

## Skill Practice 1

# Composition of Air

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. The air we breathe is mostly made up of two gases. It is approximately \_\_\_\_\_% oxygen and \_\_\_\_\_% nitrogen.
2. Let's say you have a friend who thinks the air is all one element. You decide to convince him using what you know about Lavoisier's mercury experiment. Summarize the experiment in a persuasive way to convince your friend:
3. Sodium metal and chlorine gas combine to make sodium chloride, which is table salt. Is salt an element? Why or why not?
4. Throughout history, people known as alchemists have attempted to make gold out of other metals. No one has ever succeeded. Do you think gold is an element? Why or why not?

## Skill Practice 2

# Matter Practice

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Explain why compounds are always homogeneous, but mixtures can be either homogeneous or heterogeneous.
2. A white powder is in a beaker. Which statement(s) can be said for sure about the powder?
  - I. It is homogeneous
  - II. It is heterogeneous
  - III. It is a mixture.
  - IV. It is a compound.

A) I only    B) I and IV only    C) I and III only    D) III only    E) none of these
3. Classify the following as chemical changes (C) or physical changes (P). Place a C or P in the blanks as appropriate.

_____ a) a dead fish rotting	_____ d) melting steel
_____ b) dissolving salt in water	_____ e) bending steel
_____ c) boiling salt water until just salt remains	_____ f) cracking ice
4. Identify the following as an element (E), compound (C), or mixture (M).

_____ a) calcium	_____ d) water
_____ b) calcium and oxygen in the same container	_____ e) sodium
_____ c) calcium and oxygen atoms bonded	_____ f) sand
5. How many phases and how many states are in a mixture made out of sand, saltwater, oil and ice.

## Skill Practice 3

# Experiments With Water

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Is water an element? How do you know?
2. Your friend believes you that water is formed of hydrogen and oxygen since he has heard of the formula,  $H_2O$ . However, he doesn't know how scientists proved it. Describe Lavoisier's rifle barrel experiment for your friend:
3. Is water a mixture or a compound? Explain.
4. Which are easier to separate, in your opinion—mixtures or compounds? Why?
5. Label each of the following as an element (E), mixture (M), or compound (C).  
\_\_\_\_\_ a) salad      \_\_\_\_\_ b) sugar      \_\_\_\_\_ c) soda      \_\_\_\_\_ d) copper