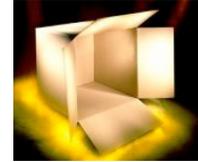# Pump Up the vOLUME

Do You Have the CAPACITY to Understand?

Volume: The space occupied by an object or area

Capacity: The amount that a container can hold

VOLUME and **CAPACITY** are closely linked and in the **METRIC SYSTEM** they are generally not distinguished. However, if you wish to distinguish the two, think of capacity as an empty box (or graduated cylinder, perhaps) and the amount of stuff that you could put in the box. Think of volume as an existing object and the amount of space that it occupies.

METRIC MOMENT

10   20   30   40   50   60   70   80   90
METRE

1 cm³ = 1 ml
If you had a container that measured
1cm x 1cm x 1cm (or 1cm³)
and you filled it with something(say a fluid like air or water)

ml – milliltres

cm³ – centimeters cubed

Millilitres and Centimeters Cubed are *inextricably* linked in the metric system. They are essentially two names for the same thing. For our purposes in Grade 8 Science, when we distinguish between the two, we will use **MILLILITRES** when we are measuring the space occupied by a **FLUID** (gas or liquid) and **CENTIMETRES CUBED** when we are measuring the space occupied by a **SOLID**.

In today's exercise we will be measuring the volume/capacity of various objects. Some of these objects will be **RECTANGULAR PRISMS**. To determine their volumes/capacities we will use the equation,
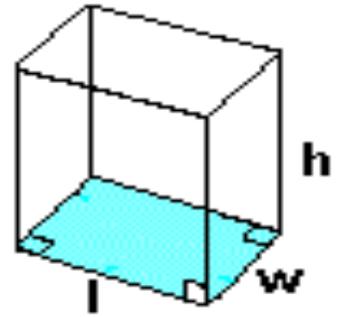
The '3' in cm³ means you are talking about a 3- Dimensional object, or **3-D**

cm³
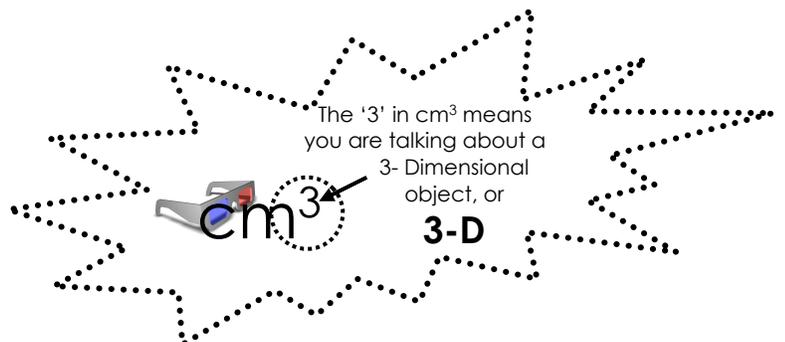
L x W x H = Volume

(Length x Width x Height = Volume of a Rectangular Prism)

STATION 1: 4 Corners!…(Actually 8 vertices)

Materials
- Various metre sticks, rulers, tape measures
- Various Rectangular Prisms
- The Equation: V=LxWxH

1. Select 5 Rectangular Prisms in the room and determine their volumes.

Object	Length (L)	Width (W)	Height (H)	Volume (V)

DON'T FORGET THE UNITS!

2. Measure the volume of air in the room. Show your work below.

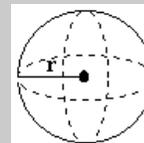3. In which units did you measure the volume of air in the room?

Did you know

that all regular geometric solids have an equation for determining their volume?
For instance, the equation for determining the
VOLUME OF A SPHERE
is

$$v = \frac{4}{3}\pi r^3$$

Are you glad that you only need to know the equation for determining the volume of a rectangular prism for Science this year?

STATION 2: Gotta Dunk 'em All!

Materials

- 🔴 Pokémon
- 🔴 Graduated Cylinders
- 🔴 Water
- 🔴 Mystery Measuring Device

1. Describe the steps you would take to measure the volume of an irregularly shaped object, say a **Pokémon**.

    1.

    2.

    3.

    4.

    5.

2. Measure the volume of 5 different **Pokémon** and list them in the table below from largest (the greatest volume) to smallest (the least volume).

Pokémon	Volume

3. Did you follow the instructions in #2 above? Are you sure? Are you Superdy-Duperdy sure?

What do you get if you put a parrot into a washing machine?