

# BIG

# SCIENCE 2



**STUDENT BOOK**

# Scope and Sequence

Units		Lessons
Science, Engineering, and Technology	<b>Unit 1: The Design Process</b>  <b>How do you solve problems</b>	Lesson 1: What is technology? Lesson 2: What are objects made of? Lesson 3: What is the design process?
	<b>Unit 2: Living Things and Their Environments</b>  <b>What do plants and animals need?</b>	Lesson 1: What do living things need? Lesson 2: How do plants and animals live in land environments? Lesson 3: How do plants and animals live in water environments?
	<b>Unit 3: Plants and Animals</b>  <b>How are living things alike and different?</b>	Lesson 1: What are some groups of living things? Lesson 2: How are living things like their parents? Lesson 3: How are groups of living things different?
Life Science	<b>Unit 4: Body and Health</b>  <b>What do I need to be healthy?</b>	Lesson 1: What can I do to stay healthy? Lesson 1: How can I stay healthy and safe?
	<b>Unit 5: Earth and Sky</b>  <b>What can you say about Earth and sky?</b>	Lesson 1: What is on Earth? Lesson 2: What changes land? Lesson 3: What is the sun?
Earth Science	<b>Unit 6: Weather</b>  <b>How can you describe weather?</b>	Lesson 1: What is weather? Lesson 2: How can you measure weather? Lesson 3: What are the four seasons?
	<b>Unit 7: Matter</b>  <b>How can you describe matter?</b>	Lesson 1: What is matter? Lesson 2: What are solids, liquids, and gases? Lesson 3: How can matter change?
Physical Science	<b>Unit 8: Energy</b>  <b>What can energy do?</b>	Lesson 1: How do we use energy? Lesson 2: What is light? Lesson 3: What is sound?
	<b>Unit 9: Movement</b>  <b>How can you describe ways objects move?</b>	Lesson 1: How objects can move? Lesson 2: What is a force? Lesson 3: What is gravity?

I will learn...	Key Words
<ul style="list-style-type: none"> <li>• how technology helps people solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>technology, science, scientist, discovery</i></li> </ul>
<ul style="list-style-type: none"> <li>• what materials different objects are made of.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>materials, natural, wood, cotton, rock, plastic</i></li> </ul>
<ul style="list-style-type: none"> <li>• to explain the design process.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>goal, solution, problem, plan, label</i></li> </ul>
<ul style="list-style-type: none"> <li>• what living things need.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>need, air, water, light, nutrients, soil, shelter</i></li> </ul>
<ul style="list-style-type: none"> <li>• how plants and animals can live in land environments.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>environment, forest, prairie, desert</i></li> </ul>
<ul style="list-style-type: none"> <li>• how plants and animals can live in water environments.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>wetland, swamp, marsh, ocean</i></li> </ul>
<ul style="list-style-type: none"> <li>• ways to group living things.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>seed, cone, backbone, mammal, reptile, amphibian, insect</i></li> </ul>
<ul style="list-style-type: none"> <li>• how living things are like their parents.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>parent, young, alike, shape, different</i></li> </ul>
<ul style="list-style-type: none"> <li>• how living things are alike and different.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>petunia, fuzzy, herd</i></li> </ul>
<ul style="list-style-type: none"> <li>• what some healthy habits are.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>healthy, habit, eating well, exercise, cavity, check up</i></li> </ul>
<ul style="list-style-type: none"> <li>• how I can stay healthy and safe.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>germs, sick, sneeze, skin, heal, cut, bandage, helmet, life jacket</i></li> </ul>
<ul style="list-style-type: none"> <li>• to describe the land, water, and living things.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>plain, hill, mountain, island, river, lake, ocean</i></li> </ul>
<ul style="list-style-type: none"> <li>• about the fast and slow Earth changes.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>earthquake, weathering, erosion</i></li> </ul>
<ul style="list-style-type: none"> <li>• ways the sun helps and harms things on Earth.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>gas, warm, heat, harm, sunglasses</i></li> </ul>
<ul style="list-style-type: none"> <li>• to describe weather.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>weather, storm, safe, thunderstorm, shelter, tornado, hurricane, snowstorm</i></li> </ul>
<ul style="list-style-type: none"> <li>• how to measure weather.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>measure, tool, thermometer, temperature, rain gauge, wind vane</i></li> </ul>
<ul style="list-style-type: none"> <li>• how the weather changes in each season.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>season</i></li> </ul>
<ul style="list-style-type: none"> <li>• to define matter and describe objects by their properties.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>matter, mass, weight, float, sink, temperature</i></li> </ul>
<ul style="list-style-type: none"> <li>• to identify solids, liquids, and gases.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>solid, liquid, gas, freeze, melt, boil</i></li> </ul>
<ul style="list-style-type: none"> <li>• ways matter can change.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>iron, rust, oxygen</i></li> </ul>
<ul style="list-style-type: none"> <li>• how to use energy.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>electricity, energy, fuel, gasoline, engine, battery, key</i></li> </ul>
<ul style="list-style-type: none"> <li>• what light can do.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>light, shadow</i></li> </ul>
<ul style="list-style-type: none"> <li>• how to make sounds.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>sound, vibrate, loud, soft, high, low</i></li> </ul>
<ul style="list-style-type: none"> <li>• how objects can move.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>move, straight, curved, around, zigzag, speed, quickly, slowly</i></li> </ul>
<ul style="list-style-type: none"> <li>• how forces change the way things move.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>force, push, pull, direction, motion</i></li> </ul>
<ul style="list-style-type: none"> <li>• that gravity pulls objects toward Earth.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>gravity, ground</i></li> </ul>

# Unit 1

# The Design Process



How do you solve problems?

## I will learn

- how technology helps people solve problems.
- what materials different objects are made of.
- to explain the design process.

**1** Look and circle the tools they are using.



stapler



nails



hammer



scissors



screwdriver

**2** Think of something you want to make. Name the tools you will need.

**Think!**

What are the father and son in this picture making?

## Lesson 1 • What is technology?

1 Read, look, and mark (✓) the tool the boy is using.

### Technology

**Technology** is using **science** to help solve problems. Computers are a kind of technology. **Scientists** use technology to make **discoveries**. Sometimes scientists discover new technologies.

### Key Words

- technology
- science
- scientist
- discovery



*Technology helps scientists to do their work.*

computer     tablet     cell phone

2 Do we use all these inventions now? Say as a class.



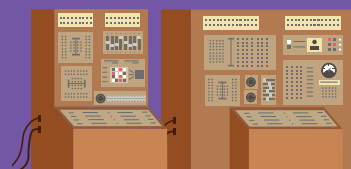
**1870**

The first all metal bicycle.



**1876**

The first telephone call.



**1946**

The first computer.



**3** Read and underline a problem that technology solves.

**Solve Problems**

Technology helps people solve problems. One problem is that people need to communicate with each other. They might not be in the same place. They can use a telephone. A telephone is technology.



*The boy uses a pencil to communicate.  
A pencil is technology.*

**4** Look and circle other examples of technology.



**5** Look at the timeline on page 5. Number the inventions 1, 2, or 3 in the order they were invented.

telephone

bicycle

computer

**Think!**

*What would you like to invent?*

- 6** Read. What are three kinds of technology a car can have? Say with a partner.

### Staying Safe

Technology helps people stay safe. People use cars to get from place to place. Seat belts and airbags help make cars safe. Safety seats help children keep safe in a car.

*Technology helps people stay safe in cars.*



- 7** Draw another kind of technology that helps people solve problems.

**Go Green**

**Helping Earth**  
Think of a technology that helps keep the air or water clean. Tell how it helps.



## Lesson 2 • What are objects made of?

- 1 Read. Look and point to three objects in the park that people made.

### Key Words

- materials
- natural
- wood
- cotton
- rock
- plastic

### Different Materials

People use **materials** to make objects. Some materials are natural. **Natural** means not made by people. Materials that come directly from Earth are natural. **Wood** and **cotton** are natural. **Rocks** and minerals are natural, too. Sometimes people use natural materials to make new materials.

**Plastic** is a material people make.



- 2 Look at the photo. Circle one material that is natural and cross out (x) one material that is made by people.



- 3** Read. Look and color the frame around the materials you might use to build a house.

## Natural Materials

Natural materials are different from each other. People use them in different ways. Wood and rocks are hard. People use them to make buildings. Cotton is soft. People use cotton to make clothes.

- 4** Write one kind of material you might use to make a pillow.



- 5** What material is soft? What materials are hard? Say with a partner.



**6** Read and write two things people can make out of plastic.

### Man-Made Materials

People make new materials, and they use them in different ways. Plastic is a new material. Some plastic is hard, and some plastic is soft. People use more than one material to make some objects. They can use plastic and wood to make a chair.

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\_\_\_\_\_

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*A plastic cup can hold food or a drink.*



*Packing foam is a soft type of plastic.*

**Flash Lab**

**Materials**

Find two objects. Tell what materials people used to make them. Tell if the materials are natural or people made them.



## Lesson 3 • What is the design process?

1 Read. Circle the problem and underline the goal.

### Key Words

- goal
- solution
- problem
- plan
- label

### A Problem and a Goal

Wood ducks are animals that need shelter. First, you set a goal, to design a house for wood ducks. A **goal** is something you want to do. Your house for wood ducks will be a solution. A **solution** solves a **problem**.



*Wood ducks do not make their own shelters. They use shelters that people or other animals make.*

2 Draw a house for a wood duck.

### Plan and Draw

Next, you make a **plan** to build your house for wood ducks. You write about how to make your house for wood ducks. You draw what your house for wood ducks will look like.

