

--

--	--	--	--	--

--	--	--	--



0607/22

## Paper 2 (Extended)

October/November 2014

**45 minutes**

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

Do not use staples, paper clips, glue or correction fluid.

You may use an HB pencil for any diagrams or graphs.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.

**CALCULATORS MUST NOT BE USED IN THIS PAPER.**

All answers should be given in their simplest form.

You must show all the relevant working to gain full marks and you will be given marks for correct methods even if your answer is incorrect.

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 40.

This document consists of **8** printed pages.

## Formula List

For the equation  $ax^2 + bx + c = 0$   $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Curved surface area,  $A$ , of cylinder of radius  $r$ , height  $h$ .  $A = 2\pi rh$

Curved surface area,  $A$ , of cone of radius  $r$ , sloping edge  $l$ .  $A = \pi rl$

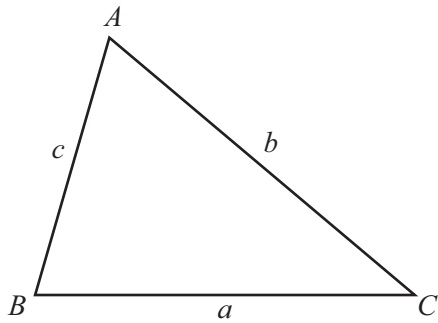
Curved surface area,  $A$ , of sphere of radius  $r$ .  $A = 4\pi r^2$

Volume,  $V$ , of pyramid, base area  $A$ , height  $h$ .  $V = \frac{1}{3}Ah$

Volume,  $V$ , of cylinder of radius  $r$ , height  $h$ .  $V = \pi r^2 h$

Volume,  $V$ , of cone of radius  $r$ , height  $h$ .  $V = \frac{1}{3}\pi r^2 h$

Volume,  $V$ , of sphere of radius  $r$ .  $V = \frac{4}{3}\pi r^3$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\text{Area} = \frac{1}{2}bc \sin A$$

Answer **all** the questions.

1  $|x - 2| = 3$

Find the values of  $x$ .

*Answer* ..... [2]

---

2 Find the  $n$ th term of this sequence.

$-1, \quad 0, \quad 3, \quad 8, \quad 15, \quad \dots$

*Answer* ..... [3]

---

3 Find the value of  $\left(\frac{16}{9}\right)^{\frac{3}{2}}$ .

*Answer* ..... [2]

---

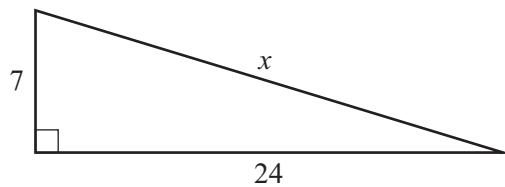
4  $\frac{3}{\sqrt{2}+1} = a\sqrt{2} + b$

Find the values of  $a$  and  $b$ .

Answer  $a = \dots\dots\dots$

$b = \dots\dots\dots$  [3]

5 (a)

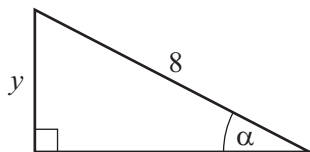


NOT TO  
SCALE

Find  $x$ .

Answer(a)  $x = \dots\dots\dots$  [2]

(b)



NOT TO  
SCALE

$$\sin \alpha = \frac{3}{5} \quad \cos \alpha = \frac{4}{5} \quad \tan \alpha = \frac{3}{4}$$

Find  $y$ .

Answer(b)  $y = \dots\dots\dots$  [2]

6 Factorise.

(a)  $x^2 - 5x - 24$

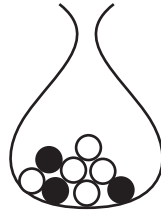
Answer(a) ..... [2]

(b)  $pq + p - tq - t$

Answer(b) ..... [2]

---

7



The bag contains 5 white beads and 3 black beads.  
Two beads are taken from the bag at random, without replacement.

Find the probability that the two beads are different colours.

Answer ..... [3]

---

- 8  $y$  varies inversely as the square root of  $x$ .  
When  $x = 4$ ,  $y = 3$ .

Find

- (a)  $y$  in terms of  $x$ ,

*Answer(a)*  $y =$  ..... [2]

- (b)  $y$  when  $x = 9$ ,

*Answer(b)* ..... [1]

- (c)  $x$  in terms of  $y$ .

*Answer(c)*  $x =$  ..... [2]

- 9 (a) Find the value of  $\log_3\left(\frac{1}{9}\right)$ .

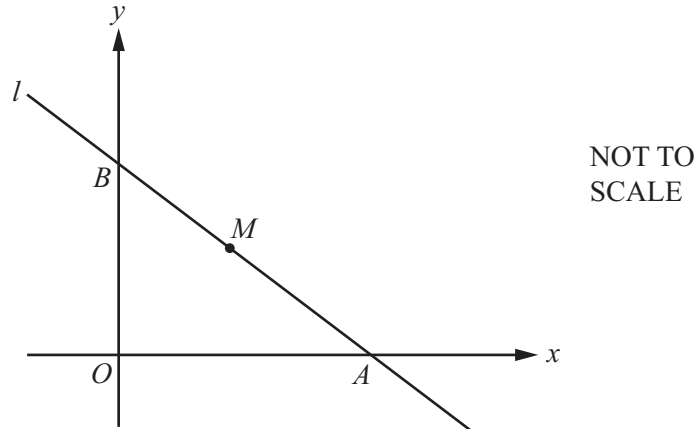
*Answer(a)* ..... [1]

- (b)  $p = \frac{\log q}{\log 3}$

Find  $q$  in terms of  $p$ .

*Answer(b)*  $q =$  ..... [2]

10



The equation of the line  $l$  is  $3x + 4y = 12$ .  
 The line cuts the  $x$ -axis at  $A$  and the  $y$ -axis at  $B$ .  
 The midpoint of  $AB$  is  $M$ .

(a) Find the co-ordinates of

(i)  $A$ ,

Answer(a)(i) ( ..... , ..... ) [1]

(ii)  $B$ ,

Answer(a)(ii) ( ..... , ..... ) [1]

(iii)  $M$ .

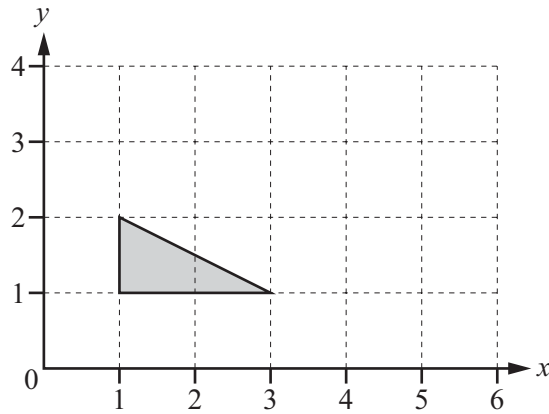
Answer(a)(iii) ( ..... , ..... ) [1]

(b) Find the equation of the line through the origin which is perpendicular to the line  $l$ .

Answer(b) ..... [3]

Questions 11 and 12 are printed on the next page.

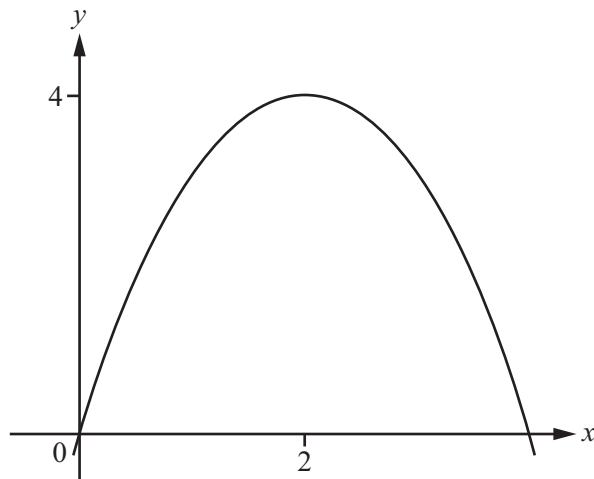
11



Draw the stretch of the shaded triangle with the  $y$ -axis invariant and factor 2.

[2]

12



NOT TO  
SCALE

The diagram shows the graph of  $y = ax^2 + bx + c$ .

The graph passes through  $(0, 0)$  and has a maximum point  $(2, 4)$ .

Find the values of  $a$ ,  $b$  and  $c$ .

Answer  $a =$  .....

$b =$  .....

$c =$  ..... [3]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.