



**Level 2 Certificate**

**FURTHER MATHEMATICS**

**Formulae Sheet**

**8365**

**Insert**

**FOR EXAMS IN 2022 ONLY**

**[Turn over]**

## 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:

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

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

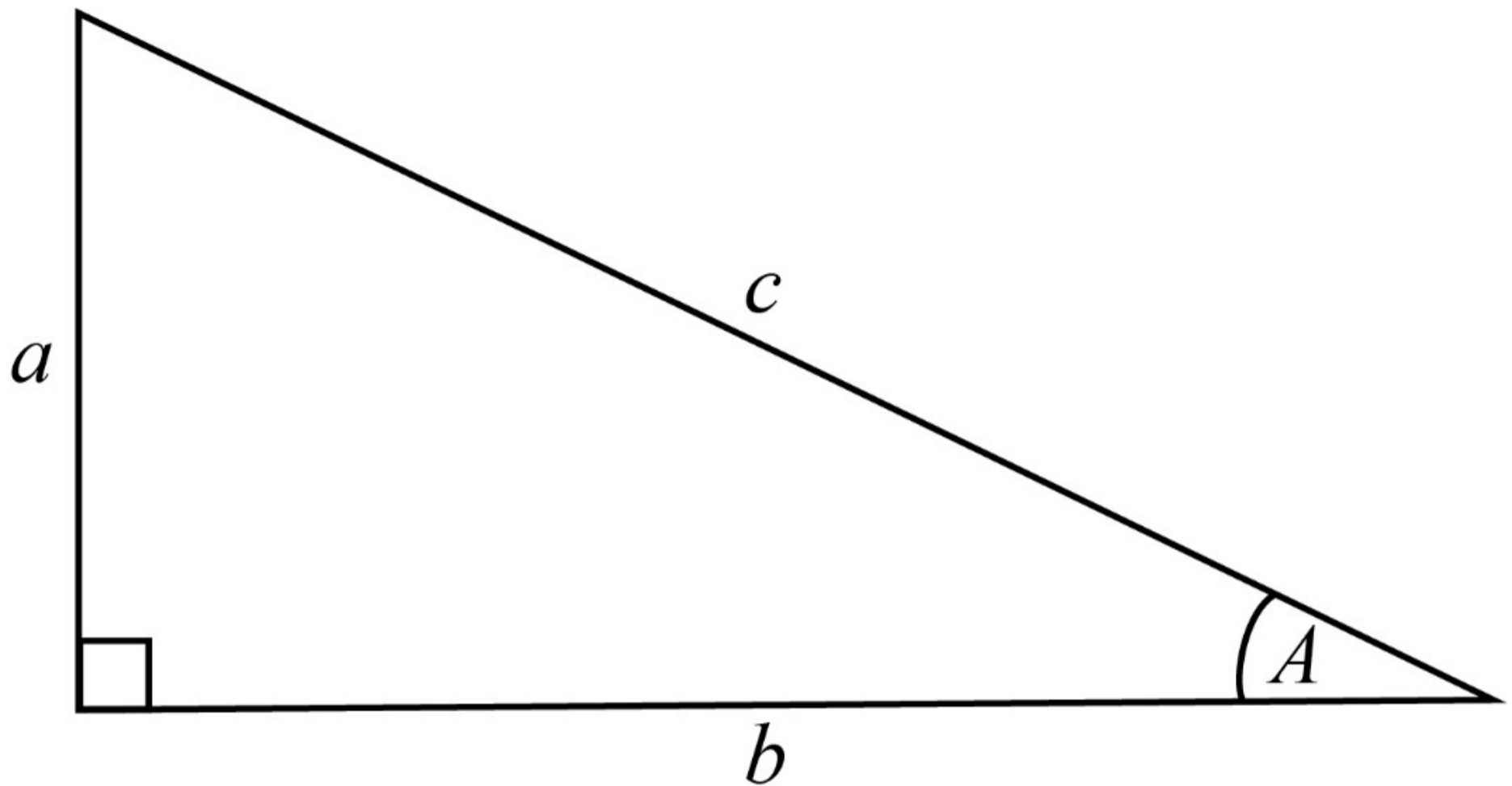
## QUADRATIC FORMULA

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

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

[Turn over]

# 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:**

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

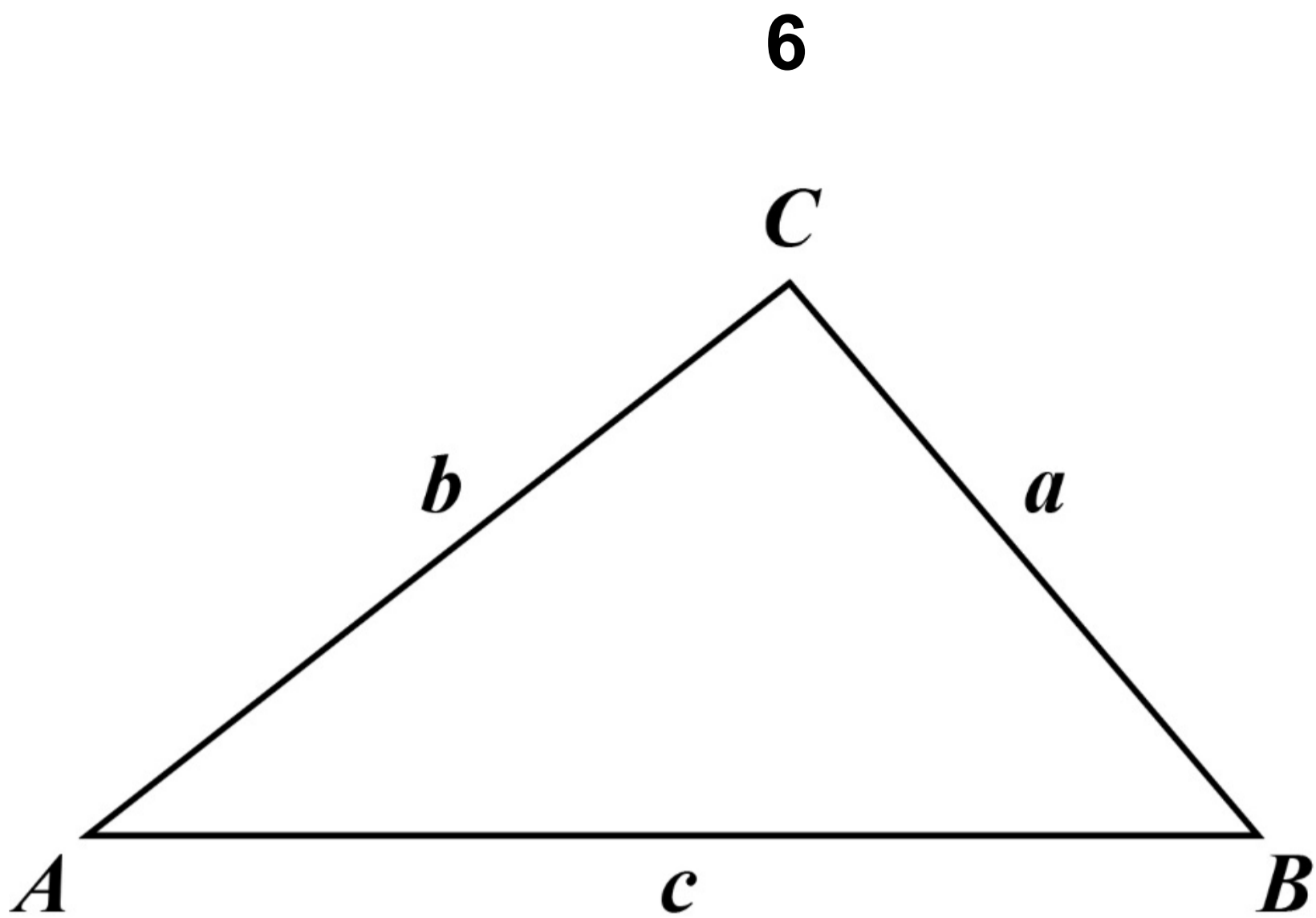
**In any right-angled triangle  $ABC$  where  $a$ ,  $b$  and  $c$  are the length of the sides and  $c$  is the hypotenuse:**

$$\sin A = \frac{a}{c}$$

$$\cos A = \frac{b}{c}$$

$$\tan A = \frac{a}{b}$$

**[Turn over]**



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

**For any angle  $\theta$   $\tan \theta = \frac{\sin \theta}{\cos \theta}$**

**and  $\sin^2 \theta + \cos^2 \theta = 1$**

## COORDINATE GEOMETRY

**Equation of a straight line passing through  $(x_1, y_1)$  with gradient  $m$**

$$y - y_1 = m(x - x_1)$$

**The general equation of a circle, centre  $(a, b)$ , radius  $r$**

$$(x - a)^2 + (y - b)^2 = r^2$$

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