Foundations of Inquiry Science

Standard Pace Workbook

Semester 1 | Year 1

Week 1 | Lesson 1

Organizing Things into Categories

Read Aloud Passage

When scientists study the world, they sort things into groups called categories. A category is a group of two or more things that share something in common. For example, you could sort a pile of buttons, coins, and pencils by color, by size, or by what they are used for. There is no single right way to sort things. The way you sort depends on what you are trying to find out.

Sorting things into categories is not just something scientists do with objects. Our brains do it all the time. When you learn new information, your brain looks for ways to connect it to things you already know. Grouping ideas together helps you remember them better.

Categories can also be broken into smaller groups. Animals is a big category. Inside that category, you could make a smaller group called birds. Inside birds you could make an even smaller group called birds that can swim. Scientists use this kind of layered sorting to organize all of nature.

The most important thing to remember is this: when you sort things into a category, every item in that group shares something with the others. That shared thing is what holds the category together.

Week 1 | Lesson 1

Organizing Things into Categories

Activity 1

One detail below does NOT belong in a paragraph about organizing things into categories. Circle it and explain why it does not belong.

A. A category is a group of two or more things that share something in common.

B. Scientists sort things into categories to organize what they learn.

C. Liquids take the shape of whatever container they are poured into.

D. Categories can be broken into smaller groups.

Activity 2

Because / But / So Complete each sentence three different ways.

Scientists sort things into categories because

_____

_____

Scientists sort things into categories but

_____

_____

Scientists sort things into categories so

_____

_____

Activity 3

Start with the kernel sentence. Use the prompts to expand it into a more detailed sentence.

Kernel sentence: Categories help scientists.

How?

Why?

Write your expanded sentence:

_____

_____

Activity 4

Write one of each type of sentence about categories and sorting.

Statement (Declarative):

_____

Question (Interrogative):

_____

Exclamation (Exclamatory):

_____

Command (Imperative):

_____

Week 2 | Lesson 2

Solids, Liquids, and Gases

Read Aloud Passage

Everything around us is matter, and all matter comes in one of three forms: solid, liquid, or gas. You can tell which one something is by watching how it behaves.

Solids hold their shape on their own. A rock, a book, and an apple are all solids. You do not need to put them in a container to keep their shape.

Liquids flow and take the shape of whatever container they are poured into. Water, juice, and honey are all liquids. If you pour water into a tall skinny cup, it becomes tall and skinny. Pour it into a wide bowl, and it spreads out wide. The amount of liquid stays the same, but its shape changes.

Gases spread out and fill up whatever space they are in. Air is a gas. You cannot see most gases, but they are real. When you blow up a balloon, the air inside fills every corner of the balloon.

Some things can look like they are flowing, like a pile of sand, but sand is actually a solid. Each tiny grain holds its shape on its own.

Week 2 | Lesson 2

Solids, Liquids, and Gases

Activity 1

Fill in the blank with the correct word from the word box.

Word Box: *solid* *liquid* *gas* *shape* *container*

1. A _____ holds its own shape without a container.

2. A _____ takes the shape of whatever it is poured into.

3. A _____ spreads out to fill any space.

4. Liquids flow and change their _____, but not their amount.

5. Air is a type of _____.

Activity 2

Each group of words is a fragment. Add what is missing to make a complete sentence.

1. *flows into any container*

_____

_____

2. *solid like a rock*

_____

_____

Activity 3

Combine the short sentences below into one smooth sentence.

1.

- Water is a liquid.
- It flows and takes the shape of its container.

Combined sentence:

_____

_____

2.

- Sand looks like it flows.
- Each grain of sand is actually a solid.

Combined sentence:

_____

_____

Activity 4

Each sentence below is a run-on. Rewrite it correctly.

1. A solid holds its own shape a liquid flows and takes the shape of its container.

Correction:

_____

_____

2. Gases spread out and fill any space they are in you cannot hold a gas in your hands.

Correction:

_____

_____

Week 3 | Lesson 3

Gravity Introduction

Read Aloud Passage

Gravity is a pulling force. It pulls things toward each other. Earth is very large, and its gravity pulls everything toward the center of the planet. That is why when you drop something, it falls down. It is being pulled toward Earth's center.

Gravity gives things weight. Weight is a measure of how strongly gravity pulls on something. A rock has more weight than a feather because it has more mass, so gravity pulls on it more strongly.

Gravity works the same way all around Earth. People who live in Australia are on the other side of the globe from us, but they do not fall off. Gravity pulls them toward the center of Earth too, just from a different direction. "Down" always means toward the center of Earth, no matter where you are standing.

Everything on Earth is affected by gravity, from tiny pebbles to huge boulders!

Week 3 | Lesson 3

Gravity Introduction

Activity 1

Because / But / So Complete each sentence three different ways.

Gravity pulls things toward the Earth because

_____

_____

Gravity pulls things toward the Earth but

_____

_____

Gravity pulls things toward the Earth so

_____

_____

Activity 2

Circle True or False for each statement.

1. **True / False** Gravity pulls things toward the center of the Earth.

2. **True / False** People in Australia fall off the Earth because they are upside down.

3. **True / False** Weight is the measure of how hard gravity pulls on something

Activity 3

Start with the kernel sentence. Use the prompts to expand it into a more detailed sentence.

Kernel sentence: Gravity pulls things.

Where?

What?

Write your expanded sentence:

_____

_____

Activity 4

Read each statement. Write two questions that could be answered by the statement.

Statement: Weight is a measure of how strongly gravity pulls on something.

Question 1:

_____

Question 2:

_____

Statement: People in Australia are pulled toward the center of the Earth, just from a different direction.

Question 1:

_____

Question 2:

_____

Week 4 | Lesson 4

States of Matter: Changes with Temperature

Read Aloud Passage

Matter can change from one form to another when the temperature changes. When something gets warm enough, it can change from a solid into a liquid. This is called melting. Ice is a solid. When ice gets warm enough, it melts into liquid water.

When something gets cold enough, a liquid can change into a solid. This is called freezing. Liquid water freezes into ice when the temperature drops low enough. Butter and chocolate can melt and freeze too.

When a liquid gets hot enough, it can turn into a gas. This is called evaporation. When water boils, it turns into a gas called water vapor and floats away into the air. You can see this as steam.

All of these changes, melting, freezing, and evaporation, are changes in matter. The word matter means anything that has weight and takes up space. Solids, liquids, and gases are all forms of matter. Heat and light are not matter. They have no weight and do not take up space.

Week 4 | Lesson 4

States of Matter: Changes with Temperature

Activity 1

Because / But / So Complete each sentence three different ways.

Matter can change from one form to another because

_____

_____

Matter can change from one form to another but

_____

_____

Matter can change from one form to another so

_____

_____

Activity 2

Fill in the blank with the correct word from the word box.

Word Box: *melting* *freezing* *evaporation* *matter* *weight*

1. When a solid gets warm enough and becomes a liquid, that is called _____.

2. When a liquid gets cold enough and becomes a solid, that is called _____.

3. When a liquid gets very hot and turns into a gas, that is called _____.

4. Anything that has weight and takes up space is called _____.

5. Heat and light are not matter because they have no _____.

Activity 3

Put the words in the correct order to make a complete sentence. Add correct capitalization and punctuation.

1. solid / melting / into / a / a / liquid / called / changing / is

_____

_____

2. when / it / water / boils / turns / vapor / called / a / gas / water / into

_____

_____

Activity 4

Combine the short sentences below into one smooth sentence.

1.

- Melting happens when a solid gets warm enough.
- The solid becomes a liquid.

Combined sentence:

_____

_____

2.

- Freezing happens when a liquid gets cold enough.
- It turns into a solid.

Combined sentence:

_____

_____

Week 5 | Lesson 5

Orbits and Gravity in Space

Read Aloud Passage

Gravity is a pulling force, and it does something remarkable in space: it keeps objects moving in curved paths called orbits. The Moon orbits Earth, and Earth orbits the sun, but this happens in a way that might surprise you.

An orbiting object is always in a state of free fall. Right now, the Moon is falling toward Earth. But the Moon is also moving sideways so fast that it keeps missing Earth. These two things, falling toward Earth and moving sideways, balance each other perfectly. That perfect balance is what we call an orbit.

If the Moon had no gravity pulling it inward, it would fly off in a straight line into space and never come back. If the Moon had no sideways speed at all, gravity would pull it straight down and it would crash into Earth. An orbit can only happen when both of these forces work together in exactly the right way.

The same idea explains why Earth orbits the sun. Earth is always falling toward the sun, but it is also moving sideways fast enough to keep going around and around rather than falling in. Satellites that humans launch into space work the same way. They must be sent up with enough speed to fall around Earth instead of falling into it.

Week 5 | Lesson 5

Orbits and Gravity in Space

Activity 1

Fill in the blank with the correct word from the word box.

Word Box: orbit free fall sideways gravity balance

1. The path the Moon travels around Earth is called an _____.

2. An orbiting object is always in a state of _____ toward what it circles.

3. The Moon moves _____ fast enough to keep missing Earth.

4. _____ is the force that pulls the Moon toward Earth.

5. An orbit is the _____ between falling inward and moving forward.

Activity 2

Because / But / So Complete each sentence three different ways.

The Moon stays in orbit around Earth because

_____

_____

The Moon stays in orbit around Earth but

_____

_____

The Moon stays in orbit around Earth so

_____

_____

Activity 3

Circle True or False for each statement.

1. True / False The Moon is in a constant state of free fall toward Earth.

2. True / False Without gravity, the Moon would fly off in a straight line into space.

3. True / False An orbit is the balance between falling inward and moving sideways.

4. True / False Earth orbits the sun for a completely different reason than the Moon orbits Earth.

Week 6 | Lesson 6

What is Energy?

Read Aloud Passage

Energy is what makes things go, move, change, or happen. Without energy, nothing would ever move or change. There are different forms of energy, but they all share one thing in common: they can make something happen.

Heat energy can make things go. When you cook food on a stove, heat energy is what changes the food. Electrical energy can make things go too. It powers lights, fans, and computers. Light energy travels from the sun and helps plants grow. Movement energy, also called kinetic energy, is the energy that moving things have.

One of the most important rules in science is that energy cannot be created and it cannot be destroyed. Energy can only change from one form into another. When you turn on a lamp, electrical energy changes into light energy and heat energy. When you ride a bike, the energy stored in your food changes into the energy of movement.

Everything that happens around us, from a ball rolling to a fire burning, involves energy changing from one form to another.

Week 6 | Lesson 6

What is Energy?

Activity 1

Because / But / So Complete each sentence three different ways.

Energy cannot be created or destroyed because

_____

_____

Energy cannot be created or destroyed but

_____

_____

Energy cannot be created or destroyed so

_____

_____

Activity 2

Circle True or False for each statement.

1. True / False Energy makes things move, change, and happen.

2. True / False Energy can be created if you have enough heat.

3. True / False Electrical, heat, light, and movement are all forms of energy.

4. True / False When a lamp turns on, electrical energy changes into light and heat energy.

Activity 3

Combine the short sentences below into one smooth sentence.

1.

- Energy comes in many forms.
- These forms include heat, light, and movement.

Combined sentence:

_____

_____

2.

- A lamp uses electricity.
- The electricity changes into light.
- It also changes into heat energy.

Combined sentence:

_____

_____

Week 7 | Lesson 7

Air is Real

Read Aloud Passage

Air is a real thing. Even though you cannot see it, air takes up space and has weight. Scientists say that air is a substance, which means it is made of real matter.

You can prove that air takes up space. If you push an upside-down cup straight down into a bowl of water without tilting it, the inside of the cup stays dry. That is because the air trapped inside the cup is keeping the water out. The air is taking up that space and will not let the water in.

Air also has weight. If you take two identical balloons and blow one up bigger than the other, the fuller balloon will be heavier. The extra air inside adds weight. You can show this by hanging both balloons from the ends of a ruler and watching which side dips down.

We feel moving air as wind. We breathe air in and out. Air fills our tires, our basketballs, and our balloons. Even though we cannot see it, air is all around us and it is very real.

Week 7 | Lesson 7

Air is Real

Activity 1

Circle True or False for each statement.

1. **True / False** Air takes up space even though you cannot see it.

2. **True / False** A fuller balloon is lighter because it has more air inside.

3. **True / False** Moving air is called wind.

Activity 2

Because / But / So Complete each sentence three different ways.

Air takes up space and has weight because

_____

_____

Air takes up space and has weight but

_____

_____

Air takes up space and has weight so

_____

_____

Activity 3

Read each statement. Write two questions that could be answered by the statement.

Statement: Air takes up space and has weight, even though you cannot see it.

Question 1:

_____

Question 2:

_____

Statement: A fuller balloon is heavier because the air inside adds weight.

Question 1:

_____

Question 2:

_____

Week 8 | Lesson 8

Energy Transformation

Read Aloud Passage

Energy is always on the move. It changes from one form to another, and scientists call this an energy transformation. A simple example is a wind-up toy. When you wind it up, you are storing energy in a coiled spring. When you let it go, that stored energy changes into movement energy and the toy moves.

Energy can also travel from one place to another. Light energy travels from the sun all the way to the Earth. Heat energy can travel through objects, like a metal spoon getting hot in a warm bowl of soup. Sound energy travels through the air from a speaker to your ears.

Some sources of energy can be used over and over again. The sun keeps shining. Wind keeps blowing. Moving water keeps flowing. These are called renewable energy sources. Other sources of energy, like coal and oil, took millions of years to form inside the Earth. Once we use them up, they are gone. These are called nonrenewable energy sources.

Whether energy is renewable or nonrenewable, it is always changing forms and always making things happen.

Week 8 | Lesson 8

Energy Transformation

Activity 1

Fill in the blank with the correct word from the word box.

Word Box: *renewable* *nonrenewable* *transformation* *stored* *travels*

1. When energy changes from one form to another, it is called an energy _____.

2. A wound-up spring has _____ energy ready to be released.

3. Light energy _____ from the sun to the Earth.

4. The sun and wind are examples of _____ energy sources.

5. Coal and oil are _____ because once they are used, they are gone.

Activity 2

Put the words in the correct order to make a complete sentence.

1. energy / forms / changes / one / from / to / another

_____

_____

2. sources / renewable / used / be / over / can / again / and / over

_____

_____

Activity 3

Write one of each type of sentence about energy transformation.

Statement (Declarative):

_____

Question (Interrogative):

_____

Exclamation (Exclamatory):

_____

Command (Imperative):

_____

Activity 4

Combine the short sentences below into one smooth sentence.

1.

- The sun produces light energy.
- Plants use it to grow.

Combined sentence:

_____

_____

2.

- Coal is a source of energy.
- It took millions of years to form.

Combined sentence:

_____

_____

Week 9 | Lesson 9

Air and the Atmosphere

Read Aloud Passage

Earth is surrounded by a thick blanket of air called the atmosphere. The atmosphere stretches many miles above the surface of the Earth, but it is held close to the planet by gravity. Without gravity, the air would drift away into space.

The atmosphere is not the same all the way through. The air near the ground is thicker and has more substance in it. As you go higher up, there is less and less air. Very high up, there is almost no air at all.

When astronauts travel into space, they must bring their own air supply. Space suits are sealed and filled with air so astronauts can breathe. There is no air in space, which means there is no atmosphere beyond our planet.

Earth has three main layers that work together as a system. The land under our feet is called the lithosphere. The water on Earth is called the hydrosphere. The air around Earth is the atmosphere. Life on Earth depends on all three of these working together.

Week 9 | Lesson 9

Air and the Atmosphere

Activity 1

Circle True or False for each statement.

1. **True / False** The atmosphere is a blanket of air that surrounds the Earth.

2. **True / False** The atmosphere is the same thickness all the way through.

3. **True / False** Gravity holds the atmosphere close to the Earth.

4. **True / False** Astronauts can breathe normally in space without a space suit.

Activity 2

Because / But / So Complete each sentence three different ways.

The atmosphere is held close to the Earth by gravity because

_____

_____

The atmosphere is held close to the Earth by gravity but

_____

_____

The atmosphere is held close to the Earth by gravity so

_____

_____

Activity 3

Start with the kernel sentence. Use the prompts to expand it into a more detailed sentence.

Kernel sentence: The atmosphere surrounds Earth.

What is it?

Why does it matter?

Write your expanded sentence:

_____

_____

Activity 4

Each sentence below is a run-on. Rewrite it correctly.

1. The atmosphere surrounds the Earth it is held close by gravity without it air would drift into space.

Correction:

_____

_____

2. Astronauts cannot breathe in space there is no air there they must wear sealed suits filled with air.

Correction:

_____

_____

Week 10 | Lesson 10

Categorizing the World Around Us

Read Aloud Passage

Everything in our world can be placed into one of three groups. The first group is living things, which scientists also call biological things. The second group is natural nonliving things, which are things that come from the Earth but are not alive. The third group is human-made things, which are things that people have built or created.

Living things grow, reproduce, need food or energy, and respond to the world around them. Dogs, trees, mushrooms, and people are all living things. Rocks, water, air, and soil are natural nonliving things. They come from the Earth, but they do not grow or reproduce on their own. Tables, cars, and plastic bags are human-made. People made them from natural materials.

Some things can be tricky to sort. A dead leaf was once living, so it used to belong in the living group. A wooden table is made from a natural material called wood, but a person built it, so it belongs in the human-made group. A bird's nest is made from natural materials by an animal, not a human, so it belongs in the natural category.

Asking good questions helps us sort things correctly. Is it alive? Did a person make it? Did it come from the Earth on its own?

Week 10 | Lesson 10

Categorizing the World Around Us

Activity 1

Because / But / So Complete each sentence three different ways.

Everything in our world can be placed into one of three groups because

_____

_____

Everything in our world can be placed into one of three groups but

_____

_____

Everything in our world can be placed into one of three groups so

_____

_____

Activity 2

Turn each fragment into a complete sentence.

1. *grows, reproduces, and needs food or energy*

_____

_____

2. *made by people from natural materials*

_____

_____

Activity 3

Put the words in the correct order to make a complete sentence. Add correct capitalization and punctuation.

1. is / dog / living / a / thing / it / because / grows / reproduces / and / a

_____

_____

2. human-made / tables / are / cars / because / and / people / built / them

_____

_____

Activity 4

Read each statement. Write two questions that could be answered by the statement.

Statement: Without bees you wouldn't have any honey, so honey is a biological material.

Question 1:

_____

Question 2:

_____

Statement: A wooden table is made from wood, but a person built it, so it is considered human-made.

Question 1:

_____

Question 2:

_____

Week 11 | Lesson 11

Matter is Made of Particles

Read Aloud Passage

Here is an amazing fact: everything around you is made of particles too small to see with the naked eye. A rock, a drop of water, the air you breathe, and even your own body are all made of these invisible particles. Scientists have known this for a very long time, even though no one has ever seen a single particle directly.

How do scientists know particles exist if they cannot see them? They look at the clues matter leaves behind. When you dissolve salt in water, the salt seems to disappear. But you can still taste it. The salt broke apart into particles too small to see, but it is still there. When you spray perfume in a room, the smell spreads quickly in all directions because the particles travel through the air.

Particles are incredibly small and incredibly numerous. A single grain of sand contains far more particles than there are grains of sand on all the beaches in the world. Even so, scientists have found many ways to measure and study them.

The idea that all matter is made of particles helps explain many things we observe every day. It explains why things dissolve, why smells spread through a room, and why you can squeeze air into a tire. Wherever there is matter, there are particles.

Week 11 | Lesson 11

Matter is Made of Particles

Activity 1

Because / But / So Complete each sentence three different ways.

All matter is made of particles too tiny to see because

_____

_____

All matter is made of particles too tiny to see but

_____

_____

All matter is made of particles too tiny to see so

_____

_____

Activity 2

Fill in the blank with the correct word from the word box.

Word Box: particles dissolve invisible evidence spread

1. All matter is made of tiny _____ that are too small to see.

2. Particles are _____ because you cannot see them with the naked eye.

3. When salt _____ in water, it breaks into particles too small to see.

4. The smell of perfume _____ through the air as particles move in all directions.

5. Clues like dissolving and spreading smells give us _____ that particles exist.

Activity 3

Circle True or False for each statement.

1. True / False All matter, including rocks, water, and air, is made of tiny particles.

2. True / False Scientists have seen individual particles directly using powerful microscopes.

3. True / False When salt dissolves in water, it disappears completely and is no longer present.

4. True / False The particles in perfume travel through the air and reach your nose.

Week 12 | Lesson 12

Distinguishing Living Things from Natural Earth and Human Made

Read Aloud Passage

Scientists use a checklist to decide whether something is truly living. To be alive, something must do all of the following: it must grow and develop, it must reproduce or be able to reproduce, it must respond to things happening around it, and it must need energy or food to survive.

Some things can trick us. Fire grows bigger and seems to move, but fire is not alive. It cannot reproduce, and it does not need food the way living things do. Crystals can grow, but they do not reproduce or respond to their surroundings. Rivers move, but they do not grow or reproduce either.

A virus is one of the hardest cases. Scientists still debate whether viruses are living or nonliving because they can reproduce inside a living cell, but they cannot do much on their own.

The key idea is that something must meet all the criteria, not just one or two. A car moves and needs fuel, but it does not grow, reproduce, or respond to the world around it the way a living thing does. Only things that meet all the requirements can be called truly alive.

Week 12 | Lesson 12

Distinguishing Living Things from Natural Earth and Human Made

Activity 1

One detail below does NOT belong in a paragraph about what makes something living. Circle it and explain why it does not belong.

A. Living things grow, reproduce, and need energy.

B. Fire grows bigger but it cannot reproduce, so it is not alive.

C. Solids hold their shape because their particles are packed tightly.

D. Something must meet all the criteria to be considered truly living.

Why does it not belong?

_____

_____

Activity 2

Circle True or False for each statement.

1. True / False Something only needs to meet one or two of the criteria to be considered living.

2. True / False Fire is not alive because it cannot reproduce.

3. True / False Living things must grow, reproduce, respond to surroundings, and need energy.

4. True / False A crystal that grows is considered a living thing.

Activity 3

Combine the short sentences below into one smooth sentence.

1.

- Fire grows bigger.
- It cannot reproduce.
- It does not need food the way living things do.

Combined sentence:

_____

_____

2.

- Crystals can be grown.
- They do not reproduce.
- They do not respond to surroundings.

Combined sentence:

_____

_____

Week 13 | Lesson 13

Changes in Particles with States of

Read Aloud Passage

Now that we know all matter is made of tiny particles, we can use that idea to explain why solids, liquids, and gases behave so differently from each other. The key is how the particles are arranged and how they move.

In a solid, particles are tightly bonded together in fixed positions. They vibrate in place, like a person shivering, but they do not move past each other. Because the particles stay locked in place, a solid has a definite shape. A rock stays the shape of a rock. A block of ice stays the shape of a block.

In a liquid, the particles are still close together and stay in contact, but they can slide freely past one another. This is why a liquid flows and takes the shape of its container. Even so, the particles stay close, so the liquid keeps the same volume no matter what container it is in. A liquid has a definite volume but no fixed shape.

In a gas, the particles move rapidly and freely in all directions, with large spaces between them. This is why gases spread out and fill any container they are placed in. When matter changes from one state to another, the particles themselves do not change. What changes is how much they move and how much space is between them.

Week 13 | Lesson 13

Changes in Particles with States of

Activity 1

Fill in the blank with the correct word from the word box.

Word Box: solid liquid gas vibrate volume

1. In a _____, particles are tightly bonded and locked in fixed positions.

2. Particles in a solid _____ in place but do not move past each other.

3. A liquid has a definite _____ but takes the shape of its container.

4. In a _____, particles are close but can slide freely past one another.

Activity 2

Because / But / So Complete each sentence three different ways.

In a solid, particles are locked in fixed positions because

_____

_____

In a solid, particles are locked in fixed positions but

_____

_____

In a solid, particles are locked in fixed positions so

_____

_____

Activity 3

Circle True or False for each statement.

1. True / False In a solid, particles are tightly bonded in fixed positions and cannot move past each other.

2. True / False A liquid has no definite volume because its particles can move past each other.

3. True / False In a gas, particles move rapidly in all directions with large spaces between them.

4. True / False When matter changes state, the particles themselves change into different particles.

Activity 4

Combine the short sentences below into one smooth sentence.

1.

- In a solid, particles are tightly bonded.
- They do not move past each other.

Combined sentence:

_____

_____

2.

- A liquid has no fixed shape.
- Its particles can slide freely past each other.

Combined sentence:

_____

_____

Week 14 | Lesson 14

Technology, Tools, and Animals

Read Aloud Passage

All human-made things start as something from the Earth. Plastic comes from oil. Glass comes from sand. Metal comes from rocks called ores. Paper comes from wood. Even though these things have been changed and shaped by people, they all began as natural materials from the Earth.

Machines and technology need energy from outside themselves to work. A car needs gasoline. A computer needs electricity. A toaster needs to be plugged in. Without that outside energy, machines stop working.

Living things are different. They generate their own energy by eating food. A dog finds food, eats it, and uses the energy in that food to run, grow, and live. Living systems do not need to be plugged in or filled up with fuel from outside.

Animals also build things, but those things are natural, not human-made. A bird builds a nest from sticks. A beaver builds a dam from wood and mud. A bee builds a hive from wax. These structures were not made by people, so we call them natural, even though an animal built them.

Week 14 | Lesson 14

Technology, Tools, and Animals

Activity 1

Because / But / So Complete each sentence three different ways.

All human-made things start as biological or natural earth materials because

_____

_____

All human-made things start as biological or natural earth materials but

_____

_____

All human-made things start as biological or natural earth materials so

_____

_____

Activity 2

Single-Paragraph Outline (SPO) Use the details to build your outline.
Write a topic sentence about how living things and machines get their energy differently.

Topic Sentence:

_____

_____

Detail 1: Machines need energy from outside, like gasoline or electricity, to work.

Detail 2: Living things generate their own energy by eating food.

Detail 3: A dog uses the energy from its food to run, grow, and stay alive.

Activity 3

Write one of each type of sentence about technology and living things.

Statement (Declarative):

_____

Question (Interrogative):

_____

Exclamation (Exclamatory):

_____

Command (Imperative):

_____

Week 15 | Lesson 15

Reversible and Nonreversible Changes

Read Aloud Passage

Matter can change in two very different ways. Some changes can be undone and some changes cannot. Understanding the difference comes down to what happens to the particles of the substance.

Changes between solid, liquid, and gas are reversible. When water freezes into ice, it changes from a liquid to a solid, but when you warm it back up, the ice melts into water again. Evaporation and condensation work the same way. Water evaporates into water vapor, and water vapor condenses back into liquid water. In all of these changes, the particles of the substance are the same. They just rearrange or slow down. The substance can always return to its original form.

Burning, cooking, and rusting are nonreversible changes. When wood burns, it turns into ash, smoke, and gases. There is no way to put those products back together to get the original wood. When an egg is cooked, it cannot be uncooked. When iron rusts, the rust cannot simply be turned back into iron. In each case, the original substance has been transformed into something fundamentally different. Scientists call these chemical changes.

The key question to ask is this: can the original substance be restored by simply changing conditions, like temperature? If yes, the change is reversible. If no, it is nonreversible. Whether a change is reversible or not

Week 15 | Lesson 15

Reversible and Nonreversible Changes

Activity 1

One detail below does NOT belong in a paragraph about reversible and nonreversible changes. Circle it and explain why it does not belong.

A. Melting and freezing are reversible because the substance returns to its original form.

B. Gravity pulls all objects toward the center of the Earth.

C. Burning wood produces ash and smoke that cannot be restored to wood.

D. In reversible changes, the particles of the substance remain the same.

Why does it not belong?

_____

_____

Activity 2

Because / But / So Complete each sentence three different ways.

Burning wood is a nonreversible change because

_____

_____

Burning wood is a nonreversible change but

_____

_____

Burning wood is a nonreversible change so

_____

_____

Activity 3

Fill in the blank with the correct word from the word box.

Word Box: reversible nonreversible condensation chemical particles

1. Melting and freezing are _____ changes because the substance returns to its original form.

2. When water vapor cools and turns back into liquid, that process is called _____.

3. Burning and rusting are _____ changes because the original substance cannot be restored.

4. Scientists call nonreversible changes _____ changes.

5. Whether a change is reversible depends on what happens to the _____ of the substance.