**Matter Review Packet**

1. A mixture (is/is not) a chemical combining of substances.

2. In a compound the (atoms/molecules) are (chemically/physically) combined so that the elements that make up the compound (retain/lose) their identities and (do/do not) take on a new set of properties.

3. The smallest identifiable unit of a compound is a(n) , which is made up of which are chemically bonded.

4. True or False: A mixture is always made up of a combination of elements.

5. In a mixture, the substances (lose/retain) their identities.

6. In a mixture the substances involved (can/cannot) be separated by a simple physical process.

In a compound the elements involved (can/cannot) be separated by a simple physical process because the elements are (physically combined/chemically bonded).

7. True or False: An element can be broken down into a simpler substance.

8. The smallest identifiable unit of an element is a(n) .

9. From the following list of substances, circle the ones that are elements:

|  |  |  |  |
| --- | --- | --- | --- |
| silver | carbon dioxide | wood alcohol | chromium |
| water | hydrogen | carbon | nitrogen |
| oxygen | gold | sugar | salt |
| air | sulfur | magnesium | nickel |

10. Explain how to separate the sugar and water in a solution of sugar and water.

11. How would you separate a mixture of alcohol and water?

12. How would you separate sand and water?

13. Classify the following as pure substances or as mixtures:

|  |  |  |
| --- | --- | --- |
| air | gasoline | grain alcohol |
| water | sugar | gold |
| mercury | oxygen | salt water |

14. Classify the following as heterogeneous or as homogeneous:

|  |  |  |
| --- | --- | --- |
| sand & salt mixture | hydrogen | iron |
| salt water | unfiltered air | iron with rust |
| pure water | an apple | nitric acid |
| tossed salad | granite | wood |

15. Classify the following as an element, a compound, a solution, or a heterogeneous mixture:

aluminum raisin bread carbon dioxide water

sugar and water sulfur sulfuric acid mercury

an orange water & instant coffee

a pencil carbon particles & sugar nitrogen air

gasoline grain alcohol

Elements, Compounds, and Mixtures

Classify each of the pictures below by placing the correct label in the blanks below:

A= Element D= Mixture of compounds

B= Compound E= Mixture of elements and compounds

C= Mixture of elements

Each circle represents an atom and each different color represents a different kind of atom. If two atoms are touching then they are bonded together.



Place a check in the appropriate column:

|  |  |  |
| --- | --- | --- |
| **Change** | **Physical****Change** | **Chemical****Change** |
| Salt dissolves in water. |  |  |
| Hydrochloric acid reacts with magnesium to produce hydrogen gas. |  |  |
| A piece of copper is cut in half. |  |  |
| A sugar cube is ground up. |  |  |
| Water is heated and changed to steam. |  |  |
| Iron rusts. |  |  |
| Ethyl alcohol evaporates. |  |  |
| Ice melts. |  |  |
| Milk sours (goes bad). |  |  |
| Sugar dissolves in water. |  |  |
| Sodium and potassium react violently with water. |  |  |
| Pancakes cook on a griddle. |  |  |
| Grass grows on a lawn. |  |  |
| A tire is inflated with air. |  |  |
| Food is digested in the stomach. |  |  |
| Water is absorbed by a paper towel. |  |  |
| Ethyl alcohol boils at 79°C. |  |  |
| Paper burns. |  |  |
| Water freezes at 0°C. |  |  |
| Fireworks explode. |  |  |
| Alka-Seltzer gives off carbon dioxide when added to water. |  |  |
| Clouds form in the sky. |  |  |

**INSTRUCTIONS:** Write **E** in the blank if the material is heterogeneous or **O** if it is homogeneous.

1. Wood 6. Dirt

2. Freshly-brewed black coffee \_\_\_\_\_\_\_ 7. Sausage-and-mushroom pizza \_\_\_\_\_\_\_

3. Water 8. Air

4. Lucky Charms® 9. Milk

5. Salt 10. Gold

**INSTRUCTIONS:** Classify each of the following as an element [**E**], a compound [**C**], or a mixture [**M**].

11. Gold 16. Air

12. Water 17. Carbon dioxide

13. Seawater 18. Silver

14. Sugar 19. Ice

15. A chocolate sundae 20. A Big Mac®

**INSTRUCTIONS:** Classify each of the following properties of matter as physical [**P**] or chemical [**C**].

21. Color 26. Reacts violently with chlorine \_\_\_\_\_\_\_

22. Density 27. Good conductor of heat \_\_\_\_\_\_\_

23. Burns easily (flammable) 28. Dissolves readily in water \_\_\_\_\_\_\_

24. Not affected by acids 29. Melts at 145 °C

25. Boils at 450 °C 30. Malleable

**INSTRUCTIONS:** Classify each of the following changes in matter as physical [**P**] or chemical [**C**].

31. Grinding chalk into powder 36. Burning gasoline

32. Dissolving salt in water 37. Hammering gold into foil \_\_\_\_\_\_\_

33. Dissolving zinc in acid 38. Melting ice

34. Tearing a piece of paper 39. Digesting food

35. Stretching copper into wire 40. Making hydrogen from water \_\_\_\_\_\_\_

**INSTRUCTIONS:** Classify each of the following as an intensive property [**I**] or an extensive property [**E**].

41. Mass 46. Color

42. Density 47. Volume

43. Melting point 48. Length