

Unit 2
“Ancient Hebrews
(& Obedience)”



Prep to
Grade
6

SCIENCE

Science & Design Technology (Prep to Grade 6)

“Ancient Hebrews (& Obedience)”

SUMMARY:

Science (The Hebrews in Ancient Egypt) invites students in Grades Prep to 6 to discover how people long ago explored, tested, and applied scientific ideas and design-technology long before modern laboratories existed. Through stories, observation, hands-on activities, and discussion, students learn concepts in science & technology related to historical events.....

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.

Some suggestions for extra reading include but are not limited to...

- to be announced...

IMAGES COPYRIGHT:

Unless otherwise indicated, all images are sourced from www.commonswikimedia.org

Prior to starting each week, review the recommended resources.

Contents

Topic	Description	Page
Topic 1	<u>Water, Survival & God's Provision (Part A)</u> 1. Floating & Sinking – The Science of Buoyancy 2. Water, Disease & the Egyptian Plagues	
Topic 2	<u>Water, Survival & God's Provision (Part B)</u> 3. The Red Sea – Geography, Tides & Archaeological Questions 4. Survival in the Wilderness – Water, Food & Human Needs	
Topic 3	<u>Building, Materials & Engineering (Part A)</u> 5. Designing Large Tents & Portable Structures 6. Stone Carving, Writing & Ancient Technologies	
Topic 4	<u>Building, Materials & Engineering (Part B)</u> 7. The Walls of Jericho – Sound, Vibrations & Force 8. Surveying the Land – Mapping, Measurement & Cartography	
Topic 5	<u>Agriculture, Health & Living Systems (Part A)</u> 9. Ancient Farming & Harvest Technologies 10. Energy, Food & Human Endurance	

Topic 6	<u>Agriculture, Health & Living Systems (Part B)</u> 11. Venoms, Medicines & Healing 12. Cells, Growth & Living Things
Topic 7	<u>Communication, Movement & Patterns (Part A)</u> 13. Ancient Weapons, Forces & Projectile Motion 14. Music, Sound Waves & the Brain
Topic 8	<u>Communication, Movement & Patterns (Part B)</u> 15. Signals, Communication & Symbol Systems 16. Patterns in Nature, Stars & God's Order
Topic 9	Assessment:

TOPIC 1	WATER, SURVIVAL & GOD’S PROVISION (PART A)

LESSON 1 – FLOATING & SINKING: THE SCIENCE OF BUOYANCY

Theme

God Provides Safety Through Wisdom and Order

Character Focus

Obedience – carefully following instructions and trustworthy processes

Learning Objectives

By the end of this lesson, students will be able to:

- Observe that some objects float while others sink
 - Identify simple properties that affect buoyancy
 - Understand that shape, weight, and trapped air affect floating
 - Conduct simple investigations and record observations
 - Recognise that careful observation and obedience to instructions help people stay safe around water
 - Connect scientific investigation to the story of Moses and the Nile River
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons, we have been learning about the time of Moses in Ancient Egypt. Moses’ baby basket floated safely on the Nile River, and later God protected the Israelites as they crossed through the Red Sea. Water was very important in the lives of the ancient Egyptians and Hebrews. Today we are going to investigate an important science question connected to water...”

“Why do some things float while others sink?”

“We will discover that objects do not float by magic or luck. God designed the world with orderly rules that scientists can observe and study carefully. Today we will practise being obedient scientists by following instructions carefully, making observations, and recording what happens truthfully.”

Vocabulary

- Buoyancy – the ability of something to float in water
- Float – to stay on the surface of water
- Sink – to fall below the surface of water
- Waterproof – not letting water pass through
- Density – how tightly matter is packed together
- Surface – the top layer of something
- Observe – to look carefully and notice details
- Prediction – a careful guess about what might happen

Science Journal Setup

Parent/Tutor Says:

“Today we will begin our Science Journal entry for Lesson 1. Write today’s lesson title: ‘Floating & Sinking – The Science of Buoyancy.’”

“You will record:

- your predictions,
 - your observations,
 - your diagrams,
 - and what you learned from the experiment.”
-

B) Informational Story

“The Basket on the Nile”

Long ago, in the land of Egypt, a Hebrew mother named Jochebed faced a terrible problem. Pharaoh had commanded that Hebrew baby boys should not live. Jochebed loved her baby deeply and wanted to protect him. But how could she keep him safe?

For three months she hid the child carefully. She obeyed God as best she could and trusted Him even during danger. But eventually the baby became too noisy to hide safely. Jochebed needed a new plan.

The Nile River flowed through Egypt like a great winding road of water. Egyptian farmers depended on it for life. Boats travelled upon it carrying grain, stone, animals, and people. Children played beside it. Fishermen cast nets into it. Crocodiles lurked in some places, while reeds swayed gently along the riverbanks.

Jochebed decided to build something very special –
a floating basket.

But this was not just an ordinary basket. If the basket leaked, the baby could drown. If it tipped over, the baby could fall into the river. She needed to make the basket carefully and wisely.

The Bible says she coated the basket with pitch to make it waterproof. Pitch was a sticky black substance that stopped water from soaking through the woven reeds. Jochebed understood something important: some materials allow water through, while others block it.

She also understood something about floating.

A small stone sinks quickly in water. But a carefully woven basket filled mostly with air can float. Boats float for the same reason. Even very large ships float because their shape spreads their weight across the water and traps large amounts of air inside.

Jochebed carefully placed the baby into the basket and gently set it among the reeds at the edge of the Nile. The basket floated safely on the surface.

Can you imagine the scene?

The reeds moved softly in the breeze. Tiny ripples pushed against the basket. Birds called from the riverbanks. Miriam, Moses' sister, watched carefully from nearby.

Then something surprising happened.

Pharaoh's daughter came down to the river to bathe. She noticed the basket floating among the reeds and ordered a servant to bring it to her. When she opened it, she saw the crying baby and felt compassion for him.

That tiny floating basket became part of God's plan to rescue His people.

Years later, Moses would again stand beside water – this time at the Red Sea. The Israelites seemed trapped between the sea and Pharaoh's army. But God provided a way through the waters.

Throughout history, people have needed to understand water:

- how boats float,
- how materials resist water,
- how rivers flow,
- and how to travel safely.

Scientists study buoyancy to understand why objects float or sink. Engineers use these ideas to design ships, bridges, rescue equipment, and submarines.

When scientists investigate buoyancy, they do not simply guess. They observe carefully. They test ideas honestly. They follow procedures step-by-step.

That requires obedience.

An obedient scientist:

- follows instructions carefully,
- records observations truthfully,
- handles materials safely,
- and keeps trying even when experiments do not work the first time.

Today, you will become a scientist investigating God's orderly world.

You will test objects in water.
You will make predictions.
You will observe carefully.

And perhaps, as you watch objects float and sink, you will remember the little basket floating safely on the Nile River long ago.

C) Narration

Parent/Tutor Says:

“Now I would like you to tell me everything you can remember from the story.”

Encourage narration in the student’s own words.

Prompt Questions (if needed)

- Why did Jochebed build a basket?
- Why did the basket float?
- What did she use to waterproof it?
- Why do some things float while others sink?
- How do scientists investigate questions carefully?
- What does obedience have to do with science?

Students may also:

- draw the basket on the Nile,
 - label floating objects,
 - or orally explain the experiment setup.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: observing properties; describing observations; following procedures)

- Which objects floated?
 - Which objects sank?
 - What did you notice about floating things?
 - Why was Moses’ basket carefully made?
 - Why is it important to follow instructions near water?
 - How did you show obedience during the experiment?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3I01, AC9S3I02, AC9S4U03 – predicting, observing forces, recording patterns)

- Why do you think some heavy things can still float?
 - How does shape affect buoyancy?
 - What role does trapped air play in floating?
 - Why would waterproof materials matter for survival near water?
 - How did careful observation help you during the investigation?
 - Why do engineers need to test designs carefully?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5I01, AC9S5I02, AC9S6U03 – investigating variables, analysing forces and scientific explanations)

- How does density affect whether an object floats or sinks?
 - Why can a steel ship float while a small steel ball sinks?
 - What forces act on a floating object?
 - How might ancient people have improved floating designs over time?
 - Why is honesty important when recording scientific observations?
 - How can disciplined scientific procedures protect human life?
-

E) Hands-on Investigation

Activity Title:

“Float or Sink?”

Materials

- Large tub or sink filled with water
- Small household objects:
 - spoon
 - cork
 - plastic lid
 - coin
 - leaf
 - rock
 - sponge
 - foil
 - wooden block
 - Paper towel
 - Science journal
 - Pencil

Step 1: Make Predictions

Parent/Tutor Says:

“Before testing each object, make a prediction:
Will it float or sink?”

Students record predictions in their journals.

Step 2: Test Each Object

Carefully place each object into the water one at a time.

Observe:

- Did it float?
- Did it sink?
- Did it partly float?

Students record results.

Step 3: Investigate Shape

Give students a piece of aluminium foil.

Round 1:

- Roll it into a tight ball.
- Place it into the water.

Round 2:

- Reshape it into a shallow boat.

Observe the difference.

Parent/Tutor Says:

“The material stayed the same – but the shape changed. Engineers must think carefully about shape when designing boats.”

Step 4: Waterproof Investigation

Optional:

Place:

- paper,

- cloth,
- plastic,
- foil

into small amounts of water.

Observe which materials resist water best.

Discuss:

- Why would Jochebed need waterproof material?
- Why do modern boats use waterproof materials?

Step 5: Journal Reflection

Students complete:

- prediction chart,
- float/sink table,
- labelled drawing,
- short written reflection.

Possible prompt:

“What did I learn about floating and sinking today?”

F) Optional Extension Activity

Design a Floating Basket

Challenge students to design a small “baby basket” using:

- foil,
- craft sticks,
- paper,
- tape,
- leaves,
- or recyclable materials.

Test:

- Does it float?
- Can it hold weight?
- Does it leak?

Older students may improve their design after testing.

G) Biblical Connection & Wrap-Up

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U01

describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects

AC9S2U03

identify that materials can be changed physically without changing their material composition

Science Inquiry

AC9S1I01

pose questions and make predictions based on experiences

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Design & Technologies

AC9TDE2K01

explore how technologies use forces to create movement in products and designed solutions for specific purposes

AC9TDE2P01

generate and communicate design ideas through describing, drawing or modelling, including using digital tools

AC9TDE2P02

select and use materials, components, tools, equipment and techniques to safely make designed solutions

Years 3 – 4

Science Understanding

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

Science Inquiry

AC9S3I01

pose questions to investigate and make predictions based on prior knowledge

AC9S3I02

plan and conduct investigations safely to answer questions and test predictions, including identifying variables to be changed and measured

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

AC9S3I04

construct and use representations, including tables, simple column graphs and visual or physical models, to organise data and information

Design & Technologies

AC9TDE4K02

explain how forces and the properties of materials affect function in designed solutions

AC9TDE4P01

generate and communicate design ideas and decisions using appropriate attributions, technical terms and graphical representation techniques, including using digital tools

AC9TDE4P02

select and use materials, components, tools, equipment and techniques to safely make designed solutions

Years 5–6**Science Understanding****AC9S6U03**

investigate how changes in movement and direction of objects are caused by unbalanced forces acting on the object

Science as a Human Endeavour**AC9S5H02**

investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Science Inquiry**AC9S5I01**

pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be

AC9S5I02

plan and conduct repeatable investigations fairly and safely to answer questions and make observations, identifying variables to be changed, measured and controlled

AC9S5I04

construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information

Design & Technologies**AC9TDE6K02**

explain how the characteristics and properties of materials, systems, components, tools and equipment affect their use in designed solutions

AC9TDE6P02

generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools

AC9TDE6P03

select and use suitable materials, components, tools, equipment and techniques to safely make designed solutions

LESSON 2 – WATER, DISEASE & THE EGYPTIAN PLAGUES

Theme

God's Creation Has Order – Disease and Health Often Follow Understandable Causes

Character Focus

Obedience – following wise instructions that protect health and wellbeing

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that water quality affects human and animal health
 - Observe how contamination can spread through water systems
 - Learn that germs, insects, pollution, and decaying matter can contribute to disease
 - Explore possible scientific explanations connected to some of the Egyptian plagues
 - Conduct safe scientific observations and simple investigations
 - Recognise the importance of hygiene, cleanliness, and careful procedures
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about Moses, Pharaoh, and the plagues of Egypt. The Bible describes terrible problems affecting the water, animals, crops, and people of Egypt. Today we are going to explore some scientific ideas connected to water, disease, insects, contamination, and health.”

“Scientists study how diseases spread and how clean water protects people. Long ago, people did not always understand why sickness spread from place to place. Today, scientists can investigate water quality, bacteria, insects, pollution, and hygiene.”

“We are not trying to explain away the miracles in the Bible. God was clearly judging Egypt powerfully. But scientists can still study the natural systems involved in water, disease, insects, and environmental changes.”

“Today we will practise obedience by:

- following hygiene rules carefully,
 - conducting safe investigations,
 - and recording observations honestly.”
-

Vocabulary

- Contamination – something harmful entering water, food, or an environment
 - Hygiene – keeping clean to stay healthy
 - Bacteria – tiny living organisms, some helpful and some harmful
 - Disease – sickness affecting living things
 - Pollution – harmful substances entering the environment
 - Observation – carefully noticing details
 - Environment – the surroundings where plants, animals, and people live
 - Microorganism – a tiny living thing too small to see easily
-

B) Informational Story

“When the River Turned Red”

The Nile River was the lifeblood of Egypt.

It watered crops.

It provided fish.

It supplied drinking water.

It carried boats filled with grain, stone, and goods.

Without the Nile, Egypt could not survive.

Every year, the river flooded its banks, leaving rich dark soil behind for farming. Egyptian families depended on those waters every single day.

But during the time of Moses, Pharaoh refused to obey God’s command to let the Hebrew people go free.

Then came the plagues.

The Bible describes the first plague this way:
the Nile River turned to blood.

Fish died.

The river smelled terrible.

People could not drink the water.

Can you imagine the fear?

Children crying for clean water.

Dead fish floating near the banks.

Animals refusing to drink.

The terrible smell spreading through towns and villages.

The Egyptians depended completely upon the Nile. When the water became unusable, many other problems would quickly follow.

Today, scientists understand something important:
when water systems become contaminated, many connected problems can appear.

If large numbers of fish die, the balance of the ecosystem changes.
Insects may increase.
Bacteria may spread.
Animals become sick.
Food supplies are affected.

Scientists sometimes study how environmental disasters create “chain reactions.”

For example:

- polluted water may kill fish,
- dead fish attract insects,
- insects spread disease,
- frogs leave contaminated water,
- and disease spreads more easily among humans and animals.

Some scientists think environmental chain reactions may help explain how several plagues could connect together.

But whether through miraculous events, natural systems, or both together, the Bible makes one thing very clear:
God was showing His power over Egypt.

The Egyptians worshipped many false gods connected to the Nile, animals, weather, and fertility. Yet God demonstrated that He ruled over all creation.

Today scientists still investigate:

- water pollution,
- disease outbreaks,
- bacteria,
- mosquitoes,
- contaminated food,
- and environmental health.

They also teach people how to protect themselves through:

- hygiene,
- clean water,
- sanitation,
- and careful health procedures.

Long ago, God gave many cleanliness laws to the Israelites. These instructions helped protect people from sickness long before modern microscopes existed.

People often obey safety instructions without fully understanding all the science behind them.

For example:

- washing hands,
- boiling unsafe water,
- cooking food properly,
- and keeping waste away from drinking water.

Obedience to wise instructions can protect entire communities.

Scientists today carefully investigate how diseases spread because understanding causes helps people prevent suffering.

But good scientists must also be truthful.
They must report observations honestly.
They must follow safety procedures carefully.

That requires obedience and responsibility.

Today, as you conduct your own investigation, you will explore:

- clean water,
- contamination,
- observation,
- and how problems can spread through systems.

You will practise being careful, truthful, and responsible scientists.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember about the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why was the Nile important to Egypt?
- What happened during the first plague?
- What problems can happen when water becomes contaminated?
- How can diseases spread through environments?
- Why are hygiene and cleanliness important?
- How does obedience help protect health?

Students may:

- orally retell,
 - draw scenes from the Nile,
 - create a plague sequence diagram,
 - or explain contamination pathways.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: observing changes, identifying safe practices, describing observations)

- Why was clean water important?
 - What happens when water becomes dirty?
 - Why should we wash our hands?
 - What did you notice during the experiment?
 - How did you follow instructions carefully today?
 - Why does God want people to care for others' health?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3U01, AC9S3I01, AC9S3I03 – living things, investigation, observing change)

- How can polluted water affect animals and people?
 - Why might insects increase when environments become unhealthy?
 - What is a chain reaction in nature?
 - Why do scientists study disease spread carefully?
 - How can hygiene reduce sickness?
 - Why is accurate observation important in science?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5U01, AC9S5H02, AC9S5I02 – ecosystems, scientific investigation, human decision-making)

- How are water systems connected to ecosystems and human health?
 - Why do environmental changes sometimes create multiple problems?
 - How do scientists investigate disease outbreaks?
 - Why are controlled procedures important during investigations?
 - How can scientific understanding help communities prevent disease?
 - Why is obedience to health procedures important during emergencies?
-

E) Hands-on Investigation

Activity Title:

“Clean Water vs Contaminated Water”

Materials

- 2 clear jars or containers
 - Clean water
 - Dirt or soil
 - Food colouring
 - Leaves or grass
 - Spoon
 - Paper towel
 - Science journal
 - Optional magnifying glass
-

Step 1: Prepare Clean Water

Fill one jar with clean water.

Observe:

- colour,
- smell,
- clarity.

Record observations.

Step 2: Create Contaminated Water

In the second jar:

- add soil,
- leaves,
- a drop of food colouring.

Stir gently.

Observe:

- colour changes,
- particles,
- smell,
- visibility.

Step 3: Compare the Two Systems

Discuss:

- Which water would be safer to drink?
- Why?
- What might happen to fish or animals living in dirty water?

Step 4: Optional “Spread” Demonstration

Place one drop of food colouring into clean water.

Observe how quickly it spreads.

Discuss:

- how contamination spreads,
- how germs can travel,
- why clean systems matter.

Step 5: Hygiene Reflection

Students practise:

- proper hand washing,
- cleaning equipment,
- drying surfaces safely.

Parent/Tutor Says:

“Scientists must work carefully and cleanly so investigations stay safe and accurate.”

Journal Tasks

Students record:

- labelled diagrams,
- observations,
- comparison table,
- short written reflections.

Possible prompts:

- “What did I notice about contamination?”
- “Why does clean water matter?”

F) Optional Extension Activity

Design a Water Filter

Materials:

- plastic bottle,
- sand,
- gravel,
- cloth,
- cotton balls,
- dirty water.

Students attempt to filter dirty water and observe changes.

Discuss:

- why filtering helps,
 - why some contamination is still invisible,
 - why modern treatment systems matter.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Exodus 15:26

“I am the Lord who heals you.”

Parent/Tutor Says:

“God cares deeply about human health and wellbeing. Throughout history, people have needed wisdom about cleanliness, safe water, food, and disease.”

“Scientists help communities by studying:

- disease,
- health,
- water systems,
- and safe practices.”

“But scientists must also act responsibly and honestly.”

“Today we practised obedience through:

- careful investigation,
 - hygiene,
 - truthful observations,
 - and responsible behaviour.”
-

Discussion Questions

- Why is clean water important?
 - How can disease spread through environments?
 - Why do communities need health rules and procedures?
 - How did you practise careful scientific behaviour today?
 - Why is honesty important during scientific investigations?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U01

describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects

AC9S2U01

recognise that living things have basic needs, including food and water

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Design & Technologies

AC9TDE2P02

select and use materials, components, tools, equipment and techniques to safely make designed solutions

Years 3–4

Science Understanding

AC9S3U01

compare characteristics of living and non-living things and examine the interdependence between living things and environments

Science Inquiry

AC9S3I01

pose questions to investigate and make predictions based on prior knowledge

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Design & Technologies

AC9TDE4K03

describe how food and fibre are produced or processed in managed environments

Years 5–6

Science Understanding

AC9S5U01

examine how particular structural features and behaviours of living things enable their survival in specific habitats

Science as a Human Endeavour

AC9S5H02

investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Science Inquiry

AC9S5I02

plan and conduct repeatable investigations fairly and safely to answer questions and make observations, identifying variables to be changed, measured and controlled

Design & Technologies

AC9TDE6K04

describe how food and fibre are produced and/or processed in managed environments and how these can become more sustainable

TOPIC 2	WATER, SURVIVAL & GOD'S PROVISION (PART B)

LESSON 3 – THE RED SEA: GEOGRAPHY, TIDES & ARCHAEOLOGICAL QUESTIONS

Theme

God's Power Over Creation

Character Focus

Obedience – trusting God and following wise leadership even during uncertainty

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that geography affects how people travel and survive
 - Explore how wind, tides, water depth, and landforms affect bodies of water
 - Learn how scientists and archaeologists investigate historical questions
 - Examine how evidence, observation, and investigation are used in archaeology
 - Conduct simple experiments related to moving water and erosion
 - Recognise the difference between scientific investigation and assumptions
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about one of the most dramatic moments in the Bible – the crossing of the Red Sea.”

“The Israelites had escaped from Egypt, but suddenly they found themselves trapped between the sea and Pharaoh's army. God instructed Moses to lead the people forward in obedience, even though the situation looked impossible.”

“Today we will investigate some scientific and geographical questions connected to the Red Sea:

- What do we know about the geography of the area?
- How do tides and winds affect water?
- How do archaeologists investigate ancient events?
- How do scientists search for evidence?”

“We are not trying to ‘prove’ God’s miracles using science alone. A miracle is still God’s supernatural action. But scientists and archaeologists can still investigate geography, water systems, ancient travel routes, and physical evidence.”

“Today we will practise scientific obedience by:

- observing carefully,
 - thinking critically,
 - recording evidence honestly,
 - and avoiding careless assumptions.”
-

Vocabulary

- Archaeology – the study of ancient people through physical evidence
 - Evidence – information that helps support an explanation
 - Geography – the study of places, landforms, and environments
 - Tide – the rising and falling of ocean water
 - Erosion – wearing away of land by water or wind
 - Route – a path travelled from one place to another
 - Investigation – careful study to discover information
 - Miracle – an extraordinary act of God beyond ordinary natural processes
-

B) Informational Story

“The Path Through the Sea”

The Israelites had finally left Egypt.

After generations of slavery, families marched out carrying belongings, animals, tools, tents, and supplies. Children walked beside parents. Dust rose beneath thousands of feet. The people followed Moses into the wilderness.

But freedom did not feel safe for long.

Soon terrible news spread through the camp:
Pharaoh’s army was coming.

Chariots thundered across the desert.
Soldiers advanced rapidly.
The Israelites became terrified.

Ahead of them stretched a great body of water.

Behind them came Egypt’s army.

Many people panicked.

“Why did you bring us out here?” they cried to Moses.
“Were there not enough graves in Egypt?”

But Moses answered:

“Do not be afraid. Stand firm and see the salvation of the Lord.”

Then God instructed Moses to move forward.

Imagine how strange that command sounded.

Move forward?

Toward the water?

Yet obedience often means trusting God before we fully understand what He is doing.

The Bible says a strong wind blew through the night, and the waters parted, allowing the Israelites to cross on dry ground.

For thousands of years people have discussed:

Where exactly did this crossing happen?

What route did the Israelites take?

How deep was the water?

What natural features existed there?

Scientists, historians, and archaeologists continue investigating these questions today.

Some researchers study:

- ancient coastlines,
- underwater landforms,
- wind patterns,
- tides,
- and ancient trade routes.

Others examine satellite images, maps, and underwater photography.

One modern explorer named Ron Wyatt became well known for claiming he found evidence related to the Red Sea crossing site. He explored underwater areas and photographed coral-covered shapes that he believed resembled ancient chariot wheels.

Some people believe his discoveries are convincing.

Others remain cautious and believe more evidence is needed.

This is actually an important lesson about science.

Good scientists must examine evidence carefully.

They must ask questions honestly.

They must avoid jumping to conclusions too quickly.

Scientists often disagree while investigating difficult questions.

That does not mean investigation is useless.

It means careful thinking matters.

Today archaeologists use many tools:

- sonar,
- underwater cameras,

- satellite mapping,
- sediment analysis,
- and carbon dating.

Geographers also study how winds and tides affect shallow waters.

Some scientists have demonstrated that strong winds blowing over shallow water for many hours can temporarily push water aside in certain conditions. Others point out that the biblical account describes something far greater and more dramatic than an ordinary natural event.

Christians understand that God can work through nature, above nature, or beyond natural explanation entirely.

But studying geography still helps us appreciate the real historical setting of the Bible.

The Red Sea region contains:

- deserts,
- marshes,
- shallow lakes,
- deep water,
- rocky coastlines,
- and changing tides.

Travelling there would have been difficult and dangerous.

The Israelites needed leadership, courage, and obedience.

Today, scientists continue exploring Earth carefully:

- mapping oceans,
- studying rivers,
- analysing coastlines,
- and investigating ancient civilisations.

Good investigations require patience.

Scientists must:

- collect evidence carefully,
- observe honestly,
- compare explanations,
- and admit when they do not know everything yet.

As students, you are learning those same habits.

You are learning:

- to ask questions,
- examine evidence,
- test ideas,
- and think carefully.

And perhaps most importantly, you are learning that truth matters.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember about the story.”

Allow students to narrate freely in their own words.

Prompt Questions (if needed)

- Why were the Israelites afraid?
- What happened at the Red Sea?
- What kinds of evidence do archaeologists study?
- Why do scientists sometimes disagree?
- What is geography?
- Why is careful investigation important?

Students may:

- orally narrate,
 - draw maps,
 - sketch the crossing,
 - or explain how evidence is investigated.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: observing environments; describing events; asking questions)

- Why were the Israelites frightened?
 - What happened to the water?
 - What is a map used for?
 - Why do scientists look carefully at evidence?
 - What did you notice during the experiment?
 - How did you practise careful observation today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3I01, AC9S3I03, AC9HS3S02 – investigation, observation, interpreting maps)

- How can geography affect travel and survival?
 - Why do tides and winds matter near oceans or seas?
 - What kinds of evidence might archaeologists search for?
 - Why should scientists avoid jumping to conclusions?
 - How can maps help researchers investigate the past?
 - Why is honesty important during investigations?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5H01, AC9S5I02, AC9HS5S02 – scientific investigation, evaluating evidence, geographical reasoning)

- Why do scientists sometimes interpret evidence differently?
 - How can underwater archaeology help investigate history?
 - What role might wind and geography play in shallow water systems?
 - Why is repeatable evidence important in science?
 - How can scientific investigation support historical understanding?
 - Why should scientists be cautious when making claims?
-

E) Hands-on Investigation

Activity Title:

“Moving Water & Landforms”

Materials

- Large tray or shallow tub
 - Sand or soil
 - Water jug
 - Spoon or ruler
 - Small rocks
 - Toy people or animals (optional)
 - Paper towels
 - Science journal
-

Step 1: Create a Landform

Students shape:

- hills,
 - riverbanks,
 - shallow channels,
 - or coastlines in the tray.
-

Step 2: Add Water

Slowly pour water into the tray.

Observe:

- flow,
- movement,
- pooling,
- erosion,
- and channels forming.

Step 3: Create “Wind” Movement

Use:

- blowing gently,
- cardboard,
- or fanning.

Observe whether water movement changes.

Discuss:

- waves,
 - movement,
 - shallow vs deep water,
 - and changing water levels.
-

Step 4: Investigate Routes

Place toy figures on one side.

Ask:

- Which paths are easiest?
 - Which are dangerous?
 - How would geography affect travellers?
-

Step 5: Journal Reflection

Students record:

- diagrams,
- observations,
- labelled landforms,
- short reflections.

Possible prompts:

- “What did I learn about water movement?”
 - “Why does geography matter?”
-

F) Optional Extension Activity

Investigate Ancient Maps

Students examine:

- ancient-style maps,
- trade routes,
- desert crossings,
- or satellite images of the Red Sea region.

Older students may compare:

- modern maps,
 - topographic maps,
 - and historical drawings.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Exodus 14:21

“Then Moses stretched out his hand over the sea, and all that night the Lord drove the sea back with a strong east wind and turned it into dry land.”

Parent/Tutor Says:

“God demonstrated His power at the Red Sea, but He also calls people to think carefully, investigate honestly, and seek truth.”

“Scientists and archaeologists must:

- observe carefully,
- examine evidence,
- avoid exaggeration,
- and remain truthful.”

“Today we practised obedience by:

- following procedures,
 - recording observations honestly,
 - and thinking carefully about evidence.”
-

Discussion Questions

- Why is geography important?
 - What kinds of evidence do archaeologists study?
 - Why should scientists avoid careless conclusions?
 - How did you practise careful investigation today?
 - Why does truthfulness matter in science?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Inquiry

AC9SI101

pose questions and make predictions based on experiences

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Years 3–4**Science Inquiry****AC9S3I01**

pose questions to investigate and make predictions based on prior knowledge

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Science as a Human Endeavour**AC9S4H01**

explain how people use science in their daily lives, including using scientific knowledge to care for environments and living things

Design & Technologies**AC9TDE4P01**

generate and communicate design ideas and decisions using appropriate attributions, technical terms and graphical representation techniques, including using digital tools

Years 5–6**Science as a Human Endeavour****AC9S5H01**

explain how scientific knowledge helps people to understand the effect of their actions

Science Inquiry**AC9S5I02**

plan and conduct repeatable investigations fairly and safely to answer questions and make observations, identifying variables to be changed, measured and controlled

AC9S5I04

construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information

Design & Technologies**AC9TDE6P02**

generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools

LESSON 4 – SURVIVAL IN THE WILDERNESS: WATER, FOOD & HUMAN NEEDS

Theme

God Provides for Human Needs in Difficult Environments

Character Focus

Obedience – following wise instructions for survival, safety, and wellbeing

Learning Objectives

By the end of this lesson, students will be able to:

- Identify the basic needs required for human survival
 - Understand the importance of water, food, shelter, and rest
 - Explore how people survive in hot and dry environments
 - Investigate how the body loses water and energy
 - Learn why planning and careful preparation are important in wilderness travel
 - Recognise how obedience to wise instructions can protect life and health
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the Israelites travelling through the wilderness after leaving Egypt. The wilderness was hot, dry, and difficult. People needed water, food, shelter, and protection from danger.”

“The Israelites often became frightened or impatient. Sometimes they obeyed God’s instructions, but sometimes they complained or ignored wise guidance.”

“Today we will investigate an important science question:
What do humans need in order to survive?”

“Scientists study how the human body works, how dehydration happens, how heat affects people, and how careful preparation helps people survive in harsh environments.”

“Today we will practise obedience by:

- listening carefully,
- following safety instructions,
- making accurate observations,
- and learning why wise preparation matters.”

Vocabulary

- Survival – staying alive in difficult conditions
 - Dehydration – dangerous loss of water from the body
 - Shelter – protection from weather or danger
 - Nutrients – substances in food that help the body function
 - Fatigue – extreme tiredness
 - Environment – the surroundings where people, animals, and plants live
 - Evaporation – water changing into vapour
 - Endurance – the ability to continue during difficulty
-

B) Informational Story

“Water in the Desert”

The sun beat down upon the wilderness.

Dust swirled beneath thousands of feet as the Israelites travelled through dry rocky land. Children became thirsty. Animals grew tired. Water skins slowly emptied.

The wilderness was not like Egypt.

Egypt had the Nile River.
It had farms.
It had wells.
It had food storage.

But now the Israelites travelled through harsh desert regions where survival was difficult.

People began to complain.

“Why did we leave Egypt?” some cried.
“There is no water here!”

In hot environments, the human body loses water very quickly.
People sweat to cool themselves.
Water escapes through breathing.
The hotter the environment becomes, the more dangerous dehydration can become.

Today scientists understand how important water is for survival.

The human body is made mostly of water.
Water helps:

- move nutrients,
- cool the body,
- support the brain,
- protect organs,
- and carry oxygen and energy throughout the body.

Without enough water:

- people become tired,
- dizzy,
- confused,
- weak,
- and eventually very sick.

Children are especially vulnerable in extreme heat.

Scientists who study survival explain that people lost in deserts must carefully manage:

- water,
- shelter,
- food,
- movement,
- and body temperature.

Travellers often move during cooler parts of the day and rest during the hottest hours.

The Israelites also needed food.

God miraculously provided manna – bread-like food appearing each morning. But the people were given instructions:

gather enough for the day,
do not hoard it selfishly,
and trust God's provision.

Some obeyed carefully.

Others ignored the instructions and discovered the food spoiled.

This teaches something important about science and survival:
systems often work best when people follow instructions properly.

Today scientists, doctors, engineers, and survival experts all use procedures designed to protect life.

For example:

- drinking clean water,
- resting during heat,
- storing food safely,
- wearing protective clothing,
- and building shelter correctly.

Survival is not usually achieved through panic or recklessness.

It requires wisdom, discipline, and preparation.

Even ancient people learned survival skills through careful observation:

- where water could be found,
- how to preserve food,
- how to travel safely,
- and how to protect families from heat and exhaustion.

Scientists today continue studying:

- hydration,
- nutrition,

- endurance,
- body systems,
- and environmental survival.

Athletes monitor hydration carefully.

Explorers carry emergency supplies.

Doctors study how heat affects the body.

Engineers design equipment for deserts and harsh climates.

Good scientists must observe carefully and follow safety procedures accurately.

That requires obedience.

When students conduct scientific investigations carefully:

- following instructions,
 - using equipment properly,
 - and recording observations honestly,
- they are developing the same habits needed in real-world science and survival.

The wilderness was dangerous.

But through wise leadership, careful preparation, and God’s provision, the Israelites survived.

Today you will investigate how water, heat, and survival systems affect the human body and why preparation matters.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why was the wilderness difficult?
- Why is water important for the body?
- What happens during dehydration?
- Why did God give instructions about manna?
- How do scientists study survival and health?
- Why are careful procedures important?

Students may:

- orally narrate,
- draw desert survival scenes,
- create labelled diagrams,
- or explain hydration systems.

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: recognising human needs; observing environments; safe practices)

- What do people need to stay alive?
 - Why is water important?
 - What happens when people get too hot?
 - Why do we need rest and shelter?
 - How did the Israelites survive in the wilderness?
 - How did you follow instructions carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3U01, AC9S3I01, AC9HP4P07 – living things, investigations, health behaviours)

- Why does the body need water?
 - How does sweating help cool the body?
 - Why can deserts become dangerous environments?
 - How can preparation help people survive?
 - Why do scientists study hydration and nutrition?
 - Why are procedures important during emergencies?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5U01, AC9S5H02, AC9HP6P06 – body systems, scientific investigation, health decisions)

- How does dehydration affect body systems?
 - Why do humans lose water faster in hot environments?
 - How do survival experts reduce risk in harsh conditions?
 - Why are routines and procedures important during long journeys?
 - How can scientific knowledge improve human survival?
 - Why does discipline matter during difficult situations?
-

E) Hands-on Investigation

Activity Title:

“Heat, Water & Survival”

Materials

- Two shallow bowls
 - Water
 - Cloth or paper towel
 - Fan or cardboard
 - Thermometer (optional)
 - Stopwatch or timer
 - Science journal
-

Step 1: Observe Evaporation

Wet one cloth and leave another dry.

Place both in a warm area or near moving air.

Observe:

- Which cools faster?
- Which dries faster?

Discuss how sweating cools the body.

Step 2: Moving Air Investigation

Fan moving air across wet skin or cloth.

Observe:

- cooling,
- evaporation,
- drying speed.

Explain:

“When sweat evaporates, it removes heat from the body.”

Step 3: Wilderness Planning Challenge

Ask students:

“If you were travelling through a desert, what would you need to bring?”

Students create:

- survival lists,
 - diagrams,
 - or shelter sketches.
-

Step 4: Journal Reflection

Students record:

- observations,
- diagrams,
- predictions,
- reflections.

Possible prompts:

- “Why is water important?”
 - “How does the body stay cool?”
 - “What helps people survive?”
-

F) Optional Extension Activity

Design a Desert Shelter

Using:

- cardboard,
- cloth,
- sticks,
- paper,
- or recycled materials,

students design a small shelter intended to:

- provide shade,
- reduce heat,
- and protect people.

Older students may test:

- temperature differences,
 - airflow,
 - or insulation.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Deuteronomy 8:2

“Remember how the Lord your God led you all the way in the wilderness these forty years...”

Parent/Tutor Says:

“God cared for His people in the wilderness by providing:

- food,
- water,
- guidance,
- and protection.”

“Scientists today also study how to protect human life through:

- medicine,
- nutrition,
- hydration,
- engineering,
- and survival planning.”

“But survival often depends upon careful obedience:

- following instructions,
- preparing wisely,
- and acting responsibly.”

“Today we practised obedience by:

- following procedures,
 - observing carefully,
 - and learning how the body works.”
-

Discussion Questions

- Why does the body need water?
 - How can heat become dangerous?
 - Why is preparation important?
 - How did you practise careful observation today?
 - Why are instructions important during emergencies?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S2U01

recognise that living things have basic needs, including food and water

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Years 3–4**Science Understanding****AC9S3U01**

compare characteristics of living and non-living things and examine the interdependence between living things and environments

Science Inquiry**AC9S3I01**

pose questions to investigate and make predictions based on prior knowledge

Health & Physical Education**AC9HP4P07**

investigate how emotional responses vary in depth and strength

Years 5–6**Science Understanding****AC9S5U01**

examine how particular structural features and behaviours of living things enable their survival in specific habitats

Science as a Human Endeavour**AC9S5H02**

investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Health & Physical Education**AC9HP6P06**

investigate the role of preventive health in promoting and maintaining health, safety and wellbeing for individuals and their communities

TOPIC 3	BUILDING, MATERIALS & ENGINEERING (PART A)

LESSON 5 – DESIGNING LARGE TENTS & PORTABLE STRUCTURES

Theme

God Gives Wisdom for Building Safe and Orderly Shelters

Character Focus

Obedience – carefully following instructions and building responsibly

Learning Objectives

By the end of this lesson, students will be able to:

- Understand why shelters are important for survival and protection
 - Explore how tents and portable structures are designed
 - Investigate how poles, ropes, fabric, and anchors work together
 - Learn how forces affect structures and stability
 - Design and test simple shelter models
 - Recognise the importance of careful workmanship and following instructions
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the Israelites travelling through the wilderness. During this time they lived in tents and temporary shelters for many years.”

“God also gave Moses detailed instructions for building the Tabernacle – a portable tent used for worship. The Israelites needed to build structures carefully and exactly as instructed.”

“Today we will investigate:

- how tents stay standing,

- how engineers design strong structures,
- and why careful instructions matter in construction.”

“Builders, engineers, architects, and designers must think carefully about:

- weight,
- balance,
- wind,
- stability,
- and safety.”

“Today we will practise obedience by:

- following instructions carefully,
 - testing structures responsibly,
 - and improving our designs thoughtfully.”
-

Vocabulary

- Structure – something built from connected parts
 - Stability – the ability to remain balanced and upright
 - Shelter – protection from weather or danger
 - Tension – a pulling force
 - Compression – a pushing force
 - Anchor – something that holds a structure in place
 - Flexible – able to bend without breaking
 - Framework – the supporting skeleton of a structure
-

B) Informational Story

“Tents in the Wilderness”

The wilderness was harsh and unpredictable.

Hot winds swept across the desert.

Dust storms rose suddenly.

The blazing sun heated the ground during the day, while cold air spread across the camp at night.

The Israelites needed shelter.

For many years they travelled from place to place, carrying belongings, animals, tools, and supplies across difficult terrain. Unlike permanent cities with stone buildings, the Israelites often depended upon tents and temporary structures.

A good tent could protect families from:

- heat,
- wind,
- rain,
- blowing sand,
- and cold nights.

But building a large tent was not simple.

If the poles were weak, the tent could collapse.

If ropes were loose, strong wind could pull the shelter apart.

If anchors failed, the structure could blow away.

Ancient people became skilled at building portable shelters because survival depended upon it.

The Israelites also constructed the Tabernacle – a large portable worship structure designed according to God's instructions.

The Bible describes:

- curtains,
- wooden frames,
- coverings,
- loops,
- clasps,
- poles,
- and carefully measured sections.

Every detail mattered.

Why?

Because large structures must work together as systems.

Engineers today understand that buildings remain stable when forces are balanced properly.

Some parts experience:

- tension – pulling forces,

while other parts experience:

- compression – pushing forces.

Tent ropes pull outward.

Tent poles push downward.

Anchors hold the system steady.

If one part fails, the whole structure may become unstable.

Modern engineers still use many ideas similar to ancient builders:

- flexible materials,
- support frames,
- tension systems,
- anchors,
- and weight distribution.

Scientists and engineers test structures carefully before people use them.

They ask questions such as:

- Can it handle wind?
- Is it balanced?
- Will it collapse under weight?
- Are the materials strong enough?

Good engineers do not guess carelessly.

They:

- measure carefully,
- follow plans,
- test designs,
- improve weaknesses,
- and follow safety procedures.

That requires obedience and discipline.

Sometimes builders ignore instructions because they want to rush.
But rushed work often creates danger.

Throughout history, collapses have occurred because:

- materials were weak,
- instructions were ignored,
- measurements were wrong,
- or safety procedures were neglected.

The Israelites learned that careful obedience mattered.

The Tabernacle required:

- craftsmanship,
- patience,
- organisation,
- and faithful attention to detail.

Today, engineers design:

- tents,
- stadiums,
- bridges,
- emergency shelters,
- and even space stations.

Whether ancient or modern, structures must be designed wisely to protect human life.

Today you will become engineers yourselves.

You will investigate:

- balance,
- support,
- tension,
- and stability.

You will test structures carefully and discover why thoughtful design matters.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow free narration.

Prompt Questions (if needed)

- Why did the Israelites need tents?
- What made large tents difficult to build?
- What is tension?
- Why are anchors important?
- Why do engineers test structures carefully?
- Why does careful workmanship matter?

Students may:

- orally narrate,
 - sketch tents,
 - label structures,
 - or explain how forces affect buildings.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: materials, simple structures, safe construction)

- Why do people need shelters?
 - What helps a tent stay standing?
 - What happens if a tent falls down?
 - Which materials bend easily?
 - Why should builders follow instructions carefully?
 - How did you build carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S4U03, AC9TDE4K02, AC9TDE4P02 – forces, materials, safe design)

- How do poles and ropes work together in a tent?
- What forces act on structures during strong wind?
- Why are anchors important?
- Why must engineers test structures carefully?
- How can materials affect stability?
- Why do accurate measurements matter?

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S6U03, AC9TDE6K02, AC9TDE6P03 – forces, structural systems, design processes)

- How do tension and compression affect structures?
 - Why do some shapes create stronger buildings?
 - How does weight distribution affect stability?
 - Why do engineers redesign structures after testing?
 - How can poor construction create danger?
 - Why is disciplined workmanship important in engineering?
-

E) Hands-on Investigation

Activity Title:

“Build a Wilderness Shelter”

Materials

- Craft sticks or straws
 - String or wool
 - Cloth, paper, or fabric scraps
 - Tape
 - Blu Tack or clay
 - Fan (optional)
 - Books or weights
 - Science journal
-

Step 1: Design the Structure

Students sketch a simple tent or shelter design.

Encourage thinking about:

- supports,
 - shape,
 - balance,
 - and coverings.
-

Step 2: Build the Framework

Construct:

- poles,

- supports,
- and anchors.

Observe:

- balance,
 - movement,
 - and stability.
-

Step 3: Add Covering Material

Place fabric or paper over the framework.

Test:

- Does it sag?
 - Does the structure remain stable?
-

Step 4: Wind Test

Use:

- blowing gently,
- a fan,
- or hand movement.

Observe:

- movement,
 - weak points,
 - and collapse risks.
-

Step 5: Improve the Design

Students modify:

- supports,
- anchors,
- shape,
- or materials.

Discuss:

“Engineers improve designs through testing.”

Step 6: Journal Reflection

Students record:

- diagrams,
- observations,

- labelled designs,
- reflections.

Possible prompts:

- “What made my structure stronger?”
 - “What caused weakness?”
 - “Why are instructions important?”
-

F) Optional Extension Activity

Design an Emergency Shelter

Older students design a shelter for:

- desert heat,
- storms,
- floods,
- or refugees.

Students explain:

- material choices,
 - safety features,
 - and structural supports.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Exodus 26:30

“Set up the tabernacle according to the plan shown you on the mountain.”

Parent/Tutor Says:

“God gave detailed instructions for building the Tabernacle because careful workmanship matters.”

“Engineers and builders today must also follow careful plans to protect people and build safely.”

“Obedience in science and engineering means:

- following procedures,
- measuring carefully,
- testing honestly,
- and working responsibly.”

“Today we practised obedience through:

- careful construction,
- testing designs,
- and improving our work thoughtfully.”

Discussion Questions

- Why do structures need stability?
 - What forces affect buildings and tents?
 - Why is careful planning important?
 - How did you improve your design today?
 - Why does responsible engineering matter?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U01

describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects

Design & Technologies

AC9TDE2K01

explore how technologies use forces to create movement in products and designed solutions for specific purposes

AC9TDE2P01

generate and communicate design ideas through describing, drawing or modelling, including using digital tools

AC9TDE2P02

select and use materials, components, tools, equipment and techniques to safely make designed solutions

Years 3–4

Science Understanding

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

Design & Technologies

AC9TDE4K02

explain how forces and the properties of materials affect function in designed solutions

AC9TDE4P01

generate and communicate design ideas and decisions using appropriate attributions, technical terms and graphical representation techniques, including using digital tools

AC9TDE4P02

select and use materials, components, tools, equipment and techniques to safely make designed solutions

Years 5–6

Science Understanding

AC9S6U03

investigate how changes in movement and direction of objects are caused by unbalanced forces acting on the object

Design & Technologies

AC9TDE6K02

explain how the characteristics and properties of materials, systems, components, tools and equipment affect their use in designed solutions

AC9TDE6P02

generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools

AC9TDE6P03

select and use suitable materials, components, tools, equipment and techniques to safely make designed solutions

LESSON 6 – STONE CARVING, WRITING & ANCIENT TECHNOLOGIES

Theme

God Gave People Creativity and Skill to Record Important Truths

Character Focus

Obedience – carefully preserving truth and following instructions accurately

Learning Objectives

By the end of this lesson, students will be able to:

- Understand why ancient people recorded information on stone and other materials
 - Explore how carving and inscription technologies worked in the ancient world
 - Investigate properties of different materials used for writing and construction
 - Learn how symbols and writing systems communicate information
 - Design and create simple inscriptions or symbols
 - Recognise the importance of accuracy, patience, and careful workmanship
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about Moses receiving the Law from God. The Ten Commandments were written on stone tablets, and throughout the ancient world people carefully recorded important laws, histories, and messages.”

“Long before computers or printers existed, people had to carve words into stone, clay, wood, or metal using hand tools. This required patience, accuracy, and great skill.”

“Today we will investigate:

- how ancient writing technologies worked,
- why some materials last longer than others,
- and how information was preserved in the ancient world.”

“Scientists and historians study ancient inscriptions to learn about past civilisations. Archaeologists carefully examine carvings, symbols, tools, and writing systems to understand history.”

“Today we will practise obedience by:

- following instructions carefully,
- working patiently,
- and recording information accurately.”

Vocabulary

- Inscription – words or symbols carved into a surface
 - Symbol – a shape or mark representing meaning
 - Tablet – a flat surface used for writing
 - Carving – cutting or shaping material using tools
 - Durable – able to last a long time
 - Archaeologist – a scientist who studies ancient remains and artefacts
 - Papyrus – an ancient Egyptian writing material made from plants
 - Communication – sharing information with others
-

B) Informational Story

“Words Written in Stone”

The mountain trembled with thunder.

Dark clouds surrounded the peak as Moses climbed Mount Sinai alone. The people waited below nervously while Moses met with God.

Then something extraordinary happened.

God gave Moses the Law – instructions teaching His people how to live wisely, worship faithfully, and treat others justly.

The Bible says the commandments were written on stone tablets.

Why stone?

Because stone lasts.

Paper tears.

Wood rots.

Cloth wears out.

But carefully carved stone can survive for thousands of years.

Throughout the ancient world, people used many materials for writing:

- clay tablets,
- papyrus scrolls,
- leather,
- wood,
- metal,
- and stone.

Different materials had different strengths and weaknesses.

Papyrus was light and easy to carry, but fragile.

Clay was inexpensive, but breakable.

Stone was heavy and difficult to carve, but extremely durable.

Ancient stone carvers needed great patience.

They used:

- chisels,
- hammers,
- carving tools,
- and careful measurement.

One mistake could ruin an entire inscription.

That is why careful obedience to instructions mattered so much.

Ancient builders and scribes often copied information exactly:

- laws,
- maps,
- records,
- names,
- and historical events.

Even small mistakes could create confusion.

Today archaeologists still discover ancient inscriptions buried beneath sand, hidden inside tombs, or carved into ruined buildings.

Scientists use many technologies to study them:

- photography,
- laser scanning,
- digital reconstruction,
- chemical analysis,
- and translation systems.

Some inscriptions help historians understand:

- trade,
- kings,
- wars,
- languages,
- religion,
- and daily life.

The Rosetta Stone became one of the most famous discoveries in archaeology because it helped scientists decode Egyptian hieroglyphics.

For many years nobody could understand the symbols.

But careful comparison and patient study slowly unlocked their meaning.

Good scientists and historians must work carefully.

They cannot simply guess.

They must:

- compare evidence,
- copy accurately,
- record observations honestly,
- and preserve artefacts responsibly.

This requires patience and discipline.

Today people still use symbols everywhere:

- road signs,
- maps,
- computer icons,
- warning labels,
- and logos.

Symbols communicate important information quickly.

Scientists also use symbols:

- mathematical symbols,
- scientific diagrams,
- and technical drawings.

Communication systems help societies function.

But communication only works properly when information is accurate and trustworthy.

That is why careful recording mattered in ancient times – and still matters today.

Today you will become both engineers and communicators.

You will investigate:

- materials,
- symbols,
- durability,
- and ancient writing technologies.

And you will discover why careful workmanship and truthful communication matter.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why were the commandments written on stone?
- What materials did ancient people use for writing?
- Why is stone durable?
- What do archaeologists study?
- Why are symbols important?
- Why must information be recorded carefully?

Students may:

- orally narrate,
 - draw stone tablets,
 - create symbols,
 - or explain ancient communication systems.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: materials, communication, observing objects)

- Why did ancient people write on stone?
 - Which materials last a long time?
 - What symbols do you recognise?
 - Why is it important to copy carefully?
 - What happens if instructions are wrong?
 - How did you work carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3I03, AC9TDE4K02, AC9TDE4P01 – materials, observations, communication systems)

- Why are some materials more durable than others?
 - Why would stone be useful for important laws?
 - How do symbols help people communicate?
 - Why do archaeologists record information carefully?
 - What tools might ancient stone carvers have used?
 - Why does accuracy matter in communication?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5H01, AC9TDE6K02, AC9TDE6P02 – materials science, communication technologies, design processes)

- How do material properties affect technological design?
- Why are durable records important in civilisations?
- How do scientists decode ancient writing systems?
- Why must historical evidence be preserved carefully?

- How can symbols communicate complex information efficiently?
 - Why is truthful communication important in science and society?
-

E) Hands-on Investigation

Activity Title:

“Ancient Writing Engineers”

Materials

- Air-dry clay or playdough
 - Craft sticks or blunt carving tools
 - Cardboard “tablets”
 - Paper
 - Markers or pencils
 - Stones or textured surfaces
 - Science journal
-

Step 1: Explore Materials

Students examine:

- stone,
- cardboard,
- clay,
- paper,
- wood (if available).

Discuss:

- Which feels strongest?
 - Which would last longest?
 - Which is easiest to write on?
-

Step 2: Create an Ancient Tablet

Students flatten clay into a tablet shape.

Using carving tools, students:

- inscribe symbols,
 - write names,
 - or create simple laws/messages.
-

Step 3: Test Durability

Compare:

- paper,
- clay,
- cardboard.

Ask:

- Which bends easily?
- Which tears?
- Which survives pressure best?

Discuss why ancient societies chose different materials.

Step 4: Create a Symbol System

Students invent:

- warning symbols,
- map symbols,
- or communication icons.

Older students explain:

- meaning,
 - clarity,
 - and usefulness.
-

Step 5: Journal Reflection

Students record:

- diagrams,
- material comparisons,
- symbols,
- reflections.

Possible prompts:

- “Which material was strongest?”
 - “Why does accurate communication matter?”
 - “Why did ancient people use durable materials?”
-

F) Optional Extension Activity

Create a Mini Rosetta Stone

Students create:

- one message,
- written in:

- English,
- symbols,
- and picture drawings.

Older students may:

- design code systems,
 - compare alphabets,
 - or investigate hieroglyphics.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Exodus 31:18

“When the Lord finished speaking to Moses on Mount Sinai, He gave him the two tablets of the covenant law, the tablets of stone inscribed by the finger of God.”

Parent/Tutor Says:

“God chose to communicate truth clearly and carefully.”

“Throughout history, people have needed trustworthy systems for recording information:

- laws,
- instructions,
- maps,
- and knowledge.”

“Scientists, engineers, historians, and communicators today still depend upon:

- accuracy,
- careful recording,
- and responsible communication.”

“Today we practised obedience through:

- careful workmanship,
 - patient observation,
 - and accurate recording.”
-

Discussion Questions

- Why are durable records important?
 - How do symbols communicate meaning?
 - Why must scientists record information accurately?
 - How did you practise patience today?
 - Why does truthful communication matter?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U01

describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects

Science Inquiry

AC9S2I03

record and represent observations and ideas in a variety of ways

Design & Technologies

AC9TDE2P01

generate and communicate design ideas through describing, drawing or modelling, including using digital tools

AC9TDE2P02

select and use materials, components, tools, equipment and techniques to safely make designed solutions

Years 3–4

Science Inquiry

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Design & Technologies

AC9TDE4K02

explain how forces and the properties of materials affect function in designed solutions

AC9TDE4P01

generate and communicate design ideas and decisions using appropriate attributions, technical terms and graphical representation techniques, including using digital tools

Years 5–6

Science as a Human Endeavour

AC9S5H01

explain how scientific knowledge helps people to understand the effect of their actions

Design & Technologies

AC9TDE6K02

explain how the characteristics and properties of materials, systems, components, tools and equipment affect their use in designed solutions

AC9TDE6P02

generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools

TOPIC 4	BUILDING, MATERIALS & ENGINEERING (PART B)

LESSON 7 – THE WALLS OF JERICHO: SOUND, VIBRATIONS & FORCE

Theme

God Created Powerful Forces Within His World

Character Focus

Obedience – trusting instructions even before understanding the outcome

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that sound is created by vibrations
 - Explore how vibrations move through air and materials
 - Investigate how force and repeated movement affect structures
 - Learn that sound waves carry energy
 - Conduct experiments involving vibrations and movement
 - Recognise the importance of careful observation and following instructions during investigations
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the Israelites arriving at the city of Jericho. Jericho had strong walls protecting the city, and humanly speaking it seemed impossible for the Israelites to defeat it.”

“But God gave Joshua unusual instructions:

the people were to march around the city quietly for six days, and on the seventh day they were to shout loudly after the trumpets sounded.”

“Today we are going to investigate sound, vibrations, force, and movement.”

“Scientists study:

- sound waves,
- energy,
- vibrations,
- resonance,
- and how repeated forces affect structures.”

“We are not saying the walls of Jericho fell only because of ordinary sound vibrations. The Bible clearly presents this as God’s miraculous intervention. But scientists can still study how sound and vibrations move through the world God created.”

“Today we will practise obedience by:

- following instructions carefully,
- observing honestly,
- and conducting safe experiments responsibly.”

Vocabulary

- Vibration – rapid movement back and forth
- Sound wave – movement of energy through air or materials
- Force – a push or pull
- Energy – the ability to cause movement or change
- Resonance – strong vibrations caused by matching frequencies
- Structure – something built from connected parts
- Frequency – how quickly vibrations repeat
- Collapse – when a structure falls down

B) Informational Story

“The Sound Around Jericho”

The city walls stood tall and strong.

Jericho was one of the oldest cities in the world, protected by thick defensive walls built to stop enemies from entering. Soldiers guarded the gates carefully while the people inside trusted the strength of their fortifications.

Then the Israelites arrived.

But instead of attacking immediately with ladders or battering rams, Joshua gave unusual instructions from God.

The people were to march around the city once each day for six days.

No shouting.

No battle cries.

No attack.

Only the sound of footsteps.
The blowing of trumpets.
And the quiet marching of thousands of people.

The people obeyed carefully, even though they may not have fully understood why.

Then came the seventh day.

The Israelites marched around the city seven times. At Joshua's command the trumpets sounded loudly, and the people shouted with all their strength.

Then the walls collapsed.

For thousands of years people have wondered:
How did this happen?

Archaeologists have studied the ruins of ancient Jericho for many years. They examine:

- fallen stones,
- layers of destruction,
- burned materials,
- and collapsed walls.

Scientists who study sound know that vibrations are powerful.

Every sound is caused by vibration.

When you speak, tiny vibrations move through your throat and mouth.
Those vibrations travel through the air as sound waves.
When the waves reach another person's ears, they hear the sound.

Some vibrations are very small.
Others are extremely powerful.

Large machines create vibrations.
Earthquakes create vibrations.
Explosions create vibrations.

Scientists have discovered that repeated vibrations can sometimes weaken structures. Engineers study this carefully when designing:

- bridges,
- stadiums,
- skyscrapers,
- and concert halls.

One famous bridge called the Tacoma Narrows Bridge collapsed in 1940 partly because wind created powerful vibrations that matched the bridge's natural movement pattern.

This is called resonance.

When repeated vibrations match the natural frequency of an object, movement can grow larger and stronger.

Musicians also understand vibration.
Guitar strings vibrate.

Drums vibrate.
Trumpets vibrate air columns.
Even your voice creates vibration.

Scientists use special equipment to measure sound waves and frequencies.

But Christians understand something important:
the fall of Jericho was ultimately God's miraculous action.

The obedience of the Israelites mattered greatly.
They followed God's instructions carefully even when the plan seemed strange.

This teaches an important lesson about science and faith.

Scientists investigate the physical world carefully.
But not everything can always be reduced to ordinary natural explanations.

Good scientists:

- observe honestly,
- avoid exaggeration,
- investigate carefully,
- and remain humble about what they do and do not know.

Today engineers still study:

- sound,
- vibrations,
- waves,
- resonance,
- and structural stability.

Architects design buildings to survive vibrations from:

- traffic,
- storms,
- earthquakes,
- and machinery.

Musicians use vibration to create beautiful music.

Doctors even use sound waves in medicine through ultrasound technology.

God designed a world filled with movement, energy, and orderly physical laws.

Today you will investigate some of these forces for yourselves.

You will see how vibrations move.
You will observe how sound creates motion.
And you will discover why careful investigation matters.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- What instructions did Joshua give?
- What caused sound?
- What are vibrations?
- What is resonance?
- Why do engineers study vibrations?
- Why is careful observation important?

Students may:

- orally narrate,
 - sketch sound waves,
 - draw Jericho,
 - or explain vibration experiments.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: observing movement, sound, and changes)

- What makes sound happen?
 - Can you feel vibrations?
 - What happens when you hit a drum?
 - Why did the Israelites shout?
 - What things vibrate around us?
 - How did you follow instructions carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S4U03, AC9S3I03, AC9TDE4K02 – forces, observations, structures)

- How do sound waves move through air?
- Why do vibrations sometimes affect structures?
- What is resonance?
- Why do engineers test buildings carefully?
- How can repeated movement weaken objects?
- Why must scientists record observations honestly?

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S6U03, AC9S5H01, AC9TDE6K02 – forces, energy transfer, structural systems)

- How do sound waves transfer energy?
 - Why can resonance become dangerous in engineering?
 - How do scientists measure vibrations?
 - Why do architects study structural stability carefully?
 - What is the difference between scientific investigation and miraculous events?
 - Why is humility important in science?
-

E) Hands-on Investigation

Activity Title:

“Seeing Vibrations”

Materials

- Drum, container, or tin
 - Plastic wrap
 - Rice grains or salt
 - Rubber bands
 - Ruler
 - Metal spoon
 - Water in a bowl
 - Science journal
-

Step 1: Observe Vibrations

Stretch rubber bands across a container.

Pluck them gently.

Observe:

- movement,
- sound,
- vibration speed.

Discuss:

“What is creating the sound?”

Step 2: Rice on a Drum Experiment

Stretch plastic wrap tightly over a bowl or container.

Place rice grains on top.

Make sounds nearby:

- clap,
- drum,
- shout gently,
- tap objects.

Observe:

- movement of rice caused by vibration.
-

Step 3: Water Vibration Investigation

Tap the side of a bowl containing water.

Observe:

- ripples,
- movement,
- wave patterns.

Discuss how energy moves through materials.

Step 4: Structure Test

Build a simple block tower.

Tap the table repeatedly.

Observe:

- movement,
- shaking,
- collapse risk.

Discuss:

“How can repeated vibration affect structures?”

Step 5: Journal Reflection

Students record:

- diagrams,
- observations,
- labelled vibration patterns,
- reflections.

Possible prompts:

- “What caused movement?”
 - “How does sound travel?”
 - “What did I learn about vibrations?”
-

F) Optional Extension Activity

Design a “Stable Tower”

Using:

- blocks,
- cups,
- cardboard,
- tape,
- or craft sticks,

students design a structure intended to resist shaking or vibration.

Older students test:

- height,
 - stability,
 - repeated tapping,
 - or balancing forces.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Joshua 6:20

“When the trumpets sounded, the army shouted... and the wall collapsed.”

Parent/Tutor Says:

“God performed a miracle at Jericho, but He also created a world filled with real physical forces and orderly systems.”

“Scientists study:

- sound,
 - waves,
 - vibrations,
 - and energy
- to better understand God’s creation.”

“Today we practised obedience through:

- careful investigation,

- safe experimentation,
 - and truthful observation.”
-

Discussion Questions

- What causes sound?
 - How do vibrations move?
 - Why do engineers study structural stability?
 - How did you observe carefully today?
 - Why is honesty important in science?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U01

describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Years 3–4

Science Understanding

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

Science Inquiry

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Design & Technologies

AC9TDE4K02

explain how forces and the properties of materials affect function in designed solutions

Years 5–6

Science Understanding

AC9S6U03

investigate how changes in movement and direction of objects are caused by unbalanced forces acting on the object

Science as a Human Endeavour

AC9S5H01

explain how scientific knowledge helps people to understand the effect of their actions

Design & Technologies

AC9TDE6K02

explain how the characteristics and properties of materials, systems, components, tools and equipment affect their use in designed solutions

LESSON 8 – SURVEYING THE LAND: MAPPING, MEASUREMENT & CARTOGRAPHY

Theme

God Created an Orderly World That Can Be Measured and Mapped

Character Focus

Obedience – carefully measuring, recording, and following boundaries responsibly

Learning Objectives

By the end of this lesson, students will be able to:

- Understand why maps and measurements are important
 - Explore how ancient people surveyed land and created maps
 - Investigate direction, distance, landmarks, and scale
 - Learn how cartographers represent real places using symbols and diagrams
 - Conduct simple mapping and measurement activities
 - Recognise the importance of accuracy and careful observation
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the Israelites entering and occupying the Promised Land. The tribes of Israel needed to divide the land carefully, establish boundaries, and understand where towns, rivers, hills, and important places were located.”

“Today we are going to investigate surveying, mapping, and cartography.”

“Cartography is the science and art of making maps.”

“Long ago, people travelled without satellites, computers, or GPS systems. Surveyors and mapmakers needed to observe carefully, measure distances, follow landmarks, and record information accurately.”

“Today scientists, engineers, builders, pilots, sailors, and emergency workers still depend upon accurate maps.”

“Today we will practise obedience by:

- measuring carefully,
- recording accurately,

- following directions,
 - and using truthful observations.”
-

Vocabulary

- Surveying – measuring and mapping land
 - Cartography – the science of making maps
 - Landmark – an easily recognised feature in an area
 - Scale – the relationship between map size and real size
 - Boundary – a dividing line between areas
 - Compass – a tool used to find direction
 - Direction – the way something moves or faces
 - Symbol – a sign representing something else on a map
-

B) Informational Story

“Measuring the Promised Land”

The Israelites stood upon hills overlooking the land God had promised them.

After many years in the wilderness, they would finally settle into towns, farms, vineyards, and family lands.

But an important question remained:
How would the land be divided fairly?

The tribes of Israel needed boundaries.

They needed to know:

- where rivers flowed,
- where mountains stood,
- where valleys stretched,
- and where roads and towns could be found.

This required surveying and mapping.

Surveyors are people who carefully measure land.

Cartographers create maps that help people understand locations, distances, and directions.

Long before modern satellites existed, ancient surveyors used surprisingly clever methods.

They observed:

- the sun,
- stars,
- hills,
- rivers,
- shadows,
- and distances travelled.

Some used ropes with evenly spaced knots for measurement.
Others used simple sighting tools to line up landmarks.

Egyptians became skilled surveyors because the Nile River flooded regularly. After floods, farmers needed to re-establish property boundaries and field measurements.

Accurate surveying mattered greatly.

If measurements were wrong:

- arguments could begin,
- buildings could be misplaced,
- roads could fail,
- and property boundaries could become confused.

Even today engineers and builders rely upon accurate measurements before constructing:

- roads,
- bridges,
- houses,
- pipelines,
- and cities.

Cartographers also use symbols to simplify information.

Maps cannot show every tiny detail.

Instead, mapmakers use:

- colours,
- shapes,
- symbols,
- lines,
- and labels.

Today maps help people:

- travel safely,
- plan cities,
- predict floods,
- navigate oceans,
- and respond to emergencies.

Modern scientists use incredible mapping technologies:

- satellites,
- GPS,
- drones,
- sonar,
- and digital imaging.

But the basic ideas remain the same as ancient surveying:

- careful observation,
- accurate measurement,
- truthful recording,
- and organised information.

Good surveyors must work carefully.

A small mistake in measurement can create large problems later.

That requires patience and obedience.

The Israelites needed to follow boundaries responsibly.

They needed fair measurements.

They needed trustworthy records.

Today students also learn careful habits through mapping and measuring.

You are learning:

- how to observe space,
- how to represent information clearly,
- and how careful measurements help people work wisely together.

Today you will become surveyors and cartographers yourselves.

You will measure,

map,

and investigate how humans represent the world around them.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why did the Israelites need maps and boundaries?
- What do surveyors do?
- What is cartography?
- Why are accurate measurements important?
- How do maps use symbols?
- Why must mapmakers work carefully?

Students may:

- orally narrate,
 - sketch maps,
 - label landmarks,
 - or explain surveying methods.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: places, directions, observing surroundings)

- What is a map?
 - Why do people use maps?
 - What landmarks can you see nearby?
 - Which direction is north/south/east/west?
 - Why should measurements be careful?
 - How did you follow directions today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3I03, AC9HS3S02, AC9TDE4P01 – measurements, mapping, graphical representations)

- Why are boundaries important?
 - How do cartographers simplify information?
 - Why must surveyors measure carefully?
 - How can symbols help communicate information?
 - Why are landmarks useful?
 - How can inaccurate measurements create problems?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5I04, AC9HS5S02, AC9TDE6P02 – data representation, spatial reasoning, design communication)

- How does scale help maps represent large areas?
 - Why do engineers and scientists depend upon accurate surveying?
 - How have mapping technologies improved over time?
 - Why are GPS systems useful?
 - Why is organised data important in cartography?
 - Why must scientific measurements be recorded honestly?
-

E) Hands-on Investigation

Activity Title:

“Become a Cartographer”

Materials

- Paper
 - Pencils
 - Ruler
 - Clipboard (optional)
 - Compass (optional)
 - Measuring tape or string
 - Coloured pencils
 - Science journal
-

Step 1: Observe the Area

Students examine:

- classroom,
- backyard,
- playground,
- or nearby area.

Identify:

- landmarks,
 - pathways,
 - trees,
 - buildings,
 - or fences.
-

Step 2: Measure Distances

Use:

- footsteps,
- rulers,
- tape measures,
- or string.

Record simple distances.

Discuss:

“Why should measurements be accurate?”

Step 3: Create a Map

Students draw:

- boundaries,
- symbols,
- labels,
- landmarks,
- and directions.

Encourage:

- titles,
 - map keys,
 - compass directions,
 - and scale approximations.
-

Step 4: Mapping Challenge

Older students:

- hide an object,
- create a map,
- and allow another student to follow directions to find it.

Discuss:

“How do clear maps help people?”

Step 5: Journal Reflection

Students record:

- diagrams,
- measurements,
- map symbols,
- reflections.

Possible prompts:

- “What makes a good map?”
 - “Why are accurate measurements important?”
 - “What did I learn about surveying?”
-

F) Optional Extension Activity

Ancient vs Modern Maps

Students compare:

- ancient-style maps,
- treasure maps,
- modern road maps,

- satellite images,
- or GPS systems.

Older students investigate:

- how GPS works,
 - satellite mapping,
 - or coordinate systems.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Joshua 18:8

“Go and make a survey of the land and write a description of it...”

Parent/Tutor Says:

“God instructed His people to organise the land carefully and fairly.”

“Surveyors, engineers, scientists, and mapmakers today still depend upon:

- careful observation,
- accurate measurements,
- organised information,
- and truthful records.”

“Today we practised obedience through:

- careful measuring,
 - accurate recording,
 - and responsible investigation.”
-

Discussion Questions

- Why are maps important?
 - Why must measurements be accurate?
 - How do symbols help communication?
 - How did you practise careful observation today?
 - Why does truthful recording matter?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Inquiry

AC9S2I03

record and represent observations and ideas in a variety of ways

Design & Technologies

AC9TDE2P01

generate and communicate design ideas through describing, drawing or modelling, including using digital tools

Years 3–4

Science Inquiry

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Humanities & Social Sciences Skills

AC9HS3S02

interpret information and data displayed in different formats

Design & Technologies

AC9TDE4P01

generate and communicate design ideas and decisions using appropriate attributions, technical terms and graphical representation techniques, including using digital tools

Years 5–6

Science Inquiry

AC9S5I04

construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information

Humanities & Social Sciences Skills

AC9HS5S02

interpret and analyse information and data from different sources

Design & Technologies

AC9TDE6P02

generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools

TOPIC 5	AGRICULTURE, HEALTH & LIVING SYSTEMS (PART A)

LESSON 9 – ANCIENT FARMING & HARVEST TECHNOLOGIES

Theme

God Designed Living Systems That Provide Food and Sustain Communities

Character Focus

Obedience – working faithfully, patiently, and responsibly to care for resources

Learning Objectives

By the end of this lesson, students will be able to:

- Understand how ancient people grew and harvested food
 - Explore how wheat and other crops grow
 - Investigate tools and technologies used in ancient farming
 - Learn how soil, water, sunlight, and seasons affect plant growth
 - Observe patterns in plant life cycles
 - Recognise the importance of faithful work, preparation, and stewardship
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the Israelites settling in the Promised Land. Much of life in Ancient Israel depended upon farming and harvests.”

“Families planted crops such as wheat and barley. They cared for vineyards, olive trees, animals, and gardens. Harvest seasons were very important because communities depended upon successful crops for survival.”

“Today we are going to investigate farming technologies, plant growth, and harvesting systems.”

“Scientists study:

- soil,
- seeds,
- water,
- sunlight,
- seasons,
- and plant life cycles

to understand how food is produced.”

“Engineers and inventors also design tools that help people farm more efficiently.”

“Today we will practise obedience by:

- working carefully,
- observing patiently,
- following instructions,
- and caring responsibly for living things.”

Vocabulary

- Harvest – gathering mature crops
- Agriculture – farming and food production
- Germination – when a seed begins to grow
- Nutrients – substances that help living things grow
- Irrigation – supplying water to crops
- Soil – the upper layer of earth where plants grow
- Stewardship – caring responsibly for resources
- Cycle – a repeating pattern or process

B) Informational Story

“The Wheat Fields of Israel”

Golden wheat moved gently beneath the wind.

Across the hills of Israel, farmers worked carefully beneath the hot sun. Families depended upon successful harvests for survival. Bread was one of the most important foods in the ancient world, and wheat fields covered many valleys and hillsides.

But growing food required hard work.

Farmers first prepared the soil.

Then seeds were planted carefully at the correct season. Too early or too late could ruin the harvest.

After planting, farmers waited patiently.

Rain became very important.

Sunlight warmed the soil.

Tiny roots pushed downward while green shoots slowly rose upward.

At first the fields looked empty and lifeless.
But beneath the soil, incredible changes were taking place.

God designed seeds with the ability to grow into living plants.

Scientists today study:

- germination,
 - root systems,
 - photosynthesis,
 - soil nutrients,
 - insects,
 - and weather patterns
- to better understand agriculture.

Ancient farmers observed these systems carefully long before modern science existed.

They learned:

- which soils grew best,
- when rains usually arrived,
- how much water crops needed,
- and which pests damaged fields.

Farmers also invented technologies to help with harvesting.

Ancient people used:

- sickles,
- grinding stones,
- storage jars,
- irrigation channels,
- and threshing floors.

A sickle had a curved blade used to cut grain quickly.
Threshing floors helped separate edible grain from useless husks.

Communities often worked together during harvest season because gathering crops before storms or animals damaged them was very important.

The Bible frequently uses farming as a picture of patience, faithfulness, and obedience.

A farmer cannot demand instant growth.

Seeds require:

- time,
- care,
- water,
- sunlight,
- and protection.

Scientists and farmers today still depend upon careful observation and planning.

Modern agriculture uses:

- tractors,
- irrigation systems,

- fertilisers,
- weather forecasting,
- satellites,
- and scientific testing.

But the basic principles remain similar to ancient farming:

- healthy soil,
- proper water,
- careful timing,
- and faithful work.

Agricultural scientists help communities grow enough food for millions of people.

They investigate:

- plant diseases,
- drought resistance,
- sustainable farming,
- soil quality,
- and food production systems.

Good farmers and scientists must be responsible stewards.

If soil is damaged carelessly, crops may fail.

If water is wasted, communities may suffer.

If pests spread unchecked, harvests can be destroyed.

That requires wisdom and discipline.

The Israelites depended upon harvest seasons year after year.

They learned that careful work, patience, and trust in God’s provision were all important.

Today you will investigate:

- seeds,
- soil,
- plant growth,
- and farming systems.

You will observe how living things grow and discover why agriculture depends upon careful stewardship and faithful work.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why was farming important in Israel?
- What does a seed need to grow?
- What tools did ancient farmers use?
- What is irrigation?
- Why must farmers be patient?
- Why do scientists study agriculture?

Students may:

- orally narrate,
 - draw farming scenes,
 - label plant parts,
 - or explain plant growth cycles.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: living things, plant needs, observing growth)

- What do plants need to grow?
 - Why is water important?
 - What happens during harvest?
 - Why must farmers care for plants?
 - What changes happen as plants grow?
 - How did you work carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3U01, AC9S3I01, AC9TDE4K03 – living systems, investigations, food production)

- Why does soil matter for plant growth?
 - How does irrigation help crops survive?
 - Why do farmers need to understand weather and seasons?
 - How did ancient technologies help harvesting?
 - Why must agricultural systems be managed carefully?
 - Why is patience important in farming?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5U01, AC9S5H02, AC9TDE6K04 – ecosystems, sustainability, agricultural technologies)

- How do root systems help plants survive?
- Why are nutrients important for crop growth?
- How do modern technologies improve agriculture?
- Why must farming systems remain sustainable?

- How can scientific knowledge improve food production?
 - Why does stewardship matter in agriculture?
-

E) Hands-on Investigation

Activity Title:

“Growing Seeds Like Ancient Farmers”

Materials

- Wheat seeds, beans, or other fast-growing seeds
 - Soil
 - Small containers or cups
 - Water
 - Spoon
 - Ruler
 - Science journal
-

Step 1: Prepare Soil

Students fill containers with soil.

Discuss:

- texture,
 - moisture,
 - and nutrients.
-

Step 2: Plant Seeds

Students:

- place seeds into soil,
- cover gently,
- and water carefully.

Discuss:

“What conditions help seeds grow?”

Step 3: Predict Growth

Students predict:

- how tall plants may grow,

- how long germination may take,
 - and what plants need.
-

Step 4: Observe Over Time

Over coming days students:

- measure growth,
 - record changes,
 - draw observations,
 - and compare plant health.
-

Step 5: Ancient Harvest Simulation

Optional:

Use dried grass, grain heads, or paper strips.

Students test:

- cutting with “sickle” motions,
- gathering bundles,
- separating seeds.

Discuss:

“How did tools help ancient farmers?”

Step 6: Journal Reflection

Students record:

- labelled diagrams,
- growth observations,
- measurements,
- reflections.

Possible prompts:

- “What helps plants grow?”
 - “Why is farming important?”
 - “What did I learn about stewardship?”
-

F) Optional Extension Activity

Design an Irrigation System

Using:

- trays,
- tubing,

- cups,
- or recycled materials,

students design a simple water delivery system for plants.

Older students test:

- water flow,
 - soil moisture,
 - or efficient watering methods.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Galatians 6:9

“Let us not become weary in doing good, for at the proper time we will reap a harvest...”

Parent/Tutor Says:

“God designed living systems that provide food and sustain communities.”

“Farmers, scientists, and agricultural engineers today help care for crops and food systems through:

- observation,
- planning,
- testing,
- and stewardship.”

“Today we practised obedience through:

- patient observation,
 - careful planting,
 - and responsible care for living things.”
-

Discussion Questions

- Why do plants need water and sunlight?
 - Why must farmers plan carefully?
 - How do technologies help agriculture?
 - How did you practise stewardship today?
 - Why is patience important in both science and farming?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S2U01

recognise that living things have basic needs, including food and water

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Design & Technologies

AC9TDE2P02

select and use materials, components, tools, equipment and techniques to safely make designed solutions

Years 3–4

Science Understanding

AC9S3U01

compare characteristics of living and non-living things and examine the interdependence between living things and environments

Science Inquiry

AC9S3I01

pose questions to investigate and make predictions based on prior knowledge

Design & Technologies

AC9TDE4K03

describe how food and fibre are produced or processed in managed environments

Years 5–6

Science Understanding

AC9S5U01

examine how particular structural features and behaviours of living things enable their survival in specific habitats

Science as a Human Endeavour

AC9S5H02

investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Design & Technologies

AC9TDE6K04

describe how food and fibre are produced and/or processed in managed environments and how these can become more sustainable

LESSON 10 – ENERGY, FOOD & HUMAN ENDURANCE

Theme

God Designed the Human Body to Need Energy, Rest, and Wise Care

Character Focus

Obedience – caring responsibly for our bodies and using energy wisely

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that the body needs energy from food and water
 - Explore how muscles and body systems work during activity
 - Investigate fatigue, endurance, and physical effort
 - Learn how nutrition, hydration, and rest affect human performance
 - Conduct simple investigations involving movement and energy use
 - Recognise the importance of self-control, wise habits, and caring for health
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the Israelites travelling, working, fighting battles, farming, and living in difficult environments. Ancient people often walked long distances, carried heavy loads, harvested crops, and travelled through rough wilderness areas.”

“To survive, people needed strength and endurance.”

“Today we are going to investigate:

- how the body uses energy,
- why food and water matter,
- and how humans become tired.”

“Scientists study:

- muscles,
- nutrition,
- exercise,
- hydration,
- body systems,
- and fatigue

to understand how the body works.”

“Today we will practise obedience by:

- following safe procedures,
 - observing carefully,
 - and learning how to care responsibly for our bodies.”
-

Vocabulary

- Energy – the ability to do work or create movement
 - Endurance – the ability to continue during effort or difficulty
 - Fatigue – extreme tiredness
 - Muscle – body tissue that helps movement
 - Hydration – having enough water in the body
 - Nutrition – substances from food that help the body function
 - Pulse – the rhythmic beating of blood through arteries
 - Recovery – the body returning to normal after activity
-

B) Informational Story

“Strength for the Journey”

The road stretched far ahead through rocky hills.

Travelling in the ancient world was exhausting.

The Israelites walked long distances carrying:

- water,
- food,
- tools,
- tents,
- and supplies.

Soldiers marched into battle wearing armour and carrying weapons.

Farmers harvested crops beneath the hot sun.

Messengers travelled rapidly between towns.

Builders lifted stone and timber for construction.

Daily life required strength and endurance.

Today scientists understand that the human body needs energy constantly.

Every movement requires energy:

- walking,
- lifting,
- breathing,
- thinking,
- and even sleeping.

The body receives most of this energy from food.

Foods contain nutrients that help:

- muscles work,
- bones grow,
- organs function,
- and the brain think clearly.

Water is also extremely important.

Without enough hydration:

- muscles weaken,
- thinking becomes slower,
- body temperature rises,
- and fatigue increases.

When people exercise or work hard, the body changes in interesting ways.

The heart beats faster.

Breathing increases.

Muscles use stored energy.

Sweating helps cool the body.

Scientists who study sports medicine and human physiology investigate how the body responds to activity and stress.

Athletes train carefully to improve endurance.

Doctors study fatigue and recovery.

Nutritionists help people choose healthy foods.

Ancient people learned many survival lessons through experience:

- carrying enough water,
- resting during heat,
- eating nourishing foods,
- and pacing long journeys carefully.

People who ignored these needs often became sick or exhausted.

The Bible frequently connects physical discipline with wise living.

Workers needed diligence.

Soldiers required endurance.

Travellers needed preparation.

Even today scientists explain that healthy habits matter:

- sleep,
- exercise,
- nutrition,
- hydration,
- and rest

all affect human performance.

Engineers also design technologies to help reduce human fatigue:

- wheels,
- carts,

- harnesses,
- tools,
- irrigation systems,
- and farming equipment.

These technologies help people work more efficiently and safely.

Good scientists investigate the body carefully.

They:

- observe honestly,
- measure accurately,
- compare results,
- and test ideas safely.

That requires patience and responsibility.

Today you will investigate how activity affects the body.

You will observe:

- pulse changes,
- breathing,
- movement,
- and fatigue.

And you will discover why wise habits and careful stewardship of the body matter.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why was life physically difficult in ancient times?
- Why does the body need food and water?
- What happens during exercise?
- What is fatigue?
- Why do people need rest?
- Why do scientists study the body?

Students may:

- orally narrate,
- draw body systems,

- label muscles,
 - or explain how energy is used.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: body needs, movement, healthy habits)

- Why do people need food?
 - Why is water important?
 - What happens when you run or exercise?
 - Why do people become tired?
 - Why do we need sleep and rest?
 - How did you follow instructions safely today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3U01, AC9HP4P08, AC9S3I01 – body systems, health behaviours, investigations)

- Why does the heart beat faster during exercise?
 - How does sweating help the body?
 - Why is hydration important during activity?
 - How do healthy foods help endurance?
 - Why must athletes and workers care for their bodies?
 - Why should investigations involving exercise be done safely?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5U01, AC9HP6P06, AC9S5H02 – body systems, preventive health, scientific investigation)

- How do muscles use energy during activity?
 - Why does the body need recovery time?
 - How does dehydration affect performance?
 - How can technologies reduce fatigue and physical strain?
 - Why do scientists measure pulse and breathing rates?
 - Why is self-discipline important for long-term health?
-

E) Hands-on Investigation

Activity Title:

“Investigating Human Energy”

Materials

- Stopwatch or timer
 - Science journal
 - Pencil
 - Space for movement
 - Optional pulse chart
-

Step 1: Resting Pulse

Students sit quietly.

Find pulse:

- wrist,
- or neck.

Count beats for 15 seconds.

Multiply by 4 for beats per minute.

Record results.

Step 2: Exercise Investigation

Students:

- jog,
- march,
- jump,
- or do star jumps safely for 1 minute.

Immediately measure pulse again.

Observe:

- breathing,
 - sweating,
 - tiredness,
 - pulse changes.
-

Step 3: Recovery Observation

Wait 2–3 minutes.

Measure pulse again.

Discuss:

- recovery,
 - endurance,
 - hydration,
 - and body systems.
-

Step 4: Compare Activities

Try:

- slow walking,
- hopping,
- stretching,
- carrying objects.

Compare:

- energy use,
 - breathing,
 - fatigue.
-

Step 5: Journal Reflection

Students record:

- pulse measurements,
- observations,
- diagrams,
- reflections.

Possible prompts:

- “What changed during exercise?”
 - “Why does the body need energy?”
 - “What helps people stay healthy?”
-

F) Optional Extension Activity

Design a “Survival Pack”

Students design a pack for:

- wilderness travel,
- soldiers,

- farmers,
- or messengers.

Include:

- food,
- water,
- tools,
- shelter items,
- or medical supplies.

Older students explain:

- why each item helps endurance and survival.

G) Biblical Connection & Wrap-Up

Bible Verse

Isaiah 40:31

“But those who hope in the Lord will renew their strength...”

Parent/Tutor Says:

“God designed the human body carefully and wonderfully.”

“Scientists study the body to help people:

- stay healthy,
- recover from sickness,
- improve safety,
- and understand how humans function.”

“But wise living also requires discipline:

- healthy habits,
- rest,
- nourishment,
- and self-control.”

“Today we practised obedience through:

- safe investigation,
- careful observation,
- and responsible care for our bodies.”

Discussion Questions

- Why does the body need energy?
- What causes fatigue?
- Why are healthy habits important?

- How did your body change during exercise?
 - Why should scientists investigate safely?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S2U01

recognise that living things have basic needs, including food and water

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Years 3–4

Science Understanding

AC9S3U01

compare characteristics of living and non-living things and examine the interdependence between living things and environments

Science Inquiry

AC9S3I01

pose questions to investigate and make predictions based on prior knowledge

Health & Physical Education

AC9HP4P08

investigate and apply behaviours that contribute to their own and others' health, safety, relationships and wellbeing

Years 5–6

Science Understanding

AC9S5U01

examine how particular structural features and behaviours of living things enable their survival in specific habitats

Science as a Human Endeavour

AC9S5H02

investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Health & Physical Education

AC9HP6P06

investigate the role of preventive health in promoting and maintaining health, safety and wellbeing for individuals and their communities

TOPIC 6	AGRICULTURE, HEALTH & LIVING SYSTEMS (PART B)

LESSON 11 – VENOMS, MEDICINES & HEALING

Theme

God Created Living Systems That Can Harm or Heal

Character Focus

Obedience – following wise instructions that protect life and health

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that some plants and animals contain harmful or healing substances
 - Explore how venoms affect living things
 - Learn how medicines can help the body recover
 - Investigate how scientists study toxins, medicines, and healing
 - Conduct safe investigations involving natural substances and reactions
 - Recognise the importance of careful procedures and safety rules
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the Israelites living in the wilderness and travelling through dangerous environments. In deserts and rocky places there were snakes, scorpions, poisonous plants, disease, and injuries.”

“People in the ancient world needed knowledge about healing, medicine, and dangerous animals.”

“Today we are going to investigate:

- venoms,
- medicines,

- healing,
- and how scientists study the body.”

“Scientists today study:

- toxins,
 - antidotes,
 - medicines,
 - plants,
 - bacteria,
 - and body systems
- to help protect human health.”

“We will also learn why safety procedures matter when dealing with dangerous substances.”

“Today we will practise obedience by:

- following instructions carefully,
- handling materials safely,
- and learning responsible scientific behaviour.”

Vocabulary

- Venom – a poisonous substance injected by an animal
- Toxin – a harmful substance
- Medicine – a substance used to help treat illness or injury
- Antidote – something that helps stop or reduce poison
- Bacteria – tiny living organisms, some helpful and some harmful
- Healing – recovery from sickness or injury
- Treatment – care given to help recovery
- Safety procedure – steps followed to reduce danger

B) Informational Story

“Danger in the Wilderness”

The wilderness could be beautiful.

Towering rocks glowed red beneath the setting sun. Dry winds swept across the hills. Stars filled the night sky.

But the wilderness could also be dangerous.

Hidden beneath stones and inside cracks in the ground were snakes and scorpions. Some carried venom powerful enough to cause great pain, sickness, or death.

The Israelites learned that survival required wisdom and careful attention.

People in the ancient world had to recognise:

- dangerous plants,
- poisonous animals,

- infected wounds,
- spoiled food,
- and contaminated water.

Without modern hospitals, healing often depended upon observation, experience, and careful treatment.

Today scientists understand that venoms are extremely complex substances.

Snake venom may contain chemicals that:

- damage blood,
- affect muscles,
- attack nerves,
- or stop normal body functions.

Different snakes produce different kinds of venom.

Scorpions, spiders, jellyfish, and many other animals also use toxins for protection or hunting.

Scientists who study venoms are called toxinologists.

They carefully investigate:

- how toxins work,
- how they affect the body,
- and how medicines can be developed.

Interestingly, some dangerous substances have actually helped scientists create useful medicines.

Certain venoms have been studied to help develop:

- pain treatments,
- heart medicines,
- blood pressure medications,
- and scientific research tools.

This teaches something important:

substances that can harm may sometimes also help when used wisely and carefully.

Ancient people also used plants for medicine.

Herbs, oils, tree resins, and natural substances were often used to:

- clean wounds,
- reduce pain,
- calm infections,
- or help recovery.

Some treatments worked well.

Others were ineffective or dangerous.

Modern medicine improved greatly when scientists began using careful testing and controlled experiments.

Good scientists do not simply assume something works.

They:

- test carefully,

- compare results,
- observe honestly,
- and follow strict safety procedures.

Doctors and scientists today study:

- diseases,
 - medicines,
 - body systems,
 - bacteria,
 - and healing processes
- to improve human health and save lives.

The Bible often connects wisdom with healing and careful living.

God gave many instructions to protect health:

- washing,
- quarantining sickness,
- safe food preparation,
- and careful handling of disease.

Obedience to wise instructions helped protect entire communities.

Scientists today still depend upon:

- safety procedures,
- careful measurements,
- accurate observations,
- and responsible testing.

This requires patience and discipline.

Today you will investigate:

- harmful and helpful substances,
- safety systems,
- and how scientists study healing.

You will discover why careful scientific work can protect human life.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why was the wilderness dangerous?
- What is venom?
- How do scientists study toxins?
- Why are medicines important?
- Why do scientists follow safety procedures?
- How can dangerous substances sometimes help medicine?

Students may:

- orally narrate,
 - draw snakes or medicine systems,
 - label body reactions,
 - or explain safety procedures.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: safety, living things, observing changes)

- Why should people avoid dangerous animals?
 - What is medicine used for?
 - Why must scientists work safely?
 - Why is washing important?
 - What helps people heal?
 - How did you follow instructions carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3U01, AC9S3I01, AC9HP4P08 – living systems, investigations, health behaviours)

- How can venom harm the body?
 - Why do doctors study poisonous animals carefully?
 - Why must medicines be tested?
 - How can hygiene reduce sickness?
 - Why are safety rules important in science?
 - How can scientists help communities stay healthy?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5H02, AC9HP6P06, AC9S5I02 – scientific investigation, preventive health, responsible procedures)

- How do toxins affect body systems?
- Why do scientists conduct controlled medical testing?
- How can medicines be developed from natural substances?
- Why are safety procedures essential in laboratories?

- How can scientific knowledge improve healthcare?
 - Why is responsibility important in medicine and science?
-

E) Hands-on Investigation

Activity Title:

“Helpful or Harmful?”

Materials

- Labels or pictures of substances
 - Salt
 - Sugar
 - Vinegar
 - Lemon juice
 - Soap
 - Water
 - Small containers
 - Science journal
-

Step 1: Observe Substances

Students safely observe:

- smell,
- texture,
- colour,
- and appearance.

Discuss:

- Which are safe?
 - Which should not be swallowed?
 - Which are helpful in some situations?
-

Step 2: Mixing Investigation

Mix small safe amounts:

- vinegar and water,
- salt and water,
- lemon juice and water.

Observe:

- dissolving,
- smell,

- reactions,
- and changes.

Discuss:

“How can substances affect living things differently?”

Step 3: Safety Sorting Activity

Students sort pictures/items into categories:

- safe,
- unsafe,
- medicine,
- cleaning,
- food,
- poisonous.

Discuss why labels and instructions matter.

Step 4: Hygiene Investigation

Optional:

Use glitter to represent “germs.”

Observe how easily “germs” spread through touch.

Discuss:

- handwashing,
 - contamination,
 - and disease prevention.
-

Step 5: Journal Reflection

Students record:

- observations,
- diagrams,
- safety rules,
- reflections.

Possible prompts:

- “Why do scientists use safety procedures?”
 - “How can substances help or harm?”
 - “What did I learn about healing?”
-

F) Optional Extension Activity

Design a “Wilderness Medical Kit”

Students design a simple medical kit for:

- travellers,
- shepherds,
- wilderness explorers,
- or soldiers.

Include:

- water,
- bandages,
- herbs,
- containers,
- tools,
- or protective equipment.

Older students explain:

- why each item matters,
 - and how it supports health and safety.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Proverbs 17:22

“A cheerful heart is good medicine...”

Parent/Tutor Says:

“God created the human body with amazing healing systems, but He also gave people wisdom to care for health responsibly.”

“Scientists, doctors, and medical researchers today help people through:

- medicine,
- careful testing,
- safety procedures,
- and scientific investigation.”

“But healing also requires wisdom, discipline, and responsibility.”

“Today we practised obedience through:

- safe investigation,
 - careful observation,
 - and responsible scientific behaviour.”
-

Discussion Questions

- Why are some substances dangerous?
- How can medicines help people?
- Why do scientists test carefully?
- How did you practise safety today?
- Why are truthful observations important in medicine?

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S2U01

recognise that living things have basic needs, including food and water

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Years 3–4

Science Understanding

AC9S3U01

compare characteristics of living and non-living things and examine the interdependence between living things and environments

Science Inquiry

AC9S3I01

pose questions to investigate and make predictions based on prior knowledge

Health & Physical Education

AC9HP4P08

investigate and apply behaviours that contribute to their own and others' health, safety, relationships and wellbeing

Years 5–6

Science as a Human Endeavour

AC9S5H02

investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Science Inquiry

AC9S5I02

plan and conduct repeatable investigations fairly and safely to answer questions and make observations, identifying variables to be changed, measured and controlled

Health & Physical Education

AC9HP6P06

investigate the role of preventive health in promoting and maintaining health, safety and wellbeing for individuals and their communities

LESSON 12 – CELLS, GROWTH & LIVING THINGS

Theme

God Designed Living Things to Grow, Repair, and Reproduce in Orderly Ways

Character Focus

Obedience – carefully observing life and responsibly caring for living things

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that living things grow and change over time
 - Learn that cells are the tiny building blocks of living things
 - Explore how plants, animals, and humans grow and reproduce
 - Investigate patterns in life cycles and growth
 - Conduct observations of living structures and growth processes
 - Recognise the importance of stewardship and responsible care for living systems
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about life in Ancient Israel during the time of the Judges and Kings. Families raised children, planted crops, cared for animals, and watched living things grow and reproduce from one generation to the next.”

“Today we are going to investigate one of the most amazing parts of science: how living things grow.”

“Scientists have discovered that all living things are made from tiny building blocks called cells.”

“Cells are so small that most can only be seen with microscopes, but they work together to form:

- plants,
- animals,
- trees,
- insects,
- and even human bodies.”

“Today we will investigate:

- growth,
- life cycles,

- cells,
- and living systems.”

“We will practise obedience by:

- handling living things carefully,
 - observing truthfully,
 - and working patiently during investigations.”
-

Vocabulary

- Cell – the tiny building block of living things
 - Growth – becoming larger or more developed
 - Reproduction – producing new living things
 - Life cycle – the stages of growth in a living thing’s life
 - Organism – a living thing
 - Microscope – a tool used to magnify tiny objects
 - Tissue – groups of cells working together
 - Structure – the arrangement of parts within something
-

B) Informational Story

“The Tiny Builders of Life”

David watched carefully as wheat shoots pushed upward through the soil.

Only weeks earlier the field had looked empty and lifeless. But now tiny green stems covered the hillsides around Bethlehem.

“How does all this happen?” he asked his father.

His father picked up a seed thoughtfully.

“God placed life inside even the smallest seed.”

For thousands of years people observed living things growing:

- babies becoming adults,
- lambs becoming sheep,
- seeds becoming plants,
- and tiny saplings becoming great trees.

But nobody could see the tiny structures inside living things.

Then, hundreds of years later, scientists invented microscopes.

For the first time people discovered that living things are made from incredibly small structures called cells.

Cells are like tiny living factories.

Some cells:

- carry oxygen,
- fight disease,
- store energy,
- send signals,
- or help movement.

Plant cells contain structures that help plants use sunlight to make food.

Root cells absorb water from soil.

Leaf cells capture sunlight.

Stem cells transport nutrients.

Scientists discovered that cells divide and reproduce.

One cell becomes two.

Two become four.

Four become many more.

This is how living things:

- grow,
- repair injuries,
- and reproduce.

Even though cells are tiny, they work together in highly organised systems.

Groups of cells form tissues.

Tissues form organs.

Organs form body systems.

The human body contains trillions of cells working together constantly.

Scientists continue studying cells today because understanding cells helps people:

- grow food,
- treat disease,
- heal injuries,
- and understand living systems.

Farmers study plant growth.

Doctors study blood cells.

Biologists investigate bacteria and reproduction.

Medical researchers examine how cells repair damage.

In the ancient world, people did not know about microscopic cells.

But they still carefully observed life cycles.

Farmers learned:

- when seeds germinated,
- when animals reproduced,
- when harvests matured,
- and how weather affected growth.

Careful observation helped communities survive.

Good scientists still depend upon careful observation today.

They:

- compare changes,
- record growth,
- measure carefully,
- and test ideas honestly.

That requires patience and responsibility.

Living systems also remind us of God’s incredible design.

Every living thing follows patterns:

- growth,
- repair,
- reproduction,
- and life cycles.

Even small seeds contain astonishing complexity.

Today you will investigate:

- cells,
- growth,
- and living systems.

You will observe patterns of life and discover how scientists study the tiny building blocks of living things.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- What are cells?
- Why are cells important?
- How do living things grow?
- What is a life cycle?
- Why do scientists use microscopes?
- Why is careful observation important in biology?

Students may:

- orally narrate,
- draw cells,

- sketch plant growth,
 - or explain life cycles.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: living things, growth, observing changes)

- What living things can grow?
 - What happens to seeds as they grow?
 - Why do living things need water and food?
 - What changes happen as babies or animals grow?
 - Why should we care for living things gently?
 - How did you observe carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3U01, AC9S3I01, AC9S3I03 – living systems, observations, investigations)

- Why are cells called the building blocks of life?
 - How do plants and animals change as they grow?
 - Why do scientists use microscopes?
 - How do cells work together in organisms?
 - Why are life cycles important in nature?
 - Why must scientists record observations carefully?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S5U01, AC9S5H02, AC9S5I04 – living structures, scientific investigation, biological systems)

- How do specialised cells perform different jobs?
 - Why do multicellular organisms require organised systems?
 - How does cell division allow growth and repair?
 - Why do scientists study cells carefully?
 - How can biological knowledge improve medicine and agriculture?
 - Why are honesty and accuracy important in biology?
-

E) Hands-on Investigation

Activity Title:

“Investigating Living Cells & Growth”

Materials

- Onion pieces or plant leaves
 - Magnifying glass or microscope (if available)
 - Paper
 - Pencil
 - Seeds or seedlings
 - Ruler
 - Science journal
-

Step 1: Observe Living Structures

Students examine:

- leaves,
- stems,
- roots,
- seeds,
- or onion layers.

Observe:

- patterns,
- textures,
- veins,
- and structures.

If microscopes are available:
observe plant cells.

Step 2: Seed Growth Investigation

Students examine:

- germinating seeds,
- roots,
- shoots,
- and leaves.

Measure:

- height,
- root length,
- or leaf size.

Discuss:

“What helps living things grow?”

Step 3: Compare Living & Non-living Things

Students compare:

- rock vs seed,
- dead leaf vs living plant,
- dry seed vs sprouting seed.

Discuss characteristics of living things.

Step 4: Life Cycle Diagram

Students create diagrams showing:

- plant life cycle,
- animal growth,
- or human growth stages.

Older students label:

- reproduction,
 - growth,
 - and cell division.
-

Step 5: Journal Reflection

Students record:

- diagrams,
- measurements,
- labelled observations,
- reflections.

Possible prompts:

- “What did I observe about growth?”
 - “Why are cells important?”
 - “How do living things change over time?”
-

F) Optional Extension Activity

Build a Cell Model

Using:

- clay,
- paper,

- recycled materials,
- beads,
- or cardboard,

students build a simple plant or animal cell model.

Older students may label:

- nucleus,
- cell wall,
- membrane,
- chloroplasts,
- or cytoplasm.

G) Biblical Connection & Wrap-Up

Bible Verse

Psalms 139:14

“I praise You because I am fearfully and wonderfully made...”

Parent/Tutor Says:

“God designed living things with incredible complexity and order.”

“Scientists study cells and growth to better understand:

- life,
- health,
- agriculture,
- medicine,
- and ecosystems.”

“But studying living things also requires responsibility.”

“We must care for life respectfully and truthfully.”

“Today we practised obedience through:

- careful observation,
- patient investigation,
- and responsible stewardship of living things.”

Discussion Questions

- Why are cells important?
- What helps living things grow?
- Why do scientists use microscopes?

- How did you observe carefully today?
 - Why should living things be treated responsibly?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S2U01

recognise that living things have basic needs, including food and water

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Years 3–4

Science Understanding

AC9S3U01

compare characteristics of living and non-living things and examine the interdependence between living things and environments

Science Inquiry

AC9S3I01

pose questions to investigate and make predictions based on prior knowledge

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Years 5–6

Science Understanding

AC9S5U01

examine how particular structural features and behaviours of living things enable their survival in specific habitats

Science as a Human Endeavour

AC9S5H02

investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Science Inquiry

AC9S5I04

construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information

TOPIC 7	COMMUNICATION, MOVEMENT & PATTERNS (PART A)

LESSON 13 – ANCIENT WEAPONS, FORCES & PROJECTILE MOTION

Theme

God Created Physical Laws That Govern Movement and Force

Character Focus

Obedience – using strength, tools, and knowledge responsibly

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that forces affect how objects move
 - Explore how ancient weapons used energy and motion
 - Investigate projectile motion, speed, direction, and gravity
 - Learn how force and angle affect movement
 - Conduct safe experiments involving launching and motion
 - Recognise the importance of responsibility and safety when studying force
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the time of Saul and David. During this period, armies used many kinds of ancient weapons such as slings, spears, bows, shields, and swords.”

“One of the most famous Bible stories describes David defeating Goliath using a sling and a stone.”

“Today we are going to investigate:

- forces,
- motion,

- energy,
- and projectile physics.”

“Projectile motion happens whenever an object travels through the air after being launched.”

“Scientists and engineers study projectile motion in:

- sports,
- engineering,
- transport,
- military systems,
- and space exploration.”

“Today we will practise obedience by:

- following strict safety procedures,
- observing carefully,
- and using equipment responsibly.”

Vocabulary

- Force – a push or pull
- Projectile – an object launched through the air
- Motion – movement from one place to another
- Gravity – the force pulling objects toward Earth
- Trajectory – the curved path an object follows
- Speed – how fast something moves
- Energy – the ability to create movement or change
- Accuracy – how close something comes to its target

B) Informational Story

“David’s Sling”

The valley echoed with shouting.

On one side stood the army of Israel.
On the other stood the Philistines.

Between them towered a giant warrior named Goliath.

He wore heavy armour and carried powerful weapons. His spear looked enormous. Soldiers feared him.

Then a young shepherd named David stepped forward.

King Saul doubted him immediately.

“You are only a boy,” Saul warned.

But David had already learned important skills while protecting sheep from danger. He understood how to use a sling with remarkable speed and accuracy.

A sling may look simple, but it is actually a powerful tool based on physics.

A sling stores energy through circular motion.

As the sling spins:

- speed increases,
- force builds,
- and the stone gains energy.

At the correct moment the stone is released, becoming a projectile moving rapidly through the air.

Scientists today study projectile motion carefully.

Projectiles follow curved paths because gravity constantly pulls them downward while momentum carries them forward.

Many factors affect projectile motion:

- launch speed,
- angle,
- air resistance,
- weight,
- and gravity.

Ancient armies learned these principles through practice and observation.

Slings became important weapons because:

- stones were easy to find,
- slings were lightweight,
- and trained users could launch projectiles with surprising force.

Archaeologists have discovered ancient sling stones throughout the Middle East.

Scientists estimate that skilled slingers could launch stones at speeds fast enough to seriously injure opponents.

But ancient weapons were not only about strength.

Accuracy mattered greatly.

David did not defeat Goliath because he was physically stronger.

He used:

- skill,
- preparation,
- courage,
- and wise judgement.

Engineers today still study forces and motion in many areas:

- sports science,
- transportation,
- construction,

- robotics,
- and aerospace engineering.

Designers carefully calculate:

- force,
- speed,
- trajectory,
- balance,
- and energy transfer.

Good scientists and engineers must test carefully.

They:

- measure accurately,
- observe honestly,
- follow safety rules,
- and avoid careless behaviour.

This is especially important when studying moving objects and forces.

The Bible also teaches responsibility in how humans use strength and power.

Knowledge can be used wisely or foolishly.

Today you will investigate:

- motion,
- launching forces,
- gravity,
- and trajectories.

You will discover how physical laws affect moving objects and why careful safety procedures matter.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- What weapon did David use?
- What is a projectile?
- Why do projectiles move in curved paths?
- What affects accuracy?
- Why must scientists follow safety procedures?
- How do engineers study motion?

Students may:

- orally narrate,
 - sketch projectile paths,
 - draw slings,
 - or explain force diagrams.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: movement, forces, safe behaviour)

- What makes objects move?
 - What happens when you throw a ball?
 - Why do falling objects move downward?
 - Why must we use objects safely?
 - What helped David use the sling well?
 - How did you follow safety instructions today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S4U03, AC9S3I03, AC9TDE4K02 – forces, movement, investigations)

- How does force affect motion?
 - Why do projectiles follow curved paths?
 - What factors affect accuracy?
 - How does gravity affect moving objects?
 - Why do engineers study trajectories?
 - Why are safety procedures important?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S6U03, AC9S5I02, AC9TDE6K02 – forces, motion systems, scientific testing)

- How does stored energy become motion?
 - Why does launch angle affect distance?
 - How do engineers calculate projectile motion?
 - Why is repeatable testing important in physics?
 - How do forces interact during motion?
 - Why must knowledge be used responsibly?
-

E) Hands-on Investigation

Activity Title:

“Investigating Projectile Motion”

Materials

- Paper balls or soft foam balls
 - Measuring tape
 - Buckets or targets
 - Ramp or cardboard tube
 - Stopwatch (optional)
 - Science journal
-

Step 1: Predict Motion

Students predict:

- which launch angle travels furthest,
- which object moves fastest,
- or how force affects distance.

Record predictions.

Step 2: Gentle Launch Investigation

Students safely:

- roll,
- toss,
- or launch soft objects.

Observe:

- speed,
 - distance,
 - angle,
 - and accuracy.
-

Step 3: Change Variables

Test:

- stronger vs weaker force,
- high vs low angle,
- different projectile weights.

Discuss:
“How did the motion change?”

Step 4: Target Challenge

Students attempt to hit safe floor targets.

Observe:

- accuracy,
- consistency,
- and trajectory.

Discuss:

“Why does practice improve results?”

Step 5: Journal Reflection

Students record:

- diagrams,
- measurements,
- predictions,
- observations,
- reflections.

Possible prompts:

- “What affected distance?”
 - “How did gravity affect motion?”
 - “Why are safety procedures important?”
-

F) Optional Extension Activity

Build a Simple Catapult Model

Using:

- craft sticks,
- rubber bands,
- spoons,
- cardboard,
- or recycled materials,

students build a very small soft-projectile launcher.

Older students investigate:

- launch angle,
- stored energy,
- and accuracy.

G) Biblical Connection & Wrap-Up

Bible Verse

1 Samuel 17:50

“So David triumphed over the Philistine with a sling and a stone...”

Parent/Tutor Says:

“God created a world governed by orderly physical laws.”

“Scientists and engineers study:

- force,
- motion,
- gravity,
- and energy

to better understand how movement works.”

“But physical knowledge also requires wisdom and responsibility.”

“Today we practised obedience through:

- careful investigation,
 - safe procedures,
 - and responsible use of equipment.”
-

Discussion Questions

- What affects projectile motion?
 - Why does gravity matter?
 - Why are safety procedures important?
 - How did you observe motion carefully today?
 - Why should knowledge be used responsibly?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U01

describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Design & Technologies

AC9TDE2K01

explore how technologies use forces to create movement in products and designed solutions for specific purposes

Years 3–4

Science Understanding

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

Science Inquiry

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Design & Technologies

AC9TDE4K02

explain how forces and the properties of materials affect function in designed solutions

Years 5–6

Science Understanding

AC9S6U03

investigate how changes in movement and direction of objects are caused by unbalanced forces acting on the object

Science Inquiry

AC9S5I02

plan and conduct repeatable investigations fairly and safely to answer questions and make observations, identifying variables to be changed, measured and controlled

Design & Technologies

AC9TDE6K02

explain how the characteristics and properties of materials, systems, components, tools and equipment affect their use in designed solutions

LESSON 14 – MUSIC, SOUND WAVES & THE BRAIN

Theme

God Created Sound, Music, and the Human Brain to Work Together in Remarkable Ways

Character Focus

Obedience – using music, emotions, and influence wisely and responsibly

Learning Objectives

By the end of this lesson, students will be able to:

- Understand that sound travels in waves
 - Explore how music affects emotions and the brain
 - Investigate vibrations, pitch, volume, and rhythm
 - Learn how the brain responds to sound and patterns
 - Conduct experiments involving sound waves and vibration
 - Recognise the importance of using music and communication wisely
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the life of David. Before David became king, he was known for his musical skill. The Bible tells us that David played music for King Saul, and the music helped calm Saul during troubled times.”

“Today we are going to investigate:

- sound waves,
- music,
- vibrations,
- and how the brain responds to sound.”

“Scientists study:

- hearing,
 - brain activity,
 - sound energy,
 - music,
 - and emotions
- to better understand how humans respond to sound.”

“Music can affect:

- feelings,
- concentration,
- memory,
- movement,
- and even body systems such as heart rate and breathing.”

“Today we will practise obedience by:

- listening carefully,
 - conducting safe sound investigations,
 - and thinking wisely about how sound influences people.”
-

Vocabulary

- Sound wave – energy travelling through air or materials
 - Pitch – how high or low a sound is
 - Volume – how loud or soft a sound is
 - Rhythm – a repeating pattern of sound or movement
 - Brain – the organ controlling thoughts, emotions, and body systems
 - Vibration – rapid movement back and forth
 - Frequency – how quickly vibrations repeat
 - Hearing – detecting sound using the ears and brain
-

B) Informational Story

“David’s Harp”

King Saul sat quietly in the dim palace hall.

His mind was troubled.

Fear and anxiety weighed heavily upon him.

The servants noticed something unusual:

whenever David played music on his harp, Saul became calmer.

The music seemed to soothe his mind.

For thousands of years people have recognised that music affects human emotions.

Songs can make people:

- feel joyful,
- peaceful,
- excited,
- emotional,
- or even frightened.

But why?

Scientists today understand that music affects both the brain and body in remarkable ways.

Every musical note begins with vibration.

When a harp string vibrates:

- air moves,
- sound waves travel outward,
- and the ears detect those vibrations.

Inside the ear are tiny structures that convert vibrations into electrical signals for the brain.

The brain then interprets:

- pitch,
- rhythm,
- melody,
- and volume.

Different sound patterns activate different parts of the brain.

Scientists using brain scans have discovered that music can affect:

- emotions,
- memory,
- movement,
- focus,
- and stress levels.

Some music helps people relax.

Other music increases excitement or energy.

Doctors sometimes use music therapy to help patients:

- reduce anxiety,
- improve mood,
- support memory,
- or assist recovery.

Musicians also understand how sound behaves physically.

Short strings create higher pitches.

Long strings create lower pitches.

Faster vibrations create higher notes.

Slower vibrations create deeper sounds.

Ancient instruments included:

- harps,
- drums,
- flutes,
- trumpets,
- lyres,
- and cymbals.

These instruments used different vibration systems to create sound.

Scientists study acoustics — the science of sound — to understand:

- waves,
- resonance,

- echoes,
- hearing,
- and sound technology.

Engineers design:

- concert halls,
 - speakers,
 - hearing aids,
 - microphones,
 - and recording systems
- using knowledge about sound waves.

Good scientists investigate carefully.

They:

- measure accurately,
- observe honestly,
- and test ideas responsibly.

The Bible also teaches that music is powerful.

Music can encourage worship, celebration, comfort, and courage.

But because music influences emotions and thinking, it should also be used wisely.

Today you will investigate:

- vibrations,
- sound waves,
- rhythm,
- and hearing.

You will discover how God designed both sound and the human brain to work together in amazing ways.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why did David play music for Saul?
- What creates sound?
- How do ears detect sound waves?
- What is pitch?
- How does music affect emotions?
- Why do scientists study sound?

Students may:

- orally narrate,
 - sketch sound waves,
 - draw instruments,
 - or explain hearing systems.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: sound, movement, observation)

- What makes sound happen?
 - Which sounds are loud or soft?
 - Which sounds are high or low?
 - How can music affect feelings?
 - What instruments make vibrations?
 - How did you listen carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S4U03, AC9S3I03, AC9HP4P07 – vibrations, observations, emotional responses)

- How do sound waves travel?
 - Why do different instruments sound different?
 - How do vibrations affect pitch?
 - Why can music affect emotions?
 - How do scientists study hearing and sound?
 - Why should sound levels be used safely?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S6U03, AC9S5H01, AC9HP6P06 – wave systems, scientific understanding, wellbeing)

- How does the brain interpret sound waves?
 - Why do different frequencies create different pitches?
 - How can music influence body systems and emotions?
 - Why do engineers study acoustics carefully?
 - How can sound technologies improve people's lives?
 - Why should powerful influences such as music be used responsibly?
-

E) Hands-on Investigation

Activity Title:

“Investigating Sound Waves”

Materials

- Rubber bands
 - Empty boxes or containers
 - Metal spoons
 - Cups
 - Water glasses
 - Rice grains
 - Plastic wrap
 - Science journal
-

Step 1: Create Vibrations

Stretch rubber bands across a box.

Pluck gently.

Observe:

- movement,
- sound,
- vibration speed.

Discuss:

“What causes the sound?”

Step 2: High & Low Pitch Investigation

Fill glasses with different amounts of water.

Tap gently with a spoon.

Observe:

- higher pitches,
 - lower pitches,
 - vibration changes.
-

Step 3: Sound Wave Demonstration

Stretch plastic wrap across a bowl.

Place rice grains on top.

Make sounds nearby:

- clap,
- sing,
- drum,
- or hum.

Observe rice movement caused by vibrations.

Step 4: Rhythm Investigation

Students:

- clap rhythms,
- repeat patterns,
- or create drum beats.

Discuss:

“How does the brain recognise patterns?”

Step 5: Journal Reflection

Students record:

- diagrams,
- observations,
- pitch comparisons,
- reflections.

Possible prompts:

- “What caused vibrations?”
 - “How did sound change?”
 - “How can music affect people?”
-

F) Optional Extension Activity

Design a Musical Instrument

Using:

- boxes,
- rubber bands,
- tubes,

- containers,
- or recycled materials,

students create a simple instrument.

Older students explain:

- vibration systems,
 - pitch changes,
 - and sound production.
-

G) Biblical Connection & Wrap-Up

Bible Verse

1 Samuel 16:23

“Whenever the spirit from God came on Saul, David would take up his lyre and play. Then relief would come to Saul...”

Parent/Tutor Says:

“God created sound, music, and the human brain with incredible complexity.”

“Scientists study sound and hearing to:

- improve communication,
- support medicine,
- create technologies,
- and understand human behaviour.”

“But music and sound also influence emotions and thinking, so they should be used wisely and responsibly.”

“Today we practised obedience through:

- careful listening,
 - safe investigation,
 - and thoughtful observation.”
-

Discussion Questions

- What creates sound waves?
 - How do vibrations affect pitch?
 - Why can music influence emotions?
 - How did you observe carefully today?
 - Why should sound and music be used responsibly?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U01

describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects

Science Inquiry

AC9S1I02

participate in guided investigations and make observations using their senses

AC9S2I03

record and represent observations and ideas in a variety of ways

Years 3–4

Science Understanding

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

Science Inquiry

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Health & Physical Education

AC9HP4P07

investigate how emotional responses vary in depth and strength

Years 5–6

Science Understanding

AC9S6U03

investigate how changes in movement and direction of objects are caused by unbalanced forces acting on the object

Science as a Human Endeavour

AC9S5H01

explain how scientific knowledge helps people to understand the effect of their actions

Health & Physical Education

AC9HP6P06

investigate the role of preventive health in promoting and maintaining health, safety and wellbeing for individuals and their communities

TOPIC 8	COMMUNICATION, MOVEMENT & PATTERNS (PART B)

LESSON 15 – SIGNALS, COMMUNICATION & SYMBOL SYSTEMS

Theme

God Designed Humans to Communicate Through Ordered Systems and Meaningful Symbols

Character Focus

Obedience – communicating truthfully, clearly, and responsibly

Learning Objectives

By the end of this lesson, students will be able to:

- Understand how humans communicate information across distances
 - Explore ancient communication systems used in Israel and surrounding nations
 - Investigate symbols, signals, codes, and message systems
 - Learn how light, sound, and movement can carry information
 - Conduct experiments involving communication and signalling
 - Recognise the importance of honesty, clarity, and responsibility in communication
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about the time of Saul and David. During this period, kingdoms needed ways to communicate quickly across cities, armies, hills, and battlefields.”

“Messengers, watchmen, trumpets, banners, signal fires, and written messages were all important communication technologies in the ancient world.”

“Today we are going to investigate:

- communication systems,

- signals,
- symbols,
- and how information travels.”

“Scientists and engineers study communication because humans constantly send information through:

- sound,
- light,
- movement,
- symbols,
- electricity,
- and digital systems.”

“Today we will practise obedience by:

- communicating carefully,
- listening accurately,
- following instructions,
- and using truthful information.”

Vocabulary

- Signal – something that sends information
 - Communication – sharing information between people
 - Symbol – a sign representing meaning
 - Code – a system of symbols or signals used to communicate information
 - Message – information sent from one place to another
 - Transmission – sending information across distance
 - Receiver – something or someone receiving information
 - Accuracy – correctness and precision
-

B) Informational Story

“The Watchmen on the Walls”

The watchman stood high upon the city wall.

Far in the distance he saw movement.

Dust clouds rose above the hills.

Riders approached rapidly along the road.

Immediately the watchman prepared to send a message.

In the ancient world, communication was extremely important.

Kings needed information about:

- armies,
- dangers,
- trade,

- weather,
- and travellers.

But there were no phones,
radios,
or satellites.

People developed many creative communication systems.

Messengers carried written scrolls between cities.
Trumpets signalled movement in battle.
Signal fires warned of danger.
Flags and banners identified armies and leaders.

Watchmen played a vital role in protecting cities.

From high towers they observed the horizon carefully.
If danger approached, signals spread rapidly through the community.

Ancient Israel often used trumpets for communication.

Different trumpet blasts signalled:

- gathering,
- warning,
- worship,
- or movement.

This allowed large groups of people to respond together.

Scientists today understand that communication depends upon systems that carry information.

Sound waves carry spoken words through air.
Light carries visual signals.
Written symbols preserve ideas across time.

Modern communication technologies use similar principles:

- radio waves,
- electrical signals,
- fibre optics,
- satellites,
- and computer coding.

Computers communicate using binary code – patterns of signals representing information.

Scientists and engineers who design communication systems must think carefully about:

- accuracy,
- speed,
- clarity,
- and reliability.

Even small errors can create confusion.

Pilots, doctors, emergency workers, and engineers all depend upon accurate communication systems.

Good communication requires:

- careful listening,
- clear signals,
- truthful information,
- and responsible behaviour.

The Bible also teaches the importance of truthful communication.

Words can help or harm.

Signals can guide or mislead.

David often depended upon messengers and communication systems during times of danger and leadership.

Scientists today continue developing communication technologies that connect people across enormous distances.

But the basic purpose remains the same:

sending information clearly from one place to another.

Today you will investigate:

- symbols,
- signals,
- sound,
- light,
- and communication systems.

You will discover how humans use ordered systems to share information and why accuracy matters.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- Why were watchmen important?
- What communication systems existed in ancient times?
- What is a signal?
- Why are symbols useful?
- How do modern communication systems work?
- Why must communication be accurate?

Students may:

- orally narrate,
- draw communication systems,

- design symbols,
 - or explain message systems.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: communication, observing signals, following instructions)

- What is a signal?
 - Why do people communicate?
 - What symbols do you recognise?
 - How can sounds send messages?
 - Why should instructions be clear?
 - How did you listen carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S4U03, AC9S3I03, AC9TDE4P01 – signals, observations, communication systems)

- How do sound and light carry information?
 - Why do symbols help communication?
 - Why were watchmen important in ancient cities?
 - How can unclear communication create problems?
 - Why do engineers design communication systems carefully?
 - Why is truthful communication important?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S6U03, AC9S5H01, AC9TDE6P02 – information systems, scientific understanding, design communication)

- How do modern technologies transmit information?
 - Why are communication systems important in emergencies?
 - How do codes simplify complex information?
 - Why must communication systems remain reliable?
 - How can misinformation become dangerous?
 - Why are honesty and clarity important in science and society?
-

E) Hands-on Investigation

Activity Title:

“Sending Messages”

Materials

- Flashlights or torches
 - Paper
 - Markers
 - Cups and string
 - Flags or coloured paper
 - Science journal
-

Step 1: Symbol Investigation

Students create:

- warning symbols,
- direction symbols,
- or communication icons.

Discuss:

“Why are symbols useful?”

Step 2: Sound Communication

Create simple “cup telephones” using:

- cups,
- string,
- tape.

Test:

- sound clarity,
- string tension,
- message accuracy.

Discuss how vibrations carry sound.

Step 3: Light Signals

Use torches or flashlights to create:

- simple codes,

- flashing patterns,
- or signal messages.

Students attempt to decode messages.

Step 4: Distance Communication Challenge

Students attempt to communicate:

- silently,
- using gestures,
- symbols,
- or signals.

Discuss:

“Which systems worked best?”

Step 5: Journal Reflection

Students record:

- diagrams,
- symbols,
- observations,
- reflections.

Possible prompts:

- “What made communication clear?”
 - “Why are signals important?”
 - “What did I learn about information systems?”
-

F) Optional Extension Activity

Design an Ancient Warning System

Students design a communication system using:

- fires,
- flags,
- drums,
- mirrors,
- towers,
- or trumpets.

Older students explain:

- speed,
- reliability,
- advantages,
- and weaknesses.

G) Biblical Connection & Wrap-Up

Bible Verse

Proverbs 12:17

“An honest witness tells the truth...”

Parent/Tutor Says:

“God designed humans to communicate using language, symbols, sound, and ordered systems.”

“Scientists and engineers continue developing technologies that allow people to communicate across great distances.”

“But communication also requires responsibility.”

“Truthful and careful communication protects people and helps communities function wisely.”

“Today we practised obedience through:

- careful listening,
 - truthful communication,
 - and responsible investigation.”
-

Discussion Questions

- Why are communication systems important?
 - How do symbols and signals help people?
 - Why must messages be accurate?
 - How did you communicate carefully today?
 - Why is truthful communication important?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Inquiry

AC9S2I03

record and represent observations and ideas in a variety of ways

Design & Technologies

AC9TDE2P01

generate and communicate design ideas through describing, drawing or modelling, including using digital tools

Years 3–4

Science Understanding

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

Science Inquiry

AC9S3I03

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Design & Technologies

AC9TDE4P01

generate and communicate design ideas and decisions using appropriate attributions, technical terms and graphical representation techniques, including using digital tools

Years 5–6

Science Understanding

AC9S6U03

investigate how changes in movement and direction of objects are caused by unbalanced forces acting on the object

Science as a Human Endeavour

AC9S5H01

explain how scientific knowledge helps people to understand the effect of their actions

Design & Technologies

AC9TDE6P02

generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools

LESSON 16 – GOD’S COVENANT WITH DAVID: PATTERNS IN NATURE & GOD’S ORDER

Theme

God Created an Ordered World Filled with Patterns, Cycles, and Predictable Systems

Character Focus

Obedience – recognising order, following wise patterns, and living faithfully within God’s design

Learning Objectives

By the end of this lesson, students will be able to:

- Identify repeating patterns and cycles in nature
 - Explore how scientists study predictable systems and observable order
 - Investigate patterns in astronomy, biology, seasons, music, and engineering
 - Understand how repeating patterns help humans design stable technologies and organised systems
 - Conduct observations, measurements, and classification activities involving patterns
 - Recognise the importance of consistency, faithfulness, and order in both creation and human behaviour
-

A) Introduction (Vocabulary & Orientation)

Parent/Tutor Says:

“In our HASS lessons we have been learning about God’s covenant with David – a promise that would continue beyond David’s own lifetime.”

“David often observed patterns in creation:

- sunrise and sunset,
- seasons,
- stars,
- plant growth,
- harvest cycles,
- and rhythms in nature.”

“These patterns reminded David that God is faithful and orderly.”

“Today we are going to investigate:

- natural patterns,
- cycles,

- systems,
- and repeating structures.”

“Scientists study patterns because patterns help people:

- make predictions,
- organise information,
- understand systems,
- and design technologies.”

“Engineers, builders, musicians, farmers, doctors, and astronomers all depend upon recognising patterns.”

“Today we will practise obedience by:

- observing carefully,
- recording honestly,
- following investigative procedures,
- and recognising order within creation.”

Vocabulary

- Pattern – something that repeats in an organised way
- Cycle – a repeating sequence of events
- Predictable – happening in expected ways
- Orbit – the path one object follows around another
- Symmetry – balanced similarity in shape or arrangement
- Sequence – things arranged in order
- Classification – grouping things by shared features
- System – parts working together in an organised way

B) Informational Story

“The Forever Promise and the Patterns of Creation”

The evening Nathan the prophet came to David with God’s covenant, the sky shimmered with stars.

David stood upon the palace balcony feeling the cool evening breeze after the heat of the day.

Above him the moon moved slowly across the heavens.

“The stars are where they were yesterday,” David whispered quietly.
 “And tomorrow they will return again.”

Nathan approached beside him.



“God has sent me with a message,” he said.

David listened carefully.

Nathan explained:

“God says your kingdom will continue. One day a King will come from your line whose kingdom will last forever.”

David was overwhelmed.

How could something continue far beyond one lifetime?

Nathan pointed upward toward the night sky.

“Look at creation,” he said.

“God filled the world with order and patterns.”

David looked carefully.

The moon followed predictable phases.

Day always followed night.

The seasons returned year after year.

Birds migrated in repeating patterns.

Seeds grew through orderly life cycles:

- sprout,
- leaf,
- flower,
- fruit,
- harvest.

Even the human body followed patterns:

- heartbeat,
- breathing,
- sleeping,
- growing,
- healing.

Scientists today study these same patterns.

Astronomers study planetary orbits and star movements.

Biologists study life cycles and reproduction.

Meteorologists study weather systems and seasonal changes.

Engineers study repeating support structures and symmetrical designs.

Patterns help scientists understand how systems work.

Without patterns, prediction would become impossible.

Farmers could not plant crops.

Builders could not design safely.

Sailors could not navigate.

Doctors could not monitor health.

David walked slowly through the palace gardens.

Nathan pointed toward a pomegranate tree.

“Each year this tree follows the same growth cycle.”

David nodded.

“Bud, blossom, fruit, harvest, rest.”

Nearby, builders repaired part of the palace wall.

Rows of stones repeated in careful patterns.

Wooden beams were evenly spaced.

Supports balanced weight across the structure.

Engineers today still use repeating patterns because patterns create:

- strength,
- balance,
- stability,
- and efficiency.

Honeycombs repeat hexagonal shapes.

Spider webs repeat geometric patterns.

Snowflakes form symmetrical structures.

Even fingerprints contain repeating ridges and designs.

Scientists often classify and compare patterns to better understand the world.

Good science requires:

- careful observation,
- accurate recording,
- repeated measurements,
- and honest comparison.

Patterns also help people emotionally.

Children feel safe with routines.

Communities depend upon predictable systems.

Healthy habits strengthen the body and mind.

David looked again toward the sky.

The stars moved in orderly paths.

The earth followed its seasons.

The world operated through dependable systems designed by God.

Nathan spoke softly:

“God’s covenant is more dependable than the sunrise.”

David bowed his head.

“The God who made the world orderly will keep His promises faithfully.”

As dawn slowly approached, David watched light spread across the horizon.

Exactly as it had yesterday.

Exactly as it would tomorrow.

And David understood:

patterns in creation reveal both wisdom and faithfulness.

C) Narration

Parent/Tutor Says:

“Now tell me everything you can remember from the story.”

Allow students to narrate freely.

Prompt Questions (if needed)

- What patterns did David observe?
- Why are patterns important in science?
- What natural cycles exist in creation?
- How do engineers use patterns?
- Why do scientists study predictable systems?
- How can routines help people?

Students may:

- orally narrate,
 - sketch natural patterns,
 - label cycles,
 - or explain systems.
-

D) Thinking Questions

i) Youngest Students (Foundation–Year 2)

(Content Links: observing patterns, seasonal changes, routines)

- What patterns do you see in nature?
 - What happens every day and every night?
 - Why do plants grow in stages?
 - What routines help families?
 - Why do repeating patterns help us?
 - How did you observe carefully today?
-

ii) Middle Primary Students (Years 3–4)

(Content Links: AC9S3U01, AC9S3I03, AC9TDE4K01 – life cycles, observations, design patterns)

- How do life cycles follow patterns?
 - Why do engineers use repeating designs?
 - How do seasonal patterns help farmers?
 - Why do scientists record repeated observations?
 - How do routines support healthy living?
 - Why are predictable systems useful?
-

iii) Upper Primary Students (Years 5–6)

(Content Links: AC9S6U02, AC9S5I04, AC9TDE6K03 – Earth systems, scientific representations, engineered systems)

- Why are repeating patterns important in science?
 - How do orbits and seasonal cycles create predictability?
 - How do engineers use symmetry and repeated supports?
 - Why do scientists classify patterns carefully?
 - How can predictable systems support emotional wellbeing?
 - Why does order matter in both science and society?
-

E) Hands-on Investigation

Activity Title:

“Investigating Patterns in Creation”

Materials

- Leaves, flowers, shells, pinecones, or natural objects
 - Paper
 - Ruler
 - Compass or circular objects
 - Coloured pencils
 - Science journal
 - Calendar or moon-phase chart (optional)
-

Step 1: Pattern Hunt

Students search for:

- symmetry,
- repeating shapes,
- spirals,
- leaf veins,

- flower petals,
- or repeated designs.

Classify findings into groups.

Step 2: Life Cycle Investigation

Students sequence:

- plant growth stages,
- butterfly life cycle,
- or seasonal cycles.

Discuss:

“What repeats predictably?”

Step 3: Engineering Pattern Investigation

Students examine:

- brick patterns,
- woven fabric,
- roof supports,
- bridges,
- or tiled designs.

Discuss:

“How do repeated structures improve strength and stability?”

Step 4: Astronomy Pattern Activity

Students track:

- sunrise direction,
- moon phases,
- star patterns,
- or daylight length over several days.

Older students record data tables.

Step 5: Build a Repeating Structure

Using:

- blocks,
- cups,
- craft sticks,
- or cardboard,

students build repeating support patterns.

Test:

- balance,
 - strength,
 - and stability.
-

Step 6: Journal Reflection

Students record:

- observations,
- diagrams,
- measurements,
- classifications,
- reflections.

Possible prompts:

- “What patterns did I observe?”
 - “Why are patterns useful?”
 - “How do patterns help scientists?”
-

F) Optional Extension Activity

Design a Pattern-Based System

Students design:

- a garden layout,
- timetable,
- bridge support system,
- woven pattern,
- or communication code

using repeating structures or sequences.

Older students explain:

- efficiency,
 - stability,
 - predictability,
 - and usefulness.
-

G) Biblical Connection & Wrap-Up

Bible Verse

Genesis 8:22

“As long as the earth endures, seedtime and harvest... day and night will never cease.”

Parent/Tutor Says:

“God filled creation with orderly systems and dependable patterns.”

“Scientists study these patterns to:

- understand the world,
- make predictions,
- design technologies,
- and solve problems.”

“Patterns also remind us of God’s faithfulness.”

“Today we practised obedience through:

- careful observation,
 - accurate recording,
 - organised thinking,
 - and responsible investigation.”
-

Discussion Questions

- What patterns exist in creation?
 - Why do scientists study repeating systems?
 - How do patterns help engineers design safely?
 - Why are routines helpful for people?
 - How did you practise careful observation today?
-

Australian Curriculum Version 9 Content Descriptions

Foundation – Year 2

Science Understanding

AC9S1U02

identify common features of plants and animals and describe how living things grow, change and have offspring similar to themselves

Science Inquiry

AC9SFI04

sort and order data and information and represent patterns, including with provided tables and visual or physical models

Health & Physical Education

AC9HPFP02

identify and practise emotional responses that account for own and others’ feelings

Years 3–4

Science Understanding

AC9S3U01

compare characteristics of living and non-living things and examine the interdependence between living things and environments

Science Inquiry**AC9S3I03**

use equipment to make and record observations, including formal measurements using familiar scaled instruments and using digital tools as appropriate

Design & Technologies**AC9TDE4K01**

investigate how forces and the properties of materials affect the behaviour and performance of designed solutions

Years 5–6**Science Understanding****AC9S6U02**

investigate the observable properties of solids, liquids and gases and how changes of state occur

Science Inquiry**AC9S5I04**

construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information

Design & Technologies**AC9TDE6K03**

explain how design and technologies contribute to meeting present and future needs of local and wider communities

Health & Physical Education**AC9HP6P06**

investigate the role of preventive health in promoting and maintaining health, safety and wellbeing for individuals and their communities

TOPIC 9	CULMINATING PROJECT OR ASSESSMENT

Differentiated Assessment Tasks

These assessment tasks are designed to gather evidence progressively across the course through:

- narration,
- practical investigations,
- models,
- observations,
- diagrams,
- experiments,
- and design tasks.

The middle achievement level (“C”) broadly aligns with the Australian Curriculum Version 9 Achievement Standards.

FOUNDATION – YEAR 2

Assessment Task 1 – Living Things & Growth Portfolio

Task Description

Students create a simple portfolio across the term showing:

- seed growth,
- living things,
- patterns in nature,
- and healthy habits.

Evidence may include:

- labelled drawings,
- oral narrations,
- photographs,
- sorting activities,
- teacher scribing,
- and simple observations.

Students explain basic needs of living things and describe simple patterns they observe in creation.

Evidence of Learning

Students:

- identify basic needs of living things,
 - observe changes and growth,
 - recognise simple patterns,
 - safely participate in investigations,
 - and communicate ideas through pictures and discussion.
-

Conditions

- Completed progressively throughout the unit
 - Teacher/parent support permitted
 - Oral responses accepted
 - Combination of practical and verbal evidence
 - May include photos of hands-on activities
-

Assessment Task 2 – Build & Test a Designed Solution

Task Description

Students design and build one simple model connected to the course, such as:

- a tent shelter,
- irrigation system,
- communication signal,
- musical instrument,
- or repeating pattern structure.

Students explain:

- what the design does,
 - how it works,
 - and how they improved it.
-

Evidence of Learning

Students:

- safely use materials,
- follow simple procedures,
- test and improve designs,

- communicate ideas visually and verbally,
 - and recognise how technologies solve problems.
-

Conditions

- Teacher-guided
 - Built during class/home lessons
 - Oral explanation permitted
 - Individual or small-group construction
-

YEARS 3–4

Assessment Task 1 – Scientific Investigation & Report

Task Description

Students conduct a guided investigation connected to one unit topic, such as:

- projectile motion,
- plant growth,
- sound vibrations,
- hydration and endurance,
- or patterns in nature.

Students:

- make predictions,
- conduct observations,
- measure results,
- record findings,
- and explain conclusions.

The report may include:

- tables,
 - labelled diagrams,
 - measurements,
 - written explanations,
 - and reflections.
-

Evidence of Learning

Students:

- pose investigable questions,
 - observe and measure carefully,
 - identify patterns,
 - explain simple scientific concepts,
 - and communicate findings using appropriate representations.
-

Conditions

- Conducted during lessons
- Teacher guidance allowed
- May use templates/scaffolds
- Practical investigation required
- Combination of written and visual evidence

Assessment Task 2 – Ancient Technology Design Project

Task Description

Students design and construct a model inspired by Ancient Israelite technologies, such as:

- a large tent structure,
- communication system,
- farming tool,
- map system,
- musical instrument,
- or stable bridge/support structure.

Students explain:

- materials used,
- how forces or patterns affect the design,
- how the system solves a problem,
- and improvements they would make.

Evidence of Learning

Students:

- apply understanding of materials and forces,
- generate and communicate design ideas,
- safely construct solutions,
- evaluate effectiveness,
- and explain technological systems.

Conditions

- Individual or pair work
 - Conducted progressively over multiple lessons
 - Drawings and labelled diagrams required
 - Oral presentation permitted
-

YEARS 5–6

Assessment Task 1 – Science Inquiry Investigation

Task Description

Students plan and conduct a more detailed scientific investigation related to the course themes.

Possible topics:

- force and projectile motion,
- sound wave behaviour,
- plant growth variables,
- structural stability,
- communication systems,
- or patterns/cycles in nature.

Students:

- identify variables,
- conduct fair testing,
- collect and organise data,
- analyse results,
- and evaluate findings.

The final report should include:

- aim,
 - prediction,
 - method,
 - results,
 - graphs/tables,
 - scientific explanation,
 - and conclusion.
-

Evidence of Learning

Students:

- plan fair investigations,
 - identify variables,
 - collect and interpret data,
 - explain scientific concepts,
 - identify patterns and relationships,
 - and communicate findings clearly.
-

Conditions

- Combination of supervised and independent work
 - Written scientific report required
 - Practical investigation required
 - Digital or handwritten presentation acceptable
-

Assessment Task 2 – Systems & Design Challenge

Task Description

Students design a practical system or engineered solution inspired by Ancient Israelite technologies and scientific ideas.

Possible project options:

- irrigation or farming system,
- stable engineered structure,
- coded communication system,
- patterned architectural support design,
- sound/music system,
- or astronomy/navigation model.

Students must:

- investigate the problem,
- develop design ideas,
- test and improve the design,
- explain scientific principles involved,
- and evaluate effectiveness.

Students present:

- diagrams,
 - labelled designs,
 - prototype/model,
 - written explanation,
 - and reflection.
-

Evidence of Learning

Students:

- apply understanding of forces, systems, patterns, and materials,
- communicate design ideas clearly,
- evaluate effectiveness,
- justify design decisions,
- and explain how scientific knowledge supports technologies.

Conditions

- Multi-lesson project
 - Independent or pair work
 - Practical prototype/model required
 - Oral or visual presentation permitted alongside written explanation
-

Ongoing Evidence Collection Across All Levels

Throughout the course, evidence may also be gathered through:

- oral narration,
- science journals,
- labelled diagrams,
- participation in investigations,
- practical demonstrations,
- teacher observations,
- design sketches,
- questioning,
- and reflective discussion.

This allows assessment to remain:

- multi-age friendly,
 - flexible,
 - practical,
 - and strongly aligned to inquiry-based Science and Design Technologies learning.
-

Differentiated Marking Rubrics

Linked to Australian Curriculum Version 9 Achievement Standards

The following rubrics are designed so that:

- the **C level** broadly aligns with the expected Achievement Standard,
- the **A level** demonstrates sophisticated or extended achievement,
- and the lower levels show developing understanding and support needs.

The rubrics assess:

- scientific understanding,
- inquiry skills,
- design thinking,
- communication,
- and responsible participation.

FOUNDATION – YEAR 2 RUBRIC

Living Things, Patterns & Simple Designed Solutions

Criteria	A – Extensive Achievement	B – Strong Achievement	C – Sound Achievement (Achievement Standard)	D – Developing Achievement	E – Beginning Achievement
Scientific Understanding	Clearly explains living things, growth, patterns, and simple forces using accurate vocabulary and detailed observations	Explains most concepts accurately with clear observations	Identifies basic needs, growth, movement, and simple patterns in familiar contexts	Identifies some features of living things and simple changes with support	Gives very limited observations or understanding
Observation & Investigation Skills	Carefully observes, compares, sorts, and records detailed findings independently	Observes and records findings carefully with minor support	Makes observations and records ideas in simple ways	Makes simple observations with significant support	Participates minimally in investigations
Design & Technology Skills	Designs and improves solutions thoughtfully using appropriate materials and explanations	Constructs effective solutions with clear purpose	Creates simple designed solutions and safely uses materials	Creates basic designs with support	Requires extensive assistance to complete tasks

Criteria	A – Extensive Achievement	B – Strong Achievement	C – Sound Achievement (Achievement Standard)	D – Developing Achievement	E – Beginning Achievement
Communication	Clearly explains ideas using labelled diagrams, oral explanations, and appropriate vocabulary	Communicates ideas clearly in multiple ways	Shares observations and ideas through drawings, discussion, or models	Communicates simple ideas with prompting	Limited communication of learning
Responsible Participation	Consistently follows procedures safely and responsibly while helping others	Usually works safely and responsibly	Follows instructions and participates appropriately	Requires reminders to follow procedures	Unsafe or disengaged participation

Linked Achievement Standard Concepts (F–2)

Students at the expected level typically:

- recognise basic needs of living things,
 - observe and describe familiar objects and events,
 - participate in guided investigations,
 - represent observations,
 - and create simple designed solutions safely.
-

YEARS 3–4 RUBRIC

Scientific Investigation & Ancient Technology Design Project

Criteria	A – Extensive Achievement	B – Strong Achievement	C – Sound Achievement (Achievement Standard)	D – Developing Achievement	E – Beginning Achievement
Scientific Understanding	Thoroughly explains forces, life systems, patterns, or materials using accurate scientific reasoning	Explains concepts clearly with mostly accurate reasoning	Describes scientific concepts and identifies relationships between observations	Identifies some concepts but explanations are incomplete	Demonstrates very limited scientific understanding
Inquiry & Investigation Skills	Independently plans careful observations, measurements, and organised investigations	Conducts investigations carefully with minor guidance	Conducts guided investigations and records observations appropriately	Participates in investigations with considerable support	Limited participation in investigation processes
Use of Evidence & Data	Accurately records, compares, and interprets detailed data and patterns	Records and interprets findings clearly	Records observations and identifies simple patterns	Records limited observations with support	Minimal recording or interpretation
Design & Technology Application	Creates highly effective designed solutions with thoughtful improvements and detailed explanations	Designs effective solutions with clear reasoning	Produces functional designed solutions explaining basic choices	Produces simple solutions with limited explanation	Limited evidence of design thinking
Communication of Scientific Ideas	Communicates findings confidently using diagrams, measurements, technical vocabulary, and explanations	Clearly communicates findings using appropriate representations	Communicates observations and ideas using simple scientific language and diagrams	Communicates partial ideas with support	Limited communication of ideas
Responsible Scientific Practice	Consistently demonstrates safe, organised, and responsible scientific behaviour	Usually works safely and responsibly	Follows procedures and safety instructions appropriately	Requires frequent reminders about procedures and safety	Unsafe or disengaged participation

Linked Achievement Standard Concepts (Years 3–4)

Students at the expected level typically:

- describe relationships between living things, materials, and forces,
 - pose questions and make predictions,
 - conduct investigations safely,
 - record observations and measurements,
 - identify patterns,
 - and generate and communicate design ideas.
-

YEARS 5–6 RUBRIC

Science Inquiry Investigation & Systems Design Challenge

Criteria	A – Extensive Achievement	B – Strong Achievement	C – Sound Achievement (Achievement Standard)	D – Developing Achievement	E – Beginning Achievement
Scientific Understanding	Demonstrates sophisticated understanding of systems, forces, patterns, or living structures using detailed scientific explanations	Explains concepts clearly with strong scientific reasoning	Explains scientific concepts and relationships using appropriate examples	Demonstrates partial understanding with some inaccuracies	Demonstrates minimal scientific understanding
Planning & Conducting Investigations	Independently plans and conducts fair, organised, repeatable investigations with careful variable control	Conducts organised investigations with mostly appropriate methods	Conducts fair investigations and records observations appropriately	Conducts investigations with significant support	Limited participation in investigation processes
Analysis of Data & Evidence	Analyses data thoughtfully, identifies patterns accurately, and draws well-supported conclusions	Interprets findings clearly and identifies relationships	Organises data and identifies basic patterns and conclusions	Limited interpretation of evidence	Minimal analysis of findings
Design Thinking & Problem Solving	Develops highly effective solutions with thoughtful testing, refinement, and justification	Designs effective solutions with clear evaluation	Produces workable designed solutions and explains choices	Produces basic solutions with limited evaluation	Limited evidence of design processes
Scientific Communication	Communicates ideas clearly using technical vocabulary, labelled diagrams, tables, graphs, and detailed explanations	Clearly communicates findings using appropriate scientific representations	Communicates findings using diagrams, tables, and explanations	Partial communication of findings	Minimal communication of scientific ideas
Application of Scientific Knowledge	Insightfully explains how scientific understanding supports	Clearly explains practical applications of science	Identifies ways scientific knowledge is used in real-world contexts	Limited explanation of applications	Minimal understanding of scientific applications

Criteria	A – Extensive Achievement	B – Strong Achievement	C – Sound Achievement (Achievement Standard)	D – Developing Achievement	E – Beginning Achievement
Responsible Scientific Behaviour	technologies, systems, and human decision-making Consistently demonstrates safe, ethical, organised, and highly responsible scientific behaviour	Usually demonstrates responsible and safe behaviour	Follows procedures and safety expectations appropriately	Requires reminders regarding safety and responsibility	Unsafe or disengaged participation

Linked Achievement Standard Concepts (Years 5–6)

Students at the expected level typically:

- explain relationships between scientific concepts and observable phenomena,
- plan and conduct fair investigations,
- identify variables,
- organise and interpret data,
- identify patterns and relationships,
- communicate explanations using scientific representations,