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

Algebraic Manipulation (A1)

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

85 questions · 251 marks · Mark schemes included

Past papers June 2017 - June 2025 · 6 sub-topics

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 Piccadilly Business Centre, Unit C, Aldow Enterprise Park
Blackett Street, Manchester, M12 6AE

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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A1d ALGEBRAIC FRACTIONS & IDENTITIES

No questions on this sub-topic in the available past papers.

A1e ALGEBRAIC PROOF & REASONING

1 Qs · 4 marks

91

85. Q14	GCSE Paper 2F November 2017	4	92
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A1f FUNCTIONS (COMPOSITE & INVERSE)

No questions on this sub-topic in the available past papers.



QUESTIONS

85 questions · 251 marks · 4 sub-topics

SUB-TOPIC A1a

NOTATION, SIMPLIFYING & SUBSTITUTION

Sub-topic A1a · 53 questions · 134 marks · lowest tariff first



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Write 3758 correct to the nearest 1000

.....

(Total for Question 1 is 1 mark)

- 2** Simplify $y + 3y - 2y$

.....

(Total for Question 2 is 1 mark)

- 3** Write down all the factors of 18

.....

(Total for Question 3 is 2 marks)



13 The length of a line is x centimetres.

Write down an expression, in terms of x , for the length of the line in millimetres.

(Total for Question 13 is 1 mark)

14 (a) Work out $\frac{1}{5}$ of 70

(1)

Fiona has to work out the exact value of $48 \div \frac{1}{2}$

She writes

$$48 \div \frac{1}{2} = 24$$

Fiona's reason is,

“There are 2 halves in 1, so there will be 24 halves in 48”

(b) Explain what is wrong with Fiona's reason.

(1)

(Total for Question 14 is 2 marks)



- 7 There are y boats on a lake.
There are 7 people in each boat.

Write an expression, in terms of y , for the total number of people in the boats.

(Total for Question 7 is 1 mark)

- 8 (a) Simplify $a \times b \times 7$

(1)

- (b) Simplify $y \times y \times y$

(1)

- (c) Simplify fully $\frac{e \times e \times e \times f}{e \times e \times f \times f}$

(2)

(Total for Question 8 is 4 marks)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Write 0.37 as a fraction.

.....
(Total for Question 1 is 1 mark)

- 2** Write 29 381 correct to the nearest 1000

.....
(Total for Question 2 is 1 mark)

- 3** Simplify $3e - e + 4e$

.....
(Total for Question 3 is 1 mark)

- 4** Write $\frac{1}{4}$ as a percentage.

..... %
(Total for Question 4 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Change 40 centimetres into millimetres.

..... millimetres

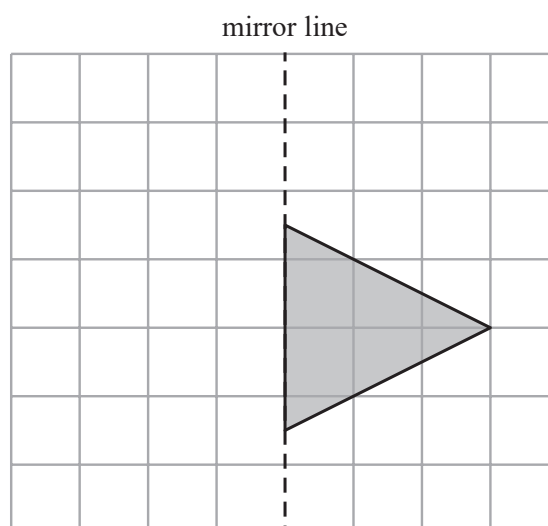
(Total for Question 1 is 1 mark)

- 2 Simplify $e + e + e + e$

.....

(Total for Question 2 is 1 mark)

- 3 On the grid, reflect the shaded triangle in the mirror line.



(Total for Question 3 is 1 mark)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Write 35% as a fraction.

.....

(Total for Question 1 is 1 mark)

- 2** Work out $\frac{1}{4}$ of 28

.....

(Total for Question 2 is 1 mark)

- 3** Write down two factors of 12

.....

(Total for Question 3 is 1 mark)

- 4** Simplify $2m \times 3$

.....

(Total for Question 4 is 1 mark)

- 5** Find $\sqrt{1.69}$

.....

(Total for Question 5 is 1 mark)



5 Simplify $3 \times w \times 5 \times t$

(Total for Question 5 is 1 mark)

6 Fay is planning a trip to a theme park for 1 adult and 2 children.

These are the costs for the trip.

Total cost of petrol	£23
Tickets to theme park	£33 each adult £24.50 each child
Meals	£15 each adult £10 each child

Fay has £200 to spend.
She pays all the costs.

How much money does she have left?

£.....

(Total for Question 6 is 4 marks)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Write 6184 correct to the nearest hundred.

.....

(Total for Question 1 is 1 mark)

- 2** Write 0.7 as a fraction.

.....

(Total for Question 2 is 1 mark)

- 3** Change 9 metres into centimetres.

..... centimetres

(Total for Question 3 is 1 mark)

- 4** Simplify $3 \times 4t$

.....

(Total for Question 4 is 1 mark)

- 5** Here is a list of numbers.

20 40 60 80 100

One of these numbers is a multiple of 25

Which number?

.....

(Total for Question 5 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write the number three thousand one hundred and seven in figures.

.....

(Total for Question 1 is 1 mark)

- 2 Write $\frac{3}{10}$ as a percentage.

.....%

(Total for Question 2 is 1 mark)

- 3 Simplify $m + m + m + m$

.....

(Total for Question 3 is 1 mark)

- 4 Change 4000 grams into kilograms.

..... kilograms

(Total for Question 4 is 1 mark)

- 5 7 -5 3 9 -2

Write these numbers in order of size.
Start with the smallest number.

.....

(Total for Question 5 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Here is a list of numbers.

2 4 4 7 8

Work out the range of these numbers.

.....
(Total for Question 1 is 1 mark)

- 2** Work out $120 - 89$

.....
(Total for Question 2 is 1 mark)

- 3** Simplify $3 \times a \times 4$

.....
(Total for Question 3 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write the following numbers in order.
Start with the lowest number.

4 -3 7 2 -1

.....
(Total for Question 1 is 1 mark)

- 2 Change 5000 millilitres to litres.

..... litres

.....
(Total for Question 2 is 1 mark)

- 3 Write $\frac{31}{100}$ as a decimal.

.....
(Total for Question 3 is 1 mark)

- 4 Write down the multiple of 7 that is between 30 and 40

.....
(Total for Question 4 is 1 mark)

- 5 Complete the statement below to make it correct.

..... $\times m = 2m$

.....
(Total for Question 5 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write 23% as a fraction.

.....
(Total for Question 1 is 1 mark)

- 2 Change 800 centimetres to metres.

..... metres
(Total for Question 2 is 1 mark)

- 3 Write down the value of the 3 in the number 62 837

.....
(Total for Question 3 is 1 mark)

- 4 Simplify $7a + a - 5a$

.....
(Total for Question 4 is 1 mark)

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

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

.....
(Total for Question 5 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Simplify $e + e + e + e + e$

.....
(Total for Question 1 is 1 mark)

- 2** Write $\frac{3}{4}$ as a decimal.

.....
(Total for Question 2 is 1 mark)

- 3** Change 60 millimetres into centimetres.

..... centimetres
(Total for Question 3 is 1 mark)

- 4** Write down a multiple of 8 that is between 25 and 35

.....
(Total for Question 4 is 1 mark)

- 5** Angle A is 53°

What type of angle is angle A ?

.....
(Total for Question 5 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Change 3 weeks into days.

..... days

(Total for Question 1 is 1 mark)

- 2** Simplify $2 \times 3n$

.....

(Total for Question 2 is 1 mark)

- 3** Write 0.7 as a percentage.

..... %

(Total for Question 3 is 1 mark)

- 4** Here are some temperatures in °C.

−3 5 −6 7 2

Write the temperatures in order.
Start with the lowest temperature.

.....

(Total for Question 4 is 1 mark)



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Work out the value of 2^4

.....
(Total for Question 1 is 1 mark)

- 2** Write 7.26451 correct to 3 decimal places.

.....
(Total for Question 2 is 1 mark)

- 3** (a) Simplify $7 \times e \times f \times 8$

.....
(1)

- (b) Solve $\frac{x}{5} = 2\frac{1}{2}$

$x =$
(1)

(Total for Question 3 is 2 marks)

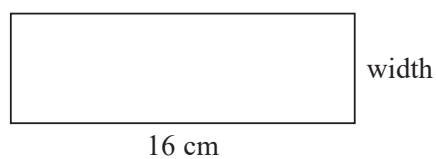
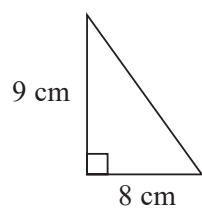
- 4** Write $\frac{4}{5}$ as a percentage.

.....%

(Total for Question 4 is 1 mark)



15 Here are a triangle and a rectangle.



The area of the rectangle is 6 times the area of the triangle.

Work out the width of the rectangle.

..... cm

(Total for Question 15 is 4 marks)

16 $v = u + at$

$$u = 1 \quad a = -3 \quad t = \frac{1}{2}$$

Work out the value of v .

$v =$

(Total for Question 16 is 2 marks)



- 2 Cups are sold in packs and in boxes.

There are 12 cups in each pack.

There are 18 cups in each box.

Alison buys p packs of cups and b boxes of cups.

Write down an expression, in terms of p and b , for the total number of cups Alison buys.

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

- 3 Here are four digits.

5 6 1 9

- (i) Write down the smallest possible two digit number that can be made with two of the digits.

.....
(1)

- (ii) Write down the three digit number closest to 200 that can be made with three of the digits.

.....
(1)

(Total for Question 3 is 2 marks)



- 4 Here is a list of four fractions.

$$\frac{4}{16}$$

$$\frac{2}{8}$$

$$\frac{15}{60}$$

$$\frac{3}{9}$$

One of these fractions is **not** equivalent to $\frac{1}{4}$

Write down this fraction.

.....
(Total for Question 4 is 1 mark)

- 5 Write down the first even multiple of 7

.....
(Total for Question 5 is 1 mark)

- 6 (a) Simplify $3 \times 4t$

.....
(1)

- (b) Simplify $8a - 3a + 2a$

.....
(1)

(Total for Question 6 is 2 marks)



9 $g = 9$
 $h = 4$

Work out the value of $2g + 3h$

.....
(Total for Question 9 is 2 marks)

10 Write down two prime numbers that have a sum of 32

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

6 Here are four fractions.

$$\frac{3}{4}$$

$$\frac{5}{7}$$

$$\frac{19}{25}$$

$$\frac{11}{15}$$

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

(Total for Question 6 is 2 marks)

7 (a) Simplify $3m - m - m + 3m$

(1)

(b) Simplify $2 \times n \times p \times 4$

(1)

(Total for Question 7 is 2 marks)

8 A map has a scale of 1 cm to 14 km.

On the map, the distance between Manchester and London is 18.8 cm.

What is the real distance, in km, between Manchester and London?

.....km

(Total for Question 8 is 2 marks)



10 Here are three symbols.

<	>	=
---	---	---

Write one of these symbols in each box to make four true statements.

$14 \quad \boxed{} \quad 21$

$4 + 7 \quad \boxed{} \quad 103 - 92$

$2^2 \quad \boxed{} \quad 2 \times 2$

$-3 \quad \boxed{} \quad -5$

(Total for Question 10 is 2 marks)

11 $P = 7r + 3q$

Work out the value of P when $r = 5$ and $q = -4$

(Total for Question 11 is 2 marks)



9 Simplify $4e + 6f + 7e - f$

(Total for Question 9 is 2 marks)

10 Bill has 400 counters in a bag.

He gives

35 of the counters to Sameena

50 of the counters to Henry

75 of the counters to Lucas

What fraction of the 400 counters is left in Bill's bag?

Give your fraction in its simplest form.

(Total for Question 10 is 3 marks)

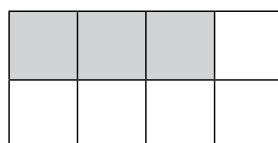


- 5 Change 4 kilometres into metres.

..... metres

(Total for Question 5 is 1 mark)

- 6 Here is a grid of squares.



Write down the ratio of the number of shaded squares to the number of unshaded squares.

.....

(Total for Question 6 is 1 mark)

- 7 $w = 4u + 3$

Find the value of w when $u = 8$

.....

(Total for Question 7 is 2 marks)

- 8 Here are the first five terms of a sequence.

1 3 6 10 15

Write down the next two terms of the sequence.

..... , ...

(Total for Question 8 is 2 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Write 31% as a fraction.

.....

(Total for Question 1 is 1 mark)

- 2** Change 3 metres into centimetres.

..... centimetres

(Total for Question 2 is 1 mark)

- 3** Write the following numbers in order of size.
Start with the smallest number.

1.02 0.12 1.20 0.21

.....

(Total for Question 3 is 1 mark)

- 4** (a) Simplify $m + m + m + m$

.....
(1)

- (b) Simplify $12p \div 4$

.....
(1)

(Total for Question 4 is 2 marks)

- 13** There are 15 sweets in a jar.
4 of the sweets are red.

Jill takes at random a sweet from the jar.

- (a) Write down the probability that the sweet is red.

.....
(1)

There are only green counters and blue counters in a bag.

A counter is taken at random from the bag.
The probability that the counter is green is 0.3

- (b) Find the probability that the counter is blue.

.....
(1)

(Total for Question 13 is 2 marks)

- 14** $y = 6x - 5$

Work out the value of y when $x = 4$

$y =$

(Total for Question 14 is 2 marks)

- 7 Myles writes down the distance readings from his car at the start and end of a journey.

Start of journey

1	2	4	6	8
---	---	---	---	---

 miles

End of journey

1	2	8	4	5
---	---	---	---	---

 miles

Myles knows that the cost of petrol for this journey is 13p per mile.

Work out the total cost of the petrol used for this journey.

Give your answer in pounds.

£.....

(Total for Question 7 is 4 marks)

- 8 Safiya wants to hire a van.
She uses this rule to work out the cost of hiring a van for a number of days.

$\text{Cost} = £45 \times \text{number of days}$
--

Safiya is going to hire the van for 7 days.

Work out the cost.

£.....

(Total for Question 8 is 2 marks)



12 Amol, Gemma and Harry each have a number of sweets.

The number of sweets that Gemma has is 6 times the number of sweets that Amol has.

The number of sweets that Harry has is half the number of sweets that Gemma has.

Write down the ratio

the number of sweets : the number of sweets : the number of sweets
that Amol has : that Gemma has : that Harry has

(Total for Question 12 is 2 marks)



12 A chess match lasted $3\frac{1}{4}$ hours.

The match finished at 14 10

At what time did the chess match start?

(Total for Question 12 is 2 marks)

13 (a) Simplify $8h^3 + 14h^3 - 2h^3$

(1)

(b) Simplify $(9y + 12y) \div 3$

(1)

(Total for Question 13 is 2 marks)

14 Write the following numbers in order of size.
Start with the smallest number.

$$\frac{7}{12}$$

0.56

57%

$$\frac{6}{11}$$

0.558

(Total for Question 14 is 2 marks)



Rob drives 17 miles from Bridlington to Scarborough.
He then drives 50 kilometres from Scarborough to Staithes.

- (b) What is the total distance Rob drives?
Give your answer in miles.

..... miles
(3)

(Total for Question 11 is 4 marks)

- 12 A shop sells apples and oranges.

There are 6 apples in each pack of apples.
There are 7 oranges in each bag of oranges.

The shop sells x packs of apples and y bags of oranges.

Write an expression, in terms of x and y , for the total number of apples and oranges the shop sells.

.....
(Total for Question 12 is 2 marks)



- 7 Here is a rule to work out the cost of buying a number of floorboards.

$$\text{Cost} = £55 \times \text{number of floorboards}$$

Toby buys a number of floorboards.
The cost is £330

Work out the number of floorboards Toby buys.

.....
(Total for Question 7 is 2 marks)

- 8 Here is a list of numbers.

7 14 6 6 8 5 6 10 11 14

- (a) Find the mode.

.....
(1)

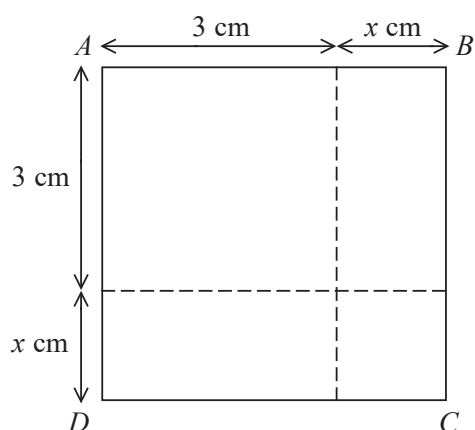
- (b) Work out the range.

.....
(2)

(Total for Question 8 is 3 marks)



24



The area of square $ABCD$ is 10 cm^2 .

Show that $x^2 + 6x = 1$

(Total for Question 24 is 3 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write $\frac{7}{100}$ as a decimal.

(Total for Question 1 is 1 mark)

- 2 Write down a multiple of 6 that is between 40 and 50

(Total for Question 2 is 1 mark)

- 3 (a) Simplify $3f \times 5g$

(1)

- (b) Simplify $t \times t$

(1)

- (c) Simplify $\frac{2n + 6n}{2}$

(1)

(Total for Question 3 is 3 marks)



13 (a) Simplify $2a \times 5b$

.....
(1)

(b) Simplify $3x + 2y + 5x - y$

.....
(2)

.....
(Total for Question 13 is 3 marks)

14 Work out 23×15

.....
(Total for Question 14 is 2 marks)



17 $x - 1 = 2$

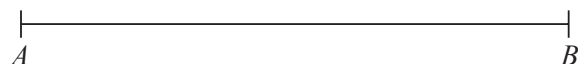
Work out the value of $2x^2$

(Total for Question 17 is 3 marks)



5 AB is a straight line.

Mark with a cross (X) the midpoint of AB .



(Total for Question 5 is 1 mark)

6 (a) Simplify $a \times b \times 4$

.....
(1)

(b) Simplify $4x + 3 - x + 5$

.....
(2)

(Total for Question 6 is 3 marks)

17 There are 200 counters in a bag.

38 counters are red.

52 counters are blue.

The rest of the counters are yellow or green.

There are the same number of yellow counters as green counters.

What percentage of the counters in the bag are yellow?

.....%

(Total for Question 17 is 4 marks)

18 Naomi has b bags of apples and c crates of apples.

There are 5 apples in each bag.

There are 28 apples in each crate.

Naomi has a total of T apples.

Write a formula for T in terms of b and c .

(Total for Question 18 is 3 marks)



12 Saira buys 24 bars of chocolate.

$\frac{2}{3}$ of the 24 bars are white chocolate.

The rest of the 24 bars are milk chocolate.

Each milk chocolate bar has a weight of 35 grams.

Work out the total weight of the milk chocolate bars that Saira buys.

..... grams

(Total for Question 12 is 3 marks)

13 (a) Simplify $2c \times 3d$

.....
(1)

$$T = x + 2y$$

$$x = 3 \text{ and } y = -4$$

(b) Work out the value of T .

$T =$
(2)

(Total for Question 13 is 3 marks)



16 (a) Simplify $m \times m \times m \times m$

.....
(1)

In a competition, a player gets

5 points for each game they win
2 points for each game they draw
0 points for each game they lose.

Amy wins x games and draws y games.

(b) Write down an expression, in terms of x and y , for the total number of points Amy gets.

.....
(2)

(Total for Question 16 is 3 marks)



11 (a) Simplify $2x \times 3y$

.....
(1)

(b) Simplify $3d - 4e + 2d + e$

.....
(2)

(Total for Question 11 is 3 marks)

12 180 tickets are sold for a concert.

60% of the tickets are child tickets.

The rest of the tickets are adult tickets.

The total cost of the 180 tickets is £1944

Each child ticket costs £8

Work out the cost of each adult ticket.

£.....

(Total for Question 12 is 4 marks)

25 (a) Simplify fully $2x^3y^5 \times 7x^2y$

.....
(2)

(b) Simplify $(m^2)^{-3}$

.....
(1)

(Total for Question 25 is 3 marks)

9 Greg is x years old.

Greg is 5 years older than Katy.

(a) Write down an expression, in terms of x , for Katy's age.

.....
(1)

Carl is twice as old as Greg.

(b) Write down an expression, in terms of x , for Carl's age.

.....
(1)

(c) Solve $4y = 12$

$y =$
(1)

(Total for Question 9 is 3 marks)



12 A factory makes mountain bikes and road bikes.
Each bike has disc brakes or rim brakes or caliper brakes.

In June the factory makes a total of 240 bikes.

- 102 of the bikes are mountain bikes.
- 75 of the 110 bikes with disc brakes are mountain bikes.
- 105 bikes have rim brakes.
- 20 of the mountain bikes have caliper brakes.

Use this information to complete the two-way table.

	disc brakes	rim brakes	caliper brakes	Total
mountain bikes				
road bikes				
Total				

(Total for Question 12 is 3 marks)

13 (a) Simplify $n \times n \times n$

.....
(1)

(b) Solve $5k - 4 = 26$

$k =$
(2)

(Total for Question 13 is 3 marks)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Simplify $5p - 3p + p$

.....
(1)

(b) Simplify $m^3 + m^3$

.....
(1)

(c) Simplify $10 + 3c + 5d - 7c + d$

.....
(2)

.....
(Total for Question 1 is 4 marks)

2 Write 56.78 correct to one significant figure.

.....
(Total for Question 2 is 1 mark)



- 7 There are y boats on a lake.
There are 7 people in each boat.

Write an expression, in terms of y , for the total number of people in the boats.

(Total for Question 7 is 1 mark)

- 8 (a) Simplify $a \times b \times 7$

(1)

- (b) Simplify $y \times y \times y$

(1)

- (c) Simplify fully $\frac{e \times e \times e \times f}{e \times e \times f \times f}$

(2)

(Total for Question 8 is 4 marks)



- 14 Find the value of $\frac{5.27 + 3.5}{7.9 - 4.36}$

Give your answer as a decimal.

Write down all the figures on your calculator display.

(Total for Question 14 is 2 marks)

- 15 You can use this rule to work out the total hire charge, in pounds (£), for hiring a 3D printer for a number of weeks.

$$\text{Total hire charge (£)} = \text{number of weeks} \times 70 + 50$$

Mia wants to hire a 3D printer for 4 weeks.

- (a) Work out the total hire charge.

£.....
(2)

Zahir hires a 3D printer.
The total hire charge is £680

- (b) For how many weeks does Zahir hire the 3D printer?

..... weeks
(2)

(Total for Question 15 is 4 marks)



18 Ben is n years old.

Chloe is twice as old as Ben.

Dan is five years younger than Ben.

The total of Ben's age, Chloe's age and Dan's age is T years.

(a) Find a formula for T in terms of n .

.....
(3)

(b) In the table below, put a tick (✓) in the box next to the identity.

$3h + 2 = 14$	
$3a + 4b - 2c$	
$A = \pi r^2$	
$5m - 3m = 2m$	
$x + 7 \leq 12$	

(1)

(Total for Question 18 is 4 marks)



20 An estimate of the height, H metres, of a tall building can be found using the formula

$$H = 4f + 12$$

where the building is f floors high.

A tall building is 110 floors high.

The real height of the building is 442 m.

Seb uses the formula to find an estimate of the height of this building.

He then finds the difference between his estimate and the real height.

Show that this difference is less than 5% of the real height.

(Total for Question 20 is 4 marks)



15 $T = 3x + 4y$

(a) Work out the value of T when $x = 5$ and $y = -7$

.....
(2)

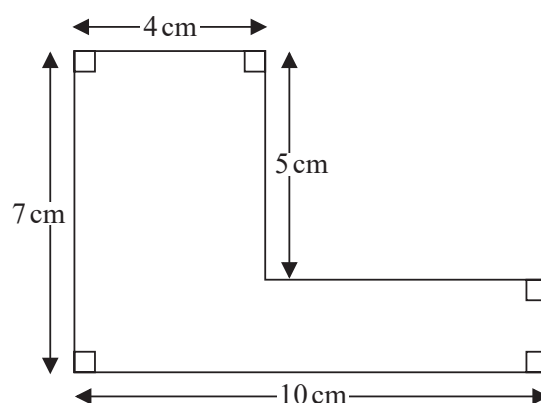
(b) Work out the value of y when $T = 38$ and $x = 6$

.....
(2)

(Total for Question 15 is 4 marks)



13



Work out the perimeter of this shape.

..... cm

(Total for Question 13 is 2 marks)

14 (a) Simplify $3x + 5y + 2x - 4y$

.....
(2)

(b) Solve $5p + 7 = 22$

$p =$
(2)

(Total for Question 14 is 4 marks)



23 (a) Simplify $n^3 \times n^5$

.....
(1)

(b) Simplify $\frac{c^3d^4}{c^2d}$

.....
(2)

(c) Solve $\frac{5x}{2} > 7$

.....
(2)

(Total for Question 23 is 5 marks)



16 $P = 4x + 3y$

$$x = 5$$

$$y = -2$$

(a) Work out the value of P .

.....
(2)

(b) Expand $4e(e + 2)$

.....
(2)

(c) Solve $3(m - 4) = 21$

$m =$
(2)

(Total for Question 16 is 6 marks)



12 $P = 2g + 4h$

(a) (i) Work out the value of P when $g = 3$ and $h = 5$

$$P = \dots\dots\dots$$

(2)

(ii) Work out the value of g when $P = 38$ and $h = 3$

$$g = \dots\dots\dots$$

(2)

$$V = 3r - q$$

(b) Work out the value of V when $r = -3$ and $q = 2$

$$V = \dots\dots\dots$$

(2)

(Total for Question 12 is 6 marks)



14 (a) Simplify $4c + 7d + 3c - d$

.....
(2)

(b) Solve $5(2m - 6) = 40$

$m =$
(3)

There are x sweets in a box.

There are y sweets in a packet.

(c) Write an expression, in terms of x and y , for the total number of sweets in 3 boxes and 2 packets.

.....
(2)

(Total for Question 14 is 7 marks)



SUB-TOPIC A1b

EXPANDING & FACTORISING

Sub-topic A1b · 19 questions · 73 marks · lowest tariff first



Kristina is 11 years old.
Her best time to run 100 metres is 12 seconds.

The point representing this information would be an outlier on the scatter diagram.

(b) Explain why.

(1)

Debbie is 15 years old.

Debbie says,

“The scatter diagram shows I should take less than 12 seconds to run 100 metres.”

(c) Comment on what Debbie says.

(1)

(Total for Question 19 is 3 marks)

20 Expand and simplify $5(p + 3) - 2(1 - 2p)$

(Total for Question 20 is 2 marks)



15 (a) Write down the value of $\sqrt{64}$

.....
(1)

(b) Work out the value of 5^3

.....
(1)

(Total for Question 15 is 2 marks)

16 (a) Expand $5(2m - 3)$

.....
(1)

(b) Factorise $3n + 12$

.....
(1)

(Total for Question 16 is 2 marks)

21 (a) Factorise $6x - 15$

.....
(1)

(b) Factorise $m^2 + 5m$

.....
(1)

(Total for Question 21 is 2 marks)

22 Find the highest common factor (HCF) of 63 and 105

.....
(Total for Question 22 is 2 marks)



14 (a) Factorise $5 - 10m$

.....
(1)

(b) Factorise fully $2a^2b + 6ab^2$

.....
(2)

(Total for Question 14 is 3 marks)

15 (a) Write 4.7×10^{-1} as an ordinary number.

.....
(1)

(b) Work out the value of $(2.4 \times 10^3) \times (9.5 \times 10^5)$
Give your answer in standard form.

.....
(2)

(Total for Question 15 is 3 marks)



17 (a) Factorise $4m + 12$

.....
(1)

expression	equation	formula	identity
inequality	term	factor	multiple

(b) Choose two words from the box above to make this statement correct.

$5y$ is a in the $3x + 5y$

(2)

(Total for Question 17 is 3 marks)



27 (a) Expand and simplify $(3x + 2)(2x - 5)$

.....
(2)

(b) Factorise $x^2 - 16$

.....
(1)

(Total for Question 27 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS



- 18** Bill wants to increase 150 by 3%
He writes down

$$150 \times 1.3 = 195$$

Bill's method is wrong.

- (a) Explain why.

(1)

Sally wants to decrease 150 by 3%

- (b) Complete this statement to show how Sally can decrease 150 by 3%

$$150 \times \dots\dots\dots = \dots\dots\dots$$

(1)

(Total for Question 18 is 2 marks)

- 19** (a) Solve $3(x - 4) = 12$

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

(2)

- (b) Factorise fully $9b - 3b^2$

(2)

(Total for Question 19 is 4 marks)



26 (a) Expand and simplify $(5x + 2)(2x - 3)$

.....
(2)

(b) Factorise $x^2 + 4x + 3$

.....
(2)

(Total for Question 26 is 4 marks)

27 (a) Write the number 0.000 075 47 in standard form.

.....
(1)

(b) Write 3.42×10^4 as an ordinary number.

.....
(1)

(c) Work out $\frac{2.3 \times 10^4 \times 6.7 \times 10^3}{5 \times 10^{-8}}$

.....
(2)

(Total for Question 27 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS



22 (a) Expand and simplify $(x + 5)(x - 9)$

.....
(2)

(b) Factorise fully $9x^2 + 6x$

.....
(2)

(Total for Question 22 is 4 marks)

23 (a) Use your calculator to work out $\frac{29^2 - 4.6}{\sqrt{35 - 1.9^3}}$

Write down all the figures on your calculator display.

.....
(2)

(b) Write your answer to part (a) correct to 4 significant figures.

.....
(1)

(Total for Question 23 is 3 marks)



18 Work out an estimate for $\frac{790 \times 289}{49}$

(Total for Question 18 is 3 marks)

19 (a) Expand $x(x - 4)$

(1)

(b) Factorise $15y - 10$

(1)

(c) Solve $7(f - 5) = 28$

$f =$
(2)

(Total for Question 19 is 4 marks)



15 (a) Expand $2(a + d)$

.....
(1)

(b) Factorise $6y^2 - 5y$

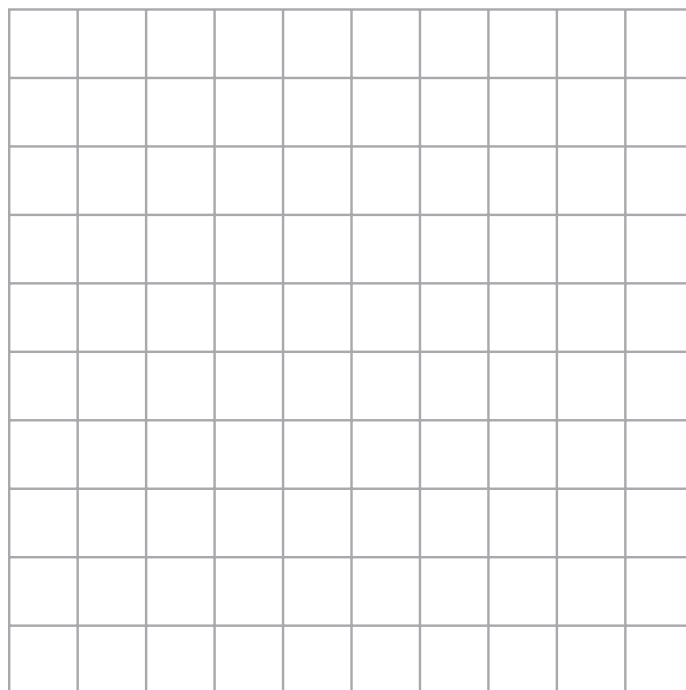
.....
(1)

(c) Solve $4x - 7 = 37$

$x =$
(2)

(Total for Question 15 is 4 marks)

16 On the centimetre grid, draw an isosceles triangle with an area of 12 cm^2



(Total for Question 16 is 2 marks)

17 (a) Expand $3(4 - 2x)$

.....
(1)

(b) Solve $\frac{3y}{4} = 12$

$y =$
(2)

(c) Factorise $4p + 6$

.....
(1)

(Total for Question 17 is 4 marks)



12 Here are 6 numbers.

13 5 4 9 3 8

Work out the mean.

.....
(Total for Question 12 is 2 marks)

13 (a) Simplify $\frac{15a}{3}$

.....
(1)

(b) Simplify $19 + 5b + 4c - 7b + c$

.....
(2)

(c) Factorise $8d - 6$

.....
(1)

(Total for Question 13 is 4 marks)



20 (a) Simplify $(m^2)^3$

.....
(1)

(b) Simplify $x^5 \times x^8$

.....
(1)

(c) Expand $4p(p^2 + 3p)$

.....
(2)

(Total for Question 20 is 4 marks)

15 (a) Factorise $6a + 15$

.....
(1)

(b) Solve $4(3y + 1) = 28$

$y =$
(3)

(Total for Question 15 is 4 marks)

16 1 cup of tea and 1 cup of coffee cost £4.50
3 cups of tea and 1 cup of coffee cost £8.50

Work out the total cost of 4 cups of tea and 3 cups of coffee.
You must show all your working.

£.....

(Total for Question 16 is 5 marks)



24 (a) Solve $2x^2 = 72$

.....
(2)

(b) Expand and simplify $(2x + 1)(3x - 2)$

.....
(2)

(c) Factorise $x^2 + 6x + 9$

.....
(1)

(Total for Question 24 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS



21 (a) Simplify $(x^3)^5$

.....
(1)

(b) Expand and simplify $4(x + 3) + 7(4 - 2x)$

.....
(2)

(c) Factorise fully $15x^3 + 3x^2y$

.....
(2)

(Total for Question 21 is 5 marks)

21 (a) Simplify $y^{10} \div y^2$

.....
(1)

(b) Simplify $(e^3)^2$

.....
(1)

(c) Expand $x(3x^2 + 5)$

.....
(1)

(d) Expand and simplify $(n + 5)(n - 2)$

.....
(2)

(Total for Question 21 is 5 marks)

17 (a) Expand $y(y + 5)$

.....
(1)

(b) Factorise $4a - 6$

.....
(1)

(c) Solve $2(5x - 4) = 21$

$x =$
(3)

(d) Simplify $4e^2f \times 5ef^3$

.....
(2)

(Total for Question 17 is 7 marks)

18 Change 1 m^2 into cm^2

..... cm^2

(Total for Question 18 is 1 mark)



SUB-TOPIC A1c

FORMULAE & REARRANGING

Sub-topic A1c · 12 questions · 40 marks · lowest tariff first



19 Make x the subject of the formula $y = 2x + 4$

(Total for Question 19 is 2 marks)



21 Make a the subject of the formula $p = 3a - 9$

(Total for Question 21 is 2 marks)

22 Rob has been asked to divide 120 in the ratio 3:5

Here is his working.

$$120 \div 3 = 40$$

$$120 \div 5 = 24$$

Rob's working is not correct.

Describe what Rob has done wrong.

(Total for Question 22 is 1 mark)



25 Make w the subject of the formula $y = 3w - 10$

(Total for Question 25 is 2 marks)

26 Solve $x^2 - 2x - 15 = 0$

(Total for Question 26 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS



- 5 Here are the first four terms of a number sequence.

2 5 11 23

The rule to continue this sequence is

multiply the previous term by 2 and then add 1

Work out the 5th term of this sequence.

(Total for Question 5 is 1 mark)

- 6 Here are five straight rods.

$\overline{\leftarrow a - 1 \rightarrow}$ $\overline{\leftarrow a \rightarrow}$ $\overline{\leftarrow a \rightarrow}$ $\overline{\leftarrow a \rightarrow}$ $\overline{\leftarrow a + 4 \rightarrow}$

All measurements are in centimetres.

The total length of the five rods is L cm.

Find a formula for L in terms of a .

Write your formula as simply as possible.

(Total for Question 6 is 3 marks)



28 Make g the subject of the formula $T = \sqrt{\frac{g+6}{2}}$

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS



30 (a) Make q the subject of $p = 6q + 7$

.....
(2)

(b) Simplify $(m^{-2})^{-3}$

.....
(1)

.....
(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS



23 Ben is trying to make m the subject of $p = \frac{m}{3} + 5$

Here is his working.

$$p - 5 = \frac{m}{3}$$

$$3 \times p - 5 = m$$

$$m = 3p - 5$$

Ben's answer is wrong.

(a) What mistake has Ben made?

.....

.....

.....

(1)

(b) Factorise fully $2x^3y + 4xy^2$

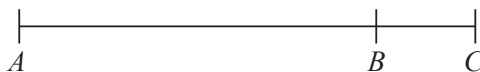
.....

(2)

(Total for Question 23 is 3 marks)



10 ABC is a straight line.



The length AB is five times the length BC .

$AC = 90$ cm.

Work out the length AB .

.....cm

(Total for Question 10 is 3 marks)

11 $T = 4v + 3$

(a) Work out the value of T when $v = 2$

$T =$
(2)

(b) Make v the subject of the formula $T = 4v + 3$

.....
(2)

(Total for Question 11 is 4 marks)



20 Work out the value of $\frac{3^7 \times 3^{-2}}{3^3}$

(Total for Question 20 is 2 marks)

21 $v^2 = u^2 + 2as$

$$u = 12 \quad a = -3 \quad s = 18$$

(a) Work out a value of v .

(2)

(b) Make s the subject of $v^2 = u^2 + 2as$

(2)

(Total for Question 21 is 4 marks)



23 $T = 4m^2 - 11$

(a) Work out the value of T when $m = -3$

$$T = \dots\dots\dots$$

(2)

(b) Make p the subject of the formula $d = 3p + 4$

$$\dots\dots\dots$$

(2)

(Total for Question 23 is 4 marks)



29 $w = 40 - t^2$

(a) Calculate the value of w when $t = -5$

$w = \dots\dots\dots$
(2)

$p = \frac{h - 5}{3}$

(b) Make h the subject of the formula.

$\dots\dots\dots$
(2)

(Total for Question 29 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

22 (a) Expand and simplify $3(2y - 5) + 7(y + 2)$

.....
(2)

(b) Factorise fully $6x^2 + 15x$

.....
(2)

(c) Make g the subject of the formula $f = 3g + 11$

.....
(2)

.....
(Total for Question 22 is 6 marks)



SUB-TOPIC A1e

ALGEBRAIC PROOF & REASONING

Sub-topic A1e · 1 question · 4 marks · lowest tariff first



14 a and b are odd numbers.

(a) Give an example to show that the value of $2(a + b)$ is a multiple of 4

(2)

(b) Show that, when a and b are both odd numbers, the value of $2(a + b)$ will always be a multiple of 4

(2)

(Total for Question 14 is 4 marks)



MARK SCHEMES

official mark schemes, in the same order as the questions



Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
1		4000	B1	for 4000
2		2y	B1	for 2y
3		1, 2, 3, 6, 9, 18	B2 [B1]	for all 6 factors with no incorrect for at least 3 factors with no more than one error]
4 (a)	$5.80 \times 3 + 7.80 = 25.20$	90p or £0.90	M1 M1 A1	for a correct first step from which a complete method could be developed, eg. $5.8(0) \times 3 (= 17.4(0))$ or $24.3(0) - 7.8(0) (= 16.5(0))$ for complete method, eg. $7.8(0) + 5.8(0) \times 3 - 24.3(0) (= 0.9(0))$ for answer in correct notation with correct units, eg. 90p or £0.90 (accept £0.90p and £0.9) [SC: B1 for an answer of £2.90]
(b)		8.27pm	M1 A1	for using 60 mins = 1 hour in the conversion of 102 minutes, eg. 1 h 42 mins or 1.42 or 1.7 or (60 + 42) mins or 102 – 60 or 102 ÷ 60 or for an answer of 8.27am or 08.27 for 8.27(pm) oe
5		13	M1 M1 A1	for the start of a method, eg. $2 \times 1000 (= 2000)$ or $150 \div 1000 (= 0.15)$ or $1000 \div 150 (= 6.66\dots)$ for a fully correct method, eg. $2000 \div 150$ or $2 \div 0.150$ or 13.3(...) cao



Paper: IMA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	40	M1	for using 90, eg $90 - 25 - 25$	90 – 25 is enough for this mark
		A1	cao	
		B1	for b or d (or both)	
		C1	(dep) for appropriate reason(s) vertically opposite angles are equal vertically opposite angles are equal corresponding angles are equal alternate angles are equal angles on a straight line add up to 180	
(b)(i)	b or d with reason	B1	for b or d (or both)	A correct answer can be implied by writing 125 immediately next to b or d (or both) as long as 125 is not written next to an incorrect angle. Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.
(ii)	reason	C1	for correct explanation using 360 or a full explanation using angles around a point Acceptable examples Because 360 around a point $360 - 125 = 235$ $125 + 235 = 360$ Because they add to 360 Not acceptable examples Because b is 125	
13	$10x$	B1	for $10x$ oe	

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{3}{4}$	B1	for $\frac{3}{4}$ or any other equivalent fraction	
2	-3, -1, 0, 2, 4	B1	for -3, -1, 0, 2, 4	Accept reverse order
3	At least two of 1, 3, 5, 15	B1	for at least two of 1, 3, 5, 15 with no incorrect values	Accept 3×5 etc.
4	1.756	B1	cao	
5	2 000 000	B1	for 2 000 000 or 2×10^6	
6	Yes and statement	P1 P1 C1	for a first step towards solution, eg. $2 \times 2.75 (= 5.5)$ or $2.75 + 2.9 (= 5.65)$ OR $10 - 1.5 (= 8.5)$ or $10 - 2.9 (= 7.1)$ or $10 - 2.75 (= 7.25)$ for a complete process to find figures to compare eg. $2 \times 2.75 + 2.9 + 1.5 (= 9.90)$ or $10 - (2 \times 2.75 + 2.9) (= 1.60)$ OR $2 \times 2.75 + 2.9 (= 8.40)$ and $10 - 1.5 (= 8.5)$ for correct conclusion with accurate figure(s) eg. Yes and (£)1.6(0) or Yes and (£)9.9(0) or Yes and (£)8.4(0) and (£)8.5(0)	
7	$7y$	B1	for $7y$ oe	Accept $7 \times y$ oe Accept a formula, eg. $P = 7y$ but not $y = 7y$



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{37}{100}$	B1	or any other equivalent fraction	
2	29000	B1	cao	
3	$6e$	B1		
4	25	B1	cao	
5	27	B1	cao	
6	Yes with supporting calculations	M1 M1 C1	for ONE correct time conversion seen or used eg 105 (mins) is 1 (hr) 45 (mins) or $16\ 45 - 14\ 30 = 2\ \text{hr}\ 15\ \text{mins}$ or $14\ 30 + 1\ (\text{hr}) + 45(\text{mins})$ for a full method to make a comparison eg for adding 20 and 105 to 14 30 (=16 35) or for subtracting 20 and 105 from 16 45 (=14 40) or for finding the time differences eg $16\ 45 - 14\ 30 (= 2\ \text{hr}\ 15\ \text{mins})$ and $105 + 20 (=125\ \text{mins})$ or adding 105 to 14:30 (= 16 15) and $1645 - "16\ 15" (=30)$ correct conclusion from the comparison of accurate figure(s) eg Yes and 16 35 or 4.35(pm) 14 40 or 2.40(pm) or for 2 hours 5 minutes and 2 hours 15 minutes oe or for 10 minutes spare or 30 (minutes to get to the bus stop)	May be implied by a correct calculation 1 hr = 60 mins is not enough for this mark Intention to do the correct calculation or calculations is enough for this mark Accept any sensible time notation throughout (pm is not required) Yes may be implied by a statement



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	400	B1	cao	
2	$4e$	B1	for $4e$ oe	e^4 gets no marks, where the 4 is clearly a power
3	Reflection shown	B1	cao	
4	6000	B1	for 6000 oe	Accept six (6) thousand(s) or just thousand(s)
5	45% , $\frac{1}{2}$, 0.55	B1	Accept equivalent notation eg $\frac{45}{100}$, $\frac{50}{100}$, $\frac{55}{100}$ or 45%, 50%, 55% or 0.45, 0.5, 0.55 or a combination of notation	Do NOT accept reverse order
6	8	B1	cao	
7	7	P1 P1 A1	for $20 - 6 (= 14)$ or $20 \div 2 (=10)$ and $6 \div 2 (=3)$ for " 14 " $\div 2 (= 7)$ or " 10 " $-$ " 3 " $(= 7)$ cao	May be seen as a build-up method or by a method of repeated subtraction, listing multiples of 2

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{35}{100}$	B1	for $\frac{35}{100}$ oe	
2	7	B1	cao	
3	Two from 1, 2, 3, 4, 6, 12	B1	for any two correct factors from 1, 2, 3, 4, 6, 12	Do not allow any incorrect numbers
4	6m	B1	for 6m	
5	1.3	B1	cao	
6	drawing of a parallelogram	B2 (B1	for an accurate drawing of a parallelogram that is not a rectangle or a rhombus for a quadrilateral drawn with no lines of symmetry or for a quadrilateral drawn with rotational symmetry of order 2)	Accept freehand drawings with some inaccuracy if the intention is clear
7	29	P1 P1 A1	for a start to a process, eg. (total apples =) $86 + 75 + 92 (= 253)$ or (total oranges =) $68 + 80 + 76 (= 224)$ or differences each week, eg. (week 1) $86 - 68 (= 18)$ or (week 2) $75 - 80 (= -5)$ or (week 3) $92 - 76 (= 16)$ for complete process, eg “253” – “224” or “18” + “– 5” + “16” cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{3}{10}$	B1	for $\frac{3}{10}$ oe	Accept equivalent fractions, eg $\frac{30}{100}$
2	9	B1	cao	
3	4	B1	cao	
4	10 or 12	B1	for 10 or 12	Accept both 10 and 12 given
5	15tw	B1	for 15tw	May be seen in different order
6	60	P3 (P2) (P1) A1	for complete process to find the total costings eg $23 + 33 + 24.5(0) + 24.5(0) + 15 + 10 + 10 (= 140)$ or for a complete process to find the total money left, eg. $200 - 23 - 33 - 24.5(0) - 24.5(0) - 15 - 10 - 10 (= 60)$, condone one error, eg one omission or one additional cost for process to find the total cost of all theme park tickets, eg $33 + 2 \times 24.5(0) (= 33 + 49 = 82)$ or for process to find the total cost of all meals, eg $15 + 2 \times 10 (= 15 + 20 = 35)$ or for process to find the total cost for the children, eg $2 \times 24.5(0) + 2 \times 10 (= 49 + 20 = 69)$ or for process to find total costs with just one child, eg $23 + 33 + 24.5(0) + 15 + 10 (= 105.5(0))$ for a start to a correct process, considering at least 2 costs eg $33 + 24.5(0) (= 57.5(0))$ or $2 \times 24.5(0) (= 49)$ or for start to a process to find money left, eg $200 - 23 (= 177)$ or $200 - 33 (= 167)$	All processes may be seen as part of subtractions to find money left Additions may include other elements for process marks, eg. $23 + 33 + 2 \times 24.5(0)$ May be any start to a correct process

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	6200	B1	for 6200 (accept in words)	
2	$\frac{7}{10}$	B1	or any equivalent fraction	
3	900	B1	cao	
4	$12t$	B1	for $12t$	
5	100	B1	cao	
6 (a)	Cross marked at 0	B1		Allow if intention is clear
(b)	Cross marked at $\frac{1}{2}$	B1		Allow if intention is clear
7 (a)	9.3	B1	accept answer in the range 9.1 to 9.5	
(b)	106	B1	accept answer in the range 104 to 108	
(c)	isosceles	B1	for isosceles	Condone incorrect spelling provided intention is clear
8	96	P1	for process to find total distance before or after using scale, eg $8 + 16 (= 24)$ or “32” + “64” oe	Condone incorrect use of scale if addition seen.
		P1	for process to use scale, eg $8 \times 4 (= 32)$ or $16 \times 4 (= 64)$ or $[PR] \times 4$	where [PR] is 12 or 13 or is clearly stated
		A1	cao	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	3107	B1	cao	
2	30	B1	cao	
3	4m	B1		
4	4	B1	cao	
5	-5, -2, 3, 7, 9	B1	cao	Accept in reverse order
6 (a)	14	B1	cao	
(b)	18	B1	cao	
7 (a)	evens	C1	oe	Accept 60% or an equivalent fraction eg $\frac{6}{10}$
(b)	certain	C1	oe	
(c)	0.6	B1	oe	
8 (a)	Square	C1	for statement of shape	Accept unambiguous misspellings.
(b)	Cuboid	C1	for statement of solid	Accept unambiguous misspellings. Accept square based prism

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	6	B1	cao	
2	31	B1	cao	
3	$12a$	B1		
4	40	B1	accept answer in the range 38 to 42	
5	60	B1	cao	
6	2300	P1 P1 A1	for converting to millilitres or litres eg $3 \times 1000 (= 3000)$ or $700 \div 1000 (= 0.7)$ for finding the difference eg $[3000] - 700$ or $3 - [0.7] (= 2.3)$ accept 2.3 litres	Process marks may be awarded in either order [3000] comes from 3×1000 or can be 30 or 300 or 30000 [0.7] comes from $700 \div 1000$ or can be 7 or 70
7 (a)	15	B1	cao	
(b)	4	B1	cao	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	-3 -1 2 4 7	B1	for -3 -1 2 4 7	Allow correct reverse order: 7 4 2 -1 -3
2	5	B1	cao	
3	0.31	B1	cao	Accept .31
4	35	B1	cao	
5	2	B1	cao	
6	(a) 10	B1	cao	eg 11 quarter squares drawn separately 3 quarters may be seen as one half square and one quarter square February and March totals may be seen on the diagram May be implied by 42 [Jan + Feb + Mar] is clearly their houses sold in Jan, Feb and March for this mark only $4\frac{1}{2}$ squares drawn for May gets P2 18 must be seen for full marks
	(b) 2 full squares and 3 quarters of a square	B1	for a diagram for April showing the equivalent of 2 full squares and 3 quarters of a square	
	(c) 18	P1	for process to find houses sold in February = $4 + 4 + 1$ (= 9) or March = $4 + 4 + 4$ (= 12) or $60 - ((\text{Jan} + \text{Feb} + \text{Mar}) + 11)$	
		P1	for a complete process, eg. $60 - ((\text{answer to part (a)}) + "9" + "12" + 11)$ or $60 - (2\frac{1}{2} + 2\frac{1}{4} + 3) \times 4 - 11$	
		A1	cao	
7	(a) 8.7	B1	for answer in the range 8.5 to 8.9	Allow free hand drawing
	(b) 67	B1	for answer in the range 65 to 69	
	(c) 6-sided shape	B1	for a 6-sided shape	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{23}{100}$	B1	oe	
2	8	B1	cao	
3	tens or 30	B1	for (3) tens or 30 or thirty	Condone incorrect spelling provided the intention is clear
4	$3a$	B1	for $3a$	Allow $a3$
5	$\frac{1}{4} \frac{1}{2} \frac{2}{3}$	B1	for correct order	Accept any form Accept 0.6 or 0.66 or 0.67 or 0.7 or 60% or 66% or 67% or 70% or better for $\frac{2}{3}$
6 (a)	32	P1	for process to find length, eg 8×4	Must include correct units
		A1	cao	
(b)	2.5 cm	P1	for process to find length, eg $10 \div 4 (= 2.5)$ oe eg $1 + 1 + 1 \div 2 (= 2.5)$	
		A1	for 2.5 cm oe eg 25 mm, 0.025 m	
7 (a)	Bus	B1	cao	
(b)	5	B1	cao	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	5e	B1	cao	
2	0.75	B1	cao	
3	6	B1	cao	
4	32	B1	cao	
5	Acute	B1	cao	
6 (a)	42	B1	cao	
(b)	Yes (supported)	P1	for a start to a process to find figures to compare, eg $33 + 40 + 27 (= 100)$ or $20 + 14 + 15 (= 49)$ or $(33 - 20) + (40 - 14) + (27 - 15) (= 51)$	
		P1	for complete process to give figures to compare, eg $33 + 40 + 27 (= 100)$ and $20 + 14 + 15 (= 49)$ and $"49" \times 2 (= 98)$ or $33 + 40 + 27 (= 100)$ and $20 + 14 + 15 (= 49)$ and $"100" \div 2 (= 50)$ or $33 + 40 + 27 (= 100)$ and $20 + 14 + 15 (= 49)$ and $"100" - "49" (= 51)$ or $33 + 40 + 27 (= 100)$ and $20 \times 2 + 14 \times 2 + 15 \times 2 (= 98)$ or $(33 - 20) + (40 - 14) + (27 - 15) (= 51)$ and $20 + 14 + 15 (= 49)$	
		C1	for Yes with correct supporting figures, eg 100 and 98 or 50 and 49 or 100 and 49 and 51 or 51 and 49	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	21	B1	cao	
2	$6n$	B1		Allow $n6$ but not $6 \times n$ or $6.n$
3	70	B1	cao	
4	-6, -3, 2, 5, 7	B1	for -6, -3, 2, 5, 7	Accept in correct reverse order
5 (i)	metres	C1	for metres or kilometres	Allow any unambiguous abbreviation
(ii)	grams	C1	for grams or milligrams or newtons	Allow any unambiguous abbreviation
6	21	P1 P1 A1	for a beginning process, eg $76 - 13 (= 63)$ or $3x + 13 = 76$ oe for " 63 " $\div 3$ or $(76 - 13) \div 3 (= x)$ cao	May be implied by $a + b + c = 63$ or $a + b + c + 13 = 76$ a, b and c may be seen in a list $13 + 21 + 21 + 21 = 76, 76, 63$ or 13 on answer line scores P1P1A0 21, 21, 21 (13) on the answer line will score P1P1A1
7	6	M1 A1	for $330 \div 55$ cao	Build up methods are allowed Condone one error in build up method $55 \times 6 = 330, 330$ or 55 on answer line scores M1A0 ignore use of £ eg £6
8 (a)	6	B1	cao	



Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
1		16	B1	cao
2		7.265	B1	cao
3 (a)		56ef	B1	cao
(b)		12.5	B1	oe
4		80	B1	cao
5		42	M1 A1	for showing method to work out 60% of 70, eg 0.6×70 or $(70 \div 10) \times 6 (= 42)$ cao
6 (i)		$\times$ at $\frac{1}{2}$	B1	
(ii)		$\times$ at 0	B1	
7		No (supported)	P1 P1 C1	process to work with either cost of 3 sausages e.g. $3 \times 2.30 (=6.9(0))$ or division of a cost by 3 process to work with costs of at least 3 of bread rolls, bread rolls, ketchup, change, sausages e.g. $2 \times 1.50 + 1.60$ or $1.50 + 1.60 + 0.30$, or $10 - 1.50 - 1.60 - 0.30$ or $10 - 1.50 - 1.50 - 1.60$ E.g. No and (£)5.10 and (£)6.90 No and (£)5.40 and (£)6.90 No and (£)1.70 No and (£)11.50 or (£)11.80 or shows cost of sausages at £2.30 and cost of any 2 other items is greater than (or equal to) £10 NB can work in £ or p throughout. Condone 5.1 etc

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
14 (a)		168°, 120°, 72°	M1	for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart)
			A1	for all three angles drawn $\pm 2^\circ$
			B1	(dep on M1) for correct labels (languages)
(b)		No and reason	C1	NO and reason given e.g. "don't have actual figures for Lowry"
15		13.5	P1	process shown to find the area of the triangle e.g. $\frac{1}{2} \times 8 \times 9 (=36)$
			P1	for calculating $6 \times (\text{area}) (=216)$
			P1	for process shown of dividing their area of rectangle by 16 (oe)
			A1	oe
16		$-\frac{1}{2}$	M1	for substitution with operations shown e.g. $1 + -3 \times \frac{1}{2}$ or $1 - \frac{3}{2}$ or $1\frac{1}{2}$ or $-1\frac{1}{2}$
			A1	oe
17		1110	M1	method to find the weight of 1 tin of soup e.g. $1750 \div 5 (=350)$
			M1	method to find the weight of 3 packets of soup e.g. $1490 - (4 \times "350") (=90)$
			M1	method to find the weight of 3 tins and 2 packets e.g. $3 \times "350" + "90" \div 3 \times 2$
			A1	cao



Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
1 (a)		Don, Mersey, Trent, Thames, Severn	B1	accept 112, 113, 297, 346, 354
(b)		Shown	C1	shown with correct values eg $(112 \times 3 =) 336$ (and 346) or $112 + 112 + 112 + 10 = 346$ or $346 \div 3 = 115(.3..)$ (and 112) or $346 \div 112 = 3.089..$ oe
2		$12p + 18b$	M1 A1	$12p$ or $18b$ or $p + b$ $12p + 18b$
3 (i)		15	B1	cao
(ii)		196	B1	cao
4		40	M1 A1	for $32 \div 4 (= 8)$ or $32 \times 5 (= 160)$ or complete method eg $32 \div 4 \times 5$ oe $(= 40)$ cao
5 (a)		1 : 3	B1	oe
(b)		42	M1 A1	ft $56 \div 4 (= 14)$ or complete method to find number of grey tiles eg $56 - (56 \div 4)$, $56 \div 4 \times 3$ oe $(= 42)$ for 42 or ft



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	6000	B1	cao	Accept 6 thousand or six thousand
2 (a)	-6,-5,0,6,12	B1	for -6,-5,0,6,12 accept 12, 6, 0, -5,-6	
(b)	0.078,0.708, 0.78,0.87	B1	for 0.078, 0.708, 0.78, 0.87 accept 0.87, 0.78, 0.708, 0.078	Accept any additional '0's at the end of a decimal, eg 0.780 or 0.870
3	$\frac{20}{100}$	B1	$\frac{20}{100}$ oe, eg $\frac{2}{10}$ or $\frac{1}{5}$	Ignore any incorrect simplification of $\frac{20}{100}$ oe and award the mark if $\frac{20}{100}$ oe is seen
4	$\frac{3}{9}$	B1	for $\frac{3}{9}$ accept $\frac{1}{3}$	
5	14	B1	cao	
6 (a)	$12t$	B1	$12t$	Accept $t12$ but not $12 \times t$ or $t \times 12$
(b)	$7a$	B1	$7a$	Accept $a7$ or $7 \times a$ or $a \times 7$ Partial simplification of $5a + 2a$ or $8a - a$ does NOT get the mark



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
8	(a) -2, -1	B1	cao	Allow without label provided unambiguous; allow if the cross is nearer to (2, 3) than other points. Label not required; allow hand-drawn line. Allow any length provided intention is clear.
	(b) Point at (2, 3)	B1	cao	
	(c) Line drawn	B1	cao	
9	30	M1	$2 \times 9 + 3 \times 4$	May be shown in stages but an intention to add 2×9 and 3×4 must be clear
		A1	cao	
10	3 and 29 or 13 and 19	M1	for two numbers with a sum of 32, only one of which is prime, eg 5, 27 or 1, 31	Do not accept 1 as a prime number.
		A1	cao	
11	(a) $\frac{10}{16}$	B1	cao	Accept any equivalent fraction
	(b) $\frac{11}{12}$	M1	for $\frac{10}{12}$ OR for using a suitable common denominator other than 12 with at least one of the two fractions correct, eg $\frac{2}{24} + \frac{20}{24}$	
		A1	for $\frac{11}{12}$ or	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	40 or tens	B1	cao	Accept trailing zeros, eg 40.0 Accept forty
2	odd square	B1	stating an odd square number eg 1, 9, 25, 49, 81, etc.	
3 (a)	4.56	B1	cao	Accept trailing zeros, eg 4.560
(b)	7300	B1	cao	Accept trailing zeros, eg 7300.0
4	4	B1	cao	
5	$\frac{31}{100}$	B1	cao	
6	$\frac{5}{7}, \frac{11}{15}, \frac{3}{4}, \frac{19}{25}$	M1 A1	conversion into decimals or percentages or other equivalent form, at least two conversions correct, or any three fractions in correct order cao	0.71(...), 0.73(...), 0.75, 0.76 Accept list in reverse order for this mark Accept expressed in equivalent decimals or percentages or any other appropriate form
7 (a)	$4m$	B1	cao	
(b)	$8np$	B1	cao	
8	263.2	M1 A1	for using the scale eg 14×18.8 or 14×18 or for the digits 2632 or an answer of 263 cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
11	23	M1	for substitution eg. 7×5 and 3×-4 or $7(5) + 3(-4)$	$7 \times 5 (= 35)$ and $3 \times -4 (= -12)$ may be seen separately but both must be seen for the award of M1
		A1	cao	
12	(a) 7	B1	cao	
	(b) 1 hr 38 mins	M1	for a complete method to find the time difference eg. $9\ 00 - 7\ 22$ OR a calculation on a number line, may be seen in any time format OR work in parts eg hours and minutes, may work in any units, eg. $60 - 22 (= 38) + 1$ hour OR a clear build up method from $07\ 22$ to $09\ 00$ OR for correct values seen in an incorrect format, eg. 1.38 or 1:38 or 98 without units	
		A1	1 hr 38 (mins) or 98 minutes or 1.63' hrs	
		P1	for starting the problem, $12 \div 6 (=2)$	
13	10	P1	for a complete process to find width " 2 " $\times 5$	The square of side 2 cm may be just seen on the diagram
		A1	cao	
14	2 : 1	B1	cao	



Paper: IMA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
9	$11e + 5f$	M1 A1	for either $11e$ or $5f$ for $11e + 5f$	
10	$\frac{3}{5}$	M1 M1 A1	for a start in the method eg $35 + 50 + 75 (= 160)$ or $400 - 35 - 50 - 75 (= 240)$ or $\frac{160}{400}$ oe for eg $\frac{400 - "160"}{400}$ or $\frac{2}{5}$ or $1 - \frac{160}{400}$ or for an unsimplified answer eg $\frac{"240"}{400}$ oe or as 60% oe cao	
11 (a)	241.56	P1 P1 A1	for difference for 1 parcel eg $35.38 - 15.25 (= 20.13)$ OR for total cost for 12 parcels by either service eg $35.38 \times 12 (= 424.56)$ or $15.25 \times 12 (= 183)$ for a complete process eg $"20.13" \times 12$ or $"424.56" - "183"$ cao	
(b)	Explanation	C1	for explanation Acceptable examples both figures rounded down (refers to both figures) 20 is less than 21 and 15 is less than 15.25 Not acceptable examples both figures rounded (up); rounded down either 20 is less than 21 or 15 is less than 15.25 (refers to just one figure) the cost is 320.25 (more than 300); multiplying with bigger numbers	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	Two correct factors	B1	for 2 correct factors from 1, 2, 3, 4, 6, 12 and no incorrect factors	Accept one correct product
2	10	B1	cao	
3	$\frac{7}{10}$	B1	for $\frac{7}{10}$ or for any other equivalent fraction	Eg $\frac{70}{100}$
4	18	B1	cao	
5	4000	B1	cao	
6	3 : 5	B1	for 3 : 5 or for any other equivalent ratio	
7	35	M1 A1	for $4 \times 8 (=32)$ cao	Award this mark if used ambiguously eg $4 \times 8 + 3 = 4 \times 11$ as long as 4×8 is stated
8	21, 28	B2 (B1	both correct one correct in the correct position or for $15 + 6 (= a)$ or $a + 7 (= b)$ where $a \neq 21$ and $b \neq 28$)	May be written alongside the given sequence but if contradiction accept the answer line. If both correct, accept in either order. May be seen as "+6" next to the sequence

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{31}{100}$ oe	B1	for $\frac{31}{100}$ or any equivalent fraction	Ignore any attempt at simplification of $\frac{31}{100}$
2	300	B1	cao	
3	0.12, 0.21, 1.02, 1.20	B1	accept 1.20, 1.02, 0.21, 0.12	
4 (a)	4m	B1	cao	
(b)	3p	B1	cao	
5	7cm by 4cm rectangle drawn	M1 A1	for a rectangle drawn with one correct dimension or $35 \div 5 (=7)$ and $20 \div 5 (=4)$ for a fully correct 7cm by 4cm rectangle drawn	Correct calculations/measurements seen the method mark can be awarded even if the drawing is incorrect or not present Accept any orientation of a correct rectangle
6 (a)	25	B1	cao	
(b)	24	B1	cao	
7	780	P1 P1 A1	for $2500 - 940 (=1560)$ or $2500 \div 2 (=1250)$ and $940 \div 2 (=470)$ for "1560" $\div 2$ or "1250" – "470" cao	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	$\frac{7}{12}$	M1	for finding two fractions with a correct common denominator, with at least one correct corresponding numerator, eg, $\frac{5}{12}, \frac{2}{12}$	Ignore errors in cancelling following sight of an equivalent fraction to $\frac{7}{12}$
		A1	for $\frac{7}{12}$ oe eg $\frac{14}{24}, \frac{21}{36}, \frac{28}{48}, \frac{35}{60}, \frac{42}{72}, \dots$	
(b)	$\frac{3}{16}$	M1	for method to multiply fractions, eg $\frac{3 \times 5}{10 \times 8} (= \frac{15}{80})$ or simplifies the calculation eg $\frac{3}{2} \times \frac{1}{8}$ or for an answer equivalent to $\frac{3}{16}$ unsimplified	
		A1	cao	
13 (a)	$\frac{4}{15}$	B1	oe	4 : 15 gets B0
(b)	0.7	B1	for 0.7 oe or $\frac{7}{10}$ oe or 70%	
14	19	M1	for a correct substitution, eg $(y =) 6 \times 4 - 5$	Answer of 149.96 (92×1.63) gets M0A0 Answer with no working gets M0A0 Ignore further rounding of their result
		A1	cao	
15 (a)	180	M1	rounds one figure appropriately 92 to 90 or 100 or 1.63 to 2 or 1.5 or 1.6 or 1.7	
		A1	for 180 ($= 90 \times 2$) or 135 ($= 90 \times 1.5$) or 144 ($= 90 \times 1.6$) or 153 ($= 90 \times 1.7$) or 200 ($= 100 \times 2$) or 150 ($= 100 \times 1.5$) or 160 ($= 100 \times 1.6$) or 170 ($= 100 \times 1.7$) or 163 ($= 100 \times 1.63$) or 184 ($= 92 \times 2$) or 138 ($= 92 \times 1.5$) or 147.2 ($= 92 \times 1.6$) or 156.4 ($= 92 \times 1.7$)	
(b)	947.2	B1	cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	-7, -2, -1, 0, 7	B1	cao	Accept reverse order
2	$\frac{37}{100}$	B1	oe fraction	
3	13	B1	cao	
4	530	B1	cao	
5	3476	B1	cao	
6 (a)	4.5	B1	accept answer in the range 4.3 to 4.7	
(b)	110	B1	accept answers in the range 108 to 112	
7	49.01	P1 P1 B1 A1	for process to work with the number of miles, eg $12845 - 12468 (= 377)$ or $12845 \times 13 (= 166985)$ or $12468 \times 13 (= 162084)$ for process to find the cost, eg $377 \times 13 (= 4901)$ or $166985 - 162084 (= 4901)$ (indep) for converting from pence to pounds, eg $4901 \div 100$ or $13 \div 100$ or miles divided by 100 eg $377 \div 100 (= 3.77)$ or $12845 \div 100 (= 128.45)$ and $12468 \div 100 (= 124.68)$ 49 or 49.01	This mark can be awarded at any stage in the process
8	315	M1 A1	for 45×7 cao	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
9	(a) $(-1,2)$	B1	cao	
	(b) $(1,4)$ marked	B1	for the point $(1, 4)$ unambiguously marked on the grid	need not be labelled if clear
	(c) $y = -3$ shown	B1	for correct line unambiguously marked	need not be labelled if clear accept a line drawn freehand
10	(i) terms given	B1	states two terms eg 11, 10 or 9, 6	May be written on the sequence with no contradiction elsewhere
	(ii) explanation	C1	explanation Acceptable examples Take away 2 then 1; take away 4 then 3 The difference goes down by 1 each time $-4, -3; -2, -1$ The differences are 4 and 3; the differences are 2 and 1 Not acceptable examples It goes down by 1 each time An algebraic rule	
11	160	M1	for $8 \times 5 \times 4$	
		A1	cao	
12	$1 : 6 : 3$	M1	for any two algebraic statements from $x, 6x, 6x/2$ oe or any two numbers as a correct ratio eg $1 : 6$ or $6 : 3$ or $1 : 3$ oe or any 3-term ratio using the numbers 1, 6 and 3	For any equivalent ratio.
		A1	oe	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
12	10 55	M1 A1	for starting a process of working with time eg for undertaking some time conversion eg 1 h = 60 min eg 3¼ hrs is 195 mins or ¼ hr = 15 mins or 3 h = 180 min or for an answer of 10 45 (am) or 10 40 (am) or 10 50 (am) or for an answer of 10 55 pm for 10 55 (am)	
13 (a)	$20h^3$	B1	cao	
(b)	$7y$	B1	cao	
14	$\frac{6}{11}$, 0.558, 0.56, 57%, $\frac{7}{12}$	M1 A1	Converts numbers to common equivalent form, eg 0.58(33..), (0.56), 0.57(0), 0.54(54..), (0.558) or any 4 in correct order or all 5 in correct reverse order for correctly ordered list	Decimals converted to at least 2 d.p. May be given in converted format.
15 (a)	$\frac{57}{64}$ $\frac{7}{25}$ $\frac{11}{11}$	B3 (B2) (B1)	for a fully correct frequency tree for at least 4 figures correctly placed for at least 1 figure correctly placed	If probabilities used instead of frequencies award a maximum of B2
(b)	$\frac{57}{64}$	M1 A1	$\frac{a}{64}$ where $0 < a < 64$ and a is an integer (ft) or $\frac{57}{b}$ where $b > 57$ and b is an integer (ft) (ft) for $\frac{57}{64}$ oe	Must be values from their diagram with numerator < denominator Accept probabilities given as equivalent fractions, 0.89(06...) or 89(.06..) %



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
11 (a)	16	B1	cao	
	48	M1	for taking a suitable reading from the graph that could be used to convert, eg 25 km = 15.5 miles or 17 miles = 27.2 km	Allow a tolerance of one small square for the reading eg 10 km = 6 – 6.5 miles 20 km = 12.25 – 12.75 miles 25 km = 15.25 – 15.75 miles 30 km = 18.5 – 19 miles for miles to km allow 1 mile = 1.6km 17 miles = 27 – 28 km
		M1	ft, for a complete method, eg “15.5” $\times$ 2 + 17 or (“27.2” + 50) $\div$ 1.6	
		A1	for an answer in the range 47 – 49.5	
12	6x + 7y	M1	for 6x or 7y or a linear expression in the form $ax + by$ where $a, b > 0$	T = 6x + 7y oe scores M1A0
		A1	for 6x + 7y oe	



Paper: 1MA1/1F															
Question	Working	Answer	Mark	Notes											
23	21840 1638 23478	234.78	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation e.g. two lines of 1 st method, internal numbers of grids, or complete structure shown of partitioning methods											
	546 201624 151218 478 43														
	<table><tr><td></td><td>500</td><td>40</td><td>6</td></tr><tr><td>40</td><td>20000</td><td>1600</td><td>240</td></tr><tr><td>3</td><td>1500</td><td>120</td><td>18</td></tr></table>				500	40	6	40	20000	1600	240	3	1500	120	18
			500		40	6									
40	20000	1600	240												
3	1500	120	18												
20000 + 1600 + 240 + 1500 + 120 + 18 = 23478															
			A1	for digits 23478											
			A1	(ft dep M1) for correct placement of the decimal point into their final answer											
24		$x^2 + 6x = 1$	M1	writes the area using algebraic terms e.g. $(x + 3) \times (x + 3)$ or at least two correct area expressions, may be written on the diagram or x given as $\sqrt{10} - 3$											
			M1	expands and includes the given 10 e.g. $x^2 + 3x + 3x + 9 = 10$; condone one error in the four terms when expanding or $10 - 3\sqrt{10} - 3\sqrt{10} + 9 + 6\sqrt{10} - 18$ (=1) condone 1 error in the 6 terms											
			A1	rearranges to give the given equation or shows surd expression simplifies to 1											

Paper: 1MA1/2F				
Question	Working	Answer	Mark	Notes
1		0.07	B1	cao
2		42 or 48	B1	42 or 48
3 (a)		$15/g$	B1	cao
(b)		t^2	B1	cao
(c)		$4n$	B1	cao
4 (a)	1785–1245 = 540 540 ÷ 90	6	P1 P1 A1	for process to find the total weight of one type of fruit eg $4 \times 125 (=500)$ or $2 \times 170 (=340)$ or $3 \times 135 (=405)$ or 1245 complete process to find the total weight of oranges eg “1785” – (“500” + “340” + “405”) or sight of digits 54 or answer given as 0.6 or 60 cao SC B1 for answer of 15
(b)(i)		No	P1	Starts process, eg $1000 \div 75$ (digits 13(.3..) seen) or $15 \times 75 (= 1125)$ or 1.125 or showing $1000 \div 15 (=66(.6..))$ or counts to 975 or 1050
		(supported)	C1	“No” with correct working eg as evidenced by work from P1 mark.
(b)(ii)		Comment	C1	for valid comment, eg may get enough tomatoes if tomatoes weigh less than assumed (75g), not if weight is more than 75g.

Paper: 1MA1/1F														
Question		Answer	Mark	Mark scheme	Additional guidance									
13	(a)	10ab	B1	cao	Accept 1y for 1 or 2 marks									
	(b)	8x + y	M1	for 8x or y										
			A1	for 8x + y										
14		345	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation. 230 115 345 2 3 02 03 10 15 3 4 5 1 5 <table><tr><td></td><td>20</td><td>3</td></tr><tr><td>10</td><td>200</td><td>30</td></tr><tr><td>5</td><td>100</td><td>15</td></tr></table> 200 + 30 + 100 + 15 = 345 23 + 23 + 23 + 23 + 23 = 115; 115 + 115 + 115 = 345		20	3	10	200	30	5	100	15	Accept all equivalent methods if complete. Partitioning methods may show a complete method which has been broken down into multiple stages. Multiple addition of 23 (or 15) acceptable if the correct number added is shown, and an attempt at addition is clear.
	20	3												
10	200	30												
5	100	15												
			A1	cao										

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	16	C1	starts to interpret information eg 75 or 29 in the correct place	May be seen as numerators of fractions for the first 2 marks.
	45 29			
	75 14	C1	for $120 - 75 (= 45)$ and $"45" - 29 (= 16)$	Could be seen in working or on the diagram
	61	C1	Complete and correct frequency tree	
(b)	$\frac{29}{120}$	B1	for $\frac{29}{120}$ or ft "29" from part (a)	Accept any equivalent fraction, decimal form 0.24(166...) or percentage form 24(.166..) Ignore subsequent incorrect attempts to write the correct answer in a different form.
16 (a)	45	B1	cao	
(b)	50	M1	for an attempt to find the gradient eg $"25" \div "0.5"$ ft their readings from the travel graph; use of speed-time formula eg $25 \div 30$ (ignore units if shown)	could be shown in working or on the graph using any acceptable triangle; could be shown by multiples of 25, 0.5 or multiples of ft figures
		A1	cao	
17	18	P1	for process to solve $x - 1 = 2$, eg. $x = 2 + 1 (= 3)$ or for $2x = 6$	Can award mark for $3 - 1 = 2$
		P1	for 2×9	
		A1	cao	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	0.45	B1	cao	
2	2 factors	B1	at least 2 of 1,5,7,35	No incorrect factors
3	10 45	B1	for 10 45	Accept any time notation
4	11	B1	cao	
5	Midpoint marked	B1	within tolerance	
6	(a) $4ab$	B1		
	(b) $3x + 8$	M1	for method to collect terms eg $3x$ or 8	May be seen in working. Accept if no ambiguity.
		A1	for $3x + 8$	
7	EJ, EK, FJ, FK, GJ, GK	B2 (B1)	fully correct list with no repeat for at least 4 correct	Allow letters in either order
8	2540 shown	M1 M1 A1	for finding the cost of one item eg $2 \times 600 (=1200)$ or $7 \times 120 (=840)$ or $2 \times 250 (=500)$ full process eg " 1200 " + " 840 " + " 500 " ($=2540$) or $2500 - "1200" - "840" - "500" (= \pm 40)$ for 2540 or ± 40	Ignore written statements as long as the correct figures are shown

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
18	$T = 5b + 28c$	M1 M1 A1	for $5b$ or $28c$ or $T =$ a linear expression in b and/or c for $5b + 28c$ or partially correct formula, eg $T = 5b (+ kc)$ oe or $T = 28c (+ kb)$ oe for $T = 5b + 28c$ oe	Allow $5 \times b$ and $28 \times c$ throughout
19	$8n - 13$	B2 (B1)	for $8n - 13$ oe for $8n + k$ where $k \neq -13$ or is absent unambiguously shown)	Accept a different variable eg $8x - 13$ $n = 8n - 13$ or $8n^{\text{th}} - 13$ gets B1 only
20	56.4	M1 A1 A1	for a start to a method, eg $846 \div 15$ or $8.46 \div 0.15$ or $8.46 \div 3 \times 20$ or $282 \div 5$ that leads to 5 as the first digit. or for a complete method with no more than one arithmetic error. for digits 564 identified (ft) dep on M1 for correct placement of the decimal point into their final answer	A start to a repeated subtraction method or a build-up method is acceptable if a correct first digit of 5 is found An answer of $56\frac{2}{5}$ gets 3 marks

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
13	(a)	B1	for $6cd$ or $6dc$ or $cd6$ oe	Inclusion of $\times$ scores B0, eg $6 \times cd$ oe
	(b)	M1	for $3 + 2 \times -4$ ($= 3 - 8$)	
		A1	cao	
14	(a)	M1	for method to find speed, eg $36 \div 3$ or $\frac{36}{3}$	Condone $36 \div (3 \times 60)$ If units are provided they must be correct for their figures for the C mark
		A1	cao	
	(b)	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 $3 + "2.25"$ ($= 5.25$) 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		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: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	15% of 88 from correct figures	P1 P1 C1	for first step towards finding comparable figures, eg $\frac{15}{100} \times 88 (= 13.2)$ oe or $\frac{20}{100} \times 62 (= 12.4)$ oe OR $15 \times 88 (= 1320)$ or $20 \times 62 (= 1240)$ for process to find two comparable figures, eg $\frac{15}{100} \times 88 (= 13.2)$ oe and $\frac{20}{100} \times 62 (= 12.4)$ oe OR $15 \times 88 (= 1320)$ and $20 \times 62 (= 1240)$ 15% of 88 from 13.2 oe and 12.4 oe OR 15% of 88 from 1320 and 1240	Must have correct figures. Ignore an incorrect difference after a correct decision from correct figures unless it contradicts.
16 (a)	m^4	B1	cao	
(b)	$5x + 2y$	M1 A1	for $5x$ or $2y$ or a linear expression in the form $ax + by$ where $a, b > 0$ for $5x + 2y$ oe	Do not award M1 for $-5x$ or $-2y$



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
10	120	P1	for process to work with length, eg $40 \div 4 (= 10)$ or $40 \times 5 (= 200)$ or $40 \div 4 \times 3 (= 30)$ or $40 \times 4 (= 160)$	May be shown on the diagram
		P1	for process to work with perimeter, eg $"10" \times 12$ or [square side length] $\times 12$ or [square side length] $\times 11$ or $"200" - 2 \times 40$ or $"30" \times 4$ oe or $"160" - 40$	
		A1	cao	
11 (a)	$6xy$	B1	cao	An answer of $5d + -3e$ scores M1 A0
		M1	for $5d$ or $-3e$	
		A1	for $5d - 3e$	
12	15	P1	for process to find number of child tickets, eg $180 \div 100 \times 60 (= 108)$ oe	Where [108] is what they clearly think is 60% of 180 but can't be greater than 180
		P1	for process to find total cost of child tickets, eg $"108" \times 8 (= 864)$ or $[108] \times 8$ OR for process to find number of adult tickets, eg $180 - [108] (= 72)$ or $180 \div 5 \times 2 (= 72)$ oe or $180 \times \frac{100 - 60}{100}$	
		P1	for a complete process, eg $(1944 - "864") \div "72"$ or $(1944 - [108] \times 8) \div (180 - [108])$	
		A1	cao	



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: 1MA1/1F					
Question		Answer	Mark	Mark scheme	Additional guidance
7	(a)	Completed bar chart	B2	for a fully correct bar chart	Condone bars of unequal width Condone no gaps or inconsistent gaps
			(B1	for one bar correct, eg ‘50p’ plotted at 8 or ‘£1’ plotted at 3 or both reversed ie ‘50p’ plotted at 3 and ‘£1’ plotted at 8)	
	(b)	Shown	M1	for method to find total amount of at least two coin types, from $10(p) \times 12 (= 120(p))$, $20(p) \times 7 (= 140(p))$, $50(p) \times 8 (= 400(p))$, $(£)1 \times 3 (= 300(p) \text{ or } (£)3)$	Accept mixed units for both method marks e.g. $10p \times 12 (= 120)$, $20 \times 7 (= 1.4)$, $50(p) \times 8 (= 4)$, $1 \times 3 (= 300)$
			M1	for a complete method to find the total amount of money e.g. “120” + “140” + “400” + “300” (= 960) or “1.20” + “1.40” + “4” + “3” (= 9.60)	Accept mixed units for both method marks e.g. $120 + 140 + 4 + 3 (= 9.60)$
			C1	(dep on method shown for totals for at least two coin types or separate correct totals for at least two coin types) showing correct comparable figures eg (£)9.6(0) or 960(p) and 1000(p) or (£)0.4(0) or 40p	Answer must be in consistent units 9.60 oe alone with no working will score M1M1
8	(a)	Completed kite	B1	cao	Condone unruled lines.
	(b)	Cylinder	B1		Allow circular prism, do not allow prism or circle alone Condone poor spelling
9	(a)	$x - 5$	B1	cao	Allow $- 5 + x$
	(b)	$2x$	B1		Allow $x + x$ or $x2$ or $x \times 2$ or $2 \times x$
	(c)	3	B1	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
1 (a)		$3p$	B1	cao
		$2m^3$	B1	cao
		$10 - 4c + 6d$	M1 A1	for $-4c$ or $6d$ (accept $+4c$) for $10 - 4c + 6d$
2		60	B1	cao
3 (a)		Walk	B1	cao
		7 on chart	B1	for bar of height 7 drawn for girls walking
		4	B1	cao
		96	M1 A1	for method to find number of Year 6 students in the survey e.g. $5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1$ (= 48) or $14 + 10 + 16 + 5 + 3$ (= 48) for 96 or ft from (b), eg 82 if no bar in (b)
4		$\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$	M1 A1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
8	(a) $7ab$	B1	for $7ab$	
	(b) y^3	B1	cao	
	(c) $\frac{e}{f}$	M1	for a correct first step, eg. numerator of $e^3 \times f$ or denominator of $e^2 \times f^2$ OR $e \div f$ or $e \times f^{-1}$ OR relevant crossings out for all the e 's and all the f 's	
		A1	for $\frac{e}{f}$ or ef^{-1}	
9	(a)(i) 24	B1	cao	Fully correct diagram with no method shown gets all 3 marks SC: B2 for 4 full circles for Wed and half a circle for Thursday SC: B1 for either Wed correct or for Thurs correct in the diagram if M0 scored
	(ii) 18	B1	cao	
	(b) Diagram	M1	for $36 \div 9$ or for using ratio 1 : 8 or setting up $w + 8w (=36)$	
		A1	for 4 and 32	
		C1	for correct diagram or ft (dep on M1) for drawing "4" and "32"	
10	$14 < 21$ $4+7 = 103 - 92$ $2^2 = 2 \times 2$ $-3 > -5$	B2	for all 4 correct	
		(B1	for 2 or 3 correct)	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	330	M1	for $4 \times 70 + 50$ oe	May be seen as sum of four 70s and a 50 $n \times (70 + 50)$ or ambiguous working gets 0 marks
		A1	cao	
		M1	for use of inverse operations eg $(680 - 50) \div 70$ OR rearranges an equation to solve eg $70x + 50 = 680$ rearranged to isolate x term. OR ft (a) eg $((680 - "330") \div 70) + 4$	
		A1	cao or ft their (a)	
16 (b)	9	M1	for use of inverse operations eg $(680 - 50) \div 70$ OR rearranges an equation to solve eg $70x + 50 = 680$ rearranged to isolate x term. OR ft (a) eg $((680 - "330") \div 70) + 4$	Need not have brackets; can be written in an incorrect order if the intention is clear A correct but embedded answer gets 1 mark
		A1	cao or ft their (a)	
		M1	for a process to work out the missing length eg $6 - 4 (=2)$ or for a process to work out the length of the base eg $4 + 6 (=10)$ OR for finding total perimeter of 2 rectangles, eg $2(6 + 4 + 6 + 4) (=40)$ OR for writing at least 5 figures correctly on the diagram	
		A1	cao or ft their (a)	
17	32	P1	for a process to work out the perimeter eg $4 + "2" + 6 + 4 + 6 + 4 + 6$ or $20 + 20 - 2 \times 4$ or $16 + 14 + "2"$	May be seen in different forms
		P1	for a process to work out the perimeter eg $4 + "2" + 6 + 4 + 6 + 4 + 6$ or $20 + 20 - 2 \times 4$ or $16 + 14 + "2"$	
		A1	cao SC B1 for 30	
		A1	cao SC B1 for 30	
17	9	M1	for a method to find the scaling factor eg $"10.8" \div "1.8" (=6)$ or $"1.8" \div 1.5 (=1.2)$ or $1.5 \div "1.8" (=0.833..)$ or a sf given from 5.5 to 6.5 or from 1.06 to 1.4 or from 0.75 to 0.94 eg used with 1.5	Could be shown on the diagram by appropriate working eg 6 steps Allow 10.6 to 11.0 and 1.6 to 2.0 for their measured lengths.
		M1	for a method to find the scaling factor eg $"10.8" \div "1.8" (=6)$ or $"1.8" \div 1.5 (=1.2)$ or $1.5 \div "1.8" (=0.833..)$ or a sf given from 5.5 to 6.5 or from 1.06 to 1.4 or from 0.75 to 0.94 eg used with 1.5	
		A1	accept an answer in the range 8 to 10	
		A1	accept an answer in the range 8 to 10	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
16	243	M1	for $1.8 \div 100 \times 4500$ oe (= 81) or for a complete method eg $4500 \times 1.8 \times 3 \div 100$ oe or for 4743 or 4257	Award M1 for 4500×1.018^n
		A1	cao	
17	26	M1	for $ADB = 64$ or $ABD = 52$	May be shown on the diagram Correct method can be implied from angles on the diagram if no ambiguity or contradiction. Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.
		M1	for complete method, eg $(180 - 64 - 64) \div 2$ oe	
		A1	for 26	
		C1	(dep on first M1) for two correct reasons appropriate to their method from base <u>angles</u> of <u>isosceles triangle</u> are equal sum of <u>angles</u> in a <u>triangle</u> = 180 sum of <u>angles</u> on a straight <u>line</u> = 180 the <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u>	
18	(a)	M1	for $2n$ or $n - 5$ or $T =$ a linear expression in n	Allow variables other than n Each age must be an expression in n
		M1	for $n + 2n + n - 5$ oe OR for $T =$ an expression in n with 2 of 3 ages correct eg $T = n + n^2 + n - 5$	
		A1	for $T = 4n - 5$ oe eg $T = n + 2n + n - 5$	
	(b)	B1	for $5m - 3m = 2m$ indicated	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
20	Shown (supported)	M1	for substitution eg $4 \times 110 + 12$	
		A1	for 452	
		M1	(dep M1) for method to find value(s) needed for comparison eg $\frac{452 - 442}{442} \times 100$	
			OR $\frac{5}{100} \times 442$ oe (= 22.1) and “452” – 442 (= 10)	
			OR $\frac{5}{100} \times 442 + 442$ oe (= 464.1) and “452”	
		C1	shown with correct comparable values eg 2.2(6...)(%) OR 22.1 and 10 OR 452 and 464.1	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	-13	M1	for substitution eg 3×5 and 4×-7 or 15 and -28	$3 \times 5 (= 15)$ and $4 \times -7 (= -28)$ may be seen separately but both must be seen for the award of M1 35 and 4-7 do not get the mark unless multiplication is shown eg $35 = 15$ is evidence of multiplication and should not be seen as choice
		A1	cao	
	5	M1	for $38 = 3 \times 6 + 4y$ or $38 - 18 (= 20)$ or for a complete method to make y the subject eg $y = \frac{T - 3x}{4}$	
		A1	cao	
16	58	P1	for a correct process to find the pass mark for the exam or either paper eg $(60 + 90) \div 3 \times 2$ oe $(= 100)$ or $60 \div 3 \times 2$ oe $(= 40)$ or $90 \div 3 \times 2$ oe	It is possible to award P0P1 on this question Accept 66% or better used for $\frac{2}{3}$ May be seen in parts
		P1	for a process to find 70% of 60 eg $\frac{70}{100} \times 60$ oe $(= 42)$	
		P1	for a complete set of processes to find the required mark "100" - "42" $(= 58)$ or "40" + "60" - "42" $(= 58)$	
		A1	cao	
			SC B2 for an answer of 48	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)(i)	20, 15	B1	cao	Working may be seen near the sequence
	11	B1	cao	Working may be seen near the sequence
	39	B1	cao	
13	34	M1	for start to method, eg $10 - 4 (= 6)$ or $7 - 5 (= 2)$ or $10 + 7 + 4 + 5 (= 26)$ or $(10 + 7) \times 2$	6, 2 may be seen on diagram
		A1	cao	
14 (a)	$5x + y$	M1	for method to collect terms, eg $5x$ or y	May be seen in working. Accept if no ambiguity. Accept 1y.
		A1	cao	
(b)	3	M1	for subtracting 7 from both sides or dividing each term by 5 as a first step, eg $5p = 15$ or $5p = 22 - 7$ or $\frac{5p}{5} + \frac{7}{5} = \frac{22}{5}$	Must be carried out, not just intention. Division by 5 must be all terms.
		A1	cao	



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 $c^1 d^3$ 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: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	24	M1 A1	for method to find 15% of 160, eg $160 \times \frac{15}{100}$ oe (= 24) or $10\% = 160 \div 10 (= 16)$ plus $5\% = "16" \div 2 (= 8)$ (= 24) cao SC B1 for answer of 136 or 184 if M0 scored	When using partitioning methods, the method to find individual %s must be clear including the need to show an intention to sum eg. $10\% = 16 + 5\% = 8$
16 (a)	14	M1 A1	for 4×5 and 3×-2 , the substitution may be seen in two separate calculations, eg $4 \times 5 (= 20)$ and $3 \times -2 (= -6)$ cao	
(b)	$4e^2 + 8e$	B2 (B1)	for $4e^2 + 8e$ for $4e^2$ or $8e$	Note: $4e^2 + 8e = 12e^3$ for example gets B1 only
(c)	11	M1 A1	for a correct first step eg $3 \times m - 3 \times 4 = 21$ or $m - 4 = 21 \div 3 (= 7)$ oe cao	Showing $\div 3$ by each side of equation is sufficient
17	1 : 3	M1 A1	for $\frac{1}{4} : \frac{3}{4}$ oe OR for any correct un-simplified ratio, eg 25 : 75 cao SC: B1 for an answer of 3 : 1 or $1 : \frac{1}{3}$ if M0 scored	Ignore 'units' such as 1 nuts : 3 no nuts $1 : 3n$ gets M1A0



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)(i)	26	M1	for substitution eg $2 \times 3 + 4 \times 5$ or $6 + 20$	Condone absence of brackets
		A1	cao	
(ii)	13	M1	for substitution eg $38 = 2g + 4 \times 3$	
			or a complete numerical method eg $(38 - 4 \times 3) \div 2$	
			or for a correct first step to rearrange eg $P - 4h = 2g$ or $\frac{P}{2} = g + \frac{4h}{2}$ oe	
		A1	cao	Condone absence of brackets
(b)	-11	M1	for $3 \times -3 = -9$ oe	
			or a full substitution eg $(3 \times -3) - 2$	
		A1	cao	Award of this mark implies the previous mark 460 implies P2
13	23	P1	for finding the number of scrunchies possible eg $100 \div 5 (= 20)$ or the cost of 1 g of wool eg $300 \div 100 (= 3)$	
		P1	for working out the cost of wool per scrunchie eg $3 \div "20" (= 0.15)$ or $300 \div "20" (= 15)$ or $"3" \times 5 (= 15)$ or the cost of all hair bands eg $"20" \times 8 (= 160)$ or $"20" \times 0.08 (= 1.6(0))$	
		P1	for complete process eg $("0.15" + 0.08) \times 100$ or $"15" + 8$ or $(300 + "160") \div "20"$ or $(3 + "1.6(0)") \div "20" \times 100$	
		A1	accept £0.23	



Paper: 1MA1/2F																								
Question	Answer	Mark	Mark scheme	Additional guidance																				
14 (a)	$7c + 6d$	M1	for $7c$ or $6d$	Condone use of b and p																				
		A1	for $7c + 6d$																					
	7	M1	for correct method to expand, eg $5 \times 2m - 5 \times 6$, or divides both sides by 5 as a first step.																					
		M1	for correct method to isolate terms in m , eg $10m - 30 + 30 = 40 + 30$																					
	$3x + 2y$	A1	cao																					
		M1	for $3x$ or $2y$																					
	A1	cao																						
	15 (a)	Diagram	B2	for a fully correct ordered diagram	<table><tr><td>7</td><td>1</td><td>4</td><td>5</td><td>7</td></tr><tr><td>8</td><td>2</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>9</td><td>1</td><td>4</td><td>7</td><td>8</td></tr><tr><td>10</td><td>3</td></tr></table> Accept stem of 70, 80, 90, 100 Can be in reverse vertical order (with matching leaves) eg 10, 9, 8, 7 Errors can be omissions; one number in the wrong position is one error.	7	1	4	5	7	8	2	4	5	6	7	8	9	9	1	4	7	8	10
7		1	4	5		7																		
8		2	4	5		6	7	8	9															
9		1	4	7		8																		
10		3																						
		(B1	for a complete unordered diagram or for an ordered diagram with at most one error or omission)																					
	B1	for correct key eg $7 1$ or $70 1$ represents 71 Key must be consistent with the stem																						
86	M1	for identifying the median, eg “6” circled or an answer of 6 or ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)																						
	A1	for 86 or ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)																						

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
19 (a)	negative	B1	cao	Ignore any description of a relationship and any reference to strength of correlation
(b)	Explanation	C1	for a correct explanation, eg "not in line with the trend of the other points" "does not fit in with the correlation" "is far away from the other points or line of best fit"	
(c)	Comment	C1	for an explanation eg "point would be outside of the range of the scatter diagram"	
20	$9p + 13$	M1 A1	for method to expand one bracket, eg $5 \times p + 5 \times 3 (= 5p + 15)$ or $2 \times 1 - 2 \times 2p (= 2 - 4p)$ or $-2 \times 1 - 2 \times -2p (= -2 + 4p)$ cao	If an attempt is made to multiply by -2 in the second brackets then it must be done consistently.
21	Triangle of area 18	M1 A1	for a complete method to find area of trapezium eg $\frac{1}{2}(2 + 7) \times 4 (= 18)$ OR for a triangle drawn of area 36 OR for a triangle that would give an area ft their area of trapezium for a triangle drawn of area 18 eg base = 6, height = 6 or base = 9, height = 4	The value for the area of the trapezium must be clear for the ft to be checked. Accept use of dimensions that are not whole numbers as long as the intention is clear

Paper: IMA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
14 (a)	14	B1	for 14	
(b)	Explanation	C1	for explanation Acceptable examples she divided by 2 but should have multiplied by 2 there are 96 halves in 48 $48 \times 2 = 96$ Not acceptable examples $24 \times 2 = 48$	
15 (a)	8	B1	cao	
(b)	125	B1	cao	
16 (a)	$10m - 15$	B1	for $10m - 15$ oe	Accept any reversing of order in the expression
(b)	$3(n + 4)$	B1	for $3(n + 4)$ oe	Accept any answer in reverse order
17 (i)	Maxine with bigger number of trials	C1	for Maxine with reason Acceptable examples She throws the coin more times than Stuart Not acceptable examples Maxine throws it 50 times She gets more Tails Stuart (he)	
(ii)	$\frac{37}{60}$	B1	for $\frac{37}{60}$ oe	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
20	1 : 3	M1	for method to find angle ABC , eg $180 - 2 \times 81 (= 18)$ oe	Award first 3 marks for angles 18, 72, 54 marked on diagram provided not ambiguous Accept $n = 3$ $1 : 3$ or $n = 3$ without working scores 0 marks
		M1	for method to find angle BCD , eg $"18" \times 4 (= 72)$	
		M1	for method to find angle CBD , eg $\frac{180 - "72"}{2} (= 54)$	
		M1	(dep M3) for writing as ratio, eg $"18" : "54"$ or for an answer of $1 : 3n$ or $3 : 1$	
		A1	(dep M3) for $1 : 3$ from correct working	
21	(a)	B1	for $3(2x - 5)$	
	(b)	B1	for $m(m + 5)$	
22	21	M1	for a complete factor tree for 63 or 105 with no more than one arithmetic error or for listing at least 4 correct factors (with no more than 1 incorrect) of 63 or 105, could be in factor pairs or for the prime factors of 63 (3, 3, 7) or 105 (3, 5, 7)	Condone the inclusion of 1 for this mark May be seen in different ways, 1, 3, 7, 9, 21, 63 1, 3, 5, 7, 15, 21, 35, 105 Prime factors may be seen in a diagram eg a Venn diagram
		A1	cao SCB1 for answer of 3 or 7 or 3×7 if M0 scored	

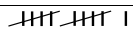
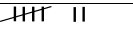
Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
14 (a)		$5(1 - 2m)$	B1	cao
		$2ab(a + 3b)$	M1	for $2a(ab + 3b^2)$ or $2b(a^2 + 3ab)$ or $ab(2a + 6b)$ or $2ab$ (2 term expression with terms in a or b or ab , can include constants), eg $2ab(1a + 3ab)$, $2ab(1 + 3b)$
			A1	for $2ab(a + 3b)$
15 (a)		0.47	B1	
		2.28×10^9	M1	for correct value but not in standard form, eg $22.8 \times 10^{3+5}$, 228×10^7 , 2 280 000 000 or for 2.28×10^n , $n \neq 9$
			A1	cao
16		T shown on the map	C1	for showing a perpendicular bisector or point T equidistant from points B and C .
			C1	for a circle or arc of circle of radius 2.5 cm or point T 2.5 cm from point A
			C1	for T shown in correct position

Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
16 (a)		40	P1	for the start of a process to find the number of boxes that will fit along one edge, eg. $240 \div 40 (= 6)$ or $150 \div 30 (= 5)$ or $140 \div 35 (= 4)$ or $240 \div 30 (= 8)$ or $240 \div 35 (= 6.85 \dots)$ ie 6 boxes), etc. or for a process to find a volume, eg. $40 \times 30 \times 35 (= 42000)$ or $0.4 \times 0.3 \times 0.35 (= 0.042)$ or $240 \times 150 \times 140 (= 5040000)$ or $2.4 \times 1.5 \times 1.4 (= 5.04)$ NB: condone incorrect or no conversion between m and cm
			P1	for a complete process to find the maximum number of boxes, eg. $"6" \times "5" \times "4" (= 120)$ or $"5040000" \div "42000" (= 120)$ or $"5.04" \div "0.042" (= 120)$
			P1	(dep on P1) for (their number of boxes) $\div 3$, eg. $120 \div 3 (= 40)$
(b)		explanation	A1	cao
			C1	for explaining that it could take more time or it could take less time with an appropriate reason, eg. "less space means less number of boxes which will take less time" or "it will take more time since a different arrangement would be required"
17 (a)		$4(m + 3)$	B1	for $4(m + 3)$ or $2(2m + 6)$
(b)		term, expression	B1	for 'term' in the 1 st space
			B1	for 'expression' in the 2 nd space



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	160 to 200	M1	rounds one figure appropriately (6, 8, 0.25 or 0.3)	Do not award any marks for an accurate calculation if then rounded
		M1	(dep) for carrying out an accurate calculation using 0.25 or 0.3 eg $6 \div 0.3 = 20$, $8 \div 0.25 = 32$, $6 \div 0.25 = 24$ or digits 16	
		A1	Answer in the range 160 to 200 from appropriate rounding	
27	(a) $6x^2 - 11x - 10$	M1	for expanding bracket to obtain 4 terms with all 4 correct without considering signs or for 3 terms out of 4 correct with correct signs	NB $6x^2 - 11x$ or $-11x - 10$ can be considered 3 terms out of 4 correct with correct signs
		A1	cao	
	(b) $(x - 4)(x + 4)$	B1	oe	

Qu 8a

Place	Tally	Frequency
castle		11
farm		7
museum		6



Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
18 (a)	explanation	C1	explanation eg should be 1.03, this is 30% (not 3%) Acceptable examples Because 1.3 is 130% He is increasing it by 30% 1.3 means 1.30, not 1.03 He needs to put a 0 in front of the 3 1.3 is the wrong decimal He should multiply by 0.03 3% is 0.03, (not 1.3) His answer should be 154.5 He is meant to increase it by 4.5, not by 45 Not acceptable examples Because he is increasing by 130%, not 3% He needs to find 1% and then times it by 3	
(b)	$(150 \times) 0.97 = 145.5$	B1	for 0.97 (or $\frac{97}{100}$ or 97%) and 145.5	
19 (a)	8	M1	for a correct first step eg $3x - 12 = 12$ or $3(x - 4) \div 3 = 12 \div 3$	
		A1	cao	
(b)	$3b(3 - b)$	M1	for $3(3b - b^2)$ or $b(9 - 3b)$ or $3b$ (two term linear expression)	
		A1	cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
26 (a)	$10x^2 - 11x - 6$	M1	for 3 out of no more than 4 terms correct with correct signs or 4 correct terms ignoring signs	$10x^2 - 15x + 4x - 6$ NB: $10x^2 - 11x$ and $-11x - 6$ are indicative of 3 correct terms.
		A1	cao	
	$(x + 1)(x + 3)$	M1	for $(x \pm 1)(x \pm 3)$ or for $(x + a)(x + b)$ where either $ab = 3$ or $a + b = 4$	
		A1	cao	
27 (a)	7.547×10^{-5}	B1	cao	
	34200	B1	cao	
	3.082×10^{15}	M1	for $\frac{23000 \times 6700}{0.00000005}$	
			OR for one calculation eg 1.541×10^8 or 154 100 000 or 4.6×10^{11} or 1.34×10^{11}	
		A1	for 3.082×10^{15} oe	
				Answer could be given as an ordinary number.



Paper: 1MA1/3F					
Question	Answer	Mark	Mark scheme	Additional guidance	
22	(a)				
	(b)				
23	(a)				
	(b)				
24					

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
19 (a)	$x^2 - 4x$	B1	cao	
	(b) $5(3y - 2)$	B1	cao	
	(c) 9	M1	for a correct first stage, eg. expanding brackets, $7 \times f - 7 \times 5 (= 28)$ oe or for division of both sides by 7, eg. $\frac{7(f-5)}{7} = \frac{28}{7}$	
		A1	cao	
20	$3n - 2$	B2	for $3n - 2$ oe	Accept a different variable, eg. $3x - 2$ $n = 3n - 2$ gets B1 only $n + 3$ gets NO marks
		(B1)	for $3n + k$ where $k \neq -2$ or is absent unambiguously shown)	
21	Shown	M1	for conversion to improper fractions eg. $\frac{7}{3}$ or $\frac{15}{4}$	Need not be shown with operators
		M1	(dep) for method to multiply fractions, eg. $\frac{7 \times 15}{3 \times 4} (= \frac{105}{12})$ or $\frac{28 \times 45}{12 \times 12} (= \frac{1260}{144})$ oe	
		C1	for complete working showing each stage as far as $\frac{35}{4}$ or $8\frac{9}{12}$	
22	B C D A	B2	cao	
		(B1)	for two or three correct)	
23	A & D	B1	cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
14	3.3(0)	P1 P1 OR P1 A1	for a process to find cost of 1 kg of carrots, eg $1.80 \div 3 (= 0.60)$ for a start to a process to find cost of 1kg of potatoes, eg $3.45 - 2 \times "0.60" (= 2.25)$ or $(1.80 + 3.45) \div 5 (= 1.05)$ for a process to find the cost of 4 kg of carrots, eg $"0.60" \times 4 (= 2.40)$ (dep on P2) for a complete process to find the cost of 4 kg of carrots and the cost of 2 kg of potatoes, eg $"0.60" \times 4 (= 2.40)$ and $("2.25" \div 5) \times 2 (= 0.90)$ or $"0.60" \times 4 (= 2.40)$ and $("1.05 - "0.60") \times 2 (= 0.90)$ cao	Could work in £ or p for P marks Condone incorrect money notation 1 kg of potatoes = (£)0.45 or 45p Award 0 marks for a correct answer with no supportive working.
15 (a)	$2a + 2d$	B1	cao	Accept $2 \times a + 2 \times d$
(b)	$y(6y - 5)$	B1	cao	Accept $y \times (6y - 5)$
(c)	11	M1 A1	for isolating x terms, eg $4x = 37 + 7$ or $4x = 44$ or for $x - \frac{7}{4} = \frac{37}{4}$ or for $37 + 7 = 44$ followed by $"44" \div 4 (= 11)$ cao	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
14	(a) 7	B1	cao	Simply quoting values for median, range is insufficient; they must be compared.
	(b) 5	B1	cao	
	(c)	C2 (C1)	ft for correct comparison of both medians and ranges, eg. median of boys shoe sizes is greater than the median of the girls shoe sizes and the range of the boys shoe sizes is greater than the range of the girls shoe sizes. ft for a correct comparison of either medians or ranges)	
15	5	M1	for 40.15 or 8.03 seen in working	
		A1	cao	
16	Triangle drawn	B2 (B1)	for an isosceles triangle drawn with the product of the base and perpendicular height being 24, eg. 6×4 or 4×6 or 8×3 or 3×8 for any isosceles triangle drawn or for any triangle with 24 as the product of the base and the perpendicular height)	Accept triangle drawn in any orientation or drawn freehand.
17	(a) $12 - 6x$	B1	for $12 - 6x$ (accept $-6x + 12$)	Do not accept ambiguous algebraic expressions Do not accept equivalent expressions not fully factorised
	(b) 16	M1 A1	for a correct first step, eg. $3y = 12 \times 4 (= 48)$ or $\frac{y}{4} = \frac{12}{3}$ cao	
	(c) $2(2p + 3)$	B1	cao	
18	(a) 2500	B1	cao	
	(b) 0.09	B1	cao	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	$5a$	B1	cao	Accept the correct 3 terms in any order The A mark is lost for any incorrect subsequent working, eg. $17b + 5c$ Accept $(4d - 3)2$ or $2 \times (4d - 3)$ or $(4d - 3) \times 2$ Condone missing final bracket, eg $2(4d - 3)$
	$19 - 2b + 5c$	M1	for $-2b$ or $5c$	
		A1	for $19 - 2b + 5c$	
(c)	$2(4d - 3)$	B1	for $2(4d - 3)$ oe	
14 (a)	27	B1	cao	Award 0 marks for a correct answer with no supportive working.
	$\frac{2}{7}$	B1	or any equivalent fraction	
		P1	for method to find the number of children on Friday eg 0.7×500 oe (= 350)	
	No (supported)	P1	for method to find the number of children on Saturday eg $720 \div 8 \times 5$ oe (= 450)	
		C1	for No with correct figures, eg No and 350 and 450 or No and 100 more on Saturday	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	2.5	p1 p1 A1	for $450 \div 6 (= 75)$ or statement $450 = \frac{3000 \times 6 \times y}{100}$ oe or $\frac{450}{3000} (= 0.15)$ or $\frac{450 \times 100}{3000} (= 15)$ for "75" $\div 3000 (= 0.025)$ or $(y =) \frac{450 \times 100}{3000 \times 6}$ oe or $\frac{"0.15"}{6} (= 0.025)$ or $\frac{"15"}{6}$ or $\frac{3000 + "75"}{3000} (= 1.025)$ cao	
20	(a) m^6 (b) x^{13} (c) $4p^3 + 12p^2$	B1 B1 B2 (B1)	cao cao for $4p^3 + 12p^2$ for expanding the bracket to get $p^3 + 3p^2$ or $4p^3$ or $12p^2$	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	$3(2a + 5)$	B1		
(b)	2	M1	for correct expansion of brackets, ie $12y + 4$ or dividing throughout by 4 as a first step to solve equation, eg $3y + 1 = 28 \div 4$	For M marks step must be carried out not just intention shown. For example, if you see $\begin{array}{r} 4(3y + 1) = 28 \\ \div 4 \qquad \div 4 \end{array}$ Award M1 for: $3y + 1 = k$ with $k \neq 28$ or 112
		M1	for isolating terms in y, eg $12y = 28 - 4$ or $3y = 7 - 1$	ft their equation of the form $ay \pm b = c$ For example, if you see $\begin{array}{r} 12y + 4 = 28 \\ -4 \qquad -4 \end{array}$ Award M1 for: $12y = k$ with $k \neq 28$ or 32
		A1	cao	



Paper: 1MA1/2F				
Question	Working	Answer	Mark	Notes
24 (a)		± 6	M1	for one value (6 or -6) or $\sqrt{36}$ or an embedded answer eg $2 \times 6^2 = 72$
			A1	± 6
(b)	$6x^2 - 4x + 3x - 2$	$6x^2 - x - 2$	M1	for at least 3 terms correct out of a maximum of 4 from expansion, or 4 terms correct ignoring signs.
			A1	cao
(c)		$(x + 3)^2$	B1	for $(x + 3)^2$ or $(x + 3)(x + 3)$



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	0.87, 0.94, 0.94	B2	for all probabilities correct	Accept any equivalent fraction, eg $\frac{87}{100}, \frac{47}{50}$ or equivalent percentage form 87%, 94%
		(B1	for 0.87 or 0.94 correctly placed)	
		M1	for 0.13×0.06 oe	
		A1	0.0078 oe	
21 (a)	x^{15}	B1	cao	Accept any equivalent fraction, eg $\frac{39}{5000}$ or equivalent percentage form 0.78% or 7.8×10^{-3}
		M1	for method to expand one bracket or collect like terms, eg $4 \times x + 4 \times 3 (= 4x + 12)$ or $7 \times 4 - 7 \times 2x (= 28 - 14x)$ or $4 \times x - 7 \times 2x (= 4x - 14x)$ and $4 \times 3 + 7 \times 4 (= 12 + 28)$	
			oe	
		M1	for $3(5x^3 + x^2y)$ or $x(15x^2 + 3xy)$ or $3x(5x^2 + xy)$ or $x^2(15x + 3y)$ or $3x^2(ax + by)$	
			cao	
		A1	cao	
22	translation $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$	B1	for translation	Award no marks if more than one transformation is given Do not accept as a coordinate $(-5, 6)$
		B1	for vector $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
21 (a)	y^8	B1	cao	
	(b) e^6	B1	cao	
	(c) $3x^3 + 5x$	B1	cao	
	(d) $n^2 + 3n - 10$	M1	for 3 out of no more than 4 terms correct with correct signs or 4 correct terms ignoring signs	
		A1	cao	$n^2 - 2n + 5n - 10$ NB: $n^2 + 3n$ or $3n - 10$ implies 3 correct terms
22	Points plotted at (5, 12) (15, 25) (25, 10) (35, 8) (45, 5) and joined with line segments	B2 (B1)	for correct plotting of all 5 points at midpoints and joining with line segments for correct plotting of all 5 points at midpoints joined with a curve or missing / no line segments or for a frequency polygon with one point incorrect or for a frequency polygon with first and last point joined directly or for plotting of all 5 points at the correct heights consistent within intervals (including end points) and joining with line segments	Ignore any histogram drawn Ignore any part of the frequency polygon outside of the range of the first and last point plotted. for example, at 0, 10, 20, 30, 40 or at 10, 20, 30, 40, 50

Paper: 1MA1/3F					
Question	Answer	Mark	Mark scheme		Additional guidance
16	Enlargement centre (1,1) scale factor 4	B2 (B1)	Enlargement, centre (1,1) and scale factor 4 two of Enlargement, centre (1,1), scale factor 4 with nothing incorrect)		No extras. Accept A as centre. If there is a clear reference to a different transformation award no marks
17	(a) $y^2 + 5y$ (b) $2(2a - 3)$ (c) 2.9	B1 B1 M1 M1 A1	cao cao for a correct first stage eg. expanding the brackets, $2 \times 5x - 2 \times 4 (= 10x - 8)$ or division of both sides by 2, eg $\frac{2(5x-4)}{2} = \frac{21}{2}$ for isolating terms in x eg $10x = 21 + 8$ oe		Do not award if there is contradiction
(d)	$20e^3f^4$	M1 A1	for any two of $4 \times 5 (=20)$, $e^{2+1} (=e^3)$, $f^{1+3} (=f^4)$ in a product or written as individual terms cao		
18	10 000	B1	cao		
19	34 cm ²	P1	for finding one area eg $8 \times 8 (= 64)$ or $0.5 \times 3 \times 5 (=7.5)$	for first stage in working with Pythagoras eg sight of $3^2 + 5^2$ or $9 + 25$	
		P1	for a complete process to find the area eg "64" – $4 \times "7.5" (=34)$	for full use of Pythagoras eg $\sqrt{3^2 + 5^2}$ or $\sqrt{34}$ or 5.83...	Any figure used must come from a correct process
		A1	for an answer in the range 33.6 to 34		Can be awarded with incorrect units stated
		B1	(indep) for cm ²		Can be awarded with an incorrect or absent numerical answer



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
18 (a)	2	B1	cao	Check working space or next to the table. Zero points may not be seen so accept without $0 \times 4, 0$
(b)	81	M1 A1	for working with values from the table eg $(0 \times 4), (1 \times 3), \dots$ with at least 3 products shown correct or $(0 +), 3, 14, 15, 24, 25$ with at least 3 correct cao SC B1 for 85	
19	$x = \frac{y-4}{2}$	M1 A1	for correct first step to rearrange eg $y-4 = 2x+4-4$ or $\frac{y}{2} = \frac{2x+4}{2}$ or ambiguously shown eg $x = y-4 \div 2$ or answer given as $\frac{y-4}{2}$ oe	May be seen in different equivalent forms but must be carried out, not just intention seen. Could be shown as a flow diagram but must have correct inverse operations
20	105	M1 A1	for evidence of understanding the angle properties of a square or equilateral triangle, eg stating angle $DBC = 60$ or angle $EBD = 45$ or angle $BAE = 90$ cao	Accept on the diagram with no contradiction in working, or no contradiction or ambiguity on the diagram; 90 can be shown as a right angle Could be shown on the diagram or in working, but do not accept contradiction or ambiguity.
21	78	P1 P1 A1	for process to find the number of rand, eg $850 \times 18.53 (= 15750.5)$ OR for process to find number of £, eg $200 \div 18.53 (= 10.79 \dots)$ (dep P1) for process to find the number of rand notes, eg " $15750.5 \div 200 (= 78.7\dots)$ " OR $850 \div "10.79\dots" (= 78.7\dots)$ cao	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	(a) 15	B1	cao	Accept readings from the graph as an indication at this stage
	(b) 4.6	B1	for an answer in the range 4.4 to 4.8	
	(c) 12	M1	for a method to calculate speed eg distance ÷ time (could be implied from figures used) eg $4 \div 20 (= 0.2)$ oe, $4 \div 0.33(\dots)$ oe or $4 \div 1/3$ oe	
		A1	cao	
20	100g butter 25g sugar 1 egg	P1	for process to find the amount needed of one ingredient for 25 scones	amount needed: 200g butter 875 flour 75 sugar 5 eggs Flour can be excluded, but no incorrect information about flour should be given.
		P1	for process to find the amount needed for at least three ingredients for 25 scones or for process to find the correct amount more for at least two of butter, sugar, eggs	
		P1	for complete process to find amount more for each of butter, sugar, eggs	
		C1	for correct amounts more shown for butter, sugar, eggs	
21	$a = \frac{p+9}{3}$	M1	for correct first step to rearrange eg $p + 9 = 3a - 9 + 9$ or $\frac{p}{3} = \frac{3a-9}{3}$ oe or answer ambiguously shown eg $a = p + 9 \div 3$ or given as $\frac{p+9}{3}$ oe	May be seen in different equivalent forms but must be carried out, not just intention seen.
		A1	oe	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	$w = \frac{y + 10}{3}$	M1	for $y + 10 = 3w$ or $\frac{y}{3} = w - \frac{10}{3}$	Accept $w = \frac{-y-10}{-3}$ for M1A1
		A1	for $w = \frac{y+10}{3}$ oe	
26	$x = 5, x = -3$	M1	for factorisation eg $(x \pm 3)(x \pm 5)$ or $(x + a)(x + b)$ where $ab = -15$ or $a + b = -2$ or for substitution into quadratic formula eg $\frac{- -2 \pm \sqrt{(-2)^2 - 4 \times 1 \times -15}}{2 \times 1}$ oe	Condone one sign error in substitution into quadratic formula.
		M1	for $(x + 3)(x - 5)$ or for $\frac{2 \pm \sqrt{64}}{2}$	
		A1	cao	



Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
1 (a)		3.65	B1	cao
(b)		2700	B1	cao
2		72	B1	cao
3		42	B1	cao
4		-9 , 2	B1	cao accept either order.
5		47	B1	cao
6		$L = 5a + 3$	M1 M1 A1	for expression $a - 1 + a + a + a + a + 4$ or $L =$ an expression in a for $5a + 3$ or $L = a + a + a - 1 + a + a + 4$ oe for $L = 5a + 3$
7 (a)		(6 , - 2)	B1	cao
(b) i		Correct point	B1	cao for point marked at (2, 9)
(b) ii		Yes with reasoning	B1	Yes with correct substitution $4 \times 2 + 1 = 9$ or by drawing correct line on diagram
(c)		Correct line	B1	for drawing line $x = -2$ cao



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
27 (a)	9.6	M1	for a correct ratio, eg $\frac{12.6}{8.4} (= 1.5)$ or $\frac{8.4}{12.6} (= 0.66\ldots)$ or $\frac{6.4}{8.4} (= 0.76\ldots)$ or $\frac{8.4}{6.4} (= 1.31)$ oe	Decimal equivalents can be truncated or rounded to 2 dp Accept equivalent methods to use a sf eg $\frac{6.4}{2} + 6.4$ (indicative of 1.5)
		A1	cao	
		M1	for $15 \div "1.5"$ or $15 \times "0.66\ldots"$ or ft their ratio from part (a) oe	
		A1	cao	
(b)	10			Award the method mark for any (equivalent) complete method shown.
28	$g = 2T^2 - 6$	M1	for $T^2 = \frac{g+6}{2}$ or $\sqrt{2} \times T = \sqrt{g+6}$	Can only award this mark if the first M mark has been awarded.
		M1	(dep) for $T^2 \times 2 = g + 6$ or $(\sqrt{2} \times T)^2 = g + 6$ oe	
		A1	for $g = 2T^2 - 6$ oe	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	6 : 15 : 20	P1 P1 A1	chooses a multiplier to equate the two fractions in terms of b eg $\frac{2}{5} \times \frac{3}{3} (= \frac{6}{15})$ or $\frac{3}{4} \times \frac{5}{5} (= \frac{15}{20})$ or lists equivalent fractions to $\frac{2}{5}$ up to at least $\frac{6}{15}$, eg. $\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \dots$ or lists equivalent fractions to $\frac{3}{4}$ up to at least $\frac{15}{20}$, eg. $\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20}, \dots$ or ($a : b =$) 2 : 5 and ($b : c =$) 3 : 4 or for 6 : 15 or 15 : 20 seen puts into related terms ready for ratio eg $\frac{2}{5} \times \frac{3}{3} = \frac{6}{15}$ and $\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$ or for ($a : b =$) 6 : 15 and ($b : c =$) 15 : 20 or lists equivalent ratios up to a common element for b, eg $a : b = 2 : 5, 4 : 10, 6 : 15$ and $b : c = 3 : 4, 6 : 8, 9 : 12, 12 : 16, 15 : 20$ for 6 : 15 : 20 oe	Need not be written in ratio form Accept equivalent ratios Accept $a = 6, b = 15$ and $c = 20$
30 (a)	$q = \frac{p-7}{6}$	M1 A1	for a correct first step, showing a method of subtraction of 7 from both sides or division of all terms by 6 eg $p - 7 = 6q + 7 - 7$ or $\frac{p}{6} = \frac{6q}{6} + \frac{7}{6}$ oe for $q = \frac{p-7}{6}$ or $q = \frac{p}{6} - \frac{7}{6}$	Allow $1\frac{1}{6}$ for $\frac{7}{6}$ Award for answer without “$q =$”
(b)	m^6	B1	cao	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	Mistake identified	C1	for identifying the mistake Acceptable examples $p - 5$ should be multiplied by 3 $(-)5$ should be multiplied by 3 All of left side / everything should be multiplied by 3 He failed to multiply the 5 as well He should have / didn't put brackets around the $p - 5$ (The $3p - 5$) should be $3p - 15$ (The $- 5$) should be $- 15$ / (the 5) should be 15 (The answer should be) $m = 3p - 15$ / $m = 3(p - 5)$ He only times the p by 3 Not acceptable examples The first line should be $3p = m + 5$ He should have multiplied everything Ben didn't divide $p - 5$ by 3 He failed to multiply the $p - 5$ He failed to multiply the $(-)5$ He only times the p He should have multiplied by 3 first He only multiplied one side by 3 He needs to get rid of the fraction Should have used brackets Just circling the $3 \times p - 5$ and / or the $m = 3p - 5$ Needs to multiply the 5 by -3 He should have done $p - 5 \times 3$	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
(b)	$2xy(x^2 + 2y)$	B2	for $2xy(x^2 + 2y)$ oe eg $2(x^2 + 2y)xy$	
		(B1	for $2x(x^2y + 2y^2)$ or $2y(x^3 + 2xy)$ or $xy(2x^2 + 4y)$ or for correctly identifying the HCF in the factorisation of the form $2xy(ax^2 \pm \dots)$ or $2xy(\dots \pm by)$ where a and b are integers or $(x^2 + 2y)$ as a factor eg $2x(x^2 + 2y)$	... can be numerical or algebraic but not equal to 0 or absent



Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
10		75	P1 P1 A1	for $90 \div 6 (= 15)$ or for connecting AB and BC by ratio or proportion eg 5 and 1 on the diagram for a complete method to find the length AB eg $90 \div 6 \times 5 (= 75)$ cao
11 (a)		11	M1 A1	substitutes $v = 2$ eg $4 \times 2 + 3$ or $8 + 3$ cao
(b)		$v = \frac{T - 3}{4}$	M1 A1	correct first step to rearrange by isolating $4v$ or dividing each term by 4, eg $T - 3 = 4v$ fully correct answer
12 (a)		Yes (supported)	M1 C1	method to find volume of one cube, eg $2 \times 2 \times 2$ or $2^3 (= 8)$ or draws a solid of 6 cubes Yes with supporting evidence eg $2 \times 2 \times 2 = 8$, $8 \times 6 = 48$
(b) (i)		cuboid drawn	B1	either a 1 by 6 by 1 cuboid (2cm by 12cm by 2cm) or a 2 by 3 by 1 cuboid (4cm by 6cm by 2cm) drawn
(ii)		104 or 88	M1 A1	ft for finding areas of 3 or more faces of their cuboid and adding for 104 or 88



Paper: IMA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
18	Jan's store (supported)	P1	process to reduce £5 by 20% (= £4) or increase 400 by 30% (= 520)	May work in pence throughout Accept any correct appropriate percentage process
		P1	process to reduce £5 by 20% (= £4) and increase 400 by 30% (= 520)	
		P1	(dep P2) process to find comparable values, eg $400 \div "4"$ and $"520" \div 5$	May use £/g or any other comparable values
		C1	'Jan's store' fully supported by correct comparative values, eg 100 (g/£) and 104 (g/£)	Do not award without correct comparable values and full working.
19	Shape drawn	B2	for shape with vertices at (4, -3), (5, -4), (5, -5), (4, -5)	Shape does not have to be shaded. Allow some tolerance on vertices as long as they are nearest to the desired points.
		(B1)	for rotation of 180° about wrong centre	This is shown by the orientation of the shape.
20	9	M1	for a correct first step, using the laws of indices to simplify eg 3^2 or $3^{7+ -2}$ or 3^{7-3} or 3^{-2-3} OR for using exact values, eg $2187 \times \frac{1}{9}$ (= 243) or $2187 \div 27$ (= 81) or $\frac{1}{27 \times 9}$ (= $\frac{1}{243}$)	
		A1	cao	
21 (a)	6 or -6	M1	for $12^2 + 2 \times -3 \times 18$ (= 36)	Terms may be partially evaluated.
		A1	for 6 or -6, accept ± 6	Only one value is required for full marks
(b)	$s = \frac{v^2 - u^2}{2a}$	M1	for subtracting u^2 from both sides or dividing all terms by $2a$ as the first step	Must see this step carried out, not just the intention shown
		A1	$s = \frac{v^2 - u^2}{2a}$ oe	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
21	168	M1 A1	for a list of at least 3 multiples of each number or for factors 3,2,2,2 oe and 7,2,2,2 oe (could be shown in a factor tree or Venn diagram or table) cao	Condone the use of 1 as a factor
22	7.5	M1 A1	for correct use of Pythagoras, eg. $8.5^2 - 4^2 (= 56.25)$ or $4^2 + x^2 = 8.5^2$ for 7.5 or $7\frac{1}{2}$ or $\frac{15}{2}$	Must have values substituted Trigonometry may be used but M1 only awarded when complete method shown.
23	(a) 25 (b) $p = \frac{d-4}{3}$ oe	M1 A1 M1 A1	for $(T \Rightarrow) 4 \times (-3)^2 - 11$ or $4 \times (-3)^2 = 36$ cao for a correct first step, eg. $d - 4 = 3p$ or $\frac{d}{3} = p + \frac{4}{3}$ or for $\frac{d-4}{3}$ as answer for $p = \frac{d-4}{3}$ oe	Can accept missing brackets May be in unsimplified form, eg $d - 4 = 3p + 4 - 4$



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
29 (a)	15	M1	for correct substitution, eg $40 - (-5)^2$	Condone missing brackets
		A1	cao	
	$h = 3p + 5$	M1	for a correct first step, eg $3p = h - 5$	Award M1 for $3p + 5$ without seeing $h = 3p + 5$
		A1	or for isolating the $\frac{h}{3}$ term, eg $p + \frac{5}{3} = \frac{h}{3}$	
			for $h = 3p + 5$ oe eg $h = 3\left(p + \frac{5}{3}\right)$	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	4 0 -2 -2 0 4	B2	for all 4 correct values	Accept a freehand curve drawn that is not made of line segments.
		(B1)	for 2 or 3 correct values)	
(b)	Graph	M1	fit (dep B1) for plotting at least 4 points correctly	
		A1	for a fully correct curve drawn	
21	Reflection $y = -x$	B1	for reflection	Score B0 for more than one transformation
		B1	for line $y = -x$ oe	
22 (a)	$13y - 1$	M1	for method to expand one bracket or collect like terms eg $3 \times 2y - 3 \times 5 (= 6y - 15)$ or $7 \times y + 7 \times 2 (= 7y + 14)$ or $3 \times 2y + 7 \times y (= 6y + 7y)$ or $3 \times -5 + 7 \times 2 (= -15 + 14)$	May be implied by $13y$ or -1
(b)	$3x(2x + 5)$	A1	oe	
		B2	oe	May be seen in different equivalent form
		(B1)	for $3(2x^2 + 5x)$ or $x(6x + 15)$ or $3x(ax + b)$	
(c)	$g = \frac{f-11}{3}$	M1	for correct first step to rearrange eg $f-11 = 3g + 11 - 11$ or $f-11 = 3g$ or eg $\frac{f}{3} = \frac{3g}{3} + \frac{11}{3}$ or $-3g = 11 - f$ or answer ambiguously shown, eg $g = f-11 \div 3$ or given as $\frac{f-11}{3}$	
		A1	oe	

Paper: 1MA1/2F				
Question	Working	Answer	Mark	Notes
13		Shown	M1	for method started to find comparable amounts, eg $17 \times 46 (=782)$ or $17 \times 0.46 (=7.82)$ or $17 \times 35 (=595)$ or $266 \div 35 (=7.6)$ or $26600 \div 35 (=760)$
			M1	for complete method to find comparable figures eg $17 \times 46 (=782)$ or $17 \times 0.46 (=7.82)$ AND $266 \div 35 (=7.6)$ or $26600 \div 35 (=760)$ eg $17 \times 46 \times 35 (=27370)$ or $17 \times 0.46 \times 35 (=273.7)$
			C1	Shows correct comparable figures eg 7.82 and 7.6(0), 782 and 760 OR 273.7(0)
14 (a)		Example	M1	Chooses two odd numbers and substitutes into $2(a + b)$ oe
			C1	Calculates $2(a + b)$ correctly to arrive at a number that is a multiple of 4
(b)		Reasoning	C1	States $a + b$ is even or $2a$ is even or $2b$ is even
			C1	Completes argument.

