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 11 June 2010 – Morning

Time: 1 hour 10 minutes

Examiner's use only		

Team Leader's use only		

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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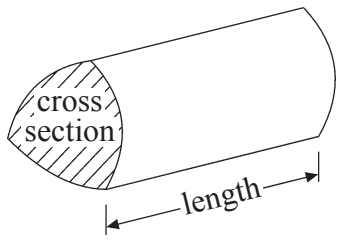
GCSE Mathematics

Formulae: Higher Tier

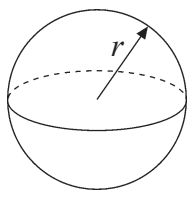
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length



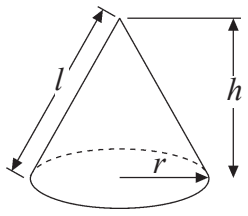
Volume of sphere $= \frac{4}{3}\pi r^3$

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

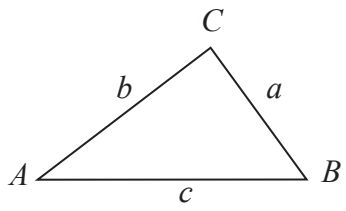


Volume of cone $= \frac{1}{3}\pi r^2 h$

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

Leave blank

Answer ALL EIGHTEEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. Here is a list of ingredients for making a trifle for 4 people.

Trifle for 4 people

120 g	of raspberry jelly
8	sponge fingers
420 m*l*	of custard
180 g	of tinned fruit

Rob is going to make a trifle for 6 people.
Work out the amount of each ingredient he needs.

..... g of raspberry jelly

..... sponge fingers

..... m*l* of custard

..... g of tinned fruit

(Total 3 marks)

Q1

Leave blank

2. In August 2008, Eddie hired a car in Italy.

The cost of hiring the car was £620
The exchange rate was £1 = €1.25

(a) Work out the cost of hiring the car in euros (€).

€ .....

(2)

Eddie bought some perfume in Italy.

The cost of the perfume in Italy was €50
The cost of the same perfume in London was £42

The exchange rate was still £1 = €1.25

(b) Work out the difference between the cost of the perfume in Italy and the cost of the perfume in London.
Give your answer in pounds (£).

£ .....

(3)

(Total 5 marks)

Q2

Leave blank

3. A circle has a diameter of 12 cm.

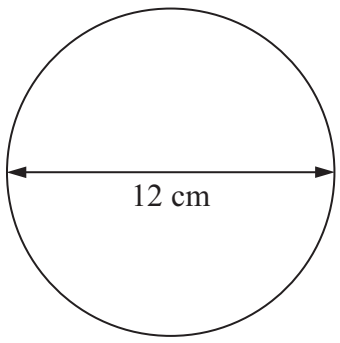


Diagram **NOT** accurately drawn

(a) Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

..... cm
(2)

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

..... cm^2
(2)

Q3

(Total 4 marks)

Turn over

Leave blank

4. The equation

$$x^3 + 10x = 25$$

has a solution between 1 and 2

Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **all** your working.

$x =$ .....

(Total 4 marks)

Q4

5. (a) Solve $8x - 3 = 17$

$x =$ .....

(2)

(b) Solve $\frac{2y}{3} = 9$

$y =$ .....

(2)

(Total 4 marks)

Q5

Leave blank

6.

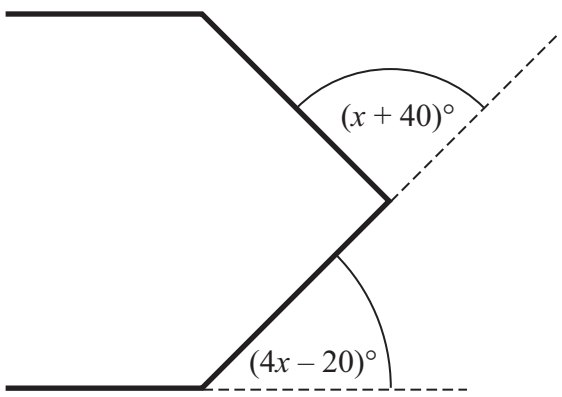


Diagram **NOT** accurately drawn

The diagram shows two exterior angles of a regular polygon.

(a) Explain why $4x - 20 = x + 40$

.....

(1)

(b) Solve $4x - 20 = x + 40$

$x =$ .....

(2)

Q6

(Total 3 marks)

7. Work out £84 as a percentage of £350

..... %

Q7

(Total 2 marks)

Leave blank

8.

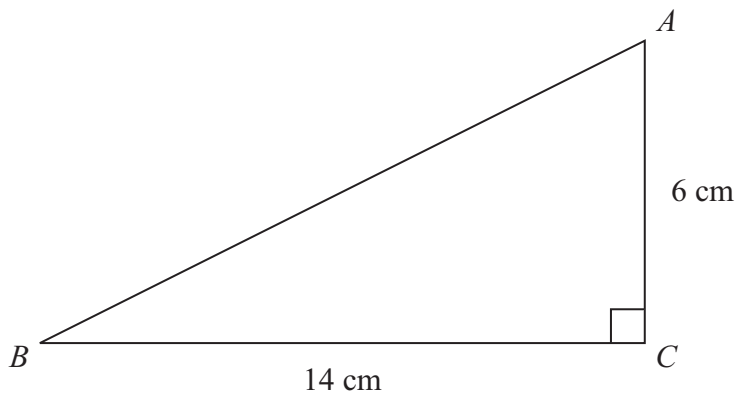


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.
AC = 6 cm.
BC = 14 cm.

Calculate the length of *AB*.
Give your answer correct to 2 decimal places.

..... cm

(Total 3 marks)

Q8

Leave blank

9. The diagram shows a solid prism.

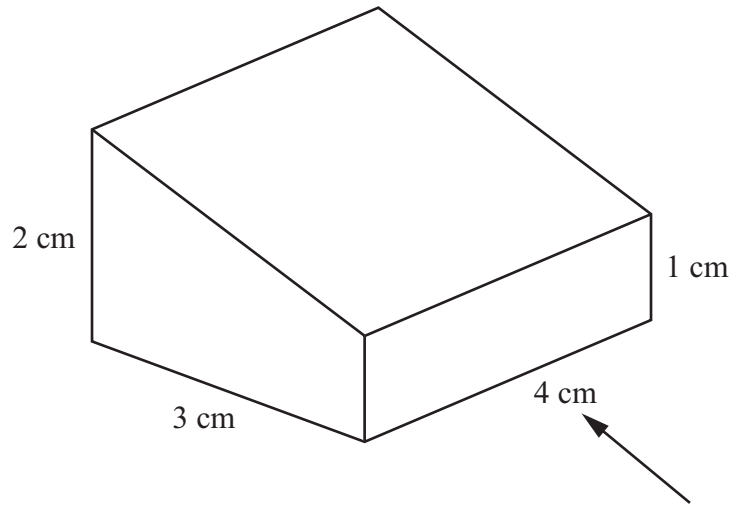
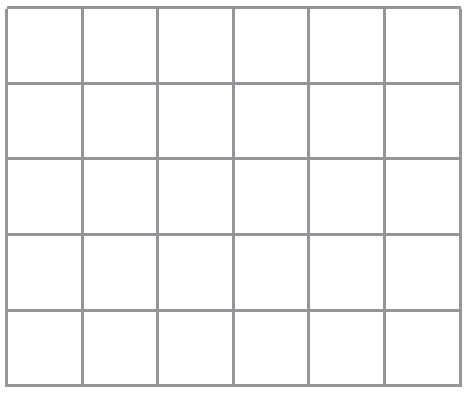


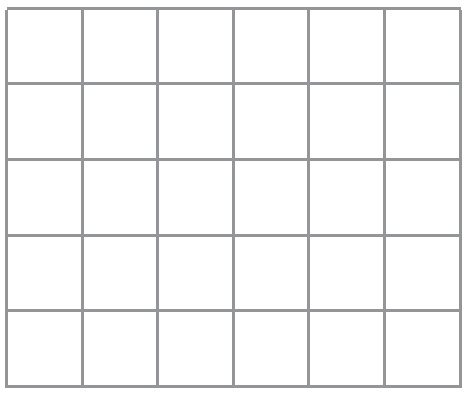
Diagram **NOT** accurately drawn

(a) On the grid below, draw the front elevation of the prism from the direction of the arrow.



(2)

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



(2) **Q9**

(Total 4 marks)

Leave blank

10. $-4 < n \leqslant 1$
n is an integer.

(a) Write down all the possible values of n.

.....

(2)

(b) Solve $3x - 2 > x + 7$

.....

(2) **Q10**

(Total 4 marks)

11. Draw the locus of all points which are equidistant from the lines AB **and** AC.

Q11

(Total 2 marks)

Leave blank

12. Make A the subject of the formula

$$r = \sqrt{\frac{A}{3}}$$

$A =$ .....

(Total 2 marks)

Q12

13. Work out the value of

$$24\,500 \div (1.25 \times 10^{-4})$$

Give your answer in standard form.

.....

(Total 2 marks)

Q13

14.

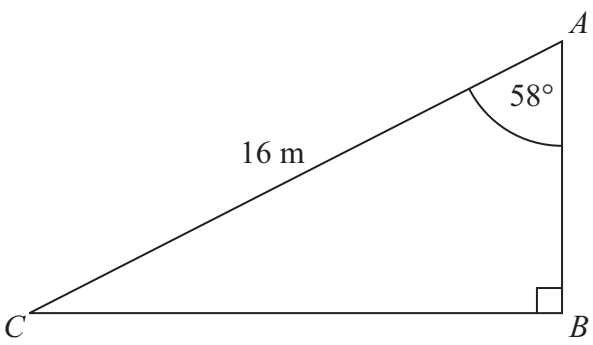


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.
$AC = 16$ m.
Angle $CAB = 58°$

Calculate the length of AB.
Give your answer correct to 3 significant figures.

..... m

(Total 3 marks)

Q14

Leave blank

15. A field is in the shape of a rectangle.
The width of the field is 28 metres, measured to the nearest metre.

(a) Work out the upper bound of the width of the field.

..... metres
(1)

The length of the field is 145 metres, measured to the nearest 5 metres.

(b) Work out the upper bound for the perimeter of the field.

..... metres
(3)

(Total 4 marks)

Q15

16. (a) Simplify $p^5 \times p^4$

.....
(1)

(b) For $x > 1$, write the following expressions in order of size.
Start with the expression with the least value.

x^0 x^2 x x^{-2} $x^{\frac{1}{2}}$

.....
(2)

(Total 3 marks)

Q16

Leave blank

17. The diagram shows a sector of a circle with centre O.
The radius of the circle is 8 cm.

PRS is an arc of the circle.
PS is a chord of the circle.
Angle $POS = 40°$

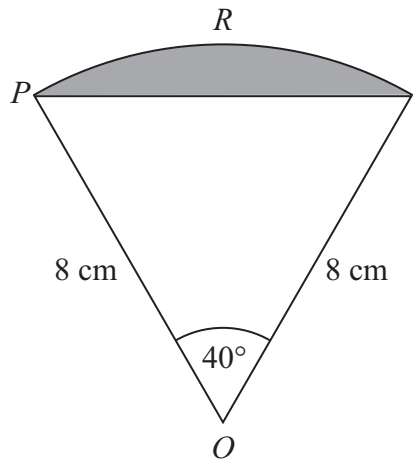


Diagram **NOT** accurately drawn

Calculate the area of the shaded segment.
Give your answer correct to 3 significant figures.

..... cm^2

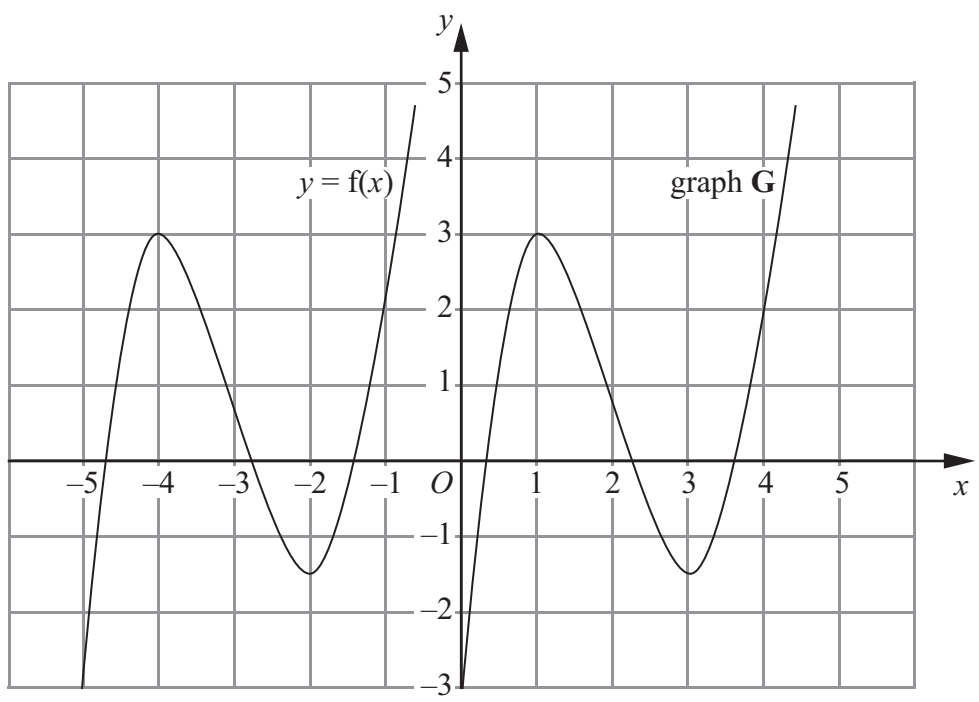
Q17

(Total 5 marks)

Turn over

Leave blank

18. The graph of $y = f(x)$ is shown on the grid.



The graph **G** is a translation of the graph of $y = f(x)$.

(a) Write down, in terms of f, the equation of graph **G**.

$y =$ .....

(1)

The graph of $y = f(x)$ has a maximum point at $(-4, 3)$.

(b) Write down the coordinates of the maximum point of the graph of $y = f(-x)$.

(..... , ...)

(2) **Q18**

(Total 3 marks)

TOTAL FOR PAPER: 60 MARKS

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