

## Skills Worksheet

# Concept Review

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## Section: Classifying Matter

1. **Classify** the following as a homogeneous, *O*, or a heterogeneous, *E*, mixture.

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|-----------------------------------|--------------------------|
| _____ a. a pail of sand and water | _____ d. banana split    |
| _____ b. air                      | _____ e. chocolate syrup |
| _____ c. human blood              | _____ f. seawater        |

2. **Compare and contrast** atoms and molecules.

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3. **Explain** the difference between a pure substance and a homogeneous mixture.

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4. **Classify** each of the following as *E*, an element, or *C*, a compound.

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|-------------------------------|------------------------------|
| _____ a. benzene, $C_6H_6$    | _____ d. titanium, Ti        |
| _____ b. aluminum, Al         | _____ e. acetylene, $C_2H_2$ |
| _____ c. aspirin, $C_9H_8O_4$ | _____ f. zinc, Zn            |

5. **Explain** why elements and compounds are pure substances while a homogeneous mixture is not.

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6. **Determine** which of the following are pure substances, *S*, and which are mixtures, *M*.

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|---------------------------------------|--------------------------|
| _____ a. salt water                   | _____ d. ammonia, $NH_3$ |
| _____ b. isopropyl alcohol, $C_3H_8O$ | _____ e. an egg yolk     |
| _____ c. mercury, Hg                  | _____ f. honey           |

7. **Explain** why carbon and copper are classified as elements.

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## Section: Properties of Matter

1. **Classify** each of the following as a physical or chemical property of sulfur.

- \_\_\_\_\_ a. Its density is  $2.97 \text{ g/cm}^3$ .  
\_\_\_\_\_ b. It reacts with hydrogen to form a gas.  
\_\_\_\_\_ c. It is a yellow solid.  
\_\_\_\_\_ d. Its melting point is  $112^\circ\text{C}$ .  
\_\_\_\_\_ e. It combines with oxygen.

2. **Classify** each of the following as a physical or chemical property of phosphorus.

- \_\_\_\_\_ a. It is a white, waxy solid.  
\_\_\_\_\_ b. It burns in air.  
\_\_\_\_\_ c. Its melting point is  $44.1^\circ\text{C}$ .  
\_\_\_\_\_ d. It has a density of  $1.82 \text{ g/cm}^3$ .  
\_\_\_\_\_ e. Its boiling point is  $280.3^\circ\text{C}$ .

3. **Explain** why aluminum is a suitable material to use in making cans based on its physical and chemical properties.

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\_\_\_\_\_  
\_\_\_\_\_

4. **Calculate** the mass of a sample of pure silver (density =  $10.49 \text{ g/cm}^3$ ) that has a volume of  $12.99 \text{ cm}^3$ .

5. **Compute** the density of an 820 g sample of pure silicon occupying a  $350 \text{ cm}^3$  container.

# Concept Review

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## Section: Changes of Matter

1. **Categorize** each of the following examples as a chemical, *C*, or physical, *P* change.

\_\_\_\_\_ a. bending a metal rod

\_\_\_\_\_ d. painting wood

\_\_\_\_\_ b. burning wood

\_\_\_\_\_ e. cooking

\_\_\_\_\_ c. breaking glass

\_\_\_\_\_ f. burning propane

2. **Explain** why dissolving is a physical change.

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3. **Explain** how a chemical change occurs when bread is baked.

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4. **Compare** physical changes and chemical changes.

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5. **List** four ways to detect that a chemical change has occurred.

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