

Lesson 9

The Ecliptic

OBJECTIVES:

- \* To recognize the brighter Zodiac constellations.
- \* To understand that the Moon and planets travel along the Ecliptic.

SCHEDULING:

You will need a clear night. Do the activity at least twice: once when the Moon is visible in the evening sky, and once when the Moon is not. (A moonless night affords the best chance to see the fainter constellations.)

Note: The Zodiac constellations that are visible in the evening in Winter, Spring, and Summer, are easier to find and identify than the ones visible in the early Fall, which consist exclusively of faint stars.

PREPARATION:

Use the SKY CALENDAR (or ALMANAC) to find the best nights for this assignment.

STUDENT SHEETS:

- \* Star charts
- \* The Zodiac
- \* Symbols

DISCUSSION:

- \* What is a constellation? (A group of stars.)
- \* What is the meaning of the words "Gemini", "Taurus", etc.?  
(They are the names of constellations.)

**ACTIVITY:**

Hand out the star charts and the Zodiac and Symbols sheets. Review how to use the star charts.

Have the students find the various Zodiac constellations on the chart. Ask them which constellation each planet is in. (The planets should have been drawn into the star charts during Lesson 6.) Explain that the reason the planets and Moon are not usually shown on star charts is that they are not always in the same place in the sky.

If the Moon is to be in the sky, remind the students to draw it at the right place on the star chart, and mark the date next to it. Also show them how to enter the symbols on the Moon Calendar to show which constellation the Moon is in.

**CONCLUSIONS:**

After they can recognize the Zodiac constellations, and when they have several observations of the Moon in various constellations, your students are ready for the following ideas:

- \* The Moon moves from one Zodiac constellation to the next.
- \* This motion is from West to East (right to left).
- \* Planets also move among the Zodiac constellations, but it takes them much longer. (Actually, Venus and Mars move faster than Jupiter or Saturn.)
- \* The Moon and planets never move very far from an imaginary line called the Ecliptic. (The Ecliptic is shown on the Star Charts, but it is not visible in the sky.)

**COMMENTS:**

\* You may choose to introduce your students to more than just the Zodiac constellations. In fact some other constellations are often easier to find and can be used as a guide to the ones in the Zodiac. See for example THE STARS: A NEW WAY TO SEE THEM, by H.A.Rey.

\* As new Zodiac constellations appear in the evening sky, you should repeat this activity in order to introduce it to your students.

\* Some students may enjoy memorizing the symbols for the planets and constellations, or making a bulletin board display of them.

\* It is not advisable to teach lessons in this kit earlier than scheduled. However, an exception can be made: Lesson 11 (telescopes) can be taught this week, in conjunction with this lesson.

\* In addition to the star charts supplied among the Student Sheets, you may want to reproduce the SKY CALENDAR monthly EVENING SKIES chart, or some other. You can also make your own charts by tracing. This allows you to add stars, planets and constellations gradually. If you use a whole-sky chart, remember to explain to your students how to hold it: the direction you are facing should be at the bottom, and overhead is in the center.

## THE ZODIAC

Just like the Sun and the Moon, the stars in the sky are constantly moving. But they move together: they are arranged in patterns that do not change. People often "connect the dots" in their mind and imagine that the stars make up different shapes in the sky. These are called constellations. The ancient Greeks named many constellations. We still use these names today.

The Zodiac is a group of constellations in the sky. You can only see three or four up at any given time, but there are twelve of them. What makes these constellations special is that they are located along an imaginary line in the sky, called the Ecliptic (which is indicated on your star chart). The Sun, the Moon, and the planets are always near this line. They appear to travel along the Ecliptic, from one Zodiac constellation to the next.

If you see the Moon at night, it will be in one of the Zodiac constellations. Try to figure out which constellation it's in, and write the symbol for that constellation at the right place on your Moon Calendar. The planets too are always in the Zodiac.

Zodiac constellations  
symbols

- ♈ Aries
- ♉ Taurus
- ♊ Gemini
- ♌ Leo
- ♍ Virgo
- ♎ Libra
- ♏ Scorpius
- ♐ Sagittarius
- ♑ Capricorn
- ♒ Aquarius
- ♓ Pisces

