

Areas and volumes

You need to know how to use the following formulas:-

Rectangle: $Area = L \times B$

Triangle: $Area = \frac{1}{2} \times base \times height$

Circle: $Area = \pi r^2$

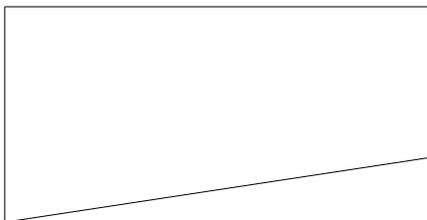
$Circumference = \pi \times D$

Cuboid $Vol = L \times B \times H$

Cylinder $Vol = \pi r^2 h$

Questions

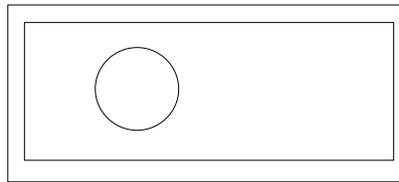
- 1) My cylindrical coffee cup has a diameter of 6cm and a depth of 9cm. Calculate the volume of the cup.
- 2) A field is 300 yards long and 250 yards wide at one end and 150 yards wide at the other end (see diagram). Calculate the area of the field.



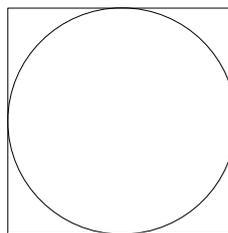
- 3) A car has wheels of diameter 20cm. Calculate how far the car travels in 10 000 revolutions of the wheel
- 4) A classroom in the shape of a cuboid is 7 metres long, 5 metres wide, and 2.4 metres high. a) Calculate the volume of the classroom in cubic metres. b) 21% of the air in the room is Oxygen. Calculate the amount of oxygen in the room *in litres*.
- 5) A cylindrical waste paper bin has a diameter of 30cm and a height of 30cm. Calculate the volume of the bin in *litres*.
- 6) A triangular flower bed has a base of 8 metres and a perpendicular 'height' of 6

metres. a) Calculate the area of the flower bed. b) Fertilizer is added to the flower bed at the rate of half a Kg per square metre. How much fertilizer is needed?

- 7) A bicycle has a front wheel that is 96 cm in diameter. Calculate how many complete turns the wheel makes for each 1 kilometre that the bicycle travels.
- 8) Nathan Adler has an idea for his lawn: he wants to put a circular pond in the centre, and add a path all the way round. The path is 1 metre wide and the pond is to be 3m in diameter. The lawn together with the path must fit in a rectangle that is 20m by 15m (see diagram). Calculate the area of the lawn available for grass.



- 9) Ernest is considering making a large cake using a cake tin that is 40cm in diameter and 15cm deep. Calculate how much cake mixture Ernest will need in *litres*.
- 10) A tin of sweet corn is 10cm high and 10cm in diameter. Calculate the volume of the tin.
- 11) A square of metal of side 10cm has a hole of radius 5cm cut into it so the centres of the hole and square coincide (see diagram). Calculate the area of the metal left after the hole is cut.



Answers

- 1) 255 cm³ 2) 60 000 m² 3) 6 284 m 4) a) 84 m³
 b) 17640 li 5) 21.2 li 6) a) 24m² b) 12 Kg 7)
 332 turns 8) 227 m² 9) 18.9 li 10) 786 cm³
 11) 21.5 cm²