

EXT

THE MISSING WATER MYSTERY

GROUP-WORK BOOKLET

Detective X needs your best ideas!



Please discuss questions on the worksheets in this folder when your teacher asks you to.

This folders belongs to:

Detective _____

Detective _____

Detective _____

Detective _____

School: _____ Year Group: _____ Date: _____



Worksheet 1_{EXT} :
The missing water mystery
What's our evaporation theory?

This picture shows two towels that were wet when they were hung up in a classroom. Now all the water has gone and they are completely dry.



In your group discuss the questions about the water missing from the towel. You may also want to talk about Detective X's ideas. Agree your **ONE** best answer to each question and write it down.

1. What do you think has happened to the water which has gone missing from the towel?

(Detective X thinks the water may have soaked into the material or it may have gone up into the sun or into the air.)

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Why do you think this?

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2. What has made the water go?

(Detective X thinks the water may have been taken by a thief, it may have just gone on its own or the sun or wind may have made it go.)

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Why do you think this?

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Worksheet 2_{EXT}

Group thinking sheet

a) Your next theory: How can we get some evaporated water back?

What do you think you could do to get some evaporated water back?

(Detective X thinks that you could put a bucket on the floor, or catch the water thief or cool down the air but you may have better ideas)

Write your best group idea here:

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Why do you think this will work?

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Worksheet 3_{EXT}

The kettle test



You have just been watching what happens when water in a kettle boils. Discuss and write down group answers to the questions:

- What is the steam?

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- Where is the steam going?

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- Why is so much coming out of the kettle so quickly?

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- The water which has appeared on the dish is called *condensation*. Where does the water on the dish come from?

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- What has made the water on the dish appear?

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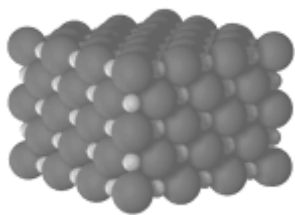
Detective X's notes on **SOLID, LIQUID AND GAS**



The Scientists say that water can be found in a solid form (ice), a liquid form (water) and a gas form (water vapour). The Scientists told me about their theory that everything is made of very small pieces of 'stuff' called particles. They say that you can understand differences between a solid, liquid and gas by thinking about what particles do in a solid, liquid and gas.

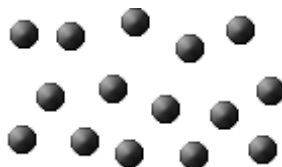
SOLID (e.g. ice)

- Particles have little energy.
- Particles are packed closely together.
- Particles cannot move away from their positions so a solid keeps its shape.



LIQUID (e.g. water)

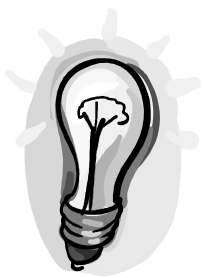
- Particles have more energy.
- Particles are close to each other but not as close as in a solid.
- Particles in a liquid can roll around each other so a liquid can change its shape.



GAS (e.g. water vapour)

- Particles have a lot of energy.
- Particles in a gas are a long way apart.
- Gas particles move around quickly and will spread out into the room which is available.





Worksheet 4 EXT

Solid, liquid and gas

You have been thinking about the differences between solids, liquids and gases in terms of the way particles are packed together. Water can be found as a solid (ice), a liquid (water) or a gas (water vapour).

Can you use your understanding about **liquid** and **gas** to explain a bit more about what happens when water evaporates and condenses?

Discuss these questions and write down your agreed theory about what happened to water particles in '**The kettle test**'.

Did the water begin as a solid, liquid or gas? Did it change to a solid, liquid or gas?

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What made the water change?

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What happened to the water particles?

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What happened when the water condensed?

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What made the water vapour change?

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Worksheet 5_{EXT}

The bathroom test



This is a test to help you think about what happens in your bathroom when you have a bath or shower.

Your teacher will give you 2 bowls of water and 2 small mirrors. One bowl has been filled with water from the hot tap. The other has been filled with water that is at room temperature.

Hold a mirror over each bowl. Some 'mist' will appear on one of the mirrors. This 'mist' is **condensation**.

Now discuss and answer the questions on the next page.

The Bathroom Test: Questions

You did 'The bathroom test' to help you think about what happens in your bathroom when you have a bath or shower.



Discuss these questions about the test. Agree answers and note them down.

Which mirror did the condensation appear on?

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Can you explain what the mist is made from?

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How did it get onto the mirror?

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Why didn't it appear on the other mirror?

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Key question: Why do the walls get wet when we have a bath?

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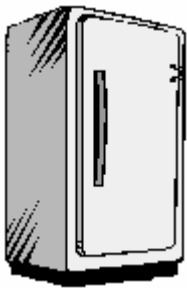
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Worksheet 6 EXT

The fridge test



Your teacher will give your group 2 bottles with drinks in them. One of them has been in the fridge and it is cold. The other one is at room temperature.

Look carefully at the bottles for a few minutes to see if any **condensation** appears on them.

Now discuss these questions. Agree answers and note them down.

What is the difference between the cold bottle and the one at room temperature?

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Where has the water on the outside of the one bottle come from?

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What do you think has happened and why?

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Key question: Why do bottles get wet when they come out of the fridge?

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Worksheet 7_{EXT}

Our new improved theory

Our new improved theory: How can we get some evaporated water back?

Now you have done some tests to help you think about how you could get some evaporated water back.

You wrote your first theory about this at the beginning of this booklet (see page 4). Read back over these original ideas. Do these ideas still seem right to you? If you want to change your best group ideas please write them below.

What do you think you could do to get some evaporated water back?
Write your best group idea here:

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Why do you think this will work?

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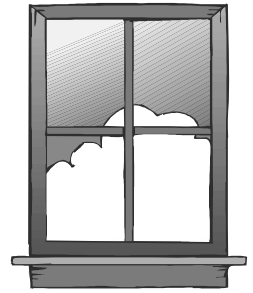
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Worksheet 8_{EXT}

The window test



The Theory

Detective X's ideas are

- That he can collect some water when it condenses on windows at HQ
- That it will be best to do this in summer time rather than winter time

Do you think he is right?

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Why do you think this? (Write down the answers which your group agrees.)

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The results

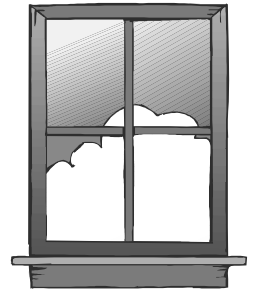
Your teacher is going to do an experiment from the detective computer to help test these ideas. Record the results of the test in this table.

	Temperature of water in glass	Observations - What did you see happening?	How much condensation did you see? None, a little, or a lot
Glass 1 Room temperature			
Glass 2 10 minutes in fridge			
Glass 3 20 minutes in fridge			
Glass 4 30 minutes in fridge			



Worksheet 9_{EXT}

Analysing the results



- What happened in the test?

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- Why do you think this happened?

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- Do you think Detective X will be able to collect water from HQ windows?

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Why do you think this?

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- Do you think it would be better for him to collect the water in summer or winter?

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Why do you think this?

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