CHAPTER 5 REVIEW ANSWERS

Reviewing Key Terms

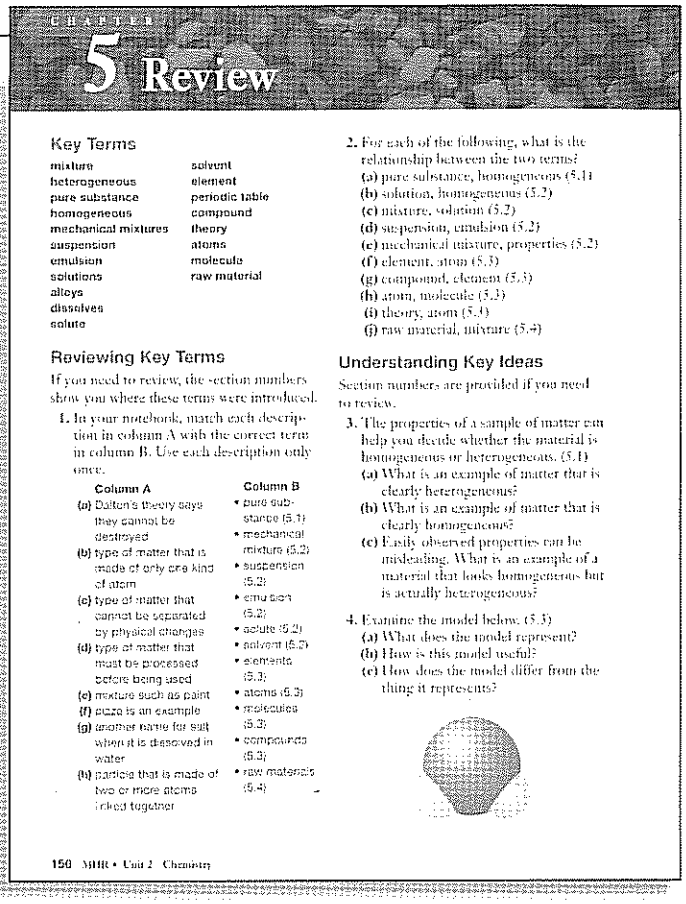
1. (a) atoms (b) elements (c) pure substance (d) raw materials (e) emulsion (f) mechanical mixture (g) solute (h) molecules
2. (a) All pure substances are homogeneous.
   (b) A solution is a homogeneous mixture.
   (c) A solution is a type of mixture.
   (d) An emulsion is a suspension with an agent added to keep it from separating.
   (e) Each part of a mechanical mixture retains its own properties.
   (f) An element is made of one type of atom.
   (g) A compound is made of two or more elements in fixed ratios.
   (h) A molecule is made of two or more atoms in fixed ratios.
   (i) Dalton proposed a theory about atoms called the atomic theory.
   (j) Raw materials are mixtures that need to be separated before they can be used.

Understanding Key Ideas

3. (a) soil (b) pure water (c) milk
4. (a) a molecule of water
   (b) It shows that a water molecule is composed of two types of atom: hydrogen and oxygen.
   (c) It is much bigger; atoms are not coloured like this and do not really look like this.
5. A mixture is a material made up of different kinds of particles. (Examples: milk, pizza) A pure substance is a material made of only one kind of particle. (Examples: gold, water)

Developing Skills

6. Gold is more dense than gravel so it sinks to the bottom of the pan. The gravel can be washed away.
7. (a) Students' flowcharts could show pouring the mixture into a tall, thin container and then using an eyedropper to remove the top layer of oil.
   (b) Students' flowcharts could show sorting by hand into two piles, or (depending on the material used to make the paper clips) using a magnet to pull the paper clips out of the mixture.
   (c) Students' flowcharts could show adding water so that the sawdust floats; the sugar dissolves; skim off sawdust; evaporate the water to obtain sugar.



CHAPTER 5 Review

Key Terms

mixture, heterogeneous, pure substance, homogeneous, mechanical mixtures, suspension, emulsion, solutions, alloys, dissolves, solute, solvent, element, periodic table, compound, theory, atoms, molecule, raw material

Reviewing Key Terms

If you need to review, the section numbers show you where these terms were introduced.

1. In your notebook, match each description in column A with the correct term in column B. Use each description only once.

Column A	Column B
(a) Dalton's theory says they cannot be destroyed	• pure substance (5.1)
(b) type of matter that is made of only one kind of atom	• mechanical mixture (5.2)
(c) type of matter that cannot be separated by physical changes	• suspension (5.2)
(d) type of matter that must be processed before being used	• emulsion (5.2)
(e) mixture such as paint	• solute (5.2)
(f) pizza is an example	• solvent (5.2)
(g) another name for salt when it is dissolved in water	• elements (5.3)
(h) particle that is made of two or more atoms linked together	• atoms (5.3)
	• molecules (5.3)
	• compounds (5.3)
	• raw materials (5.4)

2. For each of the following, what is the relationship between the two terms?
   (a) pure substance, homogeneous (5.1)
   (b) solution, homogeneous (5.2)
   (c) mixture, solution (5.2)
   (d) suspension, emulsion (5.2)
   (e) mechanical mixture, properties (5.2)
   (f) element, atom (5.3)
   (g) compound, element (5.3)
   (h) atom, molecule (5.3)
   (i) theory, atom (5.4)
   (j) raw material, mixture (5.4)

Understanding Key Ideas

Section numbers are provided if you need to review.

3. The properties of a sample of matter can help you decide whether the material is homogeneous or heterogeneous. (5.1)
   (a) What is an example of matter that is clearly heterogeneous?
   (b) What is an example of matter that is clearly homogeneous?
   (c) Easily observed properties can be misleading. What is an example of a material that looks homogeneous but is actually heterogeneous?
4. Examine the model below. (5.3)
   (a) What does the model represent?
   (b) How is this model useful?
   (c) How does the model differ from the thing it represents?

150 MHR • Unit 2 Chemistry

8. (a) Join the balls together using toothpicks.
   (b) You could rotate them to see what another side looked like.
   (c) All the balls would be the same size, but atoms are different sizes. Colour and size would also be incorrect.

Problem Solving

9. (a) No, it is not pure water, which boils at 100°C.
   (b) Adding sugar or salt would change the boiling point but not the appearance.
10. The density of the bracelet is $\frac{30\text{ g}}{3.5\text{ mL}} = \frac{8.6\text{ g}}{\text{mL}}$. This is very close to the density of copper, $8.92\ \frac{\text{g}}{\text{cm}^3}$. The bracelet is probably pure copper.

Critical Thinking

11. (a) Grind up the rock and use a magnet to separate magnetite from other rock.
    (b) No. Magnetite is a compound so a chemical change is needed to obtain pure iron.
    (c) Magnetite contains oxygen atoms. Iron does not.
    (d) You need to use chemical changes to get iron from iron ore, but you can get gold from gold ore using only physical changes.