

CHEMISTRY 11 UNIT ONE TEST REVIEW

Name: Key
Blk: _____ Date: _____

Your Unit 1 test will cover all the material that we have covered until this point, the major topics include:







- Safety (The WHMIS Symbols)
- Scientific Notation
- Significant Digits
- SI Base Units
- Multiples of Base Units (eg. Kilo, centi, milli and micro)
- Unit Conversions: single, multiple and metric
- Density Calculations
- Chemical vs. Physical properties + changes
- Matter- definitions, the matter tree, and separating matter

The test questions that you receive will be based on those given in this worksheet. As well as additional ones. This worksheet will be collected at the start of class on the test day.

SAFETY:

1. What do the letters in the acronym WHMIS stand for?
Workplace hazardous materials information system

2. For each of the following, write down the appropriate WHMIS symbol and provide an example/material that would have this symbol on its label.

	<u>Oxidizing materials</u>		<u>Causing immediate serious</u>		<u>Corrosive materials</u>
	<u>Dangerously reactive</u>		<u>Biohazardous materials</u>		<u>Causing other toxic effects</u>

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1. In the space below, write one rule for significant figures and give an example of that rule.
0.020 → 2 sig figs

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2. When the rounding tool is five what are the two rules?
4.5 → 5 4.4 → 4

1/6

3. Write either the abbreviation or the name of each of the following measurements.

ABBREVIATION	NAME
Kg	Kilogram
μm	micrometer
s	second
Mol	mole
m	metre
L	Liter

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4. How many sig figs are in each of the following?

0.000026	2
4052.0	5
1200	2
0.07459	4

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5. Express each of the following numbers in scientific notation.

2730	2.73×10^3
0.000256	2.56×10^{-4}
6020000000000000000000	6.02×10^{23}
15.2690000	1.52690000×10^1

6. When multiplying or dividing two numbers, the answer is rounded off to the least number of sig figs used in the calculation.

7. Express each of the following in ordinary notation.

6.53×10^{-3}	0.00653
2×10^6	2,000,000
3.4565×10^{10}	34,565,000,000
1.01×10^{-6}	0.00000101

8. Perform the indicated operations, answers in exponential form.

$10^3 \times 10^6$	10^9	$10^6 / 10^8$	10^{-2}
$10^{-2} \times 10^5$	10^3	$10^7 / 10^3$	10^4
$10^{-1} \times 10^{10}$	10^9	$10^2 \cdot 10^{-5}$	10^7

9. Perform the indicated operations. Convert all answers to scientific notation, showing the correct number of significant digits.

$(5.8 \times 10^3)(3.6 \times 10^8) =$	2.1×10^{13}
$(3.3 \times 10^4)(5.5 \times 10^{-7}) =$	1.8×10^{-13}
$(1.5 \times 10^2) =$	3.3×10^1
$(4.5 \times 10^9) =$	6.1×10^7

10. Using your knowledge of unitary rates, convert the following measurements.

a. $265 \text{ g} \times \frac{1 \text{ kg}}{1000 \text{ g}} = 0.265 \text{ kg}$
 b. $0.00067 \text{ m} \times \frac{1 \text{ cm}}{10 \text{ mm}} = 6.7 \times 10^{-5} \text{ cm}$
 c. $78 \text{ kg} \times \frac{1 \text{ kg}}{1000 \text{ g}} = 7.8 \times 10^4 \text{ g}$

11. If 3000ml of copper has a mass of 4.389 kg, what is the volume occupied by 1000 kg of copper?

$\# \text{ mL} = 1000 \text{ kg} \times \frac{3000 \text{ mL}}{4.389 \text{ kg}} = 6.8 \times 10^4 \text{ mL}$
 $\therefore 7 \times 10^4 \text{ mL}$

12. What is the cost of 7 dozen eggs if the eggs sell for \$2.59/dozen?

$\# \$ = 7 \text{ doz} \times \frac{\$2.59}{1 \text{ doz}} = \$18.13$

13. The gas tank on my ski-doo holds 5.9 liters. If one liter is equal to 0.264 gallons in the USA and gas is \$1.24/gallon. How much would it cost me to fill my tank in the states?
 $5.9 \text{ L} \times \frac{0.264 \text{ gal}}{1 \text{ L}} \times \frac{\$1.24}{1 \text{ gal}} = \$1.93$

15. The following is a comparison of kilometers driven to the amount of gas pumped into the tank

Km	Gas pumped (L)
360	60
24	4
72	12

$360/60 = 6 \text{ km/L}$
 $24/4 = 6 \text{ km/L}$
 $72/12 = 6 \text{ km/L}$

a. Are the two quantities proportional? Explain.

yes they are all proportional

b. Calculate the unitary rate that can be derived from this set of data.

6 km/L

16. What is the formula for density?

$D = \frac{M}{V}$

$\frac{M}{D} = V$
 $M = D \times V$
 $V = \frac{M}{D}$

17. Complete the table given below.

MASS	VOLUME	DENSITY
45g	5ml	9 g/ml
180g	60ml	3g/ml
60g	15ml	4g/ml

18. A solution has a density of 2.5 g/ml. How many grams are needed to obtain:

a) 6ml of solution 20 g
 $M = D \times V$

b) 10 ml of solution 30 g
 $M = \frac{25 \text{ g}}{\text{ml}} \times 6 \text{ ml} = 15 \text{ g} \approx 20 \text{ g}$

b) $M = \frac{25 \text{ g}}{\text{ml}} \times 10 \text{ ml} = 25 \text{ g} \approx 30 \text{ g}$

1. Define matter.

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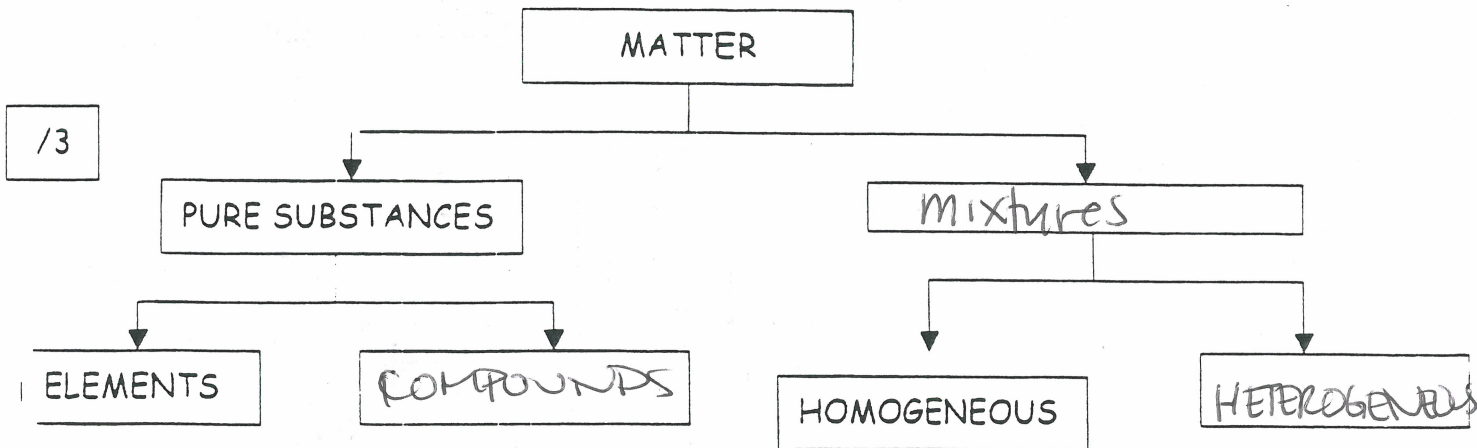
any thing that has mass + occupies space.

2. What are the three physical states of matter.

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Solid, liquid + gas

3. Complete the following flow chart.



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4. Classify the following as either chemical or physical properties.

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	PHYSICAL PROPERTY	CHEMICAL PROPERTY
BLUE COLOUR	✓	
DENSITY	✓	
MELTING POINT	✓	
FLAMMABILITY		✓

5. Classify the following as either a physical or chemical change;

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- Slicing a pellet of sodium in two physical
- A solid block of iron is melted physical
- Sugar crystals are dissolved in water physical
- Hydrochloric acid reacts with sodium carbonate and bubbles are formed. chemical

6. In class, we discussed 8 different methods of separating matter, give 2 of the methods.

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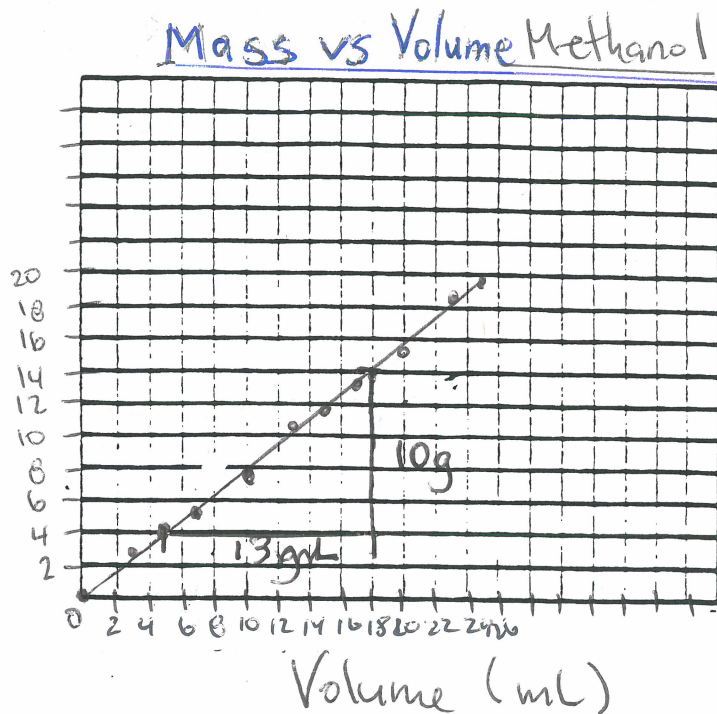
- | | |
|------------------------|-----------------------|
| 1. filtration | 6. hand separation |
| 2. distillation | 7. Solvent extraction |
| 3. gravity separation | 8. evaporation |
| 4. re-crystallization. | |
| 5. chromatography. | |

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Plot the following information on the graph below and connect the dots. Don't forget to include the title (underlined), label the axes, and to make a legend.

Substance: Methanol

Volume (mL)	Mass(g)
0	0
3	2.4
5	4.0
7	5.5
10	7.9
13	10.3
15	11.9
17	13.4
20	15.8
23	18.2
25	19.8



Use the graph above to answer the following questions:

a. What is the slope of the line?

$$10\text{g} / 13\text{mL} = 0.77\text{g/mL}$$

b. What is the density of Methanol?

The density of Methanol is 0.791 g/mL

c. Ethanol has a density of .789 g/mL. Is Methanol more or less dense than Ethanol? Which substance would float on top?

according to my data $0.77\text{g/mL} < 0.789\text{g/mL}$

He methanol is actually 0.791g/mL

which is more dense than ethanol.