Write your name here

Surname	Other names

Pearson Edexcel
International GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics A

Paper 2FR

Foundation Tier

Thursday 4 June 2015 – Morning
Time: 2 hours

Paper Reference
4MA0/2FR

You must have:
Ruler graduated in centimetres and millimetres, protractor, 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 ▶

P44391A

5/1/1/1/

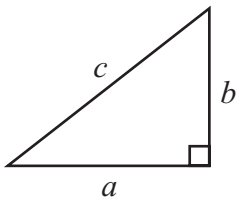
P 4 4 3 9 1 A 0 1 2 4

PEARSON

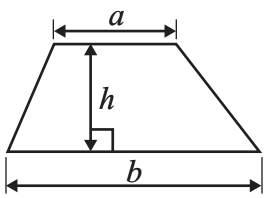
International GCSE MATHEMATICS

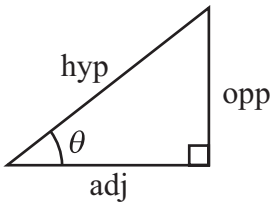
FORMULAE SHEET – FOUNDATION TIER

Pythagoras' Theorem
$a^2 + b^2 = c^2$



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





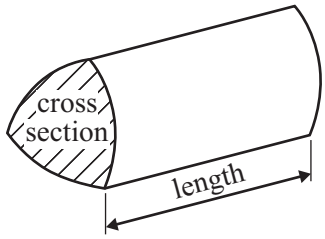
adj = hyp × cos θ
opp = hyp × sin θ
opp = adj × tan θ

or $\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$\cos\theta = \frac{\text{adj}}{\text{hyp}}$

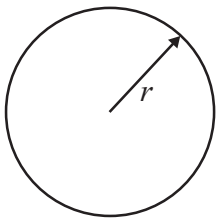
$\tan\theta = \frac{\text{opp}}{\text{adj}}$

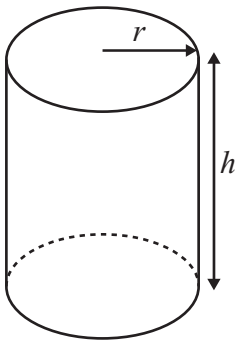
Volume of prism = area of cross section × length



Circumference of circle $= 2\pi r$

Area of circle $= \pi r^2$





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

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

Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 (a) Write down the value of the 3 in the number 4.23

.....

(1)

(b) Write 0.57 as a percentage.

..... %

(1)

(c) Here are five decimal numbers.

3.2	3.082	3.01	3.004	3.10

(i) Write down the smallest of these numbers.

.....

(ii) Write down the largest of these numbers.

.....

(2)

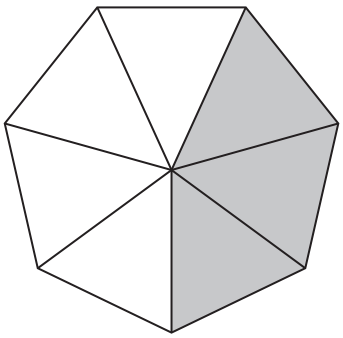
(d) Write 30.845 correct to 1 decimal place.

.....

(1)

(Total for Question 1 is 5 marks)

2 (a) The shape is divided into equal triangles.
What fraction of this shape is shaded?



.....

(1)

(b) Work out $\frac{1}{3}$ of 24

.....

(1)

(c) Write $\frac{4}{5}$ as a decimal.

.....

(1)

(d) Here are five fractions.

$\frac{5}{20}$ $\frac{9}{36}$ $\frac{25}{100}$ $\frac{12}{52}$ $\frac{17}{68}$

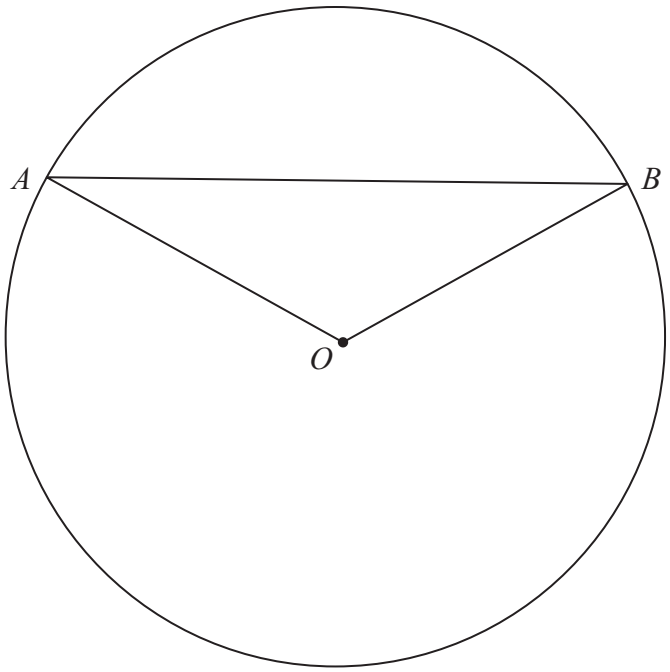
Find which one of these fractions is **not** equal to $\frac{1}{4}$

.....

(1)

(Total for Question 2 is 4 marks)

3 The diagram shows a circle with centre O.
The points A and B lie on the circle.



(a) At the point B, draw a tangent to the circle.

(1)

(b) Mark on the diagram a reflex angle.
Label this angle R.

(1)

(c) Write down the mathematical name of the line OB.

.....

(1)

(d) Shade a segment of the circle.

(1)

(Total for Question 3 is 4 marks)

4 Ben throws a dice 20 times.
He records the score for each throw.
Here are his scores.

4	1	2	2	5	1	6	2	3	4
2	5	4	5	1	6	1	3	2	6

(a) Complete the frequency table for his scores.

Score	Tally	Frequency
1		
2		
3		
4		
5		
6		

(2)

(b) Write down the mode of his scores.

.....

(1)

(c) Find the range of his scores.

.....

(1)

Ben throws the dice again.

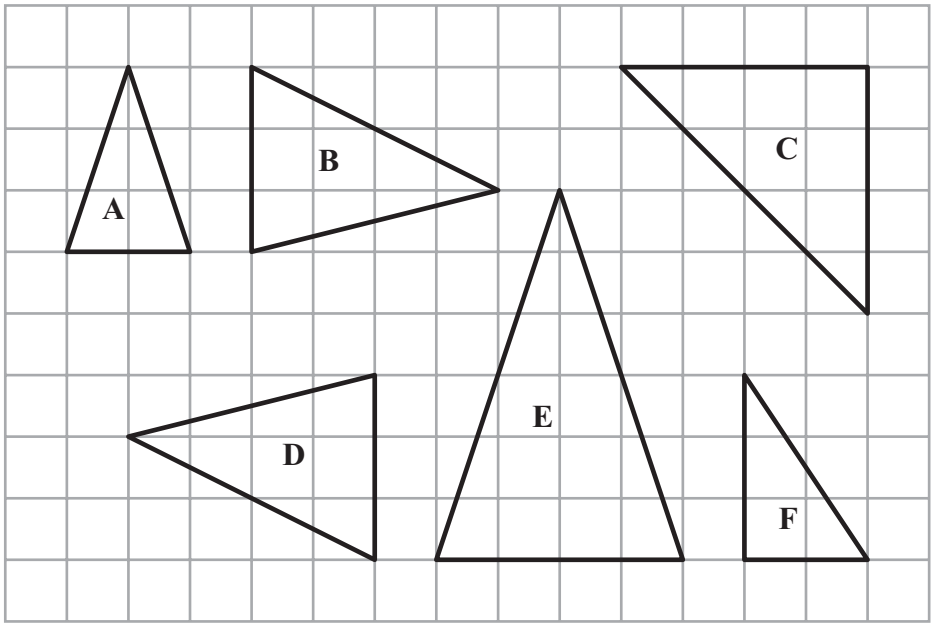
(d) Draw a circle around the word in the box that best describes the likelihood that his score will be 6

Impossible	Unlikely	Likely	Certain

(1)

(Total for Question 4 is 5 marks)

5 The diagram shows six triangles on a square grid.



(a) Write down the mathematical name for triangle **A**.

.....

(1)

(b) Write down the letters of the two triangles that are similar but not congruent.

..... and .....

(1)

(c) Triangle **D** can be mapped onto triangle **B** by a rotation.

(i) On the grid, mark with a cross (×) the centre of this rotation.

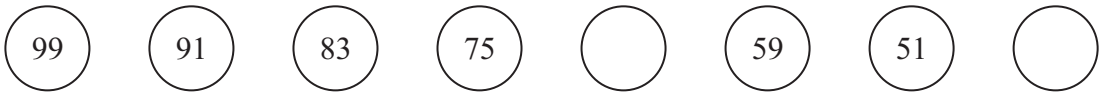
(ii) Write down the angle of this rotation.

..... °

(2)

(Total for Question 5 is 4 marks)

6 The circles contain terms in a number sequence.



The 5th term and the 8th term are missing.

(a) (i) Write down the 5th term of the sequence.

.....

(ii) Write down the 8th term of the sequence.

.....

(2)

(b) Write down the rule for working out the terms of this sequence.

.....

(1)

The 13th term of the sequence is 3

(c) Work out the 14th term of the sequence.

.....

(1)

A new sequence is made by adding 5 to each term of the first sequence.

(d) Write down the 13th term of this new sequence.

.....

(1)

The sum of the first four terms of the first sequence is 348

(e) Work out the sum of the first four terms of the new sequence.

.....

(1)

(Total for Question 6 is 6 marks)

7 In Kuran's school, 40% of the pupils are boys.

(a) Write 40% as a fraction.
Give your fraction in its simplest form.

.....

(2)

(b) What percentage of the pupils in Kuran's school are girls?

..... %

(1)

In Year 11, there are 70 girls and 42 boys.

(c) Write down the ratio of the number of girls to the number of boys in Year 11
Give your ratio in the form 1 : n

.....

(2)

(Total for Question 7 is 5 marks)

8 Neha writes

$$4 + 9 \times 3 \quad = \quad 13 \times 3 \quad = \quad 39$$

Her teacher says that Neha has made a mistake.

(a) What mistake has Neha made?

.....

.....

(1)

Neha is given two more calculations to do.
Her teacher says that Neha must show one stage of working and then the answer for each calculation.

(b) Complete the calculations showing one stage of working and the answer.

(i) $24 \div 6 - 3$ = ... = ...

(ii) $45 \div (5 + 4)$ = ... = ...

(2)

(Total for Question 8 is 3 marks)

9 Here are six numbers.

8 3 1 7 6 5

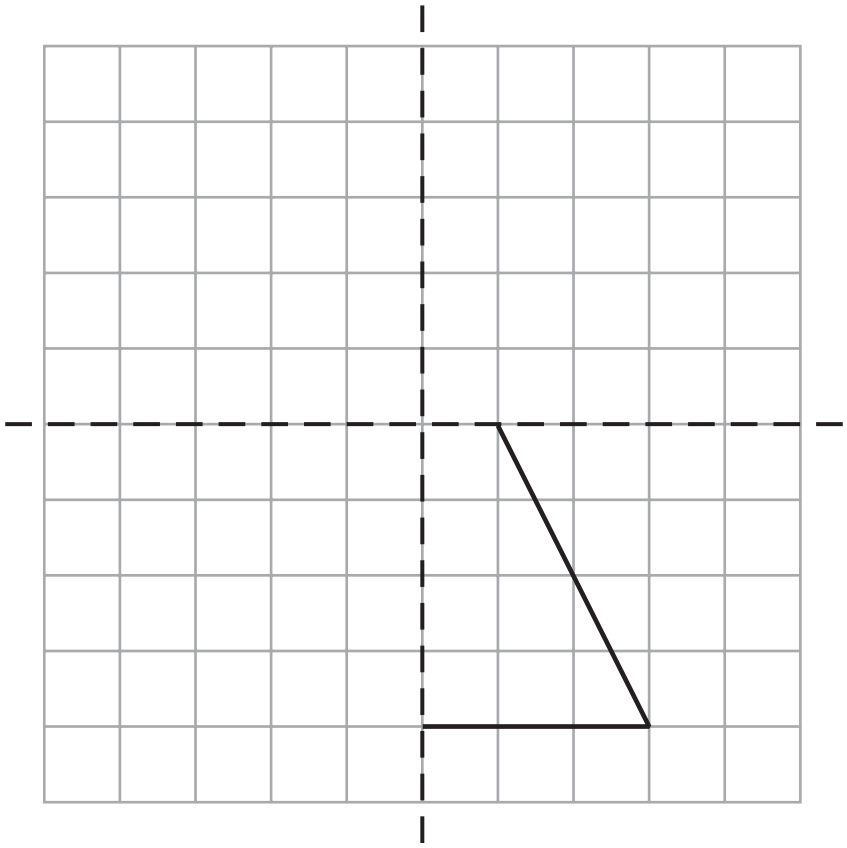
Work out the mean of these numbers.

.....

(Total for Question 9 is 2 marks)

10 A shape has exactly 2 lines of symmetry.
The diagram shows the lines of symmetry and part of the shape.

Draw the complete shape.



(Total for Question 10 is 2 marks)

11 $S = \{c, h, i, n, a\}$ $V = \{i, t, a, l, y\}$

List the elements of the set

(i) $S \cap V$

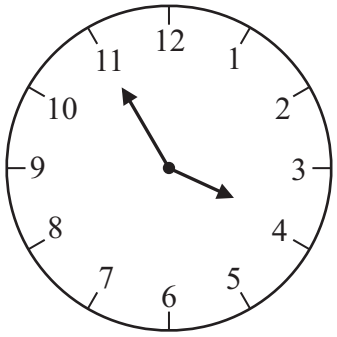
.....

(ii) $S \cup V$

.....

(Total for Question 11 is 2 marks)

12 Saki arrives at the railway station in Tokyo.
The clock shows the time in the afternoon that she arrived.



(a) Write this time using the 24-hour clock.

.....

(1)

Saki's train leaves Tokyo at 16 50 and arrives in Kyoto at 19 12

(b) (i) Write 16 50 using the 12-hour clock.

.....

(ii) Find the time taken by the train to travel from Tokyo to Kyoto.

..... hours ..... minutes

(3)

The train continues to Hakata.
It leaves Kyoto at 19 14 and takes 2 hours 45 minutes to reach Hakata.

(c) Work out the time that the train arrives in Hakata.

.....

(1)

The distance from Kyoto to Hakata is 638 kilometres.
The train journey from Kyoto to Hakata takes 2 hours 45 minutes.

(d) Work out the average speed, in kilometres per hour, of the train from Kyoto to Hakata.

..... km/h

(3)

(Total for Question 12 is 8 marks)

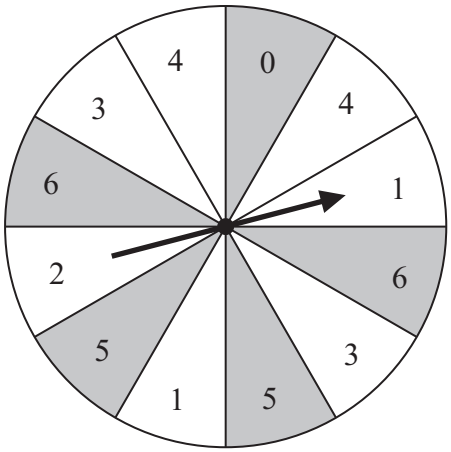
13 PQR is a triangle.
$PQ = 6$ cm and $QR = 7.3$ cm
Angle $QPR = 60^\circ$

Draw accurately the triangle PQR with PQ as its base.

P ——————————— Q

(Total for Question 13 is 2 marks)

14 The diagram shows a pointer that spins about the centre of a circle.



The circle is divided into 12 equal sectors.
When the pointer spins, it is equally likely to stop in any one of the sectors.
Each sector has a number.

Andrea spins the pointer.

(a) Find the probability that the pointer stops in a shaded sector.

.....

(1)

(b) Find the probability that the pointer stops in an unshaded sector with an odd number.

.....

(1)

Andrea now spins the pointer twice and adds together the two numbers in the sectors that the pointer stops in.

The probability that the total of the two numbers is 7 or more is $\frac{19}{36}$

(c) Work out the probability that the total of the two numbers is less than 7

.....

(2)

(Total for Question 14 is 4 marks)

15 (a) Find the square number that is between 169 and 225

.....

(1)

(b) Find the cube number that is between 216 and 512

.....

(1)

(c) Find the prime number that is between 90 and 100

.....

(1)

(d) Write $\frac{3 \times 3 \times 3 \times 3 \times 3 \times 3}{3 \times 3}$ as a single power of 3

.....

(1)

(e) (i) Find the cube root of 35
Write down the first five figures on your calculator display.

.....

(ii) Write your answer to part (i) correct to 2 significant figures.

.....

(2)

(Total for Question 15 is 6 marks)

16 (a) Solve $7 + x = 15$

$x =$ .....

(1)

(b) Solve $-9 = 8y + 3$

$y =$ .....

(2)

(Total for Question 16 is 3 marks)

17 Jordan's school awards certificates for outstanding work.
The table shows information about the numbers of certificates awarded in Jordan's class during a term.

Number of certificates	Number of students
0	4
1	9
2	7
3	1
4	6
5	3

Work out the median number of certificates awarded.

.....

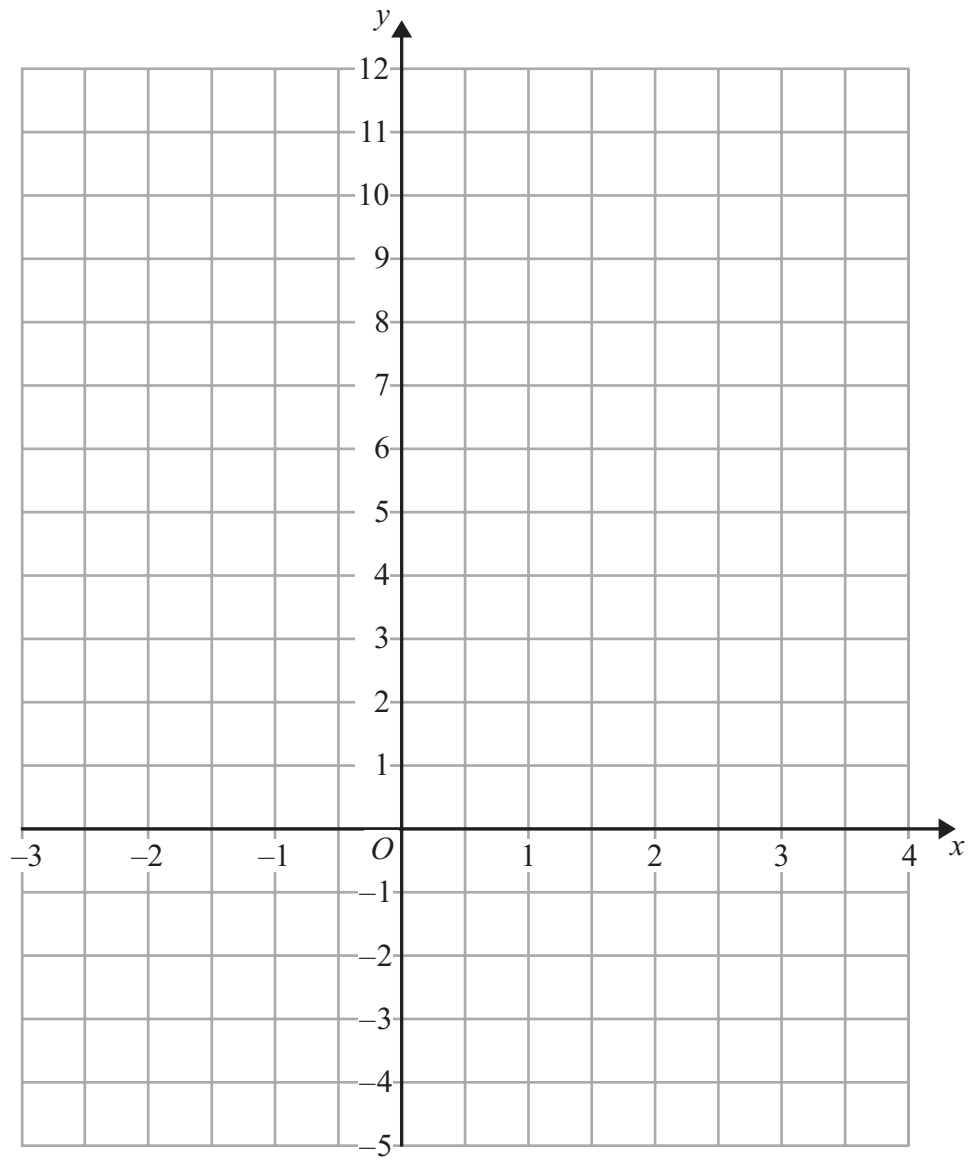
(Total for Question 17 is 2 marks)

18 (a) On the grid, draw the graph of

(i) $x = 2$

(ii) $y = 3$

(iii) $y = 3x + 2$ for values of x from –2 to 3



(5)

(b) Mark with a cross (×) a point on the grid that satisfies both the inequalities

$$x > 2 \text{ and } y > 3x + 2$$

Label this point P.

(2)

(Total for Question 18 is 7 marks)

19 Amit invests 15 000 rupees.

At the end of one year, his investment has increased by $7\frac{1}{2}\%$

(a) Work out the value of Amit's investment at the end of one year.

..... rupees

(2)

Priya invests a sum of money at an interest rate of 8% per year.
At the end of one year, the interest she receives is 1800 rupees.

(b) Work out the value of Priya's investment at the end of one year.

..... rupees

(3)

(Total for Question 19 is 5 marks)

20

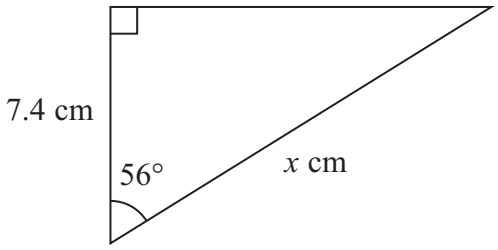


Diagram **NOT** accurately drawn

Work out the value of x.
Give your answer correct to 3 significant figures.

$x =$ .....

(Total for Question 20 is 3 marks)

21 Flaky pastry is made using flour and fat in the ratio 9 : 7 by weight.
Cassie makes some flaky pastry.
She uses 175 grams of fat.

(a) Work out the weight of flour Cassie uses.

..... grams
(2)

Sweet pastry is made using flour, fat and sugar in the ratio 27 : 14 : 9 by weight.
Luke makes some sweet pastry.
The total weight of flour, fat and sugar he uses is 400 grams.

(b) Work out the weight of flour Luke uses.

..... grams
(2)

(Total for Question 21 is 4 marks)

22 (a) Expand $5(2p - 3)$

.....

(1)

(b) Expand and simplify fully $(n + 8)(n - 5)$

.....

(2)

(c) $y = x^3 - kx + 5$

Work out the value of k when $y = 6$ and $x = -2$

$k =$ .....

(3)

(Total for Question 22 is 6 marks)

23 The table shows the probabilities of people in Wales being in blood group O or in blood group A or in blood group AB.

Blood group	Probability
O	0.44
A	0.42
B	
AB	0.04

All people in Wales are in exactly one of the blood groups O, A, B or AB.

A person is selected at random from the people in Wales.

(a) Find the probability that this person is in blood group B.

.....

(2)

(b) Find the probability that this person is in blood group O or A.

.....

(1)

There are 1200 students in Aled's school.
Aled's school is in Wales.

(c) Work out an estimate for the number of pupils in Aled's school who are in blood group AB.

.....

(2)

(Total for Question 23 is 5 marks)

24

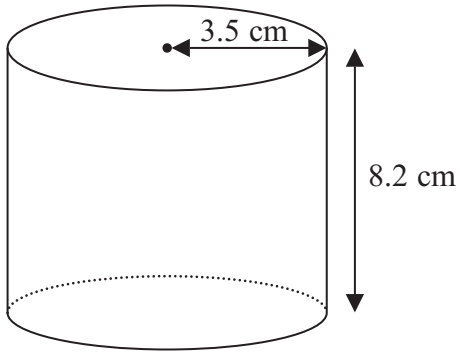


Diagram **NOT** accurately drawn

A solid cylinder has radius 3.5 cm and height 8.2 cm.

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

..... cm^2

(Total for Question 24 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

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