Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

General Certificate of Secondary Education
November 2009

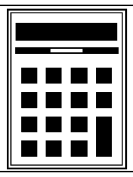
AQA

MATHEMATICS (MODULAR) (SPECIFICATION B) 43055/2F
Module 5 Foundation Tier
Paper 2 Calculator

F

Tuesday 10 November 2009 9.00 am to 10.15 am

For this paper you must have:
- a calculator
- mathematical instruments.



Time allowed: 1 hour 15 minutes

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Use a calculator where appropriate.
- Do all rough work in this book.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

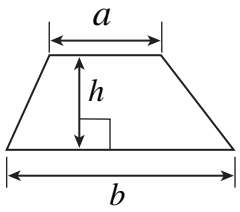
Information
- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. This must be tagged securely to this answer book.

Advice
- In all calculations, show clearly how you work out your answer.

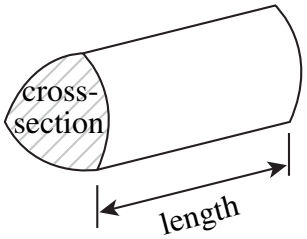
For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18	
TOTAL	
Examiner's Initials	

Formulae Sheet: Foundation Tier

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

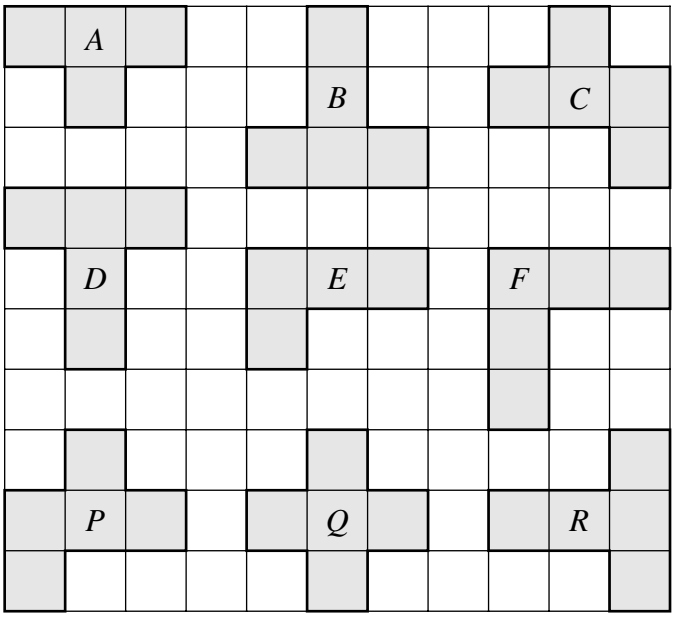


Volume of prism = area of cross-section × length



Answer **all** questions in the spaces provided.

1 Some of these shapes are congruent.



1 (a) Which **two** shapes are congruent to shape *B*?

Answer ..... and ..... *(2 marks)*

1 (b) Two other shapes are congruent.

Write down the letters of these **two** shapes.

Answer ..... and ..... *(1 mark)*

1 (c) Tick (✓) the correct box for each statement.

	True	False
Congruent shapes always have the same area.	☐	☐
Congruent shapes always have the same perimeter.	☐	☐
Congruent shapes always have one line of symmetry.	☐	☐

(2 marks)

5

2 (a) Here is a list of mathematical terms.

square	positive square root
cube	cube root
factor	multiple
reciprocal	negative square root

Use this list to complete the following sentences.

2 (a) (i) 44 is a ..... of 11.

(1 mark)

2 (a) (ii) 13 is a ..... of 65.

(1 mark)

2 (a) (iii) –7 is the ..... of 49.

(1 mark)

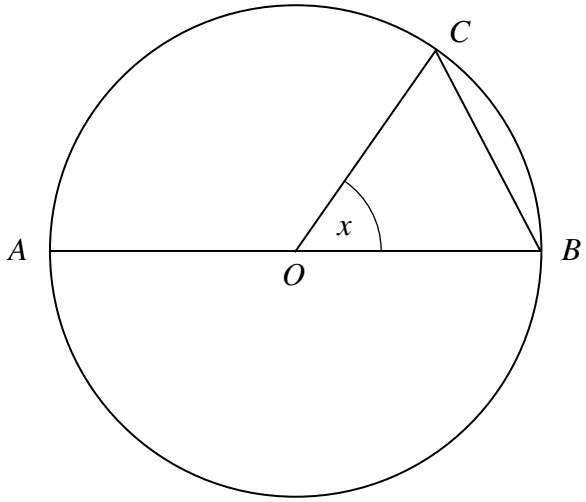
2 (b) Write down the square number between 105 and 135.

Answer ..... *(1 mark)*

2 (c) Work out the cube of 9.

Answer ..... *(1 mark)*

3 *O* is the centre of the circle.



3 (a) Measure the length of the diameter *AB*.
Give your answer in centimetres.

Answer ..... cm *(1 mark)*

3 (b) Measure the size of angle *x*.

Answer ..... degrees *(1 mark)*

3 (c) One term below describes angle *x*.

Tick (✓) the correct box.

right-angle	☐	obtuse angle	☐
acute angle	☐	reflex angle	☐

(1 mark)

3 (d) Which word describes the straight line joining *B* to *C*?

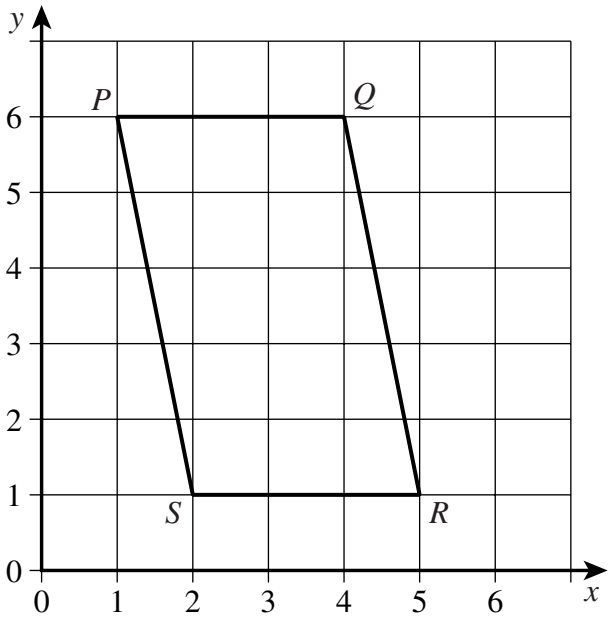
Tick (✓) the correct box.

diameter	☐	chord	☐
tangent	☐	radius	☐

(1 mark)

9

4 The diagram shows a quadrilateral *PQRS* on a centimetre grid.



4 (a) Write down the name of this type of quadrilateral.

Answer ..... *(1 mark)*

4 (b) (i) Draw the line *PR* and mark its midpoint.
Label the midpoint *M*. *(1 mark)*

4 (b) (ii) Write down the coordinates of *M*.

Answer (..... , ...) *(1 mark)*

4 (c) Find the midpoint of *SQ*.
What do you notice?

Answer .....
(1 mark)

4 (d) Sofia counts squares to work out the area of *PQRS*.
She says the area is 10 cm^2.
Tom says Sofia is wrong because she has only counted the whole squares.

What is the correct answer?
Explain how you worked it out.

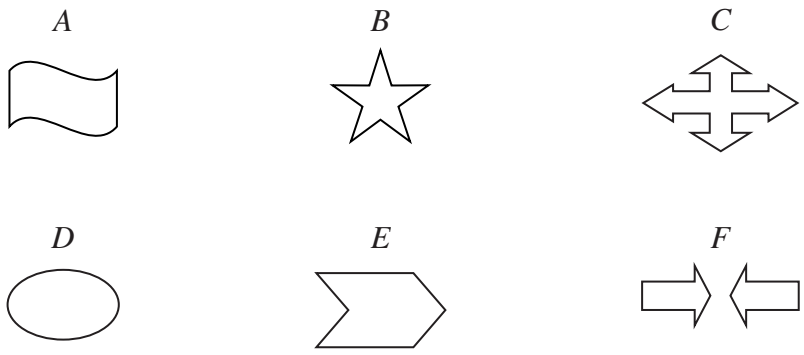
.....

.....

.....

Answer ..... cm^2 *(2 marks)*

5 Here are some logos.



5 (a) Write down the letter of a logo with exactly two lines of symmetry.

Answer ..... *(1 mark)*

5 (b) Write down the letter of the logo with rotational symmetry of order 5.

Answer ..... *(1 mark)*

5 (c) Write down the letter of the logo with rotational symmetry of order 2 but no line of symmetry.

Answer ..... *(1 mark)*

6 The fast train from Apeworth to Bettenham takes y minutes.

6 (a) The slow train takes 12 minutes longer.

Write down an expression, in terms of y, for the time the slow train takes.

Answer ..... minutes *(1 mark)*

6 (b) The bus takes twice as long as the fast train.

Write down an expression, in terms of y, for the time the bus takes.

Answer ..... minutes *(1 mark)*

11

7

Millie's home cooking

Set-up fee £19.50

plus

Economy Menu	or	**Deluxe Menu**
£5.99 per person		£8.99 per person

7 (a) Luka orders the Economy Menu for 20 people.

How much does he pay?

.....

.....

.....

.....

Answer £ ..... *(2 marks)*

7 (b) Lauren and Ollie use the Deluxe Menu for their party.
They do not want to spend more than £400.

Work out the maximum number of people, including Lauren and Ollie, who can come to the party.

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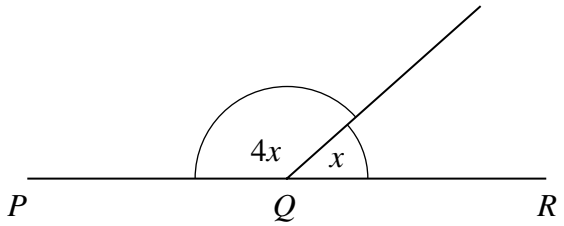
Answer ..... *(3 marks)*

8 (a) *PQR* is a straight line.



Not drawn accurately

Explain why $x = 36°$

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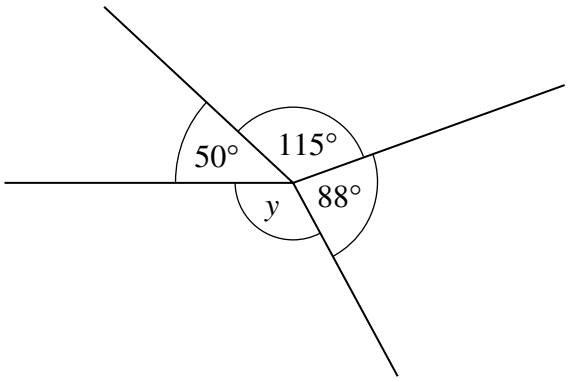
(2 marks)

8 (b) The four lines shown below meet at a point.



Not drawn accurately

Work out the value of *y*.

.....

.....

.....

Answer ..... degrees *(2 marks)*

9

9 Solve the equations.

9 (a) $9a = 45$

.....

Answer $a =$ ..... *(1 mark)*

9 (b) $b - 3 = 7.2$

.....

Answer $b =$ ..... *(1 mark)*

9 (c) $\frac{c}{2} = 7$

.....

Answer $c =$ ..... *(1 mark)*

9 (d) $8d - 1 = 21$

.....

.....

Answer $d =$ ..... *(2 marks)*

9 (e) $5e + 13 = 7 - e$

.....

.....

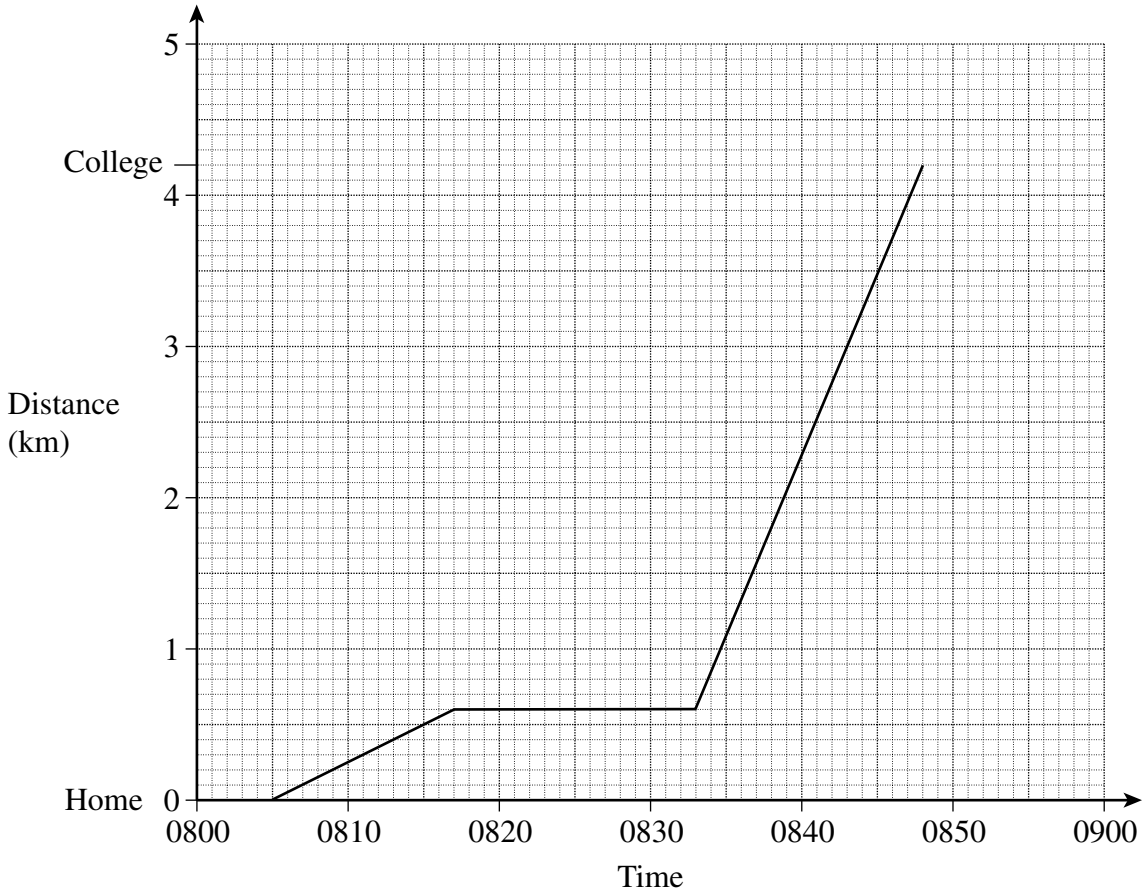
.....

.....

.....

Answer $e =$ ..... *(3 marks)*

10 The graph shows Naomi's journey to college.
The distance from her home to college is 4.2 km.
She walks to the bus-stop and waits for a bus.
Then she gets on the bus and it takes her to college.



10 (a) How far is Naomi's home from the bus-stop?

Answer ..... km *(1 mark)*

10 (b) How long does Naomi wait for the bus?

Answer ..... minutes *(1 mark)*

10 (c) At what time does Naomi get off the bus at college?

Answer ..... *(1 mark)*

10 (d) Calculate the average speed of the bus in kilometres per hour.

.....

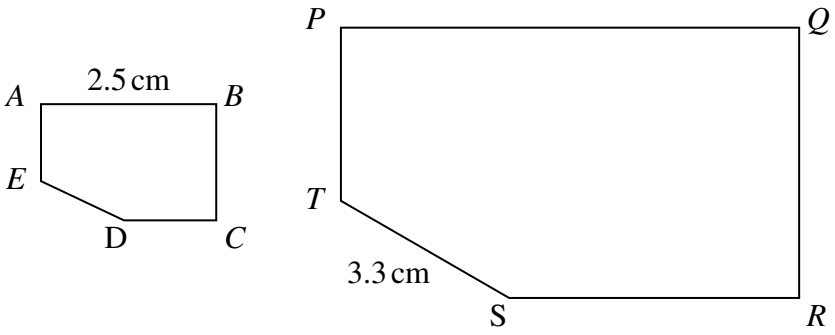
.....

.....

Answer ..... km/h *(3 marks)*

14

11 The diagram shows two irregular pentagons.



Not drawn accurately

PQRST is an enlargement of *ABCDE* by scale factor 3.
AB = 2.5 cm
TS = 3.3 cm

11 (a) Calculate the length of *PQ*.

.....

.....

Answer ..... cm *(1 mark)*

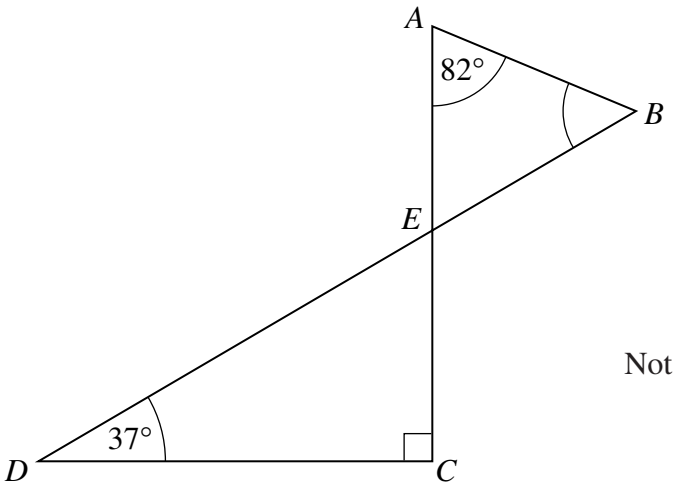
11 (b) Calculate the length of *ED*.

.....

.....

Answer ..... cm *(1 mark)*

12 In the diagram, *AEC* and *DEB* are straight lines.
Angle $D = 37°$, angle $A = 82°$ and angle $C = 90°$



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Calculate the size of angle *B*.

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.....

.....

Answer ..... degrees *(4 marks)*

6

Turn over ▶

13 Paul uses a calculator to work out $\dfrac{38.4}{14.6 - 8.2}$

He keys in | 38.4 | ÷ | 14.6 | – | 8.2 | = |

He says the answer is –5.57 to two decimal places.
Paul has made a mistake.

Explain his mistake and work out the correct answer.
You **must** show your working.

Explanation .....

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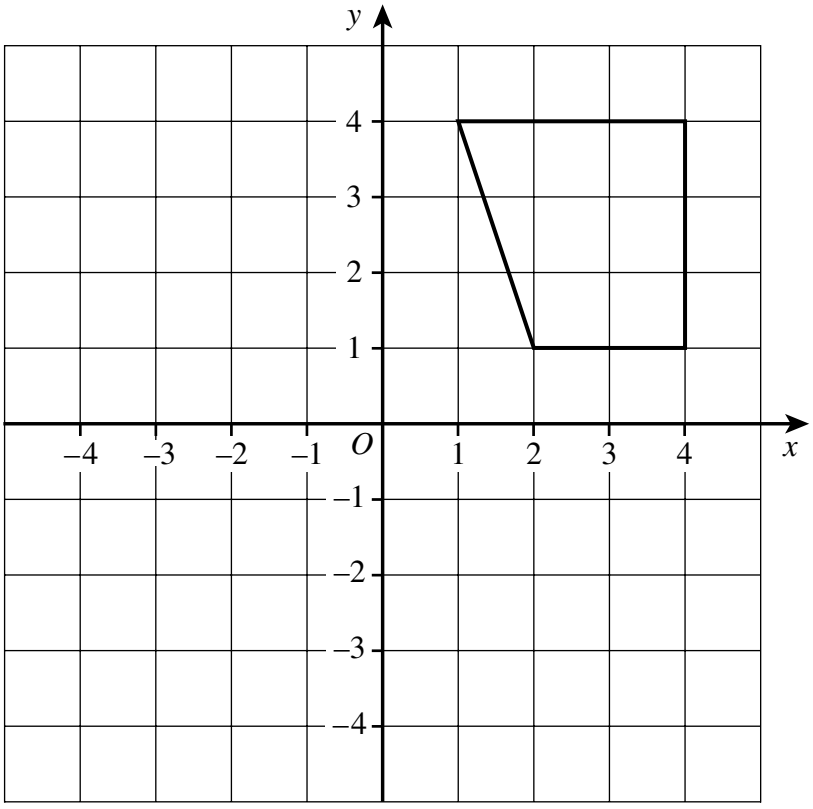
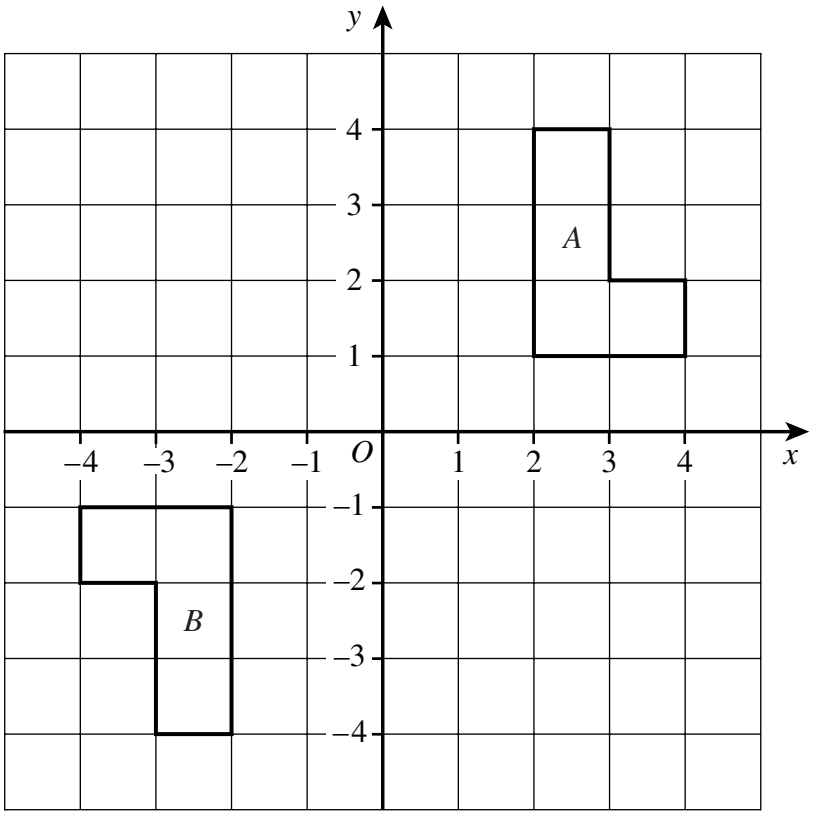
Correct answer ..... *(2 marks)*

14 (a) Reflect the trapezium in the x-axis.



(1 mark)

14 (b) Describe fully the **single** transformation which takes shape *A* to shape *B*.



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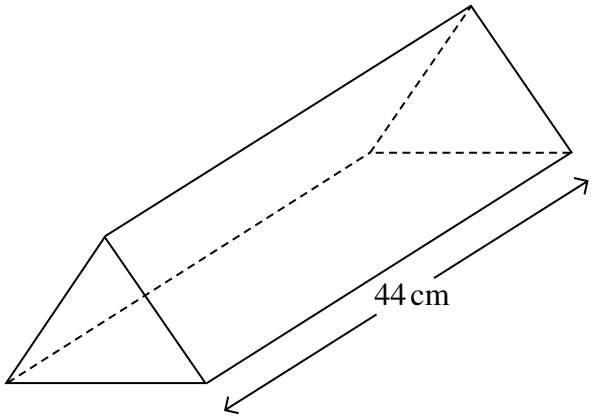
(3 marks)

Turn over for the next question

6

15 The diagram shows a triangular prism of length 44 cm.
The volume of the prism is 1089 cm^3.



Calculate the area of the triangular cross-section of this prism.

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Answer ..... cm^2 *(2 marks)*

16 Here is a sequence.

3 7 11 15 19 …

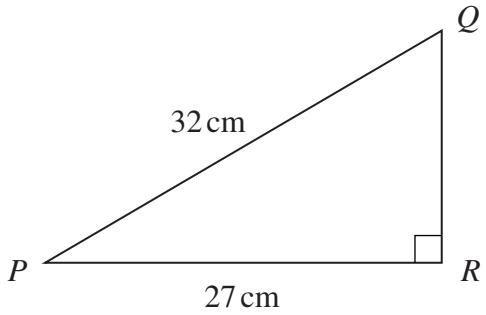
Work out the *n*th term of this sequence.

.....

.....

Answer ..... *(2 marks)*

17 *PQR* is a right-angled triangle.
$PQ = 32$ cm and $PR = 27$ cm



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Calculate the length of *QR*.

.....

.....

.....

.....

Answer ..... cm *(3 marks)*

Turn over for the next question

7

18 A solution of the equation $x^3 - 5x = 31$ lies between $x = 3$ and $x = 4$

Use trial and improvement to find this solution, to one decimal place.
The first trial is shown in the table.

x	$x^3 - 5x$	**Comment**
3	$27 - 15 = 12$	Too small

Answer $x =$ ..... *(3 marks)*

END OF QUESTIONS

3

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