Name _____ Date _____

Worksheet 2.1

Extracting salt

Sodium chloride is known as common salt. It is a very useful compound.
Read this information about how it is extracted and then answer the questions.

In hot countries, salt is extracted directly from seawater. Seawater is mainly a mixture of water and sodium chloride. In order to extract the salt, the seawater is trapped in large shallow pools. The thermal energy from the Sun evaporates the water, leaving the salt behind.

In some countries, salt is found underground as rock salt. Rock salt is a mixture of sodium chloride and rock, such as sandstone. To mine the rock salt, shafts are drilled down into the rock. In the mine, cutters and explosives are used to extract the rock salt. This is brought to the surface where it is crushed. This form of salt is used on the roads in cold countries in the winter to reduce the temperature at which water freezes and to reduce the number of road accidents. Rock salt needs to be treated to extract the pure salt if it is to be used for chemical reactions or food.

Some rock salt is extracted by a different method of mining, called solution mining. Water is pumped down into a well drilled into the rock salt. The salt dissolves in the water and this is pumped back to the surface. The water is then evaporated to leave behind the salt.

1 What is the solvent in seawater? _____

2 What is the main solute in seawater? _____

3 Give **two** uses of salt.

_____

_____

4 Explain why the seawater is trapped in large shallow pools and not small deep ones.

5 Suggest why the method mentioned in question 4 is not used in colder countries.

Worksheet 2.1

Extracting salt

Additional notes

Read through the paragraph carefully. Highlight any parts you find difficult to understand. Then read them again.

For question 1: Remember that the solvent is the liquid that things dissolve in.

For question 3: Look through the text and underline any part that mentions a use of the salt.

For question 4: Think about how quickly the water in a puddle dries up compared with a deep lake.

For question 5: Think about what kind of a day is the best to dry wet clothes on a washing line.

Name _____ Date _____

Worksheet 2.1

Extracting salt

Extension

When you have answered the first set of questions, answer these questions about extracting salt.

1 Describe the dangers in mining for rock salt.

_____

_____

_____

_____

2 What further advantage does solution mining have compared with rock salt mining?

_____

_____

3 Suggest how rock salt can be purified, so that the salt is clean and free from rock fragments.

_____

_____

_____

_____

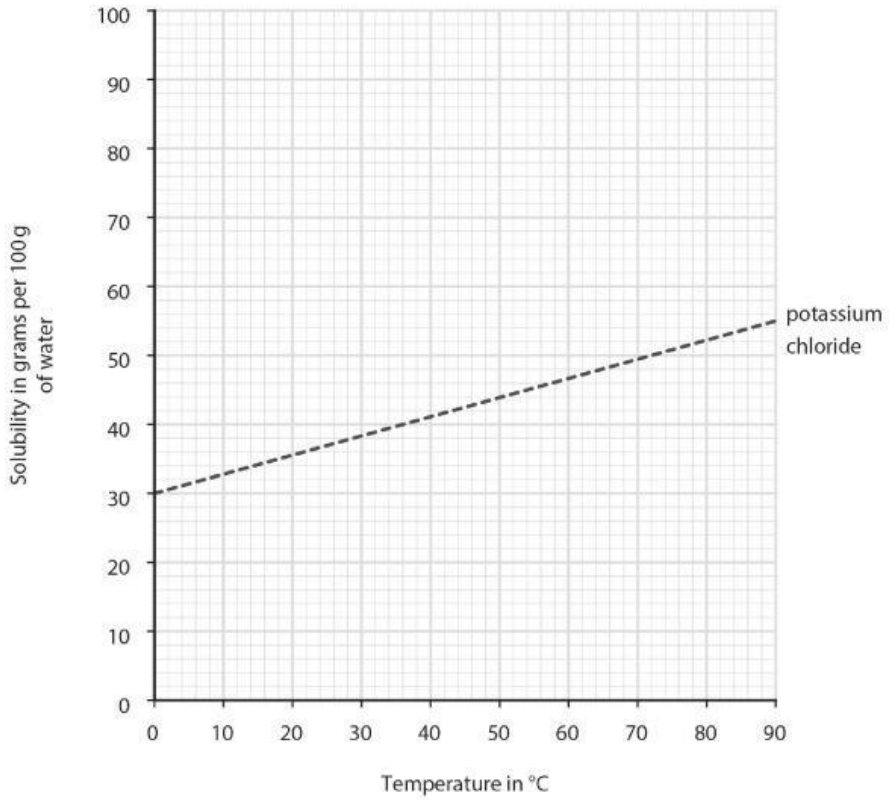
Name _____ Date _____

Worksheet 2.3(i) C

Solubility

The solubility of most solutes increases when the temperature increases. A useful way of showing the different values of the solubility at different temperatures is to plot a graph.

This graph shows the solubility of potassium chloride.



1 Plot the data for lead nitrate on the graph on the previous page, so that you can compare the solubility. Join the points in an appropriate way.

Temperature of water in °C	Solubility of lead nitrate in g per 100 g water
10	45
20	54
30	62
40	72
50	82
60	91
70	100

2 Plot the data for copper sulfate on the graph on the previous page, so that you can compare the solubilities of the three solutes. Join the points in an appropriate way.

Temperature of water in °C	Solubility of copper sulfate in g per 100 g water
10	18
20	21
30	25
40	30
60	41
70	47
80	55

3 What is the solubility of lead nitrate at 40 °C? _____

4 What is the solubility of potassium chloride at 20 °C? _____

5 Which of the three solutes is the least soluble at 50 °C? _____

6 Which of the three solutes is the least soluble at 80 °C? _____

7 What is the solubility of both potassium chloride and copper sulfate at 75 °C?

_____

8 Explain why it is important to give the temperature when you give the solubility of one of the solutes.

_____

_____

9 Explain why the solubility is given in grams per 100 g of water.

_____

_____

10 Explain how you would find the solubility of a solute.

_____

_____

_____

_____

Name _____ Date _____

Worksheet 2.3(ii)

The results of an investigation

Marcus and Sofia have collected data from an investigation into the solubility of lead nitrate. They measured how much lead nitrate would dissolve in 100 g water at different temperatures.

Here are their results.

Temperature	lead nitrate used
20	52
40	72
50	82
30	64
60	84
70	100

1 Display these results neatly and correctly.

2 What pattern is there in these results?

_____

3 What would you advise Sophia and Marcus to do to improve their results?

_____

Name _____ Date _____

Worksheet 2.4C

Vocabulary

Match the words to their meanings.

Cut out the words as a block and stick them in your book.

Then cut out the meanings separately and match them to the words.

Only stick them in when you are sure you have matched them correctly.

Note: There are more meanings than words, so take care.

	a substance that is made up of one thing
	the sand in dirty water
solution	a solution in which no more solute will dissolve
saturated solution	a mixture formed when a solute dissolves in a solvent
pure	a substance that is made of one thing
chromatogram	a substance dissolved in a liquid
filtration	a word to describe a substance that will not dissolve
solubility	a measure of how soluble a substance is
solvent	a liquid in which other substances will dissolve
solute	separated colours as the result of chromatography
insoluble	a way of separating a solid from a liquid by passing the mixture through a filter paper
paper chromatography	a way of separating coloured substances dissolved in a solution using special paper
	a measure of how soluble a substance is
	a way of separating coloured substances dissolved in a solution using special paper
	a substance dissolved in a liquid