

**Modified Enlarged 36pt**  
**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**June 2023 only**

**Level 3 Free Standing Mathematics**  
**Qualification: Additional Mathematics**

**6993/01**

**Formulae Sheet**

**INSTRUCTIONS**

**Do NOT send this Formulae Sheet for marking. Keep it in the centre or recycle it.**

**INFORMATION**

**This Formulae Sheet does NOT include advance information about the content of the June 2023 examinations.**



# FORMULAE SHEET

## Perimeter, Area and Volume

Where  $a$  and  $b$  are the lengths of the parallel sides and  $h$  is their perpendicular separation:

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

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

Where  $r$  is the radius and  $d$  is the diameter:

$$\text{Circumference of a circle} = 2\pi r = \pi d$$

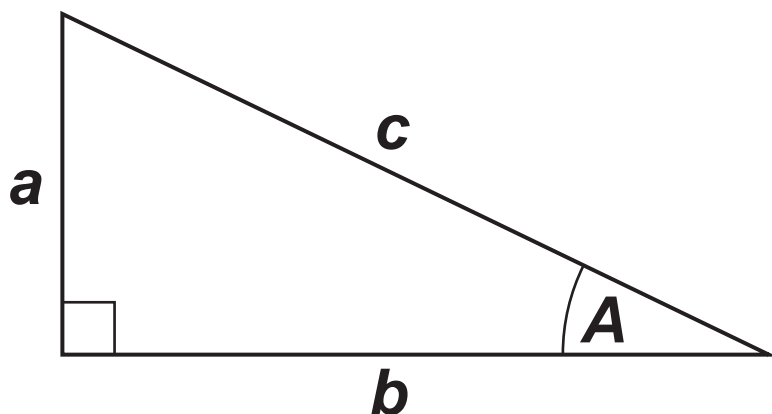
$$\text{Area of a circle} = \pi r^2$$

# The Quadratic Formula

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

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

# Pythagoras' Theorem and Trigonometry

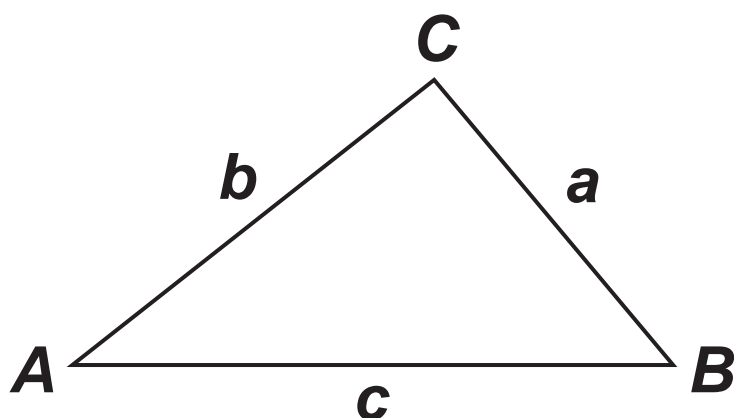


In any right-angled triangle where  $a$ ,  $b$  and  $c$  are the length of the sides and  $c$  is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle  $ABC$  where  $a$ ,  $b$  and  $c$  are the length of the sides and  $c$  is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$



In any triangle  $ABC$  where  $a$ ,  $b$  and  $c$  are the length of the sides:

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

## Compound Interest

Where  $P$  is the principal amount,  $r$  is the interest rate over a given period and  $n$  is the number of times that the interest is compounded:

$$\text{Total accrued} = P \left( 1 + \frac{r}{100} \right)^n$$

## Probability

Where  $P(A)$  is the probability of outcome  $A$  and  $P(B)$  is the probability of outcome  $B$ :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A \text{ given } B) P(B)$$

**BLANK PAGE**

## **Copyright Information**

**OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.**

**If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.**

**For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.**

**OCR is part of Cambridge University Press & Assessment, which is itself a department of the University of Cambridge.**