



LIFE·PAC®

Select



Alpha Omega Publications®

# *Astronomy*

## CONTENTS

Introduction .....	2
Curriculum Outline .....	3
<b>SCIENCE 608 NEW EDITION</b>	
Teacher Notes .....	4
Answer Keys .....	5
Alternate Test & Key .....	12
<b>SCIENCE 609 NEW EDITION</b>	
Teacher Notes .....	15
Answer Keys .....	16
Alternate Test & Key .....	23
<b>SCIENCE 703</b>	
Teacher Notes .....	26
Answer Keys .....	28
Alternate Test & Key .....	34
<b>SCIENCE 704</b>	
Teacher Notes .....	37
Answer Keys .....	39
Alternate Test & Key .....	47
<b>SCIENCE 907</b>	
Teacher Notes .....	50
Answer Keys .....	51
Alternate Test & Key .....	56



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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 four 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

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<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

# Astronomy

## Jr. High Level and above (1/2 credit)

### *Spaceship Earth*

Science LIFEPAC 608 New Edition

#### **Earth's Motion**

- Earth's Size & Shape
- Earth's Rotation
- Earth's Revolution
- Time

#### **Eclipses**

- Solar Eclipse
- Lunar Eclipse

#### **Our Solar System**

- The Sun
- Planets and Light-Years
- Asteroids, Comets, and Meteors

### *Astronomy and The Stars*

Science LIFEPAC 609 New Edition

#### **Astronomy**

- God, Astronomy, & the Universe
- History
- Astronomy Today

#### **Stars**

- Colors and Temperatures
- Giants and Dwarfs
- Elements and Spectra
- Magnitude and Luminosity
- Light-Years and Astronomical units

#### **Constellations and Major Stars**

- Familiar Constellations
- Major Stars

### *Earth In Space 1*

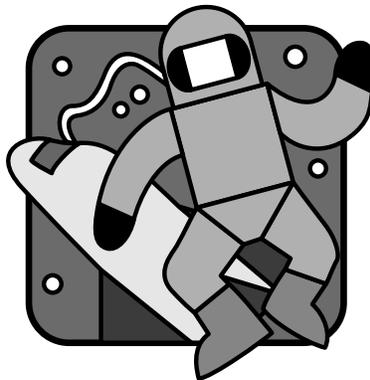
Science LIFEPAC 703

#### **Stargazing**

- The Ancients
- Constellations
- Geocentric Theory
- Wanderers
- Meteors

#### **Astronomy**

- The Transparent Sphere Hypothesis
- Copernicus
- The Telescope
- Galileo Galilei
- Tycho Brahe
- Johannes Kepler
- A Change of Mind
- Isaac Newton
- Measuring the Sky
- The Astronomer
- The Astronomer's Tools



### *Earth In Space 2*

Science LIFEPAC 704

#### **The Sun's Energy**

- Benefits of Solar Energy
- Source of Solar Energy

#### **The Sun's Family**

- Inner Planets
- Outer Planets
- Asteroids
- Comets

#### **The Moon**

- Orbit
- Rise and Set
- Rotation
- Phases
- Tides

#### **Eclipses**

- Why Eclipses Occur
- When Eclipses Occur
- What Kinds of Eclipses Occur

### *Astronomy*

Science LIFEPAC 907

#### **The Universe**

- Extent of the Universe
- Constellations

#### **Telescopes and Optics**

- Magnification
- Types of Telescopes
- Newer Types of Telescopes

#### **Space Explorations**

- Requirements for Launching a Satellite
- Planetary Missions

## **Materials Needed for LIFEPAC**

Required:

- coin, such as a quarter or a half dollar
- a large ball about the size of a basketball *or* a cardboard circle 8 inches diameter
- a small ball about the size of a tennis ball *or* a cardboard circle 3 inches diameter
- a light of about 100 watts or more
- yardstick
- ruler
- piece of chalk
- ball of string or twine
- 150 pennies

## **Additional Learning Activities**

### **Section I Earth's Motion**

1. With a friend or an adult, use a globe and light bulb to demonstrate how the sun shines on the earth.
2. With a friend, demonstrate how the angle of the sun's rays affects the amount of heat the earth gets. Fill two boxes with sand or dirt. Lay a thermometer in each box with its bulb buried about an inch deep. Set one box flat on the ground and the other on a slant. Check the temperature in each box in about ten minutes.
3. In your own words, explain why an accident could happen at 8:00 a.m. and someone in Washington, D.C., could hear about it before 4:00 a.m.
4. Write a story about what it would be like to live on a part of the earth where the sun doesn't set for months and then doesn't rise for months.

### **Section II Eclipses**

1. Arrange a field trip to go to a local planetarium.
2. With a friend, make two posters. On one poster, make a drawing of a lunar eclipse. On the other, make a drawing of a solar eclipse.
3. Do some research on the solar eclipse. When was the last one where you live? See how many photographs you can find. Display them.

### **Section III The Solar System**

1. With a friend, make a model of the solar system using different sized balls. Label all the planets and the sun.
2. With a friend, make a large chart that shows a comparison of the planets. Include information like diameter, distance from the sun, number of satellites, and revolution and rotation times. Display your chart in your classroom.

### **Independent Activities**

1. Select one planet (other than earth), and write a two-page report on it.
2. Read science fiction stories about life on other planets. Could such life really exist? Explain your reason in a one-page report.

**SECTION ONE**

- |  |  |
|--|--|
| <p>1.1 a. 7,900 miles<br/>b. 7,926 miles<br/>c. 26 miles<br/>d. no</p> <p>1.2 true</p> <p>1.3 false</p> <p>1.4 true</p> <p>1.5 true</p> <p>1.6 true</p> <p>1.7 false</p> <p>1.8 false</p> <p>1.9 true</p> <p>1.10 The rotation of the earth about its axis causes night and day.</p> <p>1.11 In relation to the sun, the earth takes 24 hours to make one complete rotation about its axis. This is called a <i>solar day</i>. In relation to the very same position on earth compared to far distant stars, however, the earth takes 23 hours 56 minutes 4.091 seconds to make one complete rotation. This is called a <i>sidereal day</i>.</p> <p>1.12 The distance around the earth parallel to the equator varies, depending on where you are located. At the equator, the distance around the earth is the greatest. As you move toward either pole, the distance is smaller. Therefore, you travel less in a day as you move toward the poles from the equator, and the speed of motion would be less.</p> <p>1.13 a. sunset</p> <p>1.14 c. midnight</p> | <p>1.15 d. 1800</p> <p>1.16 d. 360</p> <p>1.17 b. Standard time</p> <p>1.18 b. Prime Meridian</p> <p>1.19 a. International Date Line</p> <p>1.20 b. four</p> <p>1.21 f</p> <p>1.22 h</p> <p>1.23 g</p> <p>1.24 a</p> <p>1.25 j</p> <p>1.26 b</p> <p>1.27 k</p> <p>1.28 c</p> <p>1.29 l</p> <p>1.30 d</p> <p>1.31 The day and night are an equal amount of time. Also, the sun is directly overhead at noon on the equator.</p> <p>1.32 In the Northern hemisphere, after the vernal equinox, the days become longer. After the autumnal equinox, the days become shorter.</p> <p>1.33 No. Scientific study is limited by the facts that mankind has observed on the earth, in the lab, and in his explorations with a microscope or telescope. Mankind can only imagine what conditions exist on a planet orbiting a star in a faraway solar system or galaxy.</p> <p>1.34 Adult check</p> |
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**SECTION TWO**

- 2.1 There is less of the tree visible, until it is eventually blocked from sight.
- 2.2 a. moon  
Either order:  
b. earth  
c. sun
- 2.3 a. two  
b. three
- 2.4 They have been able to determine the exact relative positions of the earth, sun, and moon. They have been able to study possible changes in the strength of gravity and the size of the sun. The size of distant stars has been determined through the study of eclipses of other heavenly bodies.
- 2.5 true
- 2.6 false
- 2.7 true
- 2.8 true
- 2.9 false
- 2.10 true
- 2.11 false
- 2.12 b
- 2.13 a
- 2.14 c
- 2.15 b
- 2.16 c
- 2.17 a
- 2.18 the earth, moon, and sun are nearly in a straight line and the moon passes between the earth and sun.
- 2.19 a total or partial obscuring (or darkening) of one celestial body by another.
- 2.20 the earth, moon, and sun are nearly in a straight line and the moon passes through the earth's shadow.
- 2.21 pertaining to the moon.
- 2.22 pertaining to the sun.
- 2.23 During a solar eclipse, the line-up is sun, moon, and earth. During a lunar eclipse, the line-up is sun, earth, and moon.
- 2.24 a. opinion  
b. fact  
c. fact  
d. fact  
e. opinion  
f. opinion  
g. opinion  
h. fact  
i. opinion  
j. fact  
k. fact  
l. fact
- 2.25 a. syl lab i ca tion  
b. rev o lu tion  
c. sat el lite  
d. ro ta tion  
e. ev o lu tion  
f. hor i zon tal  
g. ver ti cal ly  
h. el lip ti cal ly  
i. grav i ta tion  
j. in er tia