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

Paper Reference(s)

5384H/14H

Examiner's use only

Team Leader's use only

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 14 (Calculator)

Higher Tier

Unit 3

Monday 14 November 2011 – Morning

Time: 1 hour 10 minutes

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 17 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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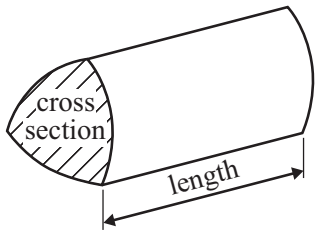
GCSE Mathematics 2381

Formulae: Higher Tier

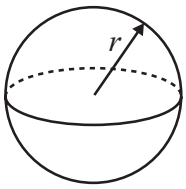
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length



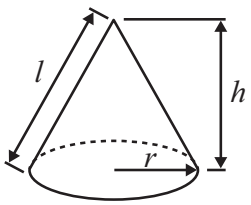
Volume of sphere $= \frac{4}{3}\pi r^3$

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

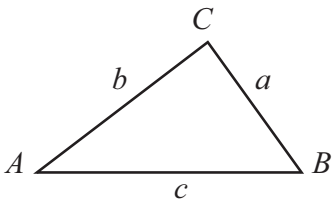


Volume of cone $= \frac{1}{3}\pi r^2 h$

Curved surface area of cone $= \pi rl$



In any triangle ABC



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

The Quadratic Equation

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

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

P 4 0 0 9 0 R A 0 2 1 6

Leave blank

Answer ALL SEVENTEEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. (a) Solve $10x - 7 = 28$

$x =$ .....

(2)

(b) Solve $\frac{4y}{9} = 6$

$y =$ .....

(2) **Q1**

(Total 4 marks)

2. A shop advertises a TV for a cash price of £650

A person can pay for the TV by credit.
The credit cost is a 20% deposit of the cash price, plus 24 payments of £26 each.

Work out the difference between the cash price and the credit cost.

£ .....

Q2

(Total 4 marks)

Leave blank

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

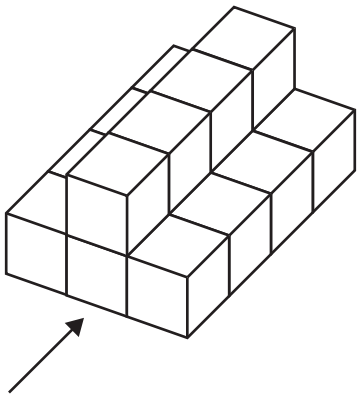
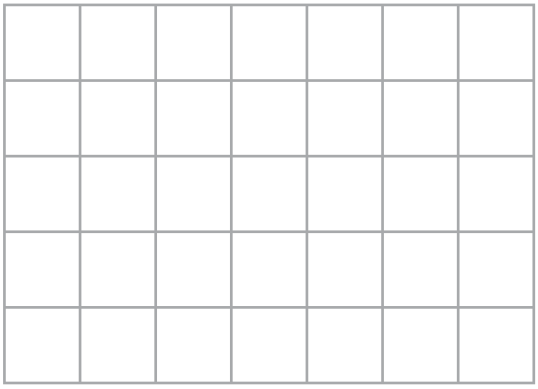


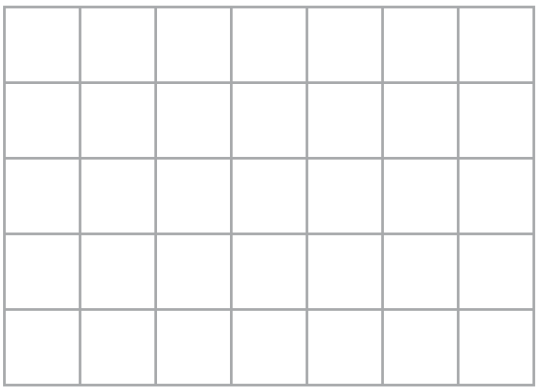
Diagram **NOT** accurately drawn

(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) **Q3**

(Total 4 marks)

Leave blank

4. (a) Work out the value of $\frac{6^5 \times 6^2}{6^4}$

Give your answer as a power of 6

.....

(2)

(b) Simplify $(x^3)^5$

.....

(1)

Q4

(Total 3 marks)

5. The diagram shows a CD.
The CD is a circle of radius 6 cm.

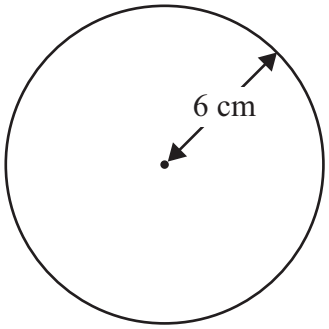


Diagram **NOT** accurately drawn

Work out the circumference of the CD.

..... cm

Q5

(Total 2 marks)

Leave blank

6.

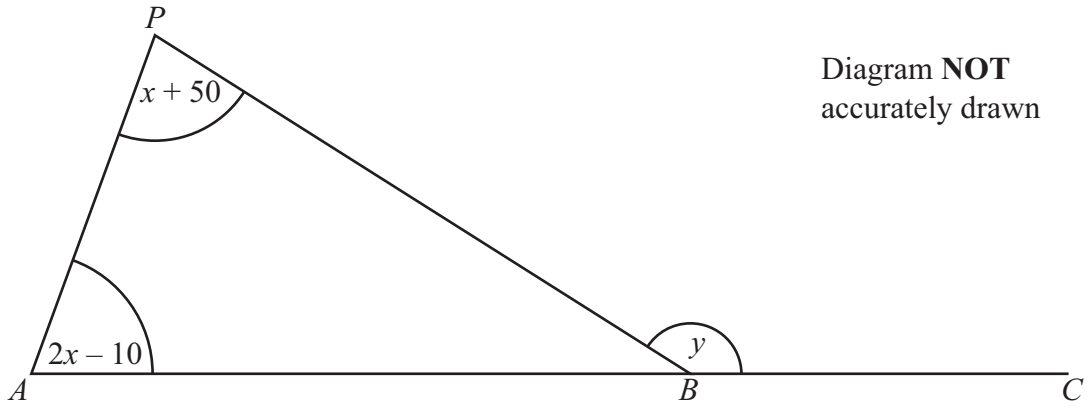


Diagram **NOT** accurately drawn

All angles are measured in degrees.

ABC is a straight line.
Angle *APB* = $x + 50$
Angle *PAB* = $2x - 10$
Angle *PBC* = y

(a) Show that $y = 3x + 40$
Give reasons for each stage of your working.

(3)

(b) Given that $y = 145$,

(i) work out the value of x,

$x =$ .....

(ii) work out the size of the largest angle in triangle *ABP*.

..... °

(4) **Q6**

(Total 7 marks)

Leave blank

7. Melissa is 13 years old.
Becky is 12 years old.
Daniel is 10 years old.

Melissa, Becky and Daniel share £28 in the ratio of their ages.
Becky gives a third of her share to her mother.

How much should Becky now have?

£ .....

Q7

(Total 4 marks)

8. The exchange rate in London is £1 = €1.14
The exchange rate in Paris is €1 = £0.86

Elaine wants to change some pounds into euros.

In which of these cities would Elaine get the most euros?
You must show all of your working.

.....

Q8

(Total 3 marks)

Leave blank

9. The diagram shows a right-angled triangle.

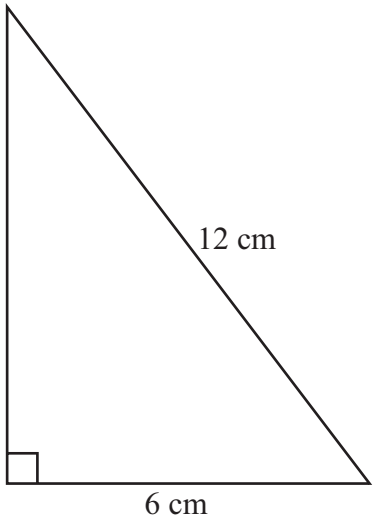


Diagram **NOT** accurately drawn

Calculate the area of the right-angled triangle.
Give your answer correct to 2 decimal places.

..... cm^2

Q9

(Total 4 marks)

10. The equation of a straight line is $y = 2x + 1$

Write down the equation of a straight line that is perpendicular to $y = 2x + 1$

.....

Q10

(Total 2 marks)

Leave blank

11. Solve the inequality $4x + 1 > 11$

.....

Q11

(Total 2 marks)

12.

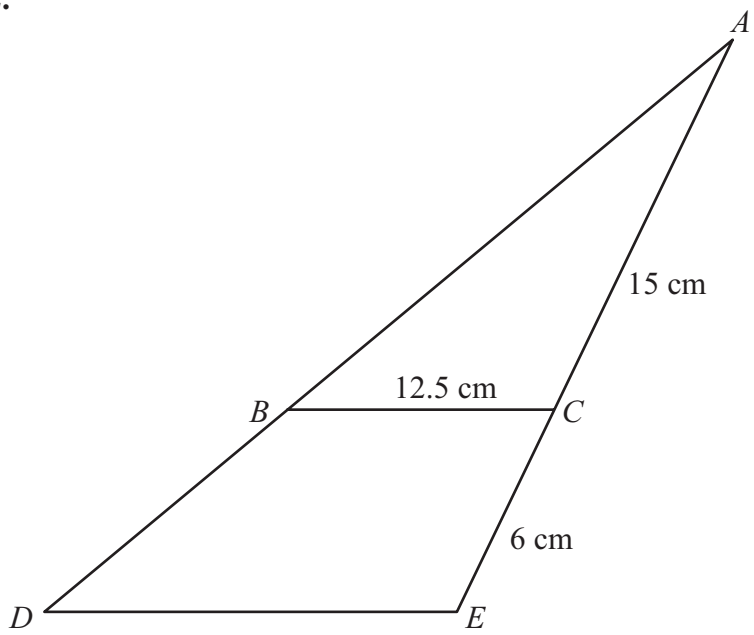


Diagram **NOT** accurately drawn

Triangle *ABC* is similar to triangle *ADE*.
AC = 15 cm.
CE = 6 cm.
BC = 12.5 cm.

Work out the length of *DE*.

..... cm

Q12

(Total 3 marks)

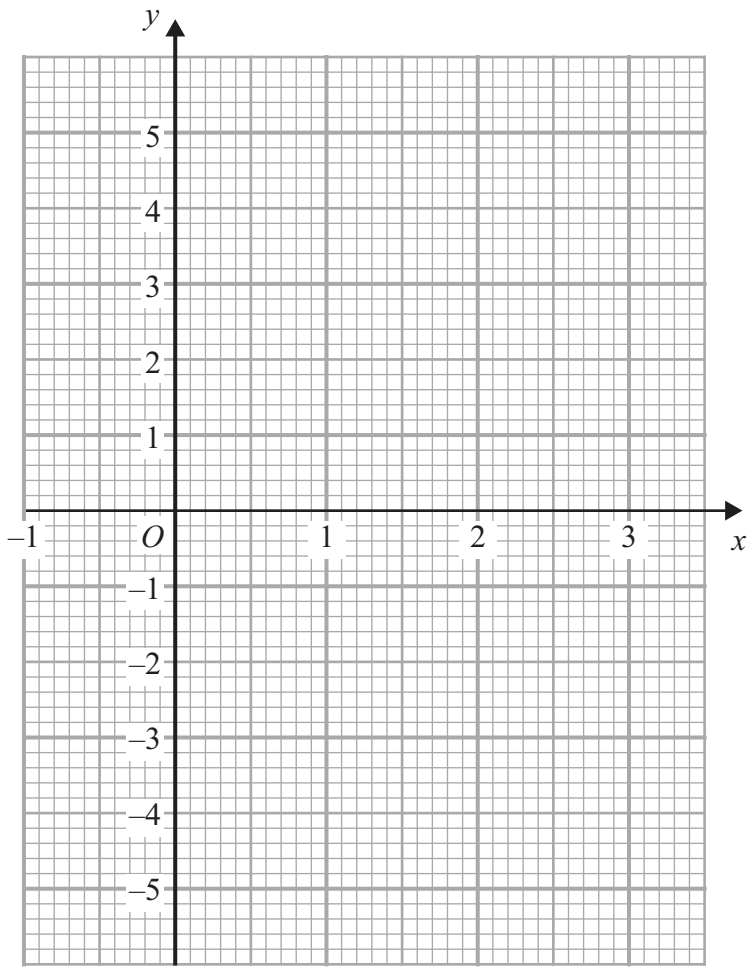
Leave blank

13. (a) Complete the table for $y = x^3 - 3x^2$

x	–1	–0.5	0	0.5	1	1.5	2	2.5	3
y		–0.875	0	–0.625		–3.375		–3.125	

(2)

(b) On the grid, draw the graph of $y = x^3 - 3x^2$



(2) **Q13**

(Total 4 marks)

Leave blank

14. Find the exact solutions of $x + \frac{3}{x} = 7$

.....

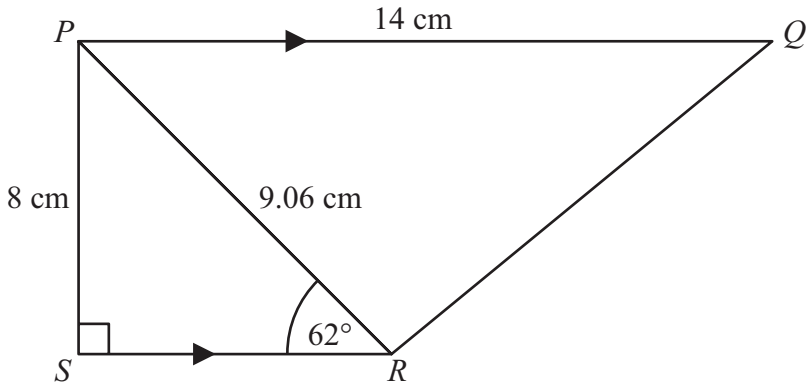
Q14

(Total 3 marks)

Leave blank

15.

Diagram **NOT** accurately drawn



PQRS is a trapezium.
PQ is parallel to *SR*.
Angle *PSR* = 90°.
Angle *PRS* = 62°.
PQ = 14 cm.
PS = 8 cm.
PR = 9.06 cm.

Work out the length of *QR*.
Give your answer to 3 significant figures.

..... cm

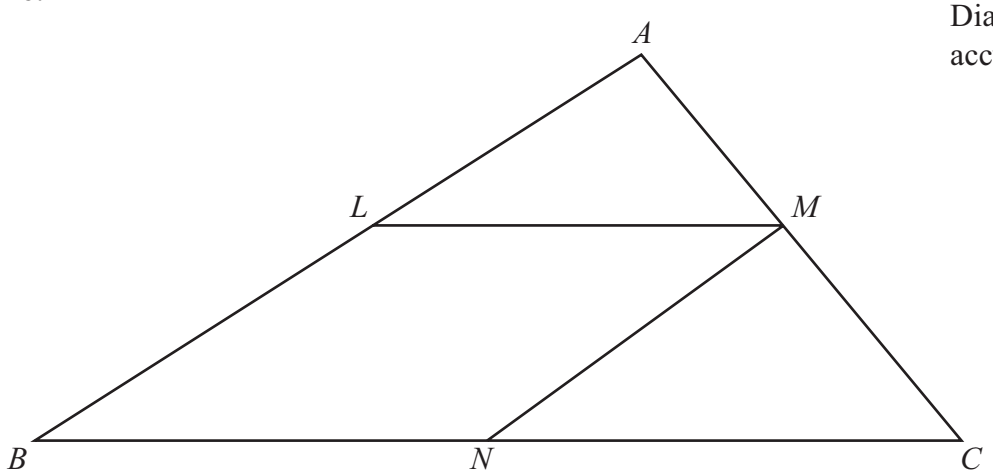
Q15

(Total 4 marks)

Leave blank

16.

Diagram **NOT** accurately drawn



The diagram shows a triangle *ABC*.

LMNB is a parallelogram where
L is the midpoint of *AB*,
M is the midpoint of *AC*,
and *N* is the midpoint of *BC*.

Prove that triangle *ALM* and triangle *MNC* are congruent.
You must give reasons for each stage of your proof.

Q16

(Total 3 marks)

Leave blank

17.

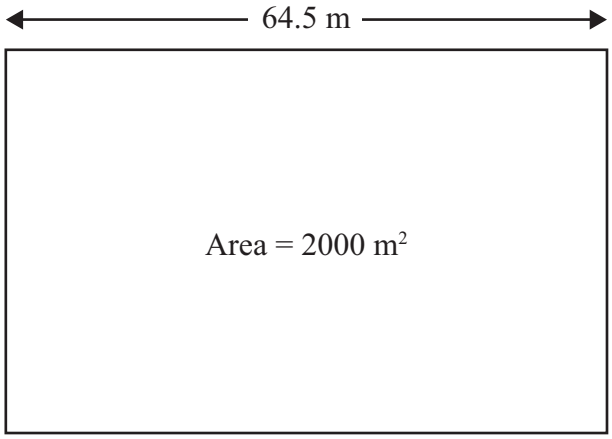


Diagram **NOT** accurately drawn

The diagram shows a rectangular field.

The area of the field is 2000 m^2, correct to 1 significant figure.
The length of the field is 64.5 m, correct to the nearest 10 cm.

Calculate the upper bound for the width of the field.
Give your answer correct to 3 significant figures.

..... m

Q17

(Total 4 marks)

TOTAL FOR PAPER: 60 MARKS

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