Focus on the New York State Learning Standards

Lesson 23 Earth, the Moon, and the Sun

1.1a Natural cycles and patterns include: Earth spinning around once every 24 hours (rotation), resulting in day and night; Earth moving in a path around the Sun (revolution), resulting in one Earth year; the length of daylight and darkness varying with the seasons; weather changing from day to day and through the seasons; the appearance of the Moon changing as it moves in a path around Earth to complete a single cycle.
1.1b Humans organize time into units based on natural motions of Earth: second, minute, hour, week, month.
1.1c The Sun and other stars appear to move in a recognizable pattern both daily and seasonally.

The regular pattern of movement by Earth, the Moon, and the Sun affects cycles and conditions on Earth's surface.

Rotation is Earth spinning around once every twenty-four hours, resulting in day and night.

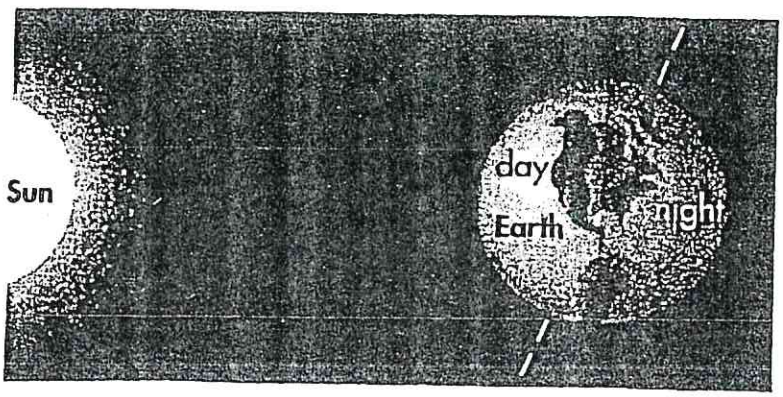
Revolution is Earth moving in a path around the Sun, resulting in one Earth year.

Guided Instruction

Directions Read the following information.

Many natural cycles and patterns on Earth's surface result from natural cycles and patterns in the movement of Earth, the Moon, and the Sun. The movements of these bodies are so important that human calendars and clocks are based on them.

An important Earth cycle that affects living things every day is its **rotation**. Once every twenty-four hours, Earth spins around on its axis, an imaginary line running through its center from one pole to the other. At any given moment, half of Earth's surface is in sunlight and half is in darkness. Because different parts of it face the Sun at different parts of the rotation, this cycle results in day and night on Earth's surface.



Guided Questions

What is rotation?

People divide the day into twenty-four hours. Each hour is divided into sixty minutes, and each minute into sixty seconds. A week is seven days.

All life on Earth is also affected by its **revolution**. Earth moves in a path around the Sun. One turn around the Sun is one revolution. One Earth year is based on the length of time it takes to revolve around the Sun once. Because Earth is tilted on its axis, the direct rays of the Sun are focused on different places on Earth at different times of the year. This causes seasons. The length of daylight and darkness varies with the seasons. As the amount of sunlight changes, weather changes from day to day and through the seasons.

As the Moon moves in a path around Earth, different parts of it are lit by the Sun at night. Therefore its appearance changes. The different ways it appears are called phases of the Moon. What we call a month is about the length of time it takes the Moon to complete a single cycle around Earth.

When humans watch the Sun and other stars from Earth, they appear to move in a pattern. Every day, the Sun comes up in the east and sets in the west. The same stars appear in the same patterns at times scientists can predict.

Guided Questions

What is **revolution**?

Directions For each question, write your answer in the space provided.

1. About how long does it take the Moon to circle Earth?

2. How did humans decide how long a year should be?

3. How is life on Earth affected by Earth's revolution around the Sun?

4. Why does the appearance of the Moon change throughout its cycle?

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5. Suppose Earth did not rotate. How would conditions and life on Earth be different?

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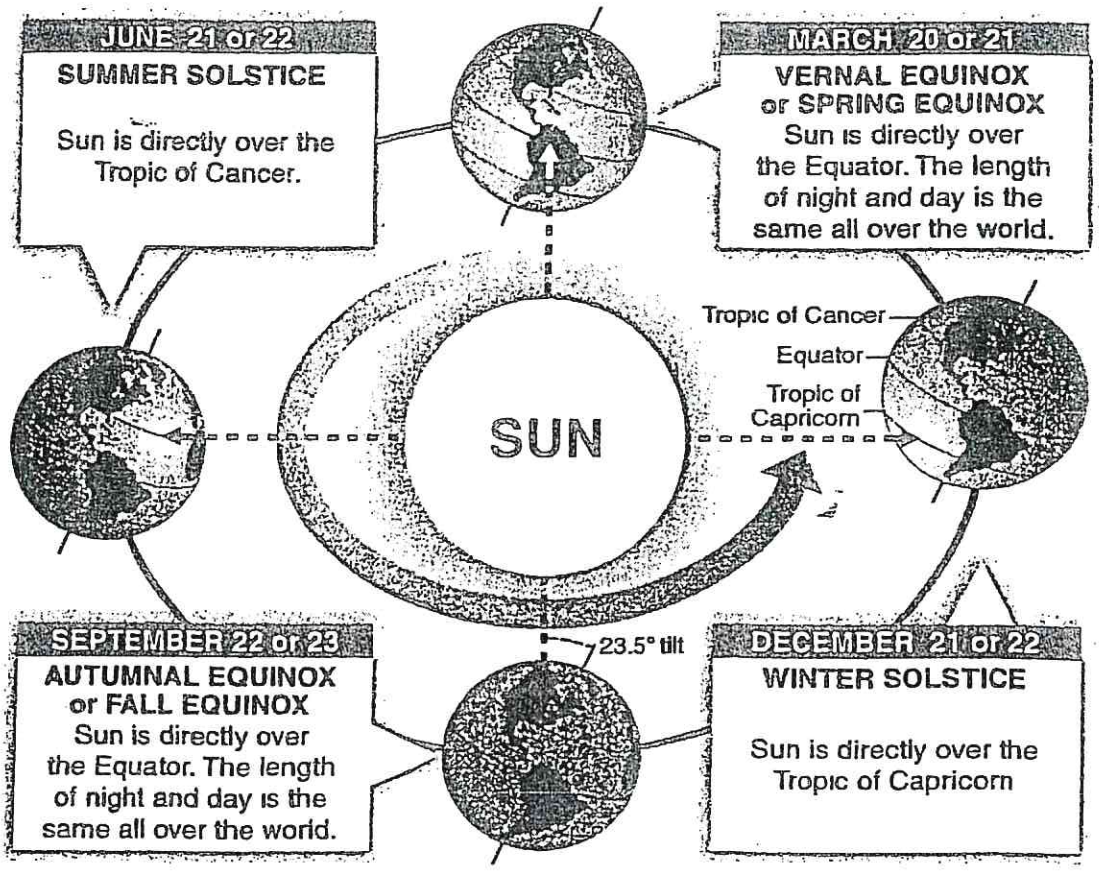
Apply the New York State Learning Standards to the State Test

Directions: For each question, write your answer in the space provided. Base your answers to questions 6 through 11 on the drawing below.



6 What is the line running through Earth from pole to pole?

_____

7 In the United States, when is the length of day longest?

_____

8 What do you notice about Earth's axis during the winter solstice?

_____

9 Why is the length of day the same all over the world at the spring equinox?

_____

_____

10 What part of Earth is darkest at the solstice? Why?

_____

_____

11 At what time of year would the tip of South America be warmest?

_____

Directions (12–17): Each question is followed by four choices. Decide which choice is the best answer. Circle the letter of the answer you have chosen.

12 What causes night and day on Earth?

A rotation of Earth
B revolution of Earth
C rotation of the Moon
D revolution of the Moon

13 What determines the length of night on Earth?

A rotation of Earth
B rotation of the Moon
C both
D neither

14 A week is

A the length of time it takes the Moon to revolve around Earth
B the length of time it takes Earth to revolve around the Sun
C both
D neither

15 The rising and setting of the Moon is mostly caused by

A rotation of Earth
B revolution of Earth
C the shadow of Earth
D rotation of the Sun

16 How long does it take the Moon to circle Earth?

A about a week
B about a year
C about a season
D about a month

17 How would conditions on Earth be different if its axis did not tilt?

A There would be no seasons.
B There would be no years.
C There would be no temperature.
D The equator would not be as warm in winter.