

7th

NTI DAY #5
(weather-closed school day)

PACKET
FIVE
(Science)

General Directions:

Due to weather, Harrison County Schools are closed. In an effort to utilize this day on the school calendar, your child is assigned and should work on this “packet” of school work today. It will count as a grade for this subject. The work attached is specific to the subject listed above. Please contact your child’s teacher of this subject at 234-7110 in the event you/your student have questions on this packet. Staff and teachers reported to HCMS today and are available should you have questions.



Science

NTI

6. $120 \text{ cl} = \underline{\hspace{2cm}} \text{ L}$
7. $7,000 \text{ mm} = \underline{\hspace{2cm}} \text{ m}$
8. $1 \text{ kl} = \underline{\hspace{2cm}} \text{ hl}$
9. $1,300 \text{ dg} = \underline{\hspace{2cm}} \text{ hg}$
10. $500 \text{ cg} = \underline{\hspace{2cm}} \text{ g}$
11. $2 \text{ g} = \underline{\hspace{2cm}} \text{ dg}$
12. $3 \text{ hg} = \underline{\hspace{2cm}} \text{ g}$
13. $790 \text{ cm} = \underline{\hspace{2cm}} \text{ m}$
14. $600 \text{ dg} = \underline{\hspace{2cm}} \text{ dag}$
15. $2.3 \text{ dl} = \underline{\hspace{2cm}} \text{ ml}$
16. $800 \text{ m} = \underline{\hspace{2cm}} \text{ hm}$
17. $100 \text{ dg} = \underline{\hspace{2cm}} \text{ g}$
18. $3 \text{ hg} = \underline{\hspace{2cm}} \text{ dag}$

Science

NTI

6. $120 \text{ cl} = \underline{\hspace{2cm}} \text{ L}$

7. $7,000 \text{ mm} = \underline{\hspace{2cm}} \text{ m}$

8. $1 \text{ kl} = \underline{\hspace{2cm}} \text{ hl}$

9. $1,300 \text{ dg} = \underline{\hspace{2cm}} \text{ hg}$

10. $500 \text{ cg} = \underline{\hspace{2cm}} \text{ g}$

11. $2 \text{ g} = \underline{\hspace{2cm}} \text{ dg}$

12. $3 \text{ hg} = \underline{\hspace{2cm}} \text{ g}$

13. $790 \text{ cm} = \underline{\hspace{2cm}} \text{ m}$

14. $600 \text{ dg} = \underline{\hspace{2cm}} \text{ dag}$

15. $2.3 \text{ dl} = \underline{\hspace{2cm}} \text{ ml}$

16. $800 \text{ m} = \underline{\hspace{2cm}} \text{ hm}$

17. $100 \text{ dg} = \underline{\hspace{2cm}} \text{ g}$

18. $3 \text{ hg} = \underline{\hspace{2cm}} \text{ dag}$

Counting Atoms and Molecules in Chemical Formulas

Chemical equations are combinations of letters and numbers. Scientists must understand the meaning behind these numbers and symbols to conduct experiments.

read passage

Remember that a **chemical symbol** is a shorthand way of writing an element's name. Symbols have one or two letters. The first letter is always capitalized and, if present, the second is always lowercase. Ex: H, Li, O, Cl.

One element listed by itself represents one atom. So H is one atom of hydrogen and Cl is one atom of chlorine. However, in nature, most atoms are found bonded to other atoms. When two or more atoms are bonded together, they are called **compounds**. One unit of that compound is called a **molecule**. Ex: Na and Cl combine to make NaCl; H and O combine to make H₂O. This combination of symbols is called a chemical formula. NaCl is the chemical formula for sodium chloride. H₂O is the chemical formula for water.

Subscripts

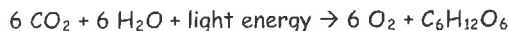
Look at the examples above. Notice that in H₂O, there is a 2 after the H. This is called a **subscript**. The subscript applies to the element listed just before it and tells how many atoms of that element are in the compound. If there is not a subscript, it is assumed to be 1. So, H₂O means that each water molecule is made up of 2 hydrogen atoms bonded to 1 oxygen atom. In the case of NaCl, since there are no subscripts, it means that 1 sodium atom is bonded to 1 chlorine atom to make up a molecule of sodium chloride.

ex:
H₂O
H-2
O-1

Some molecules are more complex and their formulas contain parentheses. Al₂(SO₄)₃, aluminum sulfate, is one example. If there is a subscript outside of the parentheses, it applies to each element inside that parenthesis and multiplies their subscripts. In Al₂(SO₄)₃, there are 2 Al atoms, 3 S atoms, and 12 O atoms. Notice that since aluminum (Al) is **OUTSIDE** the parentheses, the subscript of 3 does not affect it. It only multiplies the subscripts of sulfur (S) and oxygen (O), which are **INSIDE** the parentheses.

Coefficients

Chemical reactions often involve the combination of a certain number of one molecule with a different number of another. To indicate this, scientists put a number in front of the chemical formula indicating how many molecules of that substance are involved in the reaction. This number is called a **coefficient**. Like with subscripts, if there is no number, it is assumed to be 1. Look at the equation for photosynthesis shown below:



The numbers in front of each molecule above indicate that 6 molecules of CO₂ (carbon dioxide) and 6 molecules of H₂O (water) combine with light energy to make 6 molecules of O₂ (oxygen) and 1 molecule of C₆H₁₂O₆ (glucose).

What if we wanted to know how many carbon atoms and oxygen atoms were in 6 molecules of CO₂? We could list out CO₂ six times and count them all. However, an easier, less time consuming way would be to use multiplication.

To count the atoms in a molecule with a coefficient, multiply the coefficient by each subscript in the chemical formula. In the case of 6 CO₂, carbon (C) has a subscript of 1. Since 6 X 1 = 6, there are a total of 6 carbon atoms. Oxygen (O) has a subscript of 2. Since 6 X 2 = 12, there are a total of 12 oxygen atoms.

ex:
3H₂O
H-6
O-3

ex:
3H(CO₂)
H-3
C-6
O-12

A. Use your knowledge of subscripts to indicate how many atoms of each element are in the molecules shown below.

1. H_2 H _____
2. LiO Li _____ O _____
3. H_2SO_4 H _____ S _____ O _____
4. HCl H _____ Cl _____
5. H_2O_2 H _____ O _____
6. NH_3 N _____ H _____
7. C_2H_5OH C _____ H _____ O _____
8. $KClO_3$ K _____ Cl _____ O _____
9. $NaNO_3$ Na _____ N _____ O _____
10. $Al_2(CO_3)_3$ Al _____ C _____ O _____

B. Use your knowledge of coefficients to indicate how many of each molecule is shown below.

11. O_2 O_2 _____
12. $2 H_2$ H_2 _____
13. $4 KClO_3$ $KClO_3$ _____
14. $2 Al_2(CO_3)_3$ $Al_2(CO_3)_3$ _____
15. $N_2 + 3 H_2 \rightarrow 2 NH_3$ N_2 _____ H_2 _____ NH_3 _____
16. $4 Li + O_2 \rightarrow 2 Li_2O$ Li _____ O_2 _____ Li_2O _____
17. $4 Fe + 3 O_2 \rightarrow 2 Fe_2O_3$ Fe _____ O_2 _____ Fe_2O_3 _____
18. $6 Ag + N_2 \rightarrow 2 Ag_3N$ Ag _____ N_2 _____ Ag_3N _____
19. $H_2CO_3 \rightarrow H_2O + CO_2$ H_2CO_3 _____ H_2O _____ CO_2 _____
20. $C_2H_5OH + 3 O_2 \rightarrow 2 CO_2 + 3 H_2O$ C_2H_5OH _____ O_2 _____ CO_2 _____ H_2O _____

C. For each molecule shown, indicate how many atoms of each element can be found. For each reaction, indicate how many atoms of each element can be found on each side of the equation.

21. O_2 O _____
22. $2 H_2$ H _____
23. $4 KClO_3$ K _____ Cl _____ O _____
24. $2 Al_2(CO_3)_3$ Al _____ C _____ O _____
25. $N_2 + 3 H_2 \rightarrow 2 NH_3$ N _____ H _____ \rightarrow N _____ H _____
26. $4 Li + O_2 \rightarrow 2 Li_2O$ Li _____ O _____ \rightarrow Li _____ O _____
27. $4 Fe + 3 O_2 \rightarrow 2 Fe_2O_3$ Fe _____ O _____ \rightarrow Fe _____ O _____
28. $6 Ag + N_2 \rightarrow 2 Ag_3N$ Ag _____ N _____ \rightarrow Ag _____ N _____
29. $H_2CO_3 \rightarrow H_2O + CO_2$ H _____ C _____ O _____ \rightarrow H _____ C _____ O _____
30. $C_2H_5OH + 3 O_2 \rightarrow 2 CO_2 + 3 H_2O$ C _____ H _____ O _____ \rightarrow C _____ H _____ O _____

Name _____

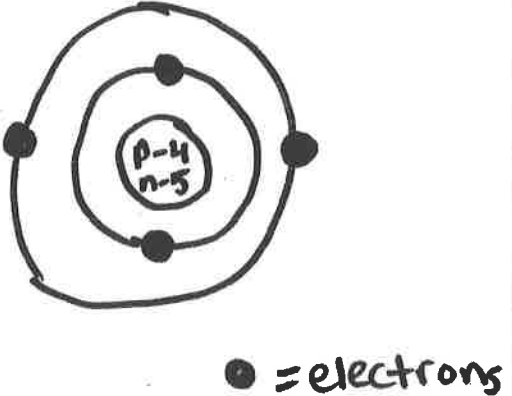
Period _____

Date _____

Bohr Model Diagrams

*** use Periodic Table in Agenda**

Locate the following Elements on the Periodic Table. Find the Atomic Number, Atomic Mass and determine how many Protons, Electrons and Neutrons are in the Atom. Once you have found your answers draw a Bohr model representing your Atom placing the electrons, protons, and neutrons where they go in the diagram.

<p>1. Beryllium - $p-4$ $e-4$ $n-5$ atomic # 4 atomic mass - 9</p>  <p>● = electrons</p>	<p>2. Sodium -</p>
<p>3. Sulfur -</p>	<p>4. Fluorine -</p>

5. Calcium –

6. Argon –

7. Beryllium –

8. Nitrogen –

9. Aluminum

10. Nickel –

INDEPENDENT AND DEPENDENT VARIABLES

Independent Variable - _____

Dependent Variable - _____

Scenario	Independent Variable	Dependent Variable
1. One cow is fed a growth hormone and another cow is not. After a year, both cows are weighed.		
2. Mosquito repellent is sprayed on one arm and the other arm is not sprayed. The number of mosquito bites is counted after 2 hours.		
3. De'andre studies for a test and Jackie does not. After the test, they compare their scores.		
4. A car and a truck are on a track and accelerate to 60 mph. At a certain point, both slam on their brakes. The distance it takes for the car and truck to stop is then compared.		
5. One person exercises, the other lifts weights. After 3 months, they chart the amount of weight they lost.		
6. Dog A is given 1 cup of food. Dog B is given ½ cup of food. Dog C is given 2 cups of food. At the end of the year dog C weighs the most.		
7. A company uses their stapler to staple a thousand papers and compares it to a generic brand. The generic stapler jammed 3 times whereas their stapler only jammed once.		
8. Adult and baby cockroaches are exposed to the chemical Dioxin. After 3 hours, 25 adults are dead and 100 baby cockroaches are dead.		
9. New houses are sprayed on the outside with an insulating paint that is either blue or green. After a year, researchers determine how much energy each house used.		
10.	Shampoo	Softness of hair
11.	Shoes	Height of jump

PHYSICAL VS. CHEMICAL PROPERTIES

Name _____

A physical property is observed with the senses and can be determined without destroying the object. For example, color, shape, mass, length and odor are all examples of physical properties.

A chemical property indicates how a substance reacts with something else. The original substance is fundamentally changed in observing a chemical property. For example, the ability of iron to rust is a chemical property. The iron has reacted with oxygen, and the original iron metal is changed. It now exists as iron oxide, a different substance.

Classify the following properties as either chemical or physical by putting a check in the appropriate column.

	Physical Property	Chemical Property
1. blue color		
2. density		
3. flammability		
4. solubility		
5. reacts with acid to form H_2		
6. supports combustion		
7. sour taste		
8. melting point		
9. reacts with water to form a gas		
10. reacts with a base to form water		
11. hardness		
12. boiling point		
13. can neutralize a base		
14. luster		
15. odor		