

SCIENCE

Student Book

► **3rd Grade | Unit 3**

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SCIENCE 303

CHANGES IN ANIMALS AND ENVIRONMENTS

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LIFEPAC Test |Pull-out

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CHANGES IN ANIMALS AND ENVIRONMENTS

God created all of the **environments** on the earth. An environment is something that surrounds a living thing. For example, you live in a place that has land. The land around you is part of your environment. You also have air around you. The air is part of your environment, too. Perhaps you live near some water. The water would also be part of your environment. If you move to another part of the earth, your environment would change. The land, air, and water would be different in some ways.

In this LIFEPAK®, you will learn about four things that cause an environment to change. These four things are **temperature**, water, light, and soil. Environments are different throughout the earth because these four things change.

God also created many animals to live in the air, water, and land environments. Temperature, water, light, and soil must be just right if living things are to live, grow, and multiply in an environment. An animal is made in a special way to survive in its normal environment. God made many different kinds of animals for the many different environments of the earth.

Animals are different and alike in many ways. Three of the ways that animals are different or alike are (1) how they are made, (2) what they eat and how they get their food, and (3) how they **breathe**. You will learn more about the ways that animals are different and alike. These differences and likenesses allow scientists to arrange animals by groups or classes. You will learn more about different animals and their groups.

Finally, in this LIFEPAK, you will learn some of the ways that animals grow and change. You will see that God's plan for all the animals and environments on the earth is orderly and good.

Objectives

Read these objectives. The objectives tell you what you will be able to do when you have finished this LIFEPAK.

1. Tell what changes the environment in which animals grow.
2. Tell some ways in which animals are different.
3. Put some animals in groups or classes.
4. Describe changes in some of the animals that God has created.



1. WHAT CHANGES AN ENVIRONMENT?

When God created the earth, He made many different environments. Many kinds of animals were placed in these different environments to live. All the animals were made in special ways so that they would fit their environment. In this way, animals would be able to live, grow, and **multiply** in the right conditions.

What changes an environment? Each kind of environment is the way it is because of the temperature, the kind of soil, the amount of light, and the amount of water in that place. These four things change from place to place on the earth, and so the environment changes. The kinds of animals and plants living in different places will be different because the environments are different. In this section of the LIFEPAK, you will learn more about the way each of these four things—temperature, water, light, and soil—change an environment.

Vocabulary

Study these new words. Learning the meanings of these words is a good study habit and will improve your understanding of this LIFEPAK.

breathe (brēTH). To inhale and exhale.

Celsius (sēl' sē əs). A scale of temperature.

energy (ěn' ər jē). The ability to do work. An example is heat energy. Heat energy can change the temperatures of things.

environment (ěn vī' rən mən). The things around something.

evaporate (ī vāp' ə rāt). When a liquid, such as water, turns to vapor in the air.

expand (ěk spānd'). To become larger and take up more space.

Fahrenheit (fār' ən hīt). A scale of temperature.

moderate (mōd' ər ít). Between hot and cold.

moisture (mois' chər). Liquid water.

multiply (mūl' tə plī). To increase.

observe (əb zûrv'). To look, see, and learn.

survive (sər vīv'). To stay alive.

temperature (tēm' pər əchər). A measure of heat.

thermometer (thər mōm' ĩ tər). An instrument that measures the temperature of something.

Note: All vocabulary words in this LIFEPAK appear in **boldface** print the first time they are used. If you are unsure of the meaning when you are reading, study the definitions given.

Pronunciation Key: hā, āge, cāre, fār; let, ēqual, tērm; it, ĩce; hot, ōpen, ôrder; oil; out; cup, pūt, rŭle; child; long; thin; /TH/ for then; /zh/ for measure; /u/ or /ə/ represents /a/ in about, /e/ in taken, /i/ in pencil, /o/ in lemon, and /u/ in circus.

Ask your teacher to say these words with you.



Teacher check:

Initials _____

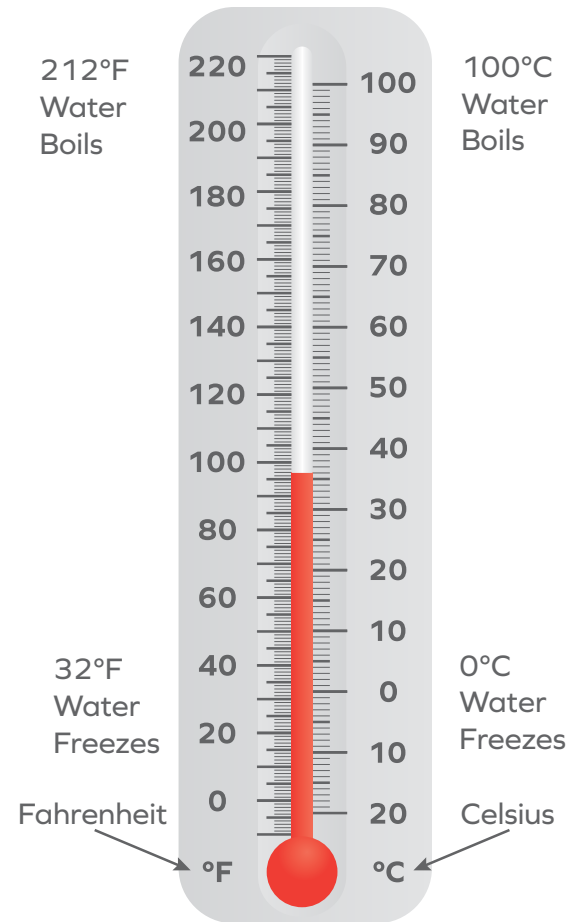
Date _____

Temperature

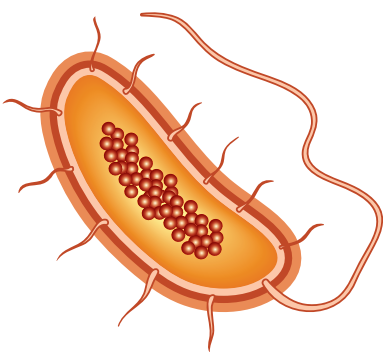
Temperature is the first condition that can change an environment. Some places on the earth have temperatures that are very hot. Other parts of the earth have temperatures that are very cold. Then, there are some parts of the earth where the temperatures are between hot and cold. That is, the temperature is **moderate**. Plants and animals are able to live everywhere on the earth in many different temperatures.

Each living thing is made just right so it can **survive** in its own environment at the normal temperature. For example, animals that live in environments where the temperature is very hot may have a special ability to store water or go for long periods with small amounts of water. Animals that live where the temperature is very cold may have a special ability to keep warm. Layers of fat and heavy coats of fur help these animals to survive in cold environments.

A **thermometer** is used to measure the temperature of places and things on the earth. Two different temperature scales are commonly used. Most common thermometers are designed to show important temperatures of water. These thermometers use either, or both, of these two scales. The thermometer scale will show 100 degrees **Celsius** (100°C) or 212 degrees **Fahrenheit** (212°F) as the point at which water boils. The thermometer scale will show 0 degrees Celsius (0°C) or 32 degrees Fahrenheit (32°F) when water freezes or ice melts. Water is the only thing on Earth that will boil at 212°F (100°C) and will freeze at 32°F (0°C).



Only some very tiny animals are able to live in places where the temperature is over the boiling point of water. Most animals cannot live at all in places where the temperature is this hot. The water in the oceans would **evaporate** if the temperature on the earth was over the boiling point. This does not happen because God created the earth so the temperatures would not get that hot.



| Some bacteria can live where temperatures are above 212° F.



Write your answers in the blanks.

- 1.1 Name one thing that you have learned so far in this LIFE PAC that changes an environment.

- 1.2 Water boils at 100° C or _____ ° F.
- 1.3 32° F (Fahrenheit) and 0° C (Celsius) is the temperature at which _____ freezes or _____ melts.
- 1.4 Why are some animals able to survive in very cold environments?

RECORD TEMPERATURE CHANGES



Record temperature change for one day.

You will need these things:

clock

thermometer with either Fahrenheit or Celsius scales or both

Follow these directions. Check the boxes as you do each step.

- ☐ 1. Choose an outside place at your school or home. Hang up or mount the thermometer so that it does not move. Wait a few minutes so the thermometer adjusts to the air temperature. Record the time and temperature on this chart. If you have a thermometer with both Celsius and Fahrenheit scales, record both numbers. Otherwise, use the correct column.
- ☐ 2. Wait one hour and read the temperature again. Record both the time and temperature on the chart.
- ☐ 3. Read and record the time and temperature every hour for one school day.

1.5 Record the temperatures from the study in this chart.

TIME	TEMPERATURE	
	°CELSIUS	°FAHRENHEIT



Teacher check:

Initials _____ Date _____

COMPARE TEMPERATURES



Record temperature at different locations.

You will need this thing:

thermometer with either Fahrenheit or Celsius scales or both

Follow these directions. Check the boxes as you do each step.

- ☐ 1. Go outside and measure the temperature in at least five different places. Wait a few minutes at each place so the thermometer adjusts to the air temperature. Record the place and temperature on this chart. If you have a thermometer with both Celsius and Fahrenheit scales, record both numbers. Otherwise, use the correct column.
- ☐ 2. Read the different temperatures. How are they different?

1.6 Record the temperatures in this chart.

NAME OF PLACE	TEMPERATURE	
	°CELSIUS	°FAHRENHEIT



Teacher check:

Initials _____ Date _____

1.7 What have you learned about the temperature at your school or home? _____

Water

Animals must have water to survive and they must have the right amount of water if they are to live, grow, and multiply properly. They are made in special ways to live on the amount of water that is found in their environment. Some animals need a lot of water and others need very little.



| Icy water in Alaska

Water is a special substance because it gets bigger or **expands** when it freezes. This is the reason why ice floats in a glass of water or on a lake or river. Have you noticed that ice floats? If you have not, **observe** how it floats the next time you put ice into water. Ice covers the tops of lakes during cold weather while the water underneath is still liquid. Because ice floats, the animals and plants that live in the water under the ice can survive. The ice acts like a blanket on top of the water. God designed it this way so that the animals would be taken care of during the cold winter months. God cares for all of His creation!

EXPLORE FREEZING TEMPERATURES



What happens when water freezes?

Follow these directions. Check the boxes as you do each step.

- ☐ 1. Fill an ice cube tray completely full of water.
- ☐ 2. Look at the water level.
- ☐ 3. Place the ice cube tray in the freezer. Be careful not to spill any water.
- ☐ 4. After the water freezes, look at the level of the ice cubes.

1.8 What was different between the level of the water and the level of the ice? _____

It takes a lot of heat **energy** to cause water to get warmer. Does it take more heat energy to heat water or soil? You will find out in this activity.



LEARN ABOUT HEAT ENERGY



Learn about the heat energy needed to heat or cool water and soil.

You will need these things:

two pint glass jars or bottles
two thermometers
ruler

water
soil

Follow these directions. Check the boxes as you do each step.

Part A

- ☐ 1. Tape or tie a thermometer in each of the two jars so it is off the bottom.
- ☐ 2. Put water in one jar or bottle. Measure the height.
- ☐ 3. Put soil in the second jar or bottle. Be sure to have it reach the same height.
- ☐ 4. Put both containers in a sunny place close together. Be sure one is not shading the other.
- ☐ 5. Read the temperature on each thermometer every five minutes and record the time and temperature in the chart.

1.9 Record the temperatures in the chart.

TIME	WATER		SOIL	
	°C	°F	°C	°F

Data Table for Part A: Heating Up Temperatures

(Continued on the next page)


Part B

- 1. Move the two jars or bottles to a shady place. Be sure they are still close together but are not in the sun.
- 2. Read the temperature on each thermometer every five minutes and record the time and temperature in the following chart.

1.10 Record the temperatures in the chart.

TIME	WATER		SOIL	
	°C	°F	°C	°F

Data Table for Part B: Cooling Off Temperatures



Teacher check:

Initials _____ Date _____



Study what happened to the temperatures in the two tables.

Write the correct answers.

- 1.11 Heat was taken in by the _____ faster than the _____ .
- 1.12 Heat was lost by the _____ faster than by the _____ .
- 1.13 The changes in heat show that the _____ will heat up faster than the _____ . (land /ocean)
(land /ocean)

You have just discovered an important fact about water. It takes a lot of heat energy to make water get hot. Water does not cool as fast as soil because it does not lose its heat as fast. Water is able to store more heat energy than the soil. The sun shines on the ocean, but the water does not get so hot that it harms the animals living in it. The ocean water does not get hot enough to boil. When night or a cooler season comes, the ocean does not become so cold that the animals cannot live there. The ocean stores heat energy. The water in the ocean affects the land that is nearby. The land near the ocean will become neither too hot nor too cold because the ocean stores heat energy. The land near the ocean has a moderate temperature because of the heat from the ocean nearby.



| The water in the ocean affects the land nearby.



Complete these activities.

1.14 Look on the Internet, check the newspaper, or listen to the weather news to find the high and low temperatures for the following cities.

CITY	HIGH		LOW	
	°F	°C	°F	°C
Fairbanks, Alaska				
Honolulu, Hawaii				
Miami, Florida				
Los Angeles, California				

1.15 The two major things studied so far in this unit that change an environment are _____ and _____.

Some environments do not contain very much water or **moisture**. They do not receive as much rain or snow as other environments. If an environment receives ten inches or less of rain or snow each year, it is called a desert. Most deserts have a high temperature, but deserts do not have to be hot to be called a desert. In fact, some deserts are not hot at all. Deserts are places that do not receive much water or moisture. Plants and animals that live in deserts must be able to wisely use the moisture they get if they are to live, grow, and multiply.



**Do this activity.**

- 1.16** Look in an encyclopedia or on the Internet under “deserts” and find the names and location of five deserts on the earth.

Write them in the following chart:

NAME OF DESERT	LOCATION

**Teacher check:**

Initials _____ Date _____

Light

In the Bible, it is recorded: “And God said, Let there be light: and there was light” (Genesis 1:3). Temperature and water are two things that cause an environment to change. Light is another important part of any environment. Different places on the earth have different amounts of sunlight so they have different environments. Green plants use the energy from light to make food. Food and oxygen are made



by the green plants for themselves and for other living things. The kinds of green plants will be different from one environment to another since different environments have different amounts of sunlight.

There is a lot of sun in some environments. Other environments are shady. Animals do not all like the same amount of light. Each animal must have the right amount of light for it to live, grow, and multiply. For example, some animals like to live underground. Earthworms are an example of these animals that would rather live underground than above ground. Other living things like to live above ground and enjoy the sunlight. You probably enjoy sunny days because God made you to live above ground.



| Earthworms like living underground.

EXPLORE AN EARTHWORM'S HOME



This experiment will show you how some animals like to live where there is no light.

You will need these things:

- a small plastic pail or a clean plastic bottle with the top cut off
- a watch that shows seconds
- moist soil
- tray
- two earthworms

A fun way to begin this activity is to go on a field trip to find the earthworms. This will give direct observation of the living environment where earthworms can be found. Before going, discuss possible locations of where the earthworms can be found. Look for moist, rich soil perhaps under a board, rock, or log. In these places, earthworms can be found 6 to 10 inches deep in the soil. Use a shovel to turn over the soil and carefully sort through the dirt by hand. If finding the earthworms is not possible, check at pet supply or sporting goods stores to purchase earthworms or night crawlers.

Follow these directions. Check the boxes as you do each step.

- ☐ 1. Place moist soil in the jar or bottle.
- ☐ 2. Put Earthworm A on top of the soil.
- ☐ 3. Time Earthworm A until the worm goes into the soil. Record the time on your chart. Write about what you see under Earthworm A on the chart.
- ☐ 4. Put Earthworm B on top of the soil.

(Continued on the next page)

- ☐ 5. Time Earthworm B until the worm goes into the soil. Record the time on your chart. Write about what you see under Earthworm B on the chart.
 - ☐ 6. Gently empty the soil and earthworms into the tray.
 - ☐ 7. Repeat steps 2, 3, 4, 5, and 6 two more times.
- 1.17 Record each fact in the chart.

OBSERVATIONS				
TRIAL	EARTHWORM A	TIME TO GO UNDERGROUND	EARTHWORM B	TIME TO GO UNDERGROUND
1				
2				
3				



Teacher check:

Initials _____ Date _____

**Write the answers.**

1.18 What did you learn about earthworms in the last study?

1.19 Name the three things that change an environment that you have learned about in this LIFEPAK: _____ , _____ , and _____ .

Soil

Another factor for the environment of animals is the soil. It is important that the animals have the right kind of soil for their environment. God created many different kinds of rocks. The rocks get broken down to make different kinds of soil. In an environment, the kind of soil needed by each plant and animal living there will be found. For example, some kinds of animals living near the ocean like to live in sandy soil at times. Other animals and plants do better in a rocky soil. Changes in the soil will make a change in the environment.

What kind of soil can be found by your home environment? What kind is found in your school or nearby environment? In the next activity, you will collect some soil samples that will help you answer these questions.

STUDY YOUR SOIL



This experiment will help you see that there are different kinds of soil.

You will need these things:

cup
water
two jars or plastic jugs with lids
ruler

Follow these directions. Check the boxes as you do each step. These steps may take several days to complete. Answer the questions for each day.

- ☐ 1. Fill a cup with soil from the yard of your home. Gently rake back loose leaves and sticks before getting your sample.
- ☐ 2. Put the soil into one of the jars.
- ☐ 3. Fill another cup with soil from your school (or another location other than your homeschool) and put it into the other jar.
- ☐ 4. Add water to the soil in both containers until the jars are three-fourths filled. Put the lids on tightly.
- ☐ 5. Shake both jars well until the soil and water is thoroughly mixed.
- ☐ 6. Place the jars in a place where they will not be moved until tomorrow.
- ☐ 7. After the jars have set overnight, observe the different layers that you see. Measure the thickness of each one.
- ☐ 8. Draw the different layers as thick as your measurements show in Rectangles A and B.
- ☐ 9. Measure the height of the water and draw that on Rectangles A and B.

(Continued on the next page)

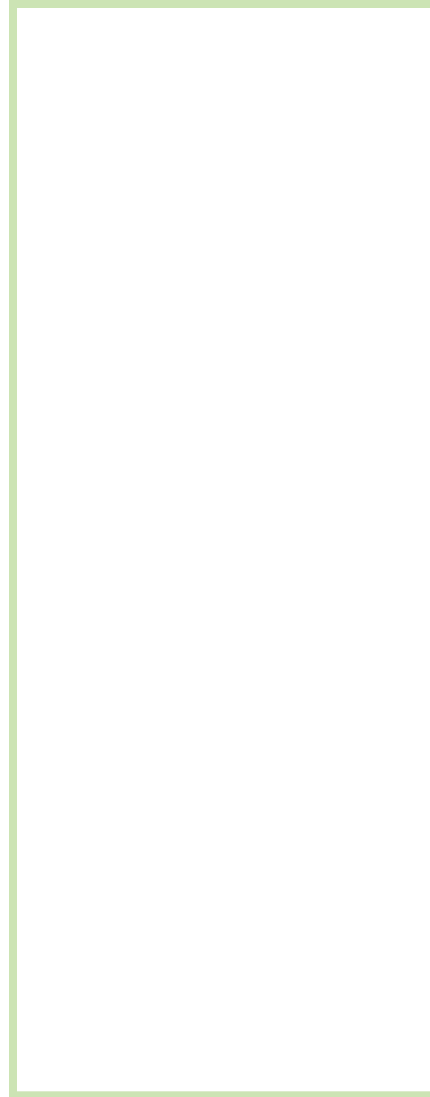
1.20 Put your answers in these rectangles.

Rectangle A



Home Soil

Rectangle B



Other Soil


- 1.21

Did you see any differences in the soil? _____
- 1.22

Explain why a change in soil would make a change in the environment. _____

- 1.23

What are the four things studied so far that can change an environment?



Teacher check:

Initials _____ Date _____



For this Self Test, study what you have read and done. The Self Test will check what you remember.

SELF TEST 1

Each answer = 1 point

Circle the correct answer.

- 1.01** What is the freezing point of water on the Celsius thermometer?
a. 32° C b. 212° C c. 0° C
- 1.02** What is the melting point of ice in degrees Fahrenheit?
a. 32° F b. 212° F c. 0° F
- 1.03** Why does ice float?
a. it is cold b. it is hard c. it expands
- 1.04** Which heats faster?
a. soil b. water
- 1.05** Which cools faster?
a. soil b. water

Write the answers on the lines.

- 1.06** Name four things that change an environment from place to place on the earth. _____

- 1.07** What does a thermometer measure?



Teacher check:

Score _____

Initials _____

Date _____

