

## METRE AND CENTIMETRE CUBES

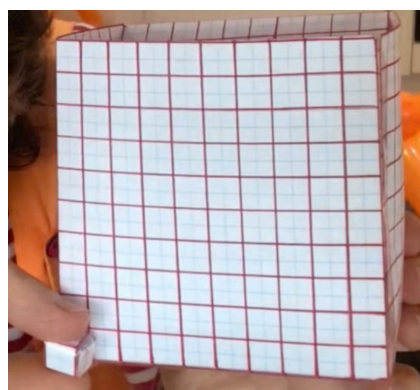


Watch the video about the Metre Cube and Scale  
<https://bit.ly/CubicMetreVideo> .

How many children can fit inside a metre cube  
(1 metre by 1 metre by 1 metre)? How many adults?

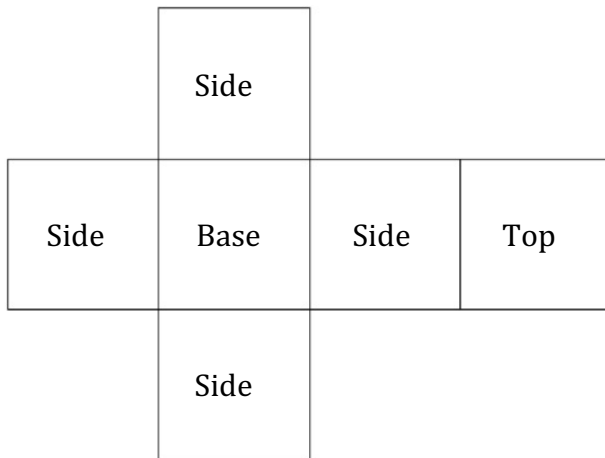
How many cubic centimetres  
(1 centimetre by 1 centimetre by 1 centimetre)  
can fit inside a metre cube?

The cubes pictured here are made from centimetre squared paper. The bigger one measures 10 centimetres by 10 centimetres by 10 centimetres and the smaller one measures 1 centimetre by 1 centimetre by 1 centimetre.



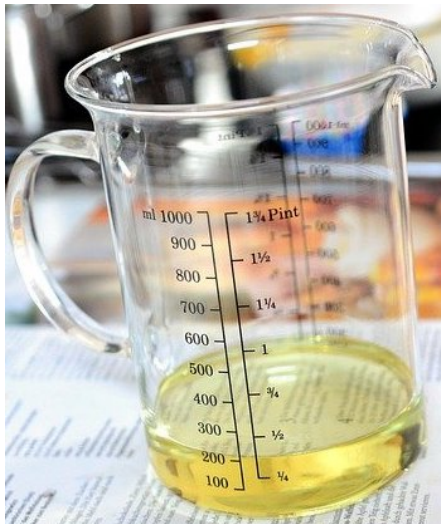
1. What is the edge length of the 10 by 10 by 10 cube?
2. You can see how many square centimetres there are on each face. What is the surface area of the whole 10 by 10 by 10 cube?
3. What is its volume?
4. What is the linear scale factor from the 1 by 1 by 1 cube to the 10 by 10 by 10 cube?
5. What is the area scale factor?
6. What is the volume scale factor?
7. How many of the smaller 1 by 1 by 1 (1 cubic centimetre) cubes can you pack into the 10 by 10 by 10 cube?
8. How many of the 1 by 1 by 1 cubes can you pack into a metre cube?
9. What is the surface area of the metre cube?
10. What is the linear scale factor comparing the metre cube (100 by 100 by 100) to the 10 by 10 by 10 cube and to the 1 by 1 by 1 cube?
11. What is the area scale factor comparing the metre cube (100 by 100 by 100) to the 10 by 10 by 10 cube and to the 1 by 1 by 1 cube?
12. What is the volume scale factor comparing the metre cube (100 by 100 by 100) to the 10 by 10 by 10 cube and to the 1 by 1 by 1 cube?

## HELP



Make your own 1 by 1 by 1 (1 cubic centimetre) cube and 10 by 10 by 10 cube from squared paper marked in square centimetres (see page 3).

Cut out a net for the cube or cut out the faces separately and fix them together with sticky tape.



## NEXT

Investigate the connection between cubic centimetres and millilitres and how

these measures are used in practice (for example in doses of medicine).

Investigate the capacity of a medicine spoon in relation to the volume inside a cubic centimetre.

How many US pints make 1 litre? The Imperial pint used in the UK, as in this measuring jug, is 20 fluid ounces. The US Customary pint is 16 fluid ounces.

Investigate the connection between millilitres and milligrams and how these are used in practice (for example in cooking).

**WEIGHT OF SEAWATER ON EARTH**

<https://aiminghigh.aimssec.ac.za>

**There are about 1.34 billion cubic kilometres of seawater on planet Earth.**

**Assuming that seawater weighs exactly 1 kilogram per litre, what is the weight of the Earth's seawater? Express this figure in Tonnes (not Tons).**

No calculators are needed here, just big numbers and powers of 10.

Take 1 billion to be  $10^9$ .

*Warning: it is generally best to use powers of 10, and not words like billion and trillion, because these words have different meanings in different countries.*

