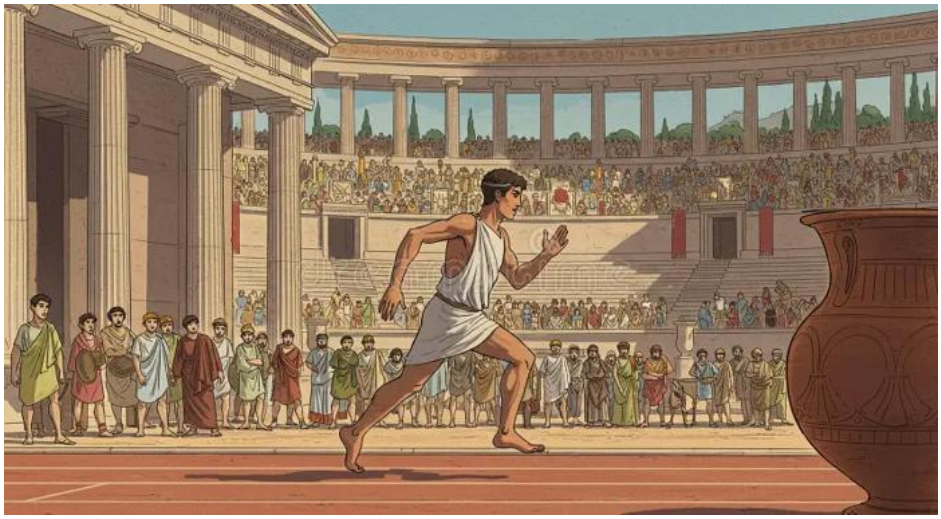
Unit 4

“Ancient Greece

(Determination & Perseverance)”



Grades

0 - 6

SCIENCE

Science & Technology (Grades 0-6)

"Ancient Greece + (Determination & Perseverance)"

SUMMARY:

This Science & Technology course for Grades Foundation to Year 6 explores the world of Ancient Greece through the character theme of **Determination & Perseverance**, using storytelling, practical experiments, mathematics, astronomy, engineering, physiology, health, and scientific observation to inspire curiosity and perseverance. Across eight topics, students investigate famous Greek thinkers such as Archimedes, Pythagoras, Thales, Empedocles, and Hypatia, discovering how courage, persistence, and careful observation helped people solve problems and better understand the natural world. Topics include simple machines, floating and displacement, pulleys, geometry, patterns in nature, music and mathematics, astronomy, observation of creation, matter and the states of matter, human movement, fitness, physiology, and ancient medicine. Each lesson combines rich informational storytelling with narration, discussion questions, hands-on experiments, reflective journaling, and biblical connections that present scientific inquiry as an act of wonder and worship.

Throughout the course, students are encouraged to see science not merely as information to memorise, but as a courageous and determined pursuit of truth within God's orderly creation. The unit consistently connects scientific discovery with character formation, teaching students to persevere through challenges, ask thoughtful questions, observe carefully, and use wisdom creatively to help others. Mathematical patterns, music, astronomy, engineering, and natural observation are repeatedly presented as evidence of design, order, and beauty within the universe. Practical investigations such as building Archimedes' screws and pulleys, creating catapults, exploring sound and rhythm, mapping constellations, and conducting nature observations help students engage actively with scientific concepts while developing habits of resilience, patience, and disciplined thinking. The course integrates biblical reflection throughout, encouraging students to recognise God's wisdom and glory through the study of the created world.

RESOURCES:

All the information you need is included within the **informational story** in each lesson plan. The hands-on or creative activities are designed to use materials you will likely have already in your home, but you should maintain some **art and craft materials**. Each child will also need a **Science Journal** (i.e., a lined exercise book or Botany book for nature study notes, writing responses to questions, and writing activities). It is also helpful to have a good **dictionary**.

Three lessons each week, with hands-on activities and extra research will keep the children fully engaged. To enjoy a richer learning experience, you could supplement the lessons with extra books about topics of interest that arise during the course.

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Contents

Topic	Description	Page
Topic 1	Greek Scientist - Archimedes	
Topic 2	Mathematics in Science	
Topic 3	Observing the Nature of Things	
Topic 4	Measuring the World, Moon & Stars	
Topic 5	Human Body Movement	
Topic 6	Basic Physiology & Health	
Topic 7	Fitness	
Topic 8	Ancient Medicine	
Topic 9	Ancient Electricity & Magnetism	
Topic 10	Assessment:	

TOPIC 1	GREEK SCIENTIST ARCHIMEDES

Lesson 1: Archimedes – The Courage to Think Differently

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story: "Archimedes and the Floating Crown"

Over 2,000 years ago, in the city of Syracuse, there lived a man who loved puzzles – not jigsaw puzzles, but puzzles about how the world works. His name was Archimedes. He was a scientist, inventor, and mathematician, and he loved to ask bold questions no one else was asking.

One day, the King of Syracuse had a problem. He gave a goldsmith some gold to make a crown. The crown looked beautiful, but the king wasn't sure it was made of pure gold. Maybe the goldsmith had cheated and mixed in some cheaper metal.

The king asked Archimedes to find out – but there was a problem. Archimedes wasn't allowed to break or melt the crown to test it. He had to find another way. Days passed. Archimedes thought and thought.

Then one evening, as he stepped into his full bathtub, water spilled over the sides. He froze. Suddenly, his eyes lit up with excitement. He leapt from the tub, shouting, "Eureka!" – a Greek word that means "I found it!"

He had realized something amazing: when something goes into water, the water pushes back. The heavier the object, the more water it pushes out. That meant he could test the crown by seeing how much water it displaced compared to a lump of real gold the same weight.

He tried it, and sure enough – the crown pushed out more water. That meant it wasn't pure gold. The king was amazed, and the goldsmith was caught!

But Archimedes didn't stop there. He kept asking questions. During a war with Rome, when Syracuse was under attack, Archimedes designed clever machines using pulleys, levers, and mirrors to defend the city. He didn't use swords – he used his brain.

Even though many people laughed at his strange ideas, Archimedes kept thinking and inventing. He wasn't afraid to try something new or to look at things differently.

Archimedes had the courage to use his mind in powerful ways. Today, we still use ideas based on his discoveries in science, boats, engineering, and math. All because one man had the courage to think differently.

B) Narration

Parent/Tutor:

"Now I'd love for you to tell me the story in your own words. Who was Archimedes? What problem did he solve? What did he shout when he figured it out? What made him brave?"

Encourage as much detail as possible. If needed, prompt with:

- "What happened in the bathtub?"
- "What was Archimedes trying to figure out?"
- "How did he protect the city?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What was Archimedes trying to fix?
- What happened when he got in the bathtub?
- What does "Eureka!" mean?
- Why is it good to ask questions and try new things?

ii) Middle Primary Students (Ages 8–10):

- Why couldn't Archimedes just break the crown to test it?
- What did he learn about how water pushes back?
- How did he use his thinking to help protect his city?
- What do you think made Archimedes brave?

iii) Upper Primary Students (Ages 11–12):

- How did Archimedes solve a problem without using force or breaking rules?
- What does his story teach us about curiosity and creativity?
- When have you had to solve a problem in a new way?
- Why does it take courage to think differently, especially when others doubt you?

D) Activity: Sink or Float + Displacement Discovery

Materials:

- Bowl of water
- Small household objects (e.g., cork, spoon, key, rubber ball)

- Clear measuring cup
- Small toy crown (or substitute object) and a same-weight metal item (or similar)
- Towel

Instructions:

1. **Sink or Float Game:**
    - Place each object in the water and predict: will it sink or float?
    - Ask: “Why do you think it floats or sinks?”
    - Explain: Water pushes up. If an object is light and spread out, it may float. If it’s heavy for its size, it sinks.
2. **Displacement Demonstration:**
    - Fill the measuring cup to the top with water.
    - Place one object in the cup and catch the overflow in a bowl.
    - Measure how much water overflowed. Then try with another object of the same weight but different shape.
    - Discuss: “Just like Archimedes, we’re seeing how shape and density matter.”

Archimedes Lesson - Experiment Worksheet

Object Prediction (Sink or Float?)	Actual Result	Why do you think it sank or floated?

Object Prediction (Sink or Float?)	Actual Result	Why do you think it sank or floated?

Say to the students:

"You're doing real science today – just like Archimedes! And you're learning to observe, ask questions, and find answers."

Archimedes Lesson - Journal Reflection Page

Question	My Answer
What did I learn from Archimedes' story?	
What did I find interesting or surprising in the experiment?	
How did I show curiosity today?	
How can I use my thinking to help others?	

E) Biblical Connection

Bible Verse:
"Turn your ear to wisdom and apply your heart to understanding… For the Lord gives wisdom; from His mouth come knowledge and understanding." – Proverbs 2:2–6

Parent/Tutor Says:

"Archimedes was wise because he looked closely at how God's creation works. He used his brain to solve problems and help others. Wisdom isn't just knowing facts – it's using what we know in the right way."

Ask:

- What kind of wisdom did Archimedes use?
- Why do you think God wants us to be curious and ask good questions?

- How can you show courage by thinking differently or standing up for a new idea?

Australian Content Descriptions:

AC9S4U04: examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use (will materials sink or float)

Lesson 2: Archimedes’ Screw – Solving Water Problems

A) Lesson Content

Parent/Tutor Says:

“I’m going to read you a story with things to learn. Now, please listen very carefully and think about the story as I’m reading it, because I’m only going to read it once, and then after I’ve read the story, I want you to tell me everything you can remember about the story. Ok?”

Story: "The Twist That Moved the River"

In the ancient city of Syracuse, where the sun shone hot and the summers were dry, farmers had a big problem. Their crops needed water, but the rivers were far below the level of their fields. Every day, workers carried heavy buckets uphill to water their plants. It was hard work, slow, and tiring. People were getting discouraged.

Archimedes, the great thinker of the city, saw the problem. He watched the farmers struggling and thought, *“There must be a better way to move water.”* He sat by the riverbank, thinking, sketching, and praying for an idea. Day after day, he kept thinking. He didn’t give up.

One afternoon, as he watched a snail crawling up a vine, an idea began to form. The snail’s spiral shell reminded him of something – a twist! What if water could be lifted using a turning motion, like how the snail slowly moved upward?

He found a long hollow tube and a sturdy stick. He wrapped the tube around the stick in a spiral shape, making it look like a screw. Then he rested one end in the river and started turning the stick. Slowly, something amazing happened: water began to rise up through the spiral tube. As he kept turning, the water climbed higher and higher until it poured out the top!

Archimedes had invented a new way to move water: the Archimedes’ Screw.

Farmers were amazed. Now they could use this simple machine to bring water into their fields more easily. They didn’t have to carry heavy buckets anymore. This invention saved time, effort, and energy.

The Archimedes’ Screw was so useful that people in other countries started using it too. Even today, thousands of years later, this invention is still used in some farms, factories, and even flood control systems.

Archimedes' invention reminds us that God gives people creativity and wisdom to solve problems. Archimedes didn’t give up. He looked carefully at the world, thought deeply, and tried new ideas until he found a solution. He showed courage by thinking differently, and determination by not quitting.

B) Narration

Parent/Tutor Instructions:

"Now I'd like you to tell me everything you remember from the story. What was the problem? What did Archimedes invent? How did it help the people?"

Let the child retell the story in their own words. Encourage creativity and details. You can gently prompt with:

- "What did Archimedes see the farmers doing?"
- "What did the snail remind him of?"
- "How did the Archimedes' Screw work?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What problem were the farmers having?
- What did Archimedes build to help?
- How did turning the screw move water?
- Why is it brave to keep trying when something is hard?

ii) Middle Primary Students (Ages 8–10):

- How did Archimedes use what he saw in nature to help him invent?
- Why did the screw make it easier to move water?
- What do you think made Archimedes determined?
- How can we use the gifts God gives us to help others?

iii) Upper Primary Students (Ages 11–12):

- Explain how the Archimedes' Screw works in your own words.
- What does this invention show about problem-solving and persistence?
- What would you do if you had a hard problem to solve like Archimedes?
- How can trusting in God's wisdom help us be brave thinkers?

D) Activity: Build a Simple Archimedes' Screw

Option 1: Hands-On Build (if materials are available)

Materials Needed:

- Clear plastic tubing (about 1 meter)
- Dowel, stick, or broom handle
- Tape
- Bowl of water
- Cup for catching water

Instructions:

1. Wrap the plastic tube around the stick in a spiral (leave some space between the coils).
2. Tape the tube in place so it doesn't unravel.
3. Place one end of the screw in the bowl of water, and the other end higher up, resting on a chair or box.
4. Slowly turn the stick. Watch the water move up the spiral and out the top!

Say to the student:

"Just like Archimedes, we're using design and motion to solve a problem. You're inventing!"

Option 2: Observation If building materials aren't available, search together for a child-friendly video showing an Archimedes' Screw in action. Ask the child to describe what they see and draw a simple diagram of how it works.

Archimedes Screw - Journal Reflection Page

Question	My Answer
What problem did Archimedes solve?	
How did he get his idea for the screw?	
What did I notice when I turned my own screw model?	
What did this teach me about determination?	

E) Biblical Connection

Bible Verse:
"All this also comes from the Lord Almighty, whose plan is wonderful, whose wisdom is magnificent." – Isaiah 28:29

Parent/Tutor Says: "This verse reminds us that all wisdom comes from God. Just like God gave Archimedes the wisdom to solve a problem with creativity, He gives us ideas too. When we face hard things, we can ask God for help – and He often gives us new ways to understand or try again."

Ask:

- What does this story teach you about God's wisdom?
- When have you had to be brave to solve a problem?
- How can you use creativity and courage to help others, like Archimedes did?

Lesson 3: Archimedes' Pulleys – Lifting Big Things with Small Effort

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A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story: "The Day Archimedes Lifted a Ship"

In the bustling port city of Syracuse, the docks were full of people loading heavy cargo onto ships. Large crates, barrels, and even stones were being lifted – very slowly – by workers straining with all their might. The sun was hot, the work was hard, and everyone looked exhausted.

Archimedes walked by, carrying a scroll and a tool he had made himself. He paused to watch the men heave and struggle. A large ship needed repairs, but no one could lift it from the water. It was just too heavy.

One of the workers groaned, "It would take ten men to move this ship – maybe more!"

Archimedes looked at the ropes and wheels nearby and said, "What if I told you I could lift that ship by myself?"

The workers laughed. "You? You're not even strong!"

But Archimedes simply smiled and got to work. He attached a pulley – then another, and another – threading ropes through wheels, creating a clever system. He called it a **compound pulley**, and it made each pull easier.

When everything was ready, he grabbed the end of the rope and pulled.

At first, nothing happened. Then, slowly, the ship began to move. The workers stared in shock. Archimedes kept pulling, and the ship rose from the water, just enough for it to be repaired.

The crowd gasped. One man clapped, then another, until everyone was cheering.

"You see," Archimedes said, "with the right tools and a little wisdom, one person can do what ten men cannot."

From that day on, Archimedes was not only known as a great thinker – but also a man who believed that **smart ideas could solve big problems**.

His pulleys helped move stones, ships, and cargo more easily. And his words still remind us today that **wisdom is stronger than muscle** when used with determination and care.

B) Narration

Parent/Tutor:

"Now I'd love to hear the story in your own words. What happened on the dock? What did Archimedes do? How did he use pulleys? Why were the people surprised?"

Encourage your child to share details. Use prompts if needed:

- "What did the workers try to lift?"
- "What did Archimedes say he could do?"
- "How did the pulley help him?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What was Archimedes trying to lift?
- What tool did he use to help?
- Was it easier or harder with the pulley?
- Why is it good to think before we work hard?

ii) Middle Primary Students (Ages 8–10):

- How did Archimedes make the job easier?
- What does a pulley do?
- Why were the people surprised by what Archimedes did?
- How does wisdom help us in life?

iii) Upper Primary Students (Ages 11–12):

- What is the scientific advantage of a pulley system?
- What does this story teach about problem-solving and creativity?
- When is it better to use wisdom rather than just effort?
- How can God use our minds to serve others, like Archimedes did?

D) Activity: Make a Simple Pulley

Materials Needed:

- Shoelace or sturdy string
- Empty thread spool, or toy wheel (pulley)
- Ruler or stick to rest spool on
- Small toy or light object
- Tape

Instructions:

1. Lay the ruler across two chairs or boxes so it forms a bridge.
2. Thread the shoelace through the spool and rest the spool on the ruler so it can turn.
3. Tie one end of the string to a small toy.

4. Pull the other end gently to lift the toy.

Extension Idea: Try lifting the toy without the pulley. Is it harder or easier? Try adding a second spool if you have one – see if that changes the effort.

Say to the student:

"Just like Archimedes, you're using a simple machine to lift something heavy with less effort. You're learning how to work smarter!"

Archimedes Pulley - Journal Reflection Page

Question	My Answer
What problem did Archimedes solve in the story?	
What tool did he use, and how did it help?	
What did I learn about how pulleys work?	
When have I needed to use wisdom instead of strength?	

E) Biblical Connection

Bible Verse:
"Wisdom makes one wise person more powerful than ten rulers in a city." – Ecclesiastes 7:19

Parent/Tutor Says:

"This verse shows how powerful wisdom really is. Archimedes didn't use strength – he used the brain God gave him. In the same way, when we face challenges, we can pray for wisdom and ask God to help us think clearly and work smart."

Ask:

- How did Archimedes use wisdom instead of strength?
- What kind of problems in your life might need smart thinking?
- How can courage and determination help you think of new ideas, even if people laugh or doubt you?

Lesson 4: Archimedes' War Machines – Defending with Brains, Not Brawn

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A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story: "Archimedes and the Attack on Syracuse"

Long ago, in the city of Syracuse, a great danger was coming. Roman ships lined the coast, preparing to attack. Inside the city, people were afraid. Soldiers rushed to the walls with swords and bows, but it didn't feel like enough. The enemy was strong, well-armed, and confident.

But one man stood calmly on the city wall. His name was Archimedes.

He was no soldier. He wore no armour. He didn't carry a sword. He was a scientist – an inventor. And he had a plan.

Instead of fighting with weapons, Archimedes used his mind. He had spent years studying how things move – how force, levers, and motion could be used in surprising ways.

With help from local craftsmen and builders, Archimedes designed machines to defend the city. He built **catapults** that could throw heavy stones far into the sea. He created **giant cranes and levers** that could lift ships partly out of the water and tip them over. Some even believe he used **mirrors** to reflect sunlight and set enemy sails on fire.

When the Roman ships came close, Archimedes' machines were ready. From behind the city walls, his inventions began to work. Huge stones flew through the air, crashing into ships. Wooden beams swung out from towers, smashing enemy equipment. Soldiers who had laughed at the idea of a "science war" now turned their ships around in fear.

The people of Syracuse cheered. Archimedes had done what no one expected – he had defended a city not with muscle, but with courage, creativity, and faith in his God-given mind.

Though Syracuse was later defeated, Archimedes' work was remembered for thousands of years. He showed the world that **wisdom, courage, and determination can be stronger than weapons**.

B) Narration

Parent/Tutor Says:

"Now I'd like you to retell the story in your own words. What happened to the city of Syracuse? What did Archimedes do to help? What kind of machines did he invent?"

Encourage full, creative retelling. Prompt if needed:

- "How did Archimedes protect the city?"
- "What were the Romans surprised by?"
- "What made Archimedes so brave?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- Who was trying to attack the city?
- What kind of tools did Archimedes build?
- Was he strong, or smart, or both?
- How can God help you be brave like Archimedes?

ii) Middle Primary Students (Ages 8–10):

- What machines did Archimedes use to protect the city?
- Why did the people trust him?
- Do you think it takes courage to try something new when others are scared?
- How can we use our minds and ideas to solve problems in life?

iii) Upper Primary Students (Ages 11–12):

- How did Archimedes turn science into a defence strategy?
- What does this story teach about the power of wisdom in crisis?
- Why do you think courage and faith were important for Archimedes during the attack?
- Can you think of a time when you needed to stay calm and think wisely, even if others were worried?

D) Activity: Build a Mini Catapult

Materials Needed:

- 6 craft sticks (popsicle sticks)
- 4 rubber bands
- Plastic spoon
- Cotton ball or paper ball

Instructions:

1. Stack 5 craft sticks and secure both ends with rubber bands.
2. Slide the 6th stick through the middle of the stack (sideways like a lever).
3. Tape or rubber-band the spoon to one end of the 6th stick.
4. Hold the base with one hand, press down the spoon, and release to launch!

Ask:

- "How far did your cotton ball go?"
- "What happens when you push the spoon down harder?"
- "What kind of things could a full-size catapult launch?"

Say to the student:

“You’re learning about force and motion – the same ideas Archimedes used. With teamwork and courage, small tools can solve big problems!”

Archimedes War Machines - Journal Reflection Page

Question	My Answer
What was happening in the city of Syracuse?	
How did Archimedes help defend the city?	
What did I learn about how machines can be used to solve problems?	

E) Biblical Connection

Bible Verse:
"It is God who arms me with strength and keeps my way secure." – Psalm 18:32

Parent/Tutor Says:

“This verse reminds us that God gives us strength – not just in our bodies, but in our minds and our hearts. Archimedes used his strength in a different way. His faith, wisdom, and determination helped protect people when they were afraid.”

Ask:

- What does this verse tell us about where our strength comes from?
- What kind of strength did Archimedes show?
- How can courage and wisdom work together in your life – at home, in school, or when something feels hard?

TOPIC 2	MATHEMATICS IN SCIENCE

Lesson 5: Pythagoras – Patterns, Numbers, and Persistence

This lesson was created to spark wonder in math, encourage deep thinking, and connect learning with courage, perseverance, and faith.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about it. Ok? Ready? Let's begin."

Story: "The Man Who Saw Numbers in the Stars"
A long time ago in Ancient Greece, in a town near the sea, a boy named **Pythagoras** was born. He was quiet and thoughtful, and while other boys played games in the sand, Pythagoras would sit and draw shapes with a stick. He noticed things that others didn't – how the waves rolled in patterns, how the stars moved across the sky, and how music made a rhythm that felt like it had numbers in it.

As he grew older, Pythagoras began to study with wise teachers. He travelled to faraway places like Egypt and Babylon, learning all he could about numbers, shapes, and the world. He especially loved **geometry** – the way shapes and lines could show balance and design. To Pythagoras, **math wasn't just numbers – it was a way to understand the beauty and order God had built into the universe**.

One night, Pythagoras walked outside and looked up at the stars. "These stars are not scattered by chance," he whispered. "They move in patterns. They sing like a choir of numbers." He believed that everything in the world – from the stars above to the tiniest pebble – followed rules that could be discovered with **careful study and hard work**.

Eventually, Pythagoras started his own school. But it wasn't like a normal school. His students had to promise to work hard, stay quiet during lessons, and never give up. He taught them how numbers could be used to build, to make music, and to explore the mysteries of the world.

One of the most famous things Pythagoras discovered was a special rule about **triangles**. He noticed that in a right-angled triangle, if you made squares on each of the three sides, the area of the two smaller squares would always add up to the area of the biggest square. This became known as the **Pythagorean Theorem**. People still use it today to build houses, design bridges, and even make video games!

But Pythagoras's greatest lesson wasn't just about triangles or stars – it was about **persistence**. He taught that **real learning takes time**, and that it takes **courage to keep thinking and trying**, even when the answers don't come right away.

He believed that studying and discovering truth was a way of honouring God's design. When we notice patterns, order, and beauty, we are seeing a little bit of the Creator's wisdom.

Pythagoras didn't have all the answers, and not everything he believed was right. But his deep curiosity and his determination to seek truth helped shape the world of math and science forever.

Even today, when we study geometry or see patterns in nature, we can remember what Pythagoras believed – that the universe is not random, but filled with purpose and meaning.

B) Narration

Parent/Tutor Says:

"Now it's your turn to tell me what you remember about the story. What did Pythagoras love? What did he discover? What was special about the way he thought?"

Let your child retell the story in their own words. Prompt if needed:

- "Where did Pythagoras go to learn?"
- "What did he notice about the stars and music?"
- "What was the triangle rule he discovered?"
- "Why was persistence important to Pythagoras?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What did Pythagoras like to study?
- What shape did he use to make a discovery?
- Can you see patterns in your room or outside?
- Who made the stars and the shapes in nature?

ii) Middle Primary Students (Ages 8–10)

- Why did Pythagoras think math was beautiful?
- What is a right-angled triangle?
- How can noticing patterns help us in life?
- How does studying carefully show courage?

iii) Upper Primary Students (Ages 11–12)

- Why do you think Pythagoras saw learning as a way to honour truth?
- What does the Pythagorean Theorem tell us about God's design?
- What's the connection between order in math and God's character?
- Can you think of a time you kept trying even when something was hard?

D) Activity

Activity Title: "Shape & Pattern Builders"

Supplies Needed:

- String, sticks, straws, or toothpicks
- Tape or glue
- Paper and pencils
- Ruler (optional)

Part 1: Build a Right-Angled Triangle

"Let's build a triangle like Pythagoras studied! Use three pieces of string or sticks. Make sure one corner is a right angle (like the corner of a book)."

Show them how to build a triangle with one 90° angle. Discuss how builders still use right angles to make strong and balanced structures.

Part 2: Pattern Art

"Now let's make a pattern using shapes like squares, triangles, and circles. Use your imagination and look for balance and symmetry – just like Pythagoras saw in nature."

Encourage them to:

- Make a border pattern
- Draw repeating shapes
- Use a ruler to explore straight lines and angles

E) Biblical Connection

Verse:
1 Corinthians 14:33 – *"For God is not a God of disorder, but of peace."*

Parent/Tutor Says:

"Pythagoras noticed that the world had order – that things made sense and worked in patterns. That's because God is not a God of chaos. He created a world that reflects His wisdom and peace."

Ask: "What does it mean that God is not a God of disorder? How does learning math or paying attention to patterns help us grow in faith and determination?"

Encourage the child to see learning as an act of worship – whether it's math, music, or science – because it all points back to the Creator.

Close in prayer: "Dear God, thank You for making a world that shows Your order and beauty. Help us to learn with joy and patience, even when it's hard. Give us courage and persistence like Pythagoras, and help us see You in everything we discover. Amen."

Lesson 6: Math in Nature – Seeing God's Patterns

Math in Nature – Seeing God's Patterns.
This lesson encourages observation, wonder, and worship as students discover the beauty of God's design in creation through math and patterns.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "The Garden Walk: Pythagoras Sees the Creator's Design"
(Approx. 650 words)

One sunny morning, a wise Greek philosopher named **Pythagoras** went for a walk in a peaceful garden. Though he lived long ago, Pythagoras loved something that's still important today – **numbers and patterns**. He believed numbers weren't just for counting – they could unlock the secrets of the universe.

As he walked, he noticed the **spirals of a sunflower**, the **perfect six-sided shapes of snowflakes**, and the **mirror-like symmetry of a butterfly's wings**.

"Even here," he whispered, smiling at a blooming daisy, "math is at work."

He bent down and counted the petals. There were **13**. Then he looked at another flower: **8 petals**. Then another: **21 petals**. These weren't random numbers. Pythagoras had seen this before – **numbers that appear in nature**, growing in a special sequence. These numbers are part of something we now call the **Fibonacci sequence** – where each number is the sum of the two before it: 1, 1, 2, 3, 5, 8, 13, 21…

Pythagoras didn't know this exact name, but he was amazed by the way math showed up in **leaves**, **pinecones**, and **spirals of shells**. He believed the world had been made with **order**, not chaos.

As he walked further, Pythagoras paused under a tree and looked up at the sky. The clouds floated by in patterns. A spider web shimmered in the sun – perfectly woven. A bird's song rang out in rhythm.

"These patterns," he thought, "must come from a great Designer. Nothing this beautiful and ordered could have happened by accident."

Though Pythagoras lived before Jesus, he was on the right path. Many years later, people would read in the Bible that *"since the creation of the world God's invisible qualities... have been clearly seen, being understood from what has been made"* (Romans 1:20).

God, the Creator of all things, wrote His wisdom into the world – **not only in stories or Scripture, but also in flowers, stars, snowflakes, and seashells**. Just like words in a book, these things tell us something about **God's mind and heart**.

Some people think math is boring or hard. But Pythagoras believed – and many scientists and mathematicians still believe – that **math is a kind of music written by God into the universe**. It helps us see that God is not only powerful, but also **peaceful**, **creative**, and **wise**.

Pythagoras continued walking, listening, observing, and counting. He didn't stop because he believed truth was worth seeking, and beauty was worth noticing. He knew that when we pay attention to the little things in nature, we discover something very big: **God's invisible fingerprints**.

B) Narration

Parent/Tutor Says:

"Now I want you to tell me the story in your own words. What did Pythagoras see in the garden? What amazed him? What did he believe about numbers and patterns?"

Encourage your child to speak freely. If they need prompts:

- "What did Pythagoras notice about the petals?"
- "What kinds of patterns did he see in nature?"
- "What do these patterns tell us about God?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What shapes did you see in nature?
- How many petals did your flower have?
- Do you think God likes patterns?
- Why do you think God made things beautiful?

ii) Middle Primary Students (Ages 8–10)

- What are some examples of math we saw in nature today?
- Why do you think flowers and pinecones follow number patterns?
- What do these patterns tell us about the way God made the world?
- How can we worship God by paying attention to what He made?

iii) Upper Primary Students (Ages 11–12)

- What is the Fibonacci sequence, and where did you see it today?
- How is math a way to understand God's design?
- Why do some people ignore or miss the beauty in nature?
- What does it take to be someone who slows down and sees what others miss?

D) Activity

Activity Title: "Nature Pattern Hunt & Drawing"

Option 1: Nature Walk (if outdoors is possible)

"Let's go outside and look for patterns! Look closely at leaves, petals, bark, spider webs, or even clouds. Can you find symmetry, spirals, or repeated shapes?"

1. Bring a clipboard or notebook to draw or record findings.
2. Count petals or leaf points. Sketch shapes or spirals.
3. Optional: Take photos of any interesting patterns.

Option 2: Indoor Exploration (if staying inside)

"Let's look at photos of nature – flowers, shells, snowflakes, or animals – and find patterns!"

1. Use nature picture books or safe online image searches (e.g., sunflower spiral, pinecone pattern, butterfly wings).
2. Draw at least **two examples** of math in nature (like a spiral shell and a star-shaped flower).
3. Label them and describe what you see (e.g., "5 petals – a repeating number").

E) Biblical Connection

Verse:
Romans 1:20 – *"For since the creation of the world God's invisible qualities – his eternal power and divine nature – have been clearly seen, being understood from what has been made..."*

Parent/Tutor Says:

"This verse reminds us that even though we can't see God with our eyes, we can see what He's like through the world He made. When we notice the order, design, and beauty in creation, we are seeing a reflection of who God is."

Ask:

- "What invisible qualities of God do you see in nature?"
  (e.g., creativity, intelligence, beauty, kindness, strength)
- "How can learning and noticing be an act of worship?"
- "When you study hard things – like math – how does that take courage and determination?"

Close in prayer:

"Dear God, thank You for the beauty You've hidden in nature. Thank You for showing us Your order and goodness in petals, shells, snowflakes, and stars. Help us to pay attention, be curious, and always see Your glory in what You've made. Amen."

Lesson 7: Math in Music – The Sound of Numbers

***Math in Music – The Sound of Numbers*.**
This lesson brings together math, music, creativity, and worship – using storytelling and hands-on discovery to show how even sound points to God's order and beauty.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "Pythagoras and the Singing Strings"
Many years ago, in Ancient Greece, there lived a man who loved numbers more than anything else. His name was **Pythagoras**. He saw numbers not just in shapes or stars – but in **sound**.

One day, as he walked past a blacksmith's shop, Pythagoras heard something strange. Each hammer hitting the metal made a different sound. One was low and deep, another was high and light. He stopped and listened carefully. "Why do they sound different?" he wondered. "Is there a pattern?"

Later that day, he found a stringed instrument – a kind of early harp. He plucked a long string: *twang!* A low note. Then he plucked a shorter string: *ting!* A higher note. He tried it again, and again, and again. Always the same result – the shorter the string, the higher the note.

Soon, Pythagoras began measuring the lengths of the strings. He found that **if you cut a string exactly in half, it made a sound one octave higher**. That means it was the same note, but brighter. It wasn't random. It was **mathematical**. He began to make charts of what we now call **ratios** – 1:2, 2:3, 3:4. These were the special number relationships that made music sound pleasing to our ears.

Pythagoras called this idea the **"music of the spheres."** He believed the whole universe – planets, stars, even time itself – moved with a kind of music. We may not hear it with our ears, he said, but it's always there. A rhythm. A song. A pattern placed by the Creator.

Even though Pythagoras didn't know the one true God, he was seeing what Christians would later understand: **God made the world with order**, and that order could even be found in music.

Thousands of years later, musicians still use numbers. A song in **4/4 time** means there are 4 beats in every measure. Chords and scales follow mathematical patterns. Even a simple rhythm – clap, clap, pause – has math in it.

So, when we sing, tap, drum, or strum, we are not just making noise – we're joining in a kind of mathematical worship.

The Bible says, *"Make a joyful noise to the Lord, all the earth; break forth into joyous song..."* (Psalm 98:4). When we play or sing music that brings glory to God, we are using both our **creativity and our math brains** to praise Him.

Pythagoras may not have known Jesus, but his discovery helped us understand that even **music has rules**, and those rules lead us to something deeper – **the beauty and peace of God's design**.

B) Narration

Parent/Tutor Says:

"Now I'd like you to tell me everything you can remember about the story. What did Pythagoras discover? What did he learn from strings and sounds?"

Encourage your child to retell the story in their own words. You may ask:

- "What did Pythagoras hear at the blacksmith's shop?"
- "What happened when he plucked different strings?"
- "What did he believe about music and the universe?"
- "How does music connect to God?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What happens when you pluck a short string?
- Did all the rubber bands sound the same?
- Can you hear beats in a song?
- Who made sound and music?

ii) Middle Primary Students (Ages 8–10)

- What did Pythagoras learn about sound and strings?
- What is an octave?
- Why do you think music has rules and patterns?
- How does playing music show God's order?

iii) Upper Primary Students (Ages 11–12)

- What is a ratio, and how does it relate to sound?
- What do time signatures like 3/4 or 4/4 tell us about a song?
- Why do you think the universe is sometimes described as having a rhythm or "music"?
- How could learning music grow our character in courage or perseverance?

D) Activity

Activity Title: "Rubber Band Harp & Rhythm Claps"

Supplies Needed:

- An empty tissue box or small cardboard box
- Several rubber bands (different lengths/thicknesses if possible)
- A ruler or pencil (optional, to use as a bridge)
- Paper and markers for rhythm drawing

Part 1: Make a Rubber Band Harp

1. Stretch 3–5 rubber bands over the open part of the box.
2. Vary the lengths or thicknesses to produce different tones.
3. Optional: Slide a pencil under the rubber bands to lift them and improve sound.

Parent/Tutor Says:

"Now pluck each rubber band. Which makes a low sound? Which is high? Try making one shorter – what happens?"

Let children experiment, observe, and describe how length affects pitch – just like Pythagoras!

Part 2: Rhythm Clapping Game

1. Clap in **4-beat patterns**: "Clap-clap-clap-clap." Try different speeds.
2. Try **3-beat patterns**: "Clap-clap-pause. Clap-clap-pause."
3. Make a fun pattern together and repeat it.

"Can you clap a beat that someone else can copy? Can you count out loud while you do it?"

This teaches time signatures and helps students feel the math in music.

E) Biblical Connection

Verse:
Psalm 98:4 – *"Make a joyful noise to the Lord, all the earth; break forth into joyous song and sing praises!"*

Parent/Tutor Says:

"This verse reminds us that music is not just fun – it's a way to worship. When we sing or play music, we are using math and beauty to give praise to God!"

Ask:

- "How can math help us worship God through music?"
- "What does it mean to make a joyful noise – even if you're still learning?"
- "How can learning an instrument, clapping a beat, or trying new things show courage and determination?"

Close in prayer:

"Dear God, thank You for the gift of music. Thank You for giving us sound and numbers and creativity. Help us to use what we learn – whether it's clapping or plucking or singing – to make joyful music that gives You glory. Amen."

Lesson 8: Math in the Stars – Astronomy and Measurement

Math in the Stars – Astronomy and Measurement.
This lesson explores how early thinkers like Pythagoras used math to study the heavens and how this points us to God's order, creativity, and purpose in creation.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "Measuring the Heavens"
A long time ago, in the land of Greece, a wise man named **Pythagoras** looked up at the sky and was filled with wonder. The stars glittered like diamonds scattered across velvet. They weren't random, he believed. They moved in **patterns**, and he was determined to understand them.

Every night, Pythagoras would go outside and watch the stars. He noticed that the same constellations – groups of stars forming pictures – came back again and again. The **Big Dipper**, for example, always pointed to the **North Star**. Other constellations only appeared in certain seasons. He began to think: "If I can measure the stars, maybe I can measure time itself."

He believed the universe had a kind of music and order to it – what he called the **"harmony of the spheres."** To Pythagoras, the planets and stars moved like instruments in a great orchestra, each in rhythm with the others.

But how could he measure something so far away?

That's when **geometry** came in. The Greeks had already studied shapes and angles. They knew that a triangle could help measure the height of a building – why not use it to guess how far away a star was? By watching how stars moved across the sky each night, and measuring their angles at different times of the year, Pythagoras and others began to understand the **movement of the earth and sky**.

Over time, these careful measurements helped people create **calendars**, predict **eclipses**, and even figure out when to plant crops. Long before telescopes, the Greeks used their eyes, their minds, and **math** to study the heavens.

And what they found amazed them.

They saw that the stars followed rules. The sun rose and set in a pattern. The moon had phases that repeated every month. Seasons changed in a cycle – spring, summer, autumn, winter – then came around again. Everything had **order**.

Though Pythagoras didn't know the one true God, his discoveries helped prepare people to understand a deeper truth: **the Creator of the stars is a God of patterns, purpose, and peace.**

Much later, in the Bible, we read that God made the stars *"for signs and for seasons, and for days and years"* (Genesis 1:14). God placed the stars in the sky **on purpose** – not just to look beautiful, but to help people understand **time** and **trust in Him**.

Today, scientists still use math to explore space. Telescopes measure the distance between galaxies. Astronomers track comets and space probes. And every bit of it began with men like Pythagoras, who looked up and said, "There must be a pattern here."

God gave us minds to explore, tools to measure, and eyes to see His wonders. The heavens declare the glory of God – and math is one of the ways we can join in that discovery.

B) Narration

Parent/Tutor Says:

"Now it's your turn to tell the story in your own words. What did Pythagoras see? What did he believe about the stars? How did math help him learn?"

Encourage your child to speak freely. Prompt with:

- "What did Pythagoras believe about how the stars move?"
- "How did he use math to study the sky?"
- "Why do the stars help us measure time?"
- "What do the patterns in the sky tell us about God?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What do stars look like at night?
- Did you make a star picture or a real constellation?
- What does it mean that stars follow patterns?
- Who made the stars?

ii) Middle Primary Students (Ages 8–10)

- How did Pythagoras use math to study the sky?
- What are some patterns we can see in the sky (like seasons or moon phases)?
- How does it help us that the stars and sun follow a schedule?
- Why do you think God made the stars with such order?

iii) Upper Primary Students (Ages 11–12)

- What is geometry, and how did Pythagoras apply it to astronomy?
- How did people use the stars to measure time before clocks and calendars?
- How do the heavens "declare the glory of God"?
- How can studying the stars help us grow in wisdom and worship?

D) Activity

Activity Title: "Create and Measure a Star Map"

Supplies Needed:

- Dark-coloured paper (black or navy)
- Star stickers or white/silver crayons/markers
- Ruler or string
- Pencil
- Optional: Printable constellation guide

Instructions:

1. **Create a Constellation Map:**
    - Use stickers or draw stars to make constellations (e.g., Orion, Big Dipper, or create your own).
    - Label your constellations.
2. **Measure Distances:**
    - Use a ruler or a piece of string to measure the space between stars.
    - Talk about which stars are "close" and which are "far" on the page – like how astronomers use angles and distance in the sky.

Parent/Tutor Says:

"Let's imagine we're ancient astronomers like Pythagoras. Look at your star map – what shapes do you see? What would happen if we watched these stars each night? What would change? What would stay the same?"

E) Biblical Connection

Verse: Genesis 1:14 – *"Let them be for signs and for seasons, and for days and years..."*

Parent/Tutor Says:

"God didn't just fill the sky with stars for decoration. He made them to mark time and to help people. Long before people had watches, they looked at the sun and moon. Long before weather apps, they watched the stars to know when to plant and harvest. The sky is one of God's calendars."

Ask:

- "What does the sky teach us about God?"
- "How can we be like Pythagoras – watching carefully and learning patiently?"
- "What do you think it means to study with courage and determination like early astronomers?"

Close in prayer:

"Dear God, thank You for the stars that shine above us and remind us of Your power, order, and care. Help us to be curious, thoughtful, and faithful learners who see Your truth in the world around us. Amen."

TOPIC 3	OBSERVING THE NATURE OF THINGS

Lesson 9: Hypatia – Wisdom in a Dangerous Time

Hypatia – Wisdom in a Dangerous Time.
This lesson celebrates courage, wisdom, respectful speech, and persistence through the inspiring life of Hypatia, while connecting it to biblical values of truth spoken with kindness.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "The Brave Teacher of Alexandria"
A long time ago, in a great city called **Alexandria**, lived a woman named **Hypatia**. The city was known for its huge library filled with scrolls and books from around the world. It was a place where people came to learn about **math, science, and philosophy**.

Hypatia lived many years after the time of Pythagoras and the other Greek thinkers. Most teachers back then were men. Some people believed that women should not speak in public or teach important ideas – but **Hypatia believed that truth and wisdom were for everyone**.

Her father was a teacher too. He taught Hypatia math, astronomy, and logic from the time she was young. She loved to study the stars and solve math problems. She also read books written by Greek philosophers and Christian thinkers alike. As she grew older, Hypatia became one of the most respected teachers in the city.

Every day, people would gather to hear her speak. Some came to learn math and science. Others came just to hear her calm and wise way of explaining hard things. She stood at the front of a large classroom, drawing shapes and numbers on a chalkboard, helping others understand how the world worked.

But Alexandria was going through a hard time. People were arguing about religion and politics. Crowds grew angry. Some people didn't like the way Hypatia shared ideas. Others were jealous of her popularity. There were even people who said, "She shouldn't be teaching – she's a woman!"

But Hypatia didn't yell back. She didn't fight or hide. She kept teaching with courage and **kindness**. She believed that shouting never led to real understanding, but that teaching with calmness and respect could make hearts softer.

One day, a large crowd gathered outside her classroom. Some were there to argue, but others were there to listen and learn. Hypatia stood calmly and asked, “Shall we speak, or shall we shout?” The crowd quieted. With a steady hand, she wrote a problem on the board and began to teach.

Even though her life became more dangerous, she never gave up her love for learning and truth.

Today, people still remember Hypatia as one of the **first female mathematicians and scientists** in history. But even more than her knowledge, they remember her **grace under pressure** – her courage to speak, her respect for others, and her peaceful spirit.

As Christians, we are reminded in the Bible that God calls us to be teachers of truth – **but never quarrelsome**. In **2 Timothy 2:24**, Paul writes, *“And the Lord’s servant must not be quarrelsome but must be kind to everyone, able to teach, and not resentful.”*

Like Hypatia, we can be brave when it’s hard to speak, and we can be kind even when others disagree with us. We can be leaders, teachers, and learners who shine God’s light by standing strong in truth and love.

B) Narration

Parent/Tutor Says:

“Now it’s your turn. Tell me everything you can remember about the story. What did Hypatia do? What made her brave? What did she believe about teaching?”

Let the child respond in their own words. You can prompt them if needed:

- “Where did Hypatia live?”
- “What did she teach?”
- “How did people treat her?”
- “How did she respond when people disagreed?”

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What did Hypatia like to teach?
- Was it easy or hard for her to teach?
- Did Hypatia yell when people were mean?
- How can we be kind like Hypatia?

ii) Middle Primary Students (Ages 8–10)

- Why do you think some people didn’t want Hypatia to teach?
- What do you think made her a good teacher?
- Can you think of a time when you had to be brave to speak or help someone?
- How can we speak truth with kindness?

iii) Upper Primary Students (Ages 11–12)

- How did Hypatia show wisdom even in a dangerous time?
- Why is it important to keep teaching and sharing truth even when it’s hard?

- What does it mean to disagree with someone respectfully?
- How can we prepare our hearts to be both courageous and gentle in our words?

D) Activity

Activity Title: "Teacher for a Day" + Badge Craft

Supplies Needed:

- Paper
- Crayons or markers
- Safety pin or tape
- Scissors (with supervision)

Part 1: Teach Something Simple

"Now it's your turn to be like Hypatia! I want you to be the teacher. Teach me one thing you know – maybe a Bible verse, a math fact, a science idea, or even how to do something fun like folding paper or drawing a shape."

Let the student take the lead, giving them space to explain clearly and confidently.

Part 2: Make a 'Brave Teacher' Badge

- Draw and cut out a circle or star from paper.
- Write on it: **"Brave & Kind Teacher"** or let the child choose a title.
- Decorate it with symbols (chalkboard, star, book, etc.).
- Attach with tape or pin and present it proudly.

"Just like Hypatia, you showed courage and kindness by teaching today. Well done!"

E) Biblical Connection

Verse:
2 Timothy 2:24 – *"And the Lord's servant must not be quarrelsome but must be kind to everyone, able to teach, and not resentful."*

Parent/Tutor Says:

"This verse reminds us that God wants His people to be able to teach others – not by yelling or arguing – but with **gentleness and respect**. Hypatia showed us that we can be brave teachers, even when it's difficult, and that kindness is stronger than fear."

Ask:

- "How can you show kindness when someone doesn't agree with you?"
- "When is it hard to speak up? What gives you courage to do it anyway?"
- "How can being a good listener also help you be a good teacher?"

Close in prayer:

“Dear God, thank You for giving us minds to learn and hearts to teach. Help us to be brave like Hypatia and kind like Jesus. Help us speak truth with love, and never be afraid to share what’s right. Amen.”

Lesson 10: Thales of Miletus – Seeking Wisdom in Nature

***Thales of Miletus – Seeking Wisdom in Nature*.**
This lesson introduces one of the first Greek scientists, encouraging students to observe creation with curiosity and connect it to God's design, with an emphasis on courage, wonder, and perseverance.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "Thales and the Voice of Creation"
Over 2,500 years ago, in a Greek city by the sea called **Miletus**, lived a man named **Thales**. He wasn't a warrior, a king, or a poet. He was something quite rare for his time – he was a **thinker**. While others were busy with farming or trade, Thales spent his time watching clouds, measuring shadows, and asking deep questions about the world.

One of Thales' favourite places to sit was by a river. The water rushed past in constant motion – twisting, turning, flowing. Thales wondered, *"What is everything made of? What gives life its beginning?"*

After much pondering, he made a bold suggestion: **everything comes from water**. Water gives life to plants, animals drink it, it falls from the sky, and it shapes the land. It's everywhere.

Some people laughed at Thales. "You think water made the stars?" they joked. But Thales wasn't discouraged. He believed that **asking questions about nature** was the first step toward understanding how the world worked.

Thales didn't just study rivers – he looked at the **sky**. He noticed how the stars appeared to move in patterns. He began to use **math and geometry** to explain what he saw. He predicted an eclipse by watching the sky's timing. He taught that the world had **order**, and that this order could be discovered if people were **willing to look, think, and learn**.

Many people think of Thales as one of the first scientists. But what made him special wasn't just his ideas. It was his **determination** to learn – even when others mocked him. He didn't have fancy tools. He didn't have books full of answers. What he had was **curiosity**, **persistence**, and a belief that nature was speaking – if only people would stop and listen.

We know from the Bible that **God created the world**, and that creation points us back to Him. Psalm 19:1 says, *"The heavens declare the glory of God; the skies proclaim the work of His hands."* Thales didn't have that verse, but he noticed the same truth: the stars, the water, the seasons – they all seemed to be telling a story.

Today, we can follow in Thales' footsteps – not by believing everything he said, but by sharing his courage to ask, to notice, and to wonder. Whether we study bugs or clouds, stars or soil, we're learning more about the amazing world God made.

And when we do that with **humble hearts** and **determined minds**, we aren't just doing science – we're doing **worship**.

B) Narration

Parent/Tutor Says:

"Now it's your turn to tell me everything you remember about the story. What did Thales do? What questions did he ask? What did he believe about the world?"

Allow your child to retell in their own words. Prompt with:

- "What did Thales think everything was made of?"
- "What did he do when others laughed at him?"
- "What did he study in the sky?"
- "How is Thales like someone who worships God by observing creation?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What did Thales like to look at?
- What did he think everything came from?
- What is something in nature you think is amazing?
- Who made the stars and rivers?

ii) Middle Primary Students (Ages 8–10)

- Why did Thales think water was important?
- What kinds of things did Thales study?
- What would you say to someone who laughed at you for asking deep questions?
- Why do you think God made the world with patterns and beauty?

iii) Upper Primary Students (Ages 11–12)

- What made Thales different from other people at his time?
- What does it take to be someone who observes, questions, and learns deeply?
- Why is it brave to keep learning even when people don't understand?
- How does science help us worship the Creator?

D) Activity

Activity Title: "Nature Notebook: Observation Walk"

Supplies Needed:

- Small notebook or paper
- Pencil or crayons
- Optional: magnifying glass or camera

Instructions:

"Let's take a walk – either outside or around your home – and look at the world like Thales did. What can we observe? What patterns or surprises do we see?"

1. Go outside or to a window and look for something in nature – a tree, a cloud, a bug, a flower, a puddle.
2. Have the student **draw or write** about it in their notebook.
3. Ask them to **wonder**: "What is this made of? Why does it work this way? What does it tell me about how the world works?"
4. Share the drawing and reflect together.

"Thales asked questions because he believed the world had order. What does your observation teach you about God's creativity?"

AC9S4U04 examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use

AC9S4H01 examine how people use data to develop scientific explanations

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E) Biblical Connection

Verse:
Psalm 19:1 – *"The heavens declare the glory of God; the skies proclaim the work of his hands."*

Parent/Tutor Says:

"This verse reminds us that God's creation speaks – if we listen. The stars, the sky, the rivers, the wind – everything God made points to His glory and wisdom. Thales saw that, even if he didn't fully understand who God was. When we observe carefully, we're not just being curious – we're learning to see God's fingerprints."

Ask:

- "How can paying attention to creation help you know God better?"
- "Do you think God is pleased when we study the world He made?"
- "When you feel unsure or others laugh, how can courage and determination help you keep going like Thales?"

Close in prayer:

"Dear God, thank You for creating such a beautiful and ordered world. Help us to slow down, to pay attention, and to ask big questions. Give us the courage to keep learning and the wisdom to see Your glory in everything around us. Amen."

Australian Curriculum Content:

AC9S4U04 examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use
AC9S4H01 examine how people use data to develop scientific explanations

Nature Observation Sheet

"The heavens declare the glory of God..." – Psalm 19:1

Where are you?

(Location of your walk or window view)

Date & Time:

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1. What do you see?

Draw or describe something interesting in nature (tree, flower, bug, cloud, etc.).

My drawing or description:

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2. What do you wonder?

What questions do you have about this object or creature?

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-

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3. What patterns do you notice?

(Shapes, lines, colours, symmetry, movement, etc.)

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4. What does this teach you about God’s creation?

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5. Thank You, God!

Write a short prayer or sentence of praise to God for what you observed.

“Thank You, God, for…”

Lesson 11: Empedocles – The Four Elements and States of Matter

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Empedocles – The Four Elements and States of Matter
This lesson builds curiosity about matter, connects ancient Greek ideas to modern science, and reflects on the beauty and order of God's creation.

A) Lesson Content

Parent/Tutor Says: "I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "Empedocles and the Search for the Building Blocks of Nature"

Long ago in ancient Greece, around 2,500 years ago, there lived a curious thinker named **Empedocles**. He wasn't a soldier or a king – he was something even more powerful: a **philosopher and scientist**. Empedocles asked the kind of questions most people ignored. "What is everything made of?" he wondered. "What are the basic building blocks of the world?"

Empedocles spent his days watching the world carefully. He looked at fire burning in a hearth, rivers rushing over rocks, wind stirring the leaves, and dirt being packed into pots. As he watched, he noticed that these things behaved very differently. Water could be poured. Fire danced and disappeared. Air was invisible but could move things. Earth could be shaped and held.

He thought deeply and finally came up with a big idea. "Maybe," he said, "everything in the world is made of **four basic elements**: **earth, air, fire, and water**." These, he believed, were the root materials from which all life and matter came.

Empedocles began teaching others about his theory. Some laughed. Some listened. Some even built on his ideas. He wrote poems and gave speeches, not just about matter, but also about the **importance of asking questions and learning from nature**.

Now, Empedocles didn't know about **atoms** or **molecules**, because microscopes hadn't been invented yet. He had no way to test with chemicals or electricity. But his guess about the four elements wasn't far off from what we know today. We now talk about the **states of matter**: **solid, liquid, gas, and plasma**.

Think about it:

- **Earth** is like a **solid** – firm and strong.
- **Water** is, of course, a **liquid** – it flows and fills spaces.
- **Air** is like a **gas** – you can't see it, but it moves and fills the air around you.
- **Fire** is closest to **plasma** – the hottest and most energetic state of matter (like lightning or the sun!).

Empedocles may not have gotten everything right, but he helped start the idea that the world has an **order** and can be studied and understood. He showed **determination** by continuing to share his ideas, even when people doubted him.

As Christians, we know that **God is the true Creator**, and He made the world with both **beauty and logic**. Hebrews 11:3 says, *"By faith we understand that the universe was formed at God's command."* Everything in creation, from the dirt we stand on to the stars in the sky, exists because of God's power and wisdom.

Empedocles reminds us that it takes courage to be curious and bold enough to explore ideas. And when we seek truth and study the world with respect and wonder, we discover **more about the One who made it all**.

B) Narration

Parent/Tutor Says:

"Now it's your turn to tell me the story in your own words. What did Empedocles believe? What did he do? What does his story teach us about science and courage?"

Prompt if needed:

- "What were the four elements Empedocles talked about?"
- "How are those elements like the states of matter today?"
- "Why was Empedocles brave?"
- "What does studying nature teach us about God?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What are the four things Empedocles thought everything was made of?
- Which one can you see at home? (water, dirt, air, fire)
- What happens when ice melts?
- Who made the water, the sky, and the ground?

ii) Middle Primary Students (Ages 8–10)

- How are earth, air, fire, and water like the states of matter we know today?
- What's one way Empedocles was determined?
- Can you think of something that changes from one state to another?
- How does science show us God's power and creativity?

iii) Upper Primary Students (Ages 11–12)

- Why was Empedocles important to the history of science?
- What do you admire about his way of thinking?
- How do scientists today build on past ideas – even ones that weren't completely correct?
- How can being curious and courageous help you grow in faith and learning?

D) Activity

Activity Title: "Matter in Action – Explore the States"

Supplies Needed:

- Ice cube (solid)
- Cup of water (liquid)
- Optional: kettle, warm water, or a cold window (to demonstrate steam or breath – gas)
- Pictures or video of lightning or plasma lamp (optional)
- Worksheet or drawing paper

Part 1: Hands-On Demo

"Let's explore the states of matter that Empedocles imagined – and what we know today!"

1. **Show the ice cube** – It's a solid (firm shape, doesn't move unless melted).
2. **Pour water** – It's a liquid (moves and takes the shape of the container).
3. **Steam or breath on a cold window** – It's a gas (moves freely and invisibly).
4. **Talk about plasma** – It's harder to see at home, but exists in **lightning**, **stars**, and **neon signs**.

Part 2: Draw and Label the States

- Let students draw the four states: solid, liquid, gas, plasma.
- Label each one and match it to an element:
  Earth = solid
  Water = liquid
  Air = gas
  Fire = plasma

"Empedocles didn't know all the science, but he saw that the world had structure. We get to learn even more today!"

E) Biblical Connection

Verse:
Hebrews 11:3 – *"By faith we understand that the universe was formed at God's command, so that what is seen was not made out of what was visible."*

Parent/Tutor Says:

"This verse reminds us that even though we can study the world using science, we know that **God is the one who created it all by His word**. People like Empedocles were asking good questions – but the Bible gives us the full answer."

Ask:

- "Why is it amazing that God made a world with order and design?"
- "How can you show courage like Empedocles when you ask questions or explore?"
- "How does knowing God created everything help you learn with joy and confidence?"

Close in prayer:

"Dear God, thank You for making this world with both beauty and structure. Help us to ask questions, explore Your creation, and learn more about You through the world You made. Give us courage like Empedocles, and wisdom to seek truth in faith. Amen."

Australian Curriculum Content:

AC9S5U04 explain observable properties of solids, liquids and gases by modelling the motion and arrangement of particles

Lesson 12: Democritus – Discovering Atoms

Democritus – Discovering Atoms
This lesson introduces the fascinating beginnings of atomic theory while encouraging curiosity, perseverance, and a Christ-centred understanding of creation.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "The Man Who Believed in the Invisible"

A long time ago in Ancient Greece, there lived a thinker named **Democritus**. He wasn't a king or a soldier – he was a man who loved to **think, imagine, and explore big ideas**.

Democritus believed something amazing – something no one else could prove at the time. He said, *"Everything in the world is made of tiny, invisible parts that cannot be broken any smaller. I call them **atoms**."*

But this was a wild idea back then. Nobody had microscopes. People could only see what their eyes showed them. But Democritus used his **mind** to imagine things no one had seen before.

One day, he sat outside with a piece of bread. He crumbled it between his fingers and watched the bits fall to the ground. "See," he said to a young student, "this big piece becomes many small pieces. And those pieces could become even smaller and smaller… until finally, you would have something so small you can't break it anymore." He called that final, tiniest piece an **atom** – which means "uncuttable."

He didn't stop there. He believed that **everything** – rocks, trees, air, people – was made of these invisible particles. Some atoms, he said, were round. Others were jagged. They moved, floated, and came together to form everything we see and touch.

People thought Democritus was strange. Some laughed at him. "You believe in something you can't see?" they asked. But Democritus didn't give up. He kept asking questions and imagining how the world was held together.

And the truth is – he was mostly right!

Thousands of years later, scientists invented powerful microscopes. And guess what they found? Atoms! They really **do** exist. Today we know even more – atoms are made of protons, neutrons, and electrons. They form **molecules**, which make up **everything** – water, food, animals, people, air, and even stars!

Democritus was ahead of his time. He didn't have the tools we have, but he had **courage** to ask questions and **determination** to keep thinking, even when others didn't believe him.

As Christians, we can learn something beautiful here. Colossians 1:17 says, *"He is before all things, and in Him all things hold together."* That means **God created every tiny part of the universe**, and **He holds it all together – even atoms!**

Even the smallest parts of creation have meaning and purpose because God made them. And when we study the world – even the invisible parts – we're discovering more about **how powerful, wise, and creative our God is**.

Democritus showed us that great ideas often begin with simple observations and deep curiosity. And when we explore creation with a heart that wants to know God more, we are doing something very special: **worship through wonder**.

B) Narration

Parent/Tutor Says:

"Now it's your turn to tell me the story in your own words. What did Democritus believe? What did he imagine? What made him brave?"

Prompt as needed:

- "What did Democritus call the tiny parts of everything?"
- "How did he explain his idea?"
- "What do we know now that proves he was partly right?"
- "How do atoms help us understand more about God?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What tiny things did Democritus think made up the world?
- Can you see atoms?
- What is something small that's very important?
- Who made atoms?

ii) Middle Primary Students (Ages 8–10)

- How did Democritus come up with his idea about atoms?
- Why did other people not believe him at first?
- What do you think it means to believe in something you can't see?
- How does studying atoms help us appreciate God's creation?

iii) Upper Primary Students (Ages 11–12)

- What does the word "atom" mean? Why did Democritus use that word?
- What does his story teach us about courage and thinking differently?
- What does Colossians 1:17 teach us about how creation stays together?
- How can you be bold and curious like Democritus in your own learning?

D) Activity

Activity Title: "Build Your Own Atoms & Molecules"

Supplies Needed:

- Small round objects like beads, buttons, or playdough balls
- Toothpicks or small sticks (if using playdough)
- Paper and pencil

Instructions:

"Let's build atoms and turn them into molecules – just like how God made everything from tiny building blocks!"

1. **Start with Atoms** – Use beads or small playdough balls to represent atoms. Make several in different colours or sizes.
2. **Create Molecules** – Join 2 or 3 "atoms" together using toothpicks or by sticking playdough balls side by side.
    - Example: Two white balls + one red = water (H_2O).
    - Or create "cookie" molecules, fruit molecules – anything!
3. **Draw Your Molecules** – After building, sketch the molecules on paper and label them.

"Democritus didn't have these materials, but now we can model what he could only imagine!"

E) Biblical Connection

Verse:
Colossians 1:17 – *"He is before all things, and in him all things hold together."*

Parent/Tutor Says:

"This verse reminds us that Jesus didn't just create everything – we are still held together because of Him. Even the tiniest parts of creation, like atoms, stay in place because of God's power."

Ask:

- "How does it make you feel knowing that God holds everything – down to the tiniest atom – together?"
- "When something feels small or invisible (like an idea or a prayer), does it still matter to God?"
- "How can you show courage in your learning, like Democritus?"

Close in prayer:

"Dear God, thank You for making the world with such amazing design. Thank You for creating atoms, for holding all things together, and for giving us minds to learn and wonder. Help us be brave, like Democritus, and faithful, knowing You hold even the smallest parts of life. Amen."

TOPIC 4	MEASURING THE WORLD, MOON & STARS

Lesson 13: Anaximander – Drawing the First Map

Anaximander – Drawing the First Map

This lesson highlights curiosity, observation, and courage through the life of a pioneering Greek thinker, while linking it to our spiritual journey and the importance of letting God guide our path.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "The Man Who Mapped the World"

Long ago, in the city of **Miletus**, a Greek thinker named **Anaximander** sat at a wooden table with a large sheet of parchment in front of him. Around him were scrolls, tools for measuring, and stories from travellers who had seen the world beyond their city.

Anaximander was curious. He wanted to know what the world looked like – not just Miletus, but the lands beyond the mountains and across the seas. "People tell stories," he said, "but what if we could draw the land to help others understand where things are?"

In his time, there were **no maps like we have today**. People travelled using stars, sun, and familiar landmarks. But no one had ever drawn a picture of the whole known world. So Anaximander decided to try.

He asked questions. He listened to sailors who spoke of faraway coastlines. He measured shadows to guess distance. He sketched mountains, rivers, seas, and cities. Bit by bit, he pieced together a view of the earth as he imagined it – **the first map of the known world**.

But that wasn't his only big idea. In a time when many believed the earth sat on the back of a giant animal or was held up by gods, Anaximander had a different thought. "I think the earth floats in space," he said, "not held by anything. It stays in balance." This was a bold idea for ancient times!

People didn't always agree with Anaximander, and some didn't understand what he was trying to do. But he kept drawing, thinking, and teaching. He believed that knowledge should be shared, and that **maps could help people find their way**.

His work helped future scientists imagine a bigger world. Even though his map wasn't perfect, it was a starting point – just like the first step on a long journey. His courage to **try something new** opened the door for explorers, geographers, and even astronauts thousands of years later.

As Christians, we can also think about **maps in another way**. We don't just need help finding cities – we need guidance for our lives. Proverbs 3:6 says, *"In all your ways submit to Him, and He will make your paths straight."* God is the best guide, and when we trust Him, He shows us where to go – even when we don't see the whole map.

Anaximander's story teaches us that being **curious**, **determined**, and **willing to explore** can lead to amazing discoveries. And when we let God be our compass, we never get lost – because He always knows the way.

B) Narration

Parent/Tutor Says:

"Now I want you to tell me the story in your own words. What did Anaximander do? What did he believe? What made his work important?"

Let your child share freely. You may ask:

- "What did Anaximander try to draw?"
- "How did he learn about the world?"
- "What did he believe about the earth's position in space?"
- "What can we learn from him?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What is a map?
- What did Anaximander draw?
- Why was it helpful to have a map?
- Who helps us find our way in life?

ii) Middle Primary Students (Ages 8–10)

- How did Anaximander create a map without ever seeing the whole world?
- Why was it brave to suggest the earth wasn't being held up by anything?
- Can maps help us do more than just travel?
- What does it mean to let God guide your path?

iii) Upper Primary Students (Ages 11–12)

- What skills did Anaximander need to make his map?
- How does exploring new ideas take courage?
- What does Proverbs 3:6 mean about "paths"?
- Can you think of a time you needed God to show you the way – like a map?

D) Activity

Activity Title: "Draw a Map of Your World"

Supplies Needed:

- Paper
- Pencil, markers or crayons
- Optional: ruler, compass, stickers

Instructions:

"Now let's be like Anaximander and draw a map! You can choose to map your room, your house, your yard, your street, or your imaginary kingdom."

1. **Draw a bird's-eye view** of the area.
2. **Add labels** to show important places (kitchen, park, mailbox, etc.).
3. **Mark a path** from one place to another (e.g., from your bed to the fridge!).
4. **Optional:** Add a compass rose and a key/legend.

Talk about it:

- "What do you notice when you look at your world from above?"
- "How would this help someone who's never been here before?"

"Maps help us see things more clearly. Just like we draw paths on paper, God helps draw paths for our lives."

E) Biblical Connection

Verse:
Proverbs 3:6 – *"In all your ways submit to him, and he will make your paths straight."*

Parent/Tutor Says:

"Anaximander wanted to help people find their way around the world. But even more important than maps is learning to let **God** guide us. He doesn't show us the whole journey at once, but He leads us step by step."

Ask:

- "What does it mean to let God direct your path?"
- "When you don't know what to do, how can you trust God's 'map'?"
- "What helps you stay on the path God has for you?"

Close in prayer:

"Dear God, thank You for being the best guide. Help us to follow Your ways and trust You even when we don't see the whole map. Just like Anaximander used his mind to explore the world, help us use our hearts to follow You each day. Amen."

Lesson 14: Anaxagoras – The Bravery to Think New Thoughts

Anaxagoras – The Bravery to Think New Thoughts
This lesson explores courage, astronomy, and critical thinking through the life of Anaxagoras, and helps children reflect on how bravery in thought aligns with godly wisdom and faith.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "Anaxagoras and the Light in the Sky"

A long time ago in ancient Greece, there lived a man named **Anaxagoras**. He wasn't a soldier or a ruler – he was a thinker, a teacher, and someone who loved to look up at the **sky**.

Every night, Anaxagoras watched the **moon** and **stars**. Most people thought the moon was a glowing god or some kind of magical being. But Anaxagoras thought differently. "The moon," he said, "doesn't make its own light. I think it shines because it reflects the **sun's light**."

People laughed. "How can the moon reflect sunlight?" they asked. "That's impossible!"

But Anaxagoras didn't stop thinking. He kept watching. He noticed how the moon changed shape during the month – from full to half to crescent. "These phases happen," he explained, "because we see different parts of the moon's surface as the sunlight hits it."

He even suggested something *really* bold: **stars are suns**, just very, very far away.

Now, these ideas seem normal to us today – but back then, they were new and strange. People didn't have telescopes or science books. They believed in myths, and when someone challenged those myths, they often became angry.

Anaxagoras lived in a time when sharing new ideas could get you in **trouble**. Some people thought he was dishonouring the gods by saying the moon wasn't magical. Others didn't like that he questioned what everyone else believed.

Eventually, Anaxagoras was **put on trial** for his ideas. He was told to stop teaching. But even though he had to leave Athens, he **never gave up thinking**. He continued to write, teach, and observe the sky.

Anaxagoras showed **great courage**. He didn't yell or argue, but he stayed faithful to what he believed was true. He used reason, observation, and patience.

And here's what's amazing – **he was right!** Today, we know the moon reflects sunlight. We know stars are giant burning suns. Anaxagoras' bravery helped science move forward.

As Christians, we are also called to **think deeply** and **stand bravely**. Romans 12:2 says, *"Do not conform to the pattern of this world, but be transformed by the renewing of your mind."* That means we don't have to believe something just because everyone else does – we can seek truth with God's help.

Anaxagoras reminds us that being different isn't a bad thing. If you follow truth with kindness and courage, you are shining light – just like the moon does. And when others don't understand, you can **keep learning**, **keep listening**, and **keep trusting** in the God who made the sky.

B) Narration

Parent/Tutor Says:

"Now I want you to tell me everything you remember about the story. Who was Anaxagoras? What did he believe? What made him brave?"

Prompt your child as needed:

- "What did Anaxagoras believe about the moon?"
- "Why didn't people agree with him?"
- "Did he stop teaching?"
- "How did he show courage?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What did Anaxagoras say about the moon?
- What was different about his idea?
- Was it brave to keep teaching when others didn't believe him?
- Who made the moon and stars?

ii) Middle Primary Students (Ages 8–10)

- Why do you think people were upset with Anaxagoras?
- What did he notice about how the moon changes?
- What does it mean to "renew your mind," like Romans 12:2 says?
- Can you think of a time when you believed something true but others didn't understand?

iii) Upper Primary Students (Ages 11–12)

- How does Anaxagoras show us that science and observation matter?
- Why is it sometimes hard to stand for truth?
- What should we do when others reject our ideas – even if we're right?
- How can a Christian be brave in thinking differently while still being respectful and kind?

D) Activity

Activity Title: "Sun, Moon, and Earth Model"

Supplies Needed:

- A flashlight (sun)
- A small ball (moon)
- A larger ball or a person (earth)
- A dark room (optional)

Instructions:

1. One person holds the flashlight (sun).
2. Another holds the small ball (moon).
3. The third person or object represents the earth (or the student stands in the middle).
4. Shine the flashlight on the "moon" and move it around the "earth."
5. Watch how **different parts of the moon are lit** – this shows the phases!

"Anaxagoras used thinking and watching to figure this out. Now you've seen it too!"

Optional Extension:
Draw the phases of the moon and label them (full, half, crescent, etc.).

E) Biblical Connection

Verse:
Romans 12:2 – *"Do not conform to the pattern of this world, but be transformed by the renewing of your mind."*

Parent/Tutor Says:

"This verse reminds us that we don't have to follow the crowd. We can use our minds to seek truth and ask good questions. Anaxagoras didn't fit in – but he showed us that with courage and patience, we can help others see what's true too."

Ask:

- "What does it mean to be brave in what you believe?"
- "When others disagree with you, how can you respond kindly and with courage?"
- "What are ways you can keep learning and renewing your mind?"

Close in prayer:

"Dear God, thank You for the stars, the moon, and the people like Anaxagoras who were curious about them. Help us to be brave when we think differently and to speak truth with love. Renew our minds with Your wisdom so we can shine like the moon – reflecting Your light. Amen."

Lesson 15: Eratosthenes – Measuring the World with Determination

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Eratosthenes – Measuring the World with Determination
This lesson encourages observation, mathematical thinking, and a heart of praise for God's creation, modelled after Eratosthenes' bold quest to understand the Earth.

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read the story once. After I've read the story, I want you to tell me everything you can remember about the story. Ok? Ready? Let's begin."

Story: "The Man Who Measured the Earth"

A long time ago, in ancient Greece, there lived a man named **Eratosthenes**. He was a thinker, a reader, and a man of great **curiosity**. He worked at a famous library in a city called **Alexandria**, where he read about history, stars, math, geography, and everything he could find.

One day, Eratosthenes read a strange fact. In a city far to the south, called **Syene**, the sun shone straight down into a deep well at noon on the summer solstice – meaning the sun was directly overhead, and there were **no shadows**. But in **Alexandria**, where he lived, there *were* shadows at the same time of day.

Eratosthenes paused and thought, "Why would the sun cast shadows in one city but not in another – on the same day and time?"

That question led to something **amazing**.

He put a stick in the ground in Alexandria and measured the angle of the shadow when the sun was highest in the sky. Then he calculated the angle of the sun's rays using geometry. Next, he used the known distance between Alexandria and Syene – about 800 kilometres – and did something no one else had tried before:

He **measured the size of the Earth**.

He reasoned that if the earth were flat, the sun would shine the same way everywhere. But because the shadow's angle changed in different places, the Earth must be **round** – and enormous.

Using just a **stick**, **a shadow**, and **math**, Eratosthenes figured out that the Earth was about 40,000 kilometers around. That was over 2,000 years ago – and his answer was **remarkably close** to what scientists know today!

People were amazed. Some doubted him, of course. But Eratosthenes didn't care about being famous. He cared about learning. He used his God-given mind and tools to understand the world better.

His determination reminds us of something important: big discoveries often begin with **simple questions**. Eratosthenes could have walked past that fact about the well and ignored it. But instead, he **stopped to wonder**. And through careful observation, he made one of the most important measurements in history.

As Christians, we believe that learning more about the earth helps us praise its Creator. The Bible says in **Jeremiah 33:2**, *"This is what the Lord says, he who made the earth, the Lord who formed it and established it…"* God designed the earth with beauty, logic, and order – and He invites us to explore it with thankful hearts.

Eratosthenes' story encourages us to use our minds for God's glory, to ask big questions, and to never give up on seeking truth.

B) Narration

Parent/Tutor Says:

"Now I'd like you to tell me the story in your own words. What did Eratosthenes do? What was his big idea? What made him determined?"

Prompt if needed:

- "Where did he live?"
- "What did he read about in Syene?"
- "What did he measure with a stick?"
- "What does this story tell us about how we can learn more about God's creation?"

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What did Eratosthenes use to measure the earth?
- What happened in the well at noon in Syene?
- Why are shadows different in different places?
- Who made the Earth?

ii) Middle Primary Students (Ages 8–10)

- How did Eratosthenes figure out the size of the Earth without leaving Greece?
- What does this story teach you about asking questions?
- How does the Earth show God's design?
- How can we use math and science to praise God?

iii) Upper Primary Students (Ages 11–12)

- What scientific methods did Eratosthenes use that we still use today?
- Why do you think it took courage to suggest the Earth was round?
- How can Christians show determination when exploring big ideas?
- In what ways does the order of the Earth reflect God's character?

D) Activity

Activity Title: "Shadow Stick Experiment"

Supplies Needed:

- A straight stick or pencil
- A ruler or tape measure
- A sunny outdoor area
- Notebook or paper
- Optional: Repeat at two different times of day

Instructions:

1. Go outside and place a stick upright in the ground or in a lump of clay/playdough.
2. Use a ruler to measure the length of the shadow.
3. Record the time and the shadow length.
4. Optional: Come back later in the day and repeat. Compare the two shadow lengths.
5. Discuss what it shows about the **position of the sun** in the sky.

Parent/Tutor Says:

"Just like Eratosthenes, we're learning from shadows! This helps us see that the sun moves across the sky and that the Earth is curved – not flat. God made the world in a way that we can observe and learn from."

E) Biblical Connection

Verse:
Jeremiah 33:2 – *"This is what the Lord says, he who made the earth, the Lord who formed it and established it…"*

Parent/Tutor Says:

"God made the Earth on purpose, with shape, size, and order. Eratosthenes used his God-given mind to study it. When we explore, measure, and ask questions, we are also **worshipping our Creator**."

Ask:

- "Why is it amazing that God made the Earth so perfectly?"
- "How can we worship God by learning about science and the world?"
- "What does it mean to be determined like Eratosthenes when we're learning something new?"

Close in prayer:

"Dear Lord, thank You for creating such a wonderful Earth and giving us minds to learn and discover. Help us to ask questions, be patient, and use our curiosity for Your glory. Just like Eratosthenes, help us be determined learners who point others to You. Amen."

TOPIC 5	HUMAN BODY MOVEMENT (SCIENCE + HEALTH & PHYS ED)

Lesson 16: How Muscles Help Us Move

A) Lesson Content (Story + Information)

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Parent/Teacher Reads Aloud:

"Today, we're going to learn about the amazing muscles God gave us! Did you know you have over 600 muscles in your body? That's a lot! Muscles are special parts of your body that work with your bones to help you move. You use muscles when you run, jump, smile, talk, and even when you sit still!

Let's imagine a boy named Josiah. Josiah loves to climb trees and race with his brothers. One day, he wondered, 'How can my body move so fast? What makes my arms pull me up and my legs push off the ground?' His dad, who used to be a coach, showed him how muscles work. He explained that muscles are like elastic bands attached to bones. When they tighten, they pull the bones to make them move.

Josiah learned that there are two main types of muscles in our body: **voluntary muscles**, which we can control (like in our arms and legs), and **involuntary muscles**, which we don't control (like our heart). God made our heart a strong muscle that beats all day and night, even while we sleep!

His dad also showed him how muscles work in pairs. For example, the biceps bend the arm, and the triceps straighten it. When one muscle tightens, the other relaxes. This teamwork lets Josiah throw a ball, wave to his mom, and climb trees safely.

Josiah started noticing how his muscles got stronger the more he played and exercised. He felt thankful that God gave him a body that could grow and improve with practice. He also learned that it's important to take care of his muscles by stretching, resting, and eating good food.

God gave us bodies that are "fearfully and wonderfully made" (Psalm 139:14). Every time we move, we can thank Him for muscles that help us serve, play, and grow stronger."

B) Narration

Parent/Tutor Says:

"Now I'd like you to tell me, in your own words, what you remember from the story about Josiah and muscles. Try to tell me what muscles do and what you learned about how they work."

(Allow the student to share freely. Prompt with questions if needed, e.g. "What are the two kinds of muscles?" "How do muscles help us climb or run?")

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What do muscles help us do?
- Can you name one muscle you used today?
- Who made our muscles?

ii) Middle Primary Students (Ages 8–10):

- Why do muscles work in pairs?
- What's the difference between voluntary and involuntary muscles?
- How can we take care of our muscles?
- How does being strong help us serve God?

iii) Upper Primary Students (Ages 10–12):

- What might happen if we didn't take care of our muscles?
- Why do you think God made muscles to grow stronger with use?
- How can determination help us train our muscles?
- How could you use your physical strength to help others?

D) Activity: Build-a-Muscle Craft and Muscle Movements Game

Materials Needed:

- Strips of red paper or fabric (for muscles)
- Straws or popsicle sticks (for bones)
- Glue or tape
- Markers
- Scissors
- A printout of a simple arm diagram (optional)

Instructions:

1. Help the child glue two straws or sticks onto a piece of paper as bones.
2. Use red strips of paper or cloth to represent the biceps and triceps muscles.
3. Show how when one muscle "contracts" (pulls), the other relaxes. Let them glue or tape it into position to mimic how muscles move bones.
4. After crafting, play a "Muscle Movement Game." Call out different movements (e.g., jump, wave, march, smile) and have the student act them out, naming which muscles they think are being used.

E) Biblical Connection

Bible Verse:
"I praise you because I am fearfully and wonderfully made; your works are wonderful, I know that full well." – Psalm 139:14

Parent/Tutor Says:

"God made your body in an amazing way. Every muscle, big and small, is part of His perfect design. When we take care of our bodies and use them to serve others, we are honouring Him."

Reflection Question:
How can you use your strength and determination this week to do something kind or courageous for someone else?

Lesson 17: Joints and Flexibility – God's Design for Bending and Moving

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A) Lesson Content (Story + Information)

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Parent/Tutor Reads Aloud:

"Have you ever tried to do a somersault, stretch your arms to the sky, or sit cross-legged on the floor? Every time you move in those ways, you're using your **joints** – special parts in your body where two bones meet, allowing you to bend, twist, and turn!

Let me tell you about a boy named Daniel. Daniel loved pretending to be a lion. He would crawl, leap, stretch, and roll across the living room floor! One day, he asked his mom, 'How come I can bend my elbows, but not my shin bone?' His mom smiled and said, 'That's because God made special hinges in your body called joints. Without them, we'd be stiff like a wooden board!'

She explained that joints come in different types:

- **Hinge joints**, like in your knees and elbows, let you bend and straighten.
- **Ball-and-socket joints**, like in your shoulders and hips, let you swing and rotate your arms and legs.
- **Pivot joints**, like in your neck, let you turn your head side to side.
- And **gliding joints**, like in your wrists and ankles, let your bones slide over each other for small, smooth movements.

Daniel was fascinated! He tried bending every joint in his body and noticed how different they all felt. His mom also talked about **flexibility** – how much a joint can move. She said that some people are more flexible because they stretch often. Daniel's older sister, who does ballet, could bend in amazing ways because she worked on her flexibility every day.

Daniel decided to try stretching with his sister. At first, he wasn't very bendy, but after a few days, he could touch his toes! He was proud of his progress. His sister told him, 'Flexibility takes time and patience. You need courage to try hard things and determination to keep going!'

Daniel also remembered something his Sunday School teacher said: 'Our bodies are like temples. We should take care of them and use them to honour God.' That day, Daniel thanked God for making him with bendy joints that let him run, leap, and worship with his whole body.

God designed our joints to give us freedom of movement – to play, help others, and even kneel in prayer. Isn't that amazing?"

B) Narration

Parent/Tutor Says:

"Now, can you tell me everything you remember from the story about Daniel and his joints? What kinds of joints did he learn about? What did he try to do?"

(Encourage the child to recall details. Prompt gently if needed: "What are hinge joints for?" "What did Daniel's sister say about stretching?")

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What are joints?
- Can you show me how your elbow or knee bends?
- Who made our bodies so we can move?

ii) Middle Primary Students (Ages 8–10):

- What are some types of joints in your body?
- Why do you think God made different joints for different movements?
- What helps people become more flexible?

iii) Upper Primary Students (Ages 10–12):

- Why is flexibility helpful for sports, dance, or daily life?
- How does stretching teach us patience and determination?
- How can being flexible in body remind us to be flexible in heart – willing to change or serve others?

D) Activity: Joint-Movement Exploration + Flexibility Challenge

Materials Needed:

- Paper and pencil
- Space for stretching
- A mirror (optional)

Instructions:

1. **Joint Discovery**
    - Have your child move their body and observe which parts bend. Ask them to find and name these joints:
        - Elbow (hinge)
        - Shoulder (ball-and-socket)
        - Neck (pivot)
        - Wrist (gliding)
    - Help them draw a stick figure and label the joints they found.
2. **Flexibility Challenge**

- Try these fun stretches:
  - Touch your toes
  - Sit with legs apart and reach to each foot
  - Reach hands behind your back and try to clasp them
- Record what they can do now.
- Encourage them to try again after a week and compare their progress!

E) Biblical Connection

Bible Verse:
"Do you not know that your bodies are temples of the Holy Spirit, who is in you... Therefore honour God with your bodies." – 1 Corinthians 6:19–20

Parent/Tutor Says:

"Your body is a gift from God, and He wants you to care for it well. Even when we stretch or bend, we can be reminded that God designed us to move, grow, and serve Him with our whole being."

Reflection Question:
How could you use your body this week – especially your flexibility and movement – to do something good for someone else? How can determination help you keep improving even when it's hard?

Lesson 18: Posture and Balance – Standing Tall for God

A) Lesson Content (Story + Information)

Parent/Tutor Says:

“I’m going to read you a story with things to learn. Now, please listen very carefully and think about the story as I’m reading it, because I’m only going to read it once, and then after I’ve read the story, I want you to tell me everything you can remember about the story. Ok?”

Parent/Tutor Reads Aloud:

"Have you ever tried to stand on one foot or walk across a log without falling? That’s using something very important called **balance**. And to balance well, your body needs something else too – **good posture**.

Let me tell you about a girl named Lily. Lily loved pretending to be a flamingo. She would stand on one foot and flap her arms like wings. One day, while playing outside, she slipped and almost fell. Her older brother Caleb, who did gymnastics, helped her up and said, 'You need to stand tall with your back straight and your head up – that’s good posture. It helps you stay balanced.'

Lily was curious. 'What is posture?' she asked. Caleb explained that posture is the way we hold our body when we sit, stand, or move. When we sit slouched or lean too far to one side, our body gets tired and our muscles work harder. But when we stand straight, with shoulders back and our head in line with our spine, we feel stronger and more balanced.

Caleb showed her how the body is like a tower. If one part is leaning, the whole thing gets wobbly. But when everything is lined up properly, it stands tall and steady – just like God designed it to.

Lily also learned that balance comes from several body parts working together: her **ears** help sense movement, her **eyes** help spot where she is, and her **muscles** and **joints** adjust to keep her steady. She even learned that her brain is always working to help her stay upright!

That afternoon, Lily practiced balancing on one foot, walking on a line, and sitting up tall. She found it hard at first, but with determination, she improved. Caleb told her, 'When you keep practicing something hard, it shows courage – and that honours God too.'

Later, Lily thought about how standing tall reminds her to **stand strong in her faith**. The Bible says we should “stand firm” in truth, even when life feels wobbly.

God made our bodies not just to move, but to be strong, steady, and ready to serve Him. Whether we’re balancing on one foot or standing up for what’s right, we can remember that He is our strength."

B) Narration

Parent/Tutor Says:

"Now can you tell me what you remember from the story about Lily and balance? What did her brother teach her? What helps us have good posture?"

(Let the child narrate freely. Prompt as needed: "What parts of your body help with balance?" "Why is good posture important?")

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What does balance mean?
- Can you show me good posture?
- Who helps us stay steady?

ii) Middle Primary Students (Ages 8–10):

- What parts of our body help with balance?
- Why is it important to have good posture?
- How does practicing balance show courage?

iii) Upper Primary Students (Ages 10–12):

- What might happen if we don't use good posture often?
- How is standing tall with our body like standing strong in our faith?
- What does it mean to "stand firm" for God, even when things feel off balance?

D) Activity: Posture Check and Balance Challenge

Materials Needed:

- Mirror (optional)
- Masking tape or string (to make a balance line on the floor)
- Small beanbag, soft toy, or book

Instructions:

1. **Posture Check:**
    - Have your child stand against a wall, heels touching, looking straight ahead.
    - Talk about how their head, shoulders, and back should line up.
    - Practice walking with good posture – shoulders back, chin level.
    - Try balancing a book or soft toy on their head as they walk slowly. This encourages proper alignment!
2. **Balance Challenge:**
    - Create a straight line on the floor with tape or string.
    - Have your child walk along it heel-to-toe, forward and backward.
    - Try standing on one foot for 10 seconds, then switch feet.

- Make it fun: turn it into a game or race!

E) Biblical Connection

Bible Verse:
"Be on your guard; stand firm in the faith; be courageous; be strong." – 1 Corinthians

Parent/Tutor Says:

"When we practice good posture and balance, we're learning to stand strong – just like God tells us to do in our faith. Our physical body helps remind us of what our heart needs too."

Reflection Question:
What's one way you can stand firm this week – either with your body (like balancing well) or in your faith (like telling the truth or doing what's right even when it's hard)?

TOPIC 6	BASIC PHYSIOLOGY & HEALTH (SCIENCE + HEALTH & PHYS ED)

Lesson 19: Heart Rate and Exercise – God's Amazing Heart Pump

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A) Lesson Content (Story + Information)

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Parent/Tutor Reads Aloud:

"Today, we're going to learn about the heart – a special muscle inside your chest that works non-stop! Your heart is about the size of your fist and it beats every moment of every day, even when you're sleeping.

Let me tell you about a girl named Grace. Grace loves skipping rope and playing tag with her cousins. One day, while playing outside, she noticed her heart beating faster than usual. She placed her hand over her chest and felt it thumping like a little drum. 'What's going on?' she asked her older brother Elijah, who liked science.

Elijah smiled and said, 'That's your heart rate! Your heart pumps blood all through your body, and when you run or jump, your body needs more oxygen. So your heart works harder and beats faster to send more oxygen to your muscles.'

Grace was amazed! She learned that when you're resting, your heart beats slower. But during exercise, your heart works like a delivery truck that speeds up to bring oxygen and nutrients quickly to your whole body.

Elijah showed Grace how to find her **pulse** – the little thump you can feel on your wrist or neck. He said, 'Count how many beats in 15 seconds and multiply by 4 – that's your heart rate in beats per minute!'

They tried it together. Before running, her pulse was slow. But after 2 minutes of skipping, it was much faster! Grace laughed and said, 'God made my heart like a superhero!'

Grace also learned that exercising regularly helps her heart stay strong. Just like we train our muscles, we can train our heart too! And because God gave us this incredible body, we should use it to glorify Him – by taking care of it, being active, and doing good things for others.

The Bible says, 'Whatever you do, do it all for the glory of God' (1 Corinthians 10:31). Grace felt thankful and proud. She decided to exercise a little every day – not just for fun, but because she wanted to be healthy and strong to do God's work."

B) Narration

Parent/Tutor Says:

"Now I want you to tell me everything you can remember from the story about Grace and her heart. What did she discover? How does our heart work when we exercise?"

(Encourage them to speak freely. Prompt if needed: "What did Elijah teach Grace?" "What happens to our heart when we run?")

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What does your heart do?
- What happens when you run and your heart beats faster?
- Who made your heart?

ii) Middle Primary Students (Ages 8–10):

- Why does your heart beat faster during exercise?
- How can you tell if your heart is working hard?
- How can we thank God for the way He made our hearts?

iii) Upper Primary Students (Ages 10–12):

- What would happen if we never exercised? How would it affect our heart?
- How is training your heart like training your character?
- How can courage and determination help us grow stronger – not just in body, but in faith?

D) Activity: Measure Your Pulse – Before and After Exercise

Materials Needed:

- Stopwatch or phone with timer
- Paper and pencil
- Space to do light exercise (jumping jacks, jogging on the spot, etc.)

Instructions:

1. Sit quietly for 1 minute. Help the child find their pulse on their wrist or neck.
2. Count how many beats they feel in 15 seconds. Multiply by 4 to find beats per minute (BPM). Write it down as "Resting Heart Rate."
3. Do a fun exercise (e.g. jumping jacks, star jumps, or skipping) for 1 minute.
4. Immediately measure the pulse again. Write it down as "Active Heart Rate."
5. Repeat once more after a short rest to see how quickly the heart returns to normal.
6. Talk about how the heart worked harder during exercise, and what that means for health.

E) Biblical Connection

Bible Verse:
"Whatever you do, do it all for the glory of God." – 1 Corinthians 10:31

Parent/Tutor Says:

"God cares about all the parts of our life – even exercise and health! When we take care of our body, we are showing thankfulness for the gift He gave us."

Reflection Question:
How can you use courage and determination to take care of your heart this week? Can you set a small goal for being active each day and stick to it?

Lesson 20: Warm-ups & Cool-downs

A) Lesson Content

Parent/Tutor Says:

“I’m going to read you a story with things to learn. Now, please listen very carefully and think about the story as I’m reading it, because I’m only going to read it once, and then after I’ve read the story, I want you to tell me everything you can remember about the story. Ok?”

Parent/Tutor, say to the students:

"Today we’re learning about warm-ups and cool-downs – two important parts of any physical activity that help keep our bodies strong and safe. Just like you wouldn’t start driving a car without warming up the engine, or stop suddenly without slowing down, our bodies need the same care when we exercise."

What is a Warm-up?
A warm-up is a short set of movements we do before playing sports or exercising. It helps get our heart beating a little faster and sends more blood to our muscles. That way, our body is ready to move quickly and safely. Warm-ups help prevent injuries like muscle pulls or strains.

Think of a rubber band. If it’s cold and stiff and you pull it suddenly, it might snap. But if you warm it up gently, it stretches without breaking. Our muscles work in a similar way.

Warm-ups usually last about 5 to 10 minutes and include movements like marching in place, arm circles, gentle stretches, or light jogging.

What is a Cool-down?
A cool-down is what we do at the end of our activity. It helps our heart rate and breathing return to normal slowly. When we exercise hard and stop suddenly, our blood can pool in our legs, making us feel dizzy or tired. Cool-downs help the blood keep moving and stop us from feeling sore the next day.

Cool-downs might include slow walking, gentle stretching, and deep breathing. They help relax our muscles and make our recovery faster.

A Story to Remember
Once there was a young boy named Micah who loved running races. One day at a homeschool track meet, he ran as fast as he could without doing his warm-up. His legs felt tight, but he ignored it. Just before the finish line, Micah felt a sharp pain in his leg and had to stop. Later, the doctor told him he had pulled a muscle.

Micah learned to always warm up first. At the next meet, he arrived early, jogged gently, and stretched his legs. After the race, he walked in circles and stretched again. This time, he felt strong and safe, and he didn’t get injured.

We can be like Micah by being wise and taking care of our bodies – the amazing gifts God has given us.

B) Narration

Parent/Tutor:

"Now it's your turn to tell the story in your own words. Can you explain what warm-ups and cool-downs are, and why they are important? What happened to Micah?"

Encourage each child to retell the story. Prompt them if needed with questions like:

- "What happened when Micah didn't warm up?"
- "What kind of exercises can we do for warming up?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What do we do in a warm-up?
- Why do we stretch our muscles?
- What happened to Micah when he didn't warm up?
- Why do you think God wants us to take care of our bodies?

ii) Middle Primary Students (Ages 8–10):

- Can you explain why warm-ups and cool-downs are important?
- What kind of injury did Micah get and how did he avoid it next time?
- Why is it wise to prepare your body before exercise?
- How can being careful with our bodies show respect for how God made us?

iii) Upper Primary Students (Ages 11–12):

- What happens to our muscles and heart during warm-ups and cool-downs?
- Why is blood flow important in exercise?
- How can warm-ups and cool-downs build the habits of responsibility and self-control?
- What character trait did Micah show by learning from his mistake?

D) Activity: Let's Practice Warm-ups & Cool-downs!

Instructions for Parent/Tutor:

1. **Warm-up Practice (5–7 minutes)**
   Lead the children in a basic warm-up:
   - March in place for 1 minute
   - Arm circles forward and backward
   - Light jogging on the spot (1 minute)
   - Gentle stretches: reach for the sky, touch toes, shoulder rolls

   Say: "We're preparing our body for activity – just like Micah learned to do!"

2. **Active Game (10–15 minutes)**
   Play a fun physical game like tag, a short relay race, or a ball toss challenge.

3. **Cool-down Practice (5–7 minutes)**
   Lead them in:
   - Slow walking in a circle
   - Deep breathing (in through the nose, out through the mouth)
   - Stretch legs, arms, and back

   Say: “We’re helping our heart and muscles slow down and relax.”

E) Biblical Connection

Bible Verse:
"Do you not know that your bodies are temples of the Holy Spirit, who is in you, whom you have received from God? You are not your own." – 1 Corinthians 6:19

Parent/Tutor:

“This verse reminds us that our bodies are very special because God made them and lives in us by His Spirit. Just like we would care for a church building, we care for our own body with love and wisdom.”

Ask:

- What does it mean to treat our bodies like temples?
- How can warming up and cooling down show courage and determination?
- How can we honour God when we play sport or do physical activity?

Lesson 21: Nutrition for Active Bodies – Fuelling God's Temple

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A) Lesson Content (Story + Information)

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Parent/Tutor Reads Aloud:

"Did you know your body is a little bit like a car? Cars need fuel to run, and so do we! But instead of petrol, we get our fuel from food – and not just any food, but healthy, life-giving food that God made to help us grow strong and stay active.

Let me tell you about a boy named Micah. Micah loved running around with his friends, climbing trees, and playing soccer. But one morning, he woke up feeling tired and grumpy. At breakfast, he grabbed a chocolate bar and skipped the eggs and fruit his mom had made. At soccer practice later, he felt slow and out of breath.

'What's wrong with me?' Micah asked. His coach gave him a bottle of water and said, 'Your body needs good fuel to work well. Just like a car can't drive far without the right petrol, you can't run well without the right food.'

Micah was curious. At home, he asked his mom about food and energy. She explained that foods have different jobs:

- **Carbohydrates** (like whole grain bread, rice, and fruit) give us energy to move.
- **Proteins** (like eggs, beans, meat, and nuts) help build muscles and fix parts of our body.
- **Fats** (like olive oil, seeds, and avocado) give us long-lasting energy and help our brains.
- **Vitamins and minerals** (from vegetables and fruit) help our bones, eyes, skin, and everything else stay healthy.
- And **water**? That's like oil for a machine – without it, everything slows down!

The next day, Micah tried a new breakfast – a boiled egg, banana, and water. He felt great during practice. He ran faster, felt stronger, and had more fun. He realized that what we eat really matters.

His family talked about how God gave us all kinds of delicious, colourful foods – apples, carrots, fish, oats, berries, and so much more – as a gift. Eating well is one way to take care of our body, which the Bible says is God's temple.

Micah still liked treats, but now he saved them for special times. Most days, he chose foods that would help him grow strong and serve God with energy and joy."

B) Narration

Parent/Tutor Says:

"Now I'd like you to tell me everything you remember about the story of Micah and what he learned about food. What helps our bodies stay active and healthy?"

(Encourage the child to recall details. Prompt if needed: "What kinds of foods give us energy?" "What happened when Micah ate better?")

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What kind of food helps you run and play?
- Can you name a food that helps your body grow?
- Who gave us all these good foods?

ii) Middle Primary Students (Ages 8–10):

- What happens when we don't eat healthy food?
- Why does your body need water and vitamins?
- How can eating well help us serve God better?

iii) Upper Primary Students (Ages 10–12):

- Why do you think God made so many types of food for us?
- What's the difference between "fuelling" your body and just eating for taste?
- How does making good food choices show courage or self-control?

D) Activity: Make a "God's Good Food" Plate

Materials Needed:

- Paper plate (or plain paper)
- Crayons, markers, or coloured pencils
- Pictures from food magazines (optional)
- Glue or tape (if using magazine pictures)

Instructions:

1. Draw a big circle to represent a plate.
2. Divide the plate into sections for:
    - Carbohydrates
    - Proteins
    - Fruits & Vegetables
    - Healthy Fats
    - Water (drawn on the side like a glass)
3. Have your child draw (or glue) examples of foods in each section.
4. Discuss how eating from each group gives the body what it needs to move, think, grow, and play.

Optional: Let them plan a healthy meal or snack and explain why they chose each item.

E) Biblical Connection

Bible Verse:
"So whether you eat or drink or whatever you do, do it all for the glory of God." – 1 Corinthians 10:31

Parent/Tutor Says:

"When we eat well, we are choosing to care for the body God gave us – not just for ourselves, but so we can be strong and ready to do the things He's called us to do."

Reflection Question:
What's one food choice you could make this week that would give your body good fuel? How can you show determination when it's hard to say 'no' to less healthy choices?

TOPIC 7	FITNESS (SCIENCE + HEALTH & PHYS ED)

Lesson 22: Fitness Tracking

A) Lesson Content (Story-Based Introduction)

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story: "The Watch That Changed Elijah's Run"

Elijah was a homeschool student who loved playing soccer and riding his bike, but he didn't think much about how fit he was. He thought fitness was just about running fast or lifting heavy things. One day, his big sister gave him a special gift: a bright blue fitness watch. "This will help you track how healthy and strong you're getting," she said with a smile.

At first, Elijah wasn't sure what to do with it. The watch showed numbers – how many steps he took, how fast his heart-beat when he ran, and how long he had been active each day. "Why do I need numbers to tell me if I'm healthy?" he wondered. But his sister explained, "Tracking helps you see where you're growing and where you can improve. It's not about being perfect. It's about learning and being consistent."

So, Elijah decided to give it a try.

Each day, he set small goals. One day, he tried to walk 5,000 steps. Another day, he tried to ride his bike for 20 minutes without stopping. At the end of each day, he looked at his watch and wrote his numbers in a notebook. Some days, he didn't meet his goals. But other days, he beat them – and that felt amazing.

Soon, Elijah noticed something else. He wasn't just feeling stronger; he was learning to be more determined. Even when he felt tired, he reminded himself, "I can do this – I'm making progress!" When he shared his numbers with his family at dinner, they cheered him on. His little brother even started doing jumping jacks to catch up!

One Saturday morning, Elijah looked at his watch and realized he had walked over 10,000 steps in one day – more than he ever had before. He smiled and thanked God for his healthy body and the chance to improve it each day.

That evening, Elijah wrote a note in his notebook: "Fitness isn't just about strength – it's about learning, trying, and not giving up."

B) Narration

Parent/Tutor Instructions:

"Now it's your turn. Tell me everything you remember about the story. What happened to Elijah? What did he learn? What did the fitness watch help him do?"

Encourage students to recall as many details as possible in their own words. Help prompt them gently if they get stuck.

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What did Elijah get from his sister?
- What kind of things did the watch help Elijah track?
- Why did Elijah smile at the end of the story?
- How do you think God feels when we try hard, even if we don't win?

ii) Middle Primary Students (Ages 8–10):

- Why was tracking fitness helpful for Elijah?
- What did Elijah learn about his body and his habits?
- How can tracking help you do your best – not just in sports, but in anything?
- What does it mean to grow in determination?

iii) Upper Primary Students (Ages 11–12):

- Why is it helpful to set goals and track progress?
- What character traits did Elijah grow in by using the tracker?
- How can we track progress without becoming too focused on the numbers?
- How can tracking fitness help us be more faithful with the body God gave us?

D) Activity: Track & Reflect

Hands-on Activity: "My Fitness Tracker Challenge"

1. **Create a Simple Tracker Chart**
   Give each child a sheet of paper to create a basic fitness tracking chart. Make columns labelled:
   - Date
   - Steps or Active Minutes
   - How I Felt
   - What I'm Thankful For
2. **Do a Short Fitness Challenge**
   - Choose a fun activity (e.g., jumping jacks, jogging in place, hopping on one foot).
   - Set a timer for 5 minutes and count how many times they can repeat the movement.
   - Record the results on their chart.
3. **Reflect Together**
   - Ask: How did that feel? Was it easy or hard?

- Encourage each child to write one sentence about how they did and what they want to try next time.

Optional Extension: Use a pedometer, a smartwatch, or a free app (if available) for older students to try tracking over a few days.

E) Biblical Connection

Bible Verse:
"Whatever you do, work at it with all your heart, as working for the Lord, not for human masters." – Colossians 3:23

Parent/Tutor Says:

"This verse reminds us that everything we do, even exercise, can be done for God. Elijah didn't try to be the best athlete. He tried to improve and do his best. That's what honours God."

Ask:

- What does it mean to "work at it with all your heart" when it comes to exercise?
- How can we use fitness tracking to grow in courage and determination, even when we don't feel strong?
- Can you think of a time you kept going, even when it was hard? What helped you?

Date	Steps or Active Minutes	How I Felt	What I'm Thankful For

Lesson 23: Coordination & Agility

A) Lesson Content

Parent/Tutor Says:

“I’m going to read you a story with things to learn. Now, please listen very carefully and think about the story as I’m reading it, because I’m only going to read it once, and then after I’ve read the story, I want you to tell me everything you can remember about the story. Ok?”

Story: "Zara and the Zigzag Race"

Zara was a homeschooler who loved gymnastics. She could do cartwheels and handstands, but there was one thing she found tricky – changing direction quickly during games. Every time she played tag with her friends, she either tripped or couldn’t turn fast enough to escape. “You’re fast in a straight line,” her brother teased, “but you run like a giraffe on roller skates!”

Zara didn’t want to give up. She wanted to grow stronger and faster in all ways. So she asked her mum, “What can I do to move quicker and stay balanced?” Her mum smiled and said, “You need to work on your coordination and agility.”

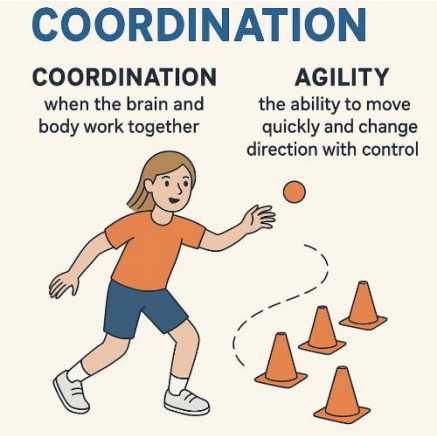
Zara wasn’t sure what those words meant, so her mum explained. “**Coordination** means your brain and body are working together – your hands, eyes, and feet all moving at the right time. **Agility** is the ability to move quickly and change direction with control.”

They watched a video of a soccer player zigzagging between cones and a dancer spinning with perfect balance. “They make it look easy,” Zara said. Her mum replied, “It looks easy because they’ve trained hard. You can too.”

That week, Zara set up a mini obstacle course in her backyard. She weaved through cones, jumped over ropes, and practiced catching a ball while hopping on one foot. At first, she stumbled. But day by day, she got quicker and steadier. She learned to look ahead and plan her next move, and her feet learned to follow her thoughts faster.

The next time she played tag, something amazing happened. Zara zipped one way, then spun and dodged her brother. “Whoa! What happened to roller skate giraffe?” he laughed. Zara grinned and said, “I’ve been training!”

Zara discovered that coordination and agility aren’t just useful for sport. They help with dancing, biking, climbing, and even reacting quickly in everyday life. Most of all, she learned that growing takes courage and that with effort and prayer, she could improve more than she ever thought.



B) Narration

Parent/Tutor:

"Now it's your turn. Tell me everything you remember about Zara and her story. What did she struggle with? What did she learn about coordination and agility? How did she improve?"

Encourage children to retell the story in their own words. Use prompts if needed:

- "What sport did Zara enjoy?"
- "Why did she set up an obstacle course?"
- "What did she learn about growing stronger?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What did Zara want to get better at?
- What does coordination mean?
- What did she do to improve?
- Who helps us when we try to do hard things?

ii) Middle Primary Students (Ages 8–10):

- Why are coordination and agility important in sports?
- What was difficult for Zara at the beginning?
- How did she show determination?
- How does God help us when we keep trying, even if we're not good at something yet?

iii) Upper Primary Students (Ages 11–12):

- How do the brain and body work together in coordination?
- What steps did Zara take to improve her agility?
- What does this story teach about perseverance and growth?
- How does developing physical skills like agility also grow spiritual traits like courage?

D) Activity: Obstacle Course & Catch Challenge

Objective: Build coordination and agility through a fun challenge.

Instructions:

1. **Set up a mini obstacle course (10–15 minutes)**
   Use items you have at home:
   - Pillows to jump over
   - Cones or cups to zigzag around
   - A line to balance on (tape on the ground or a garden hose)
   - A soft ball to throw and catch

2. **Complete the course twice:**
    - First slowly to practice coordination
    - Then as fast as possible to practice agility
3. **Add a partner game (optional):**
    - Toss and catch a ball while standing on one foot
    - Call out a number or colour while they catch it to make them think fast

Say to the student:

"This helps your brain and body work together – just like Zara practiced!"

Obstacle Course Planner

Obstacle #	Obstacle Name	What To Do	Helps Practice (e.g., jumping, balance)
1			
2			
3			
4			

E) Biblical Connection

Bible Verse:
"Be strong and courageous. Do not be afraid; do not be discouraged, for the Lord your God will be with you wherever you go." – Joshua 1:9

Parent/Tutor Says:

"When we try something hard – like learning a new skill – it can be frustrating at first. But God tells us to be strong and courageous. He is always with us, even when we feel slow or clumsy."

Ask:

- What does it look like to be strong and courageous when you're learning something new?
- How can practicing coordination and agility help you grow in faith and character?
- Can you think of a time you had to keep trying before you got better?

Lesson 24: Speed & Strength

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story: "Ethan and the Wall of Hay Bales"

Ethan lived on a small farm with his parents and younger sister, Mia. Every morning before breakfast, he helped with chores – feeding chickens, moving buckets of water, and helping his dad with hay bales. One chilly morning, his dad asked, "Can you help me move the last stack of hay? They're heavy, but we're in a hurry before the rain comes."

Ethan agreed and ran to the barn. He grabbed one hay bale and pulled – but it barely moved. He tried again, using all his effort, but it was clear: he didn't yet have the strength.

Frustrated, Ethan sat down on the hay. "Why can't I do this? I run fast and play soccer every day!"

Just then, his dad walked over and explained, "Speed and strength are both important, but they're different. Speed is how fast you can move. Strength is how much force your body can create. You're quick on your feet, but if you want to grow strong too, it takes training and time."

Ethan nodded, still a little disappointed.

That afternoon, he asked his dad to teach him strength exercises. They practiced lifting light buckets of water, carrying small logs, and doing push-ups on the grass. Every few days, Ethan added a little more weight or did one more repetition.

Weeks passed. One day, after soccer practice, Ethan raced his friend Micah down the driveway. He won the race with a huge grin. Then, heading to the barn, he tried moving one of the hay bales again. To his surprise, it shifted. Then he pushed harder, and the bale slid across the floor.

He laughed. "I did it!"

That night at dinner, he told his family. "I've been getting stronger *and* faster!"

His dad smiled and said, "Speed helps us move quickly. Strength helps us lift and push. But determination helps us keep going when it's hard – and that's the most important strength of all."

Ethan thanked God in his prayers that night – for strong legs, growing muscles, and a heart that didn't give up.

B) Narration

Parent/Tutor Instructions:

“Now it’s your turn. Can you tell me everything you remember about Ethan and the hay bales? What happened? What did he learn? What did he do to grow stronger?”

Encourage retelling in the child’s own words. Ask prompting questions if needed:

- “Why couldn’t Ethan move the hay bale at first?”
- “What did his dad teach him?”
- “How did Ethan grow stronger over time?”

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What was Ethan trying to move?
- What is strength? What is speed?
- How did Ethan get stronger?
- Who gives us strong bodies?

ii) Middle Primary Students (Ages 8–10):

- What’s the difference between strength and speed?
- Why couldn’t Ethan move the hay at first?
- What did he do to improve?
- Why do you think God wants us to use our strength wisely?

iii) Upper Primary Students (Ages 11–12):

- Why is it important to train for both speed and strength?
- What kind of determination did Ethan show?
- How can physical strength teach us spiritual lessons?
- In what areas of your life do you need to grow your "inner strength"?

D) Activity: Speed & Strength Challenge

Objective: Explore the difference between speed and strength through movement-based fun.

Materials Needed:

- Stopwatch or timer
- Small weights (e.g., water bottles, bags of rice)
- A space to run (hallway, backyard, or open room)

Part 1: Speed Challenge

- Set a 10-meter distance.
- Have students run from one point to the other. Time them.

- Repeat 2–3 times. Can they beat their time?

Part 2: Strength Challenge

- Carry a small object (weighted if appropriate for their age) from one point to another.
- Time how long it takes. Then increase the weight slightly.
- Optional: Do a set of squats or push-ups (age-appropriate number).

Say to the student:

"Speed helps us move fast. Strength helps us move heavy things. You need both in different situations – just like Ethan learned!"

Speed & Strength Activity Tracker and Journal

Date	Speed Challenge Time (seconds)	Strength Challenge (Object & Time)	How I Felt

E) Biblical Connection

Bible Verse:
"The Lord is my strength and my shield; my heart trusts in Him, and He helps me." – Psalm 28:7

Parent/Tutor Says:

"God gives us physical strength, but He also gives us something more – **spiritual strength**. That means trusting Him when life is hard, choosing to be kind when we feel angry, and not giving up when we face challenges."

Ask:

- What does it mean that God is our strength?
- How can we show courage and determination when we feel weak?
- What's more important – being strong on the outside or strong on the inside?

TOPIC 8	ANCIENT MEDICINE

Lesson 25: Hippocrates – Healing with Compassion and Wisdom

A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story: "The Doctor Who Stayed"

A long time ago, in Ancient Greece, there lived a doctor named **Hippocrates**. He wasn't like other doctors of his time. While many believed that sickness came from angry gods or strange magic, Hippocrates believed something different – he believed in **watching carefully**, listening, and caring for the whole person.

One day, Hippocrates heard news that a small village was sick. People were coughing, weak, and afraid. Many had left the town in fear, including other doctors. But Hippocrates packed his bag and went toward the sick.

When he arrived, people were surprised. "Why are you here? Aren't you afraid?" they asked.

Hippocrates replied gently, "I am here to help, not to run. You are not alone."

He didn't bring fancy tools or powerful medicines. He brought **compassion, observation**, and **wisdom**. He watched how the sick people acted, listened to what they said, and gave them simple treatments like rest, fresh air, and clean water. He washed their hands and made sure they were calm. He treated each person with kindness and dignity.

Soon, the people started to feel better. The village was peaceful again. Hippocrates didn't stay to be praised. He quietly left to help the next town.

Hippocrates believed that doctors should **"do no harm"** – a rule now known as the **Hippocratic Oath**, which many doctors still promise to follow today. He taught that healing is not just about the body, but about how we **treat people – with wisdom, courage, and kindness**.

Though he lived thousands of years ago, Hippocrates taught us something timeless: a brave heart and a caring spirit can bring healing to the world.

B) Narration

Parent/Tutor Says:

"Now I'd like you to tell the story back to me in your own words. What happened in the village? What did Hippocrates do? How did he help people feel better?"

Encourage detailed retelling. Prompt gently if needed:

- "Why did others run away?"
- "What did Hippocrates do differently?"
- "What was his big idea about healing?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- Who was Hippocrates?
- What did he do when people were sick?
- What does it mean to be kind when someone is hurting?
- How can we show love like Jesus when someone is sick or scared?

ii) Middle Primary Students (Ages 8–10):

- Why did Hippocrates go to the sick village?
- What kind of things did he do to help the sick people?
- What does it mean to "do no harm"?
- Why is being calm and gentle important in helping others?

iii) Upper Primary Students (Ages 11–12):

- How did Hippocrates' ideas differ from others in his time?
- Why was it brave of him to go into a sick village?
- What does the Hippocratic Oath mean, and why is it still used today?
- How does our Christian faith encourage compassion and wisdom when others are suffering?

D) Activity: Kindness Clinic – Play Doctor with Compassion

Objective: Experience the role of a gentle, wise helper.

Materials:

- Bandages or strips of cloth
- Stuffed animals, dolls, or action figures
- Small notebook for "doctor's notes"
- Toy medical tools (optional)

Instructions:

1. Set up a small "clinic" with toys or dolls as patients.

2. Have the child play the role of a doctor like Hippocrates.
3. For each toy, encourage the child to:
    - Gently speak and ask what's wrong.
    - "Observe" how the toy feels and give a calm, simple treatment.
    - Write or draw a note in the notebook about what was done.
    - Finish with words of kindness or a prayer.

Say to the child:

"You are learning how to care for others not just with actions, but with kindness, wisdom, and courage – just like Hippocrates."

Hippocrates - Journal Reflection Page

Question	My Answer
Who was Hippocrates, and what made him different from other doctors?	
What did he do to help the sick village?	
What did I learn about showing compassion and wisdom when helping others?	

E) Biblical Connection

Bible Verse:
"He went to him and bandaged his wounds, pouring on oil and wine." – Luke 10:34 (The Good Samaritan)

Parent/Tutor Says:

"This verse shows us how someone cared for a hurt stranger. He didn't just walk past – he stopped, helped, and treated the wounds with love. That's what Hippocrates did too."

Ask:

- How is helping someone when they're hurting a form of courage?
- When have you had the chance to care for someone?
- What kind of healing comes from kind words, gentle actions, and brave love?

Lesson 26: Natural First Aid – Healing with Honey and Olive Oil

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A) Lesson Content

Parent/Tutor Says:

"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read it once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story: "The Healing Garden"

In a warm village by the sea, a little girl named Eleni was helping her grandmother pick herbs from the garden. The air smelled like thyme and fresh olives. Bees buzzed near the lavender, and the sun made the stones feel hot underfoot.

Suddenly – *ouch!* Eleni tripped over a stone and scraped her knee. She cried out, and her grandmother quickly came over, kneeling beside her. "It's just a little cut," she said kindly, wiping away Eleni's tears. "We'll take care of it."

Eleni expected her grandmother to get a bandage, but instead, she brought two small jars from the kitchen – one with thick golden honey and the other with olive oil.

"Grandma, what are those for?" Eleni asked, sniffling.

"These," her grandmother said, "are gifts from God's creation. The honey helps fight germs and keeps the cut clean. The olive oil soothes the skin and helps it heal."

Gently, her grandmother washed Eleni's knee and then dabbed a bit of honey on the scrape. Then she rubbed a little olive oil around the sore area and covered it with a clean cloth.

"Did you know," she continued, "a wise doctor named Hippocrates used these very things. He lived long ago in Greece. He believed in using the good things God made to help the body heal."

Eleni felt comforted – not just by the treatment, but by her grandmother's calm voice and gentle hands. Soon the sting faded, and Eleni was smiling again.

That night, as they sat by candlelight, her grandmother said, "Sometimes, healing isn't just in the medicine. It's in the kindness, the care, and the words we share."

Eleni never forgot that day – the day she learned that healing comes not only from what we use, but from how we love.

B) Narration

Parent/Tutor Says:

"Now it's your turn. Can you tell me everything you remember about the story? What happened to Eleni? What did her grandmother use to help? What did you learn?"

Let your child retell in their own words. Prompt gently:

- "What did Eleni trip on?"
- "Why did her grandmother use honey and olive oil?"
- "What else helped Eleni feel better besides the medicine?"

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What did Eleni hurt?
- What did her grandmother put on the cut?
- How did her grandmother help her feel calm?
- Why do you think being kind is part of healing?

ii) Middle Primary Students (Ages 8–10):

- Why did Eleni's grandmother choose honey and olive oil instead of regular medicine?
- What did Hippocrates believe about natural healing?
- How can gentle words help someone feel better?
- How does God use people to bring healing?

iii) Upper Primary Students (Ages 11–12):

- What healing properties do honey and olive oil have?
- How is healing both physical and emotional?
- Why is it courageous to help someone who is hurting?
- What can this story teach us about God's design in creation and how we care for others?

D) Activity: Natural First Aid Observation & Mixing

Materials Needed:

- 1 teaspoon of honey
- 1 teaspoon of olive oil
- Small clean bowl or cup
- Spoon or stirrer

Instructions:

1. Scoop honey and olive oil into the bowl.
2. Stir gently and observe the texture and scent.
3. Discuss what each ingredient does:

- **Honey**: Sticky, sweet, protects against germs.
- **Olive Oil**: Smooth, soothing, helps skin recover.

Optional Extension:

- Dip a small square of clean cotton or cloth into the mixture (for pretend doctor play only).
- Remind children not to apply mixtures to real skin without adult supervision.

Say to the student:

“God gave us natural things that can help us heal. And He gave us hearts that can care and comfort, just like Eleni’s grandmother.”

E) Biblical Connection

Bible Verse:
"Gracious words are a honeycomb, sweet to the soul and healing to the bones." – Proverbs 16:24

Parent/Tutor Says:

“This verse reminds us that kind words are like honey – they heal more than just cuts. They bring peace to our hearts. Just like Eleni felt better from her grandmother’s voice and touch, we can help others heal through gentleness.”

Ask:

- How can your words be like honey to someone who’s hurting?
- What’s one way you can bring comfort to a friend or family member today?
- How can you show courage by being gentle when someone is sick, scared, or upset?

Lesson 27: Healing Herbs – Lavender, Chamomile & Mint

Theme: God's Design in Creation for Healing and Comfort

A) Lesson Content

Parent/Tutor Says:
"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read the story once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story Title: The Traveller and the Garden of Peace (Approx. 500 words)

Long ago in ancient Greece, nestled among olive trees and sun-warmed hills, there lived a kind family who loved to grow herbs. Their garden was filled with rows of green – soft lavender flowers swayed in the breeze, feathery chamomile blossoms glowed like little suns, and strong mint leaves filled the air with a fresh, cool scent.

One hot afternoon, a weary traveller came to their door. His face was tired, and his clothes dusty from walking many miles. The family greeted him kindly and said, "Come in. Rest in our home."

The mother went to the herb garden and picked a bunch of mint. She brewed it into a warm tea and offered it to the traveller. As he drank, he felt his stomach settle. The cooling mint soothed his hunger and gave him new strength.

Next, the daughter brought a bowl of lavender water. She invited the traveller to wash his face and hands. The calming scent of lavender drifted through the room. The traveller breathed deeply and felt his worries begin to melt away.

Then, the grandmother tucked some chamomile blossoms into a little pillow and gave it to the traveller for a short nap. As he lay on the soft bed, the sweet scent of chamomile helped his eyes grow heavy, and soon he was fast asleep.

The herbs had done their quiet work. The mint helped his body, the lavender helped his heart, and the chamomile helped his mind find peace. When the traveller awoke, he thanked the family. "Your garden has healed more than just my body – it has brought me peace."

The father smiled. "God gave us these plants for a reason. We grow them, but it is His wisdom that made them good."

The traveller went on his way, stronger and more hopeful than before. And the family returned to their garden, grateful for God's gift of healing herbs.

B) Narration

Parent/Tutor Says:
"Now I want you to tell me everything you remember about the story. Tell it in your own words. Try to remember what the traveller was like, what the family did, and what the herbs were used for."

(Allow the child time to recall and retell. Prompt gently if needed, e.g., "What did the mother bring?" "How did the herbs help?")

C) Thinking Questions

i) Youngest Students (Ages 5–7):

- What are the names of the three herbs in the story?
- What did the traveller drink?
- What do you think lavender smells like?
- Who made the herbs?

ii) Middle Primary Students (Ages 8–10):

- How did each herb help the traveller?
- Why do you think the family used herbs instead of other medicines?
- What did the father mean when he said, "It is His wisdom that made them good"?
- How can we thank God for the helpful plants He made?

iii) Upper Primary Students (Ages 11–12):

- What does the story teach us about using natural remedies?
- What role did each member of the family play in helping the traveller?
- How can you use knowledge of herbs to serve others today?
- How does this story show God's care for our bodies, minds, and hearts?

D) Activity

Hands-On Herb Exploration and Teatime

Parent/Tutor Instructions:

1. **Prepare Ahead:** Collect sprigs of fresh (or dried) lavender, chamomile, and mint. If you only have one or two herbs, that's okay. You can also use herbal tea bags labelled with these herbs.
2. **Smell and Touch:** Let your child gently smell and touch each herb. Ask:
    - "What does it smell like?"
    - "What words would you use to describe this herb?"
3. **Brew Tea Together:**
    - Let your child help make a warm cup of herbal tea using one or more herbs.
    - Talk about how the tea makes them feel. Does it make their body feel different? Their mood?
4. **Creative Option:** Let your child draw a "Healing Garden" – a picture of a garden with plants that help people. Label each herb and what it helps with.
5. **Optional Extension:**
    - Make simple lavender sachets or mint bundles tied with string.

- Put them under a pillow or in a drawer to enjoy the scent.

E) Biblical Connection

Bible Verse:
Ezekiel 47:12 – "Their fruit will be for food, and their leaves for healing."

Parent/Tutor Says:
"God gave us helpful plants as part of His wonderful creation. He made plants that not only feed us, but can help bring healing to our bodies, minds, and even our feelings."

Ask Your Child:

- "Why do you think God gave us healing plants like mint, lavender, and chamomile?"
- "How can you be like the family in the story – kind, gentle, and ready to help others?"
- "What does this teach us about courage and determination? When we are tired or upset, how can God help us find strength and peace, just like the traveller did?"

Lesson 28: Clay, Vinegar, and Salt – Earth's Simple Remedies

Theme: God's wisdom in the earth's healing gifts

A) Lesson Content

Parent/Tutor Says:
"I'm going to read you a story with things to learn. Now, please listen very carefully and think about the story as I'm reading it, because I'm only going to read the story once, and then after I've read the story, I want you to tell me everything you can remember about the story. Ok?"

Story Title: The Shepherd and the Grandmother's Remedies

In a quiet valley in Ancient Greece, a young shepherd named Theo watched over his sheep on a rocky hillside. The sun was warm, the sheep were calm, and Theo was barefoot, as he often was. He liked the feel of the earth beneath his feet.

One day, while chasing a wandering lamb, Theo slipped on a stone and scraped his knee. The cut stung, and dust stuck to the wound. He limped home slowly, his leg sore and dirty.

At the door of their small home, his grandmother saw him coming. She had seen many cuts and bruises in her life. With gentle hands, she washed Theo's knee with salty water. "Salt helps to clean," she told him. "It washes away the bad things we can't see."

Next, she mixed a little clay with water in a bowl until it became a smooth, cool paste. She added a few drops of vinegar and stirred it gently. "Clay can draw out what's bad, and vinegar helps to stop infection," she said.

She spread the clay poultice carefully on Theo's knee and wrapped it with a clean cloth. "God designed our bodies to heal naturally; so now we wait and let it do its work," she smiled.

As Theo rested, his grandmother sat beside him and told him stories. She spoke of how people had always used the simple things around them – salt from the sea, clay from the ground, and vinegar made from grapes. "When we don't have doctors nearby," she said, "God has still provided for us."

Theo looked at the clay on his leg. "But it's just dirt!" he said.

His grandmother chuckled. "Yes, but God made it special. Clay can carry away infection. Vinegar can kill germs. Salt can clean. They are part of His wisdom built into creation."

Theo thought for a moment. "So,... even the earth can help heal?"

"Yes," she said. "But remember – true healing comes from God. These are just tools He gives us. And we always pray, too."

That night, Theo's leg began to feel better. In the morning, the wound looked cleaner and less red. He was amazed.

Years later, when Theo became a shepherd with children of his own, he still remembered the clay, the vinegar, and the salt – and the gentle wisdom of his grandmother, who showed him that God had provided healing, even in the earth.

B) Narration

Parent/Tutor Says:
"Now, I want you to tell me everything you remember from the story. What happened first? What did Theo do? What did his grandmother use to help? Try to tell the story in your own words."

(Let the child narrate freely. You can encourage them by asking gentle prompts like: "What happened after Theo hurt his knee?" or "What did his grandmother say about the clay?")

C) Thinking Questions

i) Youngest Students (Ages 5–7)

- What happened to Theo?
- What did his grandmother put on his cut?
- What did the clay and salt do?
- Who made clay, vinegar, and salt?

ii) Middle Primary Students (Ages 8–10)

- Why did Theo's grandmother use salt, clay, and vinegar?
- What did she mean when she said "God has provided for us"?
- Can you name a time when something from nature helped you feel better?
- Why is it wise to pray as well as use natural remedies?

iii) Upper Primary Students (Ages 11–12)

- How do the properties of clay, salt, and vinegar make them useful for healing?
- What does this story teach us about trusting in God's creation?
- Why is it important to learn about natural remedies, even today?
- How can using these remedies show courage and determination in hard times?

D) Activity

Hands-On Healing Demonstration

Option 1: Make a Clay Poultice
Materials:

- Natural clay or playdough
- Small bowl
- Water
- (Optional) A few drops of vinegar
- Spoon or fingers for mixing

- Cloth or paper towel

Instructions:

1. Mix a small amount of clay or playdough with water to make a thick, spreadable paste.
2. Add a few drops of vinegar if you wish.
3. Spread a little of the mixture onto a cloth or paper towel like a poultice.
4. (Optional) Wrap it gently around a pretend injury (e.g., on a toy or doll) and pretend to help heal it, just like Theo's grandmother.

Talk about how the ingredients are gentle and simple, yet useful for healing.

Option 2: Salt Water Science
Materials:

- Warm water
- Salt
- Spoon
- Cup or jar

Instructions:

1. Stir a spoonful of salt into a cup of warm water.
2. Observe how it dissolves.
3. Discuss: "This is like the salty water Theo's grandmother used to clean his knee."
4. (Do **not** drink. This is for discussion only.)

E) Biblical Connection

Bible Verse:
James 5:14 – "Is anyone among you sick? Let them call the elders of the church to pray over them…"

Parent/Tutor Says:
"God wants us to pray for healing, and He also gives us good things – like plants and minerals – that can help our bodies. Prayer and wise actions work together."

Ask Your Child:

- "Why do you think it's important to pray and use remedies together?"
- "What can we learn from Theo's grandmother about being wise and calm in a problem?"
- "How can we show courage and determination when we're hurt or helping someone else who is sick?"

TOPIC 9	ANCIENT ELECTRICITY & MAGNETISM

LESSON 29 – The Mystery of the Baghdad Battery

Theme: Determination

Science Focus: Electricity, Conductors, Insulators & Ancient Scientific Investigation

Learning Objectives

Children will:

- Learn about an archaeological mystery known as the Baghdad Battery.
- Understand that electricity can be produced through chemical reactions.
- Identify conductors and insulators.
- Investigate magnetic and non-magnetic materials.
- Recognise how determination helps scientists continue searching for answers.
- Begin understanding how electrical energy can be produced and transferred.

Content Descriptions

AC9S4U03
Identify how forces can be exerted by one object on another and investigate the effect of frictional, gravitational and magnetic forces on the motion of objects.

AC9S6U03
Investigate the transfer and transformation of energy in electrical circuits, including the role of circuit components, insulators and conductors.

AC9S6H01
Examine why advances in science are often the result of collaboration or build on the work of others.

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says

"Today we are going to investigate one of archaeology's most fascinating mysteries. We will learn about an object discovered near Baghdad that some scientists believe may have produced electricity nearly 2,000 years ago."

"Although Ancient Greece came before this discovery, the Greeks were famous for asking questions, observing carefully, and refusing to give up when searching for answers. Today's lesson continues that spirit of determination."

Vocabulary

Electricity – A form of energy that can move through certain materials.

Current – The flow of electrical energy.

Conductor – A material that allows electricity to move through it.

Insulator – A material that slows or blocks electricity.

Magnetism – An invisible force that can attract certain metals.

Electrolyte – A liquid that helps electricity flow in a battery.

Archaeology – The study of people from the past through the objects they left behind.

Determination – Continuing to search for answers even when something is difficult or uncertain.

B) Informational Story

The Mystery Hidden in a Clay Jar

More than two thousand years ago, people lived in the lands between the Tigris and Euphrates Rivers. Traders travelled dusty roads, merchants sold goods in busy markets, and skilled craftsmen worked with metals, pottery, and tools.

Many centuries later, archaeologists were digging near Baghdad when they uncovered something strange.

At first it did not look important.

It was only a clay jar.

But when scientists looked more closely, they noticed something unusual.

Inside the jar was a rolled sheet of copper. Hanging down the centre was an iron rod. The top had been sealed with asphalt. The arrangement seemed very deliberate. It did not look like a storage jar. It did not look like a drinking cup. It appeared to have been built for a special purpose.

The archaeologist Wilhelm König carefully examined the object. The more he studied it, the more curious he became.

"What if this was not simply a container?" he wondered.

Scientists later noticed that if a liquid such as vinegar was placed between copper and iron, a small electrical current could be produced. Vinegar contains acid. Acids can cause chemical reactions between different metals.

Suddenly a fascinating possibility appeared.

Could this object have functioned like a simple battery?

No one knew for certain.

Some researchers believed the jar may have been used for producing a small electrical current. Others suggested it may have served another purpose entirely.

The mystery remains unsolved.

That is one of the exciting things about science.

Scientists do not always know the answer immediately.

Sometimes they spend years gathering evidence.

Sometimes different scientists disagree.

Sometimes new discoveries create even more questions.

Determination is needed because finding truth often takes patience.

This idea would have been familiar to many Ancient Greek thinkers.

Archimedes spent years studying mathematics and engineering. Aristotle carefully observed animals and nature. Pythagoras searched for patterns in numbers and music.

None of them learned everything in a single day.

They kept asking questions.

They kept testing ideas.

They kept searching for answers.

Today scientists continue doing exactly the same thing.

The Baghdad Battery reminds us that people in the ancient world may have understood more than we sometimes imagine. It also reminds us that archaeology is often like solving a giant puzzle with many missing pieces.

As Christians, we know that God created human beings with minds capable of creativity, investigation, and discovery.

Proverbs 25:2 says:

"It is the glory of God to conceal a matter; to search out a matter is the glory of kings."

Scientists, archaeologists, and historians continue searching for answers because God created people to explore, learn, and understand His world.

The story of the Baghdad Battery teaches us that determination is not simply refusing to quit.

It is patiently following the evidence wherever it leads.

C) Narration

Parent/Tutor Says

"Tell the story back in your own words."

Prompt if needed:

- What was discovered near Baghdad?
- What materials were found inside the jar?
- Why did some scientists think it might have been a battery?
- Why are archaeologists still debating its purpose?
- How does this story demonstrate determination?

D) Thinking Questions

Ages 5–7

1. What was found inside the clay jar?
2. What is electricity?
3. Why do scientists keep studying the object?
4. What does determination mean?

Ages 8–10

1. Why might vinegar have helped the object produce electricity?
2. Why do scientists sometimes disagree?
3. What similarities do you see between Greek thinkers and modern scientists?
4. Why is evidence important in science?

Ages 11–12

1. What evidence supports the idea that the object could have been a battery?
2. What alternative explanations might exist?
3. Why should scientists be careful before making conclusions?
4. How does determination contribute to scientific progress?

E) Learning Activities

Option 1: Build a Simple Baghdad Battery Model

Materials

- Plastic cup
- Vinegar
- Copper coin or copper strip
- Galvanised nail
- Alligator clips
- Voltmeter (if available)

Instructions

1. Fill the cup with vinegar.
2. Place the copper and nail into the liquid without touching.
3. Attach wires.
4. Observe whether a small voltage can be measured.
5. Record observations.

Discussion

- Which metals were used?
- Where did the energy come from?
- Why might ancient people have experimented with similar devices?

Option 2: Conductors and Insulators Investigation

Materials

- Magnet
- Copper coin
- Nail
- Aluminium foil
- Plastic spoon
- Wooden paddle-pop stick
- Rubber band

Instructions

Predict which materials:

- conduct electricity
- are magnetic
- are non-magnetic

Create a table of observations.

Discussion

Which materials are metals?

Which materials are good conductors?

Which materials act as insulators?

Option 3: Archaeology Challenge

Hide several "artefacts" around the yard or room.

Students:

1. Discover each object.
2. Draw it.
3. Predict its purpose.
4. Explain what evidence supports their prediction.

This mirrors the work of archaeologists studying the Baghdad Battery.

F) Biblical Connection & Wrap-Up

The Baghdad Battery reminds us that learning often begins with curiosity and questions. Scientists and archaeologists do not always know the answers immediately. Like Archimedes and other Greek thinkers, they must carefully gather evidence, test ideas, and remain determined when problems are difficult.

God has given people minds that can investigate and discover. Determination means continuing to seek understanding even when the answers are not obvious.

Memory Verse:
"It is the glory of God to conceal a matter; to search out a matter is the glory of kings." — Proverbs 25:2

Achievement Standard Evidence

This lesson provides evidence toward:

Year 4

- Identifying magnetic forces and describing their effects on objects.

Year 6

- Recognising that batteries transfer and transform energy through electrical systems.
- Identifying conductors and insulators.
- Describing the role of electrical components in producing and transferring electrical energy.

LESSON 30 – From Ancient Batteries to Modern Electricity

Theme: Determination

Science Focus: Electrical Circuits, Energy Transfer, Conductors, Insulators, Magnetism & Chemical Change

Learning Objectives

Children will:

- Understand how batteries provide electrical energy.
- Identify the role of batteries, wires, switches, and bulbs in a circuit.
- Investigate conductors and insulators.
- Explore the relationship between electricity and magnetism.
- Identify reversible and irreversible changes associated with batteries and metals.
- Demonstrate determination by testing, improving, and troubleshooting electrical circuits.

ACv9 Content Descriptions

AC9S6U03 Investigate the transfer and transformation of energy in electrical circuits, including the role of circuit components, insulators and conductors.

AC9S4U03 Identify how forces can be exerted by one object on another and investigate the effect of frictional, gravitational and magnetic forces on the motion of objects.

AC9S6U04 Compare reversible changes, including dissolving and changes of state, and irreversible changes, including cooking and rusting that produce new substances.

AC9S6H01 Examine why advances in science are often the result of collaboration or build on the work of others.

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says

"Last lesson we learned about the mysterious Baghdad Battery. Scientists are still debating exactly how it was used, but it reminds us that people have been experimenting with electricity for a very long time."

"Today we are going to move from an ancient mystery to modern science. We will learn how batteries work, how electricity travels through circuits, and how electricity and magnetism are connected."

"Like Archimedes and other Greek scientists, we will need determination because experiments do not always work perfectly the first time."

Vocabulary

Circuit – A complete pathway through which electricity can flow.

Battery – A device that stores chemical energy and converts it into electrical energy.

Electrical Energy – Energy carried by moving electric charges.

Conductor – A material that allows electricity to pass through it.

Insulator – A material that resists the flow of electricity.

Switch – A device that opens or closes a circuit.

Electromagnet – A magnet produced using electricity.

Chemical Reaction – A process that changes substances into new substances.

Irreversible Change – A change that cannot easily be undone.

Reversible Change – A change that can be undone.

B) Informational Story

The Spark That Changed the World

For thousands of years, people saw lightning flash across the sky.

They watched sparks jump from wool and amber.

They noticed magnets attracting pieces of iron.

Yet no one fully understood how these strange invisible forces worked.

Ancient Greek thinkers were fascinated by mysteries like these.

One Greek philosopher named Thales discovered that rubbing amber with cloth could attract feathers and bits of straw. He did not know about electrons, but he realised that something unusual was happening.

Many centuries later, scientists continued investigating these mysteries.

The possible Baghdad Batteries showed that ancient people may have discovered ways of producing small electrical currents. Whether they were used for medicine, experiments, or some other purpose remains uncertain. Yet the idea itself inspired scientists to ask deeper questions.

Eventually, scientists began building batteries that definitely produced electricity.

They discovered that different metals could react with chemicals to create an electrical current.

They learned that electricity could travel through wires.

They found that a complete path was needed for electricity to flow.

This path became known as a circuit.

Imagine trying to travel around a race track.

If part of the track is missing, the race car cannot continue.

Electricity behaves similarly.

If there is a gap in a circuit, the electricity stops.

If the pathway is complete, electricity can travel through the circuit.

Scientists also discovered something surprising.

Electricity and magnetism are closely connected.

When electricity flows through a wire, it creates a magnetic field around the wire.

This discovery eventually led to electric motors, generators, speakers, computers, trains, and countless other inventions.

Another important discovery involved batteries themselves.

Scientists learned that batteries work because chemical reactions occur inside them.

When chemicals react with metals, electrical energy is produced.

Over time these reactions slowly use up the battery materials.

This is why batteries eventually go flat.

The chemical reactions inside a battery create new substances.

Because new substances are formed, these reactions are examples of irreversible chemical change.

Scientists did not discover these ideas overnight.

Many experiments failed.

Many batteries leaked.

Many circuits did not work.

Many inventors made mistakes.

But determination kept them moving forward.

Each discovery built upon earlier discoveries.

Just as Greek scientists built upon the work of those before them, modern scientists continue building upon the work of earlier generations.

Today, every light switch, torch, computer, and mobile phone depends upon discoveries made by people who refused to give up when experiments became difficult.

Their determination helped illuminate the world.

C) Narration

Parent/Tutor Says

"Retell today's story in your own words."

Prompt if needed:

- What is a circuit?
- Why does electricity need a complete path?
- How are electricity and magnetism connected?
- Why do batteries eventually stop working?
- How did determination help scientists make discoveries?

D) Thinking Questions

Ages 5–7

1. What is a battery?
2. What happens if a circuit has a gap?
3. What is a magnet?
4. Why is determination important?

Ages 8–10

1. Why does electricity need a complete circuit?
2. What is the difference between a conductor and an insulator?
3. How are electricity and magnetism related?
4. Why do batteries eventually run out?

Ages 11–12

1. How does a battery transform energy?
2. Why are metals usually good conductors?
3. Why is rusting considered an irreversible change?
4. How did scientific discoveries build upon earlier discoveries?

E) Learning Activities

Activity 1: Build a Simple Electrical Circuit

Materials

- AA battery
- Battery holder
- Small bulb or LED
- Connecting wires
- Switch (optional)

Instructions

1. Examine each circuit component.
2. Predict what each part does.
3. Connect the battery, wires, and bulb into a complete circuit.
4. Observe what happens.
5. Open the circuit by disconnecting a wire.
6. Observe what changes.
7. Draw the completed circuit.

Discussion

- Which component supplied energy?
- Which component used energy?
- Why did the bulb only work when the circuit was complete?

Energy Transformation

Battery:
Chemical Energy → Electrical Energy

Bulb:
Electrical Energy → Light Energy + Heat Energy

Activity 2: Conductors and Insulators Investigation

Materials

- Circuit from Activity 1
- Aluminium foil
- Copper coin
- Nail
- Plastic spoon
- Rubber band
- Wooden paddle-pop stick

Instructions

1. Insert one material at a time into the circuit.
2. Observe whether the bulb lights.
3. Record results.

Material	Prediction	Result	Conductor or Insulator?
Coin			
Nail			
Plastic Spoon			
Rubber Band			
Wood			

Discussion

- Which materials conducted electricity?
- What do most conductors have in common?

Activity 3: Build an Electromagnet

Materials

- Large iron nail
- Insulated copper wire
- Battery
- Paper clips

Instructions

1. Wrap the wire around the nail 20–30 times.
2. Leave both ends free.
3. Connect the wire ends briefly to the battery.
4. Test whether the nail can pick up paper clips.
5. Disconnect the battery.
6. Observe what changes.

Discussion

- What force was produced?
- What happened when electricity stopped flowing?

- How does this show a connection between electricity and magnetism?

Activity 4: Reversible and Irreversible Changes

Provide examples:

- Ice melting
- Water freezing
- Salt dissolving in water
- Rusting nail
- Burnt toast
- Used battery

Students sort them into:

Reversible Changes

- Ice melting/freezing
- Water evaporating/condensing
- Salt dissolving

Irreversible Changes

- Rusting
- Burning
- Battery chemical reactions

Discussion

Which changes produced new substances?

Why can't a rusted nail simply become new metal again?

F) Optional Extension

Build a Stronger Battery

Using teacher supervision:

- Connect two Baghdad-style battery cups in series.
- Measure whether the voltage increases.
- Compare results with a single cell.

Discuss why ancient people may have connected multiple cells together if they wanted stronger electrical effects.

G) Biblical Connection & Wrap-Up

Electricity is invisible, yet its effects can be clearly seen. We cannot see electrical energy travelling through a wire, but we can see a light bulb glow.

In a similar way, God often works in ways we cannot directly see, yet His work becomes visible through its effects.

The scientists who discovered the principles of electricity showed determination by continuing to investigate difficult questions. Their discoveries built upon the work of earlier generations, reminding us that learning is often a long journey rather than a single moment of success.

Memory Verse

"Let us not grow weary while doing good, for in due season we shall reap if we do not lose heart." — Galatians 6:9

Achievement Standard Evidence

Year 4

Students:

- Identify magnetic forces acting on objects.
- Describe how magnetic forces affect movement.
- Observe that forces can act without direct contact.
- How the properties of natural & made materials influence their use (magnetic & electric conductors)

Year 6

Students:

- Identify batteries, wires, switches, and bulbs as circuit components.
- Explain the role of circuit components in transferring and transforming electrical energy.
- Distinguish between conductors and insulators.
- Classify reversible and irreversible changes.
- Recognise that battery operation involves chemical reactions that produce electrical energy.

TOPIC 10	CULMINATING PROJECT OR ASSESSMENT

Differentiated Assessment Tasks

Science & Technology – Ancient Greece (Fortitude & Determination)

These assessment tasks are designed to align with the themes, investigations, and scientific thinking explored throughout the Ancient Greece Science course, including Archimedes, Pythagoras, astronomy, sound, motion, simple machines, observation, mathematics in nature, and human physiology.

Foundation – Year 2 Assessment Task

Assessment Title

"Young Greek Thinkers & Discoverers Journal"

Assessment Description

Students create a simple "Greek Discoverers Journal" containing evidence from practical activities completed throughout the unit. The journal demonstrates curiosity, observation, participation, and growing understanding of how people in Ancient Greece used careful thinking and determination to learn about the world.

Students include:

- Drawings and oral explanations of experiments (e.g., sink/float, sound, stars, pulleys, shadows, movement)
- Simple observations and predictions
- Pattern drawings from nature or music
- Photos or teacher-recorded comments from investigations
- Short reflections about courage, persistence, or trying again when learning was difficult

The assessment focuses on participation, observation, communication, and safe engagement in investigations rather than formal scientific explanations.

Suggested Evidence

- Sink/float experiment record
- Archimedes' Screw drawing
- Pattern or constellation artwork
- Sound experiment observations

- Teacher anecdotal notes
- Oral narration

Conditions of Assessment

- Completed progressively across the term
- Combination of oral, visual, and practical evidence
- Parent/teacher scaffolding permitted
- May be completed individually or collaboratively
- Students communicate ideas using drawings, labels, simple sentences, or oral narration

Achievement Standards Addressed

Students may demonstrate evidence toward:

- observing and describing movement, materials, sounds, and patterns
- posing questions and making predictions
- safely engaging in investigations
- recording and sharing observations
- identifying patterns and communicating ideas with guidance

Years 3–4 Assessment Task

Assessment Title

“Ancient Greek Science Investigation Portfolio”

Assessment Description

Students complete a portfolio of scientific investigations inspired by Ancient Greek scientists and thinkers. They investigate motion, force, sound, patterns, astronomy, simple machines, or measurement through hands-on experiments and recorded observations.

Students complete:

1. A fair test investigation (e.g., pulley systems, sound vibrations, catapult force, floating/displacement)
2. A pattern or astronomy investigation (e.g., constellations, geometry in nature, rhythm patterns)
3. A written or oral explanation of how Greek thinkers used determination and careful observation to solve problems
4. Tables, labelled diagrams, graphs, or measurement records
5. A short reflection about perseverance and problem-solving

Students demonstrate increasing independence in planning, measuring, recording, and communicating scientific findings.

Suggested Investigation Options

- Build and test a pulley
- Create and measure a catapult launch
- Investigate sound pitch using rubber-band harps
- Observe and classify patterns in nature
- Create a constellation map and measure distances
- Compare floating objects and displacement

Conditions of Assessment

- Completed across multiple lessons
- Students use provided planning scaffolds
- Practical investigations completed safely
- Teacher guidance permitted during setup
- Combination of written, oral, and visual evidence
- Students present findings to peers, family, or teacher

Achievement Standards Addressed

Students may demonstrate evidence toward:

- identifying forces and motion effects
- recognising patterns and relationships
- conducting fair investigations
- making formal measurements
- organising data and drawing conclusions
- communicating scientific findings using scientific vocabulary

Years 5–6 Assessment Task

Assessment Title

“Greek Innovators Scientific Inquiry Project”

Assessment Description

Students conduct an extended scientific inquiry inspired by the innovations and discoveries of Ancient Greek thinkers such as Archimedes and Pythagoras. Students investigate how mathematics, force, motion, sound, astronomy, or observation can be used to explain and solve real-world problems.

Students:

1. Develop an investigable scientific question
2. Form reasoned predictions
3. Plan and conduct a repeatable fair test
4. Identify variables and possible risks
5. Collect and organise accurate measurements and data
6. Analyse patterns, trends, and relationships
7. Evaluate reliability and possible sources of error
8. Present conclusions using scientific language, diagrams, tables, graphs, or models
9. Reflect on how determination, persistence, and creativity contribute to scientific discovery

Students may choose inquiry topics connected to:

- simple machines and mechanical advantage
- astronomy and measurement
- geometry and mathematical patterns
- sound frequencies and vibration
- force, motion, and trajectory
- engineering solutions inspired by Archimedes

Suggested Project Examples

- Design and improve a pulley or lifting system
- Investigate variables affecting catapult distance
- Explore how string length changes sound pitch
- Investigate symmetry and Fibonacci patterns in nature
- Build and evaluate an Archimedes’ Screw model
- Create a star-tracking or seasonal observation project

Conditions of Assessment

- Conducted over several weeks
- Students maintain a scientific journal or investigation log
- Investigations must include repeated trials
- Students independently identify variables and methods
- Use of graphs, tables, diagrams, and measurements required
- Oral presentation or written report required

- Teacher feedback permitted during planning stages

Achievement Standards Addressed

Students may demonstrate evidence toward:

- planning repeatable investigations
- identifying variables and risks
- using equipment with precision
- organising and analysing data
- evaluating methods and sources of error
- drawing reasoned conclusions
- communicating findings appropriately for audience and purpose
- recognising how scientific understanding develops through persistence and collaboration

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Foundation – Year 2 Rubric

“Young Greek Thinkers & Discoverers Journal”

Criteria	A – Excellent	B – Strong	C – Satisfactory	D – Developing	E – Beginning
Participation & Engagement	Participates enthusiastically and independently in all investigations and discussions	Participates actively in most activities with little prompting	Participates appropriately in activities with some guidance	Participates inconsistently and requires regular prompting	Rarely participates or disengages from activities
Observation Skills	Makes detailed observations and notices patterns or changes independently	Makes clear observations and notices some patterns	Makes simple observations about experiments or activities	Makes limited observations with support	Has difficulty noticing or describing observations
Predictions & Thinking	Makes thoughtful predictions and explains ideas clearly	Makes sensible predictions connected to observations	Makes simple predictions related to activities	Makes unclear or incomplete predictions	Requires significant support to make predictions
Recording & Communication	Communicates ideas clearly using detailed drawings, labels, oral narration, or simple writing	Communicates ideas clearly with appropriate drawings or explanations	Shares basic observations through drawings or oral responses	Shares limited ideas with support	Rarely records or communicates ideas
Attitude of Determination & Persistence	Demonstrates excellent perseverance, curiosity, and willingness to try again independently	Usually shows persistence and positive effort during challenges	Shows satisfactory effort and willingness to continue learning	Gives up easily or requires encouragement to continue	Avoids challenges or becomes disengaged quickly

Achievement Standard Alignment

Middle achievement (“C”) broadly reflects Foundation–Year 2 Achievement Standards involving:

- making observations
- posing questions and predictions
- participating safely in investigations
- representing observations
- communicating ideas with guidance

Years 3–4 Rubric

“Ancient Greek Science Investigation Portfolio”

Criteria	A – Excellent	B – Strong	C – Satisfactory	D – Developing	E – Beginning
Scientific Investigation Skills	Independently plans and conducts careful investigations using fair-testing principles accurately	Conducts investigations carefully with minor support	Conducts simple investigations using provided scaffolds	Requires frequent support to complete investigations	Has difficulty completing investigations safely or accurately
Observation, Measurement & Recording	Records detailed measurements and observations accurately using appropriate tables, diagrams, or graphs	Records clear observations and measurements with good organisation	Records basic observations and measurements appropriately	Records incomplete or unclear observations	Records very limited observations or data
Understanding of Scientific Concepts	Demonstrates strong understanding of forces, patterns, sound, motion, or measurement concepts	Demonstrates clear understanding of most concepts	Demonstrates satisfactory understanding of key concepts	Demonstrates partial understanding with misconceptions	Demonstrates limited understanding of concepts
Analysis & Conclusions	Thoughtfully explains patterns, compares results, and draws logical conclusions independently	Explains findings clearly and draws appropriate conclusions	Identifies simple patterns and provides basic conclusions	Makes limited connections between observations and conclusions	Has difficulty explaining results or conclusions
Communication & Scientific Vocabulary	Communicates findings clearly and confidently using appropriate scientific vocabulary throughout	Uses scientific vocabulary appropriately in most situations	Uses some scientific vocabulary correctly	Uses limited scientific vocabulary	Rarely uses scientific vocabulary correctly
Determination & Problem-Solving	Demonstrates exceptional persistence, creativity, and initiative during investigations	Usually perseveres and solves problems effectively	Demonstrates satisfactory persistence and effort	Requires encouragement to persist when difficulties arise	Gives up easily or avoids challenges

Achievement Standard Alignment

Middle achievement (“C”) broadly reflects Years 3–4 Achievement Standards involving:

- planning investigations with scaffolds

- making measurements
- identifying patterns and relationships
- drawing conclusions
- communicating findings using scientific vocabulary

Years 5–6 Rubric

“Greek Innovators Scientific Inquiry Project”

Criteria	A – Excellent	B – Strong	C – Satisfactory	D – Developing	E – Beginning
Planning & Conducting Investigations	Independently plans detailed, repeatable investigations with well-identified variables and safety considerations	Plans and conducts investigations carefully with minor guidance	Plans and conducts investigations appropriately with support	Requires frequent support to plan and conduct investigations	Has difficulty planning or completing investigations
Data Collection & Precision	Collects accurate, detailed, and precise data using appropriate equipment effectively	Collects organised and mostly accurate data	Collects satisfactory data with acceptable accuracy	Collects incomplete or inconsistent data	Collects minimal or inaccurate data
Analysis, Evaluation & Reasoning	Analyses patterns and relationships insightfully, identifies errors, and draws well-supported conclusions	Explains patterns clearly and evaluates methods appropriately	Identifies patterns and provides satisfactory conclusions	Provides limited analysis or weak conclusions	Has difficulty analysing data or forming conclusions
Scientific Understanding	Demonstrates sophisticated understanding of scientific concepts and their real-world applications	Demonstrates strong understanding of concepts and applications	Demonstrates satisfactory understanding of key concepts	Demonstrates partial understanding with gaps or misconceptions	Demonstrates minimal understanding of concepts
Communication & Presentation	Communicates findings fluently using scientific language, graphs, tables, diagrams, and appropriate structure	Presents findings clearly using appropriate scientific conventions	Communicates findings satisfactorily with some scientific language	Communication lacks clarity or scientific detail	Findings are incomplete or unclear
Determination, Persistence & Inquiry Mindset	Demonstrates exceptional perseverance, initiative, creativity, and independent inquiry	Shows strong persistence and problem-solving during challenges	Demonstrates satisfactory persistence and effort	Requires encouragement to continue when challenges arise	Gives up easily or avoids inquiry challenges

Achievement Standard Alignment

Middle achievement (“C”) broadly reflects Years 5–6 Achievement Standards involving:

- planning repeatable investigations

- identifying variables
- collecting precise data
- analysing patterns and relationships
- evaluating methods and errors
- communicating reasoned scientific conclusions