Mixtures

Mixture (miks´ chər) a physical combination of two or more substances that are mixed together without forming new substances

Using SCIENCE Words

1. A mixture contains _____.
   A. one substance
   B. two new substances
   C. two or more substances

1 Concrete is a combination of sand, gravel, and water. Iced tea is a combination of water, tea, and sugar. Air is a combination of nitrogen, oxygen, and other gases.

2 These combinations are mixtures. A **mixture** is a physical combination of two or more objects or substances. The substances do not mix together to form new substances. Mixtures can contain solids, liquids, or gases.

2. Any substances that are _____ are mixtures.
   a. chemically combined
   b. physically combined
   c. liquids

3 A mixture can contain many materials. A salad with dressing is a mixture. A sundae is a mixture of ice cream and toppings. Mixtures are combined physically. Mixtures aren't combined through chemical reactions. Substances in a mixture keep their own properties. They can be separated without chemical reactions. You can use your fingers to separate the parts of a salad.

3. Why is it possible to separate a mixture's substances?
   a. A mixture's substances keep their own properties.
   b. A mixture's substances have already changed in a chemical reaction.
   c. both **a** and **b**

4 Mixtures are separated by using the material's physical properties. Some mixtures contain items made of iron. A magnet will separate the iron from the other materials. You could pick up iron nails from a rocky driveway by using a magnet.

4. What is the main idea of the paragraph above?
   a. The substances of some mixtures have different sizes.
   b. Driveways are mixtures.
   c. Magnets can separate iron and steel substances in a mixture.

5 Mixtures with small particles can be separated by sifting or filtering. Use a sieve to separate ocean water and sand. As you pour the mixture into the sieve, it will trap the sand. The water will pass through the sieve. Filters trap particles even smaller than grains of sand. Furnace filters trap tiny particles of dust. The dust is separated from gases in the air.

5. How do filters and sieves separate mixtures?
   a. by allowing gas or liquid to pass through while trapping solid particles
   b. by trapping gas or liquid and allowing solids to pass through
   c. both **a** and **b**

6 Some mixtures have particles so small you can't see them. You can't see the particles of sugar when it's mixed with water. This is because sugar dissolves in water. Sugar water is a solution. A **solution** is a mixture in which the ingredients are evenly blended throughout. Although you can't see the sugar, you can separate it from the water. Boil the sugar-water solution until the water evaporates. The sugar will remain in the pan.

7 Why do oil and vinegar separate in Italian salad dressing? Oil is less dense than vinegar, so it floats on top of vinegar. Allowing time for one substance in a mixture to float on top of the other is another way to separate substances.

6. Which is **not** true of a solution?
   a. The substances are mixed together evenly.
   b. One or more substances dissolve in another substance.
   c. The substances can't be separated after they're mixed.

LEARN ABOUT WORDS

Pups are **little** dogs, not **big** ones. Words with opposite meanings are antonyms. *Little* is an antonym of *big*. Read each sentence and the words below it. Write the antonym of the word in **bold type.**

7. A filter can **separate** gases and dust particles in the air.
   divide unite
8. Ocean water is a solution because its mixture of water and salts is **even.**
   balanced unequal
9. A mixture isn't a **permanent** arrangement because its substances can be separated.
   temporary unchangeable
10. A pizza is a mixture because it's a combination of **different** substances.
    similar various
11. Water is a mixture of two **familiar** substances: hydrogen and oxygen.
    mysterious well-known
12. A sieve can be used to **filter** pasta from water.
    combine strain
13. You can **blend** different colors of paint to make new colors.
    divide combine
14. In a solution, every **part** is just like the other parts.
    whole section
15. The substances in some mixtures will float on the **heavier** substances.
    lightweight weightier
16. Most liquids will **flow** through a sieve, while solid particles won't.
    halt stream

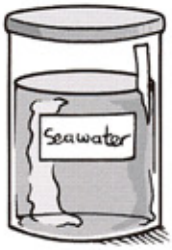
THINK ABOUT IT

Look at the diagrams. Then answer the questions.

1.

Sand and iron filings

2.



3.

4.

17. What is the best way to separate the substances in mixture 1?
    A. use the process of evaporation
    B. allow one substance to float on top of the other
    C. use a magnet
    D. use a sieve

18. What is the best way to separate the substances in mixture 2?
    A. use the process of evaporation
    B. allow one substance to float on top of the other
    C. use a magnet
    D. use a sieve

Using SCIENCE Words

1. C

Comprehension

2. b
3. a
4. c
5. a
6. c

Learn About Words

7. unite
8. unequal
9. temporary
10. similar
11. mysterious
12. combine
13. divide
14. whole
15. lightweight
16. halt

Think About It

17. C
18. A

Writing About Science

Describe how you could separate a mixture of sand and water.