DiscoVer SENSORS
Supporting inquiry based teaching and learning

Water

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

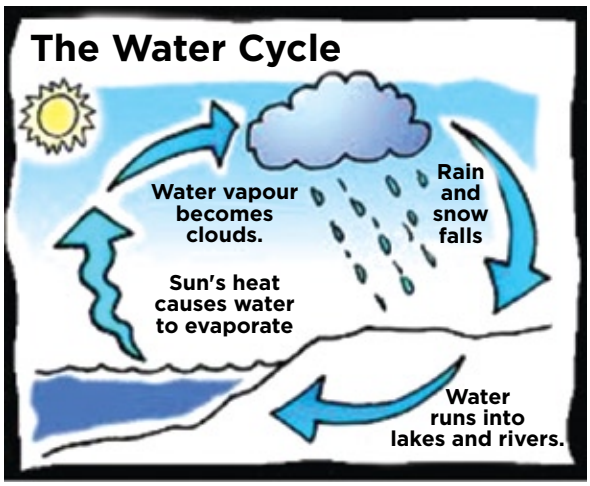
Teacher Name: ..... **School:** .....

Question 1

The person in this picture is washing her hands with soap. From the picture, do you think the water coming from the tap is hard or soft?

Explain your answer:

Using the information in the picture, explain why the water in the rivers and lakes contains more dissolved substances than the rain water.



Name one metallic ion that causes hardness in water.

Tap water is clean but not pure. Explain why it is almost impossible to get a bottle of pure spring water.

A student needed to show that there are both **suspended** and **dissolved** substances in river water. She carried out an investigation. Some of the stages of the investigation are described below.

The student poured the river water through filter paper. Why did she do this?

She collected the water that passed through the filter paper in an evaporating dish. She then evaporated the water from the evaporation dish.
How did she evaporate the water?

Why did she evaporate the water?

The student also had an electric balance in the laboratory. How could she have used this to help her in her investigation?

Question 2

A student was given four test tubes with equal volumes of different samples of water. He also had a dropper and a soap solution. The student was asked to test the liquids for hardness.

Why did the he need the dropper?

How did he use the soap solution in the test?

How would you know if the sample of water was hard?

Draw in the result you would expect for each liquid after the test in the boxes below.

Before Test **After Test**

Water from a limestone area.

Before Test **After Test**

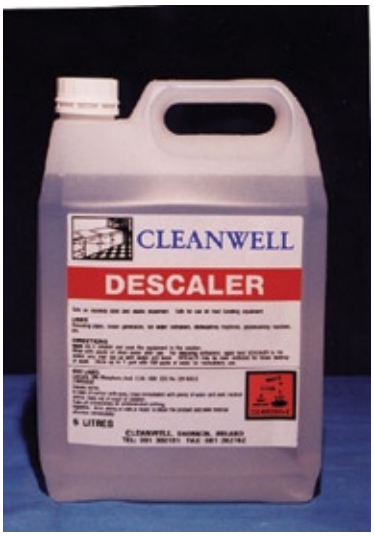
Bottled water from shop.

Before Test **After Test**

Boiled tap water.

Before Test **After Test**

Deionised distilled water.



Explain how **Cleanwell** removes hardness scale in a pipe.

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Read the label on the box of **Calgon**. Why is **Calgon** added to washing machines in some parts of Ireland more than others?

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Question 3

a) A gardener suspects that the liquid on the plant leaf is water.

Name three tests that he could do to verify that the liquid is water.
In each case give the result of the test if the liquid was water.

Test 1:

Positive result:

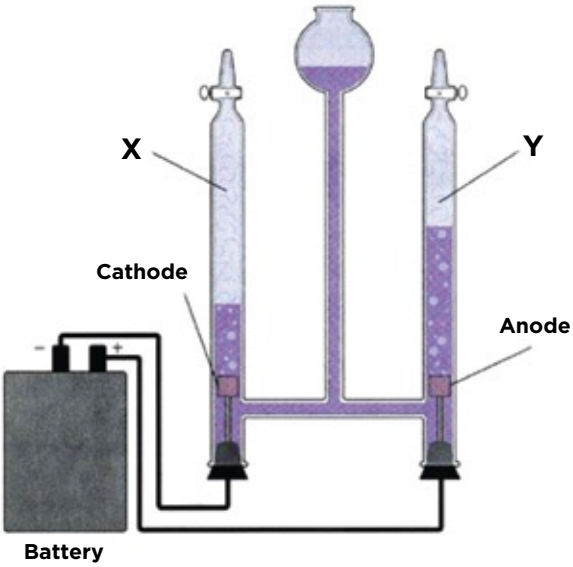
Test 2:

Positive result:

Test 3:

Positive result:

b) A student wishes to investigate the composition of water. The student uses acidified water, Hoffman voltameter, power pack and gloves.
What is meant by "acidified water"?



Why was acidified water used?

Would the voltameter work using ordinary plain water?

Explain your answer:

Name the gas at **X**:

Name the gas at **Y**:

What does this experiment tell us about the chemical composition of water?

Using the information from the above experiment, why is this car advertisement shown misleading?

Question 4

The water treatment process takes place in the water treatment plant. Outline four stages in the treatment of the raw water to make it safe to drink and give the purpose of each stage.

Stage 1:

Purpose:

Stage 2:

Purpose:

Stage 3:

Purpose:

Stage 4:

Purpose:

Give one advantage of hard water for humans.

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Give one use of hard water in industry.

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Name an industry where hard water is a disadvantage.

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For teacher use only.

Comment:

How to improve: