The Three States of Water	Grade 2 : Water in the Environment

Lesson Plan

Safety Notes: Ask an adult for permission to do this experiment. No protective equipment required.

Description

Discover the three states of water through a simple experiment done at home.

Materials

Here are the materials that you will need:

- Metal cooking pot (smallest you can find)
- A bowl of ice (enough ice to cover the bottom of the metal pot)
- Salt
- Spoon (wooden or metal will work)

Science Background

Water exists in three different states on our planet: solid, liquid and gas. Its liquid form is what we refer to as "water", is found in our taps, rivers, lakes and oceans. Its solid form is known by many different names such as ice, snow, hail and frost. Its gaseous form is known as water vapour and it is invisible. You can feel water vapour on hot humid summer days; the humidity is the water that is in the air.

Activity Procedure

We will be doing a simple experiment that showcases the three states of water. It does not require any protective equipment (i.e. goggles) but children should ask an adult permission to perform the experiment. It is recommended that you do the experiment in the kitchen since it can get a bit messy.

Place all the equipment on a table in the kitchen. Pour the ice from the bowl into the metal pot. Notice that the ice is hard and smooth; the ice is the solid state of water. Sprinkle lots of salt into the ice and stir the ice with a spoon. After about 10 seconds, what do you notice about the ice? You will notice that the ice is becoming bumpy or rough. This is because of the salt that you added to the ice.

After one minute of stirring, what do you notice at the bottom of the pot beneath the ice? You will notice that liquid water is appearing. This is because salt lowers the temperature at which ice freezes. Normally water freezes (becomes a solid) at around 0°C, but when salt is added,

water will freeze at a lower temperature. This is why once you add salt, the ice becomes liquid water since it is not cold enough in the pot for it to remain solid.

What do you notice forming on the outside of the metal pot? You will notice a white solid or ice forming on the outside of the pot. This is a solid state of water called frost. But where did this frost come from? Did water or ice leak out of the pot causing the formation of the frost? Nope. In this case the water came from the air. The water in the air transformed itself on the cold pot from a gas to a solid (frost). This process of changing from a gas directly to a solid is called sublimation. The frost on the pot shows us that there is water in the air which we call water vapour.

Debrief

This experiment has shown us the three states of water. The solid state called ice transformed into the liquid state when we added the salt. Frost formed on the outside of the pot from the water that was in the air (water vapour) because of the cold temperatures on the metal.

Next time you go outside check out the different states of water. Water is everywhere … it might just be "hiding" in different states.

Handouts

Connect (using a line) the following descriptions or activities with the corresponding state of water.

Swimming in the pool.

Ice skating on a pond.

Sliding down a hill.

Drinking a cool glass of water.

Snowshoeing in a woodland.

Waterskiing in a lake.

Making a snowman.

Hot humid summer day.

Scraping frost off a car window.

Watering your garden.

Clouds covering mountain tops.

Walking in the rain with an umbrella.

Solid

Liquid

Gas

Handouts

Water is everywhere

Find the hidden words

Y	P	O	U	J	E	C	H	F	A	W	I	E	U
A	R	C	J	L	A	K	E	O	R	G	V	R	H
Q	E	E	F	Y	D	I	B	O	I	C	E	E	A
H	C	A	B	J	A	T	F	K	W	C	Z	V	I
C	I	N	R	X	L	F	R	Q	A	L	Y	A	L
P	P	I	F	E	V	E	O	O	T	O	R	P	S
S	I	V	O	P	P	R	S	S	E	U	Y	O	T
N	T	R	G	G	H	Z	T	T	R	D	U	U	O
O	A	N	U	L	R	P	H	E	J	I	P	R	N
W	T	M	V	A	A	W	O	A	V	X	Q	A	E
M	I	E	W	C	I	Y	T	M	B	B	Y	T	G
M	O	L	G	I	N	Y	A	O	E	H	H	I	E
M	N	T	B	E	Y	B	Y	L	G	L	F	O	H
P	G	L	T	R	O	T	Y	S	P	R	I	N	G

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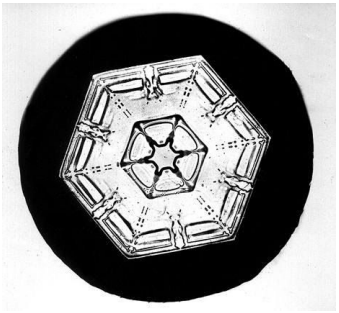
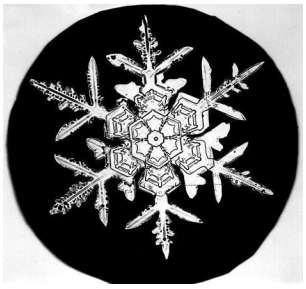
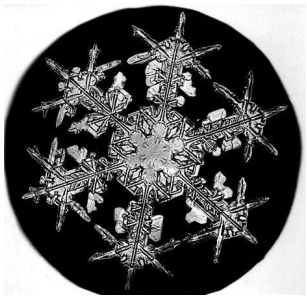
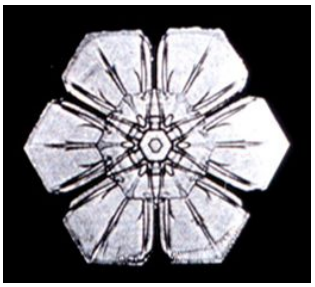
Cloud	Evapouration
Fog	Frost
Glacier	Hailstone
Ice	Lake
Melt	Ocean
Precipitation	Rain
Snow	Spring
Steam	Water

Handouts

The above pictures are those of snowflakes. How many sides do you see on a snowflake?

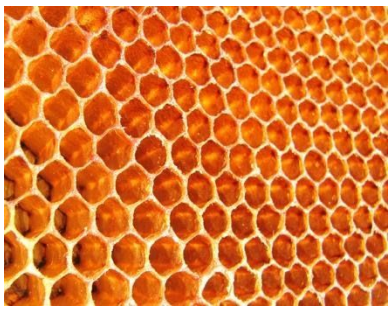
A snowflake has _____ sides.

What shape is a snowflake? A snowflake is a _____.

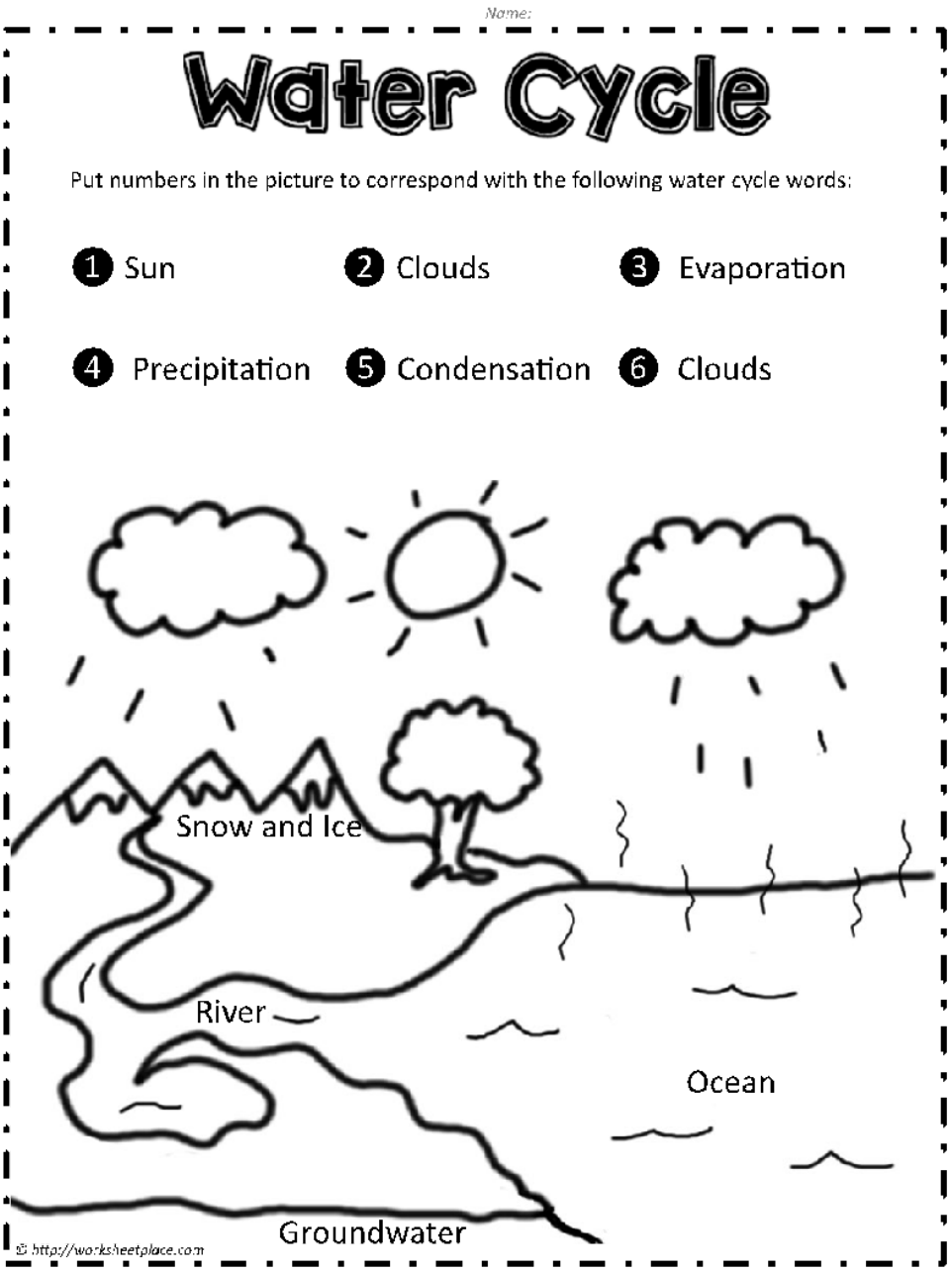
Look at the pictures below. Circle the ones that have the same shape as a snowflake.







Handouts



Handouts with Answers

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Waterskiing in a lake.

Making a snowman.

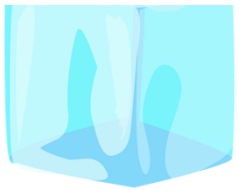
Hot humid summer day.

Scraping frost off a car window.

Watering your garden.

Clouds covering mountain tops.

Walking in the rain with an umbrella.



Solid

Liquid

Gas

Handouts with Answers

Water is everywhere

Find the hidden words

Y	**P**	**O**	U	J	E	C	H	F	A	W	I	E	U
A	**R**	**C**	J	**L**	**A**	**K**	**E**	O	R	G	V	R	**H**
Q	**E**	**E**	F	Y	D	I	B	O	**I**	**C**	**E**	**E**	**A**
H	**C**	**A**	B	J	A	T	**F**	K	**W**	**C**	Z	**V**	**I**
C	**I**	**N**	R	X	L	F	**R**	Q	**A**	**L**	Y	**A**	**L**
P	**P**	I	**F**	E	V	E	**O**	O	**T**	**O**	R	**P**	**S**
S	**I**	V	**O**	P	P	R	**S**	**S**	**E**	**U**	Y	**O**	**T**
N	**T**	R	**G**	**G**	H	Z	**T**	**T**	**R**	**D**	U	**U**	**O**
O	**A**	N	U	**L**	**R**	P	H	**E**	J	I	P	**R**	**N**
W	**T**	**M**	V	**A**	**A**	W	O	**A**	V	X	Q	**A**	**E**
M	**I**	**E**	W	**C**	**I**	Y	T	**M**	B	B	Y	**T**	G
M	**O**	**L**	G	**I**	**N**	Y	A	O	E	H	H	**I**	E
M	**N**	**T**	B	**E**	Y	B	Y	L	G	L	F	**O**	H
P	G	L	T	**R**	O	T	Y	**S**	**P**	**R**	**I**	**N**	**G**

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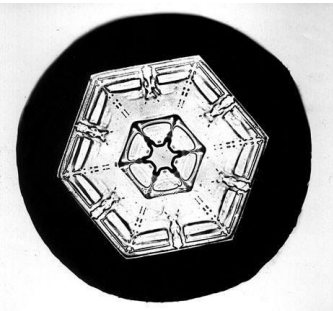
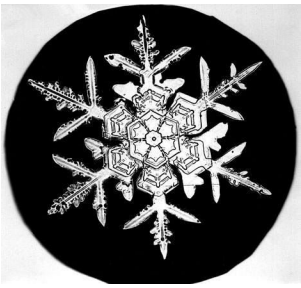
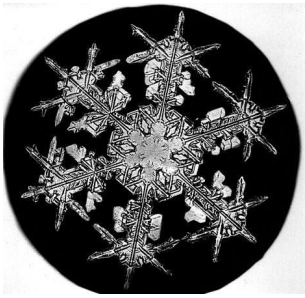
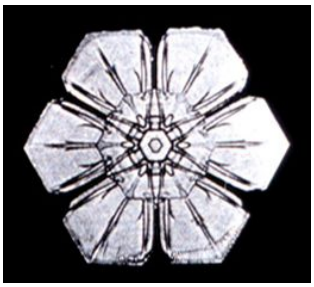
~~Cloud~~
~~Fog~~
~~Glacier~~
~~Ice~~
~~Melt~~
~~Precipitation~~
~~Snow~~
~~Steam~~
~~Evapouration~~
~~Frost~~
~~Hailstone~~
~~Lake~~
~~Ocean~~
~~Rain~~
~~Spring~~
~~Water~~

Handouts with Answers

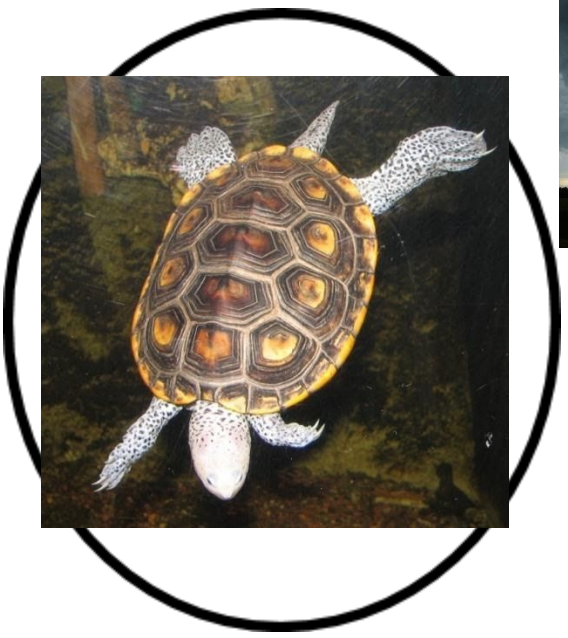





The above pictures are those of snowflakes. How many sides do you see on a snowflake?

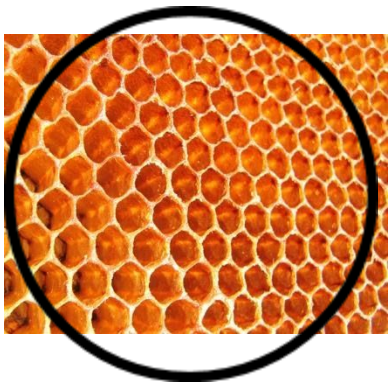
A snowflake has **6** sides.

What shape is a snowflake? A snowflake is a **hexagon**.

Look at the pictures below. Circle the ones that have the same shape as a snowflake.







Handouts with Answers

Name:

Water Cycle

Put numbers in the picture to correspond with the following water cycle words:

1 Sun 2 Clouds 3 Evaporation

4 Precipitation 5 Condensation 6 Clouds