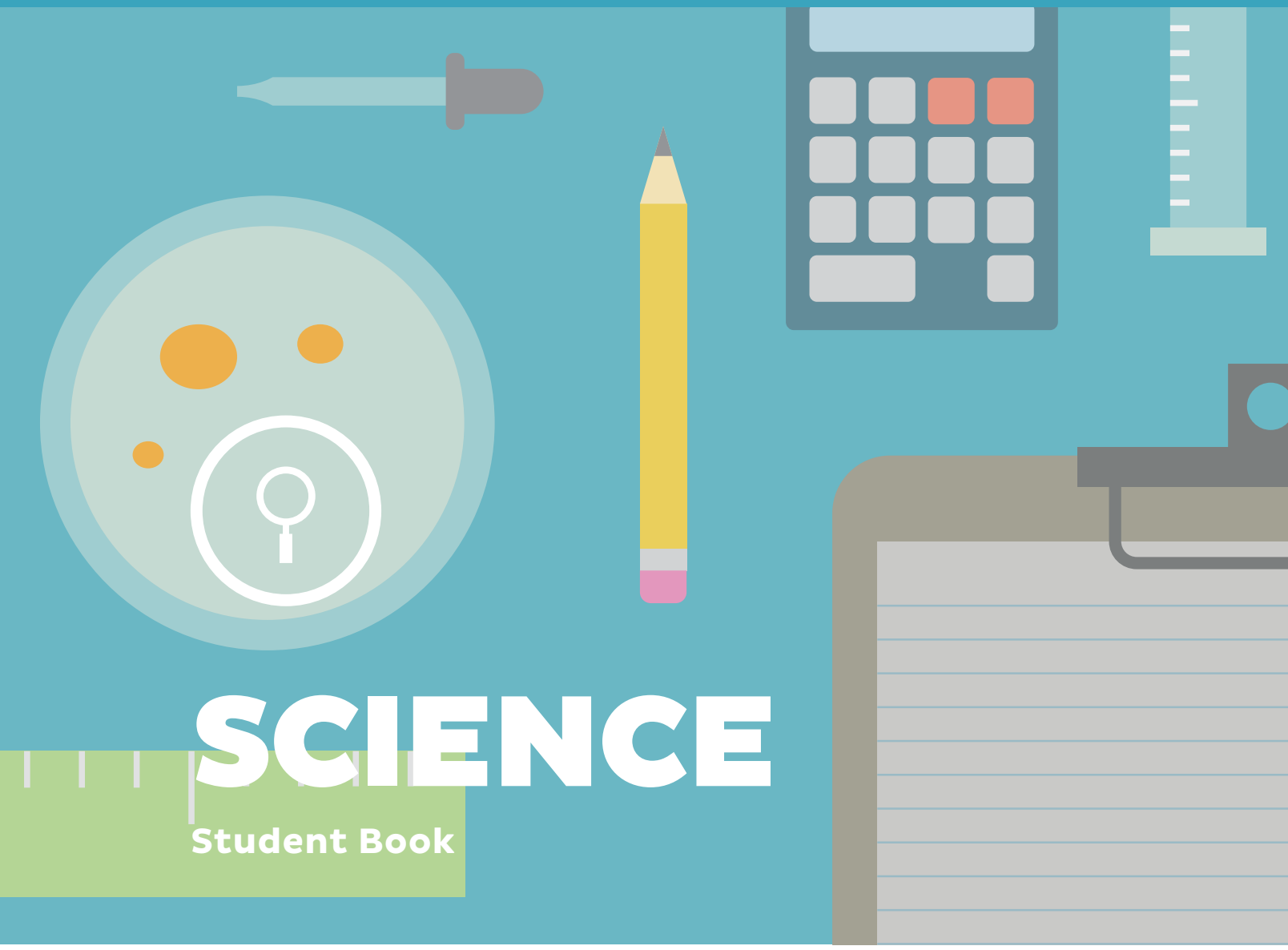
LIFEPAC®



SCIENCE

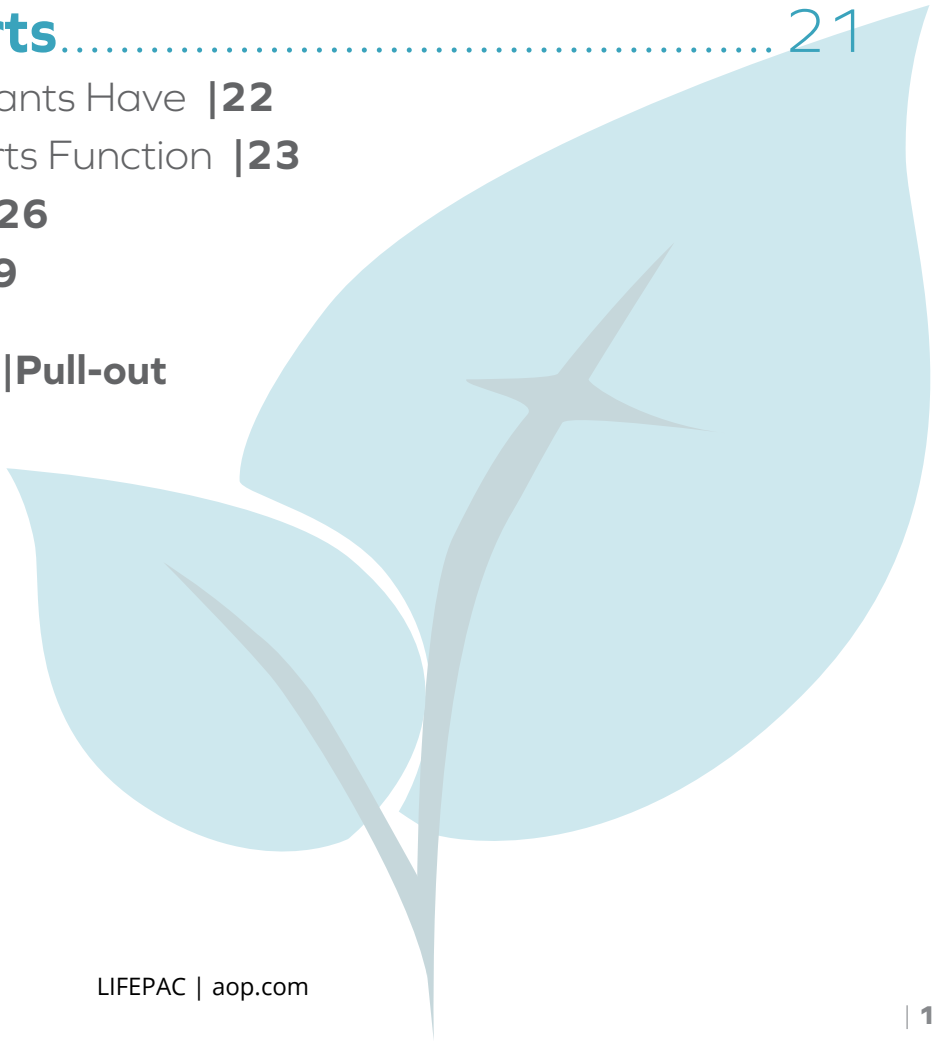
Student Book

4th Grade

Alpha Omega PUBLICATIONS

LIFEPAC | aop.com

SCIENCE 401
PLANTS



ANIMALS

As you study this LIFEPAC®, you will learn that animals are wonderfully made. Animals can travel long distances by walking, running, flying, or swimming. Some travel in all four ways. Others wiggle along from place to place. Animals eat and digest many different types of food. They breathe by means of lungs, gills, tubes, and pores. In this LIFEPAC you will begin to understand how God provided in the Creation for the food, shelter, and instinct of animals. Man, too, has a part to play in taking care of animals as well as in the way he uses them for work, for fun, and as pets.

Objectives

Read these objectives. The objectives tell you what you will be able to do when you have successfully completed this LIFEPAC. Each section will list according to the numbers below what objectives will be met in that section. When you have finished this LIFEPAC, you should be able to:

1. Tell how animals differ in the ways they travel, eat, digest food, and breathe.
2. Tell how jaws and teeth of animals are made to help them eat.
3. List some differences between animals that live on the land and those that live in water.
4. Tell how mammals, birds, and insects do unusual things.
5. Explain how some animals keep certain territories for their own use.
6. Describe the wisdom of God in providing animals with instinct.
7. Explain why man is beginning to see the importance of protecting wildlife.
8. Tell what man is trying to do to provide protection for wildlife.

1. MAN DEPENDS ON GOD'S PLAN

You are going to study in this LIFEPAC about your environment. In the first section you will learn about the meaning of the word ecology and how God has provided for His earth.

Objectives

Review these objectives. When you have completed this section, you should be able to:

1. Tell four resources that God provided on earth.
2. Tell the meaning of ecology.
3. Explain the meaning of a food chain.
4. Tell about the kinds of living things in a population.
5. Explain about the balance of nature.

Vocabulary

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

bacteria (bak tir' ē u): Very small organisms, so small that they can usually be seen only through a microscope.

carbon dioxide (kar' bun dī ok' sīd): A colorless gas that is present in air.

chlorophyll (klōr' u fil): The green coloring matter in plants.

consumer (kun sü' mur): A person who uses food, clothing, or anything grown by producers.

create (krē at'): To make something that has not been made before.

decay (di kā'): To become rotten.

decomposer (dē' kum pō' zur): Something that rots something else.

ecologist (e kol' u jist): A person skilled in ecology.

Learn this verse from the Bible.

1.11 When you have learned this verse, say the verse to your teacher.

Teacher check:

Initials _____

Date _____

"Thou art worthy, O Lord, to receive glory and honor and power: for thou has created all things, and for thy pleasure they are and were created."
Revelation 4:11

How Plants are Used

God made plants for our use. Among the many ways plants are used, four uses of plants will be discussed in this section. Plants are used for food, for shelter, for enjoyment (of their beauty), and for state symbols.

For food. In the following story about Rick and Mary's visit with their Uncle George, you will learn with them how plants are used for food.

Rick and Mary came dashing into the house.

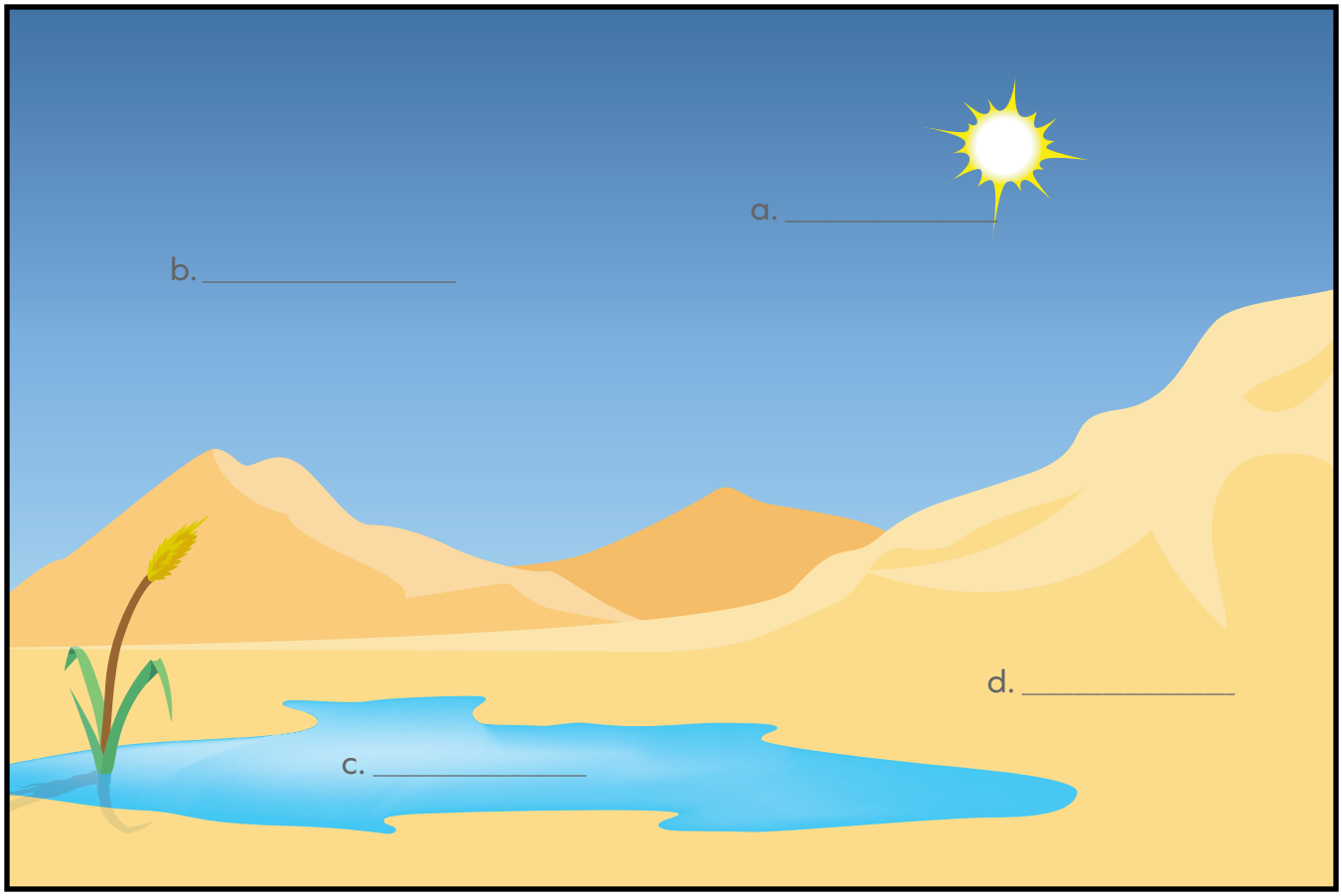
"Have you heard the news?" Rick asked.

Mother glanced up from the counter where she was working.

"What's happened?" she asked, smiling at the children.

Look at the picture.

1.25 On the lines write the name of each resource that God has given His creatures.



Think and draw.

1.26 What is your environment like? Does it include natural things and people-made things? Does it include people and animals? Does it include pleasant and unpleasant things? On a sheet of drawing paper make a picture of your environment. When you have finished it, put it in your LIFEPAC at this page. You will want to look at it again when you study about human communities.

Teacher check:

Initials _____ Date _____

MAKE A CHART FOR I SPY

Before you start on the next two sections, you will need to do a small project. You remember that Galileo taught that a true scientist must be a good observer. In other words, he must see things exactly as they are. Then he must make an accurate record of what he sees.

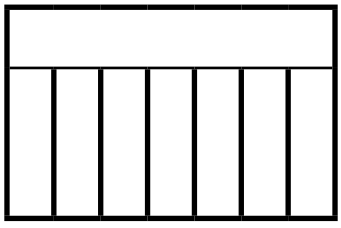
You have a chance to test yourself to see how well you can follow directions.

These supplies are needed:

one sheet of poster board (any color)
one meter stick (or yardstick)
two felt tip pens (black or red)
one sharp pencil with an eraser

Follow these directions. Use your pencil lightly to do all the lines and printing. When you have the lines and printing just right, go over your marks with a pen. Check the boxes as you do each step.

- ☐ **1.** Turn your poster board sideways. Draw a line all the way across the board 10 cm from the top.
- ☐ **2.** Divide the space beneath the line into seven equal columns. If you do your work carefully, your poster board should look like this.



- ☐ **3.** On the long line across the board, print very neatly: **MACHINES**
- ☐ **4.** At the top of each column, print the name of one simple machine in red. Print the simple machines in the order you find them on the contents page of this LIFEPAC under Machines Are Simple.
- ☐ **5.** At the top of the seventh column, print the words, "Complex Machines."

WET CELLS

View 405 Electric Current: Grade 4 Science experiments video

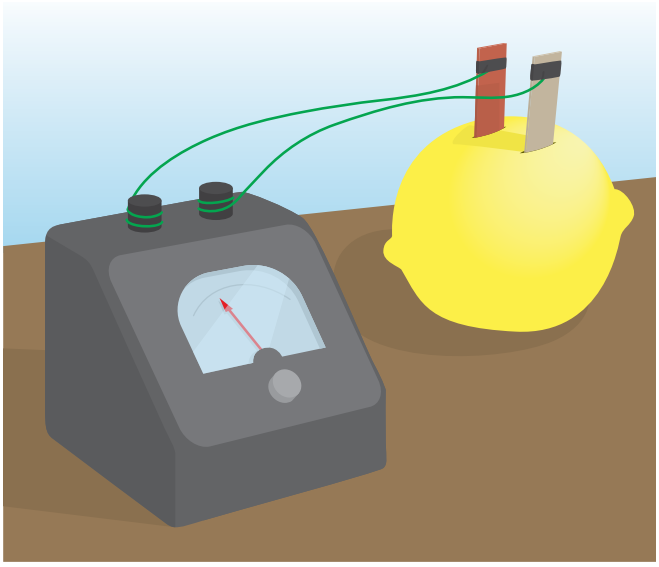
Try your hand at making each of the wet cells described here. You will need a simple instrument called a **galvanometer**, which will show you when electric current is flowing. Plans for making a simple galvanometer from a compass and some insulated wire can be found online. Your teacher may decide to discuss this experiment with you rather than have you perform it. Check before you proceed.

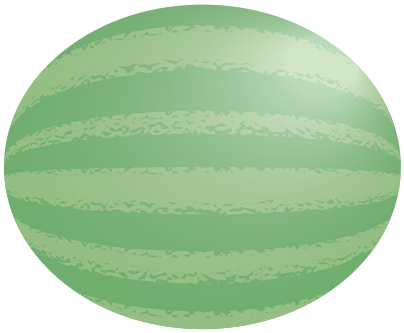
Teacher check:

Initials _____ Date _____

These supplies are needed:

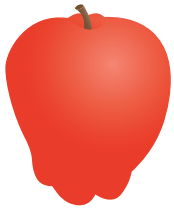
three strips each of copper and zinc (15 x 3 cm) four lengths of covered copper wire, each about 50 cm long.
a glass of vinegar
a galvanometer
a juicy lemon
a sharp knife



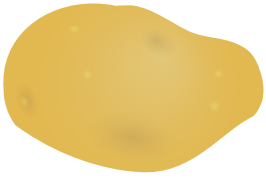


watermelon: $\frac{9}{10}$

milk: $\frac{9}{10}$

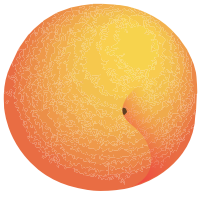


apple: $\frac{8}{10}$



potato: $\frac{8}{10}$

egg: $\frac{7}{10}$



peach: $\frac{9}{10}$

| Amount of Water In Some Food

These tiny pieces of materials captured by the rain go into the soil and are used by plants as food. In the plants, water acts as a delivery system, moving the food to all parts of the plants. The roots take water from the soil. Small tubes carry the water from the roots through the stems and to the leaves.

Just as in a plant, water works as a delivery system for humans and animals. Water dissolves food into nutrients so it can be used by the body. Water carries nutrients to all parts of the bodies of people and animals. Your blood is about 50 percent water and carries food to all parts of the body. Water also cleanses the inside of the body by carrying off body wastes.

All living things need water. It keeps plants, animals, and people alive. God provides life-giving water to the earth.

SELF TEST 1

Match these items (each answer, 3 points).

1.01	_____	space	a. Creator
1.02	_____	stratosphere	b. gives heat to the earth
1.03	_____	air	c. light shines through
1.04	_____	God	d. sun's rays
1.05	_____	C	e. abbreviation for Celsius
1.06	_____	ultraviolet	f. height of 30 miles
1.07	_____	sun	g. no air
1.08	_____	transparent	h. weather
			i. atmosphere

Choose the correct word to complete each sentence (each answer, 3 points).

atmosphere	fog	rises	troposphere
cycle		pressure	second expands
radiation	third		

1.09 When air is warmed by the rays of the sun striking the earth, it _____ and becomes cooler.

1.010 Heat travels from the sun to earth by _____ .

1.011 The water _____ is God's way of giving water to man, animals, and plants.

1.012 A cloud on or close to the ground is called _____ .

1.013 The layer of atmosphere that lies closest to the earth is called the _____ .

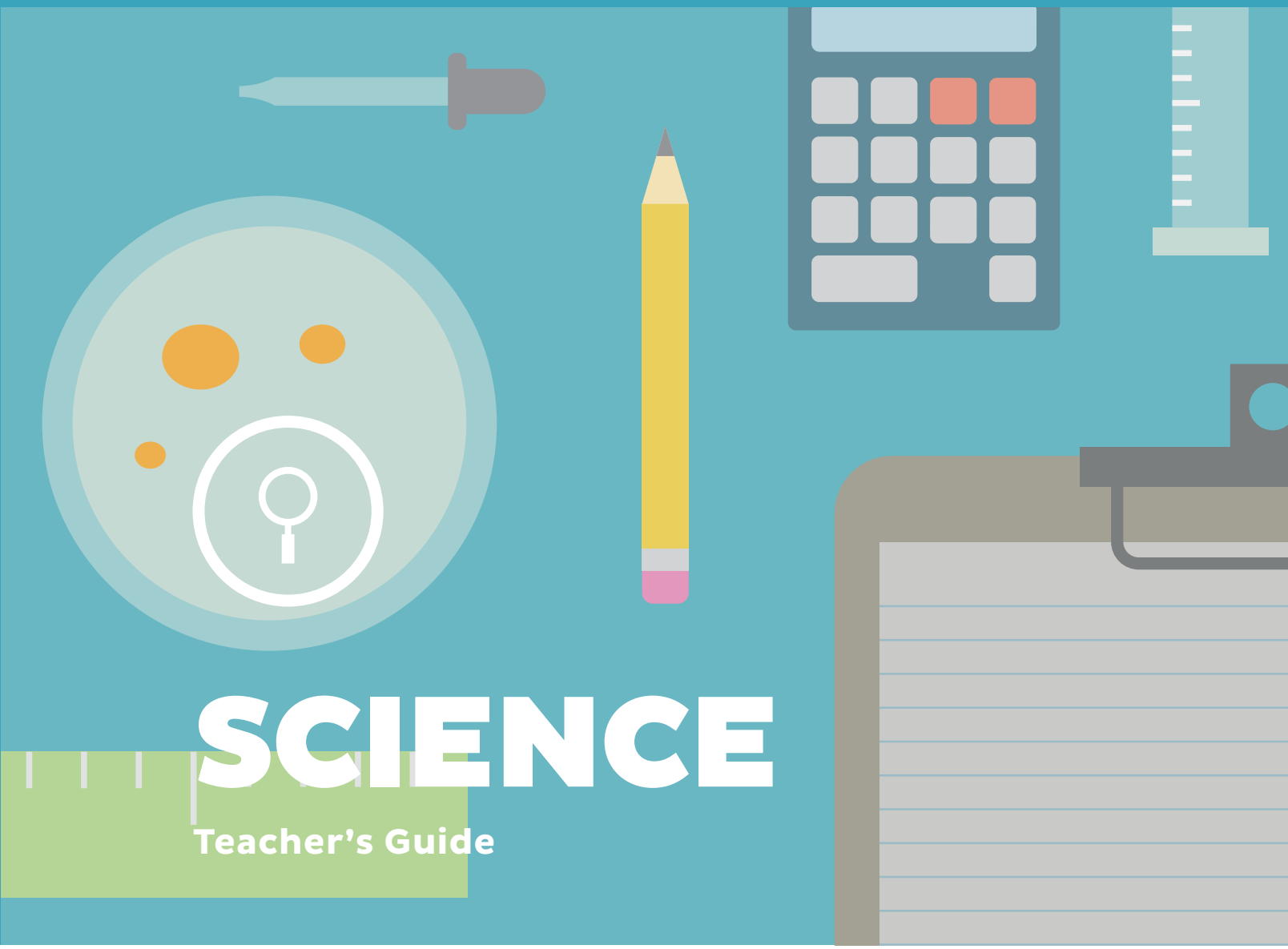
1.014 When something gets larger, it _____ .

1.015 Air has _____ .

1.016 God made air on the _____ day of Creation.

1.017 The air that surrounds the earth is the earth's _____ .

LIFEPAC®



SCIENCE

Teacher's Guide

4th Grade

Alpha Omega PUBLICATIONS

SCIENCE 400

Teacher's Guide

STRUCTURE OF THE LIFEPAC CURRICULUM

The LIFEPAC curriculum is conveniently structured to provide one teacher handbook containing teacher support material with answer keys and ten student worktexts for each subject at grade levels two through twelve. The worktext format of the LIFEPACs allows the student to read the textual information and complete workbook activities all in the same booklet. The easy to follow LIFEPAC numbering system lists the grade as the first number(s) and the last two digits as the number of the series. For example, the Language Arts LIFEPAC at the 6th grade level, 5th book in the series would be LAN0605.

Each LIFEPAC is divided into 3 to 5 sections and begins with an introduction or overview of the booklet as well as a series of specific learning objectives to give a purpose to the study of the LIFEPAC. The introduction and objectives are followed by a vocabulary section which may be found at the beginning of each section at the lower levels, or in the glossary at the high school level. Vocabulary words are used to develop word recognition and should not be confused with the spelling words introduced later in the LIFEPAC. The student should learn all vocabulary words before working the LIFEPAC sections to improve comprehension, retention, and reading skills.

Each activity or written assignment has a number for easy identification, such as 1.1. The first number corresponds to the LIFEPAC section and the number to the right of the decimal is the number of the activity.

Teacher checkpoints, which are essential to maintain quality learning, are found at various locations throughout the LIFEPAC. The teacher should check 1) neatness of work and penmanship, 2) quality of understanding (tested with a short oral quiz), 3) thoroughness of answers (complete sentences and paragraphs, correct spelling, etc.), 4) completion of activities (no blank spaces), and 5) accuracy of answers as compared to the answer key (all answers correct).

The self test questions are also number coded for easy reference. For example, 2.015 means that this is the 15th question in the self test of Section 2. The first number corresponds to the LIFEPAC section, the zero indicates that it is a self test question, and the number to the right of the zero is the question number.

The LIFEPAC test is packaged at the centerfold of each LIFEPAC. It should be removed and put aside before giving the booklet to the student for study.

Answer and test keys have the same numbering system as the LIFEPACs and appear throughout this handbook. The student may be given access to the answer keys (not the test keys) under teacher supervision so that he can score his own work.

A thorough study of the Curriculum Overview by the teacher before instruction begins is essential to the success of the student. The teacher should become familiar with expected skill mastery and understand how these grade-level skills fit into the overall skill development of the curriculum. The teacher should also preview the objectives that appear at the beginning of each LIFEPAC for additional preparation and planning.

SCIENCE PROJECTS LIST

Key

(1) = Those essential to perform for basic understanding of scientific principles.
(2) = Those which should be performed as time permits.
(3) = Those not essential for mastery of LIFEPACs.
S = Equipment needed for homeschool or Christian school lab.
E = Explanation or demonstration by instructor may replace student class lab work.
H = Suitable for homework or for homeschool students. (No lab equipment needed.)
V = This experiment is available on the Science Experiments video.

Science 401

401.A (2) H
401.B (1) H & V

Science 402

None

Science 403

403.A (1) H, S & V (seasonal)
403.B (2) H
403.C (3) S

Science 404

404.A (1) H
404.B (1) H & V
404.C (3) H
404.D (1) S & V
404.E (1) S & V
404.F (3) H & V
404.G (1) S
404.H (3) S & V

Science 405

405.A (1) S
405.B (1) S & V
405.C (2) S
405.D (1) S & V
405.E (1) S & V
405.F (3) S & V
405.G (2) S & V
405.H (1) S & V

Science 406

406.A (1) H & V
406.B (1) H & V
406.C (2) S & V
406.D (1) H
406.E (2) H & V
406.F (1) H & V
406.G (1) S & V
406.H (3) H & V
406.I (3) H

Science 407

407.A (1) H & V
407.B (2) H
407.C (1) H & V

Science 408

408.A (1) H
408.B (3) H
408.C (2) H & V

Science 409

409.A (1) H & V
409.B (1) H & V
409.C (2) S & V

Science 410

None

TEACHING NOTES

MATERIALS NEEDED FOR LIFEPAC	
Required	Suggested
• none	• fresh celery stalk (stem) with leaves on top • a glass of water • red ink or red food coloring • a knife • 4th Grade Science Experiments video

ADDITIONAL LEARNING ACTIVITIES

Section 1: Plant Life

1. Take a planned field trip to a supermarket. Divide into two groups. One group makes list of all vegetables; other group makes list of all fruits. Groups compare lists at school and discuss.
2. Small group working together makes list of all state flowers. Share list with class.
3. Memorize the first two verses of the hymn "How Great Thou Art." Write them from memory. Give what you have written to the teacher.
4. Draw a flower arrangement.
5. Using real or artificial flowers, make a floral arrangement and bring it to class.

Section 2: Plant Parts

1. Cut colored pictures of flowers and flower arrangements from magazines. Arrange bulletin board display.
2. Make leaf collection. Identify from reference books and share with class.
3. Bring seeds to class and classify them.
4. Plant some plants at home. Keep a diary of progress of the plants. Have one of your parents sign the report when you bring it to class.
5. Make a picture using various seeds.

ANSWER KEYS

SECTION 1

1.1 NL
1.2 NL
1.3 L
1.4 L
1.5 NL
1.6 NL
1.7 NL
1.8 L
1.9 NL
1.10 L
1.11 Teacher check
1.12 ____ RICK AND MARY TAKE A TRIP
1.13 __✓__ RICK AND MARY LEARN ABOUT FOOD
1.14 ____ RICK AND MARY HAD FRUIT FOR DESSERT
1.15 living
1.16 stem
1.17 bulb
1.18 root
1.19 food
1.20 e
1.21 c
1.22 a
1.23 b
1.24 d
1.25 Choices will vary.
1.26 Choices will vary.
1.27 Choices will vary.
1.28 Choices will vary.
1.29 Paragraphs will vary.
1.30 grape
1.31 apple
1.32 berry
1.33 walnut
1.34 cherry
1.35 orange
1.36 lemon or melon
1.37 Lists will vary.
1.38 Lists will vary.
1.39 Any order:
a. for food
b. for shelter
c. for enjoyment
d. for state symbols
1.40 vitamin C
1.41 trees
1.42 roots
1.43 Lists will vary.
1.44 Answers will vary.
1.45 forget-me-not
1.46 hibiscus
1.47 Example:
God loves us and wants us to have a beautiful world in which to live. God is good and would not have created a world less than beautiful.
1.48 Alaska
1.49 Choices will vary.

2.37 season
2.38 green
2.39 roots
2.40 wheat
2.41 feed
2.42 road
2.43 seeds
2.44 ain
2.45 ee
2.46 oat
2.47 ear
2.48 ead
2.49 oast
2.50 ail
2.51 suf / fer
2.52 car / toon
2.53 in / vent
2.54 slen / der
2.55 un / kind
2.56 bap / tize
2.57 b. photosynthesis
2.58 c. happy
2.59 a. flowers
2.60 c. over 250,000
2.61 a. receptacle
2.62 b. stem
2.63 a. sepal
2.64 b. pollen
2.65 a. three
2.66 a. pistil
2.67 a. God
2.68 Choices will vary.
2.69 Choices will vary.
2.70 Choices will vary.
2.71 Choices will vary.
2.72 seeds
2.73 pome
2.74 rind
2.75 fruit

SELF TEST 2

2.01 c. leafy
2.02 a. enjoyment
2.03 b. run-ning
2.04 d. factory
2.05 b. citrus
2.06 c. stem
2.07 d. seeds
2.08 a. pepos
2.09 b. nonliving
2.010 a. starch
2.011 d. wood
2.012 a. bulb
2.013 true
2.014 false
2.015 true
2.016 true
2.017 true
2.018 false
2.019 false
2.020 true
2.021 true
2.022 true
2.023 true
2.024 false
2.025 false
2.026 true
2.027 false
2.028 true
2.029 true
2.030 false
2.031 true
2.032 true
2.033 false
2.034 false
2.035 false
2.036 true
2.037 true
2.038 true
2.039 Any four; any order:

bud	future leaf
wood	future flower
bud scales	growing point
bark	

2.040 Any four; any order:

root	leaves
flowers (blossoms)	stems

2.041 Examples:
fire, insects, disease, careless, cutting methods

LIFEPAC TEST

1. energy
2. bulb
3. nonliving
4. bud
5. berry
6. nut
7. citrus
8. minerals
9. flower
10. fire
11. d
12. f
13. e
14. a
15. c
16. b
17. true
18. false
19. false
20. true
21. false
22. true
23. true
24. Any order:
a. root (system)
b. stem
c. leaf
d. flower
25. honor
26. Lord's
27. decay

ALTERNATE LIFEPAC TEST

1. rind
2. root
3. oxygen
4. pollen
5. glory
6. enjoyment
7. d
8. h
9. g
10. e
11. b
12. f
13. c
14. i
15. a
16. true
17. false
18. true
19. false
20. true
21. false
22. true
23. true
24. true
25. true
26. Examples:
fire
over-cutting

SCIENCE 401

ALTERNATE LIFEPAC TEST

NAME _____

DATE _____

SCORE _____

80
100

From the list of words, choose the correct word and write it in the blank (each answer, 4 points).

glory	enjoyment	pollen
rind	oxygen	root

1. Cucumbers are berries with a hard _____ .

2. A parsnip is a vegetable with a large _____ .

3. Plants give off _____ into the air.

4. Bees pollinate flowers by carrying _____ from one flower to another.

5. The Psalmist wrote, "Thou art worthy, O Lord, to receive _____ and honor and power."

6. Trees give us _____ as well as shelter.

From the following list write the letter in each blank that makes the sentence correct (each answer, 4 points).

a. above ground	b. underground	c. flower
d. sugar	e. grow	f. stem
g. minerals	h. chlorophyll	i. leafy

7. We get energy from eating plants which contain _____ .

8. The green coloring matter in plants that they use in making food is called _____ .

9. Soil contains _____ which plants use to make food.

10. God has given us everything we need to _____ .

11. The white potato is a swollen stem which grows _____ .

12. The flower of a plant is attached to the _____ .

13. The stem of a plant contains the future _____ .

14. Cabbage is a _____ vegetable.

15. Bean seeds and pea seeds grow _____ .

Write *true* or *false* (each answer, 3 points).

16. _____ The pioneers in America used corn for food.

17. _____ Spinach and cabbage are South American fruits.

18. _____ Each pistil of a flower is made up of three parts.

19. _____ The style of a flower is part of the pollen.

20. _____ Carbon dioxide is a gas.

21. _____ The celery stalk, which is eaten, grows underground.

22. _____ Herbs are plants whose stems and leaves are used in cooking.

23. _____ Apples and pears are fruit.

24. _____ A petal is a part of a flower.

25. _____ A melon is a fleshy fruit with a hard rind and many seeds.

Answer this question (each answer, 5 points).

26. Name two enemies of forests.

a. _____ b. _____