Solids, Liquids and Gases! Year 5 Science at Home

You can help! Your child is learning about how everything around us is made of tiny particles — and how those particles arrange and move differently in solids, liquids and gases.

Why are we learning this? Matter all around us up here

Everything in the world is made of matter — and matter comes in three states: solid, liquid and gas. Up here in the north, we see all three every day. The red dust blowing in the dry season is a solid. The monsoon rain is a liquid. The steam rising off the wet ground is a gas. Even the air itself is made of gas particles we cannot see. When your child learns to think about particles, they can explain things like why wet washing dries in the sun or why a balloon floats.

My child will learn to:

✓ Classify states of matter
Know the three states of matter — solid, liquid and gas — and give examples of each.

✓ Describe particle arrangement
Use the particle model to explain how solids, liquids and gases behave differently.

✓ Link properties to particles
Explain why solids keep their shape but liquids flow and gases spread out.

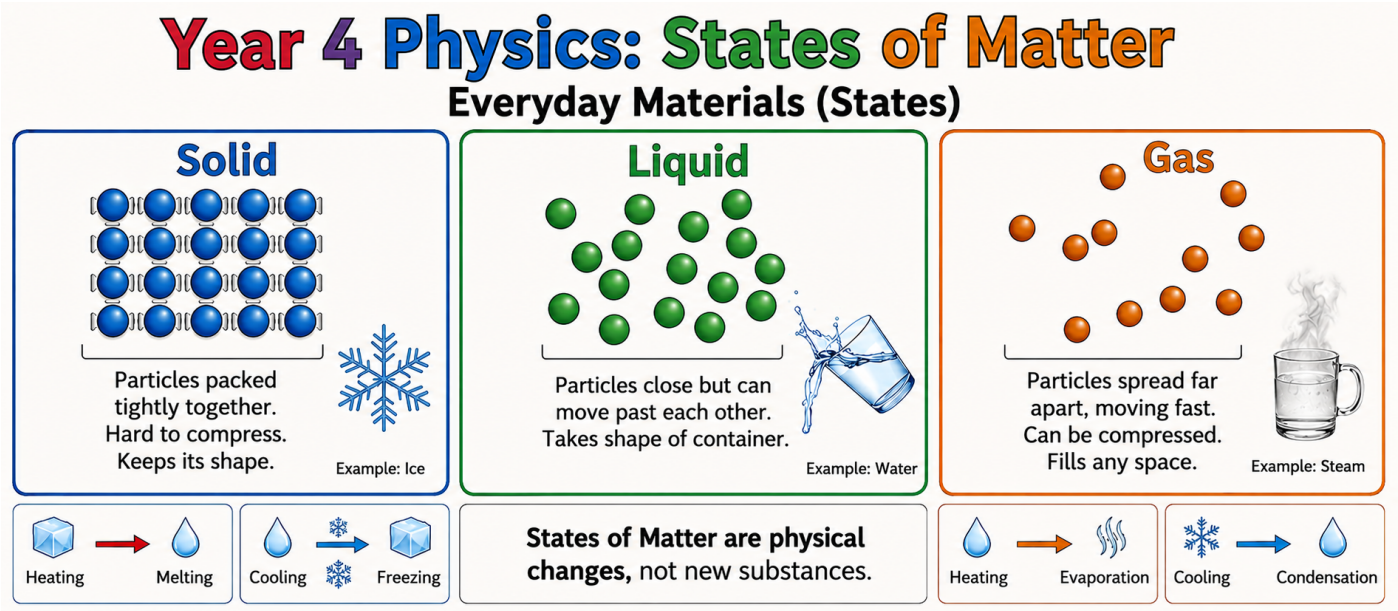
✓ Observe changes
Notice how matter changes state — melting, evaporating, condensing.

Big ideas to know:

Solid
In a solid, particles are packed tightly together. They vibrate but cannot move past each other. This is why solids keep their shape — the particles are held firmly in place. Examples: rock, ice, wood, metal.

Liquid
In a liquid, particles are close together but can slide past each other. This is why liquids flow and take the shape of their container. Examples: water, oil, honey, molten metal.

Gas
In a gas, particles are far apart and move around quickly in all directions. Gases spread out to fill any space they are in. They can be compressed. Examples: air, steam, smoke.



Solids, Liquids and Gases! Year 5 Science at Home

Comparing the three states of matter

State	Particle arrangement	Properties	Examples
Solid	Tightly packed, vibrate in place	Keeps its shape, hard to compress, definite volume	Rock, ice, wood, metal, bread
Liquid	Close but can move past each other	Takes shape of container, flows, hard to compress	Water, oil, honey, milk, lava
Gas	Far apart, moving quickly in all directions	Fills any container, can be compressed, no fixed shape	Air, steam, smoke, carbon dioxide

Think Like a Scientist — Particle Role Play

Act out the particle model! Stand very close together and barely move — you are a solid. Now move a bit but stay close — liquid. Spread out around the room and move quickly — gas! Then talk about what changed.

Ask: "When you were a solid, could you move around easily? When you were a gas, could someone compress you back into a small space? Why does a gas fill a whole room but a solid does not?"

Particle investigations at home:

1. Fill a cup with water — watch it take the shape of the cup (liquid behaviour)
2. Leave a wet cloth out — watch the water evaporate (liquid to gas)
3. Hold a cold glass on a hot day — water droplets form on the outside (gas to liquid = condensation)
4. Put a solid (ice) out in the sun — watch it melt (solid to liquid)
5. Smell food cooking — the smell is gas particles reaching your nose from across the room!

Questions to ask your child

1. Is that a solid, liquid or gas? How do you know?
2. Why does water take the shape of whatever container you pour it into?
3. Why does steam spread out into the whole room but water stays in the cup?
4. If you compressed all the air in this room, where would it go?
5. Can you think of something that can be a solid, liquid AND gas? (Water — ice, water, steam!)
6. Why does wet washing dry on a sunny day? What is happening to the water?
7. Why is it easier to squash a balloon (gas) than a water balloon (liquid)?

Role play is one of the best ways to understand particles — act out being a solid, liquid and gas together! The physical movement of the bodies mirrors what the particles are actually doing.

Key words to know:

Matter	Everything that has mass and takes up space — all solids, liquids and gases are matter
Particle	A tiny unit that all matter is made of — too small to see with the naked eye
Solid	A state of matter with particles packed tightly — keeps its shape
Liquid	A state of matter with particles that can flow — takes shape of container
Gas	A state of matter with particles spread far apart — fills any space
Compression	Squeezing particles closer together — gases can be compressed, liquids and solids cannot easily
Evaporation	When a liquid changes to a gas — water evaporating from a puddle in the sun

Key words to look up

Matter · Particle · Solid · Liquid · Gas · Compression · Evaporation

What school will check

Your child needs to relate the particulate arrangement of solids, liquids and gases to their observable properties.

Try it at home!

Put three ice cubes in a cup. Leave it in the sun and watch what happens. First solid then liquid then eventually the water evaporates (liquid to gas). You have watched all three states of matter!