6 Week Unit

UNIT 4 SPACE SYSTEMS: PATTERNS AND CYCLES – PART II

First Grade | Rogers Public Schools

Unit 4: Space Systems: Patterns and Cycles - Part II 6 weeks

In this unit, students will continue to explore patterns related to the motion of the sun and other objects in the sky throughout the day, night, and year. They will use the observations collected throughout the year to describe and predict patterns in the movement of objects in the sky. These observations include hours of sunlight based on sunrise/sunset data and new observations about the night sky. Students will begin to formalize understandings about how the patterns we see in our data can help us make predictions based on these patterns and observations.

During the first few weeks of the unit, students will formalize their ideas about how the patterns of the motion of the sun create seasonal patterns and day and night. They will explore how the sun appears to move throughout the day and how this affects our shadows during the day. They will explore patterns in daylight hours using data collected and make predictions about the seasons and seasonal patterns of daylight. They will explore characteristics of the seasons and use their observational data as evidence of these characteristics.

In the last few weeks of the units, students will explore patterns in the night sky with the moon and stars. They will make connections to the previous unit about light, understanding that light is reflected. They will use this knowledge to develop an understanding about the relationship between the Sun and the Moon and reflected light. Students will use this understanding to further explore the phases of the moon. Finally, students will explore patterns found in stars and constellations, understanding that we see stars at night and not during the day and that these patterns change throughout the year.

Unit 4 Performance Expectations

- **1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.** [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars, other than our sun, are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]

- **1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year.** [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]

In Unit 4, students will understand…

- Observations can be used to describe patterns in the natural world in order to answer scientific questions.
- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. This unit explores these patterns:
  - The Sun appears to rise in one part of the sky, move across the sky, and set.
  - Seasonal patterns of sunrise and sunset can be observed, described, and predicted, and can determine the amount of daylight (longer periods of sunlight in summer, less sunlight in winter).
  - The moon has a pattern which can be observed through its changing phases.
  - Stars, other than our sun, are visible at night but not during the day.

Unit 4 Essential Questions:

- How can we observe, describe, and predict patterns of objects in the sky?
- How does the amount of daylight change throughout the year?

Additional Content Connections:

*These connections provide opportunities to score to other content standards with focused instruction.

ELA:

- Speaking and Listening
  - SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups
  - SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

Math:

- Measurement and Data

  Work with Time and Money
  - 1.MD.B.3 Tell and write time in hours and half-hours using analog and digital clocks.

  Represent and Interpret Data
  - 1.MD.C.6 (formerly 1.MD.C.4) Organize, represent, and interpret data with up to three categories, using tally tables, picture graphs, and bar graphs. Ask and answer questions about the total number represented, how many in each category, and how many more or less are in one category than in another.

Unit Vocabulary:

question	sun	cycle
observe/observation	moon	constellations
measure	star	phases
record	Earth	full moon
predict/prediction	orbit	new moon
	patterns	crescent moon
	seasons	quarter moon

Space Systems: Patterns and Cycles

Students who demonstrate understanding can:

1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.
[Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars, other than our sun, are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]

1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year.
[Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*.

Science and Engineering Practices

Planning and Carrying Out Investigations
Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1-2)

Analyzing and Interpreting Data
Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1)

Disciplinary Core Ideas

ESS1.A: The Universe and its Stars

- Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1-ESS1-1)

ESS1.B: Earth and the Solar System

- Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2)

Crosscutting Concepts

Patterns

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-ESS1-1, 1-ESS1-2)

Connections to Nature of Science

Scientific Knowledge Assumes an Order and Consistency in Natural Systems

- Science assumes natural events happen today as they happened in the past. (1-ESS1-1)
- Many events are repeated. (1-ESS1-1)