

# Separation

**Student Name:** .....

**Class:** .....

**Teacher Name:** .....

**School:** .....

# Question 1

Your friend has returned from a holiday in Israel. She visited the Dead Sea and brought a bottle of water from it home to Ireland. The bottle also has some sand in it.



- a) Name the process you would use to remove the sand from the bottle of Dead Sea water.

- b) Describe how you would carry out this process.



- c) Your friend says the water from the Dead Sea contains six times as much salt as the water in the sea around Ireland. This is why she was able to float in the Dead Sea.

Describe an investigation you would do to find out if the Dead Sea water has six times as much salt as Irish seawater. Include diagrams in your answer.

## Question 2 - Part A

One of the major problems facing many countries is a shortage of fresh water.



- a) In some countries, sea water is converted into fresh water on a large scale. What is this process called?

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- b) Can you describe how this process might be carried out?

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- c) Draw a labelled diagram of the set up of the equipment that you think could be used to get fresh water from sea water.

## Question 2 - Part B

The following is a science article about desalination. Please read it carefully and answer the questions below.

Desalination is the name given to the process of removing salt from seawater to make it suitable for drinking, crop growing and industry. The salt water is heated in a container. The steam produced is then condensed in a separate container to form pure water. This process is repeated a couple of times to ensure that the water is completely salt free.

The cost of the fuel for this is very high. This cost can be reduced by lowering the pressure over the saltwater when it is being heated. This reduces the boiling point of the water and so the cost of the evaporation is reduced.

In Hawaii, the steam produced is first allowed pass over turbines to generate electricity. The steam is then condensed back into water using other water pumped from the ocean using electric pumps.

*Science Article Oct. 2009*

**a)** Why does reducing the pressure over the saltwater reduce the costs?

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**b)** What is the advantage of the way the process is carried out in Hawaii?

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**c)** Other than Hawaii, name another country or part of the world that might have desalination factories?

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**d)** Give two reason why you picked this country?

1. ....
2. ....

**e)** Name another industry in Ireland and Scotland where evaporation followed by condensation is used.

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## Question 3

Your Granny has diabetes and is allowed to have only let have one spoon of sugar in her tea. You think she is putting four spoons of sugar in it. She will not let you taste her tea.



- a) Describe the investigation you would do to find out whether she is taking one spoon or four spoons of sugar in her tea. Remember you cannot taste the tea but Granny does not mind you taking her cup of tea. She says the sugar is 'melted' and you will not be able to see it.

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**For teacher use only.**

Comment:

How to improve:

Response	Percentage
Yes	75%
No	25%