



Science

States of Matter

Solid, Liquid or Gas?



Aim

- I can sort and describe materials.

Success Criteria

- I can sort materials into solids, liquids or gases.
- I can describe the properties of solids, liquids and gases.
- I can show the difference between the particles in solids, liquids and gases.

Sorting Materials

A material may be in one of three states: solid, liquid or gas.

Can you sort the materials into solids, liquids or gases?

Think carefully about each one.

Solid, Liquid or Gas?

Carefully cut out the cards on the other pages and sort them into the correct categories.

Solid	Liquid	Gas

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Properties of Materials: Solids

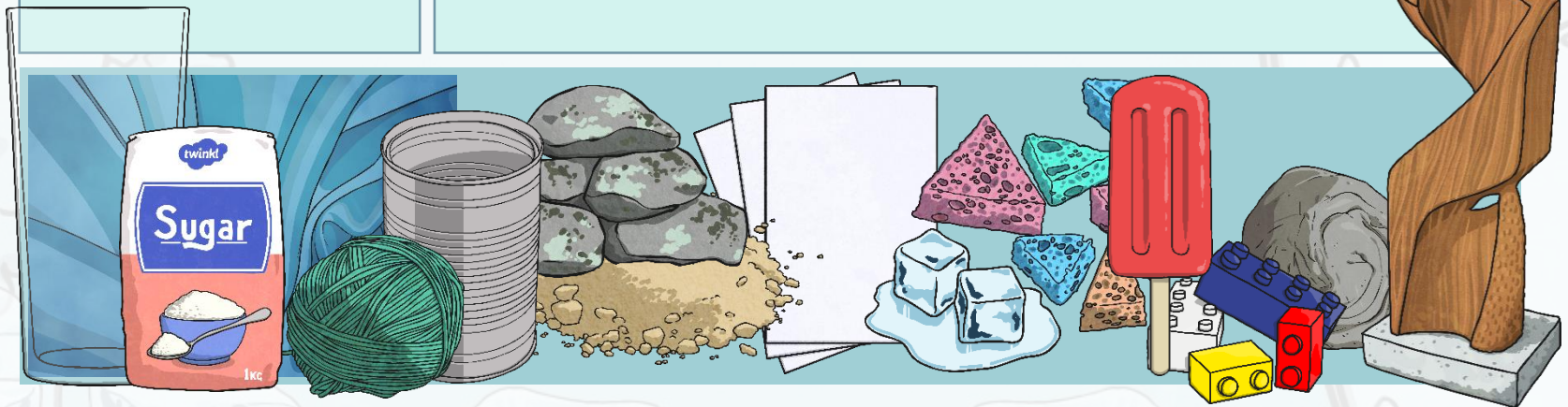
These items are all solids!

What do they have in common?
Share the adjectives you thought of.

Materials in a solid state keep their shape unless a force is applied to them.

Solids can be cut, squashed or twisted. They will not change shape on their own.

Solid materials always take up the same amount of space. They do not spread out or flow. Solids do not have to be hard. They can be squashy or soft.



Properties of Materials: Liquids

These items are all liquids!

What do they have in common?

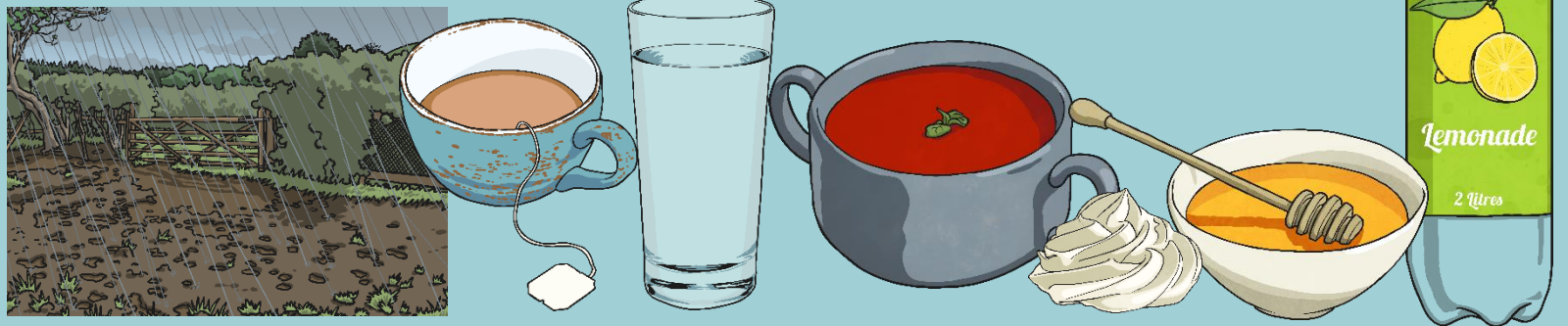
Share the adjectives you thought of.

Materials in a liquid state take the shape of the container they are in.

Although liquids can change shape, they do not change their volume. This means they still take up the same amount of space.

Liquids are pulled down to the bottom of a container by gravity.

Liquids can flow or be poured.



Properties of Materials: Gases

These items are all gases!

What do they have in common?
Share the adjectives you thought of.

Materials in a gaseous state can spread out to completely fill the container or room they are in.

Gases have weight.

Gases can be squashed.

Gases do not keep their shape.



Properties of Materials



Can you match the properties with the correct state?

Talk to your partner to help you.



solid



liquid



gas

Spreads out to
fill a space.

Keeps its shape.

Can be cut,
squashed or torn.

Takes the shape of the
container it is in.

Can be poured.

Does not have
any fixed shape.

Particles



We can explain the differences between solids, liquids and gases by knowing what they are made of.

Scientists have found out that all materials are made of very tiny particles. These particles are so small that we cannot see them with our eyes, or even with a microscope!

The position and behaviour of the particles is different in solids, liquids and gases.

Click
here to
find out
more!



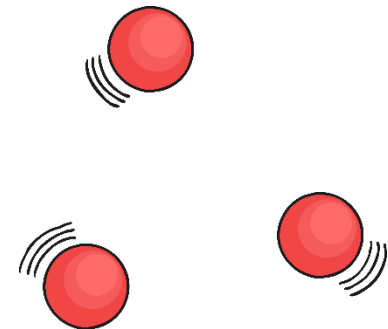
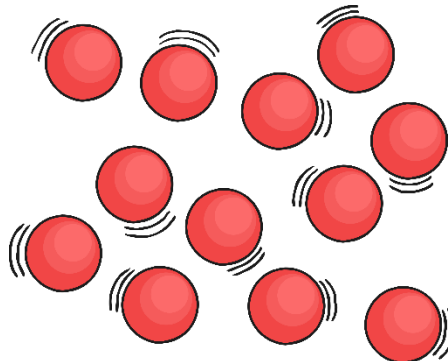
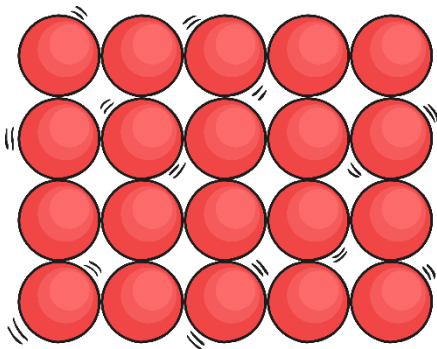
Particles and Properties



You are going to work as groups to demonstrate the differences in each state!

Follow the instructions on your group's Particle Information Card to find out what you need to do.

Then watch each others' demonstrations to learn about the behaviour of particles in solids, liquids and gases.



Particles and Properties



Now you have watched the demonstrations, have a look at the information boxes on your Particles and Properties Activity Sheet.

Can you work out which diagram and explanation goes with each state?

The image shows two overlapping activity sheets. The top sheet is titled 'Particle Properties' and contains a table with three columns: solid, liquid, and gas. Each column has a description of particle behavior and a corresponding diagram. The bottom sheet is titled 'Particle' and contains a table with two columns: State and Particles. The 'Particle Properties' sheet is cut out and placed over the 'Particle' sheet.

Particle Properties

Cut out the cards and stick them on your 'Solid, Liquid or Gas?' activity sheet to complete the table.

solid	liquid	gas
Particles are close together but random. They can move over each other.	Particles are spread out and can move about quickly in all directions.	Particles are closely packed in a regular pattern. They vibrate on the spot.

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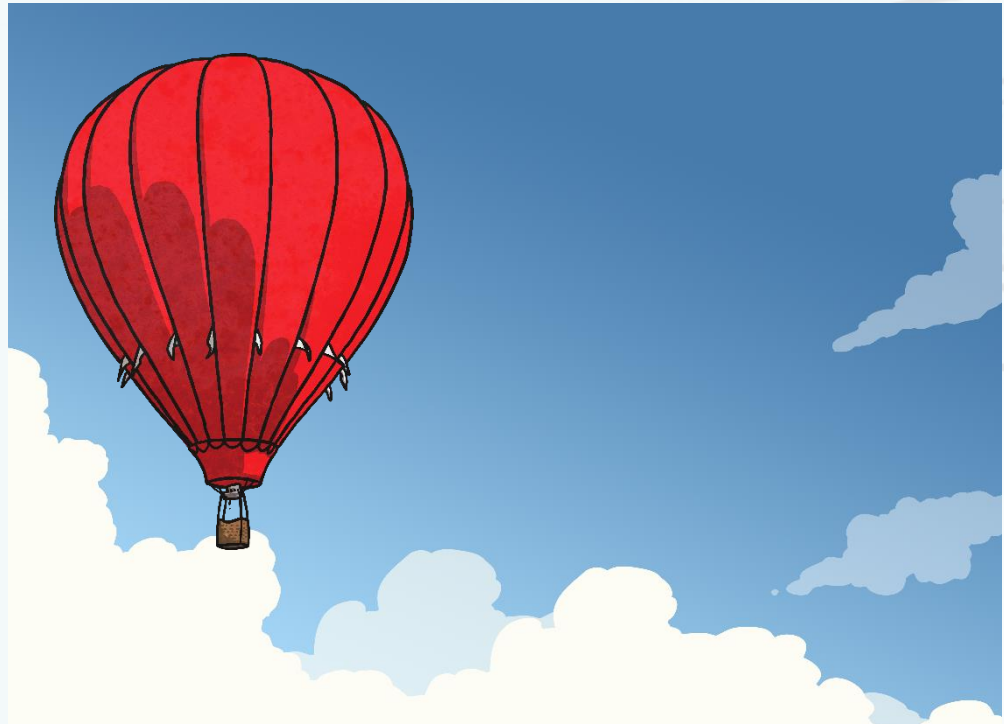
Spotting States of Matter



Watch this short film containing clips of different solids, liquids and gases.

See which materials you can spot, and which states of matter they are.

Share your ideas with the rest of the class.



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