

**Syllabus reference 1MA1/3H**  
**Pearson Edexcel GCSE (9–1)**  
**Mathematics**

**Mathematics**  
**PAPER 3 (Calculator)**  
**Higher Tier**

**Wednesday 14 June 2023 – Morning**

# **Higher Tier**

# **Formulae Sheet**

**DO NOT RETURN THIS  
FORMULAE SHEET WITH THE  
QUESTION PAPER.**

**Q75152A**

## Higher Tier Formulae Sheet

### Perimeter, area and volume

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

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

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

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

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

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

Turn over

# Higher Tier Formulae Sheet

## Quadratic formula

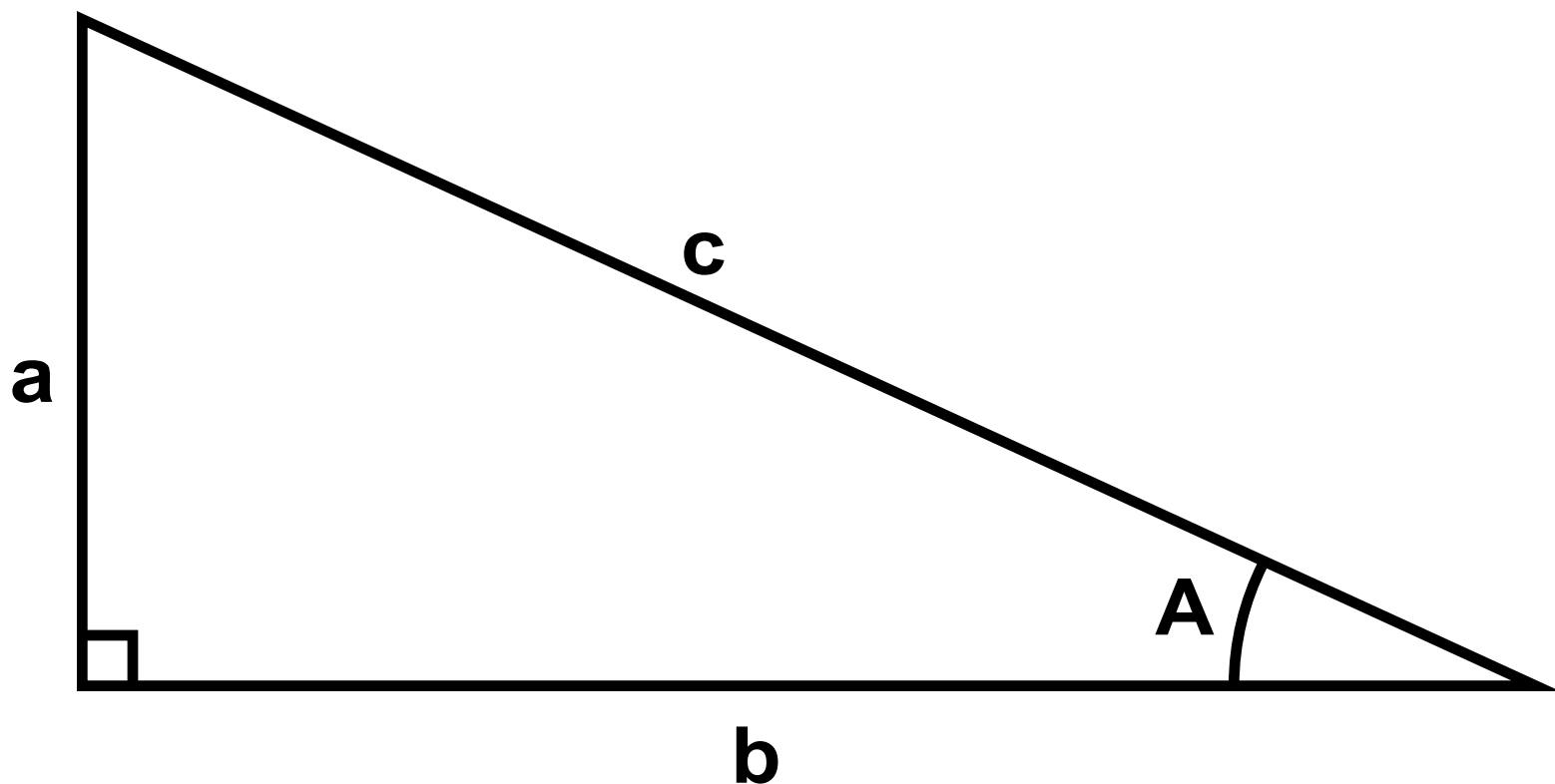
The solution of  $ax^2 + bx + c = 0$

where  $a \neq 0$

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

# Higher Tier Formulae Sheet

## 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:

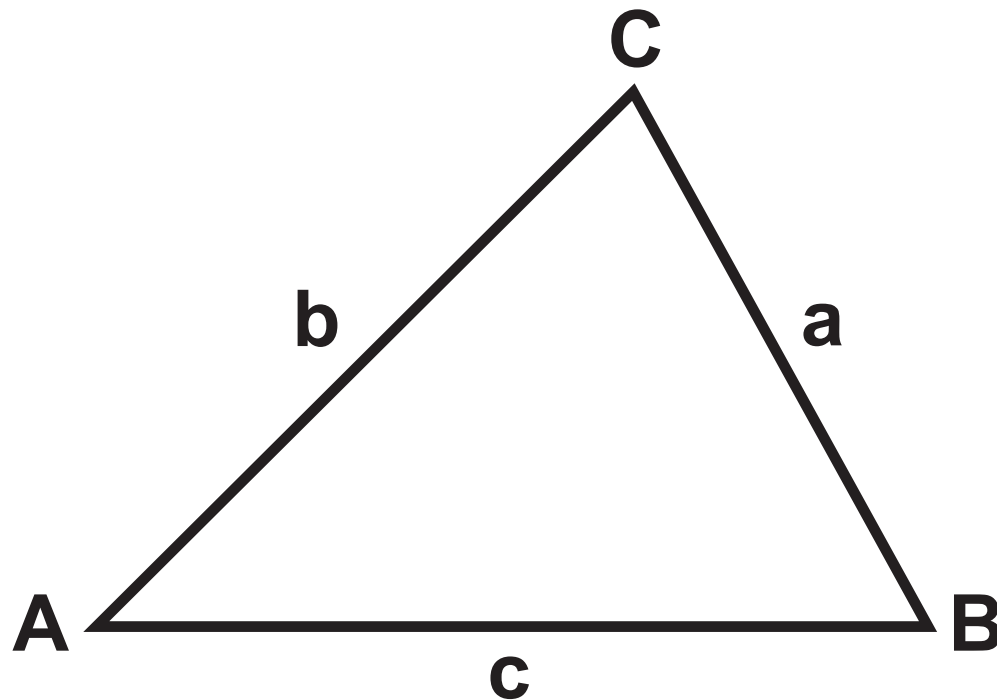
$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$

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Turn over

## Higher Tier Formulae Sheet

Pythagoras' Theorem and Trigonometry continued.



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 =  $\frac{1}{2} a b \sin C$

Turn over

## Higher Tier Formulae Sheet

### Compound Interest

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

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

Turn over

## Higher Tier Formulae Sheet

### Probability

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

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

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

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**END OF EXAM AID**

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