

91947R



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 1 Mathematics and Statistics 2024

91947 Demonstrate mathematical reasoning

Credits: Five

RESOURCE BOOKLET

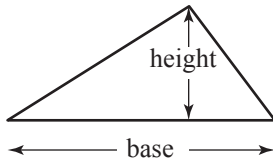
Refer to this booklet to answer the questions for Mathematics and Statistics 91947.

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

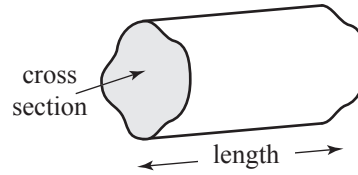
YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.

Measurement

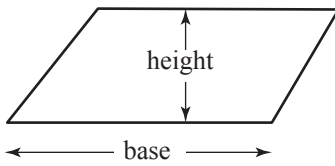
Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height}$



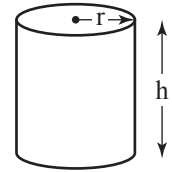
Volume of prism = area of cross section \times length



Area of parallelogram = base \times height

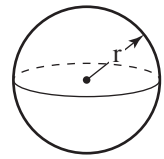


Volume of cylinder = $\pi r^2 h$

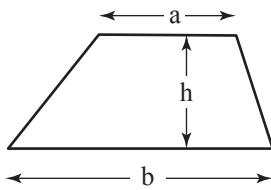


Volume of sphere = $\frac{4}{3} \pi r^3$

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

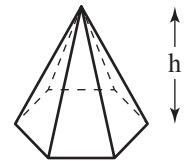


Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of pyramid

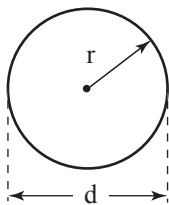
= $\frac{1}{3} \times \text{area of base} \times \text{height}$



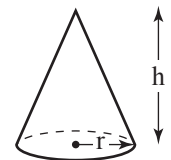
Circumference of circle = πd
= $2\pi r$

Area of circle = πr^2

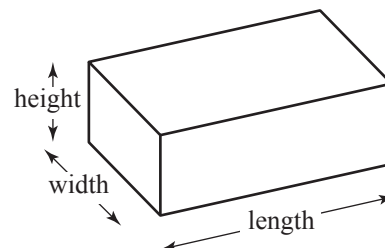
$\pi = 3.14$ to 2 decimal places



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



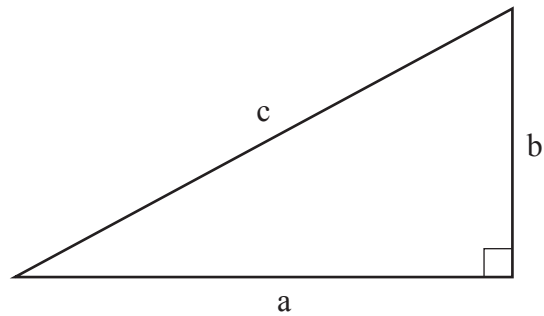
Volume of cuboid = height \times width \times length



Right-angled Triangles

Pythagoras' theorem

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



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

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

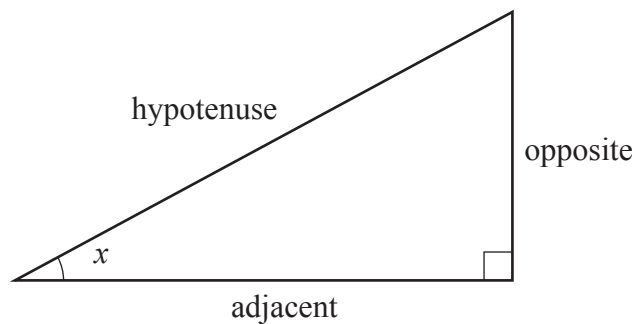
$$\tan x = \frac{\text{opposite}}{\text{adjacent}}$$

or

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

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

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



$$1 \text{ hectare} = 10\,000 \text{ m}^2$$

$$1 \text{ litre} = 1000 \text{ cm}^3$$

$$1 \text{ ml} = 1 \text{ cm}^3$$

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

$$\text{Sum of internal angles of an } n\text{-sided polygon} = (n - 2) \times 180^\circ$$

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

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