Before You Read

NAME: _____

Mixtures and Solutions

1. Write each word or group of words beside its meaning.

mixture	solution	dissolve
pure material	physical change	physical property

_____ a) a property that tells how a material looks or behaves as long as it does not change into an new material

_____ b) a material that is made of only one kind of particle

_____ c) what something does when it forms a solution

_____ d) a mixture of a material and a liquid where the particles of the materials are completely scattered among each other

_____ e) a combination of two pure materials

_____ f) a change that does not produce a new material

2. Circle T if the statement is TRUE or F if it is FALSE.

T F a) Air is a mixture.

T F b) Ocean water is a mixture.

T F c) Sugar is a mixture.

T F d) Mixtures can be separated into their parts.

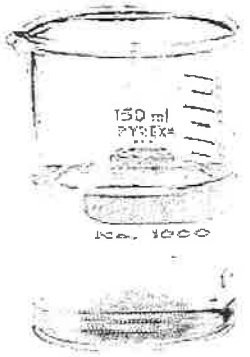
T F e) Sand dissolves in water.

NAME: _____

Reading Passage

Mixtures and Solutions

Pure materials are made of only one kind of particle. The particles may be atoms or molecules. Water, gold, oxygen, salt, sugar, and snow flakes are all pure materials.



Two or more pure materials mixed together are called a **mixture.** Soil, ocean water, air, blood, and chocolate chip cookies are all mixtures.

There are two kinds of mixtures. In some mixtures, chunks of different pure materials are mixed together. You can usually see the bits of the different materials. Soil and chocolate chip cookies are this kind of mixture.

In the other kind of mixture, separate particles are mixed together. Air is a mixture of oxygen, nitrogen, and other gas molecules. Ocean water is a mixture of salt particles and water molecules. **Solutions** are formed when the particles of one material are scattered among the particles of a liquid.

STOP

Write P after each material that is a pure material. Write M after each material that is a mixture.

Air ( ) Lemonade ( ) Ice ( )

Iron ( ) Chicken Soup ( ) Oxygen ( )

When salt is mixed with water, it seems to disappear. But the salt is in the water, and it is still salt. We can't see it because it is separated into single particles. When we make this kind of mixture we say the solid **dissolves** in the water. The amount of solid that will dissolve is called its **solubility.** Dissolving is a physical change and solubility is a physical property.

Mixtures can usually be separated into their parts. When heat is added to salt water, the water **evaporates,** and the solid salt is left behind. A mixture of salt, sand, and sawdust can be separated by adding water. The sand sinks, the sawdust floats, and the salt dissolves in the water.

NAME: _____

Mixtures and Solutions

1. Put a check mark next to the answer that is most correct.

a) Which material is a mixture?

- ◯ **A** table salt
- ◯ **B** lemonade
- ◯ **C** aluminum
- ◯ **D** snow flakes

b) Which is a pure material and not a mixture?

- ◯ **A** blood
- ◯ **B** ice
- ◯ **C** milk
- ◯ **D** soil

c) Which property could be used to separate sand and sugar?

- ◯ **A** color
- ◯ **B** hardness
- ◯ **C** size
- ◯ **D** solubility

2. Salt, sand, and sawdust can be **separated** in four steps. Number the steps from (1) to (4) in the order they should be done.

- ◯ **a)** Remove the sawdust from the top.
- ◯ **b)** Evaporate all the water to get the salt.
- ◯ **c)** Pour the water off of the sand.
- ◯ **d)** Dump the mixture into a bucket of water.

Mixtures and Solutions

3. What is a mixture?

_____

_____

4. What does solubility mean?

_____

_____

Extensions & Applications

5. Separating a Mixture

Suppose you have a mixture of sand, marbles, sawdust, and blocks of wood. You can separate these four things with a window screen, a bucket, and water. This will take three steps.

The screen is used in the first step.

The bucket and water is used in the second and third steps.

a) Describe the three steps.

Step One

_____

_____

Step Two

_____

_____

Step Three

_____

_____

b) Which properties of the materials made it possible to separate the mixture?

_____

_____