

Chemistry Worksheet #1

Classification of Matter Physical and Chemical Changes

10. How does a heterogeneous mixture differ from a homogeneous mixture? How are they similar?
*A heterogenous mixture varies throughout whereas the homogenous mixture is the same.
Both mixtures can be separated by physical methods.*
11. How does a homogeneous mixture differ from a pure substance? How are they similar?
*The mixture can contain more than one element or compound; a pure substance has only one element or compound.
Both have the same composition from point to point.*
12. How does an element differ from a compound? How are they similar?
*Compounds can be broken down by chemical means, whereas elements cannot be decomposed by chemical changes.
They are similar in that they both have properties associated with matter.*
13. How do molecules of elements and molecules of compounds differ? In what ways are they similar?
*Molecules of elements contain only one type of atom; molecules of compounds contain two or more types of atoms.
They are similar in that both are comprised of two or more atoms chemically bonded together.*
14. How does an atom differ from a molecule? In what ways are they similar?
*An atom consists of only one particle; a molecule consists of two or more atoms.
They are similar in that both are composed of the basic building block in chemistry, the atom.*
15. Many of the items you purchase are mixtures of pure compounds. Select three of these commercial products and prepare a list of the ingredients that are pure compounds.
Answers will vary.
16. Classify each of the following as an element, a compound, or a mixture:
- (a) copper - *element*
 - (b) water - *compound*
 - (c) nitrogen - *element*
 - (d) sulfur - *element*
 - (e) air - *mixture*
 - (f) sucrose - *compound*
 - (g) a substance composed of molecules each of which contains two iodine atoms - *element*
 - (h) gasoline - *mixture*

17. Classify each of the following as an element, a compound, or a mixture:
- (a) iron - *element*
 - (b) oxygen - *element*
 - (c) mercury oxide - *compound*
 - (d) pancake syrup - *mixture*
 - (e) carbon dioxide - *compound*
 - (f) a substance composed of molecules each of which contains one hydrogen atom and one chlorine atom - *compound*
 - (g) baking soda - *compound*
 - (h) baking powder – *mixture (it is a mixture of baking soda and a weak acid)*

26. Classify the six underlined properties in the following paragraph as chemical or physical:

Fluorine is a pale yellow gas(*physical*) that reacts with most substances(*chemical*). The free element melts at -220 °C(*physical*) and boils at -188 °C(*physical*). Finely divided metals burn in fluorine(*chemical*) with a bright flame. Nineteen grams of fluorine will react with 1.0 gram of hydrogen(*chemical*).

27. Classify each of the following changes as physical or chemical:

- (a) condensation of steam - *physical*
- (b) burning of gasoline - *chemical*
- (c) souring of milk - *chemical*
- (d) dissolving of sugar in water - *physical*
- (e) melting of gold – *physical*

28. Classify each of the following changes as physical or chemical:

- (a) coal burning - *chemical*
- (b) ice melting - *physical*
- (c) mixing chocolate syrup with milk - *physical*
- (d) explosion of a firecracker - *chemical*
- (e) magnetizing of a screwdriver - *physical*

29. The volume of a sample of oxygen gas changed from 10 mL to 11 mL as the temperature changed. Is this a chemical or physical change?

physical

30. A 2.0-liter volume of hydrogen gas combined with 1.0 liter of oxygen gas to produce 2.0 liters of water vapor. Does oxygen undergo a chemical or physical change?

chemical - two different elements combine to form a different substance