



SCIENCE

TEACHER'S GUIDE

► **10th Grade**

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SCIENCE 1000

Teacher's Guide

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STRUCTURE OF THE LIFEPAAC CURRICULUM

The LIFEPAAC 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 work-text format of the LIFEPAACs allows the student to read the textual information and complete workbook activities all in the same booklet. The easy to follow LIFEPAAC 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 LIFEPAAC at the 6th grade level, 5th book in the series would be LAN0605.

Each LIFEPAAC 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 LIFEPAAC. 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 LIFEPAAC 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 LIFEPAAC. The student should learn all vocabulary words before working the LIFEPAAC 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 LIFEPAAC 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 LIFEPAAC. 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 LIFEPAAC section, the zero indicates that it is a self test question, and the number to the right of the zero the question number.

The LIFEPAAC test is packaged at the centerfold of each LIFEPAAC. 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 LIFEPAACs 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 LIFEPAAC 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 answer; 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.

Example 1

58 72	SCORE _____ TEACHER _____ initials _____ date _____
-----------------------------	---

Example 2

84 105	SCORE _____ TEACHER _____ initials _____ date _____
------------------------------	---

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 LIFEPAACs based on a maximum total score of 100 points.

Example:

LIFEPAAC 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 LIFEPAAC
Oral Work	=	5% or 5* points per LIFEPAAC

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

Example:

LIFEPAAC Test Score	=	92%	$92 \times .60 = 55$ points
Self Test Average	=	90%	$90 \times .25 = 23$ 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.

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

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 LIFE-PAC 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	Math
11:00	-	11:45	History & Geography
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 LIFE-PAC 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 LIFE-PAC is designed to take 3 to 4 weeks to complete. Allowing about 3-4 days for LIFE-PAC introduction, review, and tests, the student has approximately 15 days to complete the LIFE-PAC pages. Simply take the number of pages in the LIFE-PAC, 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 LIFE-PAC containing 45 pages will require 3 completed pages per day. Again, this is only an average. While working a 45 page LIFE-PAC, 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 LIFE-PAC takes 3-4 weeks or eighteen days to complete, it should take about 180 school days to finish a set of ten LIFE-PACs. 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 LIFE-PAC. Continue marking the calendar until you have established dates for the remaining nine LIFE-PACs 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 LIFE-PACs in each subject.

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 1001

pp 28 (1) H

Science 1002

pp 15 (2) S & V
20 (1) S & V
21 (2) S & V
24 (1) H & V
29 (1) S & V
32 (1) H & V
36 (2) S
42 (1) H & V
47 (1) H & V
57 (1) S & V

Science 1003

pp 12 (1) S
17 (1) S & V
26 (1) S
31 (1) S & V
32 (1) S
41 (1) S
50 (1) S & V
78 (2) H

Science 1004

pp 9 (1) S
11 (1) S
22 (2) H
23 (3) H or E & V
23 (2) S & V
43 (1) S

Science 1005

pp 28 (1) H & V

Science 1006

pp 19 (2) H
34 (1) S & V

Science 1007

pp 12 (1) H
47 (1) H

Science 1008

pp 13 (1) S & V
24 (2) H & V
28 (1) H
29 (2) H
33 (1) H
44 (1) S & V
53 (1) S & V
66 (1) S & V
72 (2) S & V
77 (2) S & V

Science 1009

pp 32 (1) H & S
33 (1) H
37-38 (1) H

Science 1010

none

TEACHING SUPPLEMENTS

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 as previously discussed. The student's self test scores should be posted as percentage grades. When the LIFEPAAC 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 LIFEPAAC 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 LIFEPAAC or additional

learning activity. Oral work includes the student's ability to respond orally to questions which may or may not be related to LIFEPAAC 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 LIFEPAAC 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 LIFEPAAC 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:

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

WEEKLY LESSON PLANNER				
Week of:				
Monday	Subject	Subject	Subject	Subject
Tuesday	Subject	Subject	Subject	Subject
Wednesday	Subject	Subject	Subject	Subject
Thursday	Subject	Subject	Subject	Subject
Friday	Subject	Subject	Subject	Subject

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	LIFEPAAC 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	LIFEPAAC 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	LIFEPAAC Test	Oral Points	Report Points	Final Grade	Date
	1	2	3	4	5						
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											

INSTRUCTIONS FOR SCIENCE

The LIFEPAAC curriculum from grades two through twelve is structured so that the daily instructional material is written directly into the LIFEPAACs. The student is encouraged to read and follow this instructional material in order to develop independent study habits. The teacher should introduce the LIFEPAAC 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 LIFEPAACs and provides additional learning activities for the students. The materials section refers only to LIFEPAAC 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 LIFEPAAC 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 LIFEPAACs. 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 10th Grade Science Experiments video, SD1001. 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 LIFEPAAC where the video is available.

SCIENCE 1001

Unit 1: Taxonomy

TEACHING NOTES

MATERIALS NEEDED FOR LIFE PAC

Required

- dictionary
- encyclopedia or online resources
- assorted fresh fruits
- ten assorted small objects from a hobby or collection
- ten fresh flowers
- dissection kit
- ten photos of animals that inhabit one area of the earth

ADDITIONAL LEARNING ACTIVITIES

Section 1: The History of Taxonomy

1. Try to go for one full day without using any names for any persons or items. Discuss the importance of names and the confusion that would result without them.
2. Write a report about either Aristotle or Linnaeus and his contributions to taxonomy.

Section 2: Binomial Nomenclature

1. Visit an aquarium shop or a greenhouse. Ask the owner in advance to give the students a tour and to tell how scientific names are used in his business.
2. Each person should bring in one plant or leaf that is identified by genus and species. House plants, flowers, trees, and shrubs could all be used. Make a display for the classroom.
3. Find the genus and species of ten organisms including humans and any pets owned by the family. Scientific names are often given in the encyclopedia.

Section 3: Plant and Animal Classification

1. Gather all of the Golden Press Nature Guides that are available from students or the library. Take hikes or gather specimens that can be identified using the guides you have located. Plan a field day and identify as many organisms as possible. Stress ecology; do not destroy any unusual specimens.
2. Collect and press common local flowers. Make attractive note cards with them and give as a gift to a shut-in.
3. Each person should collect and mount twenty common insects. Pool the findings and eliminate duplicates. Make one master. Display and identify as many insects as possible. Label the collection with scientific names, name of collector, and date and site of collection.
4. Write a 500-word report on a sea animal of your choice. Sea urchin, sea cucumbers, jellyfish, and nudibranchs are interesting animals to consider.

Section 4: Taxonomy and Origins

1. Invite a nurse to discuss the testing of donors for organ transplants and why only close relatives are typically the most suitable candidates.
2. Have the students prepare a key for class members that would always work. Explain that color of clothing and hair length are not good choices. Discuss the pros and cons of Social Security numbers as identification.
3. Prepare an attractive poster using pictures from seed catalogues. Choose one plant, such as a rose, iris, squash, or petunia, and show the vast variety of colors and sizes available.

ANSWER KEYS

SECTION 1

- 1.1 classification and organizing
- 1.2 Examples; any order:
 - a. botany
 - b. zoology (paleontology, microbiology)
- 1.3 Adam
- 1.4 Either order:
 - a. taxonomy
 - b. genetics
- 1.5
 - a. similarities
 - b. differences
- 1.6 the Holy Spirit
- 1.7 sort, group, or label anything
- 1.8 It is used in everyday life, to enjoy life around us, to enjoy God's handiwork.
- 1.9 taxonomy is the science that brings order and meaning to the puzzle of diversity
- 1.10 a group of organisms with many similarities (dogs are a kind of living thing)
- 1.11 the genetic principle of parents producing offspring like themselves.
- 1.12 true
- 1.13 false
- 1.14 false
- 1.15 true
- 1.16 true
- 1.17 false
- 1.18 true
- 1.19 true
- 1.20 three groups of plants (herbs, shrubs, trees) and two groups of animals (with and without red blood cells)
- 1.21 noting differences between flowering and nonflowering plants; placing plants into four groups
- 1.22 Aristotle grouped plants; herb, shrub, tree. Theophrastos grouped plants: herb, subshrub, tree, shrub.
- 1.23 drawings not correct myths added/guesses and untested information added
- 1.24 wrote about medical and agricultural uses of plants
- 1.25 firsthand observations
- 1.26
 - a. Carolus Linnaeus
 - b. "Father of Modern Taxonomy."
- 1.27 Either order:
 - a. binomial classification
 - b. extensive classifying of plants according to flower structures
- 1.28 Either order:
 - a. Species Plantarum
 - b. Systema Naturae
- 1.29 stamen number in flowers
- 1.30 Linnaeus's kinds were without variation. Today, we recognize that kinds do display variation. Example: all dogs are of one kind, but show wide variation in size, shape, color, habit.
- 1.31 He developed a system in which anyone could derive the same classification for the same organism. He used the talents God gave him for organizing and for perception with a willingness and delight in his work. God blessed his efforts.
- 1.32 Teacher check

SELF TEST 1

- 1.01 d
- 1.02 f
- 1.03 a
- 1.04 e
- 1.05 c
- 1.06 classification
- 1.07 Examples:
 - a. usefulness
 - b. harmful/food and poisonous
- 1.08 Adam
- 1.09 Aristotle
- 1.010 horsetail
- 1.011 doctrine of signatures
- 1.012 added their own unproven ideas.
- 1.013 Either order:
 - a. reading books or printing books
 - b. exploration/travel/navigation
- 1.014 Linnaeus
- 1.015 Either order:
 - a. similar
 - b. different
- 1.016 false
- 1.017 true
- 1.018 false
- 1.019 false
- 1.020 true
- 1.021 true
- 1.022 e
- 1.023 d
- 1.024 f
- 1.025 c
- 1.026 i
- 1.027 a
- 1.028 k
- 1.029 g
- 1.030 b
- 1.031 j
- 1.032 binomial system, easier classifications, number of stamens per flower
- 1.033 In Rome people were more concerned with power; they copied old ideas over again. Greeks were more original and more concerned with knowledge. (Answers may vary.)
- 1.034 By causing Adam to name the animals (In "classifying" Creation into days)

SECTION 2

- 2.1 b
- 2.2 a
- 2.3 c
- 2.4 International Code of Nomenclature
- 2.5 Examples:
 - a. Names mean different things to different people.
 - b. Foreign names not understood, or: many names for same organism; no common name.
- 2.6 Examples: problems of common names, unfamiliar plants and animals, confusing names, setting rules for naming, different standards of classifying.
- 2.7 *Passer* is generic (genus) noun Latin for *sparrow*; *domesticus* is specific (species) adjective meaning "around the house."
- 2.8 His name is abbreviated and follows name of an organism.
- 2.9
 - a. kingdom
 - b. phylum or division
 - c. class
 - d. order
 - e. family
 - f. genus
 - g. species
- 2.10 They are groups within groups. Smaller groups share many likenesses among themselves but they may share only a few within larger groups.
- 2.11
 - a. Example: honey bee
 - b. Example: *Apis mellifera* and teacher check
- 2.12 The smallest group of the taxa contains very similar organisms (morphology almost the same), can only reproduce with others of the same group (reproductive isolation)
- 2.13
 - a. Example: dogs
 - b. Examples: St. Bernard, Collie, German Shepherd, Cocker Spaniel, Irish Setter, Husky, French Poodle
- 2.14 varieties, races, subspecies
- 2.15 No. Their offspring, the mule, cannot reproduce. Reproductive isolation due to genetic differences.
- 2.16 subjective
- 2.17 Any order:
 - a. complexity of classifying
 - b. limitation of knowledge
 - c. limitations of personal experience
 - d. lack of firsthand information
- 2.18 computers or mathematics or statistics

SELF TEST 2

- 2.01 false
- 2.02 true
- 2.03 true
- 2.04 false
- 2.05 true
- 2.06 a
- 2.07 b
- 2.08 d
- 2.09 b
- 2.010 a
- 2.011 f
- 2.012 g
- 2.013 b
- 2.014 e
- 2.015 c
- 2.016 h
- 2.017 i
- 2.018 a
- 2.019 d
- 2.020 variation or (subspecies, breeds, races and varieties)
- 2.021 Either order:
 - a. different
 - b. similar
- 2.022 a. noun
b. genus
- 2.023 morphology
- 2.024 order
- 2.025 species
- 2.026 reproductive isolation
- 2.027 subjective
- 2.028 a. division
b. phylum
- 2.029 a. kingdom
b. phylum or division
c. class
d. order
e. family
f. genus
g. species
- 2.030 Any two; either order:
 - a. Complexity of classifying, limitations of knowledge
 - b. limitations of personal experience, lack of firsthand information
- 2.031 Their offspring, the mule, cannot reproduce.
- 2.032 Genus name is first. It is capitalized and is a noun. Species name is second, lower case and functions as an adjective. Both are italicized or underlined.

SECTION 3

- 3.1 false
- 3.2 true
- 3.3 false
- 3.4 true
- 3.5 true
- 3.6 Teacher check
- 3.7 Teacher check
- 3.8 Teacher check
- 3.9 life
- 3.10 Any five; any order:
 - a. unicellular or multicellular
 - b. saclike body
 - c. segmented or nonsegmented
 - d. digestive system
 - e. appendages or symmetry, number of legs, exo- or endo-skeleton, teeth patterns
- 3.11 Any order:
 - a. protoplasm and cell(s)
 - b. growth
 - c. reproduction
 - d. response to stimuli
 - e. require food
 - f. removal of waste
 - g. respiration
- 3.12 Any order:
 - a. locomotion
 - b. lack of cell wall in animal cells
 - c. acquiring food
 - d. manner of growth
 - e. speed of reaction to stimuli
- 3.13 Examples:
 - big
 - hairy
 - four-legged
 - spotted
 - long teeth
- 3.14 a. Plantae
b. Anthophyta
c. Monocotyledonae
d. Poales
e. Poaceae
f. *Zea*
g. *mays*
- 3.15 a. Plantae
b. Anthophyta
c. Dicotyledonae
d. Rosales
e. Rosaceae
f. *Malus*
g. *sylvestris*
- 3.16 Teacher check

- 3.17** a. Animalia
b. Chordata
c. Amphibia
d. Anura
e. Ranidae
f. *Rana*
g. *pipiens* or *Rana pipiens*
- 3.18** a. Animalia
b. Chordata
c. Mammalia
d. Carnivora
e. Felidae
f. *Felis*
g. *leo*
- 3.19** Teacher check
- 3.20** a. two (2)
b. six (6)
- 3.21** Example:
clear, consistent, not too complicated
- 3.22** Ginkophyta
- 3.23** Anthophyta
- 3.24** 260,000
- 3.25** Chordata
- 3.26** Arthropoda
- 3.27** about 1,000,000
- 3.28** more
- 3.29** Any two; either order:
a. Protoplasm cells
b. reproduction, respiration
- 3.30** Any two; either order:
a. no cell walls, no chlorophyll
b. different growth, locomotion
- 3.31** Any two; either order:
a. protoplasm, cells, growth
b. reproduction, respiration, food intake, locomotion
- 3.32** Any two; either order:
a. walk upright, sensitivity
b. intellect, reason, memory, speech
- 3.33** Yes — people produce people, many variations of people as a kind
- 3.34** Examples:
Animalia, Chordata, Mammalia
Primates, Hominidae, *Homo sapiens*

SELF TEST 3

- 3.01** e
- 3.02** d
- 3.03** i
- 3.04** g
- 3.05** b
- 3.06** l
- 3.07** m
- 3.08** a
- 3.09** f
- 3.010** k
- 3.011** true
- 3.012** true
- 3.013** true
- 3.014** true
- 3.015** true
- 3.016** d
- 3.017** c
- 3.018** c
- 3.019** a
- 3.020** a
- 3.021** key
- 3.022** dichotomous key
- 3.023** parallel
- 3.024** *Rana pipiens*
- 3.025** a. -aceae
b. -ae
- 3.026** a. division
b. phylum
- 3.027** fewer
- 3.028** Either order:
a. red-blooded
b. nonred-blooded
- 3.029** a. kingdom
b. phylum (division)
c. class
d. order
e. family
f. genus
g. species
- 3.030** First word is genus — underlined (italicized) and capitalized; noun. Second is species — underlined (italicized) and lower case; adjective
- 3.031** Any two; either order:
a. locomotion, food intake
b. cell walls, chlorophyll

SECTION 4

- 4.1** Objectivity reports on fact or measurable data only; subjective reports feeling and emotions and opinions.
- 4.2** Artificial systems just look at characteristics (selected at random or as outstanding) while natural systems look at relationships (whether real or implied).
- 4.3** new information and new descriptions, based on chemistry, physiology, ecology, genetics, and cytology
- 4.4** A way of grouping organisms by how they look alike.
- 4.5** A way of grouping organisms by relationships, by common ancestor, and by evolution.
- 4.6** Either order:
 - a. animal husbandry
 - b. plant breeding
- 4.7** one kind of organism into some other kind
- 4.8**
 - a. O
 - b. S
 - c. S
 - d. S
 - e. O
- 4.9** archaeology
- 4.10** look around us, to study the earth and life on it and to see and know that God made everything. Don't hide or protest this truth; discover it for yourself. Test its validity. Prove it for yourself.
- 4.11** The basic kinds of life God created have continued to reproduce their kinds within limits of variation to produce life as we see it today.
- 4.12** The one or few simple life forms developing by natural processes have produced new kinds of life forms which we see today.
- 4.13** Any order; any five:
 - a. method of formation
 - b. time to happen
 - c. continuity of life
 - d. order of appearance
 - e. purpose or taxonomy
- 4.14** Topics will vary.
- 4.15** Paragraphs will vary.
- 4.16** Project will vary.

SELF TEST 4

- 4.01** false
- 4.02** true
- 4.03** true
- 4.04** false
- 4.05** true
- 4.06** c
- 4.07** b
- 4.08** a
- 4.09** f
- 4.010** e
- 4.011** b
- 4.012** d
- 4.013** c
- 4.014** c
- 4.015** a forest
- 4.016** a tree
- 4.017** artificial
- 4.018** natural
- 4.019** speciation
- 4.020** creation
- 4.021** evolution
- 4.022** Objective is based on facts, subjective on feelings and emotions.
- 4.023** Greeks were original and interested in science. Romans less interested and copied material.
- 4.024** Either order:
 - a. Creation began thousands of years ago; evolution; billions
 - b. Creation; six days; evolution-millions of years for each step
- 4.025** second-largest in animal is phylum, in plant is division
- 4.026** Their offspring, the mule, cannot reproduce which is one criteria for species.
- 4.027** The ability to reproduce only within a species.

LIFEPAC TEST

1. f
2. a
3. c
4. g
5. h
6. i
7. e
8. j
9. b
10. d
11. true
12. false
13. false
14. false
15. true
16. d
17. b
18. a
19. a
20. a
21. b
22. a
23. c
24. d
25. d
26. classification
27. Linnaeus
28. Either order:
 - a. similarities
 - b. differences
29.
 - a. genus
 - b. noun
30.
 - a. species
 - b. adjective
31. kingdom
32. three
33. speciation
34. morphology
35. key
36. two-choice key
37. artificial

ALTERNATE LIFE PAC TEST

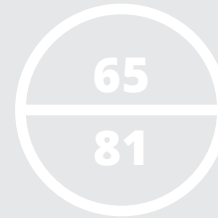
1. e
2. g
3. h
4. a
5. i
6. b
7. j
8. d
9. c
10. f
11. true
12. true
13. false
14. false
15. false
16. d
17. c
18. b
19. b

20. c
21. d
22. b
23. c
24. c
25. a
26. morphology
27. key
28. kingdom
29. classification
30. genus
31. species
32. Linnaeus
33. speciation
34. herbalist
35. population
36. dichotomy
37. evolution

SCIENCE 1001

ALTERNATE LIFEPAK TEST

NAME _____
DATE _____
SCORE _____



Match these items (each answer, 2 points).

- | | |
|----------------------------|---|
| 1. _____ classification | a. development of new species from an ancestral species |
| 2. _____ artificial system | b. the beginning |
| 3. _____ variation | c. categories |
| 4. _____ speciation | d. form of an organism |
| 5. _____ kingdom | e. a system of distinguishing groups for purposes of identification |
| 6. _____ origin | f. a classification plan based on relationships of common ancestry |
| 7. _____ taxonomy | g. a classification plan based on grouping by features |
| 8. _____ morphology | h. differences among offspring of a particular species |
| 9. _____ taxon | i. the largest taxonomical category |
| 10. _____ natural system | j. science of classification of organisms |

Write true or false (each answer, 1 point).

11. _____ Creation took six days.
12. _____ A dictionary is an artificial system of classification.
13. _____ The largest phylum of plant species is chordata.
14. _____ Natural classification systems are based upon similarities in appearance.
15. _____ The biosphere is a region of the atmosphere.

Write the letter for the correct answer on each line (each answer, 2 points).

16. *Zea mays* is an example of _____.
 a. herbal nomenclature
 b. useful taxonomy
 c. medical grouping
 d. binomial nomenclature
17. A scientist who classifies organisms is _____.
 a. a physician
 b. a genus
 c. a taxonomist
 d. an agriculturalist
18. There are _____ plants than animals.
 a. more
 b. fewer
 c. the same number
 d. twice as many
19. The "Father of Zoology" was _____.
 a. Pliny
 b. Aristotle
 c. Carolus
 d. Brunfels
20. The science of inheritance is _____.
 a. biology
 b. botany
 c. genetics
 d. zoology
21. The language of taxonomy is _____.
 a. Greek
 b. Swedish
 c. English
 d. Latin
22. The smallest taxon is _____.
 a. class
 b. species
 c. division
 d. order
23. The name given to an organism that causes the least confusion and is the same worldwide is _____.
 a. genus name
 b. common name
 c. scientific name
 d. none of these
24. A good example of an artificial system of classification is _____.
 a. a photo album
 b. a family tree
 c. an encyclopedia
 d. a, b, and c
25. A tool used in classification is a _____.
 a. key
 b. taxon
 c. morphology
 d. phylum

Complete these statements (each answer, 3 points).

26. The way a plant looks is its _____ .
27. The tool used to classify is called a _____ .
28. The largest taxon is _____ .
29. Taxonomy is the science of _____ .
30. The first word of the scientific name is the _____ .
31. The second word of the scientific name is the _____ .
32. The "Father of Modern Taxonomy" was _____ .
33. Variation that results in the evolution of one species to another is called _____ .
34. The "doctrine of signatures" was characteristic of the _____ .
35. The kind of organism living in an area is _____ .
36. The word that means *cut* or *split in two parts* is _____ .
37. The time required for _____ is millions of years for each step.



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