1

91947R

Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

# Level 1 Mathematics and Statistics 2026

## 91947 Demonstrate mathematical reasoning

Credits: Five

RESOURCE BOOKLET

Refer to this booklet to answer the questions for Mathematics and Statistics 91947.

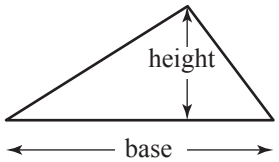
Check that this booklet has pages 2–3 in the correct order and that none of these pages is blank.

**YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.**

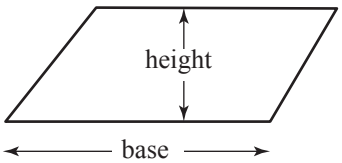
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## Measurement

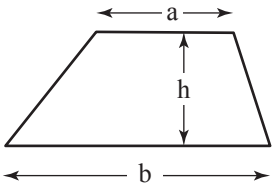
Area of triangle = $\frac{1}{2}$ × base × height



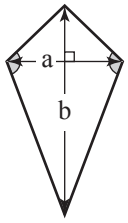

Area of parallelogram = base × height




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

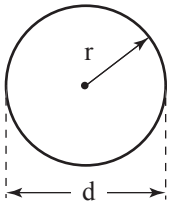



Area of kite = $\frac{1}{2}$ × a × b

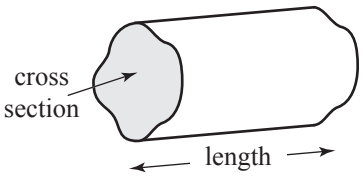


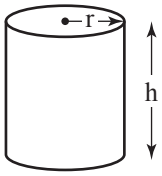

Circumference of circle = $\pi d$
$= 2\pi r$

Area of circle = $\pi r^2$
$\pi = 3.14$ to 2 decimal places




Volume of prism = area of cross section × length



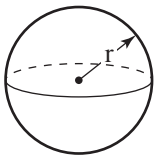




Volume of cylinder = $\pi r^2 h$

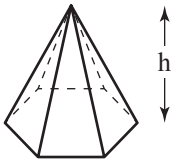
Total surface area of cylinder = $2\pi r h + 2\pi r^2$

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

Total surface area of sphere = $4\pi r^2$

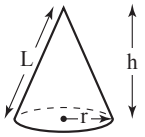



Volume of pyramid
= $\frac{1}{3}$ × area of base × height

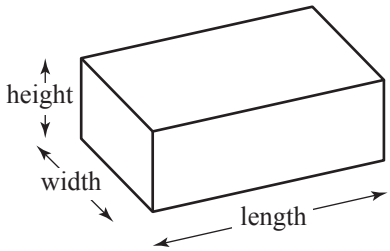



Volume of cone = $\frac{1}{3}\pi r^2 h$

Total surface area of cone = $\pi rL + \pi r^2$



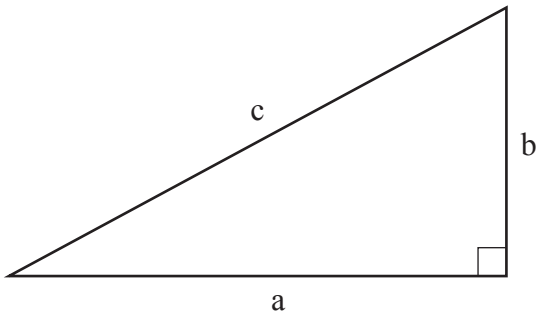

Volume of cuboid = height × width × length



## Right-angled Triangles

**Pythagoras' theorem**

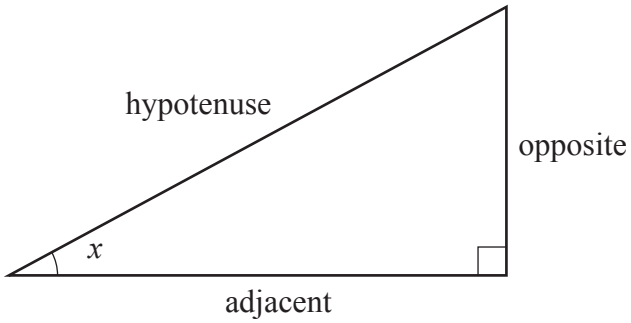
$a^2 + b^2 = c^2$




$$\sin x = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan x = \frac{\text{opposite}}{\text{adjacent}}$$




*or*

$\text{opposite} = \text{hypotenuse} \times \sin x$

$\text{adjacent} = \text{hypotenuse} \times \cos x$

$\text{opposite} = \text{adjacent} \times \tan x$

1 hectare = 10 000 $m^2$ 1 litre = 1000 $cm^3$ 1 ml = 1 $cm^3$ 1 tonne = 1000 kg

Average speed = $\dfrac{\text{total distance}}{\text{total time}}$

Sum of internal angles of an $n$-sided polygon = $(n - 2) \times 180°$

Definition of bearings: "Bearings are measured from North, in a clockwise direction."