

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



Tuesday 10 November 2009 – 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 18 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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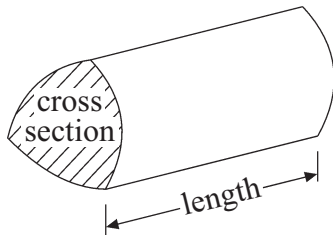
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GCSE Mathematics 2381

Formulae: Higher Tier

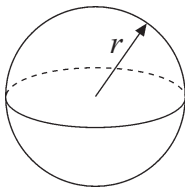
**You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.**

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



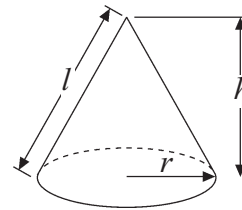
Volume of sphere = $\frac{4}{3}\pi r^3$

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

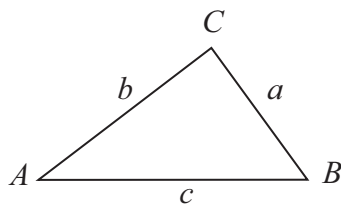


Volume of cone = $\frac{1}{3}\pi r^2 h$

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



Answer ALL EIGHTEEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. Use your calculator to work out the value of $\frac{8.7 \times 12.3}{9.5 - 5.73}$

Write down all the digits from your calculator.
Give your answer as a decimal.

.....

(Total 2 marks)

Q1

2. (a) $p = 2$
 $q = -4$

Work out the value of $3p + 5q$

.....

(2)

- (b) Solve $8x + 11 = 39$

$x =$

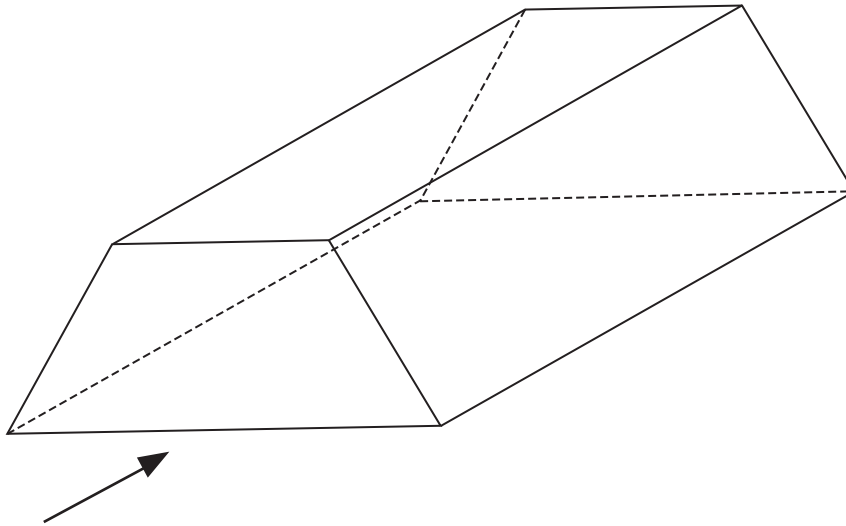
(2)

(Total 4 marks)

Q2



3.



The diagram shows a prism.

- (a) On the diagram, draw in **one** plane of symmetry for the prism. (2)

- (b) In the space below, sketch the front elevation from the direction marked with an arrow.

(2) **Q3**

(Total 4 marks)



4. A circle has a radius of 5 cm.

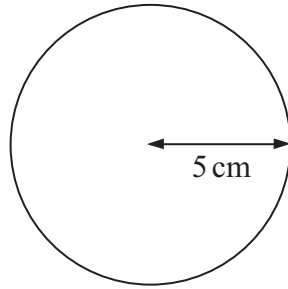


Diagram **NOT** accurately drawn

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

..... cm²

(Total 2 marks)

Q4

5. A regular polygon has 12 sides.

Work out the size of an exterior angle of this regular polygon.

..... °

(Total 2 marks)

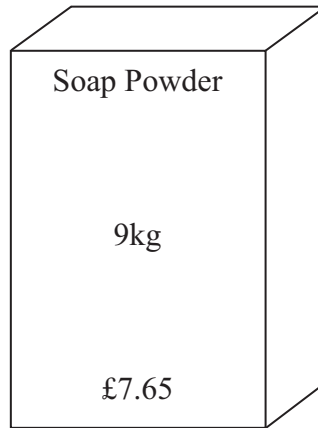
Q5



6. Soap powder is sold in two sizes of box.



Small box



Large box

A small box contains 2 kg of soap powder and costs £1.72
A large box contains 9 kg of soap powder and costs £7.65

Which size of box gives the better value for money?

.....

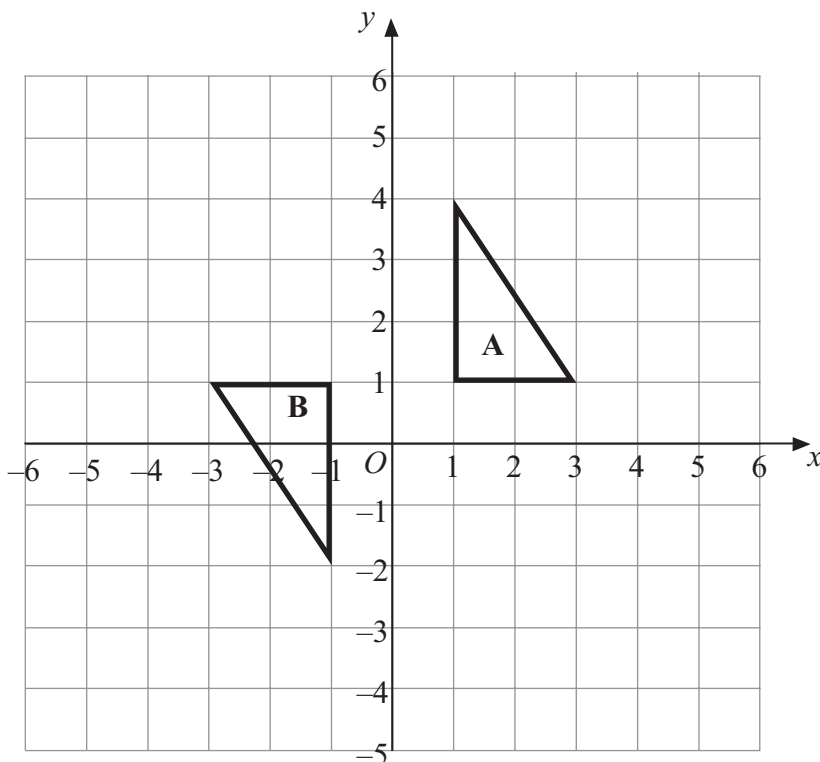
Explain your answer.
You must show all your working.

(Total 3 marks)

Q6



7.



Describe fully the single transformation that maps triangle A onto triangle B.

.....


.....

(Total 3 marks)

Q7

8. A computer costs £360 plus $17\frac{1}{2}\%$ VAT.

Calculate the total cost of the computer.

	£360
	plus
	$17\frac{1}{2}\%$ VAT

£

(Total 3 marks)

Q8



9. A piece of wood is 180 cm long.
Tom cuts it into three pieces in the ratio 2 : 3 : 4

Work out the length of the longest piece.

..... cm

(Total 3 marks)

Q9

10. The equation

$$x^3 + 2x = 60$$

has a solution between 3 and 4

Use a trial and improvement method to find this solution.

Give your answer correct to 1 decimal place.

You must show all your working.

$x =$

(Total 4 marks)

Q10



11. (a) Simplify $m^3 \times m^4$

.....
(1)

(b) Simplify $p^7 \div p^3$

.....
(1)

(c) Simplify $4x^2y^3 \times 3xy^2$

.....
(2)

(Total 4 marks)

Q11

12.

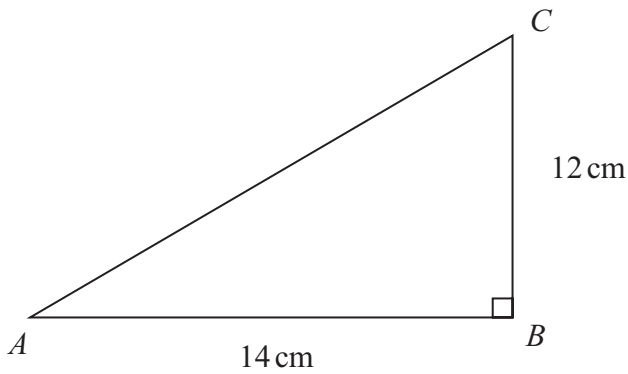


Diagram NOT accurately drawn

ABC is a right-angled triangle.

$AB = 14$ cm.

$BC = 12$ cm.

Calculate the length of AC .

Give your answer correct to 3 significant figures.

..... cm

(Total 3 marks)

Q12



13. Solve $\frac{29-x}{4} = x+5$

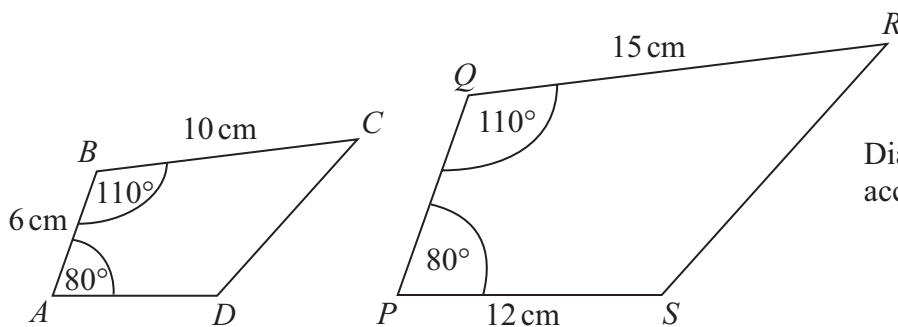
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$x = \dots\dots\dots$

(Total 3 marks)

Q13

14.



Diagrams **NOT** accurately drawn

$ABCD$ and $PQRS$ are mathematically similar.

(a) Find the length of PQ .

$\dots\dots\dots$ cm
(2)

(b) Find the length of AD .

$\dots\dots\dots$ cm
(2)

(Total 4 marks)

Q14



15. y is directly proportional to x .

When $x = 500$, $y = 10$

Find a formula for y in terms of x .

$y = \dots\dots\dots$

(Total 3 marks)

Q15

16.

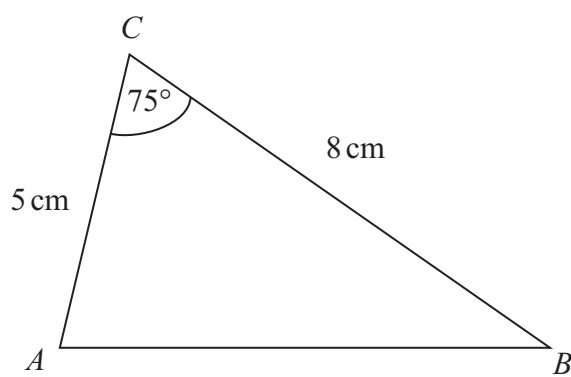


Diagram NOT accurately drawn

In triangle ABC ,

$AC = 5$ cm.

$BC = 8$ cm.

Angle $ACB = 75^\circ$.

Calculate the length of AB .

Give your answer correct to 3 significant figures.

$\dots\dots\dots$ cm

(Total 3 marks)

Q16



17. $v = \sqrt{\frac{a}{b}}$

$a = 6.43$ correct to 2 decimal places.

$b = 5.514$ correct to 3 decimal places.

By considering bounds, work out the value of v to a suitable degree of accuracy.

You must show all your working and give a reason for your final answer.

$v = \dots\dots\dots$

(Total 5 marks)

Q17



18. Solve $\frac{4}{x+3} + \frac{3}{2x-1} = 1$

.....
Q18

(Total 5 marks)

TOTAL FOR PAPER: 60 MARKS**END**

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