

Seasons
Lesson Seven
Monthly Constellations First Seen in the West

- Standard II: Students will understand how Earth's Tilt on its axis changes the length of daylight and creates the seasons.
- Objective 2: Explain how the relationship between the tilt of Earth's axis and its yearly orbit around the sun produces the seasons.
- Indicator a: Compare Earth's position in relationship to the sun during each season.
- Supplies: -Craft sticks, 2 per student, one marked east and the other marked west.
-12 Zodiac constellation names
-Big ball representing the sun

Overview

As the earth revolves around the sun, there is another Zodiac constellation first seen in the west around the 21st of each month. The constellation in the west changes each month. We do see about nine of the Zodiac constellations all through the night. However, other one comes into view about the 21st of each month.

Read the shared reading below with the students before doing this activity. Have the Zodiac Constellations already on the wall in order and the big ball in the center so they can be seen them as they read the shared reading.

Student Shared Reading
The Zodiac Constellations We First See
In the Western Sky Each Month

Each Zodiac constellation is behind the sun on the dates listed in each Zodiac constellation. It rises with the sun and goes down with the sun. Therefore, we cannot see that particular Zodiac constellation in the sky for about a month since the brightness of the sun washes out the brightness of stars in that Zodiac constellation in the daytime (and all the other stars in the daytime sky).

We also cannot see the constellations on either side of the Zodiac constellation behind the sun. This is because about an hour before the sun comes up and about an hour after the sun goes down, there is still has too much light in the sky to see the stars of those Zodiac constellations and the other stars in the sky.

All the other nine constellations can be seen in the night sky when the sky is dark enough for the stars to be seen. They seem to move from east to west as the earth spins on its own axis. However, only about six of them can be seen at one time in the night sky. As one Zodiac constellation goes down behind the western horizon another one will come up from behind the eastern horizon.

Because there is a different Zodiac Constellation in the western sky each month this proves that the earth is revolving around the sun. As we see the different

constellations after sunset in the western sky each night it shows that the earth is making its journey around the sun.

Because we see constellations and stars disappear behind the western horizon and others appear above the eastern horizon proves that the earth is rotating on its own axis.

In each Zodiac constellation space (the one that is behind the sun) it tells the first Zodiac constellation that can be seen in the western sky when the stars finally can be seen.

Zodiac Constellation in the Sun	Zodiac Constellation Seen First in the West
Aquarius (1/20 to 2/18)	Aries
Pisces (2/19 to 3/20)	Taurus
Aries (3/21 to 4/19)	Gemini (Spring)
Taurus (4/20 to 5/20)	Cancer
Gemini (5/21 to 6/20)	Leo
Cancer (6/21 to 7/22)	Virgo (Summer)
Leo (7/23 to 8/22)	Libra
Virgo (8/23 to 9/22)	Scorpio
Libra (9/23 to 10/22)	Sagittarius (Fall)
Scorpio (10/23 to 11/21)	Capricorn
Sagittarius (11/22 to 12/21)	Aquarius
Capricorn (12/22 to 1/19)	Pisces (Winter)

Directions:

1. Give each student two craft sticks. Have them write west on one and east on the other at one of the ends on each stick.
2. After reading the story, tell the students that they are going to be standing in a circle facing their birthday Zodiac constellation with the ball between them and their Zodiac constellation. Tell them that if there is more than one having a birthday during that month, they are to stand in line behind the first person. Only twelve can do this at a time because if they all try to do it, it may get a little confusing for them.
3. Have them bring their craft sticks and shared reading paper with them when then standing facing their Zodiac constellations.
4. Have them notice that the sun is between them and their Zodiac Signs. This is how it was set up hundreds of years ago.
5. Have them put the west stick in their right hands and the east sticks go in the left hands. Put the paper on the ground in front of the so they can see the Zodiac constellations.
6. Have the first ones in line turn so their right hands (west) are pointing toward the sun and their Zodiac constellations. This means that the sun is going down.
7. As they turn counterclockwise, have the stop at the next constellation to the left.
8. Tell them that this is not the first constellation they will see because it is still too light outside. Have them keep turning until they are pointing toward the next constellation.
9. This is the constellation they will first see in the western sky on their birthdays because it is dark enough to see it.

10. Go around the circle counterclockwise and have each group call out the name of the constellation they see. It will follow the names that are on the chart of the shared reading.
11. Each student in the circle represents the earth and its position in the sky around the sun being able to see the constellation at that particular position around the sun.
12. Go through this until all the students have had a turn to see how this works.
13. You can have the students continue to rotate counterclockwise until their left hand (east) reaches the sun telling it is sunrise.
14. This rotation represents the turning of the earth on its own axis.
15. They will be able to see eight more constellations during the night until sunrise that proves that the earth spins on its own axis.
16. The reason they won't see the last constellation before their birthday constellations is because it is too light again, and the light of the sun washes it out.

Viewing Your Birthday Zodiac Constellation Questions

1. Tell at least three things that you learned about the revolution and rotation of the earth as it comes to viewing the Zodiac constellations.

2. Why wouldn't you be able to see your birthday Zodiac constellation and the two constellations on either side of it?

3. On any given month, which Zodiac Constellation would you be able to see first in the western sky after sunset?

4. On any given month, which Zodiac Constellation would you be able to see last before sunrise?

5. What changes as it comes to the Zodiac constellations as the earth revolves around the sun?

6. What changes as it comes to the Zodiac constellations as the earth rotates on its own axis?
