Problem of the Week: Week 4 (Sum2): Year 10: Geometry: Area and perimeter

- identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment
- calculate arc lengths, angles and areas of sectors of circles
- calculate surface areas and volumes of spheres, pyramids, cones and composite solids

Useful formulae:

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

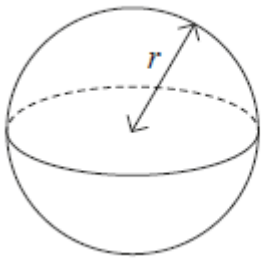
Volume of a cone = $\frac{1}{3}\pi r^2 h$

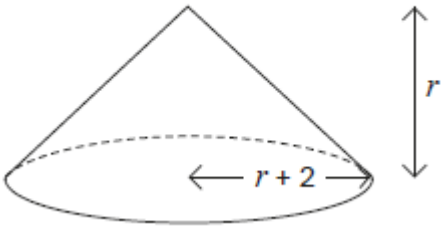
(where h is the perpendicular height of the cone and r is the radius of the cone)

Volume of a pyramid == $\frac{1}{3}$ x base area x height

<u>Equal Volumes</u>

The volume of the sphere is equal to the volume of the cone.





Work out the value of *r*.

Do **not** use trial and improvement.

You **must** show your working.

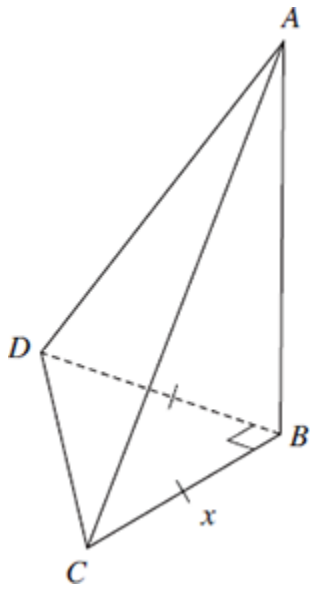
<u>Hint</u>

Make sure you use the correct radius for the cone according to the diagram

Pyramid Length

$ABCD$ is a triangular based pyramid.
The base BCD is a right-angled triangle.

A is directly above B.
$BC = BD$
$AB = 2 \times BC$
The volume of the pyramid is 72 cm^3.



Calculate the length of BC, labelled x in the diagram