Separating mixtures: particle drawings and practical record

Name: Class: Date:

Page 1 has boxes to draw the particles of pure substances and mixtures in. Page 2 is a record sheet for separating muddy salty water.

DRAWING Draw the particles

1. Draw a water particle as a small circle, a salt particle as a small square and a sugar particle as a small hexagon, the same size in every box. The shapes only tell the kinds of particle apart: real particles are not these shapes.
2. In a liquid, draw the particles close together and touching, in no pattern. In a solid, draw them packed in a regular pattern. Under each box, write pure substance or mixture.

Distilled water

Pure substance or mixture:

Salt

Pure substance or mixture:

Seawater

Pure substance or mixture:

Sugar water

Pure substance or mixture:

The filtrate from muddy seawater

Pure substance or mixture:

The distillate

Pure substance or mixture:

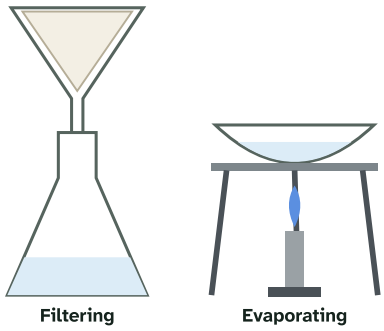
1. How do your drawings show which samples are pure substances and which are mixtures?

2. Use your drawings to explain why filtering does not take the salt out of seawater.

PRACTICAL Separate muddy salty water

Each group needs: muddy salty water (50 cm^3 of water with a teaspoon each of salt, sand and clay), a beaker, a filter funnel, filter paper, a conical flask, an evaporating basin, a tripod, a gauze, a heat resistant mat, a Bunsen burner and eye protection.

Safety. Wear eye protection throughout, and stand up while heating. Tie back long hair, keep clothing clear of the flame, and use the yellow flame when you are not heating. Hot salt can spit out when the basin is nearly dry, so turn off the heat when the first crystals appear and keep back. The basin, gauze and tripod stay hot after the flame is out, so leave them to cool. Never eat or drink anything in the laboratory.



My plan, before the practical

1.

2.

3.

What to do

1. Stir the muddy salty water. Fold the filter paper into a cone, put it in the funnel and filter the mixture into the conical flask.
2. Look at the residue and the filtrate, and write what you see in the table. The filtrate may still be a little cloudy, because school filter paper may not filter out very fine particles.
3. Pour the filtrate into the evaporating basin and heat it gently. When the first crystals appear round the edge, turn off the Bunsen burner and leave the basin to finish drying.
4. Look at what is left in the basin, and write in the table what it looks like, including its colour.

Step	What I saw	What it took out of the mixture	What was left to carry on with
Filtering			
Evaporating			

1. Give two reasons why the sand on your filter paper might still have some salt on it.

2. Why did you turn off the heat when the first crystals appeared?

3. Your teacher distilled salty water. Why does distilling keep the water, when evaporating loses it?