

Centre No.						Paper Reference										Surname	Initial(s)	
Candidate No.						5	3	8	4	H	/	1	4	H	Signature			

Paper Reference(s)

5384H/14H

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 14 (Calculator)

Higher Tier

Unit 3

Friday 12 November 2010 – Morning

Time: 1 hour 10 minutes

Examiner's use only

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Team Leader's use only

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Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Items included with question papers

Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper. Answer ALL the questions. Write your answers in the spaces provided in this question paper. **You must NOT write on the formulae page.** **Anything you write on the formulae page will gain NO credit.** If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2). There are 19 questions in this question paper. The total mark for this paper is 60. There are 16 pages in this question paper. Any blank pages are indicated. **Calculators may be used.** If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Advice to Candidates

Show all stages in any calculations. Work steadily through the paper. Do not spend too long on one question. If you cannot answer a question, leave it and attempt the next one. Return at the end to those you have left out.

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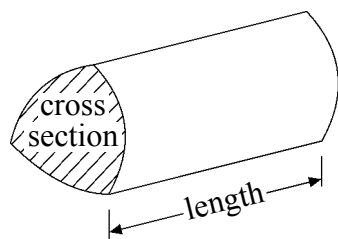
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GCSE Mathematics 2381

Formulae: Higher Tier

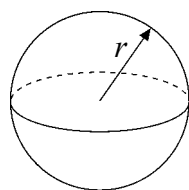
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section \times length



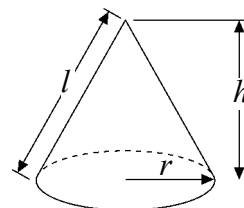
Volume of sphere = $\frac{4}{3}\pi r^3$

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

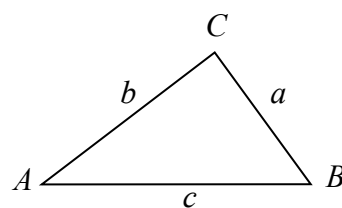


Volume of cone = $\frac{1}{3}\pi r^2 h$

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



In any triangle ABC



The Quadratic Equation

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

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

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 = $\frac{1}{2}ab \sin C$





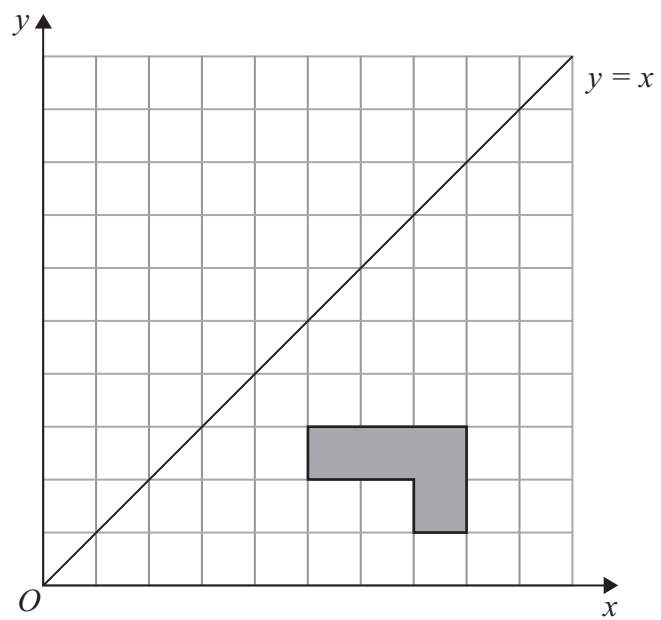
<p style="text-align: center;">Answer ALL NINETEEN questions.</p> <p style="text-align: center;">Write your answers in the spaces provided.</p> <p style="text-align: center;">You must write down all stages in your working.</p> <p>1. Here is a list of ingredients to make melon sorbet for 6 people.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"><p style="text-align: center;">Melon Sorbet for 6 people</p><p>800 g melon 4 egg whites $\frac{1}{2}$ lime 100 g caster sugar</p></div> <p>Terry makes melon sorbet for 18 people.</p> <p>(a) Work out how much caster sugar he uses.</p> <p style="text-align: right;">..... g (2)</p> <p>Hedley makes melon sorbet. He uses 2 limes.</p> <p>(b) Work out how many people he makes melon sorbet for.</p> <p style="text-align: right;">..... (2)</p> <p style="text-align: right;">(Total 4 marks)</p>	<p>Leave blank</p> <p>Q1</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto;"></div>
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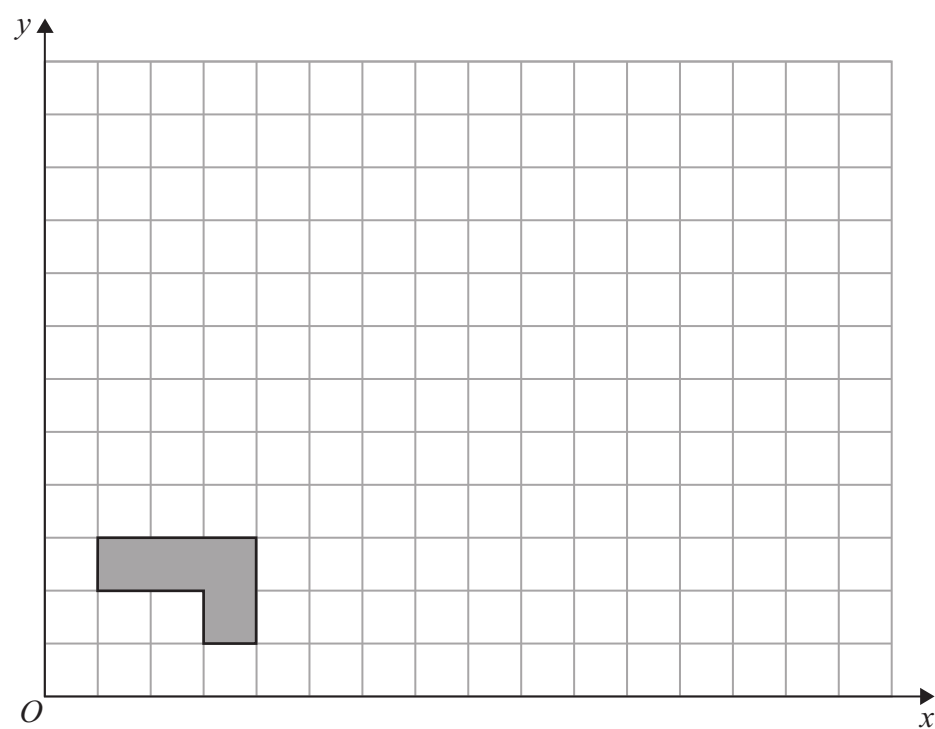


2.



(a) Reflect the shaded shape in the line $y = x$.

(2)



(b) On the grid, enlarge the shaded shape by a scale factor of 3, centre O .

(3)

Q2

(Total 5 marks)



<p>3. Noah got 8 out of 20 in a test.</p> <p>Write 8 out of 20 as a percentage.</p> <p>..... %</p> <p>(Total 2 marks)</p>	<p>Leave blank</p> <p>Q3</p> <div></div>
<p>4. (a) Solve $2x + 3 = 10$</p> <p>$x =$</p> <p>(2)</p> <p>(b) Simplify</p> <p>(i) $c^5 \times c^6$</p> <p>.....</p> <p>(ii) $e^{12} \div e^4$</p> <p>.....</p> <p>(2)</p> <p>(Total 4 marks)</p>	<p>Q4</p> <div></div>



<p>5. Use your calculator to work out</p> $\frac{13.7 + 5.86}{2.54 \times 3.17}$ <p>Write down all the figures on your calculator display. You must give your answer as a decimal.</p> <p>.....</p> <p>(Total 2 marks)</p>	<p>Leave blank</p> <p>Q5</p> <div></div>
<p>6. $-3 < k \leq 2$ k is an integer.</p> <p>Write down all the possible values of k.</p> <p>.....</p> <p>(Total 2 marks)</p>	<p>Q6</p> <div></div>





<p>7. A shop sells small boxes and large boxes for storing CDs.</p> <p>A small box stores x CDs. A large box stores y CDs.</p> <p>Ethan buys 7 small boxes.</p> <p>(a) Write down an expression for the number of CDs he can store in the 7 small boxes.</p> <p>.....</p> <p>(1)</p> <p>Ethan also buys 5 large boxes.</p> <p>(b) Write down an expression for the number of CDs he can store in the 5 large boxes.</p> <p>.....</p> <p>(1)</p> <p>Ethan can store a total of T CDs.</p> <p>(c) Write down a formula for T in terms of x and y.</p> <p>.....</p> <p>(1)</p> <p>(Total 3 marks)</p>	<p>Leave blank</p> <p>Q7</p> <div></div>
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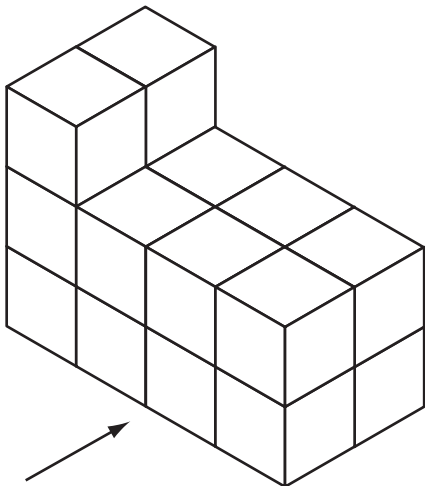


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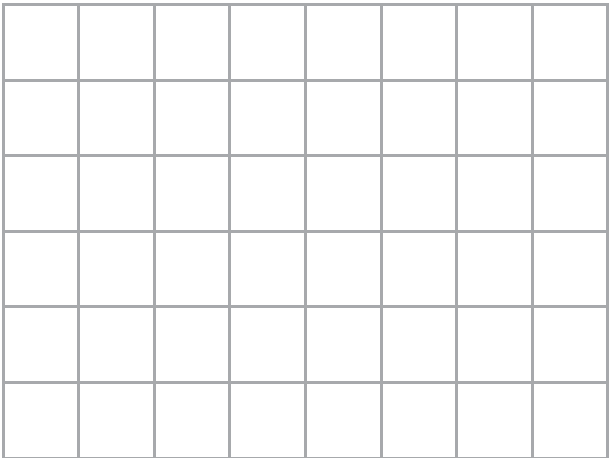


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8. The diagram shows a solid prism made from centimetre cubes.

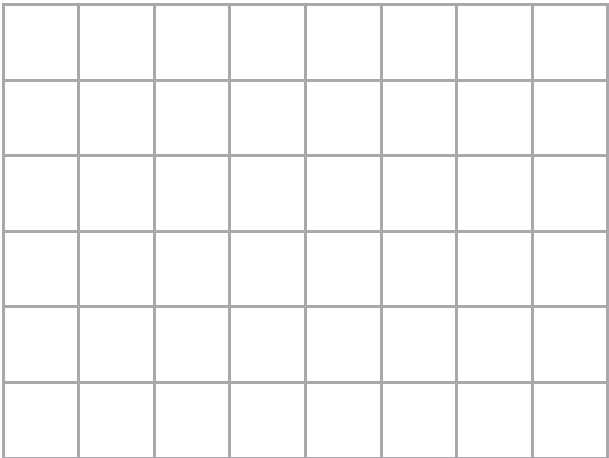


(a) On the centimetre square grid, draw the front elevation of the solid prism from the direction shown by the arrow.



(2)

(b) On the centimetre square grid below, draw the plan of the solid prism.



(2)

Q8

(Total 4 marks)





<p>9. (a) Solve $3(k - 5) = 24$</p> <p>.....</p> <p>(2)</p> <p>$2x^2 = 162$</p> <p>(b) Find a value of x.</p> <p>.....</p> <p>(2)</p> <p>(Total 4 marks)</p>	<p>Leave blank</p> <p>Q9</p> <div></div>
<p>10. Work out $(5.2 \times 10^{-7}) \times (2.8 \times 10^{-9})$</p> <p>Give your answer in standard form.</p> <p>.....</p> <p>(Total 2 marks)</p>	<p>Q10</p> <div></div>

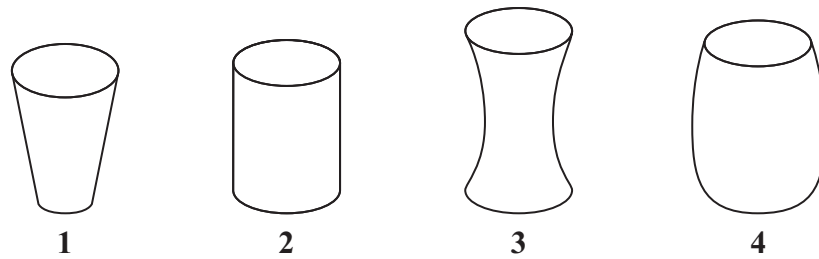


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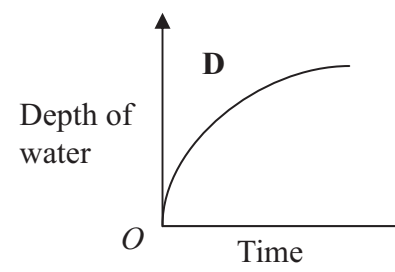
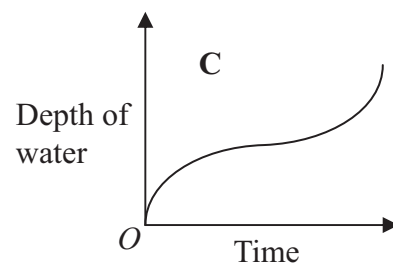
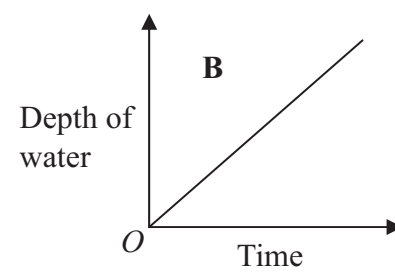
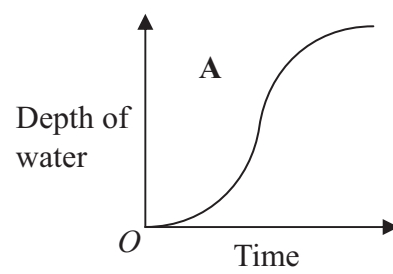


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11. Here are four containers.
Water is poured into each container at a constant rate.



Here are four graphs.
The graphs show how the depth of the water in each container changes with time.



Match each graph with the correct container.

A and

B and

C and

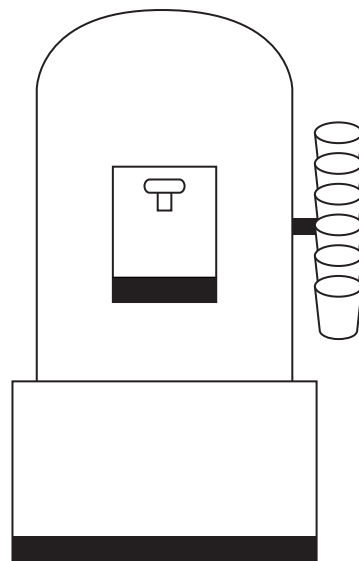
D and

(Total 2 marks)

Q11



12.



A water container has 19.5 litres of water in it.
A cup holds 210 ml of water.

At most 92 cups can be filled completely from the water container.
Explain why.
You must show all your working.

Leave
blank

Q12

(Total 3 marks)

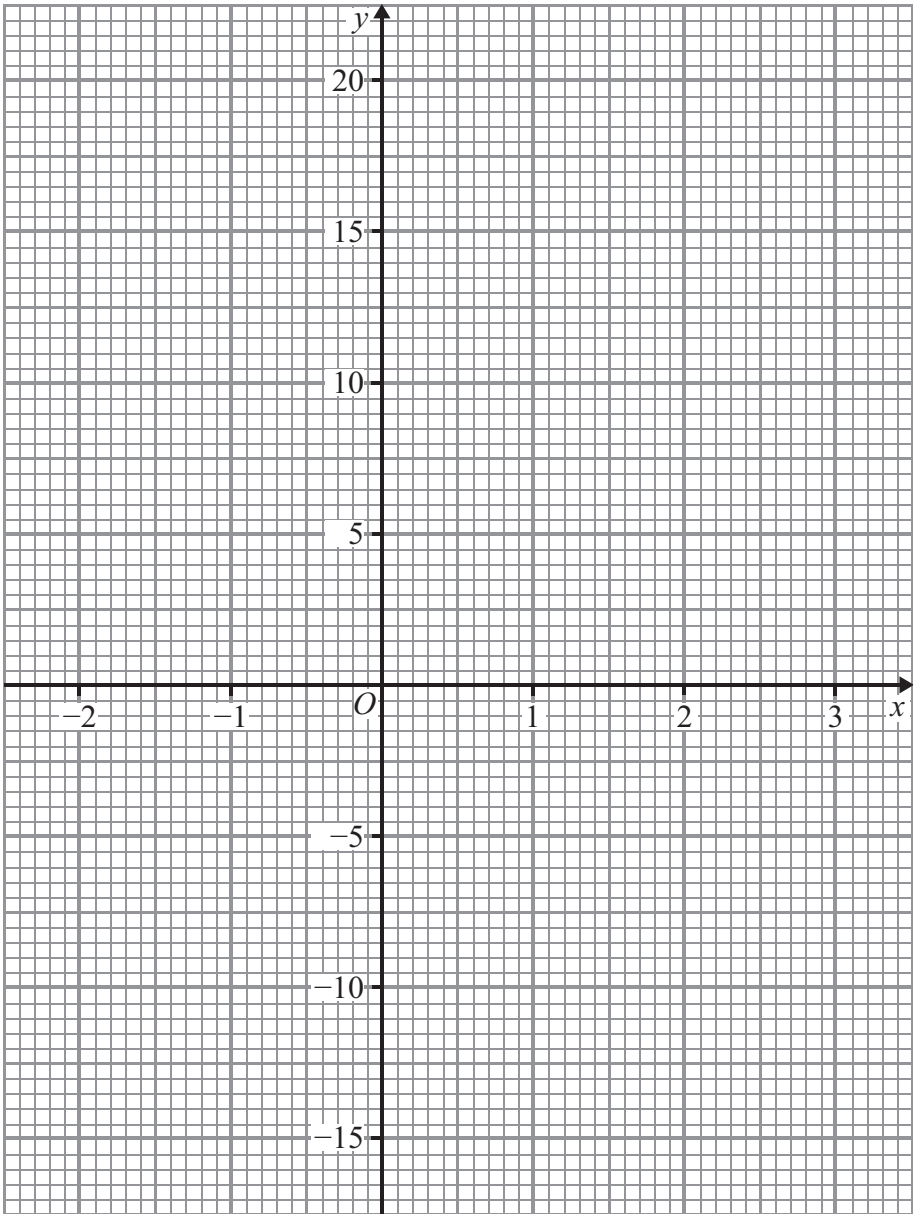


13. (a) Complete the table of values for $y = x^3 - 7$

x	-2	-1	0	1	2	3
y		-8				20

(2)

(b) On the grid, draw the graph of $y = x^3 - 7$ for values of x from -2 to 3



(2)

Q13

(Total 4 marks)





14.

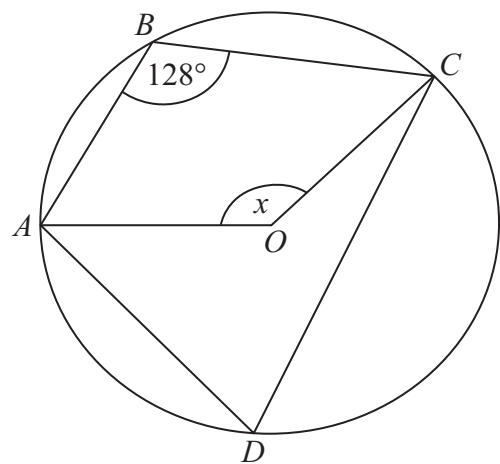


Diagram **NOT**
accurately drawn

The diagram shows a circle, centre O .
 A , B , C and D are points on the circumference of the circle.
Angle $ABC = 128^\circ$.
Work out the size of the angle marked x .

.....^o

(Total 2 marks)

Leave
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Q14

15.

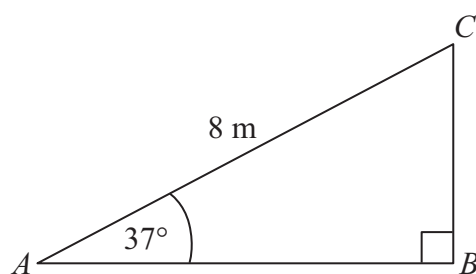


Diagram **NOT**
accurately drawn

ABC is a right-angled triangle.
 $AC = 8$ m.
Angle $CAB = 37^\circ$.
Calculate the length of AB .
Give your answer correct to 3 significant figures.

..... m

(Total 3 marks)

Q15



16.

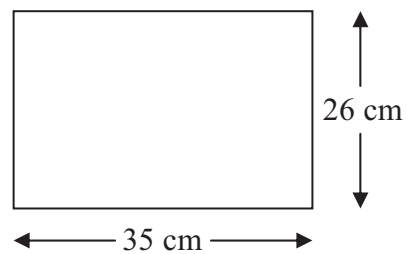


Diagram **NOT**
accurately drawn

The length of the rectangle is 35 cm correct to the nearest cm.
The width of the rectangle is 26 cm correct to the nearest cm.

Calculate the upper bound for the area of the rectangle.
Write down all the figures on your calculator display.

..... cm²

(Total 3 marks)

Leave
blank

Q16





<p>17. Solve $\frac{x}{2} + \frac{x}{3} = 8$</p> <p>$x = \dots\dots\dots$</p> <p>(Total 2 marks)</p>	<p>Leave blank</p> <p>Q17</p> <div></div>
<p>18. Make n the subject of the formula</p> $a = \frac{6a - n}{3 + n}$ <p>$n = \dots\dots\dots$</p> <p>(Total 4 marks)</p>	<p>Q18</p> <div></div>



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19.

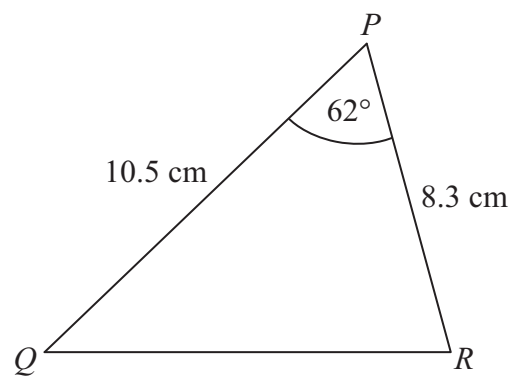


Diagram **NOT**
accurately drawn

In triangle PQR ,

$PQ = 10.5$ cm,
 $PR = 8.3$ cm,
angle $QPR = 62^\circ$.

- (a) Calculate the area of triangle PQR .
Give your answer correct to 3 significant figures.

.....cm²
(2)

- (b) Calculate the length of QR .
Give your answer correct to 3 significant figures.

.....cm
(3)

Q19

(Total 5 marks)

TOTAL FOR PAPER: 60 MARKS

END

