



SCIENCE

TEACHER'S GUIDE

▶ **7th Grade**

SCIENCE 700

Teacher's Guide

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LIFEPAC[®]

Management

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, at the beginning of the LIFEPAC in the middle grades, 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 II. 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 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.

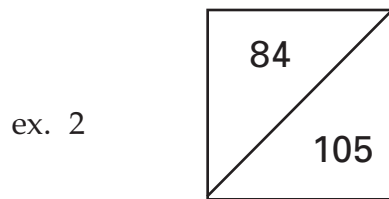
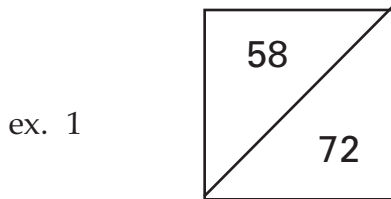
Answer and test keys have the same numbering system as the LIFEPACs and appear at the back of this handbook. The student may be given access to the answer keys (not the test keys) under teacher supervision so that he can score his own work.

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.

TEST SCORING and GRADING

Answer keys and test keys give examples of correct answers. They convey the idea, but the student may use many ways to express a correct answer. The teacher should check for the essence of the answer, not for the exact wording. Many questions are high level and require thinking and creativity on the part of the student. Each answer should be scored based on whether or not the main idea written by the student matches the model example. "Any Order" or "Either Order" in a key indicates that no particular order is necessary to be correct.

Most self tests and LIFEPAC tests at the lower elementary levels are scored at 1 point per answers; however, the upper levels may have a point system awarding 2 to 5 points for various answers or questions. Further, the total test points will vary; they may not always equal 100 points. They may be 78, 85, 100, 105, etc.



A score box similar to ex.1 above is located at the end of each self test and on the front of the LIFEPAC test. The bottom score, 72, represents the total number of points possible on the test. The upper score, 58, represents the number of points your student will need to receive an 80% or passing grade. If you wish to establish the exact percentage that your student has achieved, find the total points of his correct answers and divide it by the bottom number (in this case 72.) For example, if your student has a point total of 65, divide 65 by 72 for a grade of 90%. Referring to ex. 2, on a test with a total of 105 possible points, the student would have to receive a minimum of 84 correct points for an 80% or passing grade. If your student has received 93 points, simply divide the 93 by 105 for a percentage grade of 89%. Students who receive a score below 80% should review the LIFEPAC and retest using the appropriate Alternate Test found in the Teacher's Guide.

The following is a guideline to assign letter grades for completed LIFEPACs based on a maximum total score of 100 points.

- LIFEPAC Test = 60% of the Total Score (or percent grade)
- Self Test = 25% of the Total Score (average percent of self tests)
- Reports = 10% or 10* points per LIFEPAC
- Oral Work = 5% or 5* points per LIFEPAC

*Determined by the teacher's subjective evaluation of the student's daily work.

Example:

LIFEPAC Test Score = 92% 92 x .60 = 55 points

Self Test Average = 90% 90 x .25 = 23 points

Reports = 8 points

Oral Work = 4 points

TOTAL POINTS = 90 points

Grade Scale based on point system: 100 – 94 = A

93 – 86 = B

85 – 77 = C

76 – 70 = D

Below 70 = F

TEACHER HINTS and STUDYING TECHNIQUES

LIFEPAC Activities are written to check the level of understanding of the preceding text. The student may look back to the text as necessary to complete these activities; however, a student should never attempt to do the activities without reading (studying) the text first. Self tests and LIFEPAC tests are never open book tests.

Language arts activities (skill integration) often appear within other subject curriculum. The purpose is to give the student an opportunity to test his skill mastery outside of the context in which it was presented.

Writing complete answers (paragraphs) to some questions is an integral part of the LIFEPAC Curriculum in all subjects. This builds communication and organization skills, increases understanding and retention of ideas, and helps enforce good penmanship. Complete sentences should be encouraged for this type of activity. Obviously, single words or phrases do not meet the intent of the activity, since multiple lines are given for the response.

Review is essential to student success. Time invested in review where review is suggested will be time saved in correcting errors later. Self tests, unlike the section activities, are closed book. This procedure helps to identify weaknesses before they become too great to overcome. Certain objectives from self tests are cumulative and test previous sections; therefore, good preparation for a self test must include all material studied up to that testing point.

The following procedure checklist has been found to be successful in developing good study habits in the LIFEPAC curriculum.

1. Read the introduction and Table of Contents.
2. Read the objectives.
3. Recite and study the entire vocabulary (glossary) list.
4. Study each section as follows:
 - a. Read the introduction and study the section objectives.
 - b. Read all the text for the entire section, but answer none of the activities.
 - c. Return to the beginning of the section and memorize each vocabulary word and definition.
 - d. Reread the section, complete the activities, check the answers with the answer key, correct all errors, and have the teacher check.
 - e. Read the self test but do not answer the questions.
 - f. Go to the beginning of the first section and reread the text and answers to the activities up to the self test you have not yet done.
 - g. Answer the questions to the self test without looking back.
 - h. Have the self test checked by the teacher.
 - i. Correct the self test and have the teacher check the corrections.
 - j. Repeat steps a–i for each section.

5. Use the SQ3R* method to prepare for the LIFEPAC test.
6. Take the LIFEPAC test as a closed book test.
7. LIFEPAC tests are administered and scored under direct teacher supervision. Students who receive scores below 80% should review the LIFEPAC using the SQ3R* study method and take the Alternate Test located in the Teacher Handbook. The final test grade may be the grade on the Alternate Test or an average of the grades from the original LIFEPAC test and the Alternate Test.

*SQ3R: Scan the whole LIFEPAC.
Question yourself on the objectives.
Read the whole LIFEPAC again.
Recite through an oral examination.
Review weak areas.

GOAL SETTING and SCHEDULES

Each school must develop its own schedule, because no single set of procedures will fit every situation. The following is an example of a daily schedule that includes the five LIFEPAC subjects as well as time slotted for special activities.

Possible Daily Schedule

8:15	–	8:25	Pledges, prayer, songs, devotions, etc.
8:25	–	9:10	Bible
9:10	–	9:55	Language Arts
9:55	–	10:15	Recess (juice break)
10:15	–	11:00	Mathematics
11:00	–	11:45	Social Studies
11:45	–	12:30	Lunch, recess, quiet time
12:30	–	1:15	Science
1:15	–		Drill, remedial work, enrichment*

*Enrichment: Computer time, physical education, field trips, fun reading, games and puzzles, family business, hobbies, resource persons, guests, crafts, creative work, electives, music appreciation, projects.

Basically, two factors need to be considered when assigning work to a student in the LIFEPAC curriculum.

The first is time. An average of 45 minutes should be devoted to each subject, each day. Remember, this is only an average. Because of extenuating circumstances a student may spend only 15 minutes on a subject one day and the next day spend 90 minutes on the same subject.

The second factor is the number of pages to be worked in each subject. A single LIFEPAC is designed to take 3 to 4 weeks to complete. Allowing about 3-4 days for LIFEPAC introduction, review, and tests, the student has approximately 15 days to complete the LIFEPAC pages. Simply take the number of pages in the LIFEPAC, divide it by 15 and you will have the number of pages that must be completed on a daily basis to keep the student on schedule. For example, a LIFEPAC containing 45 pages will require 3 completed pages per day. Again, this is only an average. While working a 45 page LIFEPAC, the student may complete only 1 page the first day if the text has a lot of activities or reports, but go on to complete 5 pages the next day.

Long range planning requires some organization. Because the traditional school year originates in the early fall of one year and continues to late spring of the following year, a calendar should be devised that covers this period of time. Approximate beginning and completion dates can be noted on the calendar as well as special occasions such as holidays, vacations and birthdays. Since each LIFEPAC takes 3-4 weeks or eighteen days to complete, it should take about 180 school days to finish a set of ten LIFEPACs. Starting at the beginning school date, mark off eighteen school days on the calendar and that will become the targeted completion date for the first LIFEPAC. Continue marking the calendar until you have established dates for the remaining nine LIFEPACs making adjustments for previously noted holidays and vacations. If all five subjects are being used, the ten established target dates should be the same for the LIFEPACs in each subject.

FORMS

The sample weekly lesson plan and student grading sheet forms are included in this section as teacher support materials and may be duplicated at the convenience of the teacher.

The student grading sheet is provided for those who desire to follow the suggested guidelines for assignment of letter grades found on page 3 of this section. The student's self test scores should be posted as percentage grades. When the LIFEPAC is completed the teacher should average the self test grades, multiply the average by .25 and post the points in the box marked self test points. The LIFEPAC percentage grade should be multiplied by .60 and posted. Next, the teacher should award and post points for written reports and oral work. A report may be any type of written work assigned to the student whether it is a LIFEPAC or additional learning activity. Oral work includes the student's ability to respond orally to questions which may or may not be related to LIFEPAC activities or any type of oral report assigned by the teacher. The points may then be totaled and a final grade entered along with the date that the LIFEPAC was completed.

The Student Record Book which was specifically designed for use with the Alpha Omega curriculum provides space to record weekly progress for one student over a nine week period as well as a place to post self test and LIFEPAC scores. The Student Record Books are available through the current Alpha Omega catalog; however, unlike the enclosed forms these books are not for duplication and should be purchased in sets of four to cover a full academic year.

WEEKLY LESSON PLANNER

Week of:

Subject	Subject	Subject	Subject
Monday			
Subject	Subject	Subject	Subject
Tuesday			
Subject	Subject	Subject	Subject
Wednesday			
Subject	Subject	Subject	Subject
Thursday			
Subject	Subject	Subject	Subject
Friday			

WEEKLY LESSON PLANNER

Week of:

Subject	Subject	Subject	Subject
Monday			
Subject	Subject	Subject	Subject
Tuesday			
Subject	Subject	Subject	Subject
Wednesday			
Subject	Subject	Subject	Subject
Thursday			
Subject	Subject	Subject	Subject
Friday			

Student Name _____

Year _____

Bible

LP #	Self Test Scores by Sections					Self Test Points	LIFEPAC Test	Oral Points	Report Points	Final Grade	Date
	1	2	3	4	5						
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

History & Geography

LP #	Self Test Scores by Sections					Self Test Points	LIFEPAC Test	Oral Points	Report Points	Final Grade	Date
	1	2	3	4	5						
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

Language Arts

LP #	Self Test Scores by Sections					Self Test Points	LIFEPAC Test	Oral Points	Report Points	Final Grade	Date
	1	2	3	4	5						
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

Student Name _____

Year _____

Mathematics

LP #	Self Test Scores by Sections					Self Test Points	LIFEPAC Test	Oral Points	Report Points	Final Grade	Date
	1	2	3	4	5						
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

Science

LP #	Self Test Scores by Sections					Self Test Points	LIFEPAC Test	Oral Points	Report Points	Final Grade	Date
	1	2	3	4	5						
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

Spelling/Electives

LP #	Self Test Scores by Sections					Self Test Points	LIFEPAC Test	Oral Points	Report Points	Final Grade	Date
	1	2	3	4	5						
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

Teacher Notes

INSTRUCTIONS FOR SCIENCE

The LIFEPAC curriculum from grades two through twelve is structured so that the daily instructional material is written directly into the LIFEPACs. The student is encouraged to read and follow this instructional material in order to develop independent study habits. The teacher should introduce the LIFEPAC to the student, set a required completion schedule, complete teacher checks, be available for questions regarding both content and procedures, administer and grade tests, and develop additional learning activities as desired. Teachers working with several students may schedule their time so that students are assigned to a quiet work activity when it is necessary to spend instructional time with one particular student.

The Teacher Notes section of the Teacher's Guide lists the required or suggested materials for the LIFEPACs and provides additional learning activities for the students. The materials section refers only to LIFEPAC materials and does not include materials which may be needed for the additional activities. Additional learning activities provide a change from the daily school routine, encourage the student's interest in learning and may be used as a reward for good study habits.

If you have limited facilities and are not able to perform all the experiments contained in the LIFEPAC curriculum, the Science Project List may be a useful tool for you. This list prioritizes experiments into three categories: those essential to perform, those which should be performed as time and facilities permit, and those not essential for mastery of LIFEPACs. Of course, for complete understanding of concepts and student participation in the curriculum, all experiments should be performed whenever practical. Materials for the experiments are shown in Teacher Notes – Materials Needed.

A suggested support item for this course is the 7th Grade Science Experiments video, SD0701. The video includes presentations of many of the experiments in this course. Several of the experiments that require special equipment or materials are demonstrated on these videos. They can either be used for answering the questions of the lab report or as a demonstration of the procedure prior to performing the experiment. A notice is included with each experiment in the LIFEPAC where the video is available.

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 LIFEPAACs.

S = Equipment needed for home school or Christian school lab.

E = Explanation or demonstration by instructor may replace student or class lab work.

H = Suitable for homework or for home school students. (No lab equipment needed.)

V = This experiment is available on the Science Experiments video.

Science 701

pp 13 (1) H
27 (2) S

Science 702

pp 20 (1) S & V
24 (1) S & V

Science 703

pp 10 (1) H & V
18 (2) S or H
18 (1) S
24 (2) E & V
40 (1) S & V
41 (2) S
45 (2) S & V
52 (1) S & V

Science 704

pp 31 (1) S
40 (2) H
42 (1) S
55 (1) S

Science 705

pp 15 (1) S & V
27 (2) H

Science 706

pp 9 (1) H
21 (1) S & V

Science 707

None

Science 708

pp 7 (1) S & V
33 (1) H
37 (2) H & V
39 (1) H & V

Science 709

pp 11 (1) S & V
18 (1) H
20 (1) H
33 (2) H

Science 710

pp 8 (1) H & V

Materials Need for LIFEPAK

Required:
None

Suggested:
box containing a variety of objects for students to classify--For example:
a nail, a piece of wood, a tin can, a seed,
a piece of cloth, a sponge,
a comb, a stone, a pencil, a plastic bag,
a book of matches, and so on
a book or other resource with information about George Washington Carver

Additional Learning Activities

Section I Tools of a Scientist

1. Arrange ten objects on a tray. Show the tray to a group of friends for fifteen seconds and cover the tray. Ask your friends to list as many of the objects as they can remember.
2. Gather leaves from ten different plants. List as many similarities and differences as possible. Name ways to classify your leaves.

Section II Methods of a Scientist

1. Show the student(s) a magazine picture and ask the students to write as many questions as they can about the picture.
2. With a friend use the scientific method to solve a problem.
3. Write a skit involving a problem. Solve the problem with the scientific method. Present the skit to the rest of the class.
4. Make a poster illustrating the scientific method.
5. Write a one-page report on the importance of curiosity to a scientist.

Section III Work of a Scientist

1. Discuss the ways scientists have improved the quality of life. Topics might include: curing disease, predicting earthquakes and volcanic eruptions, developing varieties of plants that produce higher yields, forecasting the weather, and so on.
2. Make a bulletin board of famous scientists and their contributions.
3. Select one famous Christian scientist and write a one-page report about him. You may use an encyclopedia or other library books for this assignment.

Section IV Careers in Science

1. Discuss with the students the difference between a technician and an engineer (Training differences can be seen in a university catalog or a junior college catalog.)
2. Read a brief biography of a scientist in an encyclopedia. With friends act out an important event in the life of that scientist.
3. Look in pamphlets like those from the federal or state governments, colleges, or Metropolitan Life Insurance Co. Select one field of science and read about different occupations within that field.
4. Make a poster using the information given in Section IV to illustrate the need for scientists.

Alternate Tests

Reproducible Tests
for use with the Science 700
Teacher's Guide

Name _____

Answer *true* or *false* (each answer, 1 point).

1. _____ Observation involves a careful examination of things around us.
2. _____ The inductive method is a process of beginning with many particulars and proceeding to a generalization.
3. _____ Living things depend on other living things.
4. _____ Chemists tell us how things work, e.g. how a camera works.
5. _____ Philosophers are concerned about how man's mind works.
6. _____ Classification tells us the length and weight of something.
7. _____ Psychologists study human and animal behavior.
8. _____ Anthropologists study man's culture.
9. _____ Geology is a biological science.
10. _____ An experiment is a trial or test to discover something unknown.

Complete these statements (each answer, 3 points).

11. When making observations, man has _____ that he uses.
12. An inference is a _____.
13. When a scientist makes a reasonable guess about the answer to a problem, he makes a _____.
14. The sciences that are concerned with the nature of the universe are called _____.
15. The biological sciences are concerned with the study of _____.
16. The process of orderly observation and thinking is _____.
17. The study of the relationships of living things to each other and their environment is called _____.
18. The branch of biology concerned with plant life is _____.
19. The work of _____ was to change agriculture in the south.

Match these items (each answer, 2 points).

- | | |
|---------------------------------|--|
| 20. _____ classification | a. found no gain or loss in chemical reactions |
| 21. _____ data | b. information |
| 22. _____ measurement | c. studied water with microscope |
| 23. _____ questions | d. Law of Gravitation |
| 24. _____ Antoine Lavoisier | e. determining length, weight, and volume |
| 25. _____ Isaac Newton | f. system of classification |
| 26. _____ Albert Einstein | g. systematic arrangement |
| 27. _____ Anton van Leeuwenhoek | h. wondering about phenomena |
| 28. _____ Galileo | i. solar system and telescope |
| 29. _____ Carolus Linnaeus | j. Law of Relativity |

Science 701 Alternate Test

Write 1 before each physical science, write 2 before each biological science, and write 3 before each social science (each answer, 2 points).

- 30. a. _____ anthropology g. _____ geology
- b. _____ astronomy h. _____ meteorology
- c. _____ botany i. _____ paleontology
- d. _____ chemistry j. _____ physics
- e. _____ ecology k. _____ sociology
- f. _____ geography l. _____ zoology

Circle the correct answer (each answer, 2 points).

- 31. All human hands have a thumb. Bill is a human child. Therefore, Bill has a thumb. This example illustrates (inductive, deductive) reasoning.
- 32. Ann lives in Greenville. Everyone who lives in Greenville has a garden. Therefore, Ann has a garden. This example illustrates (inductive, deductive) reasoning.

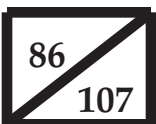
Write the definitions (each answer, 5 points).

- 33. a. Classification _____

- b. Theory _____

Complete these activities (each answer, 2 points).

- 34. List three ways in which a horse and a dog are alike.
 - a. _____
 - b. _____
 - c. _____
- 35. List three ways in which a horse and a dog are different.
 - a. _____
 - b. _____
 - c. _____



Date _____
Score _____

Answer Keys

SECTION ONE

- Answers may vary slightly depending on the resources that are used.
- | | |
|---|--|
| <p>1.1 Fahrenheit was a German physicist who developed the Fahrenheit temperature scale. He made the measurement of temperature more accurate by developing a mercury thermometer.</p> <p>1.2 Galileo is called the Father of Experimental Science. He discovered the law of the pendulum. He made the first practical use of the telescope in astronomy. He built larger and better telescopes.</p> <p>1.3 Otto von Guericke proved that a vacuum could exist. Creating a vacuum was foundational for research into electronics and other related new scientific fields.</p> <p>1.4 Robert Hooke constructed the first reflecting telescope.</p> <p>1.5 Johannes Kepler was a German astronomer who discovered the three laws of planetary motion. He discovered a better combination of lenses for a telescope.</p> <p>1.6 Anton van Leeuwenhoek was a Dutch scientist who revealed the world of microscopic life through his observations and drawings. He developed a precise grinding process to make high quality lenses.</p> <p>1.7 Torricelli was an Italian physicist who discovered the principle of the barometer. He invented the mercurial barometer. A barometer is used to measure air pressure.</p> <p>1.8 Hint:
Discuss the tree's color, height, location, leaf shape and color and taste, bark texture, condition of crumbliness (friability). Discuss the form, color, taste of seeds; attributes of fruits (if present);</p> | <p>1.9 animal population; parasites (dead or alive). Tell whether the tree is denuded. Observations will vary.</p> <p>1.10 Observations will vary.</p> <p>1.11 Hint:
Write about the taste and smell of pine needles. Write about the taste and texture of the tree's fruit. Write about the sound and feel of a breaking twig.</p> <p>1.12 Examples:
How old is the tree?
How many rings does the tree have?
Are there any birds' nests in the tree?
Is the tree climbable?</p> <p>1.13 Questions will vary.</p> <p>1.14 observation</p> <p>1.15 Any order:
a. seeing
b. hearing
c. smelling
d. tasting
e. feeling</p> <p>1.16 instruments</p> <p>1.17 Any order:
a. collect accurate data
b. recognize evidence or to think
c. make comparisons</p> <p>1.18 Either order:
a. observation
b. thinking</p> <p>1.19 meter</p> <p>1.20 gram</p> <p>1.21 liter</p> <p>1.22 one-millionth</p> <p>1.23 one-thousandth</p> |
|---|--|

Science 701 Answer Key

- 1.24 one-hundredth
1.25 one thousand
1.26 An angstrom is one hundred millionth of a centimeter.
1.27 A light year is the distance light travels in a year: almost 6,000,000,000,000 miles or 9,654,000,000,000 meters.
1.28 A micron is one-millionth of a meter.
1.29 Classifications of objects can be made according to color, shape, size, or use of material. Objects belong to the mineral kingdom, the vegetable kingdom, or the animal kingdom.
1.30 Any order:
a. mineral
b. plant or vegetable
c. animal
1.31 a. grow
b. grow and live
c. grow, live, and have feeling
1.32 Similarities Differences
Examples: Examples:
a. animal coloring
b. lives in Africa sound each makes
c. warm-blooded food each eats
1.33 Classifications will vary.
1.34 Observation will vary: however, observations will describe the differences between a paper clip and a ruler.
1.35 Answers will vary.
1.36 Answers will vary.
1.37 Answers will vary.
1.38 a. observation or question or data or experiments
b. generalization or conclusion
1.39 conservation of matter
1.40 The deductive method of reasoning starts with a general principle that is accepted as true, applies it to a particular case, and arrives at a conclusion. This means the reasoning proceeds from the general to the specific.
1.41 The inductive method of reasoning is one in which one collects many particular cases, finds out what is common, and forms a general rule that is taken to be true. This has the reasoning proceeding from the specific to the general.
1.42 deductive
1.43 deductive
1.44 inductive
1.45 deductive
1.46 inductive
1.47 balance
1.48 Either order:
a. gains
b. loses
1.49 conservation of matter
1.50 inductive
1.51 inductive
1.52 deductive
1.53 Example:
All Christians love God.
Mary is a Christian.
Therefore, Mary loves God.
1.54 Example:
Mary, Joe, Bill, Jan, and Jim are Christians.
Mary, Joe, Bill, Jan, and Jim love God.
Therefore, all Christians love God.

SECTION TWO

- | | |
|--|---|
| <p>2.1 25 years old at least</p> <p>2.2 The tree rings vary in width due to climate, availability of rainfall, and average temperature.</p> <p>2.3 The tree rings grew unevenly because of the orientation of the tree and distribution of light in the forest.</p> <p>2.4 The burn occurred years ago and bark grew over the burn</p> <p>2.5 Questions will vary.</p> <p>2.6 Questions will vary.</p> <p>2.7 Hypotheses will vary, but they must be relevant and reasonable.</p> <p>2.8 Hypotheses will vary, but they must be relevant and reasonable.</p> <p>2.9 Hypotheses will vary, but they must be relevant and reasonable.</p> <p>2.10 Hypotheses will vary, but they must be relevant and reasonable.</p> <p>2.11 Hypotheses will vary, but they must be relevant and reasonable.</p> <p>2.12 Hypotheses will vary, but they must be relevant and reasonable</p> <p>2.13 a. conclusion
b. information</p> <p>2.14 Answers will vary.</p> <p>2.15 Solutions will vary.</p> <p>2.16 <input checked="" type="checkbox"/> Drop a ten-pound piece of rubber and a five-pound piece of rubber from 100 feet. Time the fall of each object.</p> | <p>2.17 candle or some other simple flame. something to smother it, matches, flame (candle) holder</p> <p>2.18 Plans will vary, but you will need a plan which will cut off the oxygen supply.</p> <p>2.19 This is the step-by-step procedure. Example:
1. Place pad on table
2. Put candle (in holder) on pad
3. Light candle
4. Place jar over candle
5. Record observations</p> <p>2.20 true</p> <p>2.21 true</p> <p>2.22 false</p> <p>2.23 false</p> <p>2.24 increases</p> <p>2.25 The clam died.</p> <p>2.26 January</p> <p>2.27 fall</p> <p>2.28 b. 8 in.</p> <p>2.29 Both lightning and thunder are caused by the same force; or lightning causes thunder.</p> <p>2.30 Fires need oxygen</p> <p>2.31 Altitude affects boiling point.</p> <p>2.32 a. State the problem.
b. Form hypothesis.
c. Investigate or experiment.
d. Interpret data or observation.
e. Form conclusion.</p> |
|--|---|

SECTION THREE

- 3.1 a. Greek *astron* = star + *nemein* = dictate the laws of
b. Latin Greek (al) *chemy* = art of alloying metals; *-ist* = a person who does or makes; *-iry* = occupation or result
c. Greek *ge* = earth; *logos* = word, study
d. Latin Greek *physis* = nature
- 3.2 a. Greek *bios* = life; *logos* = word or study
b. Greek *botanikos* or *botane* = plant
c. Greek *oikos* = dwelling; *logos* = word or study
d. Greek *paleo* or *palaaios* = ancient; *ontos*, a being; *logos* = word or study
e. Greek *zoion* = animal; *logos* = word or study
- 3.3 a. Greek *anthropos* = man; *logos* = word, study
b. Greek *oikos* = house; *nemein* = manage or arrange
c. Greek *ge* = earth; *graphein* = write about
d. Greek *philo* = love; *sophos* = wisdom
e. Greek *psyche* = soul, mind; *logos* = word, study
f. Latin and Greek *socius* = companion; *logos* = word, study
- 3.4 a. Greek *logos* = word or study
b. Greek *mathema* or *manthanein* = science, to learn; *techne* = art, method, system
- 3.5-3.6 teacher check
- 3.7-3.10 Any order:
- 3.7 Astronomy is the study of space.
- 3.8 Physics is the study of matter and energy.
- 3.9 Chemistry is the study of substances.
- 3.10 Geology is the study of the earth's crust, its layers and their history.
- 3.11-3.14 Any order:
- 3.11 Zoology is the science that deals with animals and animal life.
- 3.12 Botany is the science that deals with plants and plant life.
- 3.13 Paleontology is a science of the forms of life existing in pre historic time (or time before recorded history) as represented by fossil animals and plants.
- 3.14 Ecology is a science that studies the effect of the environment upon animals and plants.
- 3.15-3.20 Any order:
- 3.15 Sociology is the study of the nature, origin, and development of human society and community life.
- 3.16 Psychology is the science of the study of the mind.
- 3.17 Anthropology is the science of man dealing with his physical characteristics, the development of races, and the cultures, customs, and beliefs of mankind.
- 3.18 Economics is the science of production, distribution, and consumption of goods and services.
- 3.19 Philosophy is the study of the truth or principles underlying all real knowledge.
- 3.20 Geography is a study of the earth's surface, climate, continents, countries, peoples, industries, and products.
- 3.21-3.22 Any order:
- 3.21 Mathematics is the process of
- 3.22 Logic is the process of thinking.

SECTION FOUR

- 4.1 Either order:
a. A theoretical scientist uses his mind to understand scientific principles.
b. An experimental scientist proves or disproves theories through testing.
- 4.2 Engineers are called *applied scientists* because engineers apply the principles of science to the needs of mankind.
- 4.3 A technician assists engineers and scientists in operating equipment and collecting data.
- 4.4 Either order:
a. The teacher directs the learning process.
b. The teacher interprets complex, unfamiliar ideas and translates them into understandable language.
- 4.5 Any order:
a. teaching
b. government
c. private industry, medicine, dentistry, etc.
- 4.6 Job descriptions will vary
- 4.7 Graph
- 4.8 Graph

Self Test Keys

SELF TEST 1

- 1.01 b
1.02 g

1.03 e
1.04 a
1.05 c
1.06 f

1.07 Any order:
a. sight
b. hearing
c. taste
d. smell
e. feel (touch)
1.08 a
1.09 d
1.010 b
1.011 c
1.012 a
1.013 a
1.014 d

1.015 Any order:
a. lion
b. horse
c. (canary) elephant
d. lizard
e. (eagle) mouse
f. giraffe
g. rattlesnake
1.016 Any order:
a. canary
b. rattlesnake
c. alligator
d. elephant
1.017 a
1.018 b
1.019 b. Some football players are good students.
1.020 a. All mothers see their babies as beautiful.
1.021 Hint:
Through careful observation man can learn much about many things. Write of some of the useful things man learns through observing.

SELF TEST 2

- 2.01 a. Stating the problem
b. Forming the hypothesis
c. Devising an experiment
d. Interpreting data or observation
e. Drawing conclusion

2.02 Examples:
a. History of the area gathered from newspapers
b. Colleagues or other knowledgeable people
c. Professional publications
2.03 evening
2.04 calm

2.05 flat
2.06 No
2.07 white; From the North Pole, all directions are south; and polar bears live near the North Pole.
2.08 a. inquisitiveness
2.09 b. is about 150 words a minute
2.010 b. moisture and dust are important for rain

SELF TEST 3

3.01-3.04 Any order

3.01 astronomy

3.02 geology

3.03 chemistry

3.04 physics

3.05-3.08 Any order

3.05 botany

3.06 ecology

3.07 zoology

3.08 paleontology

3.09-3.014 Any order

3.09 geography

3.010 psychology

3.011 economics

3.012 philosophy

3.013 anthropology

3.014 sociology

3.015 i

3.016 a

3.017 c

3.018 b

3.019 f

3.020 j

3.021 k

3.022 n

3.023 g

3.024 l

3.025 m

3.026 h

3.027 d

3.028 e

3.029 Hint; ideas to be included:

- a. Childhood – poor, slave, during Civil War, freed, frail, observed plants
- b. Education – hardship, poor, eager, worked his way, Master’s degree
- c. Occupation – teacher, researcher, scientist of plants, greenhouse-keeper, laundryman
- d. Experiments – peanut, sweet potato, a variety of products (list three), 300 or 400 products
- e. Reliance on God – learned prayer early and prayed daily, learned from God the potential in plants, gave honor to God

3.030 ACROSS

5. environment

7. atom

8. culture

9. energy

10. weather

DOWN

1. valid

2. elements

3. molecule

4. atmosphere

5. earthquake

6. gravity

SELF TEST 4

4.01 e

4.02 c

4.03 b

4.04 g

4.05 d

4.06 a

4.07 i

4.08 f

4.09 j

4.010 l

- 4.011 k
- 4.012 theoretical
- 4.013 experimental
- 4.014 applied
- 4.015 chemists
- 4.016 Examples:
1. All scientists are engaged in making scientific observations.
 2. They have a definite question in mind and are looking for specific information to answer that question.
 3. They have a passionate devotion to investigation and discovery.
- 4.017 The things man invents should help him have a better life rather than hurting him (example: gunpowder used in war is harmful).
- 4.018
- A. Stating the problem
 - B. Forming a hypothesis
 - C. Searching for information
 - D. Interpreting data
 - E. Drawing conclusions
- 4.019
- A. Any order:
 1. Astronomy
 2. Chemistry
 3. Geology
 4. Physics
 - B. Any order:
 1. Botany
 2. Ecology
 3. Zoology
 - C. Any order:
 1. Anthropology
 2. Economics
 3. Geography
 4. Psychology
 5. Sociology
 - D.
 1. Process of counting
 2. Process of thinking
- 4.020
- A.
 1. a. Theoretical
 - b. Experimental
 2. Engineer
 3. Technician
 4. Teacher
- B.
 1. a. Teaching
 - b. Government agencies
 - c. Industrial research
 2.
 - a. Medicine
 - b. Dentistry

Test Keys

**Science 701
LIFEPAC Test**

1. false
2. true
3. false
4. true
5. false
6. false
7. true
8. true
9. false
10. false
11. Any order:
 - a. taste
 - b. touch
 - c. sight
 - d. smell
 - e. hearing
12. instruments
13. hypothesis
14. data
15. Either order
 - a. peanuts
 - b. sweet potatoes
16. Physical
17. Social
18. Biological
19. Mathematics
20. f
21. h
22. b
23. k
24. d
25. j
26. a
27. i
28. c
29. g
30.
 - a. 2
 - b. 3
 - c. 1
 - d. 3
 - e. 2
 - f. 3
 - g. 3
 - h. 1
 - i. 1
 - j. 2
 - k. 2
 - l. 1
31. deductive
32. inductive
33.
 - a. Ecology is the study of relationship of plants and animals to their environment
 - b. Science is systematically organized knowledge.
Examples:
34. fur, small
35. four legs
36. pets, ears, mammals
Examples:
37. offspring
38. trainability
39. sounds

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