



the formulas are given to you, so the marks are in reading the shape

The reference sheet is open the whole time

- one tap away, in both Math modules, sits a reference sheet: the areas of a rectangle, a triangle and a circle, the circumference, the Pythagorean theorem, both special triangles, and the volumes of a rectangular prism, a cylinder, a sphere, a cone and a pyramid
- it also gives 360° and 2π radians in a circle, and 180 in a triangle
- so those volume formulas are not worth memorising. What IS worth memorising is the LIST, because knowing a formula is there is what stops you rebuilding it from scratch
- what the sheet does not carry: any surface area, the area of a trapezium or a parallelogram, arc length and sector area, and the distance formula. Those you bring yourself, and the tap costs a few seconds either way

The volumes, all five of them given *

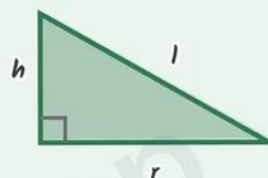
rectangular prism $V = lwh$

cylinder $V = \pi r^2 h$

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

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

pyramid $V = \frac{1}{3} lwh$



half of a cone cut down its axis: the radius along the bottom, the vertical height up the side, and the slant as the hypotenuse. The volume formula wants r and h , so a question that hands you the slant l wants the Pythagorean theorem first

the one relationship worth carrying in your head is that a cone and a pyramid are one third of the cylinder and the prism that would box them in. Everything else you can look up

Worked: reading a volume backwards

Q. a rectangular prism has length 6 cm, width 4 cm and a volume of 120 cm^3 . What is its height, in centimetres?

- 1 the sheet gives $V = lwh$, so $120 = 6 \times 4 \times h$
- 2 the base area is $6 \times 4 = 24$, so $120 = 24h$
- 3 $h = \frac{120}{24} = 5$
- 4 sanity check by rebuilding the volume: $6 \times 4 \times 5 = 120$, which matches

Answer the height is 5 cm

most volume questions on this test are this shape: the formula is given, one of its letters is missing, and the work is one division

