Lesson 5:

SNC1P

Measuring Mass & Volume

- **M**_____ is used to describe the amount of matter present in an object. **W**_____ refers to the force of gravity on that mass or object.
- To change your mass, you must eat **m**_____ or **l**_____.
- To change your weight, you change the force of **g**_____. As you go farther from the centre of the Earth, you lose weight, for instance, by moving to the top of a mountain.
- In the SI (or metric) unit, the basic unit for mass is the **k**_____. The standard kilogram is a special platinum-iridium cylinder at Sèvres, **F**_____. In this way, a kilogram is the same throughout the world.
- **V**_____ is the amount of space an object occupies.
- In the SI unit, the basic unit of volume is the **c**_____ (m^3).
- A cubic metre is the space occupied by a cube 1 m x 1 m x 1 m. This unit is used when measuring the volume of a **s**_____ object. Sometimes, you can also use cubic centimetre (cm^3) or decimeter (dm^3).
- When measuring the volume of liquids, capacity units are often used instead of cubic units. The basic capacity unit of volume is the **l**_____ (L), which is used for **l**_____ and **g**_____. Sometimes the kilolitre (kL) and milliliter (mL) are also used.
- Cubic and capacity units of volume are related as follows:

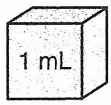
$$1\ m^3 = 1\ kL \qquad 1\ dm^3 = 1\ L \qquad 1\ cm^3 = 1\ mL$$

- **Volume of Solids by Displacement**. The volume of a small, solid, irregular object can be found by immersing it in a known quantity of water or some other liquid in a graduated cylinder. The **i**_____ in volume is assumed to be equal to the volume of that object.
- ***Système International d'Unités (abbreviated SI) or the International System of Units.*** This is the world's most widely used system of measurement for **c**_____ and **s**_____. This system has been adopted nearly globally. **C**_____ has adopted it for most purposes, but imperial units are still legally allowed. The US has not adopted the SI units as their official system of weights and measures. The UK has officially adopted a partial metrication policy, but has not replaced the imperial units entirely.
- **Base units.** The base unit for distance is the **m**_____ (m). The base unit for mass is the **k**_____ (kg). The base unit for volume/capacity is the **l**_____ (L).
- **Converting metric units.** King Henry Doesn't Like Drinking Cold Milk.

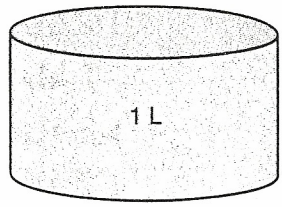
NAME _____

Lesson Units of Mass

An aspirin tablet has a mass of about 350 **milligrams (mg).**



1 mL of water has a mass of 1 **gram (g).**



1 L of water has a mass of 1 **kilogram (kg).**

1000 mg = 1 g
0.001 g = 1 mg

65 g = $\frac{?}{}$ mg
1 g = 1000 mg
65 g = (65 × 1000) mg
65 g = 65 000 mg

1000 g = 1 kg
0.001 kg = 1 g

250 g = $\frac{?}{}$ kg
1 g = 0.001 kg
250 g = (250 × 0.001) kg
250 g = _____ kg

Complete the following.

	a	*b*
1.	26 g = _____ mg	6.2 g = _____ mg
2.	75.2 mg = _____ g	2420 mg = _____ g
3.	89 kg = _____ g	7.5 kg = _____ g
4.	835 g = _____ kg	5.6 g = _____ kg
5.	60.5 g = _____ mg	60.5 g = _____ kg

6. A teaspoon holds about 5 mL of water. What is the mass of 5 mL in grams? In milligrams?

It's mass is _____ g.

It's mass is _____ mg.

6.

7. A nickel has a mass of about 5 g. What is the mass of 200 nickels in grams? In kilograms?

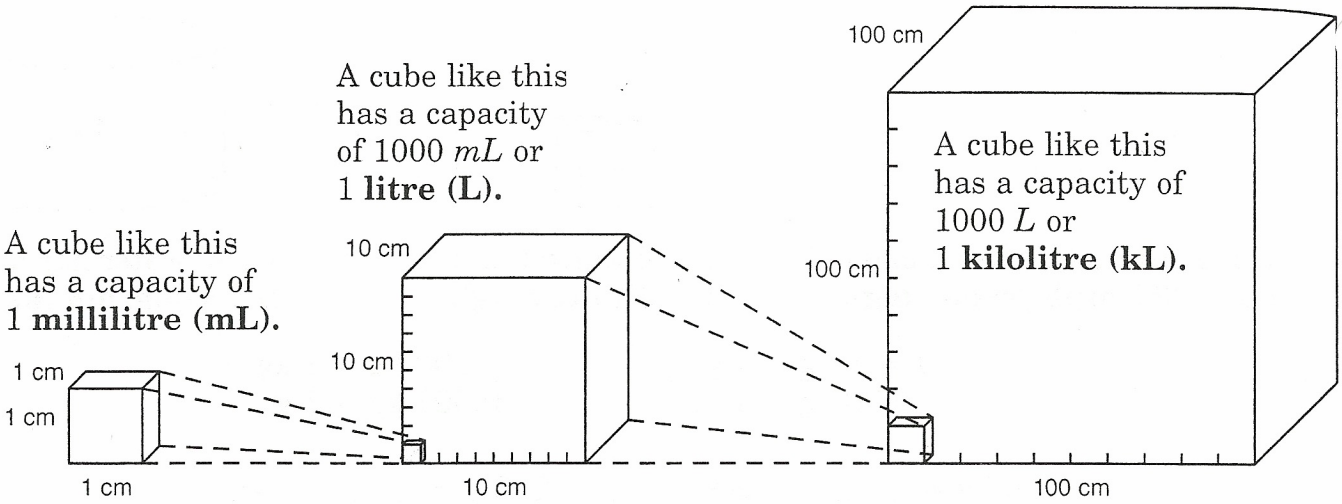
200 nickels have a mass of about _____ g.

200 nickels have a mass of about _____ kg.

7.

NAME _____

Lesson Capacity



1000 mL = 1 L
0.001 L = 1 mL

1000 L = 1 kL
0.001 kL = 1 L

Underline the measurement for the greater amount.

	a	*b*
1.	10 L, 10 kL	100 mL, 1 kL
2.	0.1 kL, 1000 L	10 mL, 1 L
3.	1000 L, 10 000 mL	0.001 kL, 1 mL
4.	500 L, 1 kL	700 mL, 1 L

Complete the following.

5.	1 L = _____ mL	0.1 L = _____ mL
6.	1 kL = _____ L	0.01 kL = _____ L
7.	0.001 kL = _____ L	1000 mL = _____ L
8.	100 L = _____ kL	10 kL = _____ L

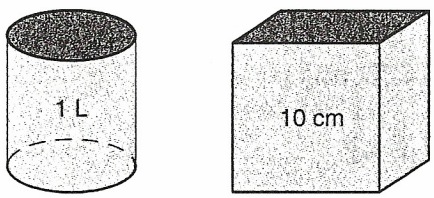
NAME _____

Lesson Units of Capacity

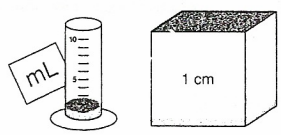
1.2 kL = ? L	54 L = ? kL
1 kL = 1000 L	1 L = 0.001 kL
1.2 kL = (1.2 × 1000) L	54 L = (54 × 0.001) kL
1.2 kL = 1200 L	54 L = _____ kL

Complete the following.

	a	*b*
1.	6.4 L = _____ mL	6000 mL = _____ L
2.	25 kL = _____ L	752 L = _____ kL
3.	78 L = _____ mL	529 mL = _____ L
4.	0.986 kL = _____ L	42 L = _____ kL
5.	7.5 L = _____ mL	7.5 mL = _____ L
6.	7.5 kL = _____ L	7.5 L = _____ kL



1 L of water will fill a cube with side length 10 cm.



1 mL of water will fill a cube with side length 1 cm.

Would you use millilitres or litres to measure each of the following?

7.	a dose of cough medicine	L	mL
8.	water in an aquarium	L	mL
9.	perfume in a bottle	L	mL

NAME _____

Metric Measurement

Circle the unit you would use to measure each of the following:

1.	capacity of a tank	*metre*	*litre*	*gram*
2.	length of a string	*centimetre*	*centilitre*	*centigram*
3.	weight of an ant	*millimetre*	*millilitre*	*milligram*

Write *1000; 0.01;* or *0.001* to make each sentence true.

4. The prefix *milli* means _____.

5. The prefix *kilo* means _____.

6. The prefix *centi* means _____.

Measure each line segment to the nearest unit indicated.

7. _____ cm

8. _____ mm

Complete the following:

	a	*b*
9.	1 m = _____ km	100 mm = _____ cm
10.	2 L = _____ mL	2 kg = _____ g
11.	0.5 g = _____ mg	300 cm = _____ m
12.	1.4 kL = _____ L	0.05 km = _____ m