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

Perimeter, Area & Volume (G4)

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

61 questions · 224 marks · Mark schemes included

Past papers June 2017 - June 2025 · 3 sub-topics

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HOW TO USE THIS BOOKLET

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

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

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

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

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

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

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2. Q21	GCSE Paper 3F June 2018	2	5
3. Q14	GCSE Paper 3F November 2019	2	6
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5. Q16	GCSE Paper 3F June 2022	2	8
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QUESTIONS

61 questions · 224 marks · 3 sub-topics

SUB-TOPIC G4a

PERIMETER & AREA OF 2D SHAPES

Sub-topic G4a · 27 questions · 96 marks · lowest tariff first



- (b) (i) Plot the point with coordinates $(2, 9)$.
Label this point B .

(1)

- (ii) Does point B lie on the straight line with equation $y = 4x + 1$?
You must show how you get your answer.

(1)

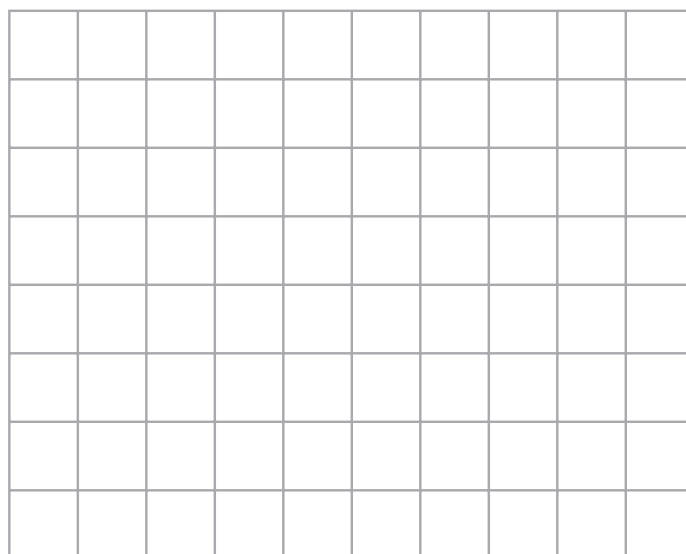
- (c) On the grid, draw the line with equation $x = -2$

(1)

(Total for Question 7 is 4 marks)

- 8 The length of a rectangle is twice as long as the width of the rectangle.
The area of the rectangle is 32 cm^2 .

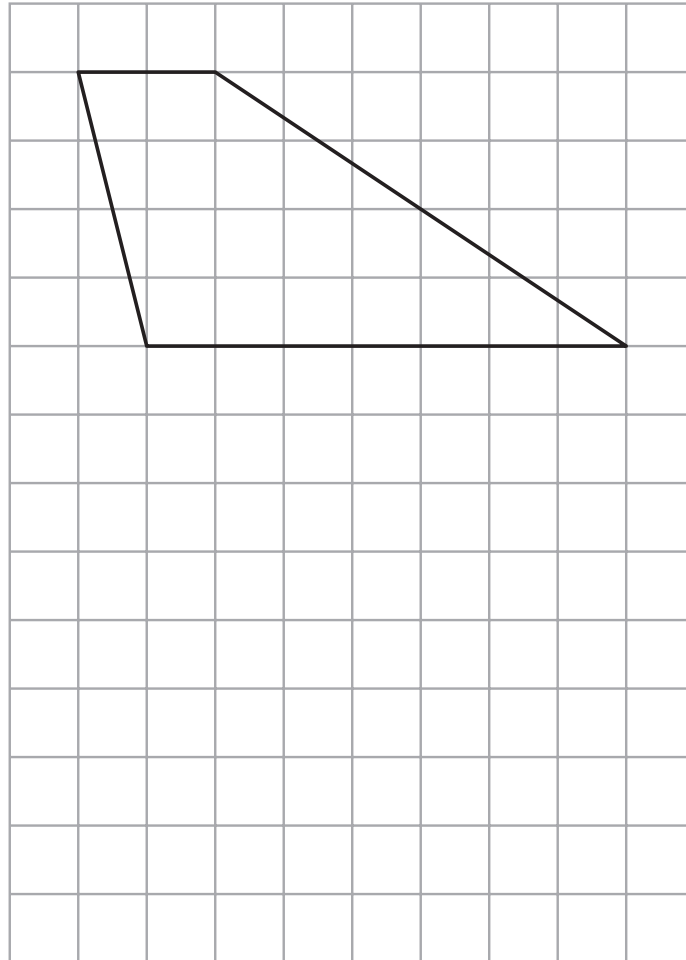
Draw the rectangle on the centimetre grid.



(Total for Question 8 is 2 marks)



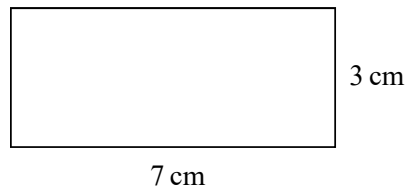
21 Here is a trapezium drawn on a centimetre grid.



On the grid, draw a triangle equal in area to this trapezium.

(Total for Question 21 is 2 marks)

14 Here is a rectangle.



Coby has to find the perimeter of this rectangle.

He writes,

$$\text{Perimeter} = 7 \times 3$$

(a) What mistake has Coby made?

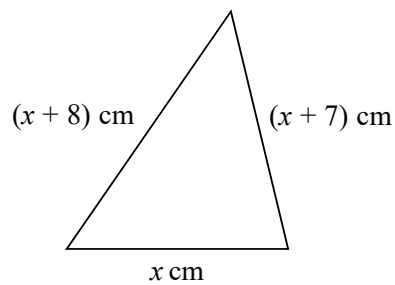
.....

.....

.....

(1)

Here is a triangle.



Iram solves a problem about this triangle to find the value of x .

Her answer is

$$x = -2$$

(b) Explain why Iram's answer must be wrong.

.....

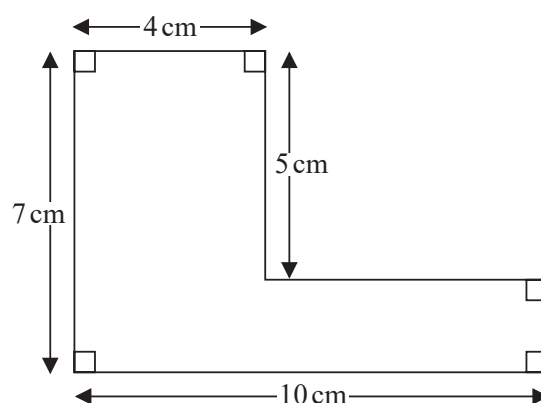
.....

.....

(1)

(Total for Question 14 is 2 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)

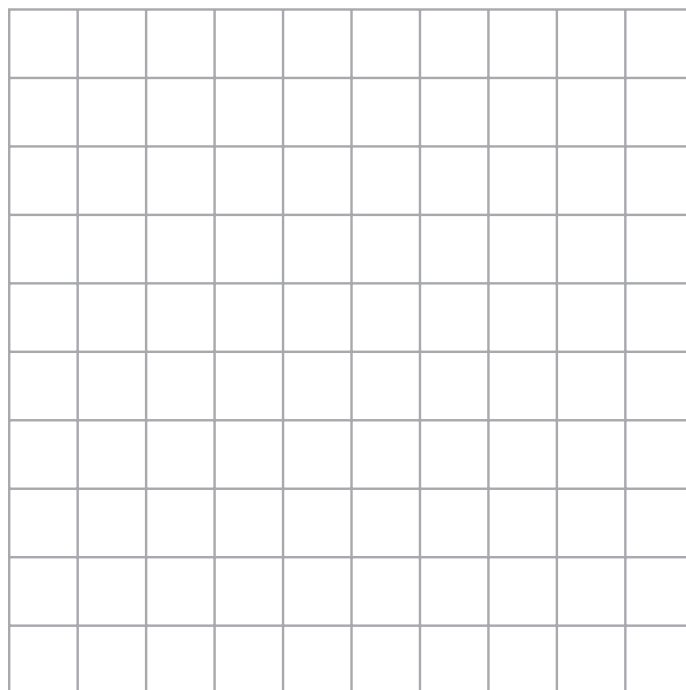
(b) Solve $5p + 7 = 22$

$p =$
(2)

(Total for Question 14 is 4 marks)



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)

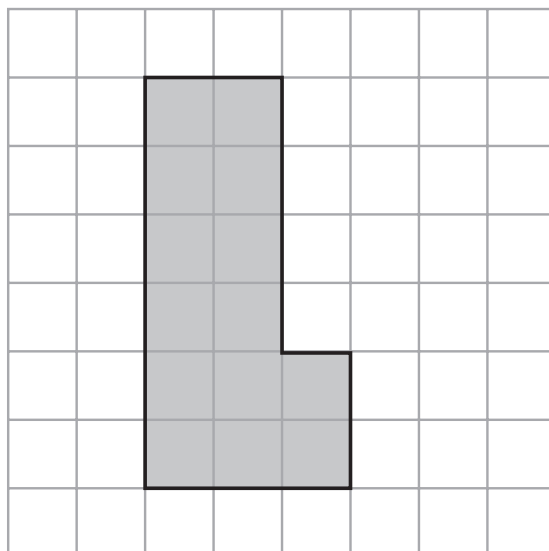
(c) Factorise $4p + 6$

.....
(1)

(Total for Question 17 is 4 marks)



- 6 The diagram shows a shape on a centimetre grid.



- (a) Find the area of the shape.

..... cm^2
(1)

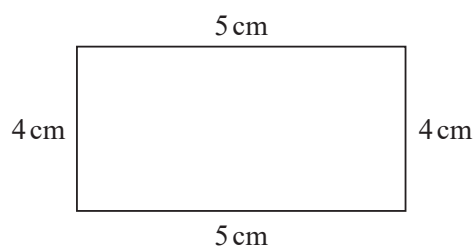
- (b) Find the perimeter of the shape.

..... cm
(1)

(Total for Question 6 is 2 marks)



13 Milo is trying to find the area of this rectangle.



He writes,

“The area is 400 cm^2 because $5 \times 4 \times 5 \times 4 = 400$ ”

(a) Explain what is wrong with Milo’s method.

(1)

Anya works out the area of a shape.

Her answer is 86 cm .

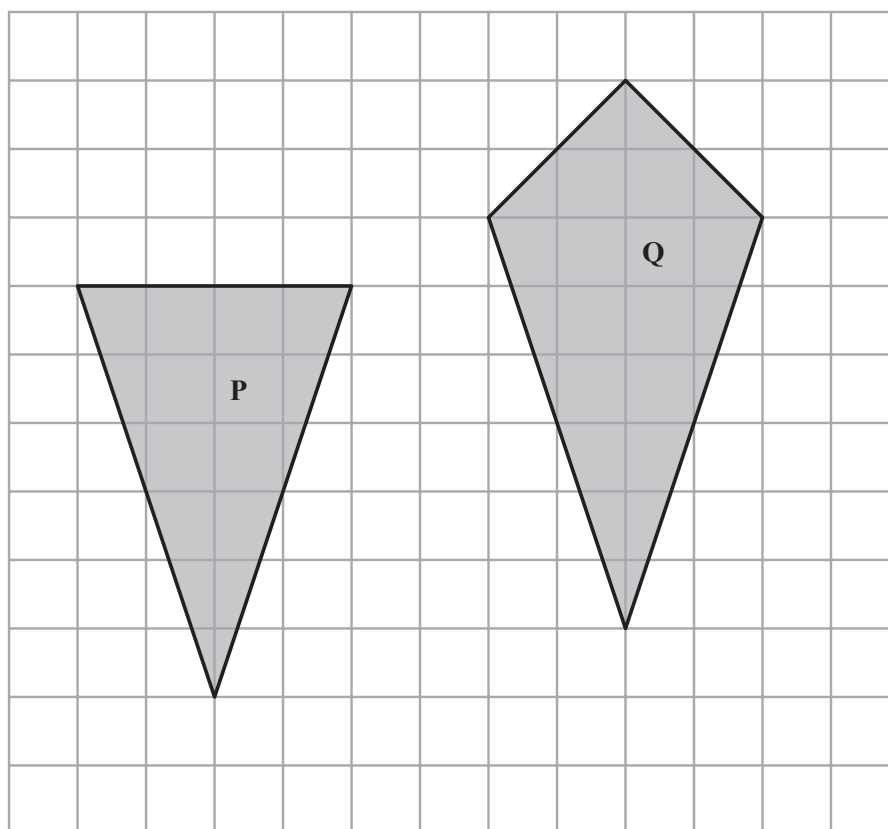
(b) Explain why her answer cannot be fully correct.

(1)

(Total for Question 13 is 2 marks)



10 The diagram shows two shapes drawn on a centimetre grid.



(a) Find the area of shape P.

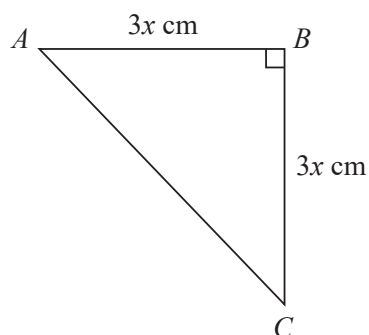
.....
(2)

(b) Write down the mathematical name of quadrilateral Q.

.....
(1)

(Total for Question 10 is 3 marks)

17 ABC is an isosceles right-angled triangle.



The area of the triangle is 162 cm^2

Work out the value of x .

$x = \dots\dots\dots$

(Total for Question 17 is 3 marks)

18 Work out the value of $\frac{2.645 \times 10^9}{1.15 \times 10^3}$

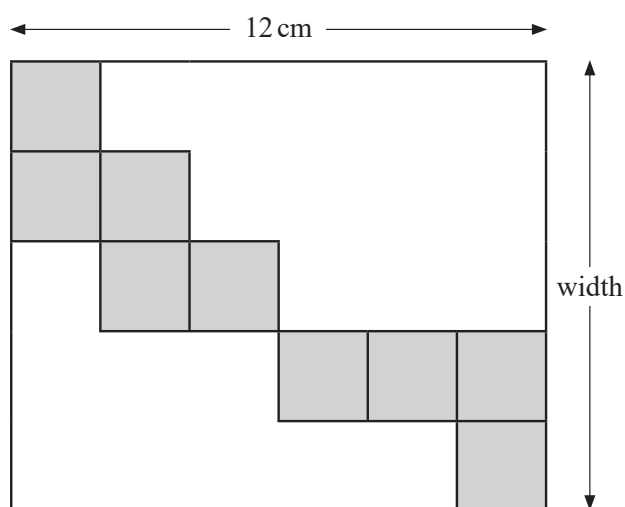
Give your answer in standard form.

$\dots\dots\dots$

(Total for Question 18 is 2 marks)



13 The diagram shows nine identical squares inside a rectangle.



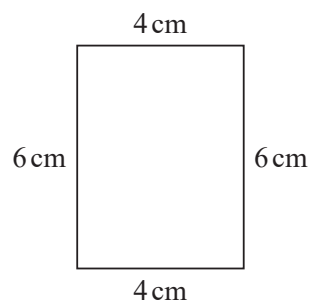
The length of the rectangle is 12 cm.

Work out the width of the rectangle.

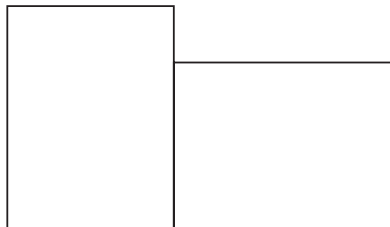
.....cm

(Total for Question 13 is 3 marks)

16 Here is a rectangle.



The 6-sided shape below is made from two of these rectangles.

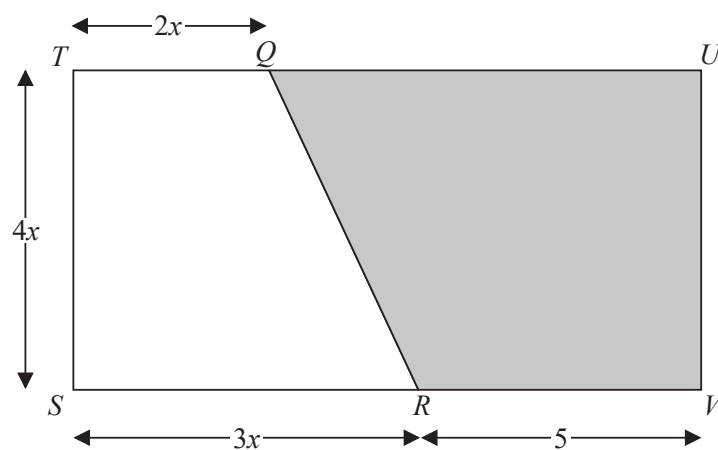


Work out the perimeter of this 6-sided shape.

..... cm

(Total for Question 16 is 3 marks)

- 28 The diagram shows rectangle $STUV$.
 TQU and SRV are straight lines.
All measurements are in cm.



The area of trapezium $QUVR$ is $A \text{ cm}^2$

Show that $A = 2x^2 + 20x$

(Total for Question 28 is 3 marks)

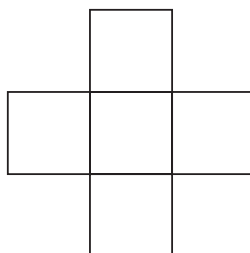


10 Here is a square.



The square has a perimeter of 40 cm.

Five of these squares are used to make the shape below.



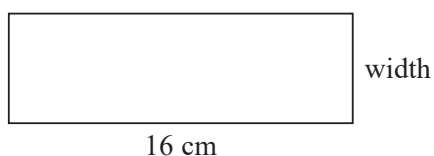
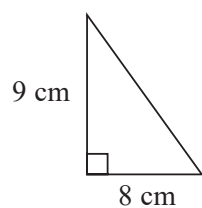
Work out the perimeter of this shape.

..... cm

(Total for Question 10 is 3 marks)



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 $v = u + at$

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

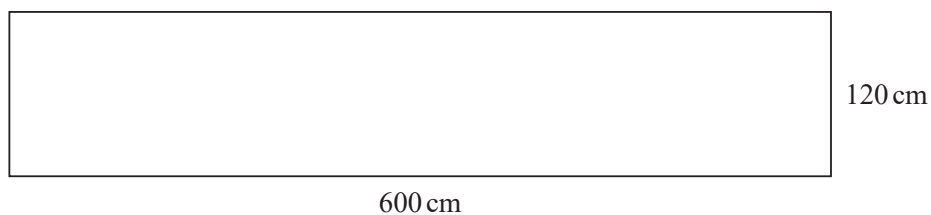
Work out the value of v .

$v =$

(Total for Question 16 is 2 marks)



18 The diagram shows a rectangular garden path.



Wasim is going to cover the path with paving stones.

Each paving stone is a square of side 30 cm.

Each paving stone costs £2.50

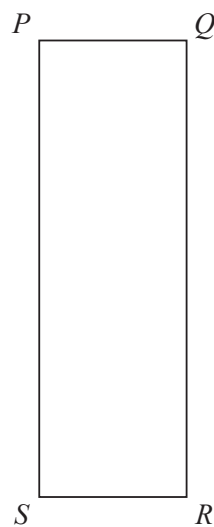
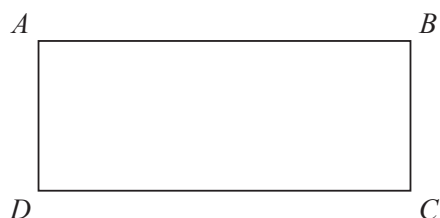
Wasim has £220 to spend on paving stones.

Show that he has enough money to buy all the paving stones he needs.

(Total for Question 18 is 4 marks)



28 Here are two rectangles.



$$QR = 10 \text{ cm}$$

$$BC = PQ$$

The perimeter of $ABCD$ is 26 cm

The area of $PQRS$ is 45 cm^2

Find the length of AB .

..... cm

(Total for Question 28 is 4 marks)



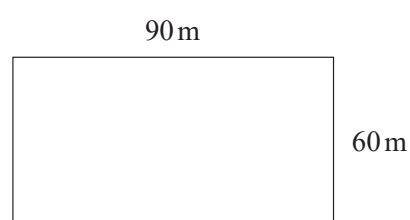
14 Write the ratio $4.5 : 2.25$ in the form $n : 1$

(Total for Question 14 is 1 mark)

15 A garden is in the shape of a rectangle 90 m by 60 m.

Flowers are grown in 40% of the garden.
The rest of the garden is grass.

Work out the area of the garden that is grass.

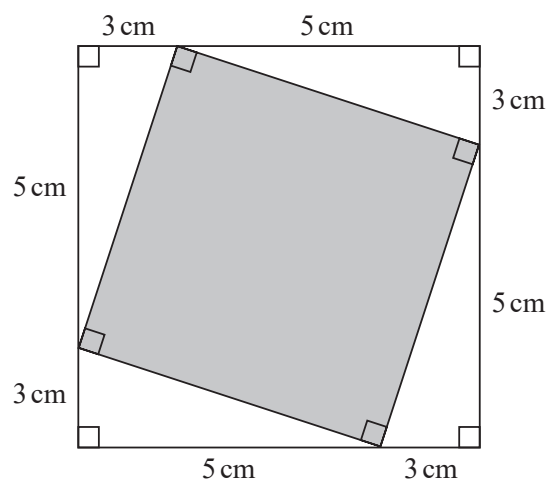


.....m²

(Total for Question 15 is 4 marks)



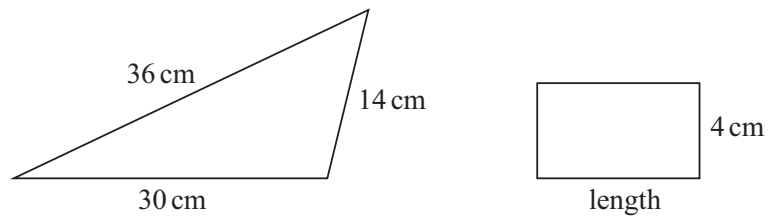
19 This diagram shows two squares.



Work out the area of the square shown shaded in the diagram.

(Total for Question 19 is 4 marks)

12 The diagram shows a triangle and a rectangle.



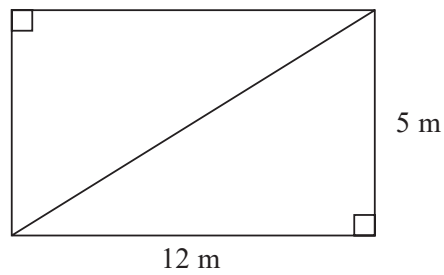
The perimeter of the rectangle is a quarter of the perimeter of the triangle.

Work out the length of the rectangle.

..... cm

(Total for Question 12 is 4 marks)

25 This rectangular frame is made from 5 straight pieces of metal.



The weight of the metal is 1.5 kg per metre.

Work out the total weight of the metal in the frame.

..... kg

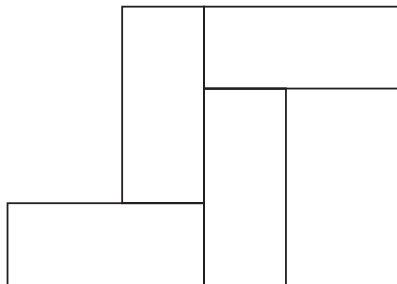
(Total for Question 25 is 5 marks)

24 Here is a rectangle.



The length of the rectangle is 7 cm longer than the width of the rectangle.

4 of these rectangles are used to make this 8-sided shape.



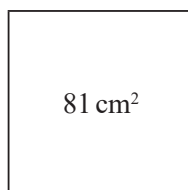
The perimeter of the 8-sided shape is 70 cm.

Work out the area of the 8-sided shape.

..... cm²

(Total for Question 24 is 5 marks)

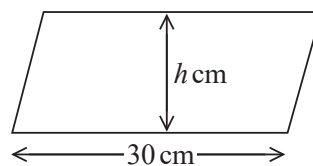
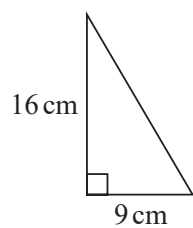
13 A square has an area of 81 cm^2



(a) Find the perimeter of the square.

.....cm
(2)

The diagram shows a right-angled triangle and a parallelogram.



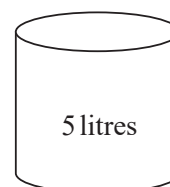
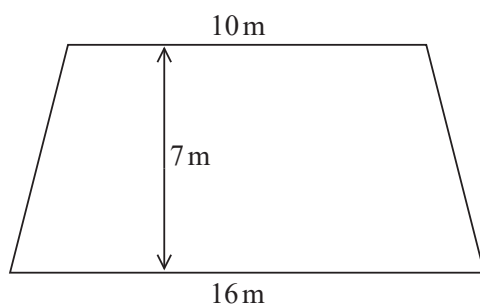
The area of the parallelogram is 5 times the area of the triangle.
The perpendicular height of the parallelogram is $h \text{ cm}$.

(b) Find the value of h .

$h =$
(3)

(Total for Question 13 is 5 marks)

24 The diagram shows a floor in the shape of a trapezium.



£16.99

John is going to paint the floor.

Each 5 litre tin of paint costs £16.99

1 litre of paint covers an area of 2 m^2

John has £160 to spend on paint.

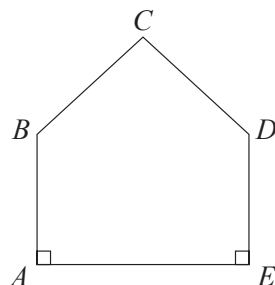
Has John got enough money to buy all the paint he needs?

You must show how you get your answer.

(Total for Question 24 is 5 marks)



- 17 The diagram shows a pentagon.
The pentagon has one line of symmetry.



$$AE = 4x$$

$$AB = 2x + 1$$

$$BC = x + 2$$

All these measurements are given in centimetres.

The perimeter of the pentagon is 18 cm.

- (a) Show that $10x + 6 = 18$

(3)

- (b) Find the value of x .

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

(2)

(Total for Question 17 is 5 marks)



- 24** Festival A will be in a rectangular field with an area of $80\,000\text{ m}^2$
The greatest number of people allowed to attend Festival A is 425

Festival B will be in a rectangular field 700 m by 2000 m.
The greatest number of people allowed to attend Festival B is 6750

The area per person allowed for Festival B is greater than the area per person allowed for Festival A.

- (a) How much greater?
Give your answer correct to the nearest whole number.

..... m^2
(4)

Callum says,

“ 300 cm^2 is the same as 3 m^2 because there are 100 cm in 1 m so you divide by 100”

Callum’s method is wrong.

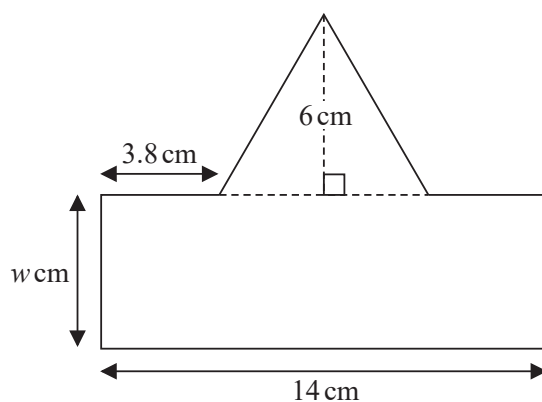
- (b) Explain why.

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

(Total for Question 24 is 5 marks)



18 Here is a shape made from a rectangle and a triangle.



The shape has exactly one line of symmetry.

The area of the rectangle is 3.5 times the area of the triangle.

The width of the rectangle is w cm.

Work out the value of w .

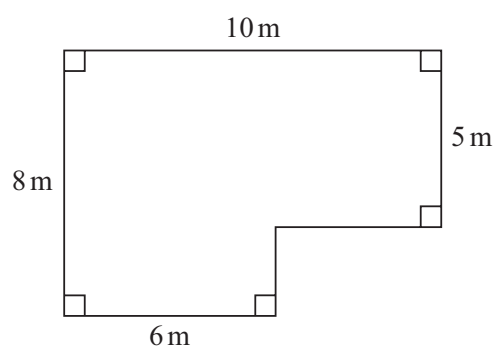
You must show all your working.

$w =$

(Total for Question 18 is 5 marks)



22 The diagram shows a plan of a floor.



Petra is going to cover the floor with paint.

Petra has 3 tins of paint.

There are 2.5 litres of paint in each tin.

Petra thinks 1 litre of paint will cover 10 m^2 of floor.

- (a) Assuming Petra is correct, does she have enough paint to cover the floor?
You must show all your working.

(4)



Actually, 1 litre of paint will cover 11 m^2 of floor.

- (b) Does this affect your answer to part (a)?
You must give a reason for your answer.

(1)

(Total for Question 22 is 5 marks)



SUB-TOPIC G4b

CIRCLES, ARCS & SECTORS

Sub-topic G4b · 14 questions · 51 marks · lowest tariff first

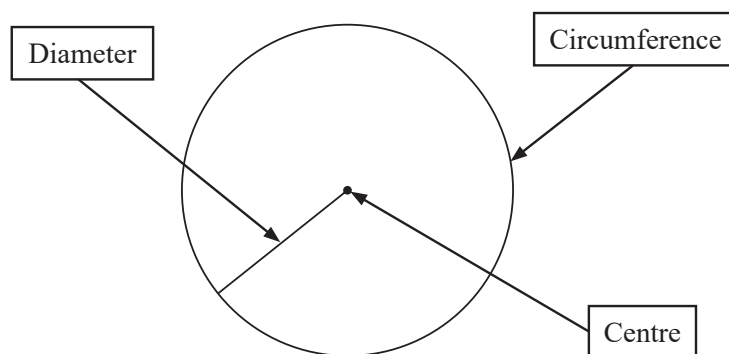


5 Solve $p - 2 = 3$

$p = \dots\dots\dots$

(Total for Question 5 is 1 mark)

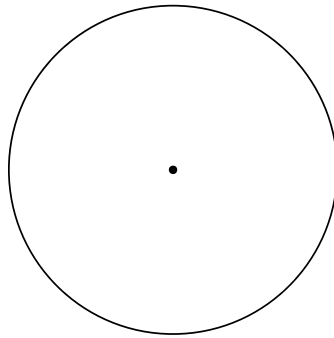
6 Freddie adds labels to this diagram of a circle.



Explain why one of the labels is wrong.

(Total for Question 6 is 1 mark)

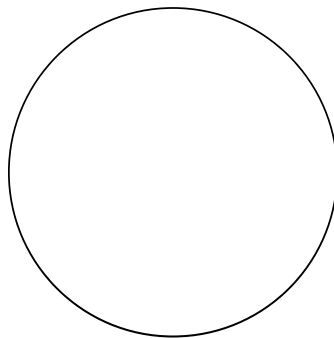
10



- (a) On the diagram above, draw a diameter of the circle.

(1)

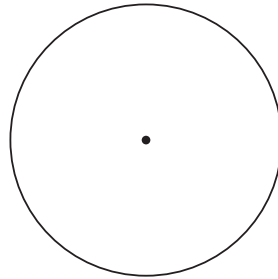
- (b) On the diagram below, draw a segment of the circle.
Shade the segment.



(1)

(Total for Question 10 is 2 marks)

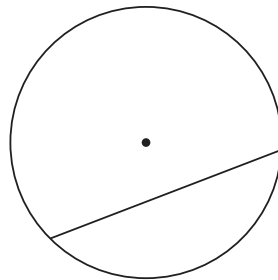
10 Here is a circle.



(a) On the diagram above, draw a radius of the circle.

(1)

Here is another circle.

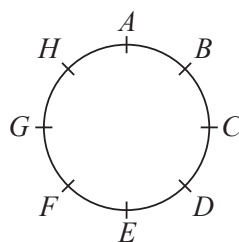


(b) Write down the mathematical name for the straight line inside this circle.

(1)

(Total for Question 10 is 2 marks)

18 Hasmeet walks once round a circle with diameter 80 metres.

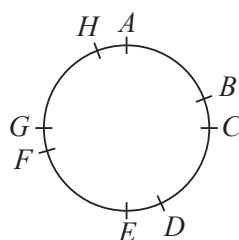


There are 8 points equally spaced on the circumference of the circle.

(a) Find the distance Hasmeet walks between one point and the next point.

.....m
(2)

Four of the points are moved, as shown in the diagram below.



Hasmeet walks once round the circle again.

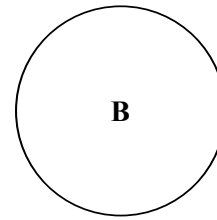
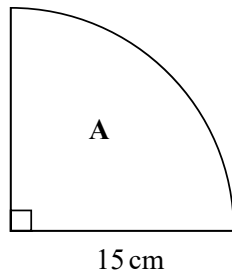
(b) Has the mean distance that Hasmeet walks between one point and the next point changed?
You must give a reason for your answer.

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

(Total for Question 18 is 3 marks)



- 30 **A** is in the shape of a quarter circle of radius 15 cm.
B is in the shape of a circle.



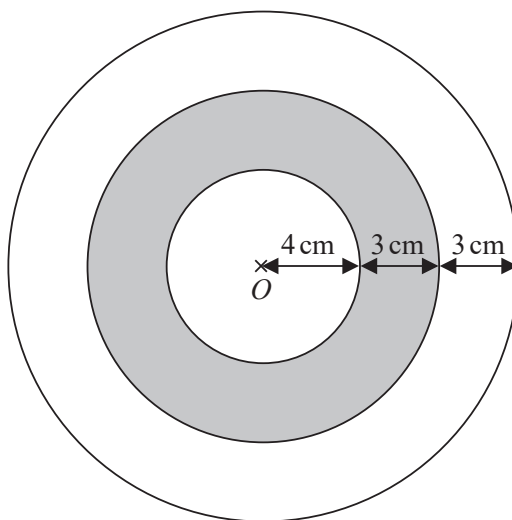
The area of **A** is 9 times the area of **B**.

Show that the radius of **B** is 2.5 cm.

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

26 The diagram shows a logo made from three circles.



Each circle has centre O .

Daisy says that exactly $\frac{1}{3}$ of the logo is shaded.

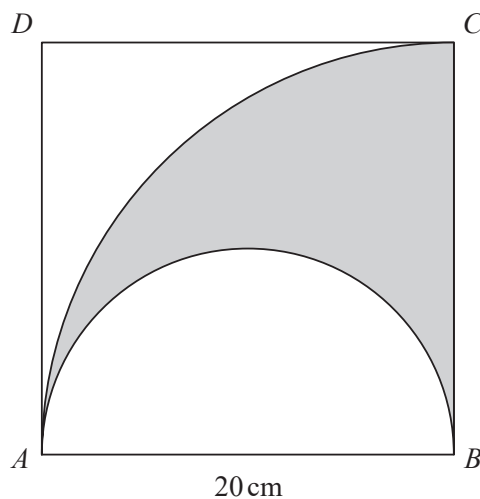
Is Daisy correct?

You must show all your working.

(Total for Question 26 is 4 marks)



- 26 The diagram shows a square $ABCD$ with sides of length 20 cm. It also shows a semicircle and an arc of a circle.

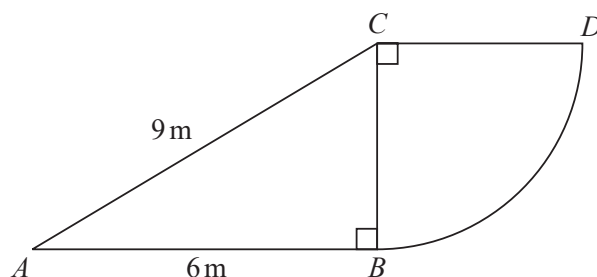


AB is the diameter of the semicircle.
 AC is an arc of a circle with centre B .

Show that $\frac{\text{area of shaded region}}{\text{area of square}} = \frac{\pi}{8}$

(Total for Question 26 is 4 marks)

27 The diagram shows a right-angled triangle and a quarter circle.



The right-angled triangle ABC has angle $ABC = 90^\circ$
The quarter circle has centre C and radius CB .

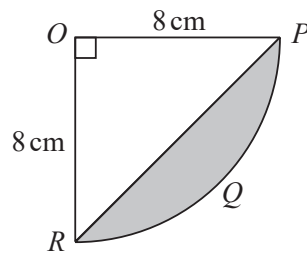
Work out the area of the quarter circle.
Give your answer correct to 3 significant figures.
You must show all your working.

..... m^2

(Total for Question 27 is 4 marks)



27 The diagram shows a sector $OPQR$ of a circle, centre O and radius 8 cm.



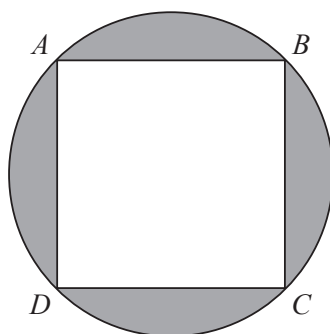
OPR is a triangle.

Work out the area of the shaded segment PQR .
Give your answer correct to 3 significant figures.

..... cm²

(Total for Question 27 is 4 marks)

29 A , B , C and D are points on a circle such that $ABCD$ is a square.



The square $ABCD$ has sides of length 3.5 cm.

Calculate the circumference of the circle.

Give your answer correct to 1 decimal place.

You must show all your working.

..... cm

(Total for Question 29 is 4 marks)

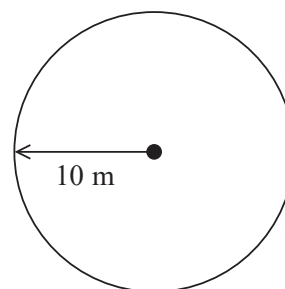
TOTAL FOR PAPER IS 80 MARKS

- 18** Balena has a garden in the shape of a circle of radius 10 m.
He is going to cover the garden with grass seed to make a lawn.

Grass seed is sold in boxes.

Each box of grass seed will cover 46 m^2 of garden.

Balena wants to cover all the garden with grass seed.



- (a) Work out an estimate for the number of boxes of grass seed Balena needs.
You must show your working.

.....
(4)

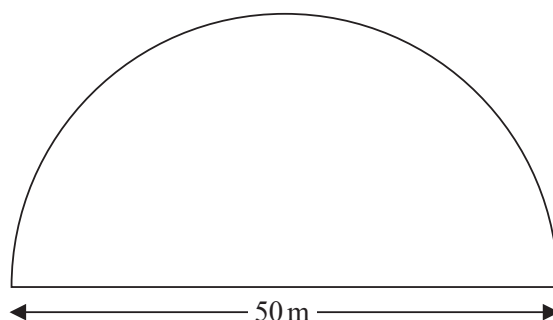
- (b) Is your estimate for part (a) an underestimate or an overestimate?
Give a reason for your answer.

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

(Total for Question 18 is 5 marks)



- 19 A farmer has a field in the shape of a semicircle of diameter 50 m.



The farmer asks Jim to build a fence around the edge of the field.
Jim tells him how much it will cost.

Total cost = £29.86 per metre of fence plus £180 for each day's work

Jim takes three days to build the fence.

Work out the total cost.

£.....

(Total for Question 19 is 5 marks)

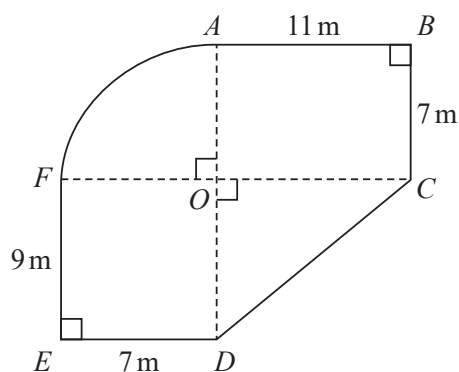


21 The diagram shows a plan of Jason's garden.

$ABCO$ and $DEFO$ are rectangles.

CDO is a right-angled triangle.

AFO is a sector of a circle with centre O and angle $AOF = 90^\circ$



Jason is going to cover his garden with grass seed.

Each bag of grass seed covers 14 m^2 of garden.

Each bag of grass seed costs £10.95

Work out how much it will cost Jason to buy all the bags of grass seed he needs.

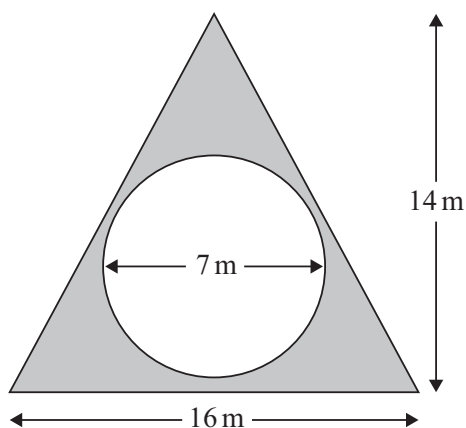
£.....

(Total for Question 21 is 5 marks)



22 Here is a plan of part of Macsen's garden.

There is a circle inside a triangle.
The circle has a diameter of 7 m.



Macsen will cover the shaded area with gravel.

Gravel is sold in bags.

Each bag of gravel covers an area of 12.5 m^2

(a) Work out the number of bags of gravel Macsen will need.

..... bags
(4)

Macsen finds that each bag of gravel only covers an area of 11 m^2

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

.....

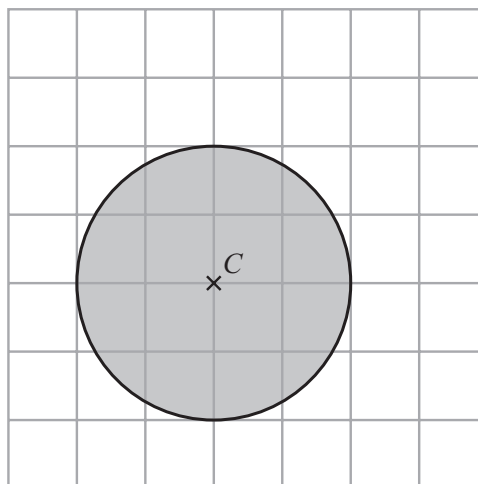
.....

.....

(1)

(Total for Question 22 is 5 marks)

23 The point C is shown on a centimetre grid.



A point P is at least 2 cm from the point C .

Nadia is asked to shade the region where point P could be.

Her answer is shown on the grid.

Explain the mistake Nadia has made.

.....

.....

.....

(Total for Question 23 is 1 mark)

SUB-TOPIC G4c

VOLUME & SURFACE AREA

Sub-topic G4c · 20 questions · 77 marks · lowest tariff first



26 Write 37 cm^3 in mm^3

..... mm^3

(Total for Question 26 is 1 mark)

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

Time	13 30
Distance to destination	65 miles

Nimer arrived at the hotel at 14 48

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

..... mph

(Total for Question 27 is 4 marks)



10 Here are the first three terms of a sequence.

20 16 13

(i) Write down two numbers that could be the 4th and 5th terms of this sequence.

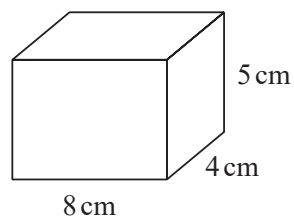
....., ...
(1)

(ii) Write down the rule you used to get your numbers.

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

(Total for Question 10 is 2 marks)

11 Here is a cuboid.



Work out the volume of the cuboid.

..... cm³

(Total for Question 11 is 2 marks)

10 (a) Solve $3m = 36$

$$m = \dots\dots\dots$$

(1)

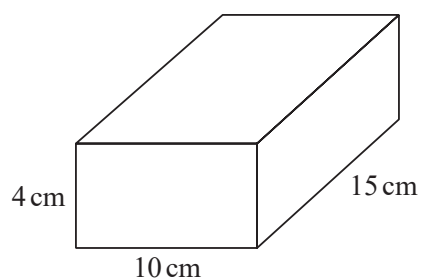
(b) Solve $7 - x = 3$

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

(1)

(Total for Question 10 is 2 marks)

11 Here is a cuboid.



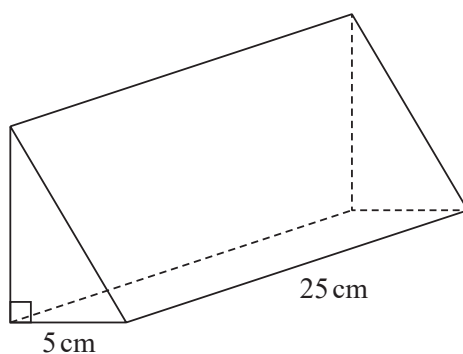
Work out the volume of the cuboid.

.....

(Total for Question 11 is 3 marks)



25 The diagram shows a prism.



The cross section of the prism is a right-angled triangle.
The base of the triangle has length 5 cm

The prism has length 25 cm
The prism has volume 750 cm^3

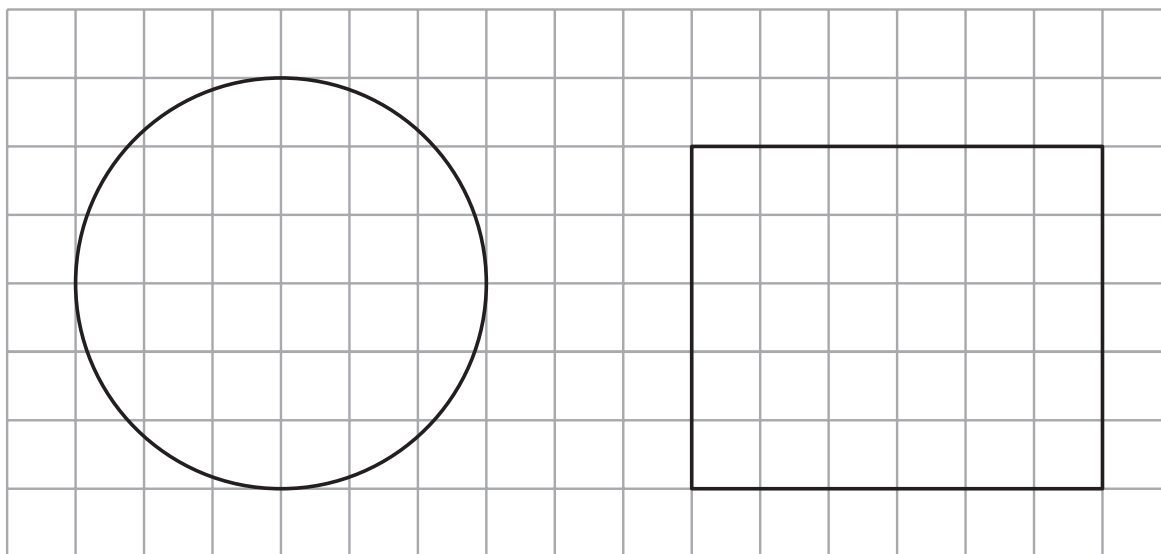
Work out the height of the prism.

..... cm

(Total for Question 25 is 3 marks)



22 The centimetre grid shows the plan and the front elevation of a cylinder.



Plan

Front elevation

Work out the volume of the cylinder.
Give your answer in terms of π

..... cm^3

(Total for Question 22 is 3 marks)

- 17** A village hall needs a new heating system.
The cost of the heating system is £9000

A community grant will pay 85% of this cost.
The village council will pay the rest of the cost.

Work out how much the village council will pay.

£.....

(Total for Question 17 is 3 marks)

- 18** A cube has a volume of 512 cm^3

Work out the surface area of the cube.

..... cm^2

(Total for Question 18 is 3 marks)



13 The total surface area of a cube is 294 cm^2 .

Work out the volume of the cube.

..... cm^3

(Total for Question 13 is 4 marks)

14 Here are two fractions.

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

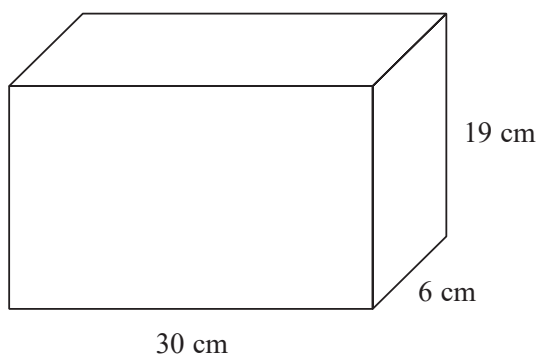
$$\frac{5}{7}$$

Work out which of the fractions is closer to 1
You must show all your working.

(Total for Question 14 is 3 marks)



23 A container is in the shape of a cuboid.



The container is $\frac{2}{3}$ full of water.

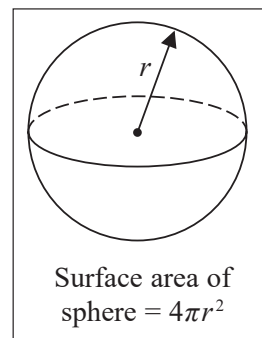
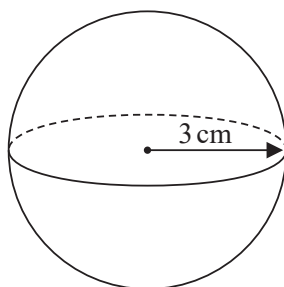
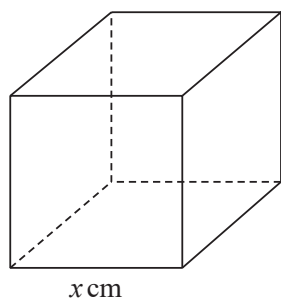
A cup holds 275 ml of water.

What is the greatest number of cups that can be completely filled with water from the container?

(Total for Question 23 is 4 marks)



- 26 The diagram shows a cube with edges of length x cm and a sphere of radius 3 cm.



The surface area of the cube is equal to the surface area of the sphere.

Show that $x = \sqrt{k\pi}$ where k is an integer.

(Total for Question 26 is 4 marks)

- 27 Freddie measured the length of a pencil as 7.2 cm correct to 1 decimal place.

Complete the error interval for the length, p cm, of the pencil.

..... $\leq p <$

(Total for Question 27 is 2 marks)



21 Work out $7\frac{3}{8} - 2\frac{1}{2}$

Give your answer as a mixed number.

.....
(Total for Question 21 is 3 marks)

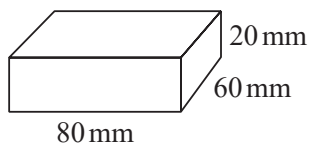
22 A cube has a total surface area of 150 cm^2

Work out the volume of the cube.

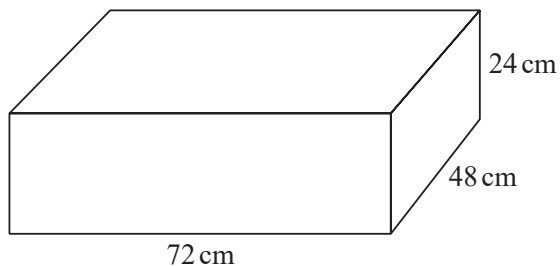
..... cm^3
(Total for Question 22 is 4 marks)



14 Packets of sweets are put into boxes.



Packet



Box

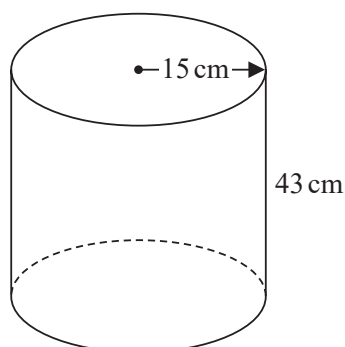
Each packet is a cuboid, 80 mm by 60 mm by 20 mm.

Each box is a cuboid, 72 cm by 48 cm by 24 cm.

Work out the greatest number of packets that can be put into each box.

(Total for Question 14 is 4 marks)

28 The diagram shows an empty tank in the shape of a cylinder.



The cylinder has radius 15 cm and height 43 cm.

Water flows into the tank at a rate of 0.47 litres per minute.

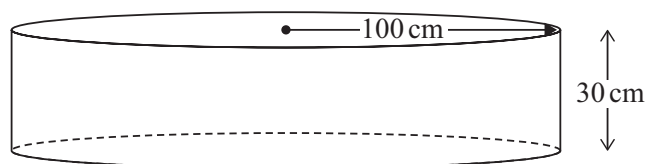
Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

..... minutes

(Total for Question 28 is 4 marks)



28 A paddling pool is in the shape of a cylinder.



The pool has radius 100 cm.

The pool has depth 30 cm.

The pool is empty.

It is then filled with water at a rate of 250 cm^3 per second.

Work out the number of minutes it takes to fill the pool completely.

Give your answer correct to the nearest minute.

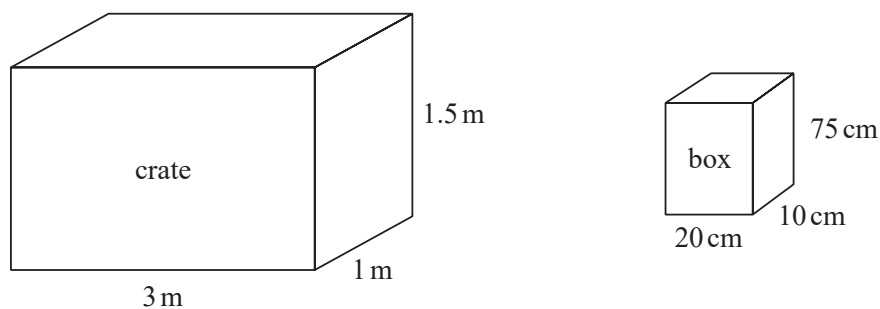
You must show all your working.

..... minutes

(Total for Question 28 is 4 marks)



13 The diagram shows a crate and a box.

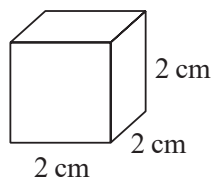


The crate is 3 m by 1 m by 1.5 m.
The crate is completely filled with boxes.
Each box is 20 cm by 10 cm by 75 cm.

Work out the number of boxes in the crate.

(Total for Question 13 is 4 marks)

12 The diagram shows a cube of side length 2 cm.



Vera says,

“The volume of any solid made with 6 of these cubes is 48 cm^3 ”

(a) Is Vera correct?

You must show your working.

(2)

(b) (i) Draw a cuboid that can be made with 6 of these cubes.
Write the dimensions of the cuboid on your diagram.

(1)

(ii) Work out the surface area of your cuboid.

..... cm^2
(2)

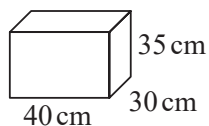
(Total for Question 12 is 5 marks)



16 Chloe has a van.

She is going to use the van to deliver boxes.

Each box is a cuboid, 40 cm by 30 cm by 35 cm.



The space for boxes in the van has

maximum length	2.4 m
maximum width	1.5 m
maximum height	1.4 m

The space for boxes is empty.

Chloe wants to put as many boxes as possible into the van.

She can put 3 boxes into the van in one minute.

Assume that the space for boxes is in the shape of a cuboid.

- (a) Work out how many minutes it should take Chloe to put as many boxes as possible into the van.

..... minutes
(4)

The space for boxes might **not** be in the shape of a cuboid.

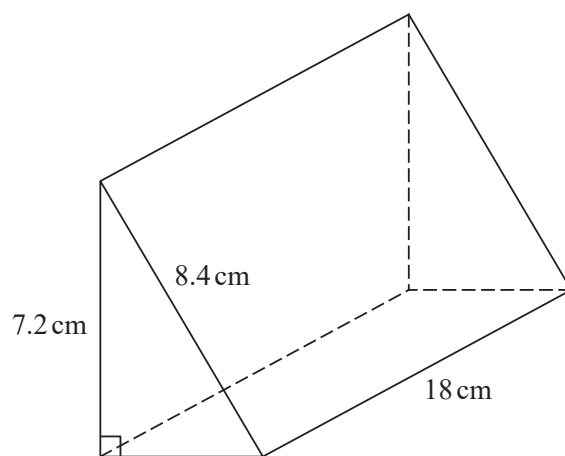
- (b) Explain how this could affect the time it would take Chloe to put as many boxes as possible into the van.

.....
(1)

(Total for Question 16 is 5 marks)



26 Here is a triangular prism.



Work out the volume of the prism.
Give your answer correct to 3 significant figures.

..... cm³

(Total for Question 26 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS

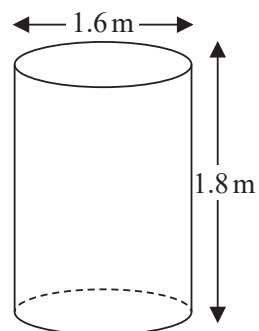


29 Jeremy has to cover 3 tanks completely with paint.

Each tank is in the shape of a cylinder with a top and a bottom.
The tank has a diameter of 1.6 m and a height of 1.8 m.

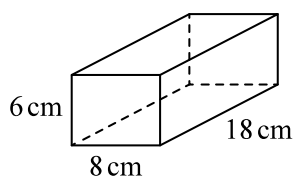
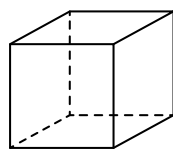
Jeremy has 7 tins of paint.
Each tin of paint covers 5 m^2

Has Jeremy got enough paint to cover completely the 3 tanks?
You must show how you get your answer.



(Total for Question 29 is 5 marks)

29 The diagram shows a cube and a cuboid.



The total surface area of the cube is equal to the total surface area of the cuboid.

Janet says,

“The volume of the cube is equal to the volume of the cuboid.”

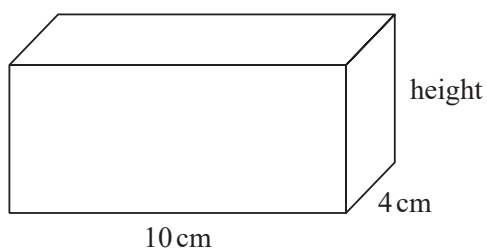
Is Janet correct?

You must show how you get your answer.

(Total for Question 29 is 5 marks)



14 Here is a cuboid of length 10 cm and width 4 cm.

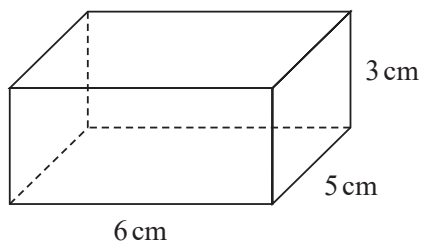


The cuboid has a volume of 200 cm^3

(a) Work out the height of the cuboid.

..... cm
(2)

Here is a different cuboid.



(b) Work out the total surface area of this cuboid.

..... cm^2
(3)

(Total for Question 14 is 5 marks)



MARK SCHEMES

official mark schemes, in the same order as the questions



Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
8		4×8 rectangle drawn	M1 A1	Draws a rectangle with side lengths in the ratio 2:1 or lists possible dimensions in the ratio 2:1 or gives two numbers which multiply to 32 for correct diagram on grid
9		Identifies error in method	C1	Explanation of error eg she should have multiplied 348 by 2 not divided
10 (a)		Jake with reason	C1	Explanation referring to spread eg range or Jakes figures are closer together or highest and lowest values for both.
(b)		Reason	C1	Reason eg stem not used or it should be 26
11 (a)	$30 \div 8$	4	P1 A1	for $30 \div 8$ or 3.75 or 3 or counting up 8s towards 30 to at least 3 lots of 8 or $4 \times 8 (=32)$ oe cao
(b)		No with reason	C1	No with $32 \div 8$ or ft from (a)
12 (a)	12 7 19 18 8 26 30 15 45	Correct table	B3 (B2) (B1)	Fully correct table for 5, 6, 7 or 8 figures correct for given values entered correctly in the table or for a correct row or column)
(b)		$\frac{8}{45}$	B1	for $\frac{8}{45}$ or ft from values in table eg $\frac{8}{45}$



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: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
14 (a)	Explanation	C1	for a correct explanation, eg that he has found the area not perimeter Acceptable examples He has found the area (not perimeter) He should have added The perimeter is $7+3+7+3$ (=20) oe He did base$\times$height He has timesed (not added) Not acceptable examples He has worked it out wrong He should have squared it He should have done 14×6 or $7\times 3\times 7\times 3$ or 7×3 twice then add them He didn't include the top or the other side He should have doubled it It should be $P=7\times 3$ or he has done the sum not found the answer	Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement, eg, he found area but perimeter equals 10
(b)	Explanation	C1	for correct explanation, eg that you cannot have a length of -2 Acceptable examples x cannot be negative Cannot have a negative length Has to be positive It is impossible Can't have -2(cm) (as a measurement) It has to be more than 0 Not acceptable examples You can have -2 Won't add to 180 He has a minus sign and the other sides have add signs It has to be a whole number or decimal there are no negative numbers to get a negative answer there is no cm after his answer It should be +2	Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement.

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	
		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 $\frac{5p}{5} + \frac{7}{5} = \frac{22}{5}$	
(b)	3	A1	cao	Must be carried out, not just intention. Division by 5 must be all terms.

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: 1MA1/3F				
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: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	Explanation	C1	for correct explanation Acceptable response should have multiplied 5 and 4 (once) it should be (just) 5×4 it is $b \times h$ or $l \times w$ she has not used the formula for area it should be $20 \text{ (cm}^2\text{)}$ shouldn't multiply all (four) sides Not acceptable response he has found the area twice he is correct he has worked out volume he has worked out the perimeter or he should have added the 4 sides	Units may be ignored
13 (b)	Explanation	C1	for correct explanation Acceptable response units should be cm^2 or units should be squared it should be 86 cm^2 or 20 cm^2 she didn't use the correct units (for area) cm is wrong Not acceptable response she is correct it is not squared or they should have squared it should be 400 cm or it should be 20 cm she has found the perimeter	Ignore numerical value if given

Paper: 1MA1/2F				
Question	Working	Answer	Mark	Notes
7		No	B1	for showing 11 or 13 or 17 or 19 with no non-prime numbers between 10 and 20, or for showing 23 or 29 with no non-prime numbers between 20 and 30. Ignore any numbers shown below 11.
		(supported)	C1	“No” supported by listing 11, 13, 17, 19 and 23, 29 and no non-prime
8 (a)		Statement	C1	States one thing wrong eg vertical scale is not linear oe
		Trend described	C1	eg the trend is upwards, positive (trend) oe
9 (a)		2.75	M1	for accurately measuring the distance between Backley and Cremford as 5.3 cm – 5.7 cm oe or their measurement $\times 0.5$ oe
			A1	for answer in the range 2.65 to 2.85
		130	B1	for answer in the range 128 to 132
10 (a)		12 cm ²	B1	for numerical answer of 12
			B1	for units shown as cm ²
		kite	B1	cao



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	10	M1	for a start of method to find Bispah's share, eg $2.50 \times 8 (= 20)$ or $\frac{1}{2} \div \frac{1}{8} (= 4)$	Accept 10.00 Accept working in pence, or in £ given as a decimal oe NB: award this mark if the working is seen in part (a) Accept 3:1 (correct answer in reverse order) which can also be an equivalent ratio to 3:1 Award full marks for 1 : 3 or an equivalent ratio. If an equivalent ratio to 1:3 is shown and then simplified incorrectly award full marks.
		A1	cao	
		P1	for a process to find Chan's share, eg "20" – 2.5 – [Bispah's money] (=7.5) or $1 - \frac{1}{8} - \frac{1}{2} (= \frac{3}{8})$	
		P1	for a correct ratio eg 2.5 : "7.5" or $\frac{1}{8} : \frac{3}{8}$ or 3 : 1 oe	
(b)	1 : 3	A1	for 1 : 3 oe eg 5 : 15	
17	6	P1	for a process to set up an equation in x, eg $\frac{1}{2} \times 3x \times 3x = 162$	Must be a complete equation Can fit their equation if a quadratic
		P1	for a process to simplify to x^2 eg $x^2 = 162 \times 2 \div 9$ or $x^2 = 36$	
		A1	cao	
18	2.3×10^6	M1	for 2.3×10^n where $n \neq 6$ or 23×10^5 or 2300000 or 2645000000 and 1150 seen	2300000 could be written as 2.3 million
		A1	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: 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 on the diagram 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: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
28	Complete chain of reasoning	M1	for (area of trapezium $TQRS = 0.5 \times 4x \times (2x + 3x)$ or for (area of rectangle $TUVS = 4x \times (3x + 5) (= 12x^2 + 20x)$	Evidence for the award of marks may be seen on the diagram
		M1	for (area of trapezium $QUVR = 4x(3x + 5) - 0.5 \times 4x \times (2x + 3x)$	Alternative methods may be seen.
		C1	for correct algebraic processing and simplification to the given form	
		M1	Alternative 1 for ($QU = 3x + 5 - 2x (= x + 5)$	
		M1	for (area of trapezium $QUVR = 0.5 \times 4x \times ((x + 5) + 5)$ or $0.5 \times 4x \times (x + 10)$	
		C1	for correct algebraic processing and simplification to the given form	
		M1	Alternative 2 for (area of triangle $= 0.5 \times (3x - 2x) \times 4x$ or for (area of rectangle $= 4x \times 5$	Accept x for $(3x - 2x)$
		M1	for (area of trapezium $QUVR = 0.5 \times (3x - 2x) \times 4x + 4x \times 5$	
29	108	C1	for correct algebraic processing and simplification to the given form	
30	16 000	M1	for $30 \times 60 \times 60$ (108000 metres per hour) or $30 \div 1000 (= 0.03 \text{ kilometres per second})$ or $60 \times 60 \div 1000 (= 3.6 \text{ scale factor})$	
		A1	cao	



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



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: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
18	Accurate figures with supportive working	M1	for a correct first step eg $600 \div 30 (=20)$ or $120 \div 30 (=4)$ or $600 \times 120 (=72\,000)$ or $30 \times 30 (=900)$	Could work in m or cm Units must be consistent
		M1	for finding an appropriate cost $2.5 \times "20" (=50)$ or $2.5 \times "4" (=10)$ OR number of tiles required $"72\,000" \div "900" (=80)$ or $"4" \times "20" (=80)$ OR number they can afford $220 \div 2.5 (=88)$	
		M1	for full method to get figures to compare eg cost to tile whole area eg $"80" \times 2.5$ OR number of tiles they need and number they can afford eg $"72\,000" \div "900"$ and $220 \div 2.5$	
		A1	for 200 OR 80 and 88 OR 72 000 and 79 200 OR 132 (cm) OR 660 (cm) SC B2 for answer of 60	



Paper: IMA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
28	8.5	P1	for process to use the area of $PQRS$ to find the length of PQ , eg $10y = 45$ or $45 \div 10 (= 4.5)$	Sets up equation for area
		P1	for process to use the perimeter of $ABCD$, eg $2x + 2 \times "4.5" = 26$ or $26 - 2 \times "4.5" (= 17)$ or $26 \div 2 (= 13)$	Uses perimeter of $ABCD$
		P1	for process to use length of BC to find length of AB , eg solves $2x + 2 \times "4.5" = 26$ or $(26 - 2 \times "4.5") \div 2$ or $"13" - "4.5"$	
		A1	for 8.5 or $8\frac{1}{2}$	Accept $\frac{17}{2}$
29	(a)	B1	cao	Brackets are given on the answer line, ignore any extra brackets seen
	(b)	B2	for both correct answers	
		(B1)	for one correct solution or $(x + 1)(x - 3)$ or $(-1, 3)$	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	3240	P1	for $90 \times 60 (= 5400)$ OR $40 \div 100 \times 90 (= 36)$ OR $40 \div 100 \times 60 (= 24)$	
		P1	for a process to work out area that is flowers eg. $40 \div 100 \times "5400" (= 2160)$ OR $"36" \times 60 (= 2160)$ OR $90 \times "24" (= 2160)$	
		P1	for a full process to find the area that is grass eg. $"5400" - "2160" (= 3240)$	
		A1	cao	
		P1	ALTERNATIVE for $100 - 40 (= 60)$	
		P1	(indep) for $90 \times 60 (= 5400)$ OR $90 \times 60 \div 100 (= 54)$ or $60 \times 60 \div 100 (= 36)$	
		P1	for a full process to find the area that is grass eg. $"60" \div 100 \times "5400" (= 3240)$ OR $"54" \times 60 (= 3240)$ or $"36" \times 90 (= 3240)$	
		A1	cao	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	
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)	
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	
(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...
		A1	for an answer in the range 33.6 to 34	
		B1	(indep) for cm ²	
			Can be awarded with incorrect units stated Can be awarded with an incorrect or absent numerical answer	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
12	6	P1 P1 P1 A1	for process to find perimeter of triangle eg $14 + 30 + 36 (= 80)$ for " $80 \div 4 (= 20)$ " for a complete process eg " $(20 - 4 - 4) \div 2$ or " $20 \div 2 - 4$ " cao	$36 \div 4 + 14 \div 4 + 30 \div 4 (= 20)$ scores P1P1
13 (a)	1	B1	Allow 100%	Allow $\frac{k}{k}$ Do not accept 100, do not accept certain.
(b)	$\frac{2}{3}$	P1 A1	for start of process to write down proportion of each coin, writes down a correct ratio, eg $1p : 2p = 2 : 1$ oe or a process to work out number of 1p coins and 2p coins, eg $40 \div 2 (= 20)$ and $(40 \div 2) \div 2 (= 10)$ or assigns numbers in correct proportion, eg 6 1p coins and 3 2p coins or finding the probability of a 2p coin $(= \frac{1}{3})$ for $\frac{2}{3}$ oe	Accept any equivalent fraction, decimal form, 0.66(6...) or 0.67 or percentage form, 66(.6...) % or 67%



Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
25		70.5	P1 P1 P1 P1 A1	starts process of Pythagoras e.g. $5^2 + 12^2$ complete process for Pythagoras e.g. $\sqrt{5^2 + 12^2}$ or $\sqrt{25 + 144}$ or $\sqrt{169}$ (=13) (dep P1 for Pythagoras) process of adding all the lengths e.g. $5 + 5 + 12 + 12 + "13"$ (=47) (indep) process of multiplying at least 2 lengths by 1.5 cao SC: any evidence of working with Pythagoras award the P1 or P2
26		comparison	M1 A1	starts to manipulate expression e.g. $3y = 9x - 6$ or $3y = 9x - 5$ gives equation(s) which can be used to show that the gradients of the two lines are the same e.g. $y = 3x - 5/3$
27	(a) (b) (c)	2b b – a – a – b	B1 B1 B1	oe oe ft oe



Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
24		147	P1 P1 P1 A1 B1	starts process, eg uses x and $x + 7$ starts to work with at least 6 correct sides, may be on the diagram or in an expression (dep on previous P1) gives a correct expression for the perimeter, eg $x + x + 7 + x + 7 + x + 7 + x + x + 7 + x + 7 + x + 7$ or adds at least 6 correct sides and equates to 70 for width = 3.5 oe and length = 10.5 oe ft (dep P2) for correct area for their x
25		0.0007452	M1 A1	for digits 7452 seen cao
26 (a)		Mel (supported)	B1	Mel with reference to greatest number of throws
(b)		$\frac{2}{9}$	M1 A1	selects overall total and multiplies P(point up)×P(point down) eg $\frac{50}{150} \times \frac{100}{150}$ oe (accept $\frac{14}{45} \times \frac{31}{45}$ or $\frac{27}{80} \times \frac{53}{80}$ or $\frac{9}{25} \times \frac{16}{25}$) for $\frac{2}{9}$ oe



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
12	$\frac{29}{49}$	P1	for $\frac{29}{a}$ where $a > 29$ or $\frac{b}{49}$ where $b < 49$ or $1 - \frac{20}{49}$ or $\frac{49-20}{c}$ where $c > 49 - 20$ OR for 29 and 49 with incorrect notation eg 29 : 49	
		A1	oe	Acceptable equivalents are any equivalent fraction to $\frac{29}{49}$, decimal 0.59 (...) or 59 (...)%
13 (a)	36	P1	square root of 81 eg $\sqrt{81}$ or 9 or 9×4	9 could be seen on the diagram
		A1	cao	
(b)	12	M1	finding area of triangle eg $\frac{1}{2} (16 \times 9)$ (=72)	
		M1	equating with area of parallelogram eg [area of triangle] $\times 5 = 30 \times h$ or $(h =) [\text{area of triangle}] \times 5 \div 30$ or $(h =) [\text{area of triangle}] \div 30$ or sight of 2.4	[area of triangle] must be 72 or 144 or come from $\frac{1}{2} (16 \times 9)$ or 16×9
		A1	cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
24	No (supported)	P1	calculates area of trapezium eg $\frac{1}{2} \times 7 \times (10+16)$ (= 91)	[area of trapezium] needs to be clearly stated if the process of finding the area is not clear
		P1	for division by coverage eg $\div 2$ or [area of trapezium] $\div 2$ (= 45.5) or process to find coverage per tin eg 5×2 (= 10)	
		P1	for division to find the number of tins eg $\div 5$ or "45.5" $\div 5$ (= 9.1) or [area of trapezium] $\div$ "10" (= 9.1)	
		P1	(dep on at least P2) for a process to multiply a whole number of tins (rounded up) by 16.99	
		C1	for 'No' supported by correct figures eg 169.9 or 90 and 91	
25	7	P1	process to use gradient eg $y=3x+c$ or $c = -6$ or $\frac{15-9}{d-5}$ or $(15-9) \div 3$ or (6, 12)	Condone use of a letter other than d , for d Must show processes to get as far as $d =$ Award P2 for an answer of (7, 15)
		P1	(dep) full process to rearrange equation formed to isolate d eg rearrangement of $15 = 3d - 6$ or $3 = \frac{15-9}{d-5}$ or for $5 + \frac{15-9}{3}$	
		A1	cao	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	6	P1 P1 A1	for listing the multiples of 3 and 5 to at least the number 15 or $3 \times 5 (= 15)$ for considering multiples of 15, eg 4 multiples of 15 identified or $100 \div 15 (=6.6..)$ or an answer of 7 cao	3, 6, 9, 12, 15 and 5, 10, 15 If in a list of multiples of 3 and 5, multiples of 15 must be clearly identified Sight of 6.6(...) or $6\frac{2}{3}$ oe or an answer of 7 gets 2 marks.
16	30:1	M1 A1	for stating $450 : 15$ oe or $450 \div 15 (=30)$ oe or $1 : 30$ cao	$90 : 3$ Ignore units throughout.
17 (a)	Full working seen	M1 M1 C1	for an initial step with the expressions eg doubling $2x + 1$ or $x + 2$ or halving $4x$ or for identifying CD as $x + 2$ or for identifying DE as $2x + 1$ for an expression for the total perimeter, eg $4x + 2 \times (2x + 1) + 2 \times (x + 2)$ for full simplification and equating to 18	May be seen in working or on diagram
(b)	1.2	M1 A1	for isolating terms in x can fit an equation stated in (a) provided in form $ax + b = c$ for 1.2 oe	$10x = 18 - 6$ Accept $\frac{12}{10}$ or $\frac{6}{5}$

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
23	89.5 and 90.5	B1	for 89.5 in the correct position	Accept 90.49 or 90.499(...)
		B1	for 90.5 in the correct position	
24 (a)	19	P1	for process to find area available at festival B, eg $700 \times 2000 (=1\ 400\ 000)$	Accept either number rounded eg 207 or 188
		P1	for finding the area available per person at one festival, eg $80\ 000 \div 425 (= 188.23..)$ or $[\text{area}] \div 6750 (= 207.40..)$	
		P1	for finding the area available per person at both festivals, eg $80\ 000 \div 425 (= 188.23..)$ and $[\text{area}] \div 6750 (= 207.40..)$	Accept both numbers rounded eg 207 and 188
		A1	answer in the range 18.7 to 19.5	
	(b) explanation	C1	for a valid statement relating to scale factor for area, Acceptable examples there are 10000 (cm ²) in 1 (m ²) because 1 m ² is the same as $100 \times 100 = 10000$ cm ² there are 2 side lengths that change from 1 m to 100 cm $300 \div 3$ is 100 should use 100 ² $300 \div 100 \div 100 = 0.03$ $3 \times 100 \times 100 = 30000$ Because it's area not length. Because it's in m ² not just metres He hasn't taken the squared sign into account Not acceptable examples there are 1000 cm in 1 m Callum is correct because $300 \div 3$ is 100 $3^2 = 9$ $300 \times 300 = 90000$ You have to square the number	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
16	-35	M1 A1	for a correct first step, eg shows $\frac{x}{7} + 9 - 9 = 4 - 9$ or $\frac{x}{7} = 4 - 9$ or $\frac{7x}{7} + 9 \times 7 = 4 \times 7$ or $x + 63 = 28$ cao	
17	No (supported)	M1 M1 C1	Working per week for 26.4×32 (= \$844.80) for "844.8" $\div 1.796$ (= £470.37...) or for 473.28×1.796 (= \$850....) for No and correct figures (850... and 844.8) or 470.37... Working per hour for $473.28 \div 32$ (= £14.79) for "14.79" $\times 1.796$ (= \$26.56....) or for $26.4 \div 1.796$ (= £14.699...) for No and correct figures (14.79... and 14.699..) or 26.56...	Throughout units and trailing 0s need not be given. Accept rounded or truncated figures throughout unless ambiguous. "No" may be expressed in words eg "Australia pay is less"
18	4.8	P1 P1 P1 A1	for finding missing length, eg $14 - 3.8 - 3.8$ (= 6.4) for method to find area of triangle, eg [missing length] $\times 6 \div 2$ (= 19.2) for method to find area of rectangle, eg [area of triangle] $\times 3.5$ (= 67.2) or writes an expression for the area of rectangle eg $14w$ or $14w \div 3.5$ for method to link both areas eg $14w = [\text{area of triangle}] \times 3.5$ or $[\text{area of triangle}] = 14w \div 3.5$ or $[\text{area of triangle}] \times 3.5 \div 14$ cao	Where [missing length] can be "6.4" or identified in working or on the diagram as the missing length [area of triangle] must be identified as the area of the triangle OR come from: [missing length] $\times 6 \div 2$ or [missing length] $\times 6$ or [decimal] $\times 6 \div 2$ Award 0 marks for a correct answer without correct supportive working.

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	Yes (supported)	P1	for a process to find the area of one shape, eg $10 \times 8 (= 80)$ or $10 \times 5 (= 50)$ or $8 \times 6 (= 48)$ or $(10 - 6) \times 5 (= 20)$ or $(10 - 6) \times (8 - 5) (= 12)$ or $6 \times (8 - 5) (= 18)$ or $5 \times 6 (= 30)$	Do not award this mark if they go on to multiply by a third length
		P1	for a complete process to find the total area, eg “80” – “12” (= 68) or “50” + “18” (= 68) or “48” + “20” (= 68)	
		P1	for a complete process to find the area covered by 3 tins eg $3 \times 2.5 \times 10 (= 75)$ or for a complete process to find the number of litres needed eg “68” $\div 10 (= 6.8)$ or [area] $\div 10$ or for a complete process to find the number of tins needed eg “68” $\div 10 \div 2.5 (= 2.72)$ or [area] $\div 10 \div 2.5$	
		A1	for ‘Yes’ supported by correct figures eg 68 (m ²) and 75 (m ²) or 6.8 (litres) and 7.5 (litres) or 68 (m ²) and 2.72 (tins needed)	
(b)	No effect (supported)	C1	ft from (a) for “has no effect” with reason Acceptable examples No effect, she will need less paint It won’t change, she will still have enough No, she will have more paint left over No, as this will cover 82.5m ² Not acceptable examples Petra will need less paint She will have more paint left over She won’t have enough paint She will need more paint	Ignore incorrect amount of paint left over if correct figures seen. Must have a decision in (a). Must include a decision eg yes / no / no effect. If figures included in the statement they must be correct for their [area] in (a).



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	0.38	B1	cao	
2	$\frac{3}{10}$	B1	or any equivalent fraction	3 : 10 or 0.3 or 30% get no marks
3	0.5	B1	cao	
4	−4	B1	cao	
5	5	B1	cao	
6	Explanation	C1	for a correct explanation. Acceptable examples he has labelled the radius incorrectly the diameter (label) should read radius the diameter goes from one side (of the circle) to the other the radius is labelled diameter Not acceptable examples a label is wrong there is nothing wrong with his labels the radius is wrong the centre is wrong, it should be the radius he has incorrectly labelled the diameter	Do not accept a statement that is ambiguous, where one aspect contradicts another, eg. “the radius goes from the centre whereas the diameter goes all round the circle”
7	Three correct factors	B2	for at least three from 1, 2, 4, 5, 10, 20	No incorrect factors No repeats (within the chosen 3) Ignore extra correct factors. Accept factor pairs, eg. 1×20 as two factors
		(B1)	for two correct factors from 1, 2, 4, 5, 10, 20 and no more than one incorrect factor)	



Paper: 1MA1/3F					
Question	Answer	Mark	Mark scheme	Additional guidance	
10	(a) Diameter drawn	B1	diameter drawn	Accept hand drawn, intention through centre and from edge to edge. Ruler not required but intention clear.	
	(b) Segment shaded	B1	segment drawn unambiguously	Line must go edge to edge (condone extending outside the circle). Freehand acceptable. Can also draw a diameter here (as semi-circle).	
11	(a)	2.5(0)	P1	for $13 \times 7.5(0)$ (=97.5(0)) or 5×20 (=100)	
			P1	for “100” – “97.5(0)”	
			A1	cao	
	(b)	96	M1	for $\frac{1}{5} \times 120$ (= 24) oe or $\frac{4}{5} \times 120$ oe	
		A1	cao		
12	6	P1	process to find the weight of small boxes eg 3×450 (=1350)	Cannot award this mark if 6 comes from a rounded value due to error in calculating	
		P1	complete process to find the number of large boxes, eg $(5850 - “1350”) \div 750$ or $5850 - “1350”$ (=4500) and 6×750 (=4500)		
		A1	cao		
13	43	M1	for identifying 74 and 31 as the key numbers	It is insufficient to identify these on the diagram (eg as 1, 4) –43 as an answer implies M1	
		A1	cao		

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
9	Shown	P1 P1 C1	for a start to process of finding the total cost, eg $5 \times 26 (= 130)$ or $4 \times 45 (= 180)$ or $8 \times 23.50 (= 188)$ or $26 + 45 + 23.50 (= 94.5(0))$ or for a start to process of finding money left after paying costs, eg $500 - 26 (= 474)$ or $500 - 45 (= 455)$ or $500 - 23.50 (= 476.5(0))$ or $500 - 5 \times 26 (= 370)$ or $500 - 4 \times 45 (= 320)$ or $500 - 8 \times 23.50 (= 312)$ for complete process, eg “130” + “180” + “188” (= 498) or $500 - “130” - “180” - “188” (= 2)$	
10 (a)	radius drawn	B1	for radius drawn	May be drawn freehand provided intention is clear
(b)	chord	B1	cao	
11	6	M1 A1	for start to method, eg $45 \times 8 (= 360)$ or (45 mins =) 0.75 oe (hours) cao	
12	3 of 23, 29, 31, 37	M1 A1	for two correct and not more than one incorrect, eg 23, 27, 29 for three correct and no incorrect	May be shown in working space. Ignore numbers less than 20 or greater than 40 Accept 4 correct and no incorrect



Paper: 1MA1/2F				
Question	Working	Answer	Mark	Notes
18 (a)		31.4	P1	for working with circumference formula, eg $\pi \times 80$ (=251.(...)) oe
			A1	for answer in the range 31.4 to 31.5 accept 10π
(b)		No (supported)	C1	Mean distance stays the same with reason, eg total distance remains unchanged or same number of points
19		$\frac{1}{11}$	P1	for starting the process, eg by writing down a correct ratio or using a given number of cubes for one relationship, eg 2B 1Y or B:Y = 2:1 or 4G 1B or G:B = 4:1 or 8G, 1Y or G:Y = 8:1 oe or yellow = 2, blue = 4, or states 2:1:8 oe in any order (can be algebraic)
			P1	for complete process to find possible number of each colour or equivalent ratio, eg 8G 2B 1Y or G:B:Y = 8:2:1 oe or yellow = 2, blue = 4, green = 16 oe (can be algebraic)
			A1	$\frac{1}{11}$ oe
20 (a)		(-2, 1) (-4, 1) (-2, 2) (-5, 2)	B1	Shape labelled A
(b)		(1, -4) (3, -4) (1, -5) (4, -5)	B1	Shape labelled B

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	45	P1	for $180 - 117 (=63)$ or states, or uses, exterior angle $+ x = 117$	Angles may be shown on the diagram. Any angle labelled correctly as 63 and not contradicted scores this mark
		P1	for process to find the exterior or the interior angle of the pentagon, eg $360 \div 5 (=72)$ or $180 - (360 \div 5) (=108)$ or $((5-2) \times 180) \div 5 (=108)$	Exterior = 108 or interior = 72 does not score the mark
		P1	for a complete process to find x, eg $180 - "72" - "63"$ or $"108" - "63"$ or $117 - "72"$	
		A1	cao	An answer of 45 with no supporting working scores 0
30	Result shown	M1	for finding the area of A or the area of B , eg $(\pi \times 15^2) \div 4 (=56.25\pi = 176.(7\dots))$ or $\pi \times 2.5^2 (=6.25\pi = 19.6(3\dots))$	May work without π or with an approximation of π Values may be rounded or truncated
		M1	for finding the area of A and the area of B , eg $(\pi \times 15^2) \div 4$ or $"6.25\pi" \times 9 (=56.25\pi = 176.(7\dots))$ or 177 AND $\pi \times 2.5^2$ or $"56.25\pi" \div 9 (=6.25\pi = 19.6(3\dots))$	
		C1	for conclusion eg, $\sqrt{56.25\pi \div 9 \div \pi} = 2.5$ oe or $\sqrt{\frac{6.25\pi \times 9 \times 4}{\pi}} = 15$ oe or $56.25\pi \div 9 = 19.6(3\dots)$ and $\pi \times 2.5^2 = 19.6(3\dots)$ oe or $6.25\pi \times 9 = 176.(7\dots)$ or 177 and $(\pi \times 15^2) \div 4 = 176.(7\dots)$ or 177 oe or for $((\pi \times 15^2) \div 4) \div (\pi \times 2.5^2) = 9$ oe	

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
26		Daisy is wrong	P1	for process to find area of any relevant circle ie $\pi \times 4^2 (=16\pi)$, $\pi \times 7^2 (=49\pi)$, $\pi \times 10^2 (=100\pi)$ or 7^2 and 4^2
		(supported)	P1	for completed method to find shaded area eg “ $\pi \times 7^2$ ” – “ $\pi \times 4^2$ ” (=33 π) or use of radii eg $7^2 - 4^2 (=33)$
			A1	for 2 comparable figures, eg 33 π and 100 π or 33 and 100 or 103 to 103.7 and 314 to 314.2 or 103 to 103.7 and 104.6 to 104.8
			C1	statement eg No because it should be $\frac{33}{100}$ and their accurate figures Allow use of $\pi = 3$ or better
27 (a)		365	M1	fx with x consistent within intervals eg 200×1 , 300×11 , 400×5 , 500×0 , 600×3 , if 200, 3300, 2000, 0, 1800 are seen without working then condone 1 error
			M1	(dep) $\Sigma fx \div \Sigma f$ eg “7300” $\div 20$
			A1	Cao
	(b)	Comment	C1	for comment about outliers affecting mean



Paper: IMA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	$x = 4.5, y = -1.5$	M1	correct process to eliminate one variable (condone one arithmetic error)	Fractions do not need to be in simplest form
		M1	(dep) for substituting found value in one of the equations OR correct process after starting again (condone one arithmetic error)	
		A1	for $x = 4.5, y = -1.5$ oe	
26	shown	C1	for method to find area of semicircle, eg $\pi \times 10^2 \div 2 (= 50\pi)$	Can award first 3 marks if a value for π is used Working out to find the area of the shaded region must be shown
		C1	for method to find area of quarter circle, for $\pi \times 20^2 \div 4 (= 100\pi)$	
		C1	for a complete method to find area shaded and area of square, eg $\pi \times 20^2 \div 4 - \pi \times 10^2 \div 2$ and 20×20	
		C1	fully correct working leading to $\frac{\pi}{8}$	
27	(a)	B2	for all probabilities correct (oe)	Accept any equivalent fraction, decimal form 0.16(6...) or 0.17 or percentage form 16(.6...) % or 17%
		(B1	for 2 or 3 correct)	
	(b)	M1	for $\frac{3}{10} \times \frac{5}{9}$ oe	
		A1	$\frac{15}{90}$ oe	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	35.3	P1	for starting the process to find length of third side of triangle, eg $9^2 - 6^2 (=45)$ or $6^2 + x^2 = 9^2$	[radius] is any value If an answer in the range 35.2 to 35.4 is given in the working space then incorrectly rounded, award full marks No working, answer only no marks
		P1	for $\sqrt{9^2 - 6^2}$ or $\sqrt{81 - 36}$ or $\sqrt{45}$ or $3\sqrt{5}$ ($= 6.7..$) or $r^2 = 45$	
		P1	for stating or using $\pi \times [\text{radius}]^2 \div 4$	
		A1	for answer in range 35.2 to 35.4	
28	24	M1	for a complete method eg $360 \div 15 (=24)$	If extra steps are shown do not award this mark.
		A1	cao	
29	2	B1	cao	

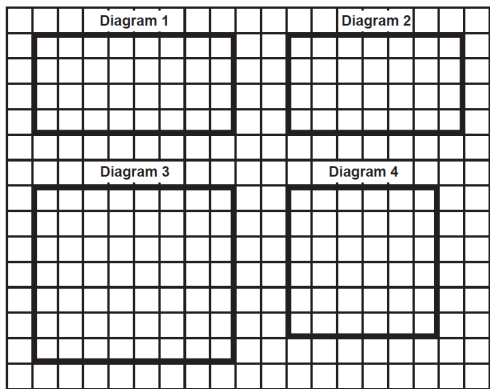


Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	12	P1	for a process to find the fifth term eg $3a + 5a (=8a)$	[8a] allow use of what is clearly indicated as the missing term $\frac{228}{19}$ or $\frac{228}{1+2+3+5+8}$ scores P1 P1 $\frac{228}{1+2+3+5+8}$ scores P0 P1
		P1	for setting up the equation eg $a + 2a + 3a + 5a + [8a] = 228$	
		A1	cao	
26	(a)	P1	for $1 - 0.05 - 0.15 (=0.8)$	Award this mark for any two probabilities that sum to 0.8
		A1	oe	
	(b)	M1	$18 \div 0.15$ oe or $6 + 18 + a + b$ where $a + b = 96$	
		A1	cao	
27	18.3	P1	for finding the area of the triangle eg $0.5 \times 8 \times 8 (=32)$	Accept rounded or truncated figures If the answer is given within the range but then rounded incorrectly award full marks.
		P1	for finding the area of the circle $\pi \times 8 \times 8 (=201.06..)$	
		P1	for finding the area of the sector eg $\frac{1}{4} \times \pi \times 8^2$ or "201.06.." $\div 4 (=50.26..)$	
		A1	for an answer in the range 18.2 to 18.3	
28	Sketch	M1	correct shape in one of the required quadrants or correct graph where the lines touch the axes	Lines do not need to extend to the ends of the axes if the intention is clear
		A1	fully correct shape	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
28	$y = -2x + 3$	M1 M1 A1	for a correct method to find the gradient of the line, eg $\frac{-1-3}{2-0}$ ($= -2$) or uses 3 as the intercept in $y = mx + c$, eg $y = mx + 3$ oe, $y = 1.5x + 3$ for $y = [-2]x + c$ or for (L=) $3 - 2x$ or uses their gradient and a point on the line, eg $y - -1 = [-2](x - 2)$ for $y = -2x + 3$ oe	 [−2] must be identifiable as their gradient Any correct equation gets 3 marks
29	15.6	P1 P1 P1 A1	for beginning process to use Pythagoras to find diameter or radius, eg $3.5^2 + 3.5^2 (= 24.5)$ or $1.75^2 + 1.75^2 (= 6.125)$ for complete process to find diameter or radius, eg $\sqrt{3.5^2 + 3.5^2}$ or $\sqrt{24.5}$ ($= 4.94..$) or $\sqrt{1.75^2 + 1.75^2}$ or $\sqrt{6.125}$ ($= 2.47...$) for process to find circumference of circle, eg $\pi \times "4.94..."$ ($= 15.55...$) or $2 \times \pi \times "2.47..."$ ($= 15.55...$) for answer in range 15 to 16	Award P1 for a correct Pythagorean statement eg $3.5^2 + 3.5^2 = \text{diameter}^2$ 4.94.. or 2.47.. truncated or rounded can imply P2 Accept use of 3.14 or better for π Accept use of truncated values for 4.94.. or 2.47.. If an answer is shown in the range in working and then incorrectly rounded award full marks. Award 0 marks for a correct answer without correct supportive working.

Question 19 exemplars



Question 19 exemplars

Diagram 1: M2

Diagram 2: M2

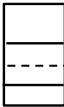
Diagram 3: M2 C1

Diagram 4: 0 marks

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
18 (a)		6 to 8	M1 M1 M1 A1	evidence of recall of area formula with correct radius e.g. $\pi \times 10^2$ calculation to find number of boxes, (area) $\div$ (coverage figure) (indep) evidence of estimation, eg π in range 3 to 3.2, or coverage figure of 40, 42, 45, 48 or 50 (dep on M3) answer in the range 6 to 8
(b)		underestimate	C1	e.g. (ft from (a)) underestimate: true area greater so could need more boxes. Must relate to estimation, not rounding of answer.
19 (a)		9.5	M1 A1	expands brackets or divides by 4 as a first step oe
(b)		-2, -1, 0, 1, 2	B2 (B1)	cao (for the numbers -2, -1, 0, 1 (accept with -3 and/or 2 only), or 4 correct with no incorrect)
20		1545	M1 A1	shows a method to find 3% eg $1500 \times 0.03 (=45)$ cao



Paper: 1MA1/2F					
Question	Answer	Mark	Mark scheme	Additional guidance	
18	Correct description	B2 (B1)	reflection and y axis or reflection and $x = 0$ reflection or y axis or $x = 0$	If more than 1 transformation given award B0	
19	4378.2(0)	P1 P1 P1 P1 A1	for a process to find the circumference of the circle or the semi circle, eg $\pi \times 50$ (= 157.0796327) or $0.5 \times \pi \times 50$ (= 78.53981634) for a complete process to find the perimeter of the field, eg $(0.5 \times \pi \times 50) + 50$ (= 128.5...) OR for working with one cost eg "157.07..." $\times 29.86$ (= 4690.11...) or "78.5..." $\times 29.86$ (= 2345.198...) or 50×29.86 (=1493) or 3×180 (= 540) For finding the costs of two different aspects eg 2 of "78.5..." $\times 29.86$ (= 2345.1...) or 50×29.86 (= 1493) or 3×180 (= 540) for a adding at least 2 costs eg "2345.1..." + "540" (=2885.1...) or "1493" + "540" (=2033) or "128.5..." $\times 29.86$ (= 3838.2...) for answer in the range 4377 – 4392	Figures may be truncated or rounded May use circle at this point, figures imply method One cost is 1 length or labour Figures may be truncated or rounded Two different aspects means arc and straight edge or arc and labour or straight edge and labour Condone circle and labour or circle and straight edge. Finding the cost of the perimeter is two costs added and so implies the previous P1 The circle is not allowed to be counted as one of the two costs for this mark	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	Elevation	B2 (B1)	fully correct side elevation 5 high and 3 wide for a rectangle 5 high and 3 wide or correct side elevation in the wrong orientation)	
20 (a)	$6n + 1$	B2 (B1)	oe for $6n + c$ where c is an integer $\neq 1$ or is missing)	
(b)	Shown with supportive working	M1 A1	for $8 - 6n = -58$ or $8 - 6 \times 11 (= -58)$ or starts to list terms of the sequence, with at least 3 correct or any other valid method. shown with working or an explanation, eg Yes and 11 or 2, -4, -10, -16, ..., -52, -58	2, -4, -10, -16, -22, -28, -34, -40, -46, -52 May stop at -58 or ring if sequence continues
21	186.15	P1 P1 P1 P1 A1	for correctly finding the area of at least three sections, eg 3 of $11 \times 7 (= 77)$, or $9 \times 7 (= 63)$, or $\frac{1}{2} \times 11 \times 9 (= 49.5)$, or $\frac{1}{4} \times \pi \times 7^2 (= 38.4845\dots)$ for a method to find the number of bags required for one area or a combination of areas eg "77" $\div 14 (= 5.5)$ or "227.9845.." $\div 14 (= 16.2846\dots)$ for method to work out the total area for all four sections eg "77" + "63" + "49.5" + "38.4845.." (= 227.9845...) or adding the exact number of bags per section for all four sections eg "5.5" + "4.5" + "3.53.." + "2.74.." (= 16.28...) for method to find the cost, eg integer number of bags $\times 10.95$ cao	Note a trapezium for the rectangle and triangle should be classed as two areas. Accept figures rounded or truncated to 1 dp or better throughout. This mark is dependent upon correct processes seen for all four sections. integer number of bags must come from area $\div 14$ rounded up

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	6	P1	for process to find a relevant area, eg $16 \times 14 \div 2 (= 112)$ or $\pi \times \left(\frac{7}{2}\right)^2 (= 38.4\dots)$	May be implied by $\frac{49}{4}\pi$
		P1	for process to find the shaded area, eg “112” – “38.4...” (= 73.51...) or “8.96” – “3.07...” (= 5.88...)	
		P1	for a process to find the number of bags required for a full or partial area, eg “73.51...” $\div$ 12.5 (= 5.88...) or “112” $\div$ 12.5 (= 8.96) or “38.4...” $\div$ 12.5 (= 3.07...) or [area] $\div$ 12.5 or uses 12.5 in a build up method to exceed [area], eg $12.5 \times 6 (= 75)$ oe	[area] can be any area but cannot be a length
		A1	cao	
(b)	Statement	C1	for a valid statement relating to effect on number of bags needed, eg Acceptable examples Will need more bags It will increase Will need an extra bag or will now need 7 bags He won't have enough There is no change (ft their [area] but must be supported by calculation) Not acceptable examples Will cover less area Needs to change the number of bags needed There is no change (unsupported or incorrect ft their [area]) He may need more bags Calculation using 11 with no supporting statement	

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

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
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	



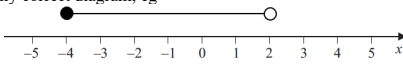
Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
11	600 cm ³	M1	for a complete method to find the volume eg $4 \times 10 \times 15$	If extra steps are shown do not award this mark
		A1	for 600	Ignore incorrect or absent units for this mark
		B1	(indep) cm ³	Ignore incorrect or absent numerical answer for this mark
12	L23, U23, L29, U29	B2 (B1)	for all 4 outcomes with no extras or repeats for at least 2 correct outcomes out of at most 8 different outcomes or for indicating 23 and 29 are the only prime numbers between 20 and 30)	Pairs must be unambiguous and in the correct order of letter number
13	19	P1	for $4275 \div 28 (= 152.678\ldots)$ or 153 or a build up to at least $150 \times 28 (=4200)$	Division may be seen as a build up method
		P1	for “152” $\times 28 (= 4256)$ or “153” $\times 28 (=4284)$ or (“152.678..” – 152) (=0.678..) or $4275 \div \text{“152”} - 28 (= 0.125)$ or $4275 - \text{“4200”} (=75)$ oe	Use of 150×28 or better for “4200”
		A1	cao	
14	Correct pie chart	M1	for a method to find at least one angle eg $\frac{50}{(50+45+25)} \times 360 (= 150)$ or $\frac{45}{(50+45+25)} \times 360 (= 135)$ or $\frac{25}{(50+45+25)} \times 360 (= 75)$ oe	
		A1	for at all 3 angles correctly calculated OR at least one correct and accurately drawn angle (from no more than 3 sectors)	Do not award for drawing if the intention is to show more than 3 sectors 3 angles correct in table is enough for this mark irrelevant of diagram
		A1	for a fully correct labelled pie chart	Labels as “City” from table not just angle size.

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	12	P1 P1 A1	for a process to find the area of cross section, eg $750 \div 25 (= 30)$ oe or $\frac{1}{2} \times 5 \times h$ oe for a correct equation in h , eg $750 \div 25 = \frac{1}{2} \times 5 \times h$ oe or $\frac{1}{2} \times 5 \times h \times 25 = 750$ oe or for a complete process to find h , eg. $\frac{750}{25} \times \frac{2}{5}$ oe or “30” $\times 2 \div 5$ cao SC B1 for answer of 6 if P0 scored	May use any letter for h or may use ?
26	Shown	M1 M1 M1 A1	for a correct expression for the area of one face of the cube, eg. x^2 or a correct expression for the surface area of the cube, eg $6 \times x^2$ for a correct expression for the surface area of the sphere, eg $4 \times \pi \times 3^2 (= 36\pi)$ for forming a suitable equation, eg $6 \times x^2 = 4 \times \pi \times 3^2$ or $6x^2 = “36\pi”$ for completing the method to $x = \sqrt{6\pi}$ or $k = 6$	No marks for $x = \sqrt{6\pi}$ without any working. $6 \times x^2 = 4 \times \pi \times 3^2$ $x^2 = 36\pi \div 6$ $x = \sqrt{6\pi}$
27	7.15 and 7.25	B1 B1	for 7.15 as the lower bound for 7.25 as the upper bound	Accept 7.249 oe or 7.2499... oe
28 (i)	−4	B1	cao	
(ii)	(0, 3)	B1	cao	



Paper: 1MA1/1F													
Question	Answer	Mark	Mark scheme	Additional guidance									
20	$\frac{39}{88}$	M1 M1 A1	for finding the gap (A) $1 - \frac{5}{8} (= \frac{3}{8} = \frac{33}{88})$ or (C) $1 - \frac{9}{11} (= \frac{2}{11} = \frac{16}{88})$ or $\frac{5}{8} + \frac{9}{11} (= \frac{55}{88} + \frac{72}{88} = \frac{127}{88})$ for $\frac{9}{11} - \frac{3}{8} (= \frac{72}{88} - \frac{33}{88})$ or $\frac{5}{8} - \frac{2}{11} (= \frac{55}{88} - \frac{16}{88})$ or $1 - \frac{3}{8} - \frac{2}{11} (= 1 - \frac{33}{88} - \frac{16}{88})$ oe or $\frac{5}{8} + \frac{9}{11} - 1 (= \frac{55}{88} + \frac{72}{88} - 1)$ oe										
21	<table border="1"><tr><td>1</td><td>79</td></tr><tr><td>2</td><td>55677789</td></tr><tr><td>3</td><td>377</td></tr><tr><td>4</td><td>57</td></tr></table> Key: eg 2 5 = 25 or 20 5 = 25	1	79	2	55677789	3	377	4	57	B2 (B1) B1	for a fully correct ordered diagram for a complete unordered diagram or for an ordered diagram with at most one error or omission) for correct key (units not required but must be correct if stated) eg 2 5 or 20 5 represents 25 (years)	Accept stem of 10, 20, 30, 40 Can be in reverse vertical order (with matching leaves) eg 4, 3, 2, 1 Errors can be omissions; one number in the wrong position is one error. Key must be consistent with the stem	
1	79												
2	55677789												
3	377												
4	57												
22	45π	P1 P1 A1	for (area of circle =) $\pi \times 3^2$ for (volume =) [area of circle] $\times 5$ cao	 [area of circle] $\times 5 = \pi \times 3^2 \times 5$ or $\pi \times 6^2 \times 5$ or $\pi \times r^2 \times 5$									



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
18	384	P1 P1 A1	for $\sqrt[3]{512} (= 8)$ or $512 \div 8 (= 64)$ for $8^{12} \times 6$ or $\sqrt[3]{512} \times \sqrt[3]{512} \times 6$ cao	A correct answer coming from an incorrect method, eg $512 \div 4 = 128$ and $128 \times 3 = 384$ will score no marks
19 (a)	-2	B1	cao	
(b)	Inequality shown	C2 (C1)	for a fully correct diagram, eg  for drawing a line from -4 to 2 or (indep) for an open circle at 2 or (indep) for a closed circle at -4	Condone arrow heads or line ending to denote the 'end' of the line
20 (a)	2×5^3	M1 A1	for a complete method to find prime factors; could be shown on a complete factor tree with no more than one arithmetic error or by division by prime factors with no more than one error or for 2, 5, 5, 5 accept $2 \times 5 \times 5 \times 5$ oe	Condone the inclusion of 1s for this mark

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
13		343	P1 P1 P1 A1	for finding area of one face eg $294 \div 6 (= 49)$ for $\sqrt[3]{49^3} (= 7)$ for “49” $\times$ “7” or for “7” $\times$ “7” $\times$ “7” or oe cao
14		$\frac{5}{7}$ supported	P1 P1 C1	for $\frac{7}{5} = 1.4$ or $\frac{5}{7} = 0.7..$ or compares $\frac{1}{7}$ to $\frac{1}{5}$ or compare $\frac{5}{7}$ to 1 eg $1 - \frac{5}{7} (= \frac{2}{7})$ or compare $\frac{7}{5}$ to 1 eg $\frac{7}{5} = 1\frac{2}{5}$ or eg $\frac{49}{35}$ or $\frac{14}{35}$ or $\frac{25}{35}$ or oe for $\frac{7}{5} = 1.4$ and $\frac{5}{7} = 0.7..$ or compares $\frac{5}{7}$ to 1 eg $1 - \frac{5}{7} (= \frac{2}{7})$ and $\frac{7}{5}$ to 1 eg $\frac{7}{5} = 1\frac{2}{5}$ or two correct fractions with common denominator eg $\frac{49}{35}$ and $\frac{25}{35}$ for $\frac{5}{7}$ with supporting evidence
15		45	M1 A1	for a correct first step eg $\frac{9}{7+4+9} (= \frac{9}{20})$ or $\frac{100}{7+4+9} (= 5)$ or a full method for one of the other colours cao

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
22	(i)	65	M1 for working with proportion eg. $10 \div 30 \times 195 (= 65)$	Condone use of 200 for 195
		A1	cao	
	(ii)	statement	C1 for statement	
			Acceptable examples sample is representative (otherwise answer wrong) random sample (otherwise answer will be different) the 30 students are from the 195 (otherwise not accurate) 10 out of every 30 want to go to the Theme Park (otherwise answer will be different/wrong) there is no bias Not acceptable examples There would be more than 10 people who want to go to the Theme Park I rounded my answer	
23		8	P1 for working with volume of the cuboid, eg $30 \times 6 \times 19 (= 3420)$ OR for using $\frac{2}{3}$ with one dimension, eg. $30 \times 2 \div 3 (= 20)$	For P marks, ignore attempts at unit conversion
			P1 for “3420” $\times 2 \div 3 (= 2280)$ or “3420” $\div 3 (= 1140)$ OR “20” $\times 6 \times 19 (= 2280)$ OR “3420” $\div 275 (= 12.4..... = 12 \text{ cups})$	
			P1 (dep on P2) for “2280” $\div 275 (= 8.29..)$ or “1140” $\div 275 (= 4.14..)$ OR “12” $\times 2 \div 3$ OR for $275 \times 8 (= 2200)$ or $275 \times 9 (= 2475)$	
		A1	cao	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
14	864	B1	(indep) for process to convert to common units, eg $72 \times 10 (= 720)$ or $48 \times 10 (= 480)$ or $24 \times 10 (= 240)$ or $80 \div 10 (= 8)$ or $60 \div 10 (= 6)$ or $20 \div 10 (= 2)$ or or “96000” $\div 10^3 (= 96)$ or “82944” $\times 10^3 (= 82944000)$ or “0.864” $\times 10^3$	This mark can be awarded at any stage One correct conversion for their method is enough for the award of this mark
		P1	for using volume, eg $80 \times 60 \times 20 (= 96000)$ or $72 \times 48 \times 24 (= 82944)$ or for start of process to find number of packets using one dimension, eg “720” $\div 80 (= 9)$ or “480” $\div 60 (= 8)$ or “240” $\div 20 (= 12)$ or $48 \div “8” (= 6)$ or $72 \div “2” (= 36)$ or $24 \div “6” (= 4)$	Working may be seen on diagram. May be implied by correctly dividing the areas of corresponding faces
		P1	for full process with or without unit conversion, eg “82 944 000” $\div$ “96000” or “82944” $\div$ “96” or for “9” $\times$ “8” $\times$ “12” or “36” $\times$ “6” $\times$ “4” or “0.9” $\times$ “0.8” $\times$ “1.2” $(= 0.864)$	$9 \times 24 \times 4$ $12 \times 24 \times 3$ $12 \times 6 \times 12$ $36 \times 8 \times 3$ Note sight of digits 864 with decimal point and/or extra zeros scores P2
		A1	cao	



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	21	P1	for process to work correctly with initial ratio, eg $120 \div 4 \times 9 (= 270)$ or $90 + 120 + 60 (= 270)$	Can be implied by $90 : 120 : 60$ or by a second ratio that totals to 270
		P1	for process to find the value of 1 part in the new ratio, eg $"270" \div (2 + 5 + 3) (= 27)$	
		P1	for process to find both values for Errol, eg $("27" \times 3) (= 81)$ and $(120 \div 4 \times 2) (= 60)$	
		A1	cao	
27	327	M1	for $147 + 180$ or for $360 - (180 - 147)$, or for drawing a suitable diagram with 147 in the correct position and with the bearing of A from B indicated	Diagram can be a sketch
		A1	cao	
28	65	P1	for a full process to find the volume of the container, eg $\pi \times 15^2 \times 43 (= 30\,394.9\dots)$	These steps may be completed in a different order Accept 9675π Accept 9.675π or $\frac{387}{40}\pi$ [volume] can be any value they believe to be the volume that might have been incorrectly converted (or not at all) If an answer is given in the range in working and then rounded incorrectly award full marks.
		P1	for a process to convert between cm^3 and litres, eg $"30\,394.9\dots" \div 1000 (= 30.39\dots)$ or [volume] $\div 1000$ or $0.47 \times 1000 (= 470)$	
		P1	for a complete process to find the time taken, eg [volume] $\div 0.47$ or [volume] $\div "470"$	
		A1	answer in the range 64.6 to 65	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
27 (a)	0.4	B1	for 0.4 in correct position	Accept equivalent fractions or percentages for probabilities An answer of $\frac{0.33}{1}$ scores M1A0
	0.45, 0.55, 0.45	B1	for the correct probabilities for coin B in the correct place on the branches	
	0.33	M1	for a correct method, eg 0.6×0.55 only	
		A1	for 0.33 oe	
28	63	P1	for process to find volume, eg $\pi \times 100^2 \times 30$ (= $300\,000\pi$ or $942\,477(.796\dots)$)	(volume =) $942\,478$ implies P1
		P1	for process to find time in seconds, eg " $942\,477(.796\dots)$ " $\div$ 250 (= 1200π or $3769(.911\dots)$) or [volume] $\div$ 250 or for converting rate to minutes, eg 250×60 (= $15\,000$)	(time =) 3770 implies P2 [volume] $\neq$ $30, 60, 100, 250$
		P1	for complete process, eg " $3769(.911\dots)$ " $\div$ 60 (= 20π) or " $942\,477(.796\dots)$ " $\div$ " $15\,000$ " (= 20π)	
		A1	for answer in the range 62 to 63	A correct answer with no supportive working gets 0 marks If an answer is shown in the range in working and then incorrectly rounded award full marks

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
13	300	B1	(indep) for process to convert to common units, eg $3 \times 100 (= 300)$ or $1 \times 100 (= 100)$ or $1.5 \times 100 (= 150)$ or $20 \div 100 (= 0.2)$ or $10 \div 100 (= 0.1)$ or $75 \div 100 (= 0.75)$ or $"4.5" \times 100^3 (= 4500000)$ or $"15\ 000" \div 100^3 (= 0.015)$	This mark can be awarded at any stage One correct conversion for their process is enough for the award of this mark Working may be seen on the diagram
		P1	for finding the volume of either shape, eg $3 \times 1 \times 1.5 (= 4.5)$ or $[300] \times [100] \times [150] (= 4\ 500\ 000)$ or $20 \times 10 \times 75 (= 15\ 000)$ or $[0.2] \times [0.1] \times [0.75] (= 0.015)$ OR for start of the process to find the number of boxes using one dimension, eg $[300] \div 20 (= 15)$ or $[100] \div 10 (= 10)$ or $[150] \div 75 (= 2)$ or $3 \div [0.2] (= 15)$ or $1 \div [0.1] (= 10)$ or $1.5 \div [0.75] (= 2)$	$[300] = 3$ or 30 or $"300"$ or 3000 $[100] = 1$ or 10 or $"100"$ or 1000 $[150] = 1.5$ or 15 or $"150"$ or 1500 $[0.2] = 20$ or 2 or $"0.2"$ or 0.02 $[0.1] = 10$ or 1 or $"0.1"$ or 0.01 $[0.75] = 75$ or 7.5 or $"0.75"$ or 0.075
		P1	(dep on P1) for a complete process with or without unit conversion eg $"4\ 500\ 000" \div "15\ 000"$ or $"4.5" \div "0.015"$ or $"15" \times "10" \times "2"$	May be implied by correctly dividing the areas of the corresponding faces eg $\frac{[300] \times [100]}{20 \times 10}$
		A1	cao	Condone an incorrect attempt to convert volume before division



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 (2 cm by 12 cm by 2 cm) or a 2 by 3 by 1 cuboid (4 cm by 6 cm by 2 cm) 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: 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 $240 \div 35 (= 6.85 \dots \text{ie } 6 \text{ boxes})$, 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: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	280	P1	for starting to use Pythagoras to find the missing side eg $8.4^2 - 7.2^2 (= 18.72)$	Award P1 for a correct Pythagorean statement eg $x^2 + 7.2^2 = 8.4^2$
		P1	for a complete process to find the missing side eg $\sqrt{70.56 - 51.84}$ or $\sqrt{18.72} (= 4.32\dots)$	4.3 truncated or rounded can imply P2
		P1	(dep P1) for a process to find the area of the triangular face eg $[\text{length of base}] \times 7.2 \div 2 (= 15.57\dots)$ OR the volume of the cuboid eg $[\text{length of base}] \times 7.2 \times 18 (= 560.7\dots)$	Uses a figure they show as the length of the base of the right angled triangle but dep on P1 Allow 15.57.. truncated or rounded if unsupported
		P1	for a complete process to find the volume of the prism eg $"15.5\dots" \times 18$ or $"560.7\dots" \div 2$	
		A1	answer in the range 278 – 281	If an answer is given in the range 278 to 281 but then incorrectly given to 3 sig fig this mark can still be awarded.



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	No Supported	P1	for finding the area of a circle eg $\pi \times 0.8^2 (= 2.01\dots)$	Must be area of circle and not part of a volume, eg $\pi r^2 h$ May be seen as $2\pi r^2$
		P1	for finding the curved surface area eg $2\pi \times 0.8 \times 1.8 (= 9.047\dots)$	May be seen from $2\pi r h$ or from $\pi d h$
		P1	for use of the coverage information with an area eg "2.01..." $\div 5 (= 0.402\dots)$ or "4.02..." $\div 5 (= 0.804\dots)$ or "9.047..." $\div 5 (= 1.8095\dots)$ or "11.058" $\div 5 (= 2.2116\dots)$ or "13.069..." $\div 5 (= 2.6138\dots)$ OR for process to find total coverage for comparison eg $5 \times 7 (= 35)$	Accept numbers without working written to no less than 2dp Do not award if a volume has been used as part of the calculation. An independent mark for 5×7
		P1	(dep P1) for finding total surface area for 3 tanks eg [total surface area] $\times 3 (= 39.2\dots)$ OR for complete process to find the number of tins needed for total area of 3 tanks eg "13.069" $\dots \times 3 \div 5 (= 7.84\dots)$ OR for complete process to find coverage needed from each tin eg "13.069" $\dots \times 3 \div 7 (= 5.6\dots)$	[total surface area] must come from the addition of two attempts at area, but not from volume.
		C1	for conclusion "No" supported by accurate figures eg 8 tins or 7.84 (> 7) or 39.2 > 35 or 5.6 (> 5)	Clear statement that there is not enough paint supported by correct figures for comparison. NB: $2.6 \times 3 = 9$ tins needed is inaccurate 8 or 7.84 tins is sufficient without restating the 7, 5.6 m ² is sufficient without restating the 5 but 39.2 and 35 are needed for comparison. A statement of "No, 8 tins" alone gets 0 marks without supporting working.

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	No (supported)	P1	for finding the area of 3 or more faces of the cuboid and adding eg $(6 \times 8) + (8 \times 18) + (6 \times 18) \dots$ or “48” + “144” + “108” ... (= 300)	Could be an addition of <i>any</i> three faces eg $48 + 48 + 144$ etc. [surface area] must come from the addition of at least three attempts at area, but not from volume.
		P1	complete process to find surface area of cuboid, eg $6 \times 8 \times 2 + 6 \times 18 \times 2 + 8 \times 18 \times 2$ (= 600)	
		P1	for process to find side length of cube, eg [surface area] $\div 6$ and square rooting (= 10)	
		P1	(dep on previous P1) for processes to find volume of cube and volume of cuboid, eg [side length] ³ (= 1000) and $6 \times 8 \times 18$ (= 864)	
		A1	No with 1000 and 864 OR No with 600 and 544(.28...)	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	8	M1	for $11 + 5 (= 16)$	7 may be seen next to function machine or embedded within a calculation
		A1	cao	
		P1	for $28 \div 4 (= 7)$ or $10 - 3 (= 7)$ or $10 \times 0.7 (= 7)$	
14 (b)	126	A1	cao	Accept $+$ $-$ 3 or $\times \frac{7}{10}$
		P1	for a start of a method to find the height, eg $10 \times 4 (= 40)$ or $200 \div 10 (= 20)$ or $200 \div 4 (= 50)$	Do not award first M if multiplied by a third length (ie volume calculation)
			or for forming a correct equation $10 \times 4 \times h = 200$	
		A1	cao	
		M1	for a start to find the area of at least one face, eg $6 \times 3 (= 18)$ or $5 \times 3 (= 15)$ or $6 \times 5 (= 30)$	
		M1	for combining the area of at least three of the correct faces eg "18" + "15" + "30" (= 63) or $2 \times$ "18" + "15"	
		A1	cao	May be part of a larger addition including incorrect areas. Do not award if more than 6 areas added.

