

The PiXL Club

PARTNERS IN
EXCELLENCE

Practice Paper

Produced for the following syllabus

Paper Reference(s)

5384H/14H

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 14 (Calculator)

Higher Tier

Unit 3



June 2010

This paper is one of two produced post the non-calculator paper.

It is our best guess at what the calculator paper might look like.

It should be stressed that it is far more problematic to guess the shape of this paper than might normally be the case. We have a very limited number of real past papers to take into account.

We offer this paper as a service, but make no great claims as to its accuracy .

Time: 1 hour 10min

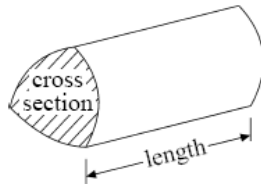
Marks: 60

GCSE Mathematics (Linear) 1380

Formulae: Higher Tier

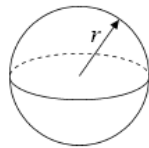
**You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.**

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



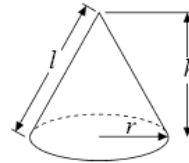
Volume of sphere = $\frac{4}{3}\pi r^3$

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

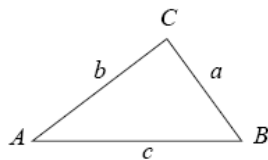


Volume of cone = $\frac{1}{3}\pi r^2 h$

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

Question 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)

Question 2

Here is a list of ingredients for making 8 cheese scones.

Ingredients for 8 cheese scones
200 g self-raising flour
60 g butter
30 g cheese
150 ml milk

Work out the amount of each ingredient needed to make 12 cheese scones.

..... g self-raising flour

..... g butter

..... g cheese

..... ml milk

(Total 3 marks)

Question 3

Fred went on holiday to America.
He changed £475 to dollars (\$).

$$£1 = \$1.96$$

How many dollars should Fred get?

\$.....
(Total 2 marks)

Question 4

The diameter of a circle is 15 centimetres.

Work out the circumference of the circle.

Give your answer, in centimetres, correct to 1 decimal place.

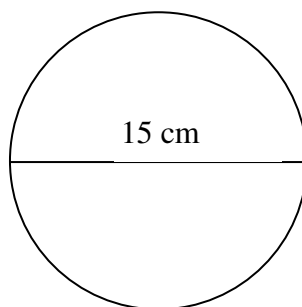


Diagram **NOT**
accurately drawn

.....
(3 marks)

Question 5

(a) Solve $2(y - 3) = 8$

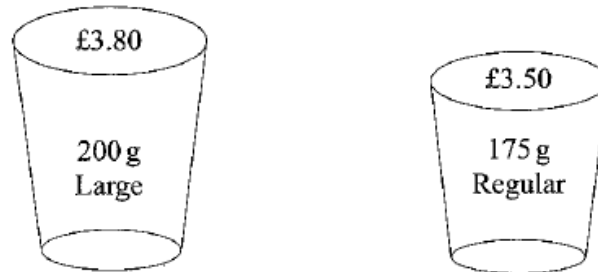
$y = \dots\dots\dots$
(2)

(b) Solve $4x + 1 = 2x + 12$

$x = \dots\dots\dots$
(2)

(Total 4 marks)

Question 6



A Large tub of popcorn costs £3.80 and holds 200 g.
A Regular tub of popcorn costs £3.50 and holds 175 g.

Rob says that the 200 g Large tub is the better value for money.
Linda says that the 175 g Regular tub is the better value for money.

Who is correct?

.....

Explain the reasons for your answer.
You must show all your working.

(Total 2 marks)

Question 7

Two girls share £24.80 in the ratio 3:5

Work out the difference between the larger share and the smaller share.

£.....

(Total 3 marks)

Question 8

(a) Solve the inequality

$$3t + 1 < t + 12$$

.....
(2)

(b) t is a whole number.

Write down the largest value of t that satisfies

$$3t + 1 < t + 12$$

.....
(1)

(Total 3 marks)

Question 9

The equation

$$x^3 - x = 30$$

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.

$x = \dots\dots\dots$

(Total 4 marks)

Question 10

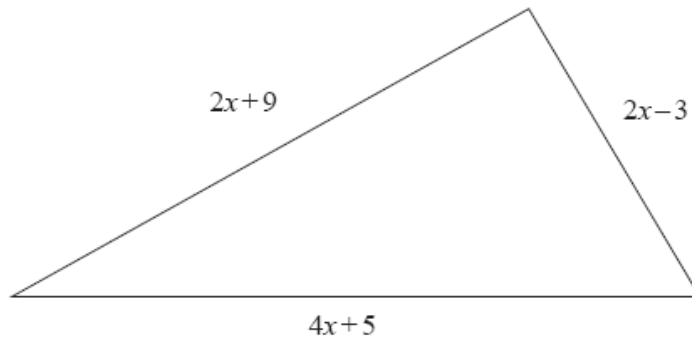


Diagram NOT
accurately drawn

In the diagram, all measurements are in centimetres.

The lengths of the sides of the triangle are

- $2x+9$
- $2x-3$
- $4x+5$

- (a) Find an expression, in terms of x , for the perimeter of the triangle.
Give your expression in its simplest form.

.....
(2)

The perimeter of the triangle is 39 cm.

- (b) Find the value of x .

$x =$
(2)

(Total 4 marks)

Question 11

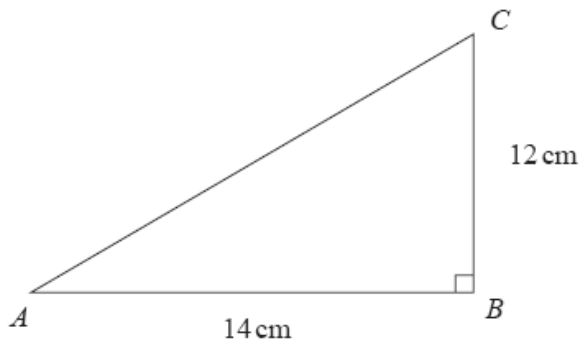


Diagram NOT
accurately drawn

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)

Question 12

y is directly proportional to x .

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

Find a formula for y in terms of x .

$y =$

(Total 3 marks)

Question 13

Simplify fully $\frac{6x^2 + 3x}{4x^2 - 1}$

.....

(Total 3 marks)

Question 14

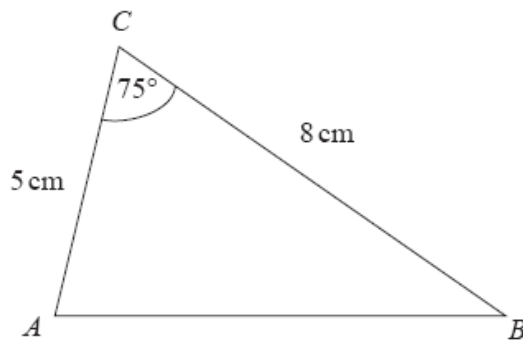


Diagram NOT
accurately drawn

In triangle ABC ,

$AC = 5$ cm.

$BC = 8$ cm.

Angle $ACB = 75^\circ$.

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

..... cm^2
(2)

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

..... cm
(3)

(Total 5 marks)

Question 15

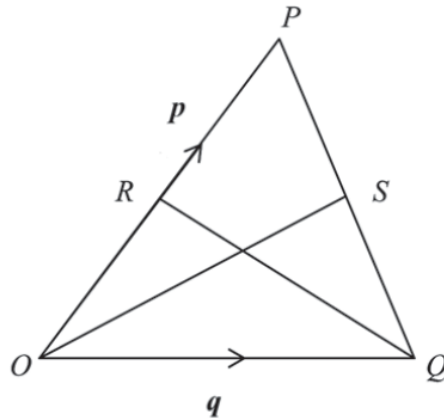


Diagram **NOT**
accurately drawn

OPQ is a triangle
 R is the midpoint of OP
 S is the midpoint of PQ

$\vec{OP} = \vec{p}$ and $\vec{OQ} = \vec{q}$

(i) Express \vec{OS} in terms of \vec{p} and \vec{q} .

$\vec{OS} = \dots\dots\dots$

(ii) Prove that RS is parallel to OQ .

(Total 5 marks)

Question 16

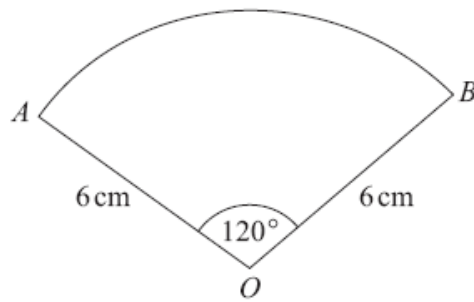


Diagram **NOT**
accurately drawn

The diagram shows a sector of a circle, centre O .
The radius of the circle is 6 cm .
Angle $AOB = 120^\circ$.

Work out the **perimeter** of the sector.
Give your answer in terms of π in its simplest form.

..... cm

(Total 3 marks)

Question 17

Expand and simplify

$$(2 + \sqrt{3})(7 - \sqrt{3})$$

Give your answer in the form $a + b\sqrt{3}$, where a and b are integers.

.....

(Total 3 marks)

Question 18

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

$a = 6.43$ 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)