Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE

Wednesday 4 June 2025

Morning (Time: 2 hours)

Paper reference **4MA1/2HR**

Mathematics A

PAPER 2HR
Higher Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

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.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
- Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- 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.
- Check your answers if you have time at the end.

Turn over ▶

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Pearson

International GCSE Mathematics

Formulae sheet – Higher Tier

Arithmetic series

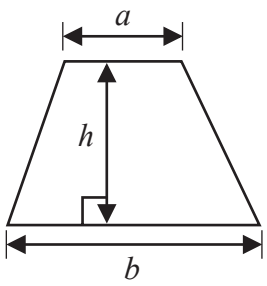
Sum to n terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

The quadratic equation

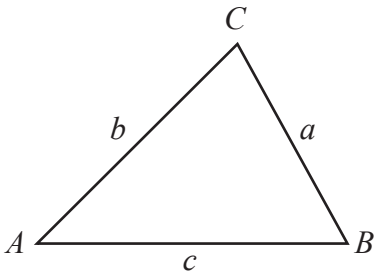
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Area of trapezium $= \frac{1}{2}(a+b)h$



Trigonometry



In any triangle ABC

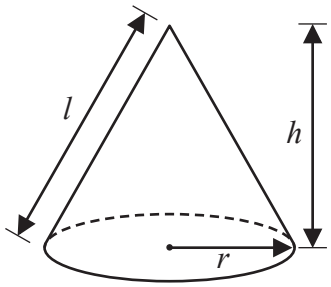
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

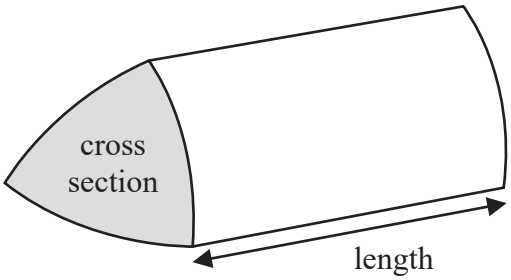
Area of triangle $= \frac{1}{2}ab\sin C$

Volume of cone $= \frac{1}{3}\pi r^2 h$

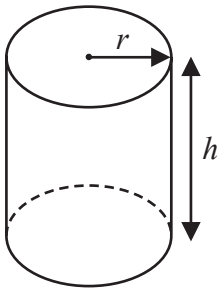
Curved surface area of cone $= \pi r l$



Volume of prism
= area of cross section × length

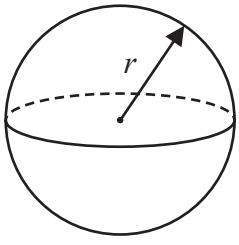


Volume of cylinder $= \pi r^2 h$
Curved surface area of cylinder $= 2\pi r h$



Volume of sphere $= \frac{4}{3}\pi r^3$

Surface area of sphere $= 4\pi r^2$



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Answer ALL TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Factorise fully $18c - 45cd$

.....

(2)

(b) Solve $\frac{5 - 2x}{6} = 3x - 4$

Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 1 is 5 marks)

2 Write 1400 as a product of powers of its prime factors.
Show your working clearly.

.....

(Total for Question 2 is 3 marks)

3 Solve the simultaneous equations

$$3x + 2y = 10$$
$$3x - 4y = 16$$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(Total for Question 3 is 3 marks)

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4 Joshua is going to cover a floor with tiles for a customer.
The area of the floor is 45 m^2

Joshua buys one box of tiles for each 1.5 m^2 of floor area.
Each box of tiles costs £64

Joshua also buys 5 bags of tile adhesive.
Each bag of tile adhesive costs £12

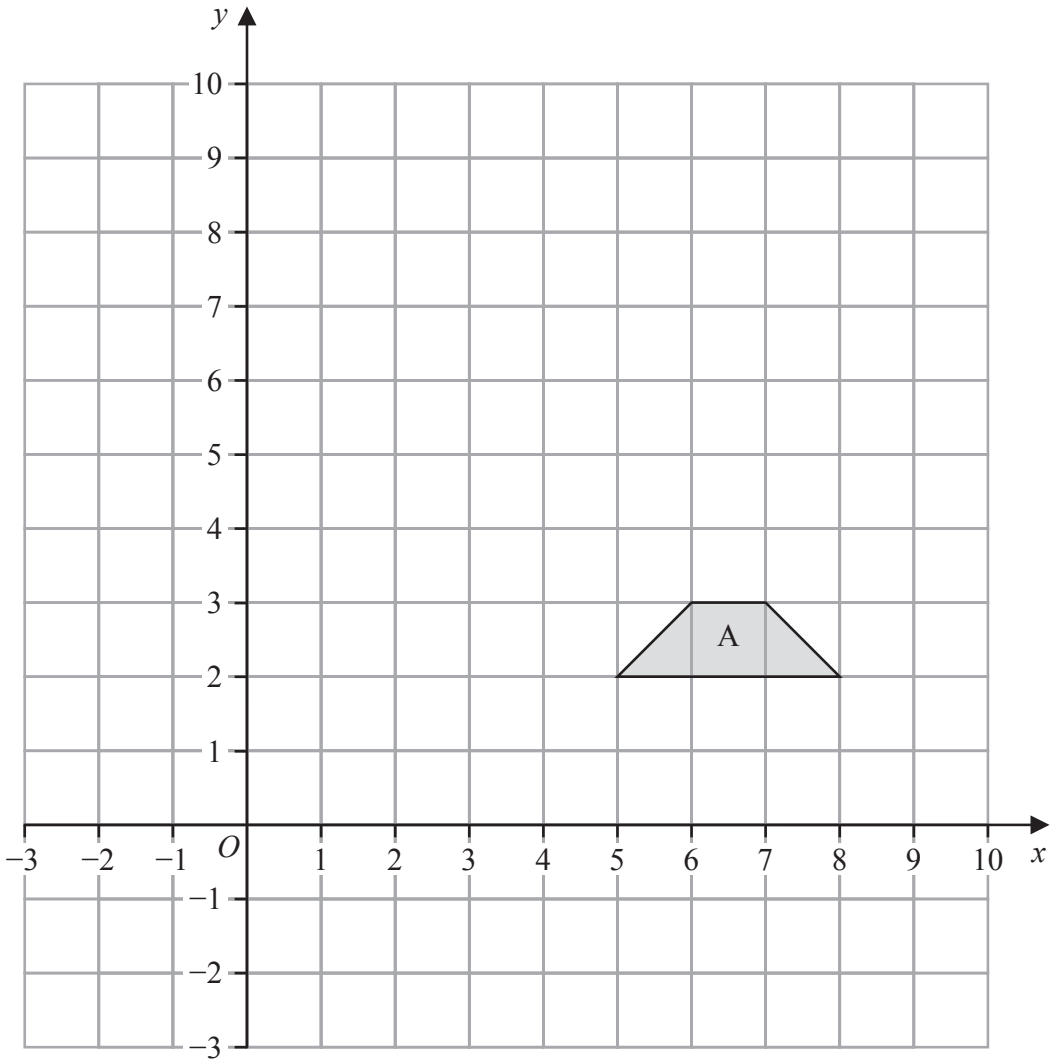
Joshua charges the customer £3000

Work out his percentage profit.
Give your answer correct to one decimal place.

..... %

(Total for Question 4 is 5 marks)

5



(a) On the grid above, reflect shape **A** in the line $y = x$

(2)

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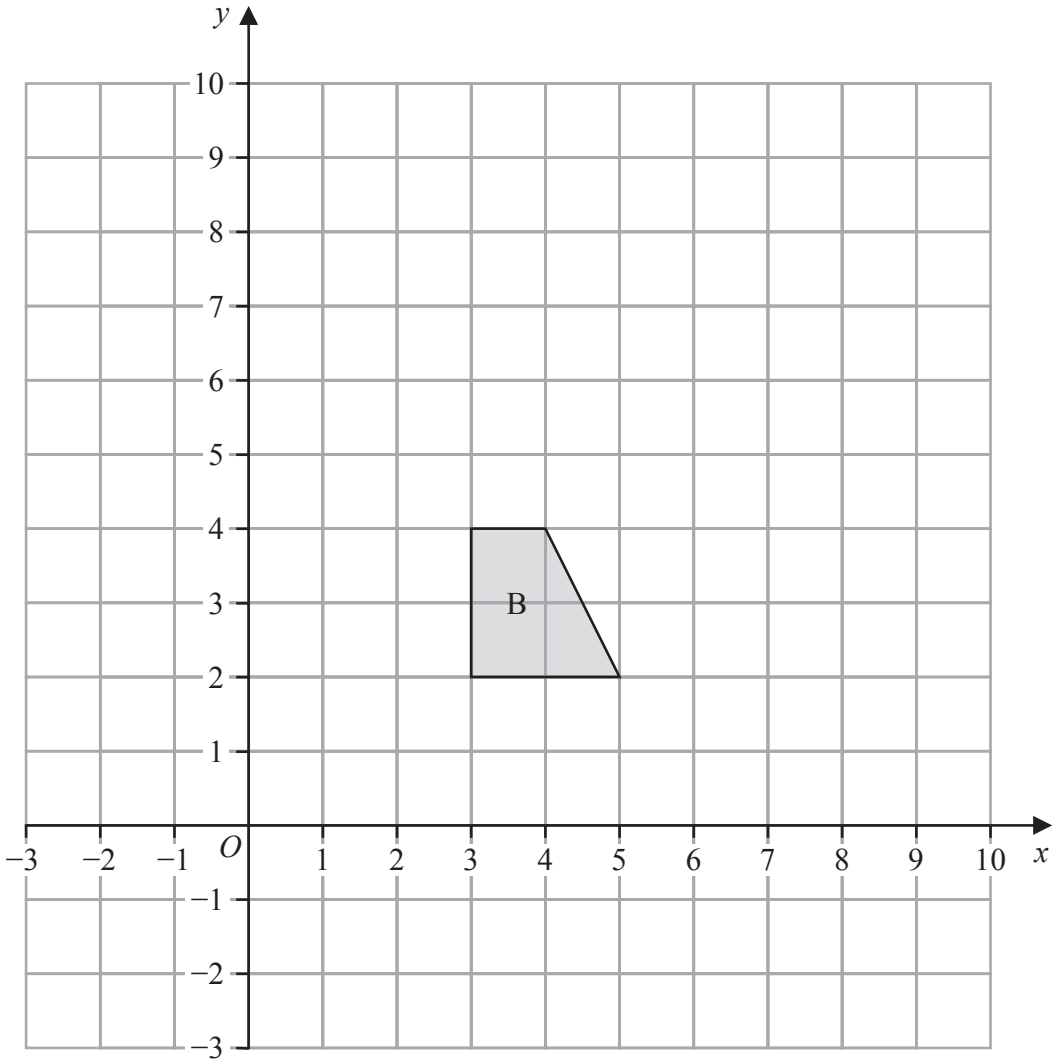

(b) On the grid above, enlarge shape **B** by scale factor 2 with centre (1, 1)

(2)

(Total for Question 5 is 4 marks)

6 (a) Write down the value of 5^0

.....

(1)

$$\frac{5^9 \times 5^{-3}}{5^{-2}} = 5^k$$

(b) Find the value of k

$k =$ .....

(2)

(c) Simplify fully $\left(2d^4e^5\right)^3$

.....

(2)

(Total for Question 6 is 5 marks)

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7 The mass of a silver coin is 48.3 g
The density of silver is 10.5 g/cm^3

Work out the volume of the silver coin.

..... cm^3

(Total for Question 7 is 2 marks)

8 The mean of 7 numbers is 60

The mean of 3 of the numbers is 46

Work out the mean of the other 4 numbers.

.....

(Total for Question 8 is 3 marks)

9 In a sale, normal prices are reduced by 15%

The sale price of a dishwasher is 612 Swiss francs.

Work out the normal price of the dishwasher.

..... Swiss francs

(Total for Question 9 is 3 marks)

10 A straight line, **L**, is parallel to the line with equation $y = 2 - 5x$
The line **L** passes through the point (0, 6)

Find an equation of the line **L**

.....

(Total for Question 10 is 2 marks)

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11 The diagram shows two triangles, *ADE* and *CDB*

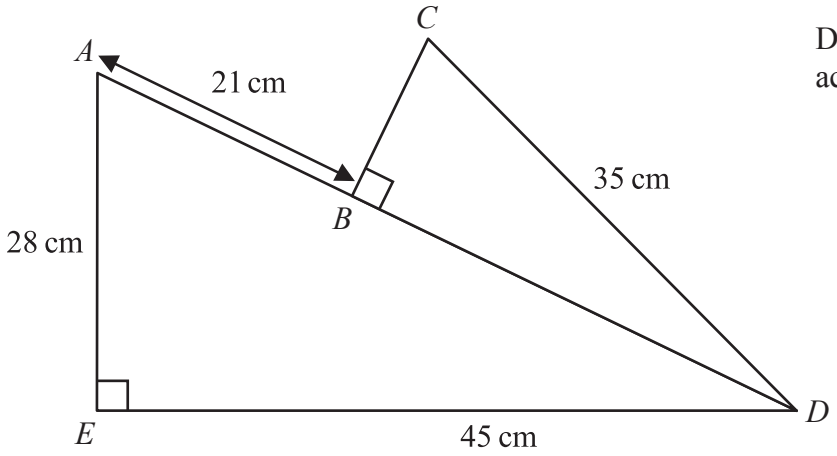

Diagram **NOT** accurately drawn

ABD is a straight line.

$AE = 28\,\text{cm}$ $ED = 45\,\text{cm}$ $AB = 21\,\text{cm}$ $CD = 35\,\text{cm}$

angle AED = angle $CBD = 90°$

Work out the area of triangle *CDB*
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 11 is 5 marks)

12 Osman buys a car for \$16 000

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

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

Work out the value of x

.....

(Total for Question 12 is 3 marks)

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13 (a) Factorise $4x^2 - 25y^2$

.....

(2)

(b) Show that $4x(x + 3)(2x - 5)$ can be written in the form $ax^3 + bx^2 + cx$ where a, b and c are integers to be found.

(3)

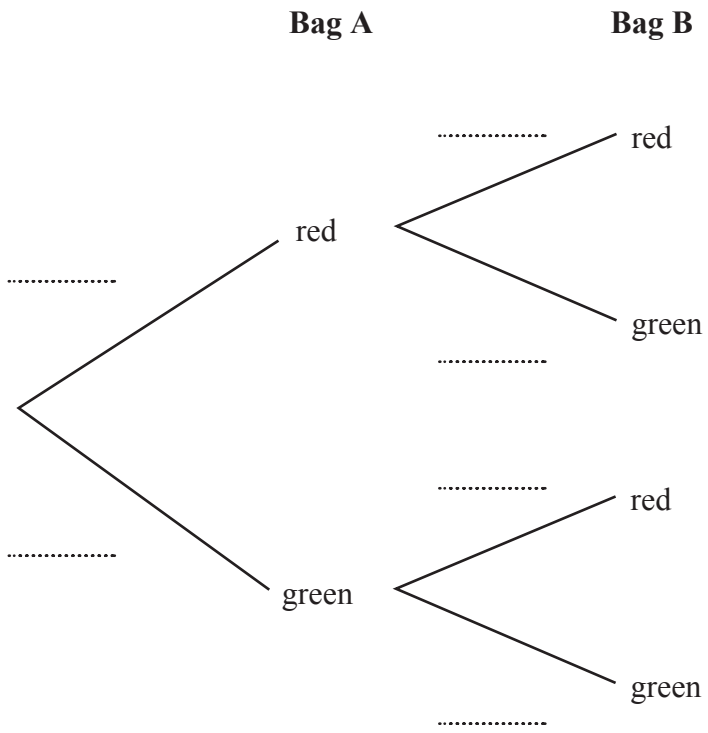
(Total for Question 13 is 5 marks)

14 Sara has two bags, **A** and **B**

In bag **A**, there are only 5 red beads and 4 green beads.
In bag **B**, there are only 7 red beads and 3 green beads.

Sara takes at random a bead from bag **A**
She then takes at random a bead from bag **B**

(a) Use this information to complete the probability tree diagram.



(2)

(b) Work out the probability that Sara takes two red beads.

.....

(2)

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Sara puts the beads back into their original bags.

Sara also has a box of beads.
In the box, there are only red beads and green beads.

When a bead is taken at random from the box, the probability that it is

a green bead is $\frac{2}{11}$

Sara takes at random a bead from bag **A**
She then takes at random a bead from bag **B**
She then takes at random a bead from the box.

(c) Work out the probability that Sara takes more red beads than green beads.

.....

(3)

(Total for Question 14 is 7 marks)

15 A, B and C are points on a circle, centre O

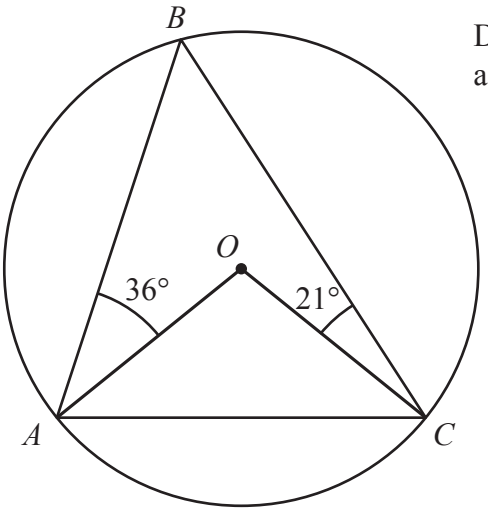

Diagram **NOT** accurately drawn

Angle $BAO = 36°$
Angle $BCO = 21°$

Work out the size of angle ACO

.....°

(Total for Question 15 is 3 marks)

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16 Show that $\frac{4}{3\sqrt{5}+7}$ can be written in the form $a-\sqrt{b}$ where a and b are integers.

Show each stage of your working.

(Total for Question 16 is 3 marks)

17 Make k the subject of $p=\frac{8k^2+5}{7-3k^2}$

.....

(Total for Question 17 is 4 marks)

18 OAB is a triangle.

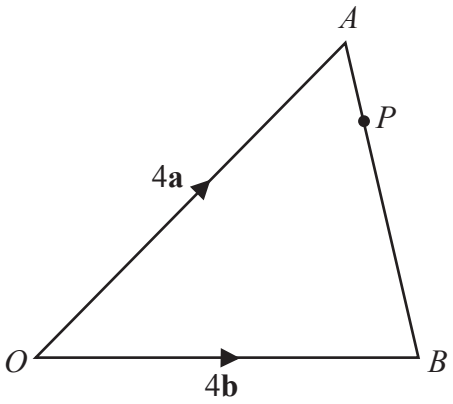

Diagram **NOT** accurately drawn

$\overrightarrow{OA} = 4\mathbf{a}$

$\overrightarrow{OB} = 4\mathbf{b}$

P is the point on AB such that $AP : PB = 1 : 3$

(a) Write down $\overrightarrow{AB}$ in terms of **a** and **b**

.....

(1)

(b) Express $\overrightarrow{OP}$ in terms of **a** and **b**
Give your answer in its simplest form.

.....

(2)

(Total for Question 18 is 3 marks)

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19 The functions f and g are such that

$$f(x) = 3x - 4 \text{ where } x > 2$$

$$g(x) = \frac{x}{2x + 1}$$

(a) State the value of x that cannot be included in any domain of g

.....

(1)

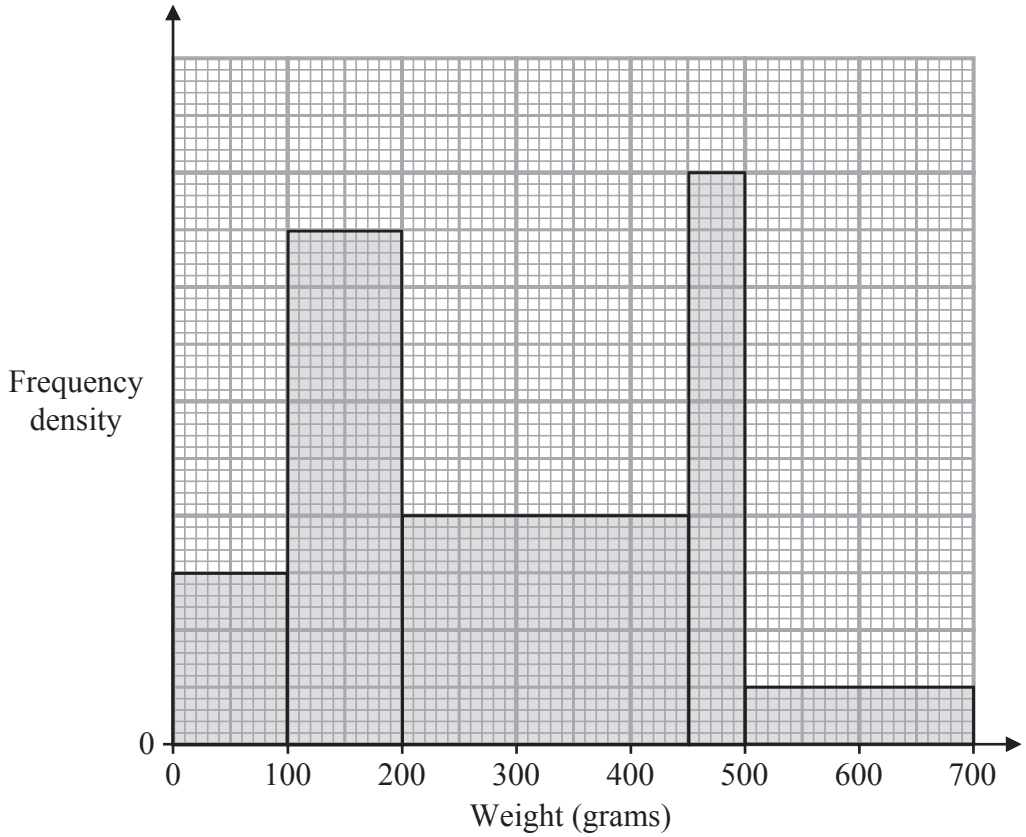
(b) Find $gf(x)$
Give your answer in its simplest form.

$gf(x) =$ .....

(2)

(Total for Question 19 is 3 marks)

20 The histogram gives some information about the weights, in grams, of some books.



75 books weigh less than 100 grams.

A book is chosen at random.

Find an estimate for the probability that this book weighs between 400 grams and 600 grams.

.....

(Total for Question 20 is 4 marks)

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21 Solve the inequality $2x^2 - 7x - 15 > 0$

Show clear algebraic working.

.....

(Total for Question 21 is 3 marks)

22 The diagram shows a solid cuboid.

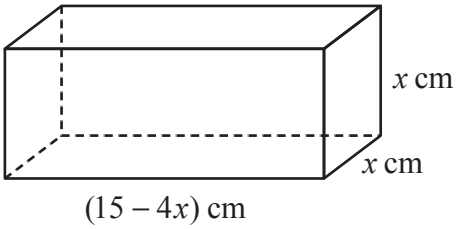

Diagram **NOT** accurately drawn

The volume of the cuboid is V cm^3

Find the maximum value of V

.....

(Total for Question 22 is 5 marks)

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23 The diagram shows a triangular prism, *ABCDEF*, with a horizontal rectangular base *ABCD*

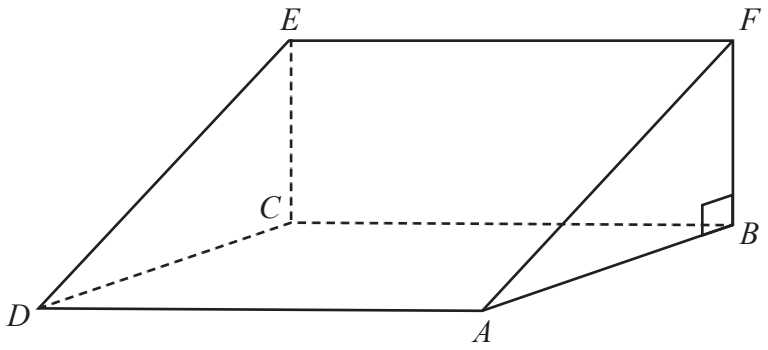

Diagram **NOT** accurately drawn

M is the midpoint of the line *AC*

$AC = 40\,\text{cm}$ angle $CAE = 35°$ angle $ABF = 90°$

Work out the size of angle *CME*
Give your answer correct to 3 significant figures.

.....°

(Total for Question 23 is 3 marks)

24 PQ is a straight line drawn on a square grid, with a scale of 1 cm for 1 unit on each axis.

P has coordinates $(-5,\ a)$ and Q has coordinates $(7,\ 3a)$ where $a > 0$

The length of PQ is $4\sqrt{10}$ cm

Find an equation of the perpendicular bisector of PQ
Give your answer in the form $y = mx + c$ where m and c are integers.

.....

(Total for Question 24 is 6 marks)

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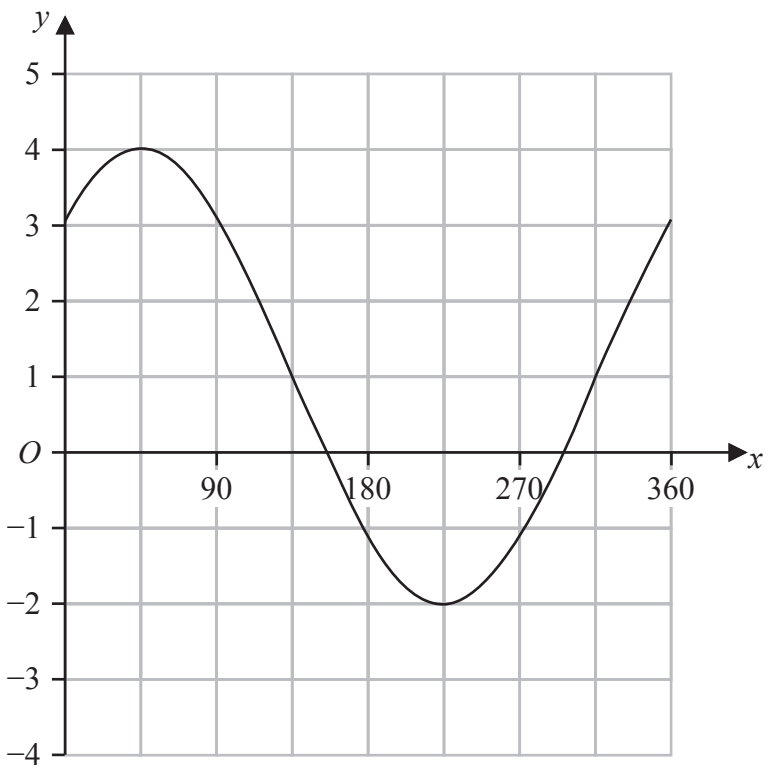
25 The graph of $y = a\sin(x + b)^\circ + c$ for $0 \leqslant x \leqslant 360$ is drawn on the grid below.



Find a suitable value for a, for b and for c

$a =$ .....

$b =$ .....

$c =$ .....

(Total for Question 25 is 3 marks)

Turn over for Question 26

26 The diagram shows a solid hemisphere, H

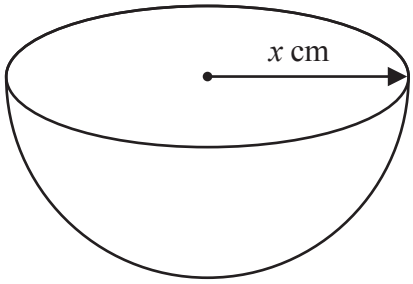


Diagram **NOT** accurately drawn

The radius of H is x cm
The volume of H is 6174π cm^3

A bowl is made by removing a solid hemisphere from H such that the uniform thickness of the bowl is 2 cm

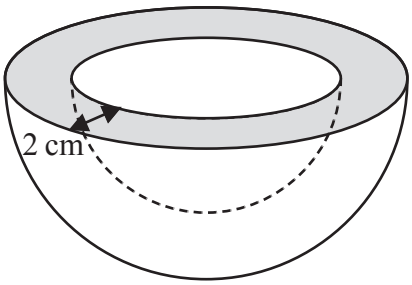


Diagram **NOT** accurately drawn

Work out the **total** surface area of the bowl.
Give your answer in terms of π

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..... cm^2

(Total for Question 26 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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