

See back cover for an English translation of this cover.

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91947MR



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Te Pāngarau me te Tauanga, Kaupae 1, 2024

91947M Te whakaatu take pāngarau

Ngā whiwhinga: E rima

TE PUKAPUKA RAUEMI

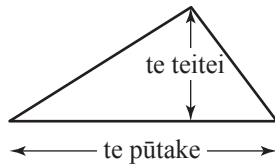
Whakamahia tēnei pukapuka ki te whakaoti i ngā tūmahi i Te Pāngarau me te Tauanga 91947M.

Tirohia kia kitea ai e tika ana te raupapatanga o ngā whārangi 2-5 i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

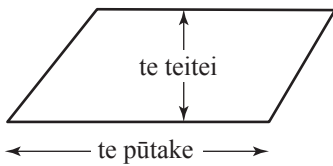
E ĀHEI ANA TŌ PUPURI KI TĒNEI PUKAPUKA HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

Te ine

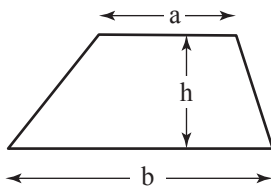
Te horahanga o te tapatoru
 $= \frac{1}{2} \times \text{te pūtake} \times \text{te teitei}$



Te horahanga o te tapawhā whakarara
 $= \text{te pūtake} \times \text{te teitei}$

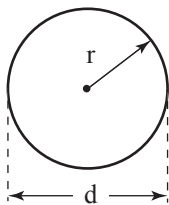


Te horahanga o te taparara $= \frac{1}{2}(a + b)h$

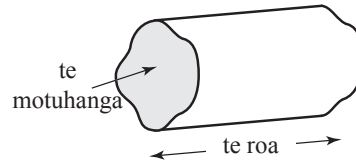


Te paenga o te porowhita $= \pi d$
 $= 2\pi r$

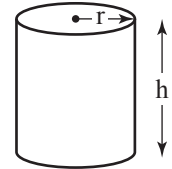
Te horahanga o te porowhita $= \pi r^2$
 $\pi = \text{ko te } 3.14 \text{ ki ngā mati whaiira e } 2$



Te rōrahi o te poro
 $= \text{te horahanga o te motuhanga} \times \text{te roa}$

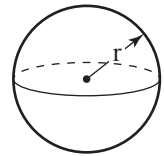


Te rōrahi o te rango $= \pi r^2 h$



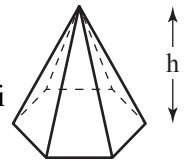
Te rōrahi o te poi $= \frac{4}{3} \pi r^3$

Te horahanga mata o te poi $= 4\pi r^2$

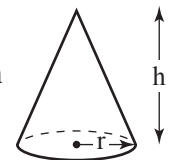


Te rōrahi o te koeko

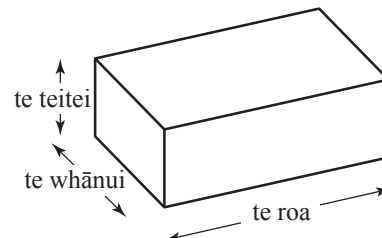
$= \frac{1}{3} \times \text{te horahanga o te pūtake} \times \text{te teitei}$



Te rōrahi o te koeko porowhita $= \frac{1}{3} \pi r^2 h$

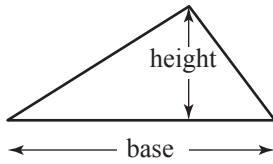


Te rōrahi o te poro-tapawhā hāngai
 $= \text{te teitei} \times \text{te whānui} \times \text{te roa}$

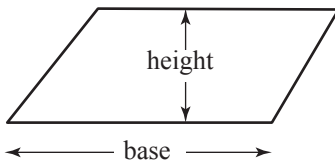


Measurement

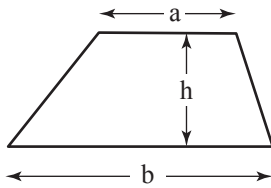
Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height}$



Area of parallelogram = base $\times$ height



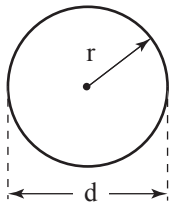
Area of trapezium = $\frac{1}{2}(a + b)h$



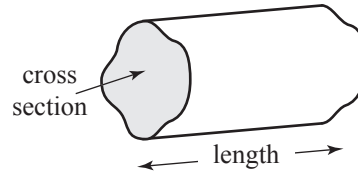
Circumference of circle = πd
= $2\pi r$

Area of circle = πr^2

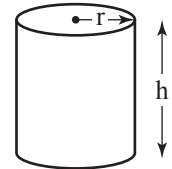
$\pi = 3.14$ to 2 decimal places



Volume of prism = area of cross section $\times$ length

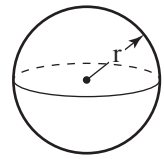


Volume of cylinder = $\pi r^2 h$



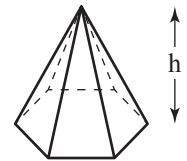
Volume of sphere = $\frac{4}{3}\pi r^3$

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

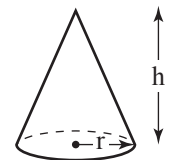


Volume of pyramid

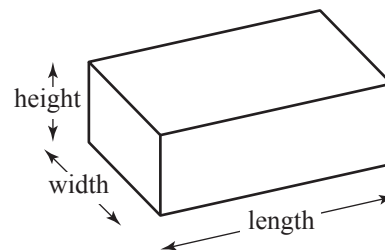
= $\frac{1}{3} \times \text{area of base} \times \text{height}$



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



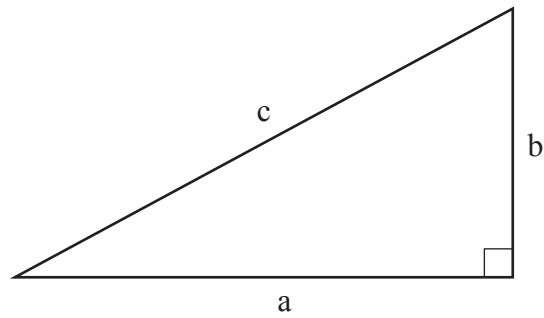
Volume of cuboid = height $\times$ width $\times$ length



Ngā tapatoru hāngai

Te ture a Pythagoras

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



$$\sin x = \frac{\text{te tauaro}}{\text{te tāroa}}$$

$$\cos x = \frac{\text{te pātata}}{\text{te tāroa}}$$

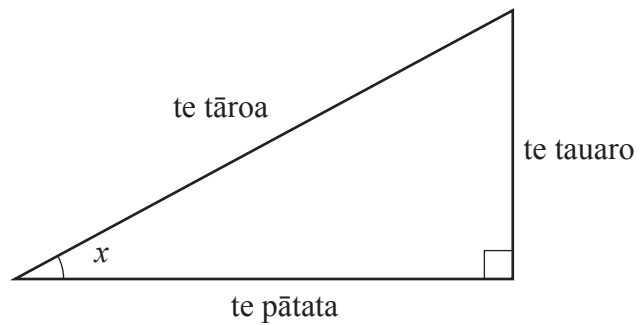
$$\tan x = \frac{\text{te tauaro}}{\text{te pātata}}$$

ko ēnei rānei

$$\text{te tauaro} = \text{te tāroa} \times \sin x$$

$$\text{te pātata} = \text{te tāroa} \times \cos x$$

$$\text{te tauaro} = \text{te pātata} \times \tan x$$



$$\text{Te heketea kotahi} = 10\,000 \text{ m}^2$$

$$\text{Te rita kotahi} = 1000 \text{ cm}^3$$

$$\text{Te ritamano kotahi} = 1 \text{ cm}^3$$

$$\text{Te tere toharite} = \frac{\text{te tawhiti}}{\text{te roa o te wā}}$$

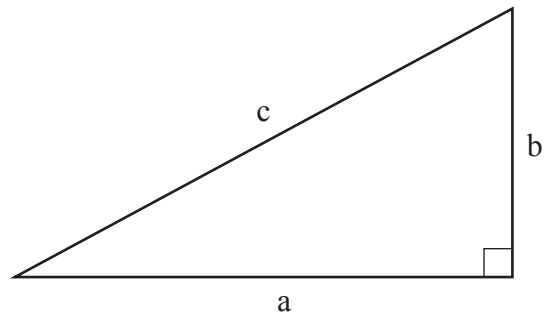
$$\text{Te tapeke o ngā koki roto o tētahi taparau tapa-}n = (n - 2) \times 180^\circ$$

Te whakamāramatanga o te ahunga: “Ka inea te ahunga mai i te Raki, ka huri whakatekaraka ai.”

Right-angled Triangles

Pythagoras' theorem

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



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

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

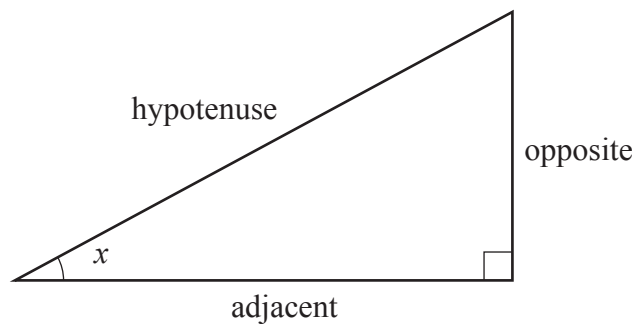
$$\tan x = \frac{\text{opposite}}{\text{adjacent}}$$

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."

English translation of the wording on the front cover



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Level 1 Mathematics and Statistics 2024

91947M Demonstrate mathematical reasoning

Credits: Five

RESOURCE BOOKLET

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

Check that this booklet has pages 2–5 in the correct order and that none of these pages is blank.

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