

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number				Candidate Number					
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Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Time 1 hour 30 minutes Paper reference **1MA1/1H**

Mathematics

PAPER 1 (Non-Calculator)

Higher Tier

<p>You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.</p>	Total Marks
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Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**



Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Work out 3.67×4.2

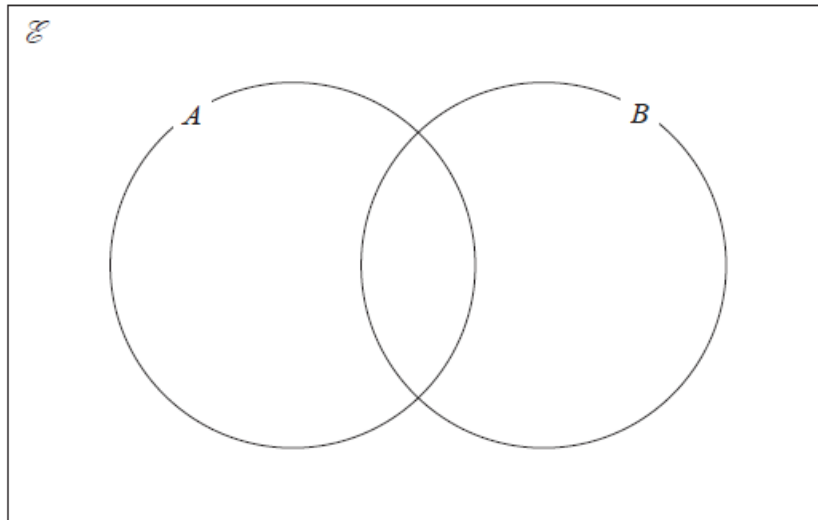
.....
(3)

(b) Work out $59.84 \div 1.6$

.....
(3)

(Total for Question 1 is 6 marks)

- 2 $\mathcal{E} = \{\text{even numbers less than 19}\}$
 $A = \{6, 12, 18\}$
 $B = \{2, 6, 14, 18\}$
Complete the Venn diagram for this information.



(Total for Question 2 is 3 marks)

- 3 Work out $4\frac{1}{5} - 2\frac{2}{3}$
Give your answer as a mixed number.

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

4 At the end of 2017
the value of Tamara's house was £220 000
the value of Rahim's house was £160 000

At the end of 2019
the value of Tamara's house had decreased by 20%
the value of Rahim's house had increased by 30%

At the end of 2019, whose house had the greater value?
You must show how you get your answer.

(Total for Question 4 is 4 marks)

5 Rosie, Matilda and Ibrahim collect stickers.

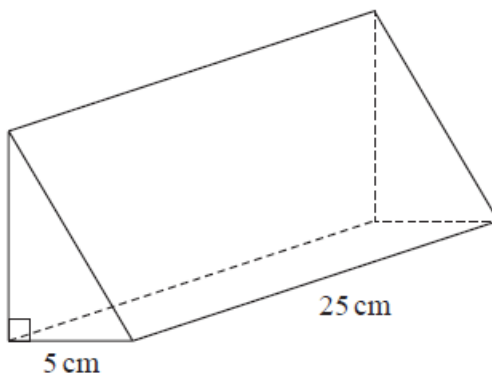
$$\begin{array}{ccccc} \text{number of stickers} & : & \text{number of stickers} & : & \text{number of stickers} \\ \text{Rosie has} & & \text{Matilda has} & & \text{Ibrahim has} \end{array} = 4 : 7 : 15$$

Ibrahim has 24 more stickers than Matilda.

Ibrahim has more stickers than Rosie.
How many more?

.....
(Total for Question 5 is 3 marks)

6 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

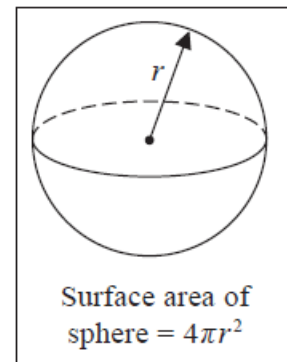
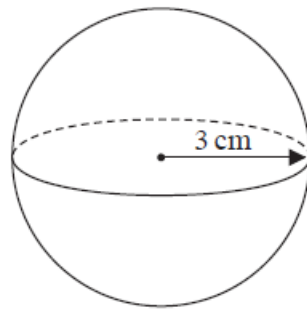
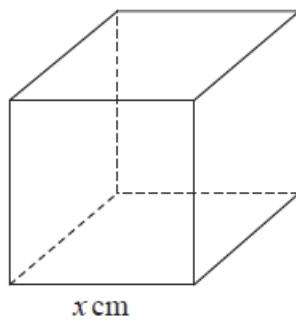
The prism has length 25 cm
The prism has volume 750 cm^3

Work out the height of the prism.

..... cm

(Total for Question 6 is 3 marks)

- 7 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 7 is 4 marks)

8 Solve $x^2 = 5x + 24$

.....
(Total for Question 8 is 3 marks)

9 (a) Write down the value of 7^0

.....
(1)

(b) Find the value of $3 \times 3^6 \times 3^{-6}$

.....
(1)

(c) Find the value of 2^{-4}

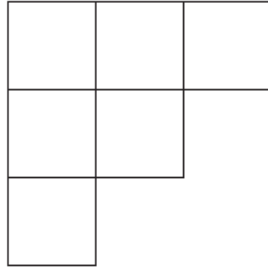
.....
(1)

(d) Find the value of $27^{\frac{1}{3}}$

.....
(1)

(Total for Question 9 is 4 marks)

10 The diagram shows a shape made from 6 identical squares.



The total area of the shape is 5406 cm^2

- (a) Find an estimate for the length of one side of each square.
Give your answer correct to the nearest whole number.

..... cm
(3)

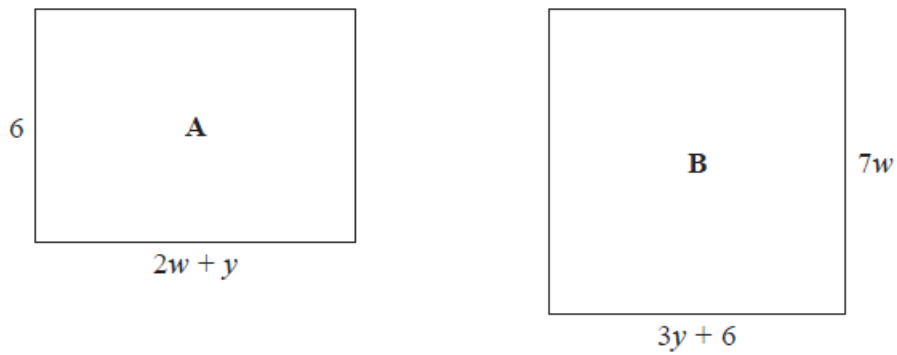
- (b) Is your answer to part (a) an underestimate or an overestimate?
You must give a reason for your answer.

.....
.....
.....

(1)

(Total for Question 10 is 4 marks)

11 The diagram shows two rectangles, **A** and **B**.



All measurements are in centimetres.

The area of rectangle **A** is equal to the area of rectangle **B**.

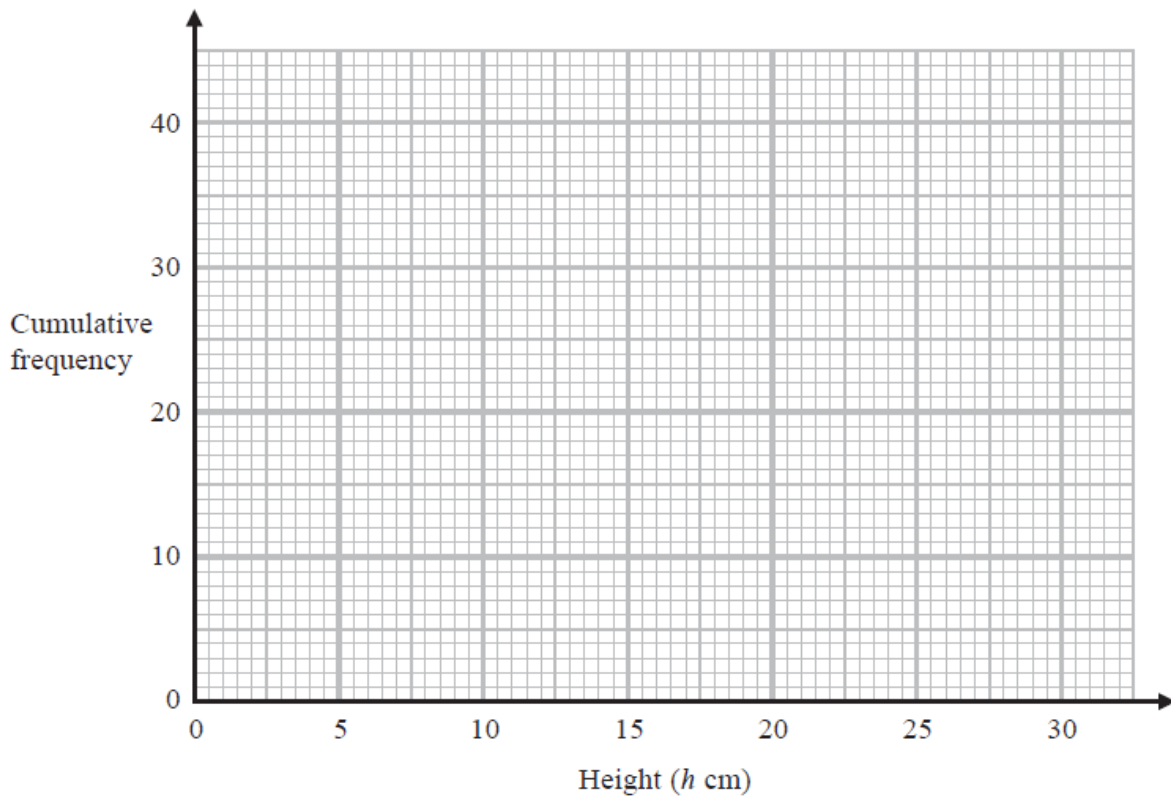
Find an expression for y in terms of w .

.....
(Total for Question 11 is 4 marks)

12 The cumulative frequency table gives information about the heights, in cm, of 40 plants.

Height (h cm)	Cumulative Frequency
$0 < h \leq 5$	4
$0 < h \leq 10$	11
$0 < h \leq 15$	24
$0 < h \leq 20$	34
$0 < h \leq 25$	38
$0 < h \leq 30$	40

(a) On the grid, draw a cumulative frequency graph for this information.



(2)

(b) Use the graph to find an estimate for the median height of the plants.

..... cm
(1)

(Total for Question 12 is 3 marks)

13 Ted is trying to change $0.\dot{4}\dot{3}$ to a fraction.

Here is the start of his method.

$$\begin{aligned}x &= 0.\dot{4}\dot{3} \\10x &= 4.\dot{3}\dot{4} \\10x - x &= 4.\dot{3}\dot{4} - 0.\dot{4}\dot{3}\end{aligned}$$

Evaluate Ted's method so far.

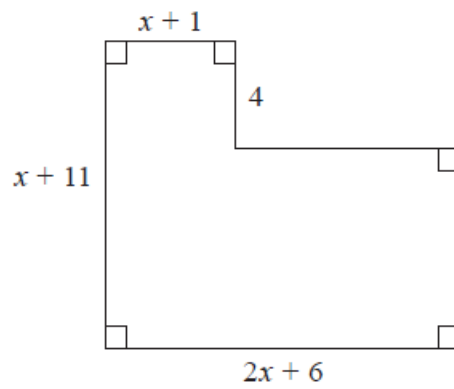
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.....

.....

(Total for Question 13 is 1 mark)

14 Here is a shape with all its measurements in centimetres.



The area of the shape is $A \text{ cm}^2$

Show that $A = 2x^2 + 24x + 46$

(Total for Question 14 is 3 marks)

15 Show that $\frac{4x+3}{2x} + \frac{3}{5}$ can be written in the form $\frac{ax+b}{cx}$ where a , b and c are integers.

(Total for Question 15 is 3 marks)

16 There are only 3 red counters and 5 yellow counters in a bag.

Jude takes at random 3 counters from the bag.

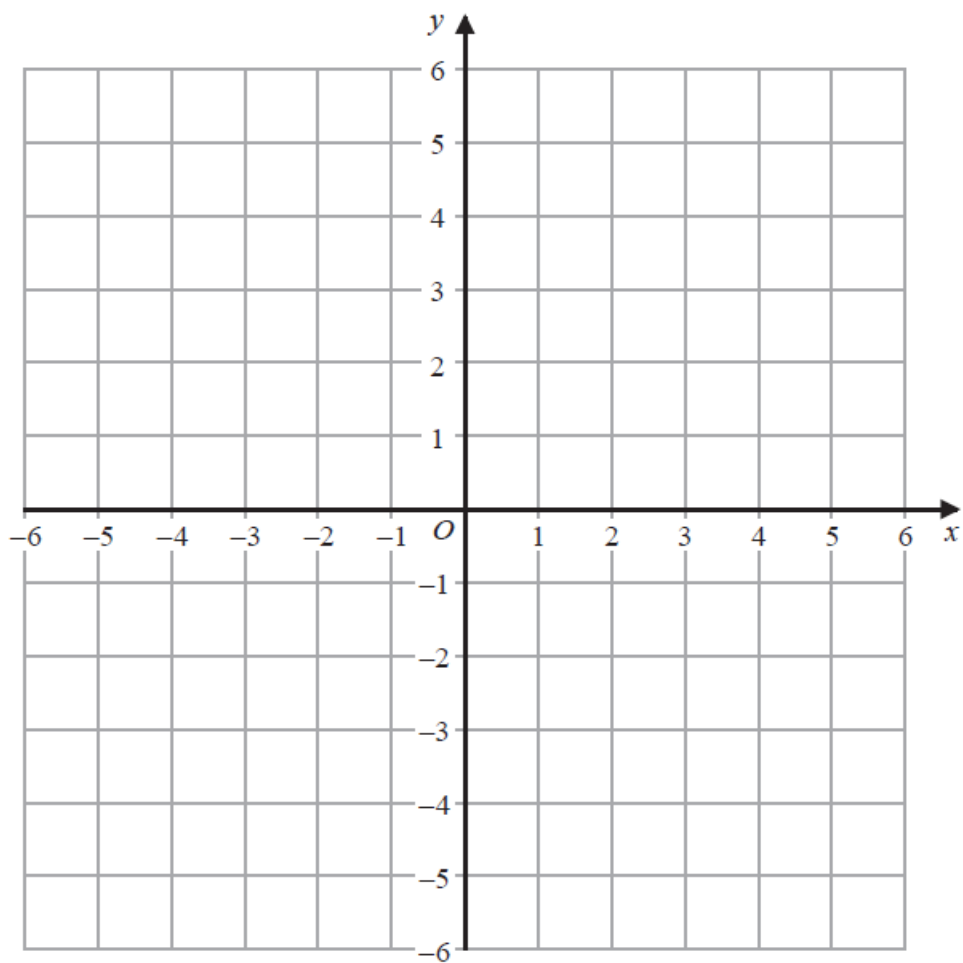
Work out the probability that he takes exactly one red counter.

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

17 On the grid show, by shading, the region that satisfies all of these inequalities.

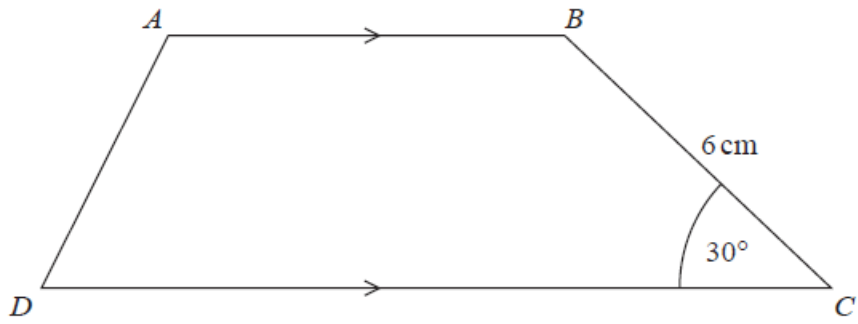
$$2y + 4 < x \quad x < 3 \quad y < 6 - 3x$$

Label the region **R**.



(Total for Question 17 is 3 marks)

18 Here is trapezium $ABCD$.



The area of the trapezium is 66 cm^2

the length of AB : the length of $CD = 2 : 3$

Find the length of AB .

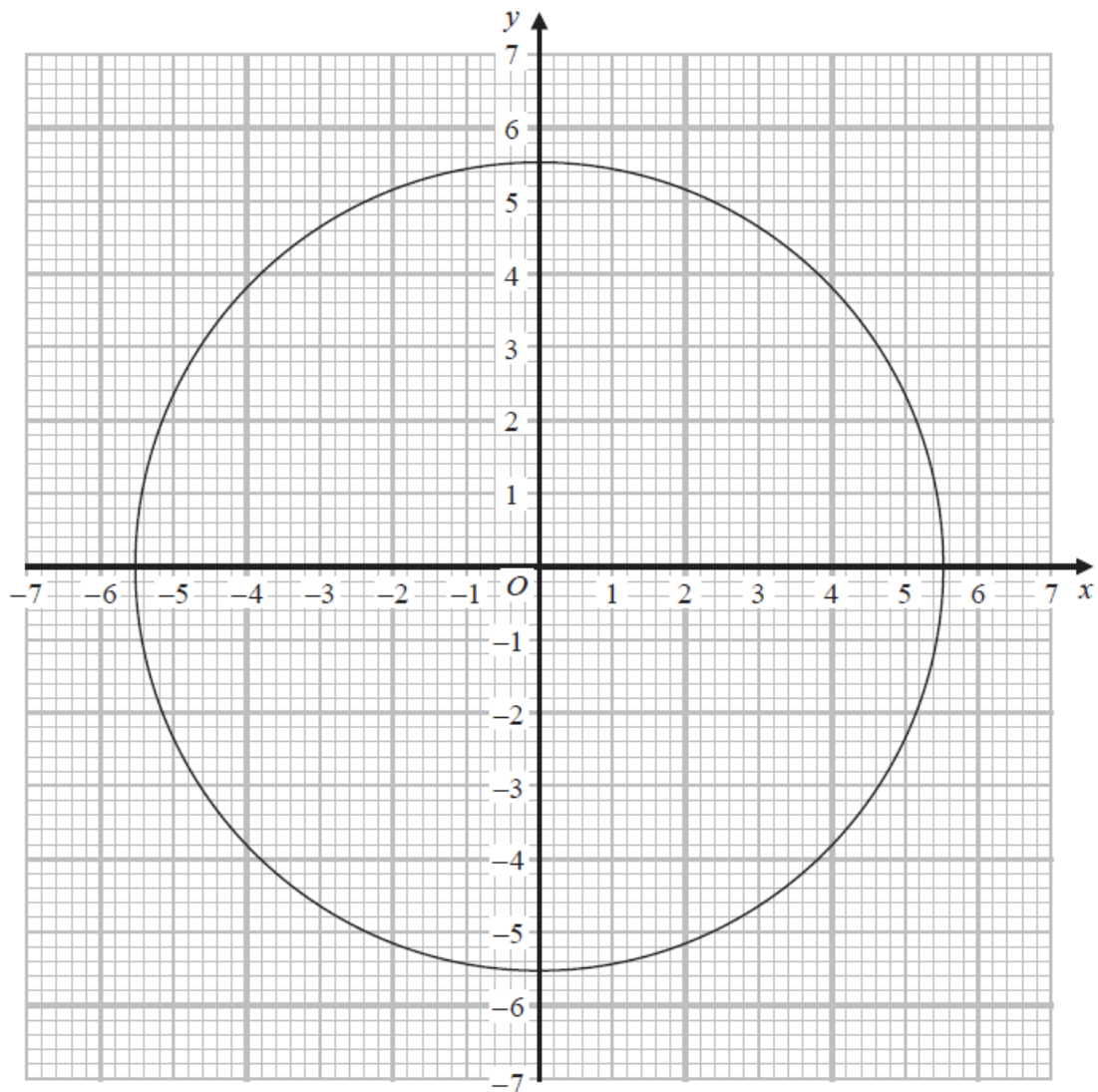
..... cm

(Total for Question 18 is 5 marks)

- 19 Show that $\frac{8+\sqrt{12}}{5+\sqrt{3}}$ can be written in the form $\frac{a+\sqrt{3}}{b}$, where a and b are integers.

(Total for Question 19 is 4 marks)

20 The diagram shows the graph of $x^2 + y^2 = 30.25$



Use the graph to find estimates for the solutions of the simultaneous equations

$$\begin{aligned}x^2 + y^2 &= 30.25 \\ y - 2x &= 1\end{aligned}$$

.....

(Total for Question 20 is 3 marks)

21 The functions f and g are such that

$$f(x) = 3x^2 + 1 \text{ for } x > 0 \quad \text{and} \quad g(x) = \frac{4}{x^2} \text{ for } x > 0$$

(a) Work out $gf(1)$

.....
(2)

The function h is such that $h = (fg)^{-1}$

(b) Find $h(x)$

.....
(4)

(Total for Question 21 is 6 marks)

- 22 Find the coordinates of the turning point on the curve with equation $y = 9 + 18x - 3x^2$
You must show all your working.

(..... ,)

(Total for Question 22 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS