SCIENCE

Heat.

one stop clil

1 Write.

Melting is when a solid turns into a (liudqi) _____ .

Ice turns into (twear) _____ when you heat it.

Evaporation is when a liquid turns into a (ags) _____.

Water turns into (treaw povuar) _____ _____ when you heat it.

Solidification is when a (idlqui) _____ turns into a (sloid) _____.

Water turns into (cie) _____ at temperatures below 0°C.

Condensation is when a (ags) _____ turns into a (ldiuqi) _____.

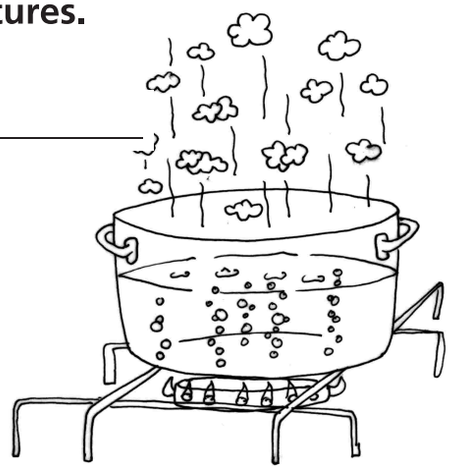
Water vapour turns into (weatr) _____ when it cools.

2 Complete the table.

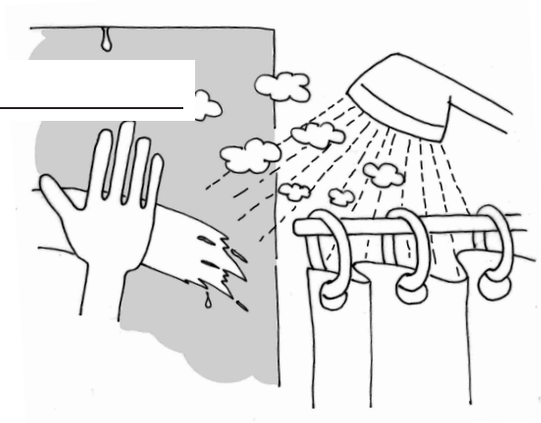
The change from	solid	to	liquid	is called	
	liquid				evaporation
					solidification
					condensation

3 Label the pictures.

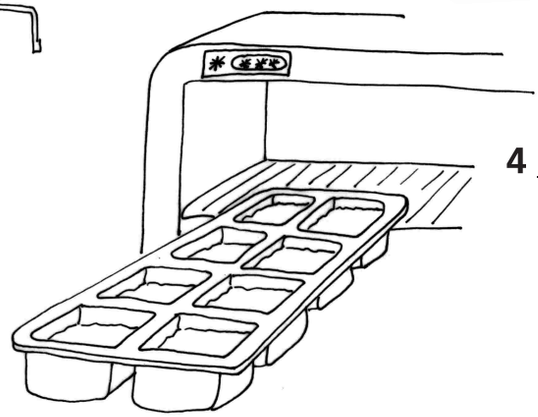
1 _____



2 _____



3 _____



4 _____

TEACHER'S NOTES

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Heat.

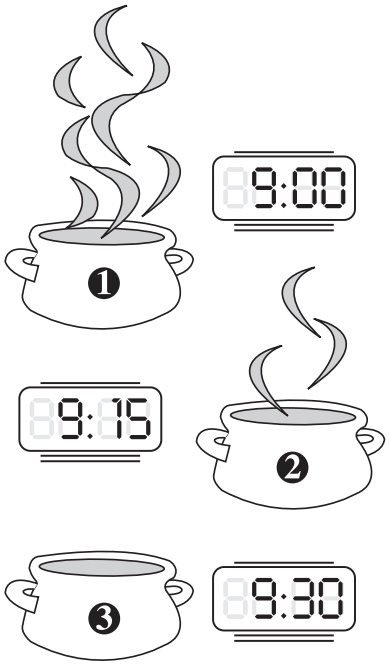
Aim
- To study heat transfer and changes of state.

Language focus
Key vocabulary: *warm, heat, solid, liquid, gas, melting, evaporation, solidification, condensation.*

Key language: *Melting is when a solid turns into a liquid. Ice turns into water when you heat it. The change from solid to liquid is called melting.*

Materials
- Worksheet.

Warm-up
- Divide the board into two halves and write *hot food / cold food.* Encourage the pupils to call out food that they usually eat hot and food that they usually eat cold, eg, hot: *soup, beans, lentils, lasagna, meat, fish;* cold: *sandwiches, salad, ice-cream, fruit, cakes.*
- Draw three bowls of soup on the board – (1) hot and steaming (2) warm and only steaming a little (3) cold, with no steam. Draw a clock or write the time beside each picture, eg. (1) 9.00 (2) 9.15 (3) 9.30:



- Ask the pupils questions, eg, *What it is? It's a bowl of soup. Is it hot or cold? It's very hot.*
- Explain the difference between *hot, warm* and *cold* Explain that *in Picture 1 the soup is very hot. In Picture 2 the soup is warm. In Picture 3 the soup is cold.* Ask the pupils *Where did the heat go?* Explain that *in Picture 1 the temperature of the soup is about 80°C and the room about 22°C. Heat energy goes from hotter substances to colder ones. The heat energy from the soup in Picture 1 flows into the room because there is a difference in temperature. This process happens until the temperature of the soup is the same as the temperature in the room.* Stress that *heat energy goes from the hotter substance to the colder substance.*
- Ask the pupils to copy the pictures in their notebooks and write *hot, warm* and *cold* under them. Write this sentence on the board and ask them to copy it in their notebooks:

  Heat moves from one place to another because of the difference in temperature between the places. Heat transfer is always from hot to cold.

Completing the Worksheet

Activity 1
- Ask the pupils *What is there in your fridge and freezer?* Encourage the pupils to say what food there is in their fridge and freezer. Write their answers on the board, eg, *milk, water, ice cream, ice cubes, meat, butter, margarine, fish, frozen food.* Try to include *ice cubes, ice cream, butter* and *margarine.* Ask the pupils *What happens when you leave the ice cream outside the freezer? It melts, it becomes a liquid. What happens when you leave the butter outside the fridge? It becomes soft and when it's very hot it melts.*
- Explain that *matter has got three states: solid, liquid and gas. When a substance changes from one state to another we call it a change of state. These changes of state always occur with a change of heat.* Write on the board *solid butter → heat → liquid butter* and explain that solid butter becomes a liquid when we heat it. This process is called *melting.*

- Ask the pupils to read the information in Activity 1 and unscramble and write the words. Check their answers.

Answers: liquid; water; gas; water vapour; liquid; solid; ice; gas; liquid; water

Activity 2

- Explain the changes of state by drawing the table on the board. Bring a pupil to the front. Say *The change from solid to liquid is called …* Encourage the pupil to complete the sentence *(melting)*. Do a few more examples. Encourage the pupils to continue in small groups.
- Ask the pupils to complete the table.

Answers:

The change from	solid	to	liquid	is called	*melting*
	liquid		*gas*		evaporation
	liquid		*solid*		solidification
	gas		*liquid*		condensation

Activity 3

- Pupils write the different changes of state next to the pictures.

Answers: **1**-evaporation; **2**-condensation; **3**-melting; **4**-solidification

Extension activity

- Explain that *thermometers measure temperature. In the 18th century Gabriel Fahrenheit created the Fahrenheit scale (freezing point of water at 32 degrees and boiling point at 212 degrees). Later, Anders Celsius invented the Celsius scale (freezing point of water at 0 degrees and boiling point at 100 degrees). Most countries use the Celsius scale, but some countries use the Fahrenheit scale. These are the formulas to convert temperature between the two scales:*
Fahrenheit = (Celsius x 1.8) + 32
Celsius = (Fahrenheit – 32) / 1.8
- Do an example on the board, eg, *When the temperature in New Orleans is 98,6 degrees Fahrenheit, what is the temperature in degrees celsius?* (98.6 – 32 = 66.6; 66.6 / 1.8 = 37º Celsius). *If the temperature in Madrid is 10º Celsius, what is the temperature in degrees Fahrenheit?* (10 x 1.8 = 18; 18 + 32 = 50º Fahrenheit)
- Ask the pupils to complete this table:

Celsius	**16ºC**		**35ºC**	
Fahrenheit		**67ºF**		**105ºF**

Answers:

Celsius	16ºC	19,4ºC	35ºC	40,5ºC
Fahrenheit	60,8ºF	67ºF	95ºF	105ºF