

Y4 Changing State

KS2 Y4 Science · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

What happens to ice is heated from -10°C to 110°C ?

Step 1 · Below 0°C

It stays solid ice

Step 2 · At 0°C

It melts into liquid water

Step 3 · At 100°C

The water boils and turns into water vapour (gas)

Answer: Solid ice $\rightarrow$ liquid water at 0°C $\rightarrow$ water vapour at 100°C .

Check: Heating changes solid $\rightarrow$ liquid $\rightarrow$ gas. Cooling does the reverse.

2. Now try one with the steps

Why does chocolate melt in your hand but not in the wrapper on a cool shelf?

Step 1 · What temperature does chocolate melt at?

Step 2 · How warm is your hand?

Step 3 · How warm is a cool room?

Answer:

3. Practice

Have a go at each one. There is space underneath to work it out.

1. What is it called when a solid turns into a liquid?

2. What is it called when a liquid turns into a solid?

3. What is it called when a liquid turns into a gas?

4. What is it called when a gas turns into a liquid?

5. At what temperature in °C does water freeze?

6. At what temperature in °C does water boil?

7. Does heating or cooling make a liquid freeze?

8. Chocolate melts at about 34°C. Will it melt on a 20°C day in the shade?

9. Will chocolate melt in a hot car at 45°C?

10. Ice melts at what temperature in °C?

11. Candle wax melts at about 60°C and butter at about 32°C. How many degrees higher is wax's melting point?

12. A freezer is at -18°C. Is water inside it solid, liquid or gas?

13. Water is heated from 20°C to 100°C. What happens at 100°C?

14. Plan a fair test to find which melts fastest in a warm room: ice, butter or chocolate. Name ONE thing to keep the same.

4. Before you hand it in

All materials melt at the same temperature

Ice 0°C, butter about 32°C, chocolate about 34°C, candle wax about 60°C, iron about 1500°C.

When water boils, the bubbles are air.

Boiling bubbles are the gas form of water, escaping.

Melting and dissolving are the same thing.

Ice melts. Sugar dissolves.

Water needs to boil to evaporate.

Evaporation happens at any temperature; it's just faster when warmer. Boiling happens at 100°C.