Name: _____ Period: _____ Date: _____

Evidence Notebook

Lesson 1.1 – Exploring Matter

Key Words

Key Word	Definition	Example(s)
Matter		
Mass		
Physical property		
Chemical property		
Extensive property		
Intensive property		
Model		

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Main Concepts

1. Match the physical properties to the best:

Density	a. The ability of a substance to be flattened
Conductivity	b. The measure of the amount of electricity, heat, or sound that a substance can carry
Malleability	c. The amount of a substance that can dissolve in a given amount of another substance
Solubility	d. The amount of mass per volume of a substance

2. In one experiment, magnesium metal is melted. In a second experiment, magnesium metal is burned. Classify the change in each experiment as chemical or physical. Explain your reasoning.

3. Describe two physical properties that depend upon a change of state in the material.

4. Explain the differences between solid, liquid, and gaseous states in terms of the arrangement of the particles

5. Give two examples of chemical changes and two examples of physical changes.

Chemical change Example 1	Physical Change Example 1
Chemical change Example 2	Physical Change Example 2

6. A blend of any two or more kinds of matter where each maintains its own unique properties is known as a:

7. Determine if the following are *heterogenous* or *homogeneous* mixtures:
    a. It forms a uniform composition throughout

    b. A bowl of mixed nuts

    c. The mixture is <u>not</u> uniform throughout

    d. Sugar water

8. Explain the difference between a pure substance and a homogeneous mixture. Use an <u>example</u> in your answer.

9. A pure substance made of two or more elements that are chemically bonded is known as:

10. Two students want to decompose a pure substance into its individual elements. Once they have broken down the pure substance, they plan to build a model of each molecule or element in the pure substance. They found that it required a significant amount of energy to decompose the pure substance.
    a. Describe the properties of a pure substance.

    b. Explain why it required so much energy to decompose the pure substance.

CHECKPOINTS: Check your understanding

11. Which statement best defines matter?
    a. Matter is anything that is a solid at room temperature.
    b. Matter is anything that takes up space and has mass.
    c. Matter is any substance that reacts with another substance.
    d. Matter is any substance that contains carbon.

12. *Select (circle) the correct terms to complete the statement about physical and chemical changes:*

    When electricity passes through liquid water, two gases form. This is an example of a physical | chemical change because the identity of the substance changed | stayed the same. When liquid water loses energy, a change in state | chemical identity occurs. This is an example of a chemical | physical change.

13. *Match the description of particle motion to the correct state of matter:*

Liquid	a. Particles are packed very close together in a relatively fixed arrangement; has definite volume and shape
Plasma	b. Particles are close together but can move past one another; has a definite volume but an indefinite shape
Solid	c. Particles are far apart and move very rapidly; has neither definite volume nor definite shape
Gas	d. Particles have a large amount of energy, and they become electrically charged

14. *Select (circle) the correct terms to complete the statement about intensive and extensive properties.*

    An intensive | extensive physical property can be used to help identify a substance because it changes | does not change with the amount of matter present. An intensive | extensive property cannot be used to help identify a substance because it changes | does not change with the amount of the substance.

15. Choose the projects most likely to be worked on by a chemist. Select all correct answers.
    a. studying the structure of an enzyme
    b. analyzing the components of petroleum
    c. analyzing the velocity of planets
    d. observing the behavior of farm animals
    e. building a computer model for producing antacids

16. Chemists have identified three new forms of alternative fuel. If the chemists want to predict how each fuel would affect the environment and change the efficiency of the car, what type of model should they use?
    a. 3D model
    b. mathematical model
    c. computer simulation
    d. visual model

17. *Categorize each substance as a pure substance or a mixture:*
    a. Air
    b. Aluminum
    c. Carbon dioxide
    d. Table salt
    e. Soil
    f. Wood
18. Is a tossed salad a homogeneous mixture, a heterogeneous mixture, or a pure substance? Explain your reasoning.
19. Many changes occur to a wax candle after it is lit.
    a. Which changes are physical?
    b. Which changes are chemical?
    c. How do you know what kind of changes took place?
20. A new plumbing system needs to be installed in a school bathroom.
    a. What role will chemistry play in this project?
    b. What information or tests might be important to know or do in order to select the best material for this project?