



LIFE·PAC®

Select



Alpha Omega Publications®

Geology

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Alpha Omega Publications®

804 N. 2nd Ave. E., Rock Rapids, IA 51246-1759

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Dear Instructor,

Thank you for your interest in electives using the LIFEPAC Select Series.

The courses in this series have been compiled by schools using Alpha Omega's LIFEPAC Curriculum. These courses are an excellent example of the flexibility of the LIFEPAC Curriculum for specialized teaching purposes.

The unique design of the worktext format has allowed instructors to mix and match LIFEPACs from five core subjects (Bible, Language Arts, Science, and History & Geography) to create alternative courses for junior high and high school credit.

These courses work particularly well as unit studies, as supplementary electives, or for meeting various school and state requirements. Another benefit of the courses—and any LIFEPAC subject, for that matter—is the ability to use them with any curriculum, at any time during the year, for any of several purposes:

- Elective Courses
- Make-up Courses
- Substitution Courses
- Unit Studies
- Summer School Courses
- Remedial Courses
- Multi-level Teaching
- Thematic Studies

<i>Course Titles</i>	<i>Suggested Credits</i>
Astronomy (Jr. High and above)	1/2 credit
Composition	1/2 credit
Geography	1/2 credit
Geology	1/2 credit
Life of Christ (Jr. High and above)	1/2 credit
Life Science	1/2 credit
Mankind: Anthropology and Sociology	1/2 credit

Geology

High School Level (1/2 credit)

Physical Geology

Science LIFEPAC 903

Earth Structures

- Shape
- Rocks
- Layers
- Igneous Structures
- Mountains

Earth Changes

- Weathering
- Erosion and Sedimentation

Earth Movements

- Isostasy
- Folding
- Folding
- Plate Tectonics

Historical Geology

Science LIFEPAC 904

An Observational Science

- The Science
- Sedimentary Rock
- Fossils
- Crustal Changes

Measuring Time

- Relative Time
- Absolute Time

Oceanography

Science LIFEPAC 908

History of Oceanography

- Chronology of Oceanography
- Techniques for Investigation
- Major Discoveries
- Submersible Research

Geology of the Ocean

- Geological Structure
- Results of Profiling
- Turbidity and Sedimentation
- World's System of Currents

Biological, Chemical, and Physical Properties

- Graphs
- Charts
- Other Resource Material

The Atmosphere

Science LIFEPAC 705

Structure of the Atmosphere

- Gases
- Layers
- Solar Effects
- Influences on Life
- Changes

Natural Cycles

- Water Cycle
- Carbon-Oxygen Cycle
- Nitrogen Cycle

Pollution

- Types of Pollutants
- Effects in Life
- Our Responsibility

Climate

Science LIFEPAC 707

Climate: General

- Weather
- Climate and Weather
- Parts of Climate

Climate: Worldwide

- Factors Affecting Climate
- General Distribution of Climate

Climate: Regional

- Classification of Climate
- Distribution of Climate Types

Climate: Local

- How Climate Affects People
- People, Communities, and Climate

Materials Needed for LIFEPAC

Required:

pencil, desk or small table, long sheet of paper, string, brick
double-pan balance, set of metric masses,
string, various rocks, beaker

Suggested:

Additional Learning Activities

Section I Earth Structures

1. Organize a field trip to a local rock or mineralogy museum.
2. With a classmate gather several rock samples. Your teacher may have some you can use. Check each sample for color and weight. See if you can determine whether the rocks are igneous, sedimentary, or metamorphic.
3. With a classmate find the directions in a library science reference book for making a "volcano." Construct one to show your class.
4. In the library science resource books look up *minerals*. Write a one-page report on minerals and how they relate to rocks.

Section II Earth Changes

1. Demonstrate the effect of sedimentation by stirring dirt into a beaker full of water. Set the beaker aside. Lead a class discussion on how sedimentation takes place in the oceans and lakes.
2. With a classmate demonstrate the effects of mechanical weathering. Heat a piece of glass tubing over the flame of a Bunsen burner. Be sure to use forceps. When the tubing is very hot, plunge it into cold water. What happens?
3. Demonstrate another effect of mechanical weathering with a friend. Fill a glass bottle with water. Wrap the bottle with a towel and set it in the freezer overnight. Carefully check the bottle. What happened?
4. Pour a mixture of small gravel, sand, and clay into a jar of water. Stir vigorously and let stand. Check the jar later to see what material has settled to the bottom first. Were layers formed?

Section III Earth Movements

1. With a friend trace the continents of the world on a map. Then cut each continent out. See if you can fit the "puzzle" pieces together.
2. Write to the United States Geological Survey, Department of the Interior, Washington, D.C., 20244. Ask for a contour map of the area you live in.
3. Read a book on the drifting continents. Write a one-page report on the book. Be sure to include your scientific opinion of what is really happening to the continents. Make sure your opinion is reasonable based on your research.

SECTION ONE

- | | |
|---|---|
| <p>1.1 Eratosthenes</p> <p>1.2 Ptolemy</p> <p>1.3 sphere</p> <p>1.4 During a lunar eclipse, the earth's shadow on the moon is circular.</p> <p>1.5 The width was one-eighth of a minute of latitude.</p> <p>1.6 true</p> <p>1.7 true</p> <p>1.8 true</p> <p>1.9 igneous</p> <p>1.10 lava</p> <p>1.11 magma</p> <p>1.12 Either order:</p> <p style="padding-left: 20px;">a. tuff</p> <p style="padding-left: 20px;">b. volcanic ash</p> <p>1.13 b-c; either order:</p> <p style="padding-left: 20px;">a. quartz</p> <p style="padding-left: 20px;">b. feldspar</p> <p style="padding-left: 20px;">c. mica</p> <p>1.14 basalt</p> <p>1.15 a. cooled from magma or lava</p> <p style="padding-left: 20px;">b. laid in place by moving water, ice, or wind</p> <p style="padding-left: 20px;">c. put under pressure, or under heat and pressure</p> <p>1.16 a. sandstone</p> <p style="padding-left: 20px;">b. conglomerate</p> <p style="padding-left: 20px;">c. breccia</p> <p style="padding-left: 20px;">d. siltstone or shale</p> <p>1.17 a. slate or schist</p> <p style="padding-left: 20px;">b. marble</p> <p style="padding-left: 20px;">c. quartzite</p> <p>1.18 true</p> <p>1.19 false</p> <p>1.20 true</p> <p>1.21 true</p> <p>1.22 false</p> <p>1.23 false</p> <p>1.24 c</p> <p>1.25 a</p> <p>1.26 c</p> <p>1.27 b</p> <p>1.28 hydrosphere</p> | <p>1.29 basalt</p> <p>1.30 crust</p> <p>1.31 mantle</p> <p>1.32 asthenosphere</p> <p>1.33 The gravitational pull of the earth is greater than the weight of surface rock.</p> <p>1.34 Either order:</p> <p style="padding-left: 20px;">a. earth's magnetic field</p> <p style="padding-left: 20px;">b. meteorite composition</p> <p>1.35 Either order:</p> <p style="padding-left: 20px;">a. compression waves</p> <p style="padding-left: 20px;">b. sideways shaking motions (vibrations)</p> <p>1.36 Sideways vibrations do not move through liquids; sideways shock waves get lost at 2,900 kilometers.</p> <p>1.37 a. The line is straight down the paper.</p> <p style="padding-left: 20px;">b. The line is wavy and jagged rather than straight and smooth.</p> <p style="padding-left: 20px;">c. The line has big notches (jagged marks) and these get smaller down to a straight even line.</p> <p>1.38 true</p> <p>1.39 true</p> <p>1.40 false</p> <p>1.41 false</p> <p>1.42 false</p> <p>1.43 c</p> <p>1.44 b</p> <p>1.45 Either order:</p> <p style="padding-left: 20px;">a. silicon</p> <p style="padding-left: 20px;">b. oxygen</p> <p>1.46 size</p> <p>1.47 pressure</p> <p>1.48 intrusive</p> <p>1.49 sill</p> <p>1.50 joints</p> <p>1.51 shield</p> <p>1.52 Either order:</p> <p style="padding-left: 20px;">a. silicon</p> <p style="padding-left: 20px;">b. oxygen</p> <p>1.53 Any order:</p> <p style="padding-left: 20px;">a. potassium</p> |
|---|---|

Science 903 Answer Key

- b. aluminum
c. sodium
d. magnesium
e. calcium or iron
- 1.54 Slow cooling allows time for molecules to move and come in contact with other similar molecules.
- 1.55 teacher check
- 1.56 false
- 1.57 true
- 1.58 true
- 1.59 true
- 1.60 false
- 1.61 a
- 1.62 c
- 1.63 Lava flows flow out of a fissure. A volcano is the result of lava finding a small place where the ground is weak.
- 1.64 huge waves of ocean water or dust in the sky
- 1.65 teacher check
- 1.66 false
- 1.67 true
- 1.68 false
- 1.69 scarp
- 1.70 magma
- 1.71 mesas
- 1.72 erosion
- 1.73 Either order:
a. along zones of weakness
b. over "hot spots"
- 1.74 Any order:
a. shields of lava flows
b. cinder cones
c. combinations of a and b
- 1.75 Any order:
a. volcanoes
b. folded mountains
c. fault-block
d. domes
e. erosional remnants

SECTION TWO

- 2.1 true
- 2.2 false
- 2.3 true
- 2.4 a
- 2.5 b
- 2.6 They can be turned into rock (stone).
- 2.7 Either order:
a. chemical
b. mechanical
- 2.8 Either order:
a. plant roots
b. decaying plants
- 2.9 exfoliation
- 2.10 talus
- 2.11 clay
- 2.12 Any order:
a. on the floor plain of a river
b. in a lake
c. at the mouth of a river
d. on a sandbar
- e. in a sand dune
- 2.13 Any order:
a. wind
b. water
c. ice
- 2.14 Either order:
a. dissolves minerals
b. freezes and expands
- 2.15 topsoil – decayed vegetation
subsoil – weathered rock
regolith – partly weathered rock
bedrock – unweathered rock
- 2.16 true
- 2.17 false
- 2.18 false
- 2.19 true
- 2.20 false
- 2.21 true
- 2.22 true
- 2.23 true