Name: Key
Chapter 1 Study Guide

Period: _____
Date: _____

CHAPTER 1 STUDY GUIDE: TEST TUESDAY OCTOBER 8, 2019

WARNING: This guide is not the only thing you should use to study. It does not provide you with everything you need. You should also rely on your textbook, homework, labs, and classroom notes. Use everything you can for the best results.

Topic 1: Laboratory equipment – (Binder Page 6)

- Make sure you look over the pictures and the names of the important laboratory equipment

Topic 2: Scientific Method – (Binder Page 11)

1. Match the following terms with the correct

B Experimental Group	A. The group that does not receive the independent variable but used to compare results.
F Independent Variable	B. The group exposed to the independent variable.
E Qualitative data	C. The factor that is measured in an experiment.
A Control Group	D. Data that's counted, measured, or expressed in numbers.
D Quantitative data	E. Data that is descriptive.
C Dependent Variable	F. The factor that is manipulated during an experiment.

2. Read the following experiment and identify the Independent Variable, Dependent Variable, Control Variables, Control Group.

Four groups of rats are first massed and then fed identical diets except they each get different amounts of vitamin A. A fifth group of rats receive the same treatment except they do not get any Vitamin A. After 3 weeks on the diet, the rat's masses are measured again to see if there has been a decrease in mass.

- Independent Variable: Amount of Vitamin A
- Dependent Variable: Mass of Rats
- Control Variables: Food ; Species of Rats ; Same environment (cage)
- Control Group: Group of rats that didn't get any Vitamin A

3. Write a hypothesis for the following experiment. Follow the correct format for writing a hypothesis (**If...., then..., because...**).

A student wanted to test how the mass of a paper airplane affected the distance it would fly. Paper clips were added before each test flight. As each paper clip was added, the plane was tested to determine how far it would fly.

If the mass of a paper airplane increases, then the distance the paper airplane will fly decreases because gravity will pull the plane down more with more mass.

Topic 3: Describing matter – (Binder Page 13-20)

4. Chemistry is the study of: a. Atoms (b. Matter) c. Compounds d. Explosions

5. Matter is anything that has what two properties?
   A. Mass B. Volume

6. ***True/False:*** Matter does not have to be visible or solid in every case.
7. Matching:

C Smallest particle that still chemically reacts	A. Compound
B Simple substance made of one type of atom	B. Element
D Group of elements that can be the same or different	C. Atom
A Group of elements that must be different	D. Molecule

8. Complete the subatomic particle table below:

Particle	*Charge*	*Location in the atoms*
Proton	+	nucleus
Neutron	0	nucleus
Electron	−	electron cloud

9. What subatomic particle determines the type of element? Protons

10. Overall, atoms are _____ because the number of protons is _____ the number of electrons.
a. Neutral; equal to b. Positive; greater than c. Negative; less than

11. ***True/False:*** Elements can be broken into other elements.

12. ***True/False:*** Atoms can gain and lose protons.

13. When elements chemically join, they form a: a. Link b. Element c. Atom d. Bond

14. What is the difference between a molecule and a compound? A compound must contain 2 or more different elements held together by a chemical bond.

15. Circle the compounds below.
H_2O N_2 H_2 CO_2 H_2SO_4 C_4

16. Determine the number of atoms of each element in the formulas below and the atomic ratio:

a. H_20
   i. H = Hydrogen = 2 atoms
   ii. O = Oxygen = 1 atoms
   iii. Atomic ratio = 2 : 1
   iv. Number of Molecules = 1
   v. Number of Compounds = 1

b. H_2SO_4
   i. H = Hydrogen = 2 atoms
   ii. S = Sulfur = 1 atom
   iii O = Oxygen = 4 atoms
   iv. Atomic ratio: 2 : 1 : 4
   v. Number of Molecules = 1
   vi. Number of Compounds = 1

17. ***True/False:*** The properties of a compound differ from the elements that make it.

18. What is the difference between a Mixture and Pure Substance? Mixtures are made of 2 or more pure substances that are not chemically combined, easy to separate, and not in a fixed ratio.

19. What is the difference between a homogenous mixture and a heterogeneous mixture? Homogenous mixtures you cannot see the different parts. Heterogeneous mixtures you can see different parts.

Pure substances have a specific ratio of atoms and are hard to separate

20. Matching:

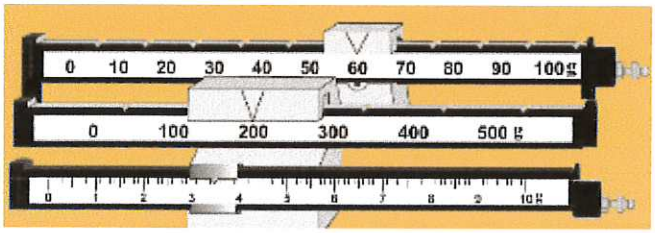
A Salt (NaCl)	B Lemonade	A. Pure substance
B Air	C Water and oil together	B. Homogeneous mixture
C Cookie dough	A Aluminum	C. Heterogeneous mixture

Topic 4: Measuring matter – Binder Page pg. 19-24

21. Circle the one that depends on gravity and underline the one that does not change.

Mass (Weight)

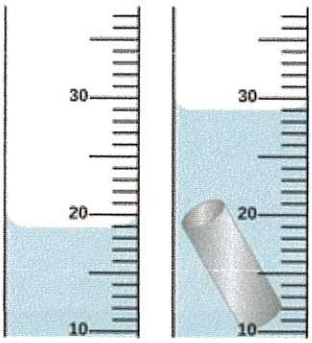
22. Determine the masses for the triple beam balances shown below.



200 + 60 + 3.6

263.6 g

23. Determine the volume of the irregularly shaped object:



29mL - 19mL =

10 mL

24. Write a definition for density. The amount of mass in a given volume.

25. Indicate the metric unit you should use for each of the following:

Mass = g

Volume = mL or cm^3

Density = $\frac{g}{mL}$ or $\frac{g}{cm^3}$

26. Object A and Object B have the same mass. However, object A has a greater volume. Which object has the greater density?

Object B has the greater density because the same mass is in a smaller space, making it more compact & dense.

27. Draw the density triangle.

$D = m \div V$

$V = m \div D$

$m = D \cdot V$

28. What is the density of an object with a mass of 60g and a volume of $2cm^3$?

$\frac{60g}{2cm^3} = 30g/cm3$

29. What is the volume of an object that has a density of .6g/mL and a mass of 120g?

$\frac{120g}{.6g/mL} = 200mL$

30. What is the mass of an object with a volume of $34cm^3$ and a density of $6g/cm^3$?

$6g/cm^3 \cdot 34cm^3 = 204g$

31. An object has a density of 1.5g/mL. If you put it in water will it float? Why or why not?

No, it will sink because the objects density is more than the density of water (1g/mL)

Topic 5: Changes in matter – Binder Page 25-28

32. A physical change:
    a. Results in a new substance
    b. Changes the identity of a substance
    c. Usually comes with fizzing and gas production
    d. Only changes the appearance of a substance

33. Circle the changes that are chemical changes.

Burning Bending Tearing Precipitate Rusting

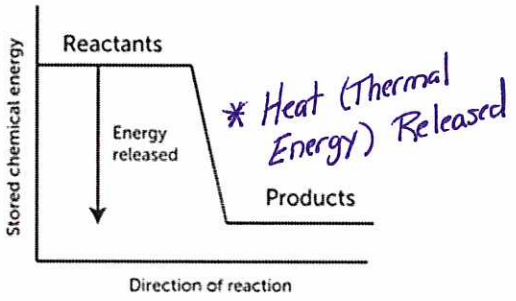
34. Identify the following as a Chemical Property (C) or Physical Property (P) of matter:

P Blue color	P Boiling point
P Density	C Reacts with air
C Reacts with acid	P Hardness
C Flammability	P Melting point

35. Identify the following as a Chemical (C) or Physical (P) change:

C A marshmallow is toasted over a campfire	P Chocolate syrup dissolved in milk
P A marshmallow is cut in half	P Ice melts
P Water evaporating to steam	P Tire inflating with air
C Chain fence rusting	P Coal is crushed into a fine powder

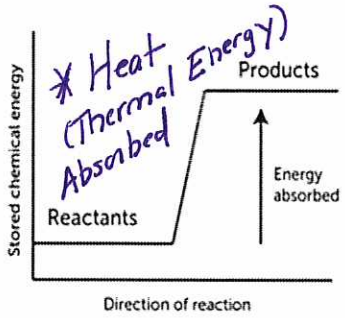
36. Identify the graph as endothermic or exothermic:



* Heat (Thermal Energy) Released

Exothermic

37. Identify the graph as endothermic or exothermic:



* Heat (Thermal Energy) Absorbed

Endothermic

38. Matching:

A Takes in energy	A. Endothermic
B Feels warm to the touch	B. Exothermic
B Campfire burning	
A Feels cold to the touch	
A Ice melting	
B Releases heat	