Name_____

GVC Science Dept.

Course: Science 10F

Intro to Lab Skills

Day 1: Sandman Lab

Name_____

Introduction

The main purpose of the Sandman Lab is to familiarize yourself with basic lab techniques and skills. In this lab you will practice converting units, measuring mass and volume, identifying common lab equipment and lab safety.

Materials

Materials for this lab include:

1. Rubber Stopper	2. Scoopula	3. Electronic Balance	4. Test Tube	5. Metal Ring Stand	6. Metal Tongs
7. Beaker	8. Graduated Cylinder	9. Pipette	10. Bunsen Burner	11. Erlenmeyer Flask	12. Goggles

Procedure

Part A: For part A, you will need to match the image (page 3) with the name of the correct instrument from the materials list (located in the table above).

Part B: For part B, you will use the diagram to help you complete the four metric conversions on page 4.

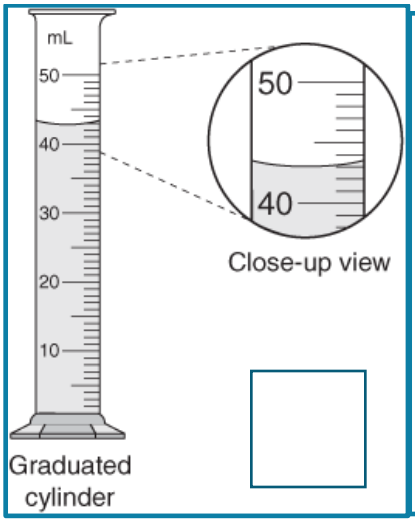
Part C: In this section, you are required to measure out two masses and two volumes of sand. You will need to convert these masses to the correct units as well.

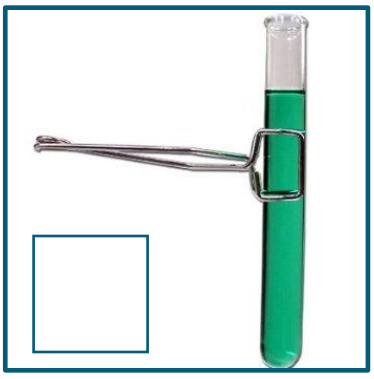
Part D: In this section, you are required to assemble and disassemble a metal ring stand, complete with Bunsen burner and test tube. You will also need to include a labeled drawing of a metal ring stand in the space provided.

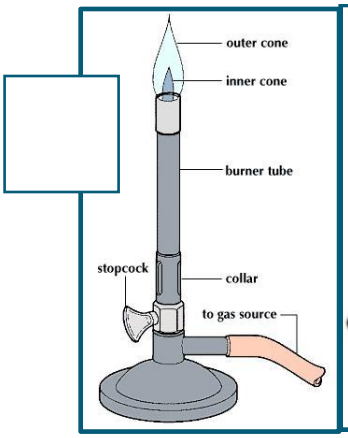
Part E: Begin the Lab Safety Assessment.

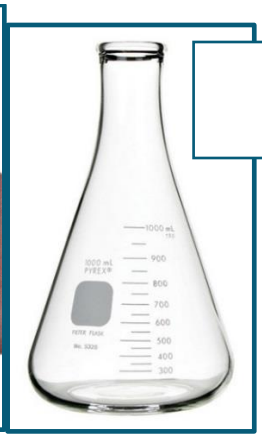
Name_____

Part A: Match the following images with the correct number from the materials list above.









Name_____

Part B: Use the following table to convert between units, in the examples listed on this page.

Metric Conversion

King	Henry	Died	Unusually	Drinking	Chocolate	Milk
Kilo	Hecto	Deca	* Unit *	Deci	Centi	Milli
 10 x 10 x 10 x LARGER than a unit	10 x 10 x LARGER than a unit	10 x LARGER than a unit	***Meter*** *(length)* ***Liter*** *(liquid volume)* ***Gram*** *(mass/weight)* **1 unit**	10 x SMALLER than a unit	10 x 10 x SMALLER than a unit	10 x 10 x 10 x SMALLER than a unit 
1 kilo = 1,000 units	1 hecto = 100 units	1 deca = 10 units		10 deci = 1 unit	100 centi = 1 unit	1,000 milli = 1 unit
km = kilometer kL = kiloliter kg = kilogram	hm = hectometer hL = hectoliter hg = hectogram	dam = decameter daL = decaliter dag = decagram	m = meter L = liter g = gram	dm = decimeter dL = deciliter dg = decigram	cm = centimeter cL = centiliter cg = centigram	mm = millimeter mL = milliliter mg = milligram
Example: 5 kilo	50 hecto	500 deca	5,000 units	50,000 deci	500,000 centi	5,000,000 milli

DIVIDE numbers by 10 if you are getting bigger (same as moving decimal point one space to the left)

MULTIPLY numbers by 10 if you are getting smaller (same as moving decimal point one space to the right)

1) 5.50 kilograms = _____ mg

2) 70 meters = _____ hm

3) 2,575 centiliters = _____ mL

4) 6,958 decigrams = _____ kg

To Change Units, Move the Decimal Point

10^3	10^2	10^1	10^0	10^{-1}	10^{-2}	10^{-3}
k	h	da	1	d	c	m
kilo	hecto	deka	UNIT	deci	centi	milli

2.3 km = _____ m

2.3 km = 2300 m

2.3 0 0.

Name_____

Part C: Lab Tasks

1) Your first task will be to measure a substance using an electronic balance.
   a. Before you begin, make sure the electronic balance and counter space is clear.
   b. Obtain a 20 cm x 20 cm square piece of paper towel
   c. Place the piece of paper towel on the electronic scale. The scale will show the mass of the paper towel. You will then touch the zero (tare) button, with the piece of paper towel still on the scale. The scale will now read zero. This is done, so that when you are measuring a substance, you are just measuring the substance, not the substance and the paper towel.
   d. Next, you are required to obtain **450 centigrams** of sand. First convert centigrams to grams.

      450 centigrams (cg) = _____ grams (g)

   e. Then use a square of paper towel and scoopula to gather the approximate amount of the substance (sand) desired.
   f. Place the paper towel and substance on the electronic scale.
   g. If there is too much substance on the balance, remove paper towel and sand from the balance. Then use the scoopula to remove some of the substance. **NOTE:** For this exercise you may place the sand back in the beaker, but **never** put a substance back into the original container. This will help to avoid **contamination** of the source substance.
   h. If there is not enough of the substance, remove the paper towel with sand and add a bit more substance using the scoopula.
   i. Once you have attained the correct mass, pour all of the sand back into the beaker, wipe down the scoopula (leaving it at the station), throw away your paper towel and make sure the scale and counter space is clean of all substances.

2)
   a. Your next task is to repeat the steps from above and obtain the following mass of sand:

      5,200 milligrams (mg) = _____ grams (g).

3) Convert and measure on electronic balance:

   0.09 kg = _____ g

Name_____

Part D: Assembling and disassembling a ring stand, complete with Bunsen burner and test tube.

a. First place the metal base on the countertop.
b. Next screw the metal rod into the base.
c. Then, depending upon what the lab calls for, slide and tighten either the ring or test tube clamp onto the metal rod. For this lab attach the test tube clamp to the metal rod.
d. Connect the Bunsen burner to the gas supply and place on the center of the metal base directly underneath the metal ring or test tube clamp. NOTE: Make sure your Bunsen burner and stand are not underneath any bookshelves or poster paper.
e. Place the test tube in the test tube clamp at a 45 degree angle towards the wall.
f. Draw and label a diagram of the metal ring stand, in the space provided below.
g. Once you have completed your diagram, disassemble the metal ring stand and place all of the materials in their original position.