Chemistry One Honors - SME - Ms. Hallstrom

Summer Assignments

All materials referenced below are accessible on the Moodle site. We are "switching" sites, so I'm not sure about access..... e-mail me and I can forward with the assignments.

The world will not end if you don't get all of these done. However, you will be using your completed work to take online "did you do your homework" quizzes. You will take those quizzes quite early in the school year. We go through this material very, very, very fast! The summer assignments are not difficult science!

You can probably find answers online for some of this work. I suggest you do the work yourself – in pencil, then check for answers if you are so inclined. I will provide answer keys after we get started next fall.

The only assignments that might give you trouble are the significant figures material. That's new and can be confusing. I'll be spending more time in class working on measurement with you.

NOTE: The dates are approximate.

Assignment:	Support/Instruction:
Enroll in Moodle! (If it works...)	Enroll in Moodle! Enrollment Key: **hailstorm**
Matter Flow Chart Worksheet (HW – Day 3) **Matter and Change Packet (HW – Day 2)**	**Matter, Change, Elements PowerPoint On Moodle** **This Material will be covered in class during weeks 1 and 2.**
"Elements Origins" Worksheet (HW – Day 1) **Periodic table- Search for different formats of the periodic table. The periodic table we will use in class is on the Moodle Site!!**	Matter, Change, Elements PowerPoint **This material isn't anything that needs to be taught. It's more of a search of elements.**
Sig Fig Worksheet (HW – Day 6 or 7)	**Measurement and Calculations PowerPoint** **Sig Fig Tutorial** **This material will be reviewed in class.**
SI Units and Prefixes Worksheet (HW – Day 6 or 7)	**Measurement and Calculations PowerPoint** **SI Units and Prefixes is plain old memorization followed by some simple practice of unit conversions. Unit conversions will be covered in class**
Memorize element names with proper spelling and their symbols. **(Mastery Test – Day 7)** Memorization Tip: make flash cards by hand or electronically (you do not need to learn the original names or name origins included on the flash cards).	Memorize Common Elements List FLASHCARD SET – on Moodle (Actually, I don't know if the new Moodle supports flash cards. We'll see. Quizlet works) **Simple memorization.** **Elements Mastery will be scheduled for week 2 or 3!!!**

How to enroll in the Chemistry 1 Honors online classroom – Moodle!

Go to:

https://smephysicalscience.gnomio.com

You will have to create a log on for yourself.

I strongly suggest you use the following

User ID: smstudentid example: s3333333

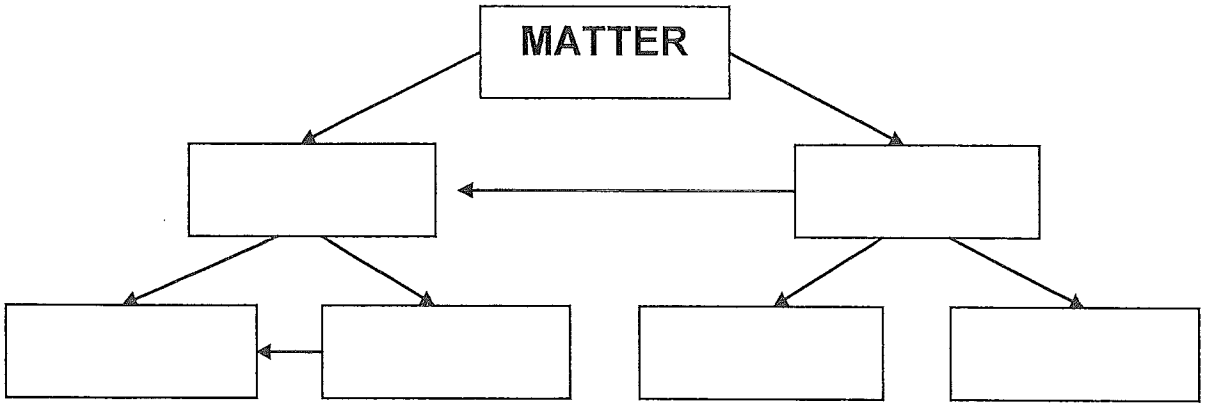
Password: 12345678Zz!

You will receive an e-mail. When you get the e-mail, select the Chemistry 1 Honors. The enrollment key is

hailstorm

e-mail me if you have difficulty enrolling!

Chem I Name _____ Hour _____



Name (Symbol) (Examples) (Examples) (Examples)

1. Hydrogen H
2. _____ 1. _____ 1. _____ 1. _____
3. _____ 2. _____ 2. _____ 2. _____
4. _____ 3. _____ 3. _____ 3. _____
5. _____ 4. _____ 4. _____ 4. _____
6. _____ 5. _____ 5. _____ 5. _____
7. _____
8. _____
9. _____
10. _____

States of Matter:

Name	Properties
1. _____	_____
2. _____	_____
3. _____	_____

What is a phase? Give an example.

_____

What is a solution? Give an example.

_____

What distinguishes a vapor from other gases?

_____

Explain the difference between physical and chemical separation.

_____

Name _____ Period _____ Date _____

Worksheet: What Are The Symbols For The Elements?

Symbols are signs that stand for something else. Here are some symbols that you may know: $ % @ & #. What does each one stand for?

There is a symbol for each of the 106 chemical elements. There are 106 symbols because there are 106 elements. The symbols for the elements are the same all over the world. It makes no difference what country you are in or what language you speak; the chemical symbols are the same.

I. HOW DO THE ELEMENTS GET THEIR SYMBOLS?

1. Often the first letter of the element's name is the symbol for that element.
2. The name of the element may begin with a letter that is already the symbol for another element. In that case, it may be the first and second letters that are used or the first letter and another letter in the name may be used to make the symbol.
3. The first letter of the symbol is always capitalized. The second letter (if used) is always a lowercase letter.
4. A few elements are named after places or famous scientists.

II. HOW ELEMENTS ARE NAMED

Study the Periodic Table of Elements. Do any of the names of the elements sound familiar? They should. Some elements have ancient names of Latin and Greek origins; but many other were named for famous scientists, countries, planets, etc. Using a copy of the Periodic Table, answer the following questions.

1. There are several elements named for famous scientists. Can you find three?

	Element Name	Symbol	Scientist Name/couple of words regarding contribution
a.	_____	_____	_____
b.	_____	_____	_____
c.	_____	_____	_____

2. There are four elements named for the planets. Can you find all four of them?

a. _____ _____ c. _____ _____

b. _____ _____ d. _____ _____

3. There is one element named for a city in the United States and another for the state of that city. Can you find the element named for the city and the element named for the state? (Hint: They are next to each other on the table.)

a. _____ _____ b. _____ _____

4. There are two elements named for large regions which include several countries. Do you know what these elements are called?

a. _____ _____ b. _____ _____

5. Element numbers 39, 65, 68, and 70 were all named for the same city, Ytterby, Sweden. What are the names of these elements?

a. _____ _____ c. _____ _____

b. _____ _____ d. _____ _____

6. The ancient name for France was Gaul, and the ancient name for Russia was Ruthernia. Can you find the elements named for these ancient lands?

a. _____ _____ b. _____ _____

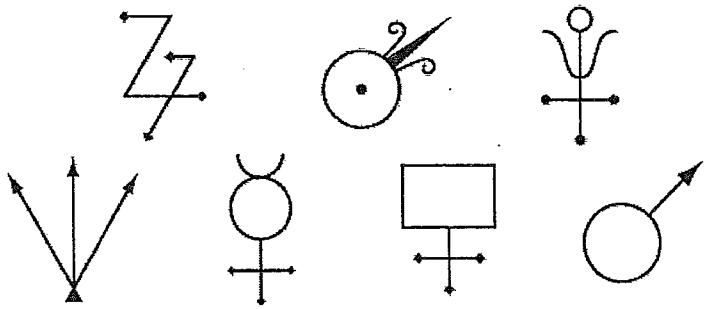
7. Find four elements named in honor of countries.

a. _____ _____ c. _____ _____

b. _____ _____ d. _____ _____

III. ANCIENT NAMES FOR THE ELEMENTS

Plumbum
Natrium
Aurum
Stibium
Argentum
Hydrargyrum (Greek)
Kalium
Ferrum



This exercise will help you to remember the symbols of some of the elements which are not similar to their modern names. The elements listed above were named in ancient times by the early Romans and Greeks. Although we do not use these names, we have kept the symbols. How many of these ancient names can you match to their modern names and symbols given below?

	Modern Name	Symbol	Ancient Name
8.	Antimony	Sb	_____
9.	Gold	Au	_____
10.	Iron	Fe	_____
11.	Silver	Ag	_____
12.	Sodium	Na	_____
13.	Potassium	K	_____
14.	Lead	Pb	_____
15.	Mercury	Hg	_____

IV. COMPLETE SENTENCES

Complete the sentences with the words below.

capital **two** **elements** **symbol** **small**

16. The short way of writing an element name is called its _____.
17. The first letter of a chemical symbol is always a _____ letter.
18. If a chemical symbol has two letters, the second letter is always a _____ letter.
19. A chemical symbol never has more than _____ letters.
20. Chemists use symbols for the names of _____.

Name _____ Class _____ Date _____

2 Matter and Change

2.1 Properties of Matter

Essential Understanding Matter is anything that has mass and occupies space. All matter has certain characteristics, or properties, that can be used to classify and identify it.

Lesson Summary

Describing Matter All properties used to identify matter are either extensive or intensive properties.

- **Extensive properties**, such as mass and volume, depend on the amount of matter in a sample.
- An **intensive property**, such as density, depends not on the amount of matter in a sample, but on the type of matter.
- A **pure substance** is a type of matter that has a definite composition and can be identified by its unique set of properties.
- A **physical property** can be observed without changing a substance's composition.

States of Matter The three most common states of matter on Earth are solid, liquid, and gas.

- A **solid** has a definite shape and a definite volume.
- A **liquid** has a definite volume, but it takes the shape of its container.
- A **gas** takes both the shape and the volume of its container.
- A **vapor** is the gaseous state of a substance that is usually a solid or a liquid at room temperature.

Physical Changes The identity of a material does not change during a physical change.

- Some **physical changes**, such as melting or boiling, are **reversible**.
- Some physical changes, such as breaking or cutting, are **irreversible**.

Describing Matter

5. The _____ of an object is a measure of the amount of matter the object contains.

6. How does an extensive property differ from an intensive property?

_____

_____

7. Matter that has a uniform and definite composition is called a _____.

8. Is the following sentence true or false? All samples of a substance have different physical properties._____

9. A physical property is a quality or condition of a substance that can be _____ or _____without changing the substance's composition.

10. Circle the letter of the term that is NOT a physical property.

a. hardness **c.** boiling point

b. color **d.** melting

11. Look at Table 2.1. What is the melting point of bromine? _____

12. Look at Table 2.1. Circle the letter of the substance that is a yellow solid and melts at 115°C.

a. sulfur **c.** gold

b. chlorine **d.** copper

13. Is the following sentence true or false? Physical properties can help a chemist identify a substance._____

States of Matter

14. Circle the letter of the term that is NOT a physical state of matter.

a. water **c.** liquid

b. gas **d.** solid

15. Complete the table about the properties of the three states of matter. Use these terms: *definite, indefinite, easily,* and *not easily.*

Properties of the States of Matter			
Property	**Solid**	**Liquid**	**Gas or Vapor**
Shape		indefinite	
Volume	definite		indefinite
Can be compressed		not easily	

17. Is the following sentence true or false? The words *gas* and *vapor* describe the same thing.

_____

18. The term *gas* is limited to those substances that exist in the gaseous state at

_____.

19. What does *vapor* describe?

_____

16. Match each arrangement of the particles in matter with a physical state.

Physical State	**Arrangement**
_____ gas	**a.** packed tightly together
_____ liquid	**b.** close, but free to flow
_____ solid	**c.** spaced relatively far apart

Physical Changes

20. A physical change alters a given material without changing its chemical

_____.

21. What are some words that describe physical changes?

_____

_____

22. What is true about all physical changes that involve a change of state?

_____

_____

2.2 Mixtures

Essential Understanding A **mixture** is a physical blend of two or more components that can be separated by physical means.

Lesson Summary

Classifying Mixtures Mixtures can be classified according to how their components are distributed.

- In a **heterogeneous mixture**, the components are not evenly distributed.
- In a **homogeneous mixture**, or **solution**, the components are evenly distributed.
- A heterogeneous mixture consists of at least two phases, but a homogeneous mixture contains exactly one phase.

Separating Mixtures The physical properties of the components of a mixture can be used to separate the mixture.

- A solid and a liquid can be separated by filtration because of the difference in the physical properties of the two components.
- A liquid solution might be separated by distillation, during which the component with the lowest boiling point is boiled off, and the resulting vapors are then condensed.

Classifying Mixtures

1. Is the following sentence true or false? Most samples of matter are mixtures._____
2. What is a mixture?

   _____

   _____
3. Is the following sentence true or false? A heterogeneous mixture is one that has a completely uniform composition. _____
4. What is another name for a homogeneous mixture? _____
5. Circle the letter of the term that describes a part of a sample having uniform composition and properties.

   a. solution **c.** state

   b. mixture **d.** phase
6. How many phases exist in these types of mixtures?

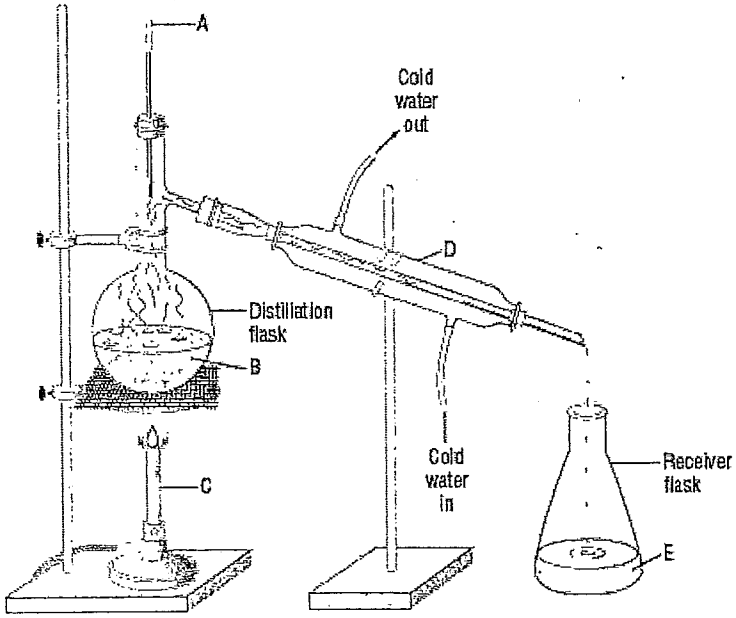
   a. Homogeneous _____ **b.** Heterogeneous _____

Separating Mixtures

7. In general, what is used to separate mixtures?_____

   _____
8. The process that separates a solid from a liquid in a heterogeneous mixture is called _____.
9. What happens during distillation? _____

   _____



Match each term with its location in the diagram.

_____ **10.** condenser

_____ **11.** heat source

_____ **12.** thermometer

_____ **13.** tap water

_____ **14.** distilled water

2.3 Elements and Compounds

Essential Understanding Elements and compounds are both types of substances because both types of materials have definite and uniform composition.

Lesson Summary

Distinguishing Elements and Compounds While both elements and compounds are substances, they have distinct differences.

- An **element** is the simplest form of matter that has its own unique set of properties.
- A **compound** is made up of two or more elements chemically combined in a definite proportion.
- A compound can be broken down into its component elements by a chemical change.
- A **chemical change** produces a new kind of matter that has a composition different from the original matter.
- Usually, the properties of a compound are quite different from the properties of the elements the compound contains.

Distinguishing Substances and Mixtures Substances and mixtures can appear the same, but they differ in their general characteristics.

- In a substance, the composition is fixed and cannot vary.
- The composition of a mixture might vary; the components in a mixture do not have to be in definite ratios.

Symbols and Formulas Chemical symbols represent elements, and chemical formulas represent compounds.

- Each element is represented by a one- or two-letter symbol that is unique to that element.
- The chemical formula of a compound consists of the chemical symbols of each element in the compound, along with subscripts that show how many atoms of each element are present.

The Periodic Table—A Preview The periodic table is used to organize elements according to atomic number and repeating properties.

- The periodic table is arranged according to rows, or *periods,* and columns, or *groups.*
- Elements in a group have similar physical and chemical properties.
- From top to bottom and left to right, elements are arranged on the periodic table according to increasing atomic number.

Distinguishing Elements and Compounds

1. Each _____ has a unique set of properties.
2. Into what two groups can pure substances be classified?_____ _____
3. Is the following sentence true or false? Elements can be easily separated into simpler substances. _____
4. Compounds are substances that can be separated into simpler substances only by_____ means.
5. Is the following sentence true or false? The properties of compounds are different from those of their component elements. _____
6. Complete this sentence. Sodium chloride (table salt) is a _ of sodium, which is a soft _____, and chlorine, which is a pale yellow _____.

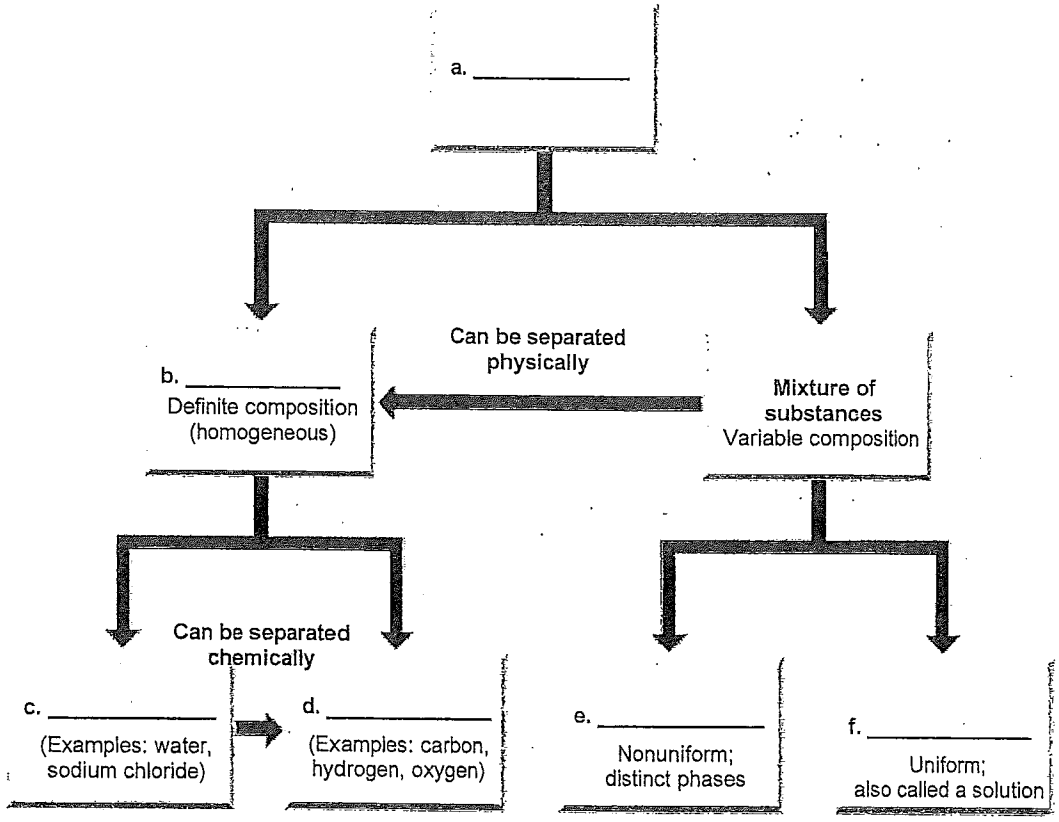
Distinguishing Substances and Mixtures

7. Describe one way to decide whether a sample of matter is a substance or a mixture.

_____

_____

8. Complete the labels in the diagram below.



Symbols and Formulas

9. What is used to represent an element?

_____

_____

10. What are chemical symbols used for?

_____

_____

11. Subscripts in chemical formulas are used to indicate the relative proportions of the elements in a _____.

12. Is the following sentence true or false? The elements that make up a compound are always present in the same proportions._____

13. Use Table 2.2 to answer the following questions.

    a. Pb is the symbol for what element?_____

    b. What is the symbol for gold?_____

    c. Stibium is the Latin name for which element?_____

2.4 Chemical Reactions

Essential Understanding Chemical reactions involve chemical changes and the conservation of mass.

Lesson Summary

Chemical Changes During a chemical change, the composition of matter changes.

- A chemical change must occur for a chemical property to be observed.
- The substances at the beginning of a reaction are called reactants. The substances produced by the reaction are called products.
- Reactants and products differ in composition.

Recognizing Chemical Changes Although a change in composition is the only way to confirm a chemical change, several clues might indicate that a chemical change occurred.

- One clue is a transfer of energy.
- Other clues include a change in color and the production of a gas.
- The formation of a precipitate, a solid that forms and settles out of a liquid, is another clue.

Conservation of Mass The law of conservation of mass says that mass is neither created nor destroyed during a normal chemical reaction or physical change.

- During chemical reactions, the total mass of the reactants equals the total mass of the products.
- Mass is also conserved during physical changes, such as a change of state.

Chemical Changes

1. What is a chemical property?

_____

_____

2. Is the following sentence true or false? Chemical properties are observed only when a substance undergoes a chemical change. _____

3. What happens during a chemical reaction?

_____

4. In chemical reactions, the substances present at the start of the reaction are called _____, and the substances produced are called _____.

5. Circle the letter of the term that best completes the sentence. A change in the composition of matter _____ occurs during a chemical reaction.

a. sometimes
c. always
b. rarely
d. never

6. Which representation of a chemical reaction is correct?

a. products → reactants
b. reactants → products

Recognizing Chemical Changes

7. List four possible clues to a chemical change.

_____

_____

_____

_____

8. Is the following statement true or false? If you observe a clue for chemical change, you can be certain that a chemical change has taken place. _____

9. Define a precipitate.

_____

_____

Conservation of Mass

10. During a chemical reaction, the mass of the products is always equal to the mass of the _____.

11. The law of conservation of mass states that in any physical change or chemical reaction, mass is neither _____ nor _____.

12. Look at Figure 2.16. How do you know that mass was conserved?

_____

Recognizing Chemical Changes

7. List four possible clues to a chemical change.

_____

_____

_____

_____

8. Is the following statement true or false? If you observe a clue for chemical change, you can be certain that a chemical change has taken place. _____

9. Define a precipitate.

_____

_____

Conservation of Mass

10. During a chemical reaction, the mass of the products is always equal to the mass of the _____.

11. The law of conservation of mass states that in any physical change or chemical reaction, mass is neither _____ nor _____.

12. Look at Figure 2.16. How do you know that mass was conserved?

_____

_____

Apply the Big Idea

A camper burned a piece of paper to start a campfire. Answer these questions about burning the paper.

a. Is burning paper a physical change or a chemical change? How do you know?

_____

_____

b. If you said the change was chemical, what are the reactants? What are the products?

_____

_____

c. The ash produced by the burning paper has much less mass than the mass of the original paper. Was mass conserved during this change? Explain your answer.

_____

_____

_____

_____

ELEMENTS LIST

You need to know the name and symbol. Spelling counts!!!

Aluminum
Antimony
Argon
Arsenic
Barium
Beryllium
Bismuth
Boron
Bromine
Cadmium
Calcium
Carbon
Cesium
Chlorine
Chromium
Cobalt
Copper
Fluorine
Gold
Helium
Hydrogen
Iodine
Iron
Krypton
Lead
Lithium
Magnesium
Manganese
Mercury
Neon
Nickel
Nitrogen
Oxygen
Palladium
Phosphorus
Platinum
Plutonium
Potassium
Radium
Radon
Selenium
Silicon
Silver
Sodium
Strontium
Sulfur
Tin
Titanium
Tungsten
Uranium
Vanadium
Xenon
Zinc
Zirconium

Name _____ Class _____ Date _____

Using SI Units and Prefixes

1. Complete the table showing selected SI base units of measurement.

Units of Measurement		
Quantity	**SI Base Unit**	**Symbol**
Length		
Mass		
Temperature		
Time		

2. All metric units of length are based on multiples of _____.

3. The International System of Units (SI) is a revised version of the _____.

4. Complete the following table showing some metric units of length. Remember that the meter is the SI base unit for length.

Metric Units of Length		
Unit	**Symbol**	**Factor Multiplying Base Unit**
Meter	m	1
Kilometer		
Centimeter		
Millimeter		
Nanometer		

Match each metric unit with the best estimate of its length or distance.

_____ 5. Height of a stove top above the floor

_____ 6. Thickness of about 10 sheets of paper

_____ 7. Distance along a road spanning about 10 telephone poles

_____ 8. Width of a key on a computer keyboard

a. 1 km

b. 1 m

c. 1 cm

d. 1 mm

9. The space occupied by any sample of matter is called its _____.

10. Circle the letter of each sentence that is true about units of volume.

a. The SI unit for volume is derived from the meter, the SI unit for length.

b. The liter (L) is a unit of volume.

c. The liter is an SI unit.

d. There are 1000 cm^3 in 1 L, and there are also 1000 mL in 1 L, so 1 cm^3 is equal to 1 mL.

Match each of the three descriptions of a volume to the appropriate metric unit of volume.

Example	Unit of Volume
_____ **11.** Interior of an oven	**a.** 1 L
_____ **12.** A box of cookies	**b.** 1 m^3
_____ **13.** One-quarter teaspoon	**c.** 1 mL

14. A volume of 1 L is also equal to

a. 1000 mL

b. 1 dm^3

c. 1000 cm

15. The volume of any solid, liquid, or gas will change with _____.

16. A kilogram was originally defined as the mass of _____.

17. Circle the letter of the unit of mass commonly used in chemistry that equals 1/1000 kilogram.

a. gram

b. milligram

c. milliliter

Match each unit of mass with the object whose mass would be closest to that unit.

Mass	Unit of Mass
_____ **18.** A few grains of sand	**a.** 1 kg
_____ **19.** A liter bottle of soda	**b.** 1 g
_____ **20.** Five aspirin tablets	**c.** 1 mg

21. Is the following sentence true or false? The mass of an object changes with location.

_____

22. When brought to the surface of the moon, will a mass have more or less weight than it did on the surface of Earth, or will it be the same weight? Explain.

_____

_____

_____

SIGNIFICANT FIGURES WS 1 NAME:_____

PERIOD:_____

Significant Figures in Measurement

1. How many significant figures are in each of the following measurements?

_____a. 123 m

_____b. 0.123 m

_____c. 40,506 mm

_____d. 9.8000×10^4 m

_____e. 4.5600 m

_____f. 22 meter sticks

_____g. 0.07080 cm

_____h. 98,000 L

2. Write each measurement in scientific notation and determine the number of significant figures in each.

a. 0.05730 m _____ _____

b. 8765 dm _____ _____

c. 0.00073 mm _____ _____

d. 0.010 km _____ _____

Significant Figures and Rounding

When rounding a number to the correct number of significant figures, if the digit immediately to the right of the last significant digit is less than 5, round down. If the digit immediately to the right of the last significant digit is greater than 5, round up.

3. Round off each of these measurements to the number of figures shown in parenthesis.

_____a. 314.721 L (4)

_____b. 0.001775 m (2)

_____c. 64.32×10^{-1} m (1)

_____d. 8792 mL (2)

4. Write each of the answers from Problem 3 in scientific notation.

a. _____

b. _____

c. _____

d. _____

5. Round each measurement to three significant figures. Write your answer in scientific notation.

_____a. 870.73 cm

_____b. 4.3621×10^8 m

_____c. 0.01552 °C

_____d. 9009 km

_____e. 1.777×10^{-3} m

_____f. 629.55 m

_____g. 55,555 mL

_____h. 7,000.00 cm

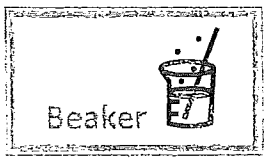
SIGNIFICANT FIGURES – THE RULES!

The **significant figures** in a measurement include all the digits that are known precisely plus one digit that is estimated. We use significant figures to realistically report data to the specifications of the measuring instruments used. We cannot report numbers that give a greater sense of the reporting limits of the instrument that what is true.

The rules for determining which digits in a measurement are significant are as follows:

1. Every nonzero digit in a recorded measurement is significant. The measurements 24.7 m, 0.743 m and 714 m all express a measurement of length to three significant figures.
2. Zeros appearing between nonzero digits are significant. The measurements 7003 m, 40.79 m, and 1.503 m all contain four significant figures.
3. Zeros appearing in front of all nonzero digits are NOT significant. These leading zeros are place holders only. The measurements 0.0071 m, 0.42 m, and 0.000 099 all have two significant figures. Although not significant. These particular zeros cannot be arbitrarily dropped from the measurement because they show the magnitude of the measurement. You can, however, get rid of these place-holding numbers by writing the measurement sin scientific notation: 7.1×10^{-3} m, 4.2×10^{-1} m, and 9.9×10^{-5} m.
4. Zeros at the end of a number AND to the right of a decimal point are always significant. The measurements 43.00 m, 1.010 m, and 9.000 m all have four significant figures.
5. Zeros at the end of a measurement and to the left of the decimal pint are NOT significant if they just serve as place markers to show the magnitude of the number. The zeros in the measurement 300 m, 7000 m, and 27210 m are not significant as written. The number of significant figures is one, one and four respectively. However, if these zeros were measured values, then they are significant. To avoid ambiguity, the measurements must be written in scientific notation. If these zeros were measured, you would write 3.00×10^{2} m, 7.000×10^{3} m, and 2.7210×10^{4} m. Then the number of significant figures is three, four, and five, respectively. If the last zero in each of these measurements were not measured, then the figures would be written as 3.0×10^{3} m, 7.00×10^{3} m, and 2.721×10^{4} m. IN this instance the number of significant figures is two, three and four, respectively.
6. There are two instances in which measurements have an unlimited number of significant figures. The first instance involves counting. If you count 23 people in your classroom, then there are exactly 23 people and this measurement has an unlimited number (∞) of significant figures. The second instance involves exactly defined quantities usually found within a system of measurement. When you write 60 min = 1 hour, or 100 cm = 1 m, each of these measurements has an unlimited number (∞) of significant figures. You must recognize exact measurements to be able to round off answers correctly in calculations problems involving measurements.

SIGNIFICANT FIGURES WS 2



NAME:_____

PERIOD:_____

Significant Figures in Calculations

In general, when calculating an answer to problem the answer cannot be more precise than the least precise measurement from which it was calculated.

Multiplying and Dividing

In calculations involving multiplication and division, and answer is rounded off to the number of significant figures in the last precise term used in the calculation. The least precise term is the measurement with the least number of significant figures.

Example 1: ***23.0 cm × 432 cm × 19 cm = 188,784 cm^3***

The answer is then rounded off to 190,000 or 1.9 ×10^5 cm. The number 19 is the least precise measurement with two significant figures, therefore the answer can contain only two significant figures.

Adding and Subtracting

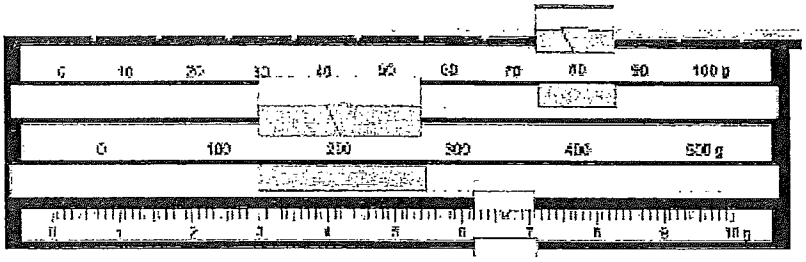
In calculations involving adding and subtracting, the answer should be rounded to have the same number of *decimal places* as the measurement with the least number of decimal places.

Example 2:	***123.25 mL***	*The correct answer is expressed as 255.5 mL.*
	46.0 mL	*46.0 mL is reported to the tenths place, therefore,*
	86.257 mL	*the final answer can be reported to the nearest tenth.*
	255.507 mL	

Directions: Perform the following operations expressing the answer to the correct number of significant figures.

1. 1.35 m × 2.537 m = _____
2. 12.01 mL + 24.2 mL + 7.345 mL = _____
3. 1035 meters divided by 42 meters equals _____
4. 55.46 g – 48.9 g = _____
5. 0.021 cm × 3.278 cm × 100.1 cm = _____
6. $(2.6 \times 10^{22}) \times (4.23 \times 10^{8})$ = _____
7. $5.789 \times 10^{3} + 2.43 \times 10^{2}$ = _____
8. 3500 meters divided by 175 meters = _____
9. 1.278×10^{3} m^3 divided by 1.4267×10^{2} m^2 = _____
10. 505.1 kg + 450.25 kg = _____

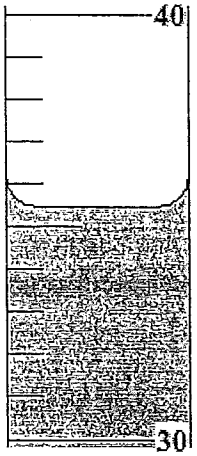
11. What mass is shown on the following balance? Make sure to give your answer to the correct number of significant figures! (Hint: The unit of mass is the gram)



Answer:_____

12. What volume is indicated on the graduated cylinder to the right?

Answer:_____



13. What temperature is indicated on the thermometer to the right? The unit of temperature is degrees Celsius.

Make sure you give your answer to the correct number of significant figures.

Answer:_____

Using a metric ruler, measure the following shapes, do the required calculations, and report your answer to the correct number of significant figures.

14. What is the perimeter around the rectangle below in **millimeters**? Units and sig figs!!

Length of rectangle? _____

Width of rectangle? _____

Answer_____

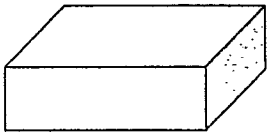
15. What is the area of the rectangle? Units and sig figs!! Answer:_____

16. Calculate the volume of the box as shown below. The volume of the box equals the width times the length times the height. Pay attention to the measurement units!!!

Length = 3.8 cm

Width = 24.5 mm

Height = 0.0012 m



Substituted equation:_____

Answer:_____