3x + 1)$ or $(2x - 5)$ eg $3 \times “8” + 1 (= 25)$ or $2 \times “8” - 5 (= 11)$	
		P1	for finding the mass of one book eg $7500 \div “25” (= 300)$	
		P1	for finding the mass of the books on shelf A eg “300” $\times$ “8”	
		A1	cao	
25	2.7	M1	for use of density = mass $\div$ volume eg $27 \div 10$	
		A1	oe	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
8	Shown	M1	for a method to find the total cost for footballs, hockey sticks or cricket bats, eg $9.5 \times 5 (= 47.5)$ or $(6 \div 2) \times 30 (= 90)$ or $23 \times 2 (= 46)$ OR begins to work with budget, eg $200 - 5 (= 195)$	Can be done with addition or subtraction, or combination
		M1	for a method to find the total cost for two of footballs, hockey sticks or cricket bats, eg two from $9.5 \times 5 (= 47.5)$ or $(6 \div 2) \times 30 (= 90)$ or $23 \times 2 (= 46)$ OR works with budget and total cost for one of footballs, hockey sticks or cricket bats, eg $200 - "47.5"$	
		M1	for a complete method to find comparable figures, eg $9.5 \times 5 + (6 \div 2) \times 30 + 23 \times 2 + 5$ or $"47.5" + "90" + "46" + 5$ or $200 - (9.5 \times 5 + (6 \div 2) \times 30 + 23 \times 2 + 5)$ or $200 - "188.5"$	
		C1	shows correct figures for a conclusion eg (£)188.5(0) or (£)11.5(0)	
9	WP WS WC BP BS BC GP GS GC	B2	for all correct and no incorrect or repeats	Ignore repeats
		(B1	for at least 4 correct)	
10	3 : 5	M1	for 24 : 40 or for any ratio equivalent to 24 : 40 or 5 : 3	Accept 3 : 5 in the form $n : 1$, eg 0.6 : 1 or 1 : n , eg 1 : 1.66(..)
		A1	for 3 : 5	
11 (a)	Unlikely	B1	cao	
(b)	Evens	B1	cao	
12	111	M1	for a complete method, eg 37×3 oe	
		A1	cao	



Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
20		New York (supported)	P1 P1 C1	for changing between £ and \$, eg $1.089 \times 1.46 (= 1.58(9.))$ or $2.83 \div 1.46 (= 1.93(8.))$ or between litres and gallons, eg $1.089 \times 3.785 (= 4.12(1.))$ or $2.83 \div 3.785 (= 0.74(7.))$ for a complete process to give values that can be used for comparison, eg “ $1.938... \div 3.785 (= 0.51(2.))$ ” or “ $1.589... \times 3.785 (= 6.01(7.))$ ” or $1.089 \times 3.785 (= 4.12(1.))$ and $2.83 \div 1.46 (= 1.93(8.))$ for New York and correct comparative values.
21		648	M2 [M1 A1	a complete method, eg $12.5 \times 1000 \div 19.3$ for using volume = mass/density, eg $12500 \div 19.3$ (condone inconsistent units or incorrect conversions) may be implied by digits 647... or 648...] for answer in range 647 to 648
22		15	P1 P1 A1	strategy to start the problem, eg 8:20 and 20:5 process to solve the problem, eg $\frac{5}{33} \times 100$ or 24:60:15 cao
23 (a)		0.625	B1	cao
(b)		$9.75 \leq x < 9.85$	B2 [B1	$9.75 \leq x < 9.85$ for 9.75 or 9.85 (or 9.849)]



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	No (supported)	P1	For a process to calculate the initial or new pressure, eg $(70 + 10) \div (20 + 10)$ (=2.6 to 2.7) or $80 \div 30$ (=2.6 to 2.7) or $70 \div 20$ (=3.5)	Accept any value in the range 2.6 to 2.7 if unsupported by working
		P1	For a complete process to make a comparison eg. $0.8 \times "3.5"$ (=2.8) OR $\frac{("3.5" - "2.6")}{"3.5"} \times 100$ (=22 to 26) OR $"3.5" \times 0.2$ (=0.7) and $80 \div 30$ (=2.6 to 2.7) OR $\frac{"2.6"}{"3.5"} (\times 100)$ (=0.74 to 0.78 or 74 to 78)	
		A1	for a correct conclusion supported by accurate figures eg 2.8 and 2.6(6...) OR decrease is 24% (or 22% to 26%) OR 0.7 and 2.6 to 2.7 and 3.5 OR 0.7 and 0.9 OR 0.76 (or 0.74 to 0.78) OR 76% (or 74% to 78%)	Allow truncation or rounding of figures



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	20 or 24 or 168	B1	for identification of the range of the girls (20) or the range (24) or the median (168) of the boys	
	Comparison	C2	for a correct comparison of medians and a correct comparison of ranges supported by correct figures. eg the median height for girls (165) is less than the median height for boys (168) and the range for girls (20) is less than the range for boys (24) At least one comparison must be in context referring to height or quoting cm.	Simply quoting values for median, range is insufficient; they must be compared.
		(C1	for a correct comparison of medians or a correct comparison of ranges that could fit their incorrect figure(s))	Context not necessary for C1
27	450	M1	for $18 \div 3 (=6)$	Ignore units
		M1	for substitution eg. $75 = \frac{F}{6}$ or $75 \times "6"$	
		A1	cao	
28	0.000672, 67.2×10^{-4} 6.72×10^5 672×10^4	B2	cao	Accept correct numbers in any form
		(B1	for correct conversions to same format, condoning one error. or for 3 numbers in the correct order (ignoring one) or for all 4 numbers listed in reverse order)	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	n^8	B1	cao	May be seen as simplification in original fraction Accept c^1d^3 Must see carried out correctly, ie at least $5x > 7 \times 2$ not just intention seen. Allow other signs for this mark.
		M1	for partial simplification, eg c or d^3	
		A1	for cd^3	
		M1	for $5x > 14$ or $5x = 14$ or critical value, $\frac{14}{5}$ oe	
(b)	cd^3			
(c)	$x > \frac{14}{5}$	A1	$x > \frac{14}{5}$ or $x > 2\frac{4}{5}$ or $x > 2.8$	
24	2 hours 45 minutes	P1	for $30 \div 24 (= 1.25)$ or $12 \div 8 (= 1.5)$	May be written in hours and/or minutes or 3 h 15 min or 2 h 75 min
		P1	for finding the sum of their two times eg "1.25" + "1.5" (= 2.75) or 165 (minutes)	
		A1	cao	
25	9.35, 9.45	B1	for 9.35 in the correct position	Accept 9.449 oe or 9.4499... oe
		B1	for 9.45 in the correct position	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
27 (a)	$\frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}$	B2	six fully correct probabilities	Accept any equivalent fraction, decimal form 0.33(3...) and 0.66(6...) or 0.67 or percentage form 33(.3...)%, 66(.6...)%, 67% or 67%
		(B1	at least 2 correct probabilities)	
		M1	for $\frac{1}{3} \times \frac{2}{3}$ oe or ft probabilities from diagram	
(b)	$\frac{2}{9}$	A1	for $\frac{2}{9}$ oe	Accept any equivalent fraction, decimal form 0.22(2...) or percentage form 22(.2...)%
28 (a)	-2, 4	B1	cao	If answers are stated as coordinates, award M1 for both coordinates and M0 for one coordinate. With no extras
(b)	0.55 to 0.65, 3.35 to 3.45	M1	for correct method, eg marking intercepts with x-axis or one correct answer or both solutions given as a coordinate eg (0.6, 3.4) or (0.6, 0) (3.4, 0)	
		A1	for answers in the ranges 0.55 to 0.65 and 3.35 to 3.45	
29	96	M1	for a complete process to find the volume eg $6 \times 4 \times 10 \div 2$ (= 120)	
		M1	for a complete process, eg $(6 \times 4 \times 10 \div 2) \times 0.8$	
		A1	cao SC B1 for 192	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
9	4 5 23 32 8 9 7 24 12 14 30 56	B3 (B2) (B1)	for a fully correct table for at least 7 figures correctly placed) for the given values correctly placed in the table or one correct row or column)	Given values in bold Given values: 5, 32, 8, 12, 14, 56
10	61	P1 A1 A1	for $300 \div 4.85 (= 61.8\dots)$ for 61.8... or 62 61	This mark may be awarded for build-up methods that get to figures that are before or after 300 Embedded answers get –1 mark.
11 (a)	3 hrs 16 mins	P1 A1	$196 - 60 - 60 - 60 (=16)$ or $196 \div 60 (= 3.26\dots \text{ or } 3.27\dots)$ or states 3 hours in their answer (with an incorrect number of minutes or minutes left blank) 3 hours 16 minutes	
(b)	$\frac{x}{2}$	B1	$\frac{x}{2}$ or	
12 (a)	50	M1 A1	$[2.5] \times 20 (=50)$ for an answer in the range 46 to 54	[2.5] a number in the range 2.3 to 2.7 or identified as the distance from Shelton to Trilby
(b)	60	M1 A1	$5 \times 1200 (=6000)$ or $1200 \div 100 (=12)$ or conversion $5 \div 100 (=0.05)$ cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	3 : 2	P1	for a process to find either volume eg $3^3 (= 27)$ or $4^3 (= 64)$	Ignore units quoted
		P1	for showing density A = $81 \div "27"$ (= 3) or density B = $128 \div "64"$ (= 2)	
		A1	for 3 : 2 oe	
30	0.5	B1	for 0.5 or $\frac{1}{2}$ oe	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25 (a)	Description	C1	for a valid description of the relationship Acceptable examples As age increases, weight increases The older you are the greater the weight Positive correlation Not acceptable examples Positive (relationship) age and weight are in proportion strong correlation or correlation is increasing as the babies get older the heavier they get, negative correlation they are directly proportional, weight goes up as age goes up	Accept positive correlation Ignore any comment about strength
(b)	2.5 to 4.5	B2 (B1	for an answer in the range 2.5 to 4.5 for a suitable line of best fit drawn or for a point on the grid at (x, 5.8) where x lies between 2.5 and 4.5 or a horizontal line drawn from 5.8 across to (x, 5.8) where x is in the range 2.5 to 4.5)	
26	1200	M1 A1	for a fully correct method, eg $240 \div 0.2$ or 240×5 oe cao SC B1 for an answer of 960 or 1440 if M0 scored	
27	3	P1 P1 A1	for process to find area of base, eg $1200 \div 40 (= 30)$ for process to find pressure, eg $90 \div "30"$ cao	
28	$x = 6$ $y = -2$	B1	cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	Spinner (supported)	P1 P1 C1	for a process to express one relationship, eg $\frac{2}{6}$ oe or $\frac{3}{8}$ oe or 2 : 4 oe or 3 : 5 oe or 2 : 6 oe or 3 : 8 oe for process to express both relationships, eg $\frac{2}{6}$ oe and $\frac{3}{8}$ oe or 2 : 4 oe and 3 : 5 oe or 2 : 6 oe and 3 : 8 oe for indicating (number greater than 5 on) spinner supported by correct values, eg $\frac{8}{24}$ and $\frac{9}{24}$ or 0.33(3..) and 0.37(5) or 33(.3..) % and 37(.5) % or 10 : 20 and 12 : 20 or 16 : 48 and 18 : 48	Allow use of words to describe relationship, eg 2 out of 6 Conclusion may be indicated in body of question eg circling spinner or phrase
16	98	M1 M1 A1	for method to use speed, distance and time, eg $56 \times [\text{time}]$ or $56 \times 105 (= 5880)$ or $56 \div 4 \times 3 (= 42)$ or $56 \div 60 (= 0.933...)$ OR for method to convert decimal time, eg $(60 + 45) \div 60 (= 1.75)$ or $45 \div 60 (= 0.75)$ for a complete method using decimal time, eg $56 \times "1.75"$ or "5880" $\div 60$ or "$0.933...$" $\times 105$ or $56 + "42"$ or $56 + "28" + "14"$ for 97.65 to 98.3	For this mark accept [time] written unconventionally eg as 1.45, 145, 175, 75



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
24 (a)	63	B1	for 63, accept $3 \times 3 \times 7$ or $3^2 \times 7$	(A =) $2^2 \times 3^4 \times 7$ scores 0 marks
		M1	for at least two of 2^2 , 3^4 , 7^2 or shows at least 3 multiples of 2268, eg 2268, 4536, 6804 and at least 3 multiples of 441, eg 441, 882, 1323	
		A1	for 15876 or $2^2 \times 3^4 \times 7^2$ oe	
25	65	P1	for a correct process to find the number of seconds, eg $67\,205\,600 \div 11.9$ (= 5 647 529.4...) or for a correct process to convert between seconds and days, eg $24 \times 60 \times 60$ (= 86 400) oe, may be seen in stages or $11.9 \times 60 \times 60 \times 24$ (= 1 028 160)	Note that this mark may be awarded at any stage in the working. If a correct answer within the range is shown in working but incorrectly rounded award full marks.
		P1	for a complete process, eg “5 647 529.4...” $\div$ “86 400” or $67\,205\,600 \div$ “1 028 160”	
		A1	accept answers in the range 65 to 65.4 or 66	
26 (a)	(1, -3)	B1	cao	
		B1	for an answer in the range -0.8 to -0.6 or 2.6 to 2.8	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	7 hours 56 minutes	P1 P1 A1	for process to begin to work with speed, eg $143 \div 55 (= 2.6)$ for process to work in minutes, eg $"2.6" \times 60 (= 156 \text{ mins})$ and $5 \times 60 + 20 (= 320 \text{ mins})$ or for 476 (mins) or for process to work in hours eg $"2.6"$ and $5 \frac{20}{60} (= 5.33\ldots)$...or for 7.93... or for process to work in hours and minutes, eg $"2" + ("0.6" \times 60) (= 2 \text{ hrs } 36 \text{ mins})$ cao	May work in minutes or hours and minutes Accept 2 or more decimal places for this mark
27	Shown	M1 M1 C1	for substitution to find area of face, eg $3.5 = \frac{504}{\text{area}}$ or $3.5 \times \text{area} = 504$ or $\text{area} = 504 \div 3.5 (= 144)$ or for working from surface area eg $900 \div 6 (= 150)$ for method to find comparable figures, eg $"144" \times 6 (= 864)$ or $"150" \times 3.5 (= 525)$ or $504 \div "150" (= 3.36\ldots)$ or $504 \div 3.5 (= 144)$ and $900 \div 6 (= 150)$ or $900 \div 144 (= 6.25)$ and 6 for correct comparable figures, eg 864 (and 900) or 144 and 150 or 525 (and 504) or 3.36... (and 3.5) or 6.25 and 6	Other equivalent methods should be credited accordingly Condone incorrect units given.



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	3.125×10^7	M1	for $(k =) (1.25 \times 10^{-12}) \div (4 \times 10^{-20})$ or for the digits 3125	Condone missing brackets on division 3.1×10^7 or 3.12×10^7 or 3.13×10^7 will score M1A0
		A1	cao	
28	7.96	M1	for method to find volume of cylinder, eg $\pi \times 3^2 \times 10$ ($= 90\pi$ or 282.74...)	[volume] is any value they clearly think is the volume of the cylinder but must come from a calculation and must not be 3 or 10
		M1	for method to find density, eg $2250 \div \text{“}282.74\text{...”}$ or $2250 \div [\text{volume}]$	
		A1	for answer in the range 7.95 to 7.96	



Question 22 additional guidance

	London	Zurich
100g	$3.5 \div 2 = \text{£}1.75$ $1.75 \times 1.25 = \text{£}2.1875 \text{ F}$	$7.2 \div 360 = \text{£}2.00 \text{ F}$ $2.00 \div 1.25 = \text{£}1.60$
200g	$\text{£}3.50$ $3.5 \times 1.25 = \text{£}4.375 \text{ F}$	$7.2 \div 360 \times 200 = \text{£}4.0 \text{ F}$ $4.0 \div 1.25 = \text{£}3.20$
360g	$3.5 \div 200 \times 360 = \text{£}6.30$ $6.30 \times 1.25 = \text{£}7.875 \text{ F}$	7.20 F $7.20 \div 1.25 = \text{£}5.76$
1g	$\text{£}3.50 \div 200 = \text{£}0.0175$ $\times 1.25 = \text{£}0.021875 \text{ F}$	$7.20 \div 360 = \text{£}0.02 \text{ F}$ $\div 1.25 = \text{£}0.016$
40g	$\text{£}3.50 \div 5 = \text{£}0.70$ $0.7 \times 1.25 = \text{£}0.875 \text{ F}$	$7.20 \div 9 = \text{£}0.8 \text{ F}$ $0.8 \div 1.25 = \text{£}0.64$
By weight	$350 \div 200 = 1.75 \text{ p/g}$ $350 \times 1.25 = 4.375$ $4.375 \div 200 = \text{£}0.021875 \text{ F/g}$	$720 \div 360 = \text{£}0.02 \text{ F/g}$ $720 \div 1.25 = 576$ $576 \div 360 = \text{£}1.6 \text{ p/g}$
By cost	$200 \div 350 = \text{£}0.571 \text{ g/p}$ $350 \times 1.25 = 437.5$ $200 \div 437.5 = \text{£}45.7 \text{ g/F}$	$360 \div 720 = \text{£}50 \text{ g/F}$ $720 \div 1.25 = 576$ $360 \div 576 = \text{£}0.625 \text{ g/P}$



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	10	P1	for process to find total number of buttons $20 + 12 (= 32)$	
		P1	for process to work with probability, eg $"32" \div 4 (= 8)$ or $"32" \div 4 \times 3 (= 24)$	May be implied by $\frac{8}{32}$
		P1	for process to find number of extra blue buttons required, eg $"8" - 6 (= 2)$ or for process to find number of extra reds, eg $12 - ("8" - 6)$ or for process to find new total number of red buttons, eg $(6 + 5 + 12) - "8" (= 15)$ or $"32" - "8" - 9 (= 15)$ or $"24" - 9 (= 15)$	May be implied by $8 : 9 : 15$ or $\frac{10}{32}$
		A1	(dep P2) cao	Answer of 10 only scores no marks
16 (a)	70	M1	for a method to work with distance $\div$ time, eg $35 \div (30 \div 60)$ or $35 \div 30 \times 60$ or $35 \times (60 \div 30)$ or $35 \div 30 (= 1.16...)$ or [distance] $\div$ [time]	May use other readings from graph for [distance] and [time] but must be accurate
		A1	answer in the range 69.6 to 70.2	
(b)	Graph drawn	C1	for a line from (30, 35) to (45, 35)	
17	1350	P1	for working with percentage, eg $85 \div 100 \times 9000 (= 7650)$ or $(100 - 85) \div 100 (= 0.15)$ or	Allow $\frac{15}{100}$ and 15% but not 15 alone
		P1	for a complete process, eg $9000 - "7650"$ or $(100 - 85) \div 100 \times 9000$	15% $\times 9000$ is not acceptable unless correctly evaluated
		A1	cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	60.3	M1	for a correct trig statement, eg $\tan x = \frac{7}{4}$	Other methods are possible but only award this mark at the point of an equation with x as the only unknown
		A1	60.2 to 60.42	
27	25	P1	for working with density, eg $8 \times 1500 (= 12\,000)$ or $[\text{density}] \times 1500$	P marks can be awarded in either order [density] is 8×10^3 Condone $8 \times 1500 \times 300$ for this mark only P marks can be awarded in either order [mass] must be what they believe to be mass following a calculation that uses 8 and 1500 but not 300
		P1	for a correct conversion, eg “12 000” $\div 1000 (= 12)$ or $\frac{8}{1000} (= 0.008)$ or $300 \times 1000 (= 300\,000)$ or $[\text{mass}] \div 1000$	
		A1	cao	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	630	M1	for converting time, eg $24 \text{ minutes} = \frac{24}{60}$ (= 0.4 (hours)) oe eg $\frac{2}{5}$ (hours) or $2 \text{ hours } 24 \text{ minutes} = 2 + \frac{24}{60}$ (= 2.4 (hours)) oe eg $2\frac{2}{5}$ (hours) or $2 \text{ hours } 24 \text{ minutes} = 2 \times 60 + 24$ (= 144 (minutes)) oe or $2 \text{ hours } 24 \text{ minutes} = 2 \times 60 \times 60 + 24 \times 60$ (= 8640 (seconds)) oe OR for using distance $\div$ time, eg $1512 \div [\text{time}]$ oe or $[\text{distance}] \div [\text{time}]$ oe	10.5 or 0.175 imply M1 [distance] can be 1512 or the result of an attempt to convert 1512 km to a different unit, it must have the digits 1512 eg 151.2 or 1512 000 [time] can be any value they believe to be the time the plane takes to fly
		M1	for a complete method using distance $\div$ time, eg $1512 \div "2.4"$ or $1512 \div "2\frac{2}{5}"$ or $1512 \div "144" \times 60$ oe or $1512 \div "8640" \times 60 \times 60$ oe	
		A1	cao	



Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
20		1.01	P1 P1 P1 A1	fruit syrup $15 \times 1.4 (= 21)$ or water $280 \times 0.99 (= 277.2)$ or apple juice $25 \times 1.05 (= 26.25)$ (dep P1) for complete process to find the total mass e.g. “277.2” + “26.25” + “21” (= 324.45) or a weighted density eg $15 \times 1.4 \div 320 (= 0.065625)$ or $280 \times 0.99 \div 320 (= 0.86625)$ or $25 \times 1.05 \div 320 (= 0.08203125)$ (dep P2) for complete process to find the density eg “324.45” $\div 320 (= 1.01..)$ or “0.065625” + “0.86625” + “0.08203125” (= 1.0139..) or 1.01 to 1.014
21		Shown (supported)	M1 C1	method to divide a pair of corresponding sides, eg $7.5 \div 3 (= 2.5)$ or $3 \div 7.5 (= 0.4)$, or states scale factor is 2.5 or 0.4 or method to work out the size of an angle, eg $\tan^{-1}\left(\frac{7.5}{10}\right) (= 36.8 \text{ to } 36.9)$ shows or states that all sides are enlarged by the same factor or works out a pair of corresponding angles and states that the two triangles have the same angles
22 (a)		12, 4, 2, 1.2, 1	B2 (B1)	for fully correct table (allow fractions or decimals) for 3 or 4 of 12, 4, 2, 1.2, 1
(b)		Correct curve	M1 A1	ft (dep on B1 in (a)) for plotting at least 6 points from their table correctly for a fully correct curve



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	Estimated value	P1	for using a rounded value in a correct process eg $3000 \div 15$ or 15×8 or 20×8	Their rounded value must be used in a calculation Rounding may appear after a correct process eg $15.12 \times 8 = 120.96 \approx 100$ followed by eg $3069.25 \div 100$
		P1	for a full process to find the number of days eg " $3000 \div 15 \div 10$ " (= 20) or " $3000 \div 15 \div 8$ " (= 25)	Accept $3069.25 \div 15.12 \div 8$ oe
		A1	for a correct answer following through their rounded values	
(b)	Explanation	C1	eg less days required or it doesn't affect the answer because I would still round 16.27 down to 15 (or up to 20)	Refers to time taken



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
8	19.85	P1	for a start to the process eg $30 \div 6 (=5)$ or $30 \div 15 (=2)$ or $30 \div 10 (=3)$ OR $30 \times 37 (=1110)$ OR $82 \div 6 (=13.6 \text{ to } 13.7)$ or $45 \div 15 (=3)$ or $1.25 \div 10 (=0.125)$	
		P1	for process to find cost of 30 pens or 30 pencils or 30 rulers eg $"5" \times 82 (=410)$ or $"2" \times 45 (=90)$ or $"3" \times 1.25 (=3.75)$ OR $"13.6." \times 30 (=409.8 \text{ to } 410)$ or $"3" \times 30 (=90)$ or $"0.125" \times 30 (=3.75)$	Work may be in pence or in pounds
		P1	for a process to find cost of 2 of 30 pens or 30 pencils or 30 rulers eg any 2 of $"5" \times 82 (=410)$, $"2" \times 45 (=90)$, $"3" \times 1.25 (=3.75)$	Intention to add not necessary eg 410, 3.75 is sufficient, or working leading to these figures Any two correct methods will imply P1P1P1
		P1	for adding at least 3 different costs (units may not be consistent) eg $"410" + "90" + "3.75"$ or $"410" + "90" + "11.10"$	Correct working for 3 of pens, pencils, rulers and pencil cases with an intention to add, may be in a mixture of money units
		A1	cao	
9	(a) 62	M1 A1 cao	for distance $\div$ time eg $186 \div 3$ or $186 \div (3 \times 60)(=1.03..)$	May use hours or minutes at this point
	(b) 232	M1 A1 cao	for speed $\times$ time eg 58×4 or $58 \times 4 \times 60 (=13920)$	May use hours or minutes at this point

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
24 (a)	2 mins 48 secs	P1	for an appropriate first step eg $700 \div 475 (=1.47..)$ or $475 \div [\text{time}] (=4.16.. \text{ m/s})$ or $[\text{time}] \div 475 (=0.24 \text{ s/m})$	[time] what candidate indicates as time of first race Units are not needed and can be ignored if given
		P1	for a complete process to find the required time eg $700 \div 475 \times [\text{time}] (=168)$ or $700 \div (475 \div [\text{time}]) (=168)$ or $[\text{time}] \div 475 \times 700 (=168)$	Allow calculation in stages and appropriate rounding.
		A1	cao	
(b)	Statement	C1	eg takes less time Acceptable examples Quicker time Faster time Reduces my answer to part (a) Not acceptable examples It is an underestimate The amount of time could/may increase Laura goes faster	



Paper: 1MA1/1F					
Question		Answer	Mark	Mark scheme	Additional guidance
7	(a)	7	P1	for process to find the number of blue flowers, eg $30 - 8 - 10 - 5$	Allow one error
			A1	cao	
	(b)	white	B1	for white or ft from (a)	Must be seen clearly for ft
8		$\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{7}{12}, \frac{3}{4}$	M1	converts fractions to a common equivalent form, at least two conversions correct eg fractions with a denominator of 12, decimals or percentages, or any 4 fractions in correct order	0.25, 0.33(...), 0.5, 0.58(...), 0.75
			A1	cao	Accept list in reverse order for this mark Accept expressed in equivalent decimals or percentages or any other appropriate form or mixed forms
9	(a)	6	M1	for method to find distance, eg $4 \times \text{time difference}$ or 30 mins = 2 miles	10.30 am – 9 am may be seen as 1.5(hr) or 1(hr) 30 (min) or 90 (min) or $\frac{3}{2}$ (hr) or $1\frac{1}{2}$ (hr)
			A1	cao	
	(b)	12 35 pm	M1	for method to add time using consistent units eg 11 20 or 50 + 75 or 2 hours 5 mins	
			A1	12 35 pm or 12 35 (h)	Allow 12 35 but not 12 35 am
10	(a)	4	B1	cao	
	(b)	8	B1	cao	
	(c)	3	M1	for a correct first step eg subtracting 2 from both sides or dividing all terms by 6	Division by 6 must be ALL terms
			A1	cao	

Paper: 1MA1/3F														
Question	Answer	Mark	Mark scheme	Additional guidance										
25	18.6	M1	for finding 4 products within intervals (including end points)	<table><tr><td>Min $\dot{f}x$</td><td>Max $\dot{f}x$</td></tr><tr><td>5</td><td>10</td></tr><tr><td>20</td><td>30</td></tr><tr><td>105</td><td>140</td></tr><tr><td>160</td><td>200</td></tr></table>	Min $\dot{f}x$	Max $\dot{f}x$	5	10	20	30	105	140	160	200
		Min $\dot{f}x$	Max $\dot{f}x$											
		5	10											
20	30													
105	140													
160	200													
M1	for $\Sigma \dot{f}x \div (1 + 2 + 7 + 8)$ or $(7.5 \times 1 + 12.5 \times 2 + 17.5 \times 7 + 22.5 \times 8) \div (1 + 2 + 7 + 8)$ or $(\text{"7.5"} + \text{"25"} + \text{"122.5"} + \text{"180"}) \div \text{"18"}$ or $\text{"335"} \div \text{"18"}$	$\Sigma \dot{f}x$ must come from 4 products $\dot{f}x$ within intervals (including end points)												
A1	for 18.6(111...)													
26	37 000	B1	cao											
27	50	B1	for finding the time difference, eg, 1hr 18 mins or 78 mins oe	Allow 1.18 for this mark 118 scores B0										
		P1	for correct process to convert minutes to hours, eg $18 \div 60$ (=0.3) or $78 \div 60$ (=1.3) or for a correct process to convert speed in miles per minute to mph eg $\text{"0.833..." } \times 60$	For a conversion of time or speed										
		P1	for using speed = distance $\div$ time eg, $65 \div [\text{time}]$ or $65 \div 78$ (=0.833...)	[time] is what the candidate clearly indicates as time difference										
		A1	cao SCB2 for 83(.333...) seen as the answer											

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
24	260	P1	conversion to common units of capacity eg $2.2 \times 4.54 (= 9.988)$ or $8 \div 4.54 (= 1.76\dots)$ OR for company A $2400 \div 4.54 (= 528.63\dots)$ OR $2400 \div 8 (= 300)$ OR a rate per minute $8 \div [\text{time for Company A}] (= 4.8\dots)$ oe	[time for Company A] could be 1 min 40 sec or 1.66... or 1.6 or 1.40 etc as long as it is clear it relates to 1 min 40 sec Results of calculations may be truncated or rounded.
		P1	for a complete process to find the time for one water rate in minutes. eg in litres Company A $2400 \div "4.8..." (= 500)$ or $"300" \times [1 \text{ min } 40 \text{ sec}] (= 500)$ or Company B $2400 \div "9.988" (= 240.28\dots)$ OR eg in gallons Company A $"528.63..." \div ("1.76..." \div [1 \text{ min } 40 \text{ sec}]) (= 500)$ or Company B $"528.63..." \div 2.2 (= 240.28\dots)$	
		P1	for complete processes to find the times for both company A and company B in minutes. Company A eg in litres $2400 \div "4.8..." (= 500)$ or $"300" \times [1 \text{ min } 40 \text{ sec}] (= 500)$ or in gallons $"528.63..." \div ("1.76..." \div [1 \text{ min } 40 \text{ sec}]) (= 500)$ AND Company B eg in litres $2400 \div "9.988" (= 240.28\dots)$ or in gallons $"528.63..." \div 2.2 (= 240.28\dots)$	
		A1	for an answer in the range 259 to 260	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	(0)8 45	P1	for $50 \div 40 (= 1.25)$ oe or (time $\Rightarrow$) (0)8 30 (after travelling for) 40 miles	
		P1	for a process to convert their time to minutes or hours and minutes, eg " $1.25 \times 60 (= 75 \text{ mins} = 1 \text{ hr } 15 \text{ mins})$ " or for $\frac{10}{40} \times 60 (= 15 \text{ mins})$	May be seen as a build-up method and may state 1 hour 15 mins
		A1	for (0)8 45 oe	SC: B2 for answer of (0)8 55 ($= 7.30 + 1.25$)
(b)	Explanation	C1	Acceptable examples It will be earlier Time will be reduced He will get there quicker/faster He will arrive at a different time The journey will be shorter so he will arrive earlier Not acceptable examples He will arrive later The time will increase	Explanations must be unambiguous

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	40 missing from frequency scale Incorrect point (50, 5)	C2 (C1)	Two different statements Acceptable eg (50, 5) / the last point is incorrect the last point should be at (45,5) the last point plotted was placed incorrectly for his last point he has plotted by the end of the data and for the rest he has plotted by the middle he did not use the midpoint, he used 50 instead of 45 40 missing (from vertical axis) vertical scale is not linear the frequency doesn't increase in the same intervals the vertical axis is not right Not acceptable eg the last point should be at (40, 5) bottom of the polygon should be connected he didn't start the graph at the origin he did not draw a polygon he has plotted the first 4 points at midpoint	Ignore additional statements provided no contradiction
27	10	P1 P1 P1 A1	for a process to use distance = speed × time for either of the parts of Jessica's journey, eg. $6 \times \frac{15}{60}$ (= 1.5) or $9 \times \frac{40}{60}$ (= 6) or 6×15 (= 90) or 9×40 (= 360) for a process to add the 2 distances for Jessica, eg $6 \times \frac{15}{60} + 9 \times \frac{40}{60}$ (= 7.5) or $6 \times 15 + 9 \times 40$ (= 450) for complete process to find Amy's average speed, eg. "7.5" ÷ "0.75" oe or "450" ÷ 45 cao	Must be consistent units at this stage.

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	29 775	P1	for evidence of using a correct first step eg $25\,000 \times 0.06$ (= 1500) or $25\,000 \times 1.06$ (= 26 500)	P3A0 is implied by 4775 or 4776 or 4780 or 4800
		P1	for evidence of a "compound interest" process eg " $26\,500 \times 0.06$ (= 1590) or " $26\,500 \times 1.06$ (= 28 090) or $25\,000 \times 1.06^t$, $t \geq 2$	
		P1	for a complete process eg $25\,000 \times 1.06^3$ (= 29 775.4)	
		A1	for 29 775 or 29 776 or 29 780 or 29 800 SCB1 for 3000 or 4500 or 28000 or 29500 seen if P0 scored	
26	2	P1	for process to find volume of tin eg $600 \div 0.6$ (= 1000)	Award P1 for $600 \div 0.6$ (= 1000) even if not used [volume] can be 700 or from a seen calculation using "1000", "300", 700 or identified as volume by label or formula or units A correct answer with no supportive working gets 0 marks
		P1	for process to find volume of salt eg " $1000 - 700$ (= 300)	
		P1	for a process to find density of the salt eg $600 \div "300"$ or $0.6 \times ("1000" \div "300")$ or $600 \div [\text{volume}]$	
		A1	cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
11 (a)	Shown	M1	for a correct first step, eg method to convert, $4 \times 60 (= 240)$ or $75 \div 60 (= 1.25)$ or $150 \div 60 (= 2.5)$ or accurate converted time shown, eg 1(hr) 15(mins) oe or 2(hrs) 30(mins) oe or adding the two required times $150 + 75 (= 225)$	Units not required but if stated they must be correct.
		C1	for accurate figures to compare, eg 240 and 225 (mins) or 3.75(hrs) or 3(hrs) 45(mins) or 15 mins spare (from $240 - 150 - 75$)	Units not required but if stated they must be correct. An incorrect conversion will score C0, eg 3.75 incorrectly converted to 3hrs 75mins Figures are enough and a direct comparison to 4 hrs is not needed Condone $65 \times "120"$
(b)	130	M1	for 2×65 oe	
		A1	cao	
12	75 7 20 102 35 98 5 138 110 105 25 240	B3	for a fully correct table	
		(B2)	for 7, 8, 9, 10 or 11 entries correctly placed)	
		(B1)	for 6 entries placed correctly)	
13 (a)	n^3	B1	cao	
(b)	6	M1	for isolating k terms, eg $5k = 26 + 4$ or $5k = 30$ or $k - \frac{4}{5} = \frac{26}{5}$ oe or $26 + 4 \div 5$	For M mark step must be carried out not just intention shown. For example, if you see $5k - 4 = 26$ +4 +4 award M1 for $5k = r$ where $r > 26$
		A1	cao	



Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
20 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. $56 \div 70 (= 0.8 \text{ (hrs) or } 48 \text{ (mins)})$
			P1	for a process to find the total distance, eg $56 + 61 (= 117)$ or the total time, eg “48” + 75 (= 123) or “0.8” + $\frac{75}{60} (= 2.05)$, with consistent units of time
			P1	(dep P2) for a correct process to find average speed with consistent units of time, eg. “117” $\div$ “2.05” or “117” $\div$ “123”
			A1	for answer in the range 57 to 57.1
(b)		explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ the distance from Barnsley to York oe
21 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4} (= 1.5)$ oe or $\frac{5.4}{8.1} (= 0.66\ldots)$ oe or $\frac{2.6}{5.4} (= 0.48\ldots)$ oe or $\frac{5.4}{2.6} (= 2.07\ldots)$ oe
			A1	cao
(b)		2.05	M1	for $\frac{5.4}{8.1} \times 6.15 (= 4.1)$ or $\frac{2.7}{8.1} \times 6.15$ oe or ft “scale factor” from (a)
			A1	cao



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	60	B1	cao	May be seen on diagram
	(b) 50	B1	cao	May be seen on diagram
	(c) 80 : 200	P1	for process to use the number of children, 80 or the total number of men and women, 200 in a ratio or for $\frac{80}{200}$	
		A1	for 80 : 200 oe	Award for a correct ratio even if subsequently incorrectly simplified.
14 (a)	81	M1	for $54 \times [\text{time}]$ eg $54 \times 1\frac{1}{2}$ oe, or $54 \div 54 \div 2$ oe	[time] could be $1\frac{1}{2}$ oe or any other time that has been changed from $1\frac{1}{2}$, eg 90 (mins) or 1.30 or 130
		A1	cao	
	(b) 1.5	P1	for use of scale eg $6 \times 25\,000$ (= 150 000) or for $25\,000 \div 100\,000$ (= 0.25) or $25\,000 \div 100$ (= 250) or $25\,000 \div 1000$ (= 25)	
		P1	for “150 000” $\div$ 100 000 (= 1.5) or “150 000” $\div$ 100 (= 1500) or “150 000” $\div$ 1000 (= 150) or for $[0.25] \times 6$ (= 1.5)	
		A1	for 1.5 oe	
				[0.25] could be found by dividing 25 000 by 100 (= 250) or dividing 25 000 by 1000 (= 25)

Paper: 1MA1/2F					
Question		Answer	Mark	Mark scheme	Additional guidance
13	(a)	6cd	B1	for 6cd or 6dc or cd6 oe	Inclusion of $\times$ scores B0, eg $6 \times cd$ oe
	(b)	– 5	M1	for $3 + 2 \times -4$ (= $3 - 8$)	
			A1	cao	
14	(a)	12	M1	for method to find speed, eg $36 \div 3$ or $\frac{36}{3}$	Condone $36 \div (3 \times 60)$
	(b)	Yes with supporting figures	A1	cao	
			P1	for process to find time, eg $36 \div 16$ (= 2.25) or $36 \div 16 \times 60$ (= 135)	
			P1	for full process to find figures to compare, eg $3 + \text{“2.25”}$ (= 5.25) or 3 hours + “2 hours 15 mins” (= 5 hours 15 mins) or 5 hours 20 mins – “2 hours 15 mins” (= 3 hours 5 mins) or 5 hrs 20 mins – 3 hours (= 2 hrs 20 mins) and $36 \div 16$ (= 2.25)	
			C1	Yes with correct supporting figures, eg 5.25(hours) (and 5.33.. hours) or 5 hours 15 mins or 3 hours 5 mins or 2 hrs 20 mins and 2 hrs 15 mins oe	
15		525	M1	for method to find the interest after one year, eg $3500 \times 2.5 \div 100$ (= 87.5) oe or 0.025×6 (= 0.15) oe or for a complete method, eg $3500 \times 2.5 \times 6 \div 100$ oe or for 4025 or 2975	May be implied by, eg 3587.5(0) Award M1 for 3500×1.025^n
		A1	cao		

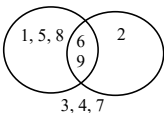


Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
23	35	P1 P1 P1 A1	for process to work out income and outgoings, eg $7.5(0) \times 54 (= 405)$ and $100 + 120 + 80 (= 300)$ for process to find the profit, eg $"405" - "300" (= 105)$ OR $"405" \div "300" (= 1.35)$ or $"405" \div "300" \times 100 (= 135)$ for a full process to find percentage profit, eg $("105" \div "300") \times 100$ or $("1.35" - 1) \times 100$ or $"135" - 100$ cao	
24	4811.20	M1 A1	for full method for one year, eg $4500 \times 1.034 (= 4653)$ oe for 4811.2(0)	Can be implied by 4806 or 9306 Accept 4811.202 and 4811.21
25	11	M1 M1 A1	for one correct step to isolate x term or constant term on one side, eg adds x to both sides to get $5x - 14 + x = 52 - x + x$ or adds 14 to both sides to get $5x - 14 + 14 = 52 - x + 14$ oe for both correct steps to isolate terms in x on one side and constant term on one side, eg $"6x" - 14 + 14 = 52 + 14$, or $5x + x = "66" + x - x$ cao	May be seen in different equivalent forms but must be carried out, not just intention seen. Can be implied by eg $4x = 66$ or $6x = 38$



Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
22		Secure Bank (supported)	P1 P1 C1	for a process to work out the interest after one year e.g. $0.02 \times 25000 (= 500)$ or $0.043 \times 25000 (= 1075)$ or for 1.02 or 25500 or 1.043 or 26075 for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. $25000 \times 1.02 \times 1.02 \times 1.02$ oe ($= 26530...$) or $1.02^3 (= 1.0612...)$ or $25000 \times 1.043 \times 1.009 \times 1.009$ oe ($= 26546...$) or $1.043 \times 1.009 \times 1.009 (= 1.0618.....)$ [accept total interest of 1530...or 1546...if final values of investment are not found] for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618
23		$4.755 \leq n < 4.765$	B2 [B1]	for $4.755 \leq n < 4.765$ for 4.755 or 4.765 or 4.7649]
24		$x = -8, x = 3$	M1 M1 A1	for factorisation or for substitution into quadratic formula ($x \pm a$)($x \pm b$) where product of a and $b = 24$, eg ($x \pm 4$)($x \pm 6$) or difference of a and $b = 5$, eg ($x \pm 2$)($x \pm 7$) $\frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error) for ($x + 8$)($x - 3$) or for $\frac{-5 \pm \sqrt{121}}{2}$ oe cao



Paper: IMA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
24 (a)	6,9	M1	for 6, 9 in the intersection only	Ignore all entries except the region you are marking for each method mark 
	1,5,8	M1	for 1, 5, 8 in set A only	
	2		or 2 in set B only	
	3, 4, 7	C1	or 3, 4, 7 in set $(A \cup B)'$ only	
		C1	for all numbers correctly placed in the Venn Diagram	
(b)	$\frac{2}{9}$	M1	ft for identification of 2 or 9 or ft diagram	Need not be written in correct form at this stage eg could be a ratio 2 : 9 Repeated digits in the diagram should be counted as 2 elements Accept any equivalent fraction, decimal form 0.22(22...) or percentage form 22(22...) %
		A1	$\frac{2}{9}$ oe or ft diagram	
25	12272.70 12272.71 or 12272.72	M1	for evidence of using a correct first step eg 200000×0.015 (= 3000) or 200000×1.015 (= 203000)	values may be rounded or truncated to 2 dp
		M1	for evidence of a compound interest method eg 203000×0.015 (= 3045) or 203000×1.015 (= 206045) or 206045×0.015 (= 3090.675) or 206045×1.015 (= 209135.675) or 209135.675×0.015 (= 3137.035...) or 209135.675×1.015 (212272.710...) or 200000×1.015^t , $t \geq 2$	
		A1	for 12272.7(0) or 12272.71 or 12272.72 SC B2 for 212272.7(0) or 212272.71 or 212272.72	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	14.5, 21	P1	for process to work with coordinates, eg $4 - (-3) (= 7)$ or $9 - 1 (= 8)$	Accept in reverse order eg $-3 - 4 (= -7)$ and negative distances throughout
		P1	for process to use ratio, eg $"7" \div 2 (= 3.5)$ or $"8" \div 2 (= 4)$ or $"7" \times 3 (= 21)$ or $"8" \times 3 (= 24)$	This mark is implied by 10.5 or 12 or 17.5 or 20
		P1	for complete process to find either the x or the y coordinate of N, eg $"3.5" \times 3 + 4$ or $"4" \times 3 + 9$ or $"3.5" \times 5 - 3$ or $"4" \times 5 + 1$ OR to find both the required distances eg $"3.5" \times 3 (= 10.5)$ and $"4" \times 3 (= 12)$ or $"21" \div 2 (= 10.5)$ and $"24" \div 2 (= 12)$ or $"3.5" \times 5 (= 17.5)$ and $"4" \times 5 (= 20)$	
		A1	oe	
26	600.74	M1	works out decrease for one year, eg $679 \times 4 \div 100 (= 27.16)$ oe or $679 \times (100 - 4) \div 100 (= 651.84)$ oe	Implied by $679 \times 0.12 (= 81.48)$ or $679 \times 0.88 (= 597.52)$
		M1	for compound method, eg $679 \times "0.96"^{t \geq 2}$ or $"651.84" \times "0.96" (= 625.76..)$ or $"651.84" \times "0.04" (= 26.07)$ or for answers in the range 600.71 to 600.74 exclusive	Values may be rounded or truncated
		A1	accept 600.71 or 600.72 or 600.73 or 600.74	If the correct answer is seen and the difference found award M1M1A0



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
22	8.73	M1	for a correct trig statement, eg $14.5 \times \cos 53$ or $\cos 53 = x \div 14.5$	Can use a combination of skills but must have only one unknown in x to score this mark If an answer is given in the range in working and then rounded incorrectly award full marks.
		A1	answer in the range 8.726 to 8.73	
23	7318.15	M1	for a correct first step eg working out increase for one year $7000 \times (100 + 3) \div 100 (= 7210)$ oe or $7000 \times 3 \div 100 (= 210)$ oe or find the multiplier for both years eg $(100 + 3) \div 100 \times (100 + 1.5) \div 100 (= 1.04545)$	7315 or 315 implies M1
		M1	for a compound method, eg $7000 \times (100 + 3) \div 100 \times (100 + 1.5) \div 100$ oe or “7210” $\times 1.5 \div 100$ or $(= 108.15)$ oe	318.15 implies M1M1A0
		A1	cao	
24	(a) 4	B1	for 4	Condone (0,4) or 0,4 Accept both solutions given as a coordinate for M1 eg (5.2, 0.8) or (0.8, 5.2) or (5.2, 0) and (0.8, 0)
	(b) (3, -5)	B1	cao	
	(c) 5.1 to 5.3 and 0.7 to 0.9	M1	for a correct method, eg marking both intercepts with x-axis or one correct solution	
		A1	for answers in the range 5.1 to 5.3 and 0.7 to 0.9	
25	(a) 1.25	B1	for 1.25 or $\frac{5}{4}$ or $1\frac{1}{4}$	Accept 4749.9 or 4749.99(...)
	(b) 4650 and 4750	B1	for 4650 in the correct position	
		B1	for 4750 in the correct position	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
25 (a)	$14x^5y^6$	B2	cao	Where a , x^b , y^c can be made up of two products Condone inclusion of multiplication signs for B1
		(B1)	for correct simplification of two terms ax^5y^6 or $14x^b y^6$ or $14x^5 y^c$ where $a \neq 14$, $b \neq 5$, $c \neq 6$)	
(b)	m^{-6}	B1	for m^{-6} or $\frac{1}{m^6}$	
26	247.4(0)	M1	for a method to find the value of the investment or interest after 1 year, eg 4500×1.018 (= 4581) or 4500×0.018 (= 81)	May be seen in more than one calculation Award of this mark implies the first M1 Sight of 83.94... implies M2
		M1	for a method to find the value of the investment after 3 years, eg 4500×1.018^3 (= 4747.4...) or “4581” $\times 1.018$ (= 4663.45...) and “4663.45...” $\times 1.018$ (= 4747.4... or 4747.39...)	
		A1	accept 247.39 SCB1 for 243 or 4743 if M0 scored	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	Rachel supported	P1 P1 P1 C1	for process to begin to work with percentage for year 1 for Tamsin or Rachel, eg 150000×0.04 (= 6000) oe or 150000×1.04 (= 156000) oe or 160000×0.015 (= 2400) oe or 160000×1.015 (= 162400) oe for process to use compound interest for Tamsin or Rachel, eg "156000×0.04 (= 6240) oe or "156000×1.04 (= 162240) oe or "162400×0.015 (= 2436) oe or "162400×1.015 (= 164836) oe or 1.04^2 (= 1.0816) or 1.015^2 (= 1.030225) OR for process to begin to work with percentage increase for Tamsin and Rachel for one year, eg 150000×1.04 (= 156000) oe and 160000×1.015 (= 162400) oe for full process to find figures to compare, eg Tamsin for 2 years and Rachel for 2 years eg 150000×1.04^2 (= 162240) oe and 160000×1.015^2 (= 164836) oe OR Tamsin for 2 years and Rachel for 1 year, eg 150000×1.04^2 (= 162240) oe and 160000×1.015 (= 162400) oe for Rachel with supporting figures, eg 162240 and 164836 or 162240 and 162400 or other valid conclusion with supporting comparable figures	May be implied by 12000 or 4800 or 162000 or 164800 values may be rounded or truncated to 3 sf May be implied by 162000 and 164800 Other comparisons are possible Note that the figure used to compare for Rachel can be the figure after 2 years or after 1 year
28	B, D, E, C, A	B3 (B2) (B1)	for all correctly matched for 3 or 4 correctly matched) for 2 correctly matched)	



Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	Ben (supported)	P1	shows how to work interest out for one year eg $2000 \times 0.025 (= 50)$ or $1600 \times 0.035 (= 56)$ or 150 or 168 or $2000 \times 1.025 (= 2050)$ or $1600 \times 1.035 (= 1656)$	Throughout accept figures ± 1 pence which do not need to be presented in money notation (to 2dp) or with monetary symbols.
		P1	shows compound interest calculation for one account eg $2050 \rightarrow 51.25$ or $2101.25 \rightarrow 52.53$ or $1656 \rightarrow 57.96$ or $1713.96 \rightarrow 59.99$ eg $2000 \times 1.025^3 (= 2153.78)$ or $1600 \times 1.035^3 (= 1773.95)$	Award mark for a correct process shown, for which these figures can be taken as implying the process.
		P1	shows complete compound interest calculation for both accounts eg $2000 \times 1.025^3 (= 2153.78)$ and $1600 \times 1.035^3 (= 1773.95)$ OR one interest stated correctly eg 153.78 or 173.95	As above, award mark for both correct processes shown for both accounts, which these figures can be taken as implying the process.
		C1	Ben (shares) supported by 153.78 and 173.95	Accept an answer of “shares”.
	(b) conclusion	C1	conclusion (ft) eg no change, shares now 182.5... Acceptable examples no since shares/Ben now 182.5 Still Ben since $182.5 > \text{Ali}$ No; he only gets 8.57 more No; he gets 68.56 instead of 59.98 (3 rd yr) No; Ben already gets more interest, he would just get even more Not acceptable examples no shares now 182.5 Still Ben since less than Ali $182.5 > 153.78$ no; he needs 20.17 more	Conclusion needs to be supported. ft is from part (a); calculations carried out as part of (b) need to be correct for the comparison to be valid.