Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE

Time 2 hours

Paper reference **4MA1/1FR**

Mathematics A

PAPER 1FR

Foundation 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 ▶

P72436A

J:1/1/1/1/

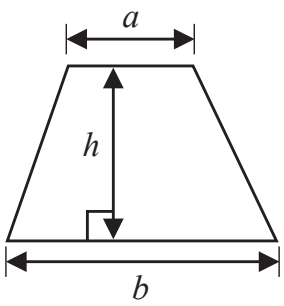
P 7 2 4 3 6 A 0 1 2 4

Pearson

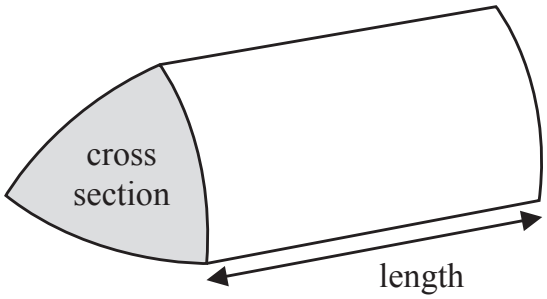
International GCSE Mathematics

Formulae sheet – Foundation Tier

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

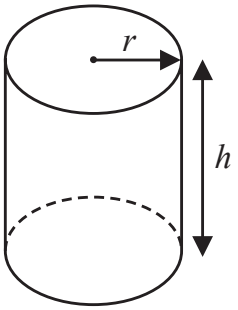


Volume of prism = area of cross section × length



Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$



Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is a list of numbers.

2 8 14 15 16 18 20

From this list, write down

(a) the odd number

15 (1)

.....

(1)

(b) the multiple of 6

18 (1)

.....

(1)

(c) the square number

16 (1)

.....

(1)

(d) the prime number

2 (1)

.....

(1)

(e) two numbers with a sum of 26

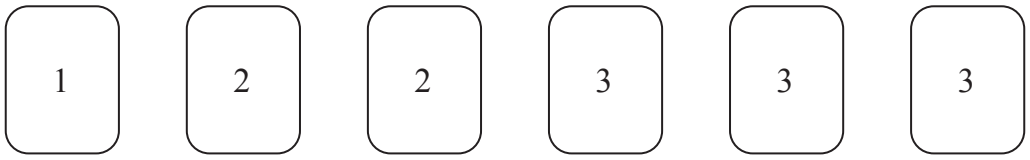
8 and 18 (1)

.....

(1)

(Total for Question 1 is 5 marks)

2 Here are 6 counters.
Each counter has a number on it.



Finn takes at random one of these counters.

(i) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with the number 2 on it.

impossible	unlikely	evens	likely	certain
	✓ (1)			

(ii) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with the number 3 on it.

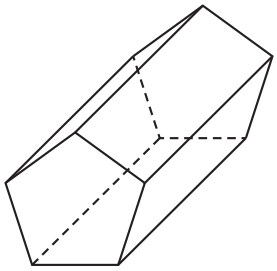
impossible	unlikely	evens	likely	certain
		✓ (1)		

(iii) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with a number greater than 4 on it.

impossible	unlikely	evens	likely	certain
✓ (1)				

(Total for Question 2 is 3 marks)

3 (a) Write down the mathematical name of this 3-D shape.



Prism (1)

.....

(1)

(b) (i) How many faces does this shape have?

7 (1)

.....

(1)

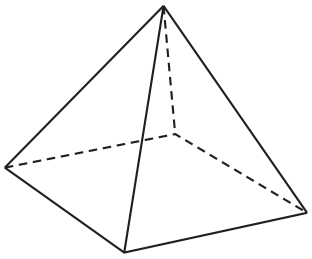
(ii) How many vertices does this shape have?

10 (1)

.....

(1)

Here is a different 3-D shape.



Marie makes a model of the shape.
She uses a length of wire to make each edge of the model.
Each edge of the model is 5 cm long.

Marie has 70 cm of wire.

(c) What length of wire does she have left after making the model?

70 - (8 x 5) (1)

= 70 - 40

= 30 (1)

30

..... cm

(2)

(Total for Question 3 is 5 marks)

4 (a) Simplify $10y - y$

9y (1)

(1)

(b) Simplify $3p \times 4p$

$12p^2$ (1)

(1)

(c) Solve $7x = 42$

$x = \frac{42}{7} = 6$

$x =$ 6 (1)

(1)

(d) Solve $n + 6 = 5$

$n = 5 - 6$

$= -1$

$n =$ -1 (1)

(1)

(e) Simplify $8c + 5d - 2c - 3d$

$8c - 2c + 5d - 3d$

$6c + 2d$

$6c + 2d$ (2)

(2)

(Total for Question 4 is 6 marks)

5 Zoya buys a book and some pencils.

The book costs £6.90
Each pencil costs £0.55

Zoya has a total of £15 to spend on the book and the pencils.
She buys as many pencils as she can.

Work out how many pencils she buys.

15 - 6.90 = 8.10 (1)

8.10 ÷ 0.55 = 14.727...
(1)
≈ 14 (1)

14

(Total for Question 5 is 3 marks)

6 (a) Write down all the factors of 10

1, 2, 5, 10 (1)

(1)

(b) Find the lowest common multiple (LCM) of 18 and 60

multiples :

18 : 18, 36, 54, 72, 90, 108, 126, 144, 162, (180)

60 : 60, 120, (180) (1)

180 (1)

(2)

(Total for Question 6 is 3 marks)

7 (a) Write these decimals in order of size.
Start with the smallest decimal.

0.5 0.54 0.45 0.504 0.405

0.405, 0.45, 0.5, 0.504, 0.54 (1)

(1)

(b) Write 0.08 as a percentage.

8 (1) %

(1)

(c) Write $\frac{31}{9}$ as a mixed number.

$9\overline{)31}$ (3) -27 (3) 4

$3\frac{4}{9}$

$3\frac{4}{9}$ (1)

(1)

(d) Find the number that is exactly halfway between $\frac{7}{25}$ and 0.88

$\frac{7}{25} = 0.28$

$\frac{0.28 + 0.88}{2} = 0.58$ (1) (1)

0.58

(2)

(Total for Question 7 is 5 marks)

8 The two-way table shows some information about the desserts chosen at lunch yesterday by the 80 students from Year 5 and Year 6.
Each student chose one dessert from apple pie or fruit or ice cream.

	apple pie	fruit	ice cream	Total
Year 5	22	6	8	36
Year 6	34	8	2	44
Total	56	14	10	80

3

(a) Complete the two-way table.

(3)

(b) What fraction of these 80 students were in Year 5 **and** chose apple pie?
Give your answer in its simplest form.

$\frac{22}{80} \div 2 = \frac{11}{40}$ (1)

(1)

$\frac{11}{40}$

(2)

(Total for Question 8 is 5 marks)

9

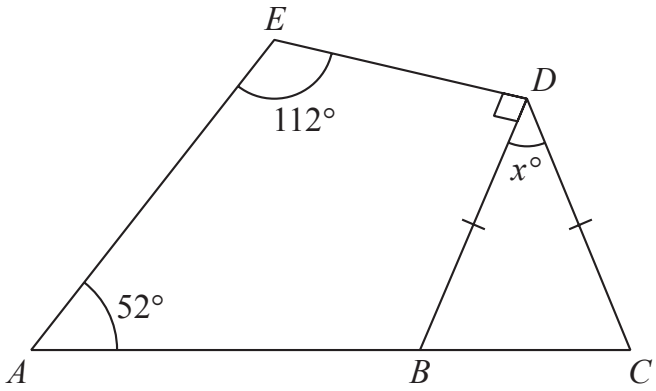


Diagram **NOT** accurately drawn

BCD is an isosceles triangle with *BD* = *CD*
ABC is a straight line.
ABDE is a quadrilateral.

Work out the value of *x*
Give a reason for each stage of your working.

ABD = 360 - 52 - 112 - 90

= 106 (1)

(angles in a quadrilateral add up to 360°) (1)

CBD = 180 - 106

= 74 (1)

(angles on a straight line add to 74°)

x = 180° - 2(74°) - (base angles in isosceles are equal)

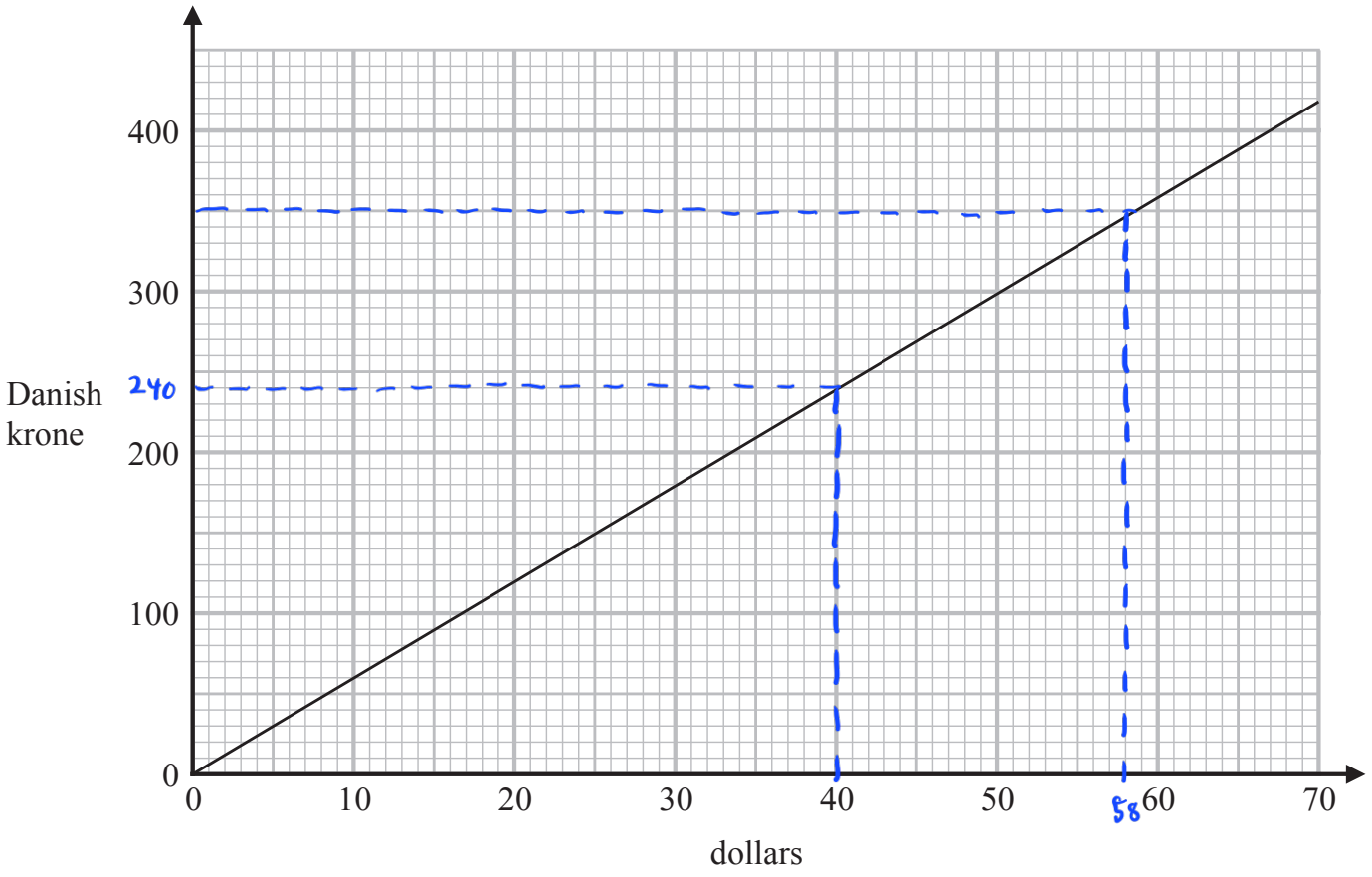
= 180° - 148°

= 32° (1)

$x =$ 32

(Total for Question 9 is 4 marks)

10 The graph below can be used to change between dollars and Danish krone.



(a) Change 40 dollars to Danish krone.

240 (1)

..... Danish krone

(1)

(b) Change 350 Danish krone to dollars.

58 (1)

..... dollars

(1)

Robert needs 950 Danish krone to pay for a hotel stay.
He has 170 dollars.

(c) Show that Robert has enough money to pay for his hotel stay.

10 dollars = 60 krone

170 dollars = 17 × 60 krone (1)

= 1020 krone

Yes, 1020 krone is more than 950 krone.

(1)

(2)

(Total for Question 10 is 4 marks)

11 (a) Work out the value of $\dfrac{2.5 + 3.6}{12.7} + \dfrac{8.2}{5 \times 3.6}$

Give your answer as a decimal.
Write down all the figures on your calculator display.

$\frac{6.1}{12.7} + \frac{8.2}{18}$ (1)

$= 0.9358705162$ (1)

0.9358705162

(2)

(b) Write your answer to part (a) correct to 3 significant figures.

0.936 (1)

(1)

(Total for Question 11 is 3 marks)

12 Aarav uses this rule to estimate the time, in minutes, that a bus journey takes.

Time	=	2.5 × length of journey in kilometres	+	1.5 × number of bus stops

Aarav's bus journey to work has a length of 12 kilometres.
There are 5 bus stops on the route.

(a) Use Aarav's rule to work out an estimate for the time this bus journey takes.

Time = $2.5 \times 12 + 1.5 \times 5$ (1)

$= 30 + 7.5$

$= 37.5$ (1)

37.5 ..... minutes

(2)

A different bus journey takes 55 minutes.
There are 8 bus stops on the route.

(b) Use Aarav's rule to work out an estimate for the distance of this bus journey.

$55 = 2.5 \times \text{distance} + 1.5 \times 8$ (1)

$$\text{distance} = \frac{55 - 12}{2.5}$$ (1)

$$= \frac{43}{2.5}$$

$= 17.2$ (1)

17.2 ..... km

(3)

(Total for Question 12 is 5 marks)

13

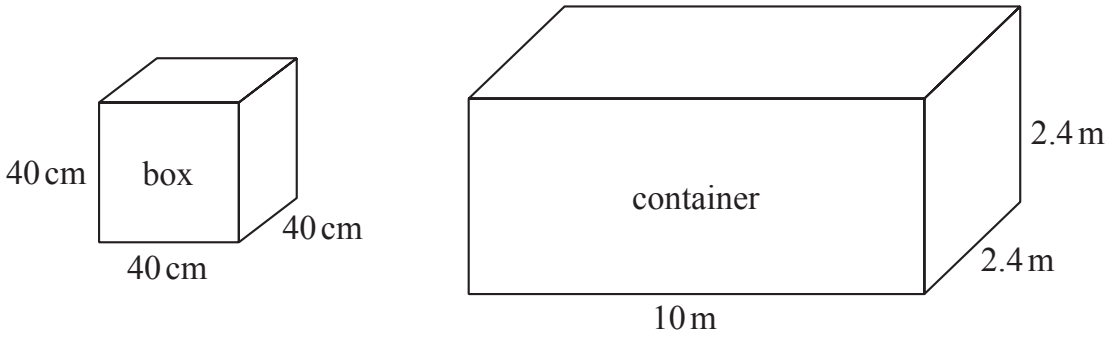


Diagram **NOT** accurately drawn

Tom puts boxes into a shipping container.

The container is a cuboid 10 metres by 2.4 metres by 2.4 metres.
Each box is a cube of side 40 centimetres.

Work out the greatest number of these boxes that Tom can put into the container.

length : $\frac{10}{0.4} = 25$ (1)

width : $\frac{2.4}{0.4} = 6$

height : $\frac{2.4}{0.4} = 6$

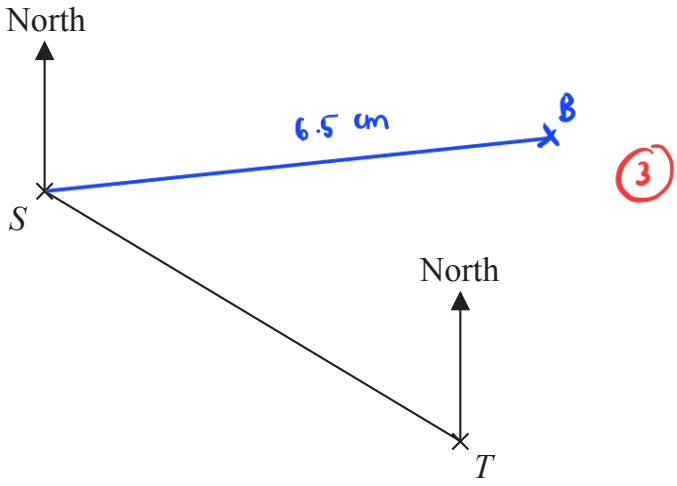
$25 \times 6 \times 6 = 900$ (1)

(1)

900

(Total for Question 13 is 3 marks)

14 The accurate scale drawing shows the positions of two lighthouses, S and T



3

The scale of the drawing is 1 cm to 2 km

(a) Find, by measuring, the bearing of lighthouse T from lighthouse S

121 (1) °

(1)

A boat is on a bearing of 084° from S
The boat is 13 km from T

(b) On the diagram, mark with a cross (×) the position of the boat.
Label the cross B

(3)

(Total for Question 14 is 4 marks)

15 The table shows information about the frame size, in cm, of 60 bicycles sold in a shop.

Frame size (S cm)	Frequency
$30 < S \leqslant 36$	4
$36 < S \leqslant 42$	14
$42 < S \leqslant 48$	18
$48 < S \leqslant 54$	19
$54 < S \leqslant 60$	5

(a) Write down the modal class.

$48 < S \leq 54$ (1)

.....

(1)

(b) Work out an estimate for the mean frame size.

$$\frac{33 \times 4 + 39 \times 14 + 45 \times 18 + 51 \times 19 + 57 \times 5}{60} \quad (1)$$

$$= \frac{132 + 546 + 810 + 969 + 285}{60} \quad (1)$$

$$= \frac{2742}{60} \quad (1)$$

$$= 45.7 \quad (1)$$

45.7 cm

.....

(4)

(Total for Question 15 is 5 marks)

16 The diagram shows a solid triangular prism.

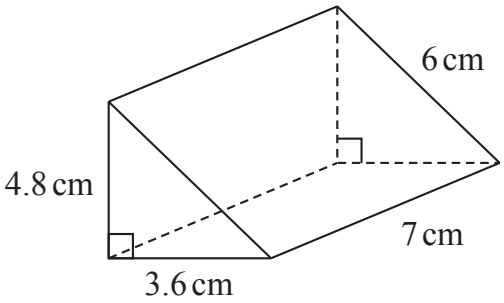


Diagram **NOT** accurately drawn

Work out the **total** surface area of the triangular prism.
Give your answer correct to 3 significant figures.

$(2 \times \frac{1}{2} \times 4.8 \times 3.6) + (7 \times 6) + (7 \times 3.6) + (4.8 \times 7)$ (1)

$= 17.28 + 42 + 25.2 + 33.6$ (1)

$= 118.08$

≈ 118 (1)

118 ..... cm^2

(Total for Question 16 is 3 marks)

17 Here is a list of six numbers written in order of size.

3 6 10

x 5 y z 10 12

The numbers have

a range of 9
a median of 8
a mode of 10

Find the value of x, the value of y and the value of z

mode = 10, hence $z = 10$

median 8, $\frac{y + 10}{2} = 8$

$y = 6$

range = 9, $12 - 9 = 3$

$x = 3$

$x =$ 3 (3)

$y =$ 6

$z =$ 10

(Total for Question 17 is 3 marks)

18 (a) Simplify $w^{12} \div w^3$

$w^{12-3} = w^9$

w^9 (1)

(1)

(b) Simplify $5m^4p^2 \times 2m^3p$

$5 \times 2 \times m^{4+3} \times p^{2+1}$

$= 10 m^7 p^3$

$10 m^7 p^3$ (2)

(2)

(Total for Question 18 is 3 marks)

19 Divya and Yuan each pay for a holiday at a special offer price.

Divya's holiday	**Yuan's holiday**
Normal price: \$1600	Normal price: \$1400
Special offer: 16% off the normal price	Special offer: k% off the normal price

The amount that Divya pays is the same as the amount that Yuan pays.

Work out the value of k

$1 - 0.16 = 0.84$ (1)

Divya pays : $\frac{84}{100} \times 1600 = 1344$ (1)

$1400 - 1344 = 56$ (1)

$\frac{56}{1400} \times 100\% = 4\%$ (1)

$k = 4$

$k =$ 4

(Total for Question 19 is 4 marks)

20 C grams of chocolate is shared in the ratios 2 : 5 : 8
The difference between the largest share and the smallest share is 390 grams.

Work out the value of C

$\frac{390}{8-2} = 65$ (1)

$65 \times (2+5+8)$ (1)

$65 \times 15 = 975$ (1)

$C =$ 975

(Total for Question 20 is 3 marks)

21 Solve the simultaneous equations

$x + 2y = 15$ $\quad x = 15 - 2y$ (1)
$4x - 6y = 4$ (2)

Show clear algebraic working.

subs (1) into (2) :

$4(15 - 2y) - 6y = 4$

$60 - 8y - 6y = 4$ (1)

$56 = 14y$

$y = 4$

$x = 15 - 2(4)$ (1)

$= 7$

$x =$ 7 (1)

$y =$ 4

(Total for Question 21 is 3 marks)

22 (a) Write 9.32×10^{-5} as an ordinary number.

0·0000932 (1)

(1)

(b) Work out $3 \times 10^5 - 6 \times 10^4$

Give your answer in standard form.

$3 \times 10^5 - 0.6 \times 10^5$

$= 2.4 \times 10^5$

2.4×10^5 (2)

(2)

(c) Work out $(3 \times 10^{55}) \times (6 \times 10^{65})$

Give your answer in standard form.

$3 \times 6 \times 10^{55+65}$

$= 18 \times 10^{120}$

$= 1.8 \times 10^{121}$

1.8×10^{121} (2)

(2)

(Total for Question 22 is 5 marks)

23 (a) Factorise fully $18c^3d^2 - 21c^2$

$3(6c^3d^2 - 7c^2)$

$3c^2(6cd^2 - 7)$

$3c^2(6cd^2 - 7)$ (2)

(2)

(b) (i) Factorise $y^2 - 3y - 18$

$(y - 6)(y + 3)$

(2)

$(y-6)(y+3)$

(2)

(ii) Hence, solve $y^2 - 3y - 18 = 0$

$6, -3$ (1)

(1)

(Total for Question 23 is 5 marks)

24 The diagram shows an isosceles triangle ABC

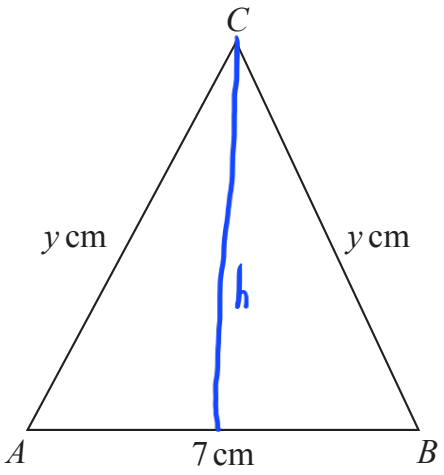


Diagram **NOT** accurately drawn

$AB = 7\,\text{cm}$ $AC = BC = y\,\text{cm}$

The area of the triangle is $42\,\text{cm}^2$

Work out the value of y

Area : $\frac{1}{2} \times 7 \times h = 42$

$h = 12$ (1)

$y^2 = 12^2 + 3.5^2$ (1)

$y = \sqrt{12^2 + 3.5^2}$ (1)

$= 12.5$ (1)

$y =$ 12.5

(Total for Question 24 is 4 marks)

25 R and T are points on a circle, centre O

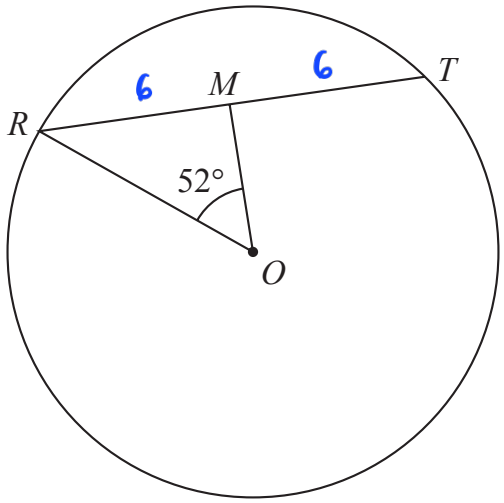


Diagram **NOT** accurately drawn

$RT = 12\,\text{cm}$
M is the midpoint of RT
Angle $ROM = 52°$

Work out the area of the circle.
Give your answer correct to 3 significant figures.

$\sin 52° = \frac{6}{r}$ (1)

$r = \frac{6}{\sin 52°}$ (1)

$= 7.614$

Area $= \pi \times 7.614^2$ (1)

$= 182$ (1)

182 ..... cm^2

(Total for Question 25 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS