

God is Truth Year 3

States of Matter

God is true to His word and never changes. He is a faithful God. He is faithful to His word. In the study of 'states of matter' we see that a substance retains its chemical compositions despite changing from solid to liquid to gas. There is consistency in the created world, reflecting God's immovable consistency. God and His word never change.

Key Questions

- What is matter?
- What is a solid?
- What is a liquid?
- What is a gas?
- Can any of these be changed by heat? What happens?
- Can any of these be changed by cold? What happens?

Activities

- Make ice cubes.
 - Melt ice cubes using a heat source.
 - Observe and describe the changes from water to ice cube and back to water.
 - Boil water to create steam. Measure the temperature of water being heated to boiling point.
 - Classify materials and substances into categories of solid, liquid, gas
 - Experiment with saturation and drying of sponges and fabrics in different drying conditions. Explain why some materials dried faster than others
 - Conduct kitchen chemistry activities, such as melting butter, coconut oil or chocolate to make no-bake cookies (refrigerated); making jelly (jello); making fruit ice-blocks.
 - Describe what happened to the ingredients when making the food.
 - Compare the amount of heat necessary to melt butter and sugar by placing both butter and sugar in a warm (but not hot) place. Draw conclusions about the melting temperatures of different materials.
 - Inflate and over-inflate balloons to show that air takes up space and can be contained.
 - Blow bubbles.
 - Make a chart divided into 3 sections: solid, liquid, gas. Use rice bubbles or similar to show how the particles would look inside a solid object, a container or liquid, and a container of gas. On your chart, describe the properties of a solid, liquid, gas
- Solid:** doesn't change shape; doesn't move around; can be changed by heat
- Liquid:** flows smoothly from one place to another; can be clear or not clear; has not shape of its own; can be changed by heat
- Gas:** can't see most gases; air is a gas; wind is moving air that you can feel; it will fill a bubble or balloon; you can breathe it.

- Discuss the properties of solids, liquids and gases.
- Discuss solids and liquids in relation to volcanic lava and rocks.
- Measure room temperature using a thermometer. Time how long it takes water to boil and record the rising temperature on a thermometer every minute. Graph the rise in temperature from cold to boiling point.

Values education

God is Truth

Respect for Truth

Respect for truth means that ...

- we live by what we know to be true
- we obey what is true
- we do the things our parents and teachers tell us to do.
- we do what the Bible tells us to do.
- we follow the laws that are right and true.

Activities

1. Dad is driving to an important meeting and he is late. The road sign says not to go faster than 60 kilometres per hour. What should Dad do?
2. Mum has asked you to clean your room. Your friend wants you to come and play. What should you do?
3. You find a coin in the school playground. What should you do?
4. You have promised your grandma that you will help her with the sopping but your friend has just dropped in to see you. What should you do?

What does the Bible say about respect for truth?

1 John 3:24 Those who obey His commands live in Him.

1 John 5:3 This is love for God: to obey His commandments.

Psalms 25:2 Guide me in your truth and teach me, for you are God my Saviour, and my hope is in you all day long.

Practical Science Year 3

Will the Ice Melt and Overflow?

<http://www.sciencekids.co.nz/experiments/iceoverflow.html>

At first thought you might think that an ice cube sitting at the very top of a glass would eventually melt and spill over the sides but is this what really happens? Experiment and find out!

What you'll need:

- A clear glass
- Warm water
- An ice cube

Instructions:

1. Fill the glass to the top with warm water.
2. Gently lower in the ice cube, making sure you don't bump the table or spill any water over the edge of the glass.
3. Watch the water level carefully as the ice cube melts, what happens?

What's happening?

Even though the ice cube melted the water doesn't overflow. When water freezes to make ice, it expands and takes up more space than it does as liquid water (that's why water pipes sometimes burst during cold winters). The water from the ice takes up less space than the ice itself. When the ice cube melts, the level of the water stays about the same.

Solid, Liquid, Gas guessing game

Ask the student to make up riddles about things that are solid, liquid or gas. They can write their riddles and then read them to someone who has to guess the answer. For example, "What is solid, wooden, tall and attached to our wall?" (a book case)

Liquids take the shape of their container

Explain to the student that liquids take the shape of their containers. Experiment pouring liquids into containers of different shapes and sizes. Then have the student pour the same amount of liquid into each container. How do the shapes change? Why do some containers appear to have more liquid than others?

Balloon animals

Ask the student to blow up balloons to make different shapes. Balloons can be small, large, tube-shaped etc. Encourage students to make balloon animals to show how gas can be moved and contained. Compare how liquids and gases fill their containers.

Art Year 3

God is Truth

Topic: States of matter

Biblical connection: God created the universe with scientific laws that are true, dependable & unchanging

Bible art as a wall display: Shadrach, Meshach and Abednego in the fiery furnace.

God says “Yes” to all His promises. (2 Corinthians 1:20)

Painting

How can we change liquid paint? Experiment with making paint thick, (by adding flour or glue) or thin (by adding water). Experiments with different techniques using thick and thin paint,

Examples for thin paint:

Coloured wash over crayon drawings

Straw blowing of thin paint, and holding page at various angles and allowing paint to run down to make patterns.

Examples for thick paint:

Make textures by applying thick paint to paper, and making patterns with pieces of corrugated cardboard, ice block sticks and other objects to give interesting patterns and textures in the paint.