

Water Butt



The summer has been terribly hot and the badgers at the sett are suffering. *(Badgers get most of their moisture from the worms they eat, but still appreciate a water supply near to the sett.)* There is usually a small pond near to the sett, but it has dried up in the heat. The only other option is a long walk to the nearest stream.

The group have bought a barrel to drip-feed into a low trough and supply water to the badgers. *(The group have ensured that there is an escape slope in the trough, to allow small animals who fall into it to escape.)*



To find the volume of the barrel, the group will use the volume of a cylinder.

- The volume of a cylinder is found by multiplying the area of an end of the cylinder by its height.
- As the base or lid of a cylinder is a circle, the area of that circle is found by using the formula: $\text{area} = \pi r^2$. (r = the radius of the base.) The radius of the base is 30cm. (Use $\pi = 3.14$)
- Now that we know the area of the base, we can use the full formula of: $\text{volume} = \pi r^2 h$. (h is the height of the barrel.)
- The height of the barrel is 90cm. Use the formula to work out the volume by multiplying the area of the base by the height.

The trough will be a cuboid with the measurements of length 45cm, width 35cm and height 20cm.

- Work out the maximum volume of water in the trough.

