Centre No.						Paper Reference								Surname	Initial(s)
Candidate No.						5	3	8	3	H	/	1	0	Signature	

Paper Reference(s)

5383H/10

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 10 (Calculator)

Higher Tier

Unit 2 Stage 2

Monday 21 June 2010 – Afternoon

Time: 30 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 10 questions in this question paper. The total mark for this paper is 25.
There are 8 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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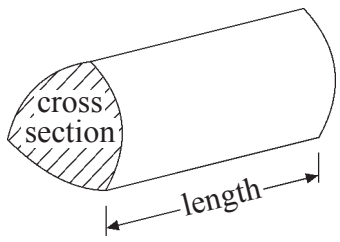
GCSE Mathematics

Formulae: Higher Tier

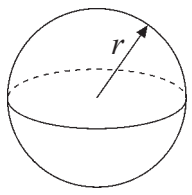
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length



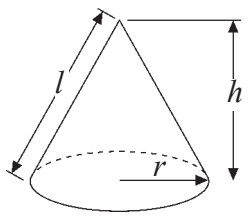
Volume of sphere $= \frac{4}{3}\pi r^3$

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

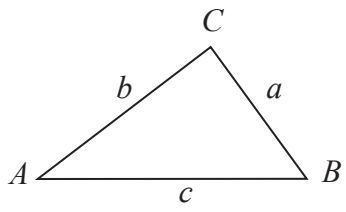


Volume of cone $= \frac{1}{3}\pi r^2 h$

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

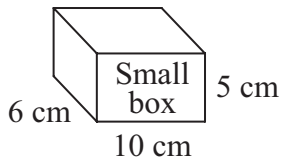
Leave blank

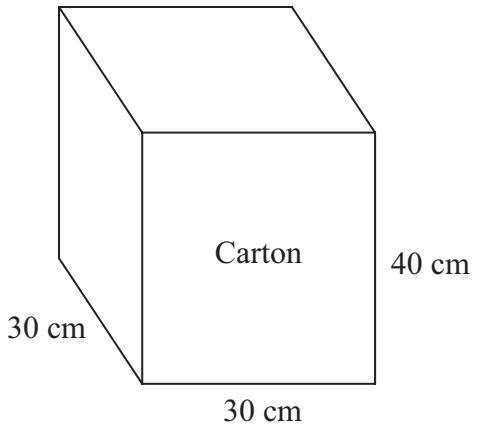
Answer ALL TEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1.





Diagrams **NOT** accurately drawn

A small box measures 6 cm by 10 cm by 5 cm.
A carton measures 30 cm by 30 cm by 40 cm.

The carton is completely filled with small boxes.

Work out the number of small boxes in the carton.

.....

(Total 3 marks)

Q1

Leave blank

2. (a) Simplify $3a + 2b + a - 5b$

.....

(2)

(b) Expand $4(x - 2)$

.....

(1) **Q2**

(Total 3 marks)

3. Work out the value of $\dfrac{6.5^2}{7.3 - 2.54}$

Write down all the figures on your calculator display.
You must give your answer as a decimal.

.....

(Total 2 marks) **Q3**

4. Write as a power of 7

(i) $7^6 \times 7^2$

.....

(ii) $7^9 \div 7^5$

.....

(Total 2 marks) **Q4**

Leave blank

5. The density of iron is 7850 kg/m^3.

Work out the mass of 4 m^3 of iron.

..... kg

Q5

(Total 2 marks)

6. The population of Italy is 6×10^7
The population of San Marino is 3×10^4

The population of Italy is bigger than the population of San Marino.
How many times bigger?

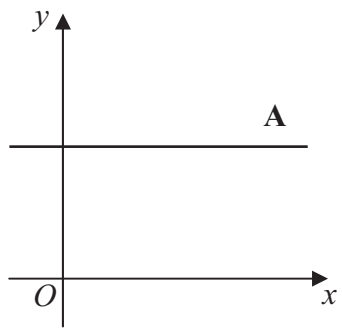
.....

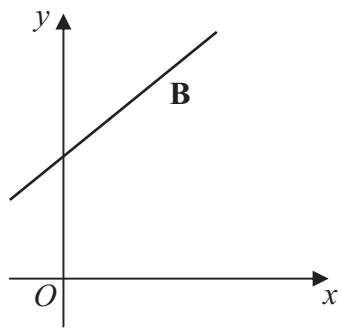
Q6

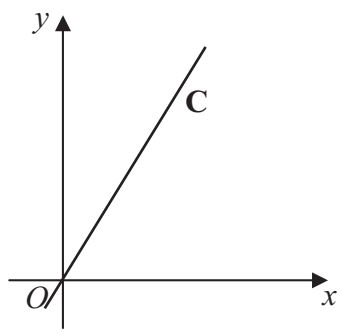
(Total 2 marks)

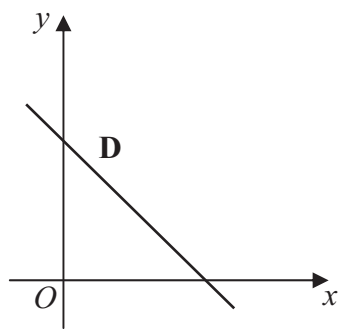
Leave blank

7. Here are the graphs of four straight lines labelled **A**, **B**, **C** and **D**.









The equations of the straight lines are

$y = 3x$ $\quad$ $y = x + 3$ $\quad$ $y = 3$ $\quad$ $y = 3 - x$

Match each straight line, **A**, **B**, **C** and **D**, to its equation.
Complete the table.

Equation	Straight line
$y = 3x$	
$y = x + 3$	
$y = 3$	
$y = 3 - x$	

Q7

(Total 2 marks)

Leave blank

8.

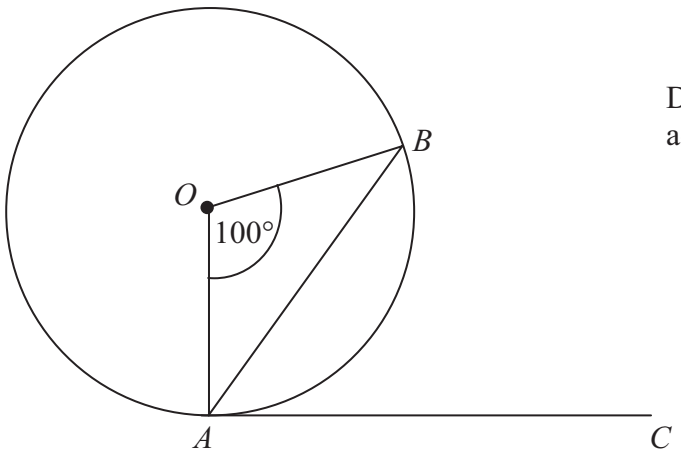


Diagram **NOT** accurately drawn

A and *B* are points on the circumference of a circle, centre *O*.
AC is a tangent to the circle.

Angle *AOB* = 100°

Find the size of angle *BAC*.
Give reasons for each stage of your working.

.....°

Q8

(Total 3 marks)

Turn over

Leave blank

9. Simplify fully $\dfrac{3x^2 + x - 4}{2x^2 - 2x}$

.....

Q9

(Total 3 marks)

10. Use algebra to prove that the sum of three consecutive whole numbers is always divisible by 3

Q10

(Total 3 marks)

TOTAL FOR PAPER: 25 MARKS

END