

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



General Certificate of Secondary Education  
Higher Tier  
March 2013

# Mathematics

# 43603H

Unit 3

Wednesday 6 March 2013 9.00 am to 10.30 am

# H

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• a calculator</li> <li>• mathematical instruments.</li> </ul>	
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**Time allowed**

- 1 hour 30 minutes

- Instructions**
- Use black ink or black ball-point pen. Draw diagrams in pencil.
  - Fill in the boxes at the top of this page.
  - Answer **all** questions.
  - You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
  - Do all rough work in this book.
  - If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.14 unless another value is given in the question.

- Information**
- The marks for questions are shown in brackets.
  - The maximum mark for this paper is 80.
  - The quality of your written communication is specifically assessed in Questions 6 and 15. These questions are indicated with an asterisk (\*).
  - You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.

- Advice**
- In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
<b>TOTAL</b>	



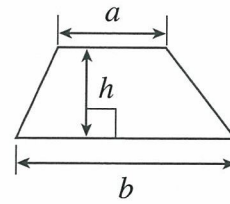
M A R 1 3 4 3 6 0 3 H 0 1

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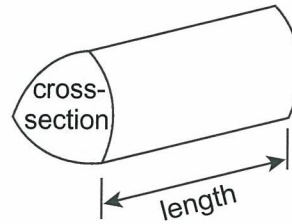
# 43603H

## Formulae Sheet: Higher Tier

$$\text{Area of trapezium} = \frac{1}{2}(a+b)h$$

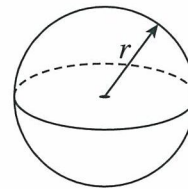


$$\text{Volume of prism} = \text{area of cross-section} \times \text{length}$$



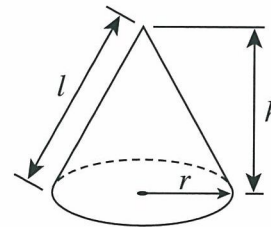
$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

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



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

$$\text{Curved surface area of cone} = \pi r l$$

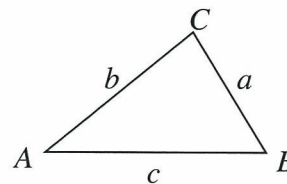


In any triangle  $ABC$

$$\text{Area of triangle} = \frac{1}{2}ab \sin C$$

$$\text{Sine rule} \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\text{Cosine rule} \quad a^2 = b^2 + c^2 - 2bc \cos A$$



### The Quadratic Equation

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

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

