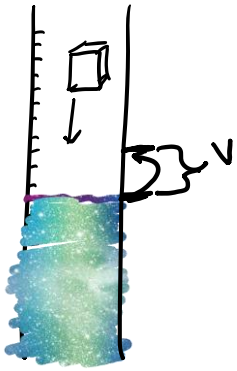
Name: _____ Date: 10/15

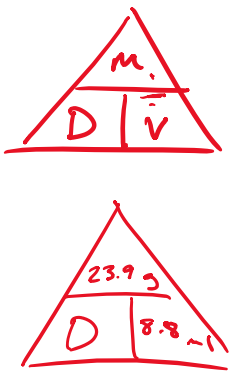
Test Date: 10/18

Grade 8 Science
October Benchmark Review 2019-2020

Use your knowledge of science and the graph below to answer question #1



Substance	Density
Polyethylene	0.85 g/cm³
Quartz	2.7 g/cm³
Glass	2.3 g/cm³
Lucite (Transparent plastic)	1.2 g/cm³



1. A student has a clear block of an unknown substance and needs to determine the identity of the substance. The mass of the block is 23.9 grams. The block displaces 8.8 ml of water when dropped in a graduated cylinder. What is the identity of the substance? Will this substance sink or float in water?

Quartz ; 2.7 g/cm³, Sink (>1, <1)

2. Describe groups on the periodic table. Tell which direction they go and what is similar about elements in the same group. VERTICAL COLUMN, ↕, SIMILAR CHEM PROPERTIES (SAME # VEs)

4. A. What are the names, charges, and locations of the three subatomic particles we have discussed?

PROTON: +, NEUTRON: 0, > NUCLEUS | ELECTRON: −, ELECTRON CLOUD (SHELLS)

B. Where are the valence electrons located?

OUTERMOST SHELL

5. List the subatomic particles that are responsible for comprising the atom's atomic mass? Then list them from smallest to largest.

NUCLEUS

PROTON & NEUTRON, P! ≈ N, E < P < N

6. A. Beryllium is in which ***group*** on the periodic table?

GROUP 2

B. List 2 elements that would have similar properties to Beryllium.

SAME GROUP

Mg, Ca, Sr, Ba, Ra

7. How many protons, neutrons, and electrons does Carbon have?

6 protons

6 electrons

6 neutrons

6 = A

C

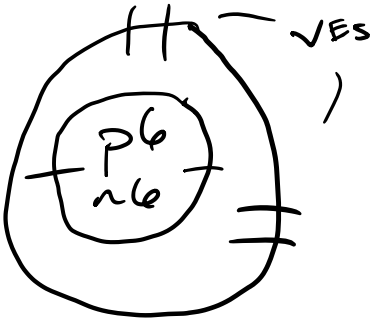
12 ~~= P~~

12 < P + N

A = P = E

M - A = N

12 - 6 = 6



How many valence electrons does Carbon have? 4

8. How many protons, neutrons, and electrons does Sodium have?

11 protons

11 electrons

12 neutrons

11 = P = E

Na

23 - 11 = 12

M A N

9. If an atom has eight electrons in its outermost shell, it is said to be STABLE (stable or reactive).

A = P = E

10. In a neutral atom, the number of protons is always equals to the number of ELECTRON.

CHARGED PARTICLES ARE THE SAME AMOUNT $p^+ = e^-$

11. Draw a Bohr atomic model for ***Oxygen***. (Label the nucleus as well as the protons, neutrons, and electrons; place the sub-atomic particles in the accurate locations on the model.)

8 < p 8, e 8

O

16

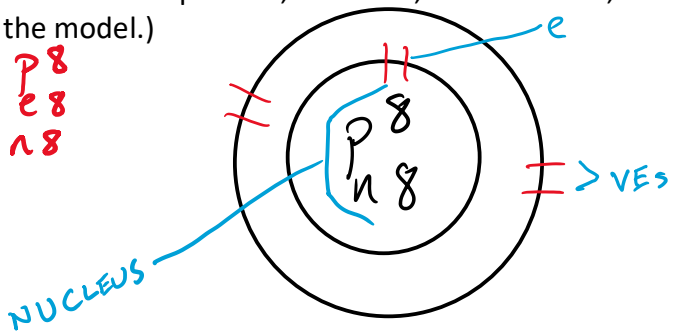
p + N

8 + 8

p 8

e 8

n 8



12. Which group of elements on the periodic table has one valence electron and is extremely reactive?

GROUP 1

FARTHEST FROM GROUP 18

b. Which group on the periodic table is the most reactive non-metal?

GROUP 17

CLOSEST TO GROUP 18

13. What group of elements is not reactive? GROUP 18 - NOBLE GASES

b. Why do they not react? FULL SHELL OF VEs

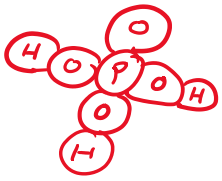
14. When conducting a laboratory involving heat, chemicals, or glassware, what safety precautions must you take?

WEAR
- GOGGLES
- GLOVES
- APRON

USE
- FIRE EXTINGUISHER - large fires
- FIRE BLANKET - smaller fires
- SAFETY SHOWER/EYE WASH STATION

15. Draw a model of the molecule H_3PO_4.

H - 3
P - 1
O - 4



16. How many total atoms are in H_2SO_4?

H: 2
S: 1
O: 4

2
+1
3
+4
7

7 total atoms

17. Which of the following is not a compound? (Circle one)

2 or more different elements

H_2SO_4 H_2O S_3 HS_3

18. Using the symbols given, write the chemical formula if N = $, H = @, and O = #?

@$###

HNOOO

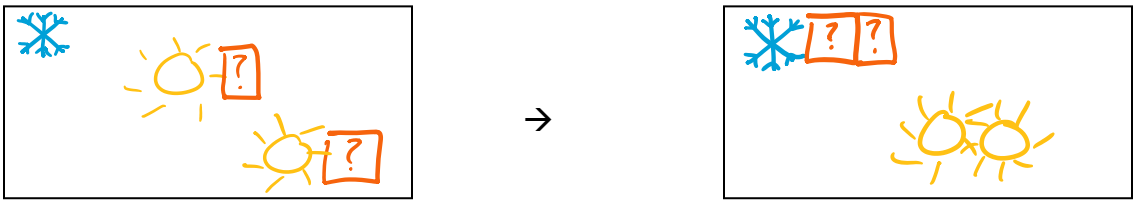
~~HNSO~~

HNO_3

19. Using the symbols provided in the key, draw the following chemical reaction.

$$Zn + 2HCl \rightarrow ZnCl_2 + H_2$$

KEY	❄ Zn	☼ H	?Cl



20. Determine the number total atoms in the reactants in the equation below? Then determine the number of atoms in the products? Is the law of conservation of mass maintained in this reaction? How do you know?

NO, THE EQ. IS UNBALANCED. TOO MANY OXYGEN ATOMS IN THE PRODUCT.

R P

$C_3H_8 + O_2 \xrightarrow{\Delta} 3CO_2 + 4H_2O$

R	P
C: 3 ✓	C: 3 ✓
H: 8 ✓	H: 8 ✓
O: 2 ×	O: 6 + 4 = 10 ×

1.) T-BAR
2.) LIST REACTANTS
3.) COPY R → P
4.) COUNT ATOMS

21. In Mrs. Smith's science class, students added sodium (Na) to water (H_2O) to see what would happen. They found that sodium hydroxide (NaOH) and hydrogen gas (H_2) were produced.

a. What are the reactants that the students used?

LEFT
- STARTING CHEMICALS
- WHAT YOU COMBINE

$Na + H_2O$

b. What are the products?

RIGHT
- ENDING CHEMICALS
- WHAT YOU GET

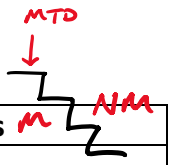
$NaOH + H_2$

c. Write out the chemical equation that best describes this reaction.

R → P

$2Na + 2H_2O \rightarrow 2NaOH + H_2$

22. List the properties of metals, non-metals, and metalloids.



5 Metals	3 Non-Metals	3 Metalloids
- GOOD CONDUCTORS OF HEAT + ELECTRICITY - LUSTROUS (shiny) - DUCTILE (wire) - MALLEABLE (sheets) - SOLIDS (except Hg)	- INSULATORS (poor conductors) - DULL (matte) - BRITTLE SOLIDS	- SHARE PHYS PROP OF BOTH M + NM. - SHINY BRITTLE SOLIDS - SEMICONDUCTORS