

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



hammer



nails



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



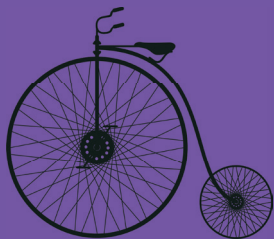
Technology helps scientists to do their work.

computer

tablet

cell phone

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



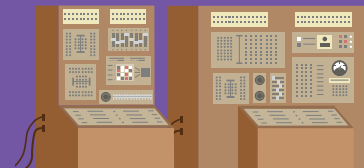
1870

The first all metal bicycle.



1876

The first telephone call.



1946

The first computer.



Let's Explore! Lab

Unit 1 5

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 1 Check

▶ Got it?



▶ 60-Second Video

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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.



A plastic cup can hold food or a drink.

Flash Lab

Materials

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



Packing foam is a soft type of plastic.



Lesson 3 • What is the design process?

- 1 Read. Circle the problem and underline the goal.

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**.



Key Words

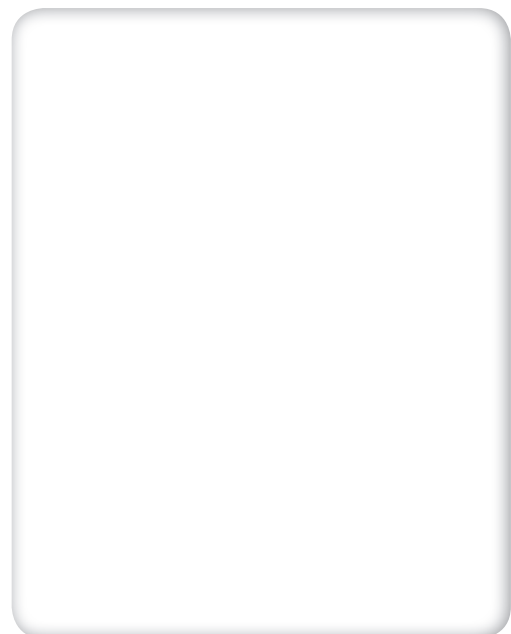
- goal
- solution
- problem
- plan
- label

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.



- 3** Read. Look and circle three materials you need to make a house for wood ducks.

Choose Materials

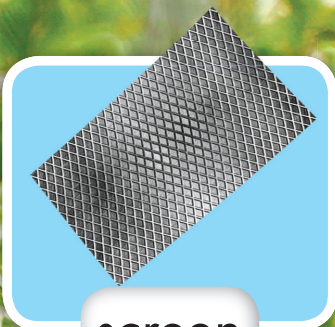
Next, you decide what materials to use to make your house for wood ducks. You might choose wood for the walls. You might choose nails to hold the walls together. You need something on the inside so the wood ducks can climb out. You might choose a piece of screen.



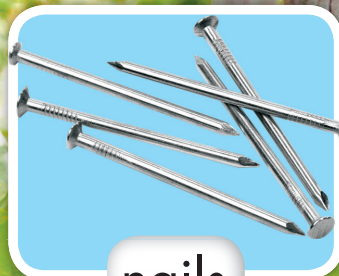
tape



wood



screen



nails



microphone

- 4** Read. How do you know your house for wood ducks works well? Say with a partner.

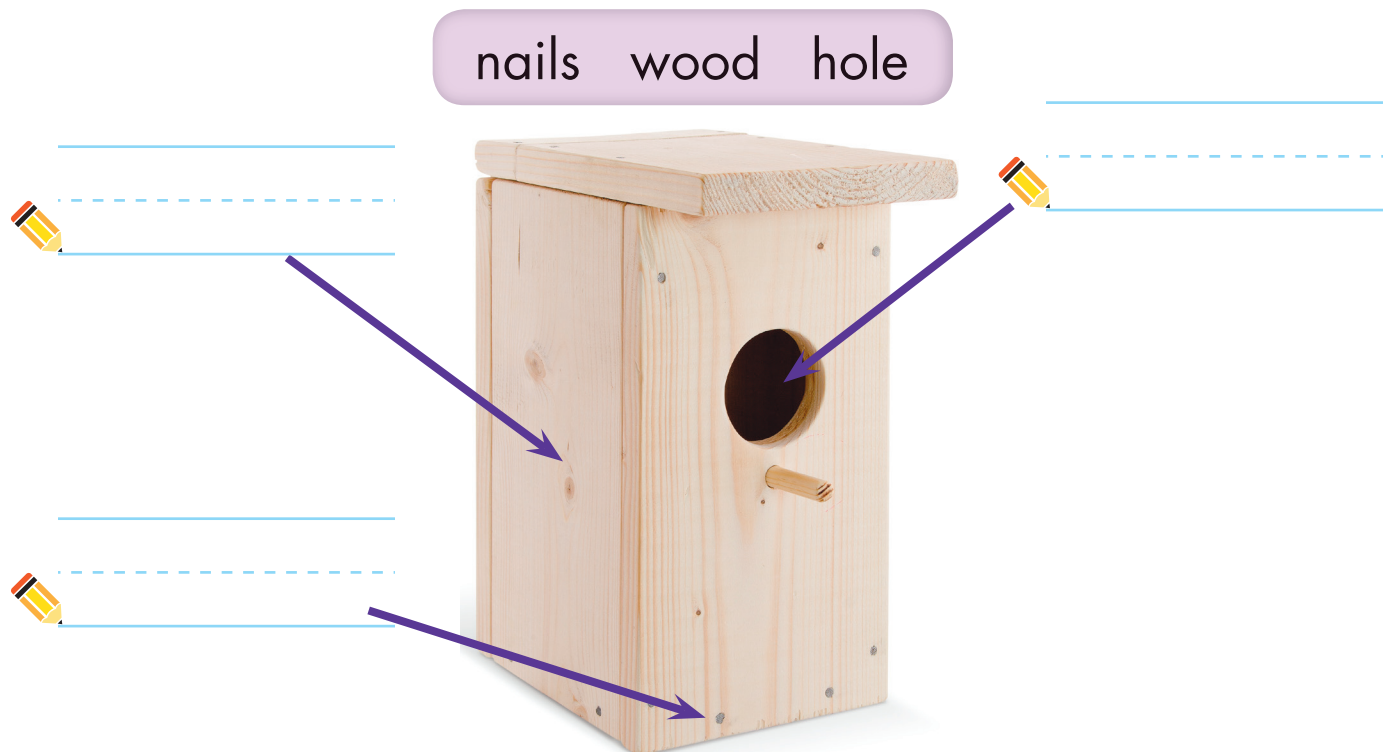
Test

Next, you make your house for wood ducks. You check the house every day. You see if wood ducks live there.

- 5** Read, look, and label the details of the house for wood ducks.

Record and Share

You decide how your solution works. You plan again to make your solution better. You write and draw to tell about your solution. You use **labels** to show parts of your solution.

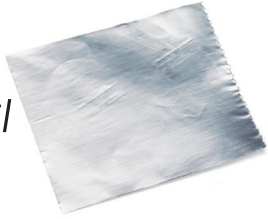


Materials

gram
cubes



foil



plastic tub
of water



Let's Investigate!

How can you build a boat?

1. Design a boat that will float. Draw your design.
2. Build your boat.
3. Add gram cubes to your boat until it sinks. Record.
4. Redesign your boat to hold more cubes. Predict how many gram cubes it will hold before it sinks. Record.





Lesson 1

What is technology?

- 1 Circle the word that best completes the sentence.

Technology helps solve _____.

goals

solutions

problems

science



Lesson 2

What are objects made of?

- 2 Circle the object with no natural materials.



Lesson 3

What is the design process?

- 3 How can you test an ant farm?
Underline the answer.

a. put food inside

c. draw the ant farm

b. tell about the ant farm

d. see if ants live there

