

This assessment is based on a now-expired version of the achievement standard and may not accurately reflect the content and practice of external assessments developed for 2024 onwards.

91947R



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 1 Mathematics and Statistics RAS 2023

91947 Demonstrate mathematical reasoning

Credits: Five

PILOT ASSESSMENT

RESOURCE BOOKLET

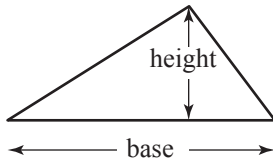
Refer to this booklet to answer the questions for Mathematics and Statistics RAS 91947.

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

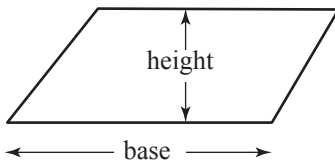
YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.

Measurement

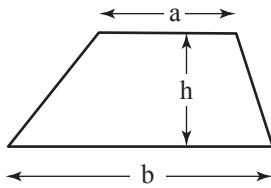
$$\text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{height}$$



$$\text{Area of parallelogram} = \text{base} \times \text{height}$$



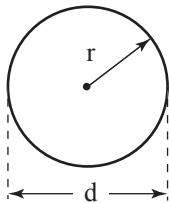
$$\text{Area of trapezium} = \frac{1}{2}(a + b)h$$



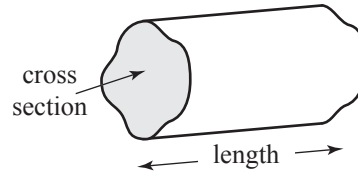
$$\begin{aligned} \text{Circumference of circle} &= \pi d \\ &= 2\pi r \end{aligned}$$

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

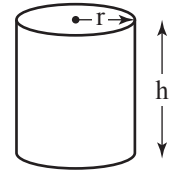
$$\pi = 3.14 \text{ to 2 decimal places}$$



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

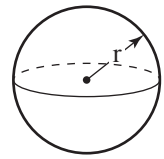


$$\text{Volume of cylinder} = \pi r^2 h$$



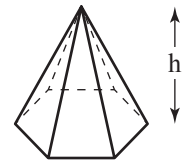
$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

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

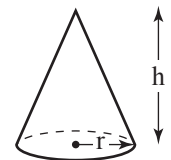


$$\text{Volume of pyramid}$$

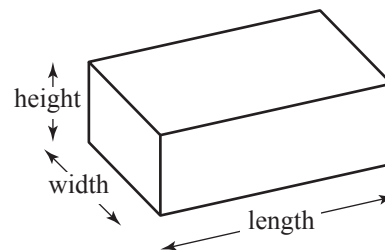
$$= \frac{1}{3} \times \text{area of base} \times \text{height}$$



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



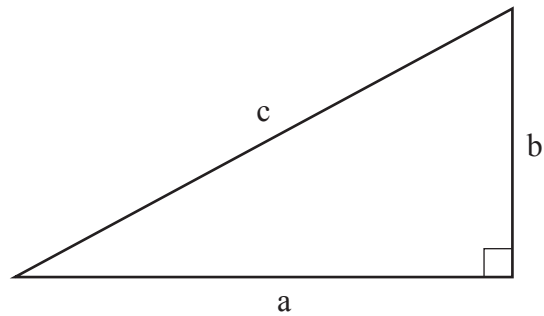
$$\text{Volume of cuboid} = \text{height} \times \text{width} \times \text{length}$$



Right-angled Triangles

Pythagoras' theorem

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



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

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

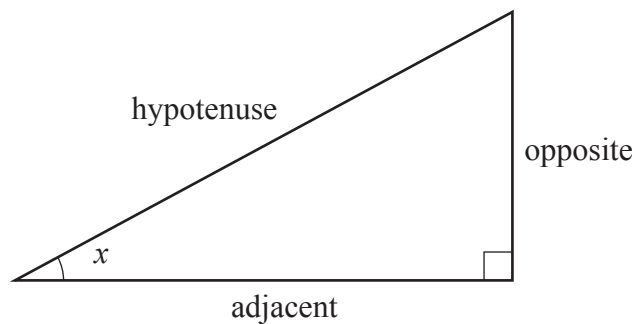
$$\tan x = \frac{\text{opposite}}{\text{adjacent}}$$

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."

91947R