

UNIT 1: Patterns of Change in the Night Sky

Unit Summary:

In this unit of study, students observe, describe, and predict patterns in the movement of objects in the sky.

Concepts & Vocabulary:

Key vocabulary may include but are not limited to: Sun, Moon (not phases), Stars, Patterns, Night and Day, Sky, Amount of daylight, Time of the year (e.g. winter, summer), Sunrise and sunset

Stage 1 – Desired Results (Also see Disciplinary Core Ideas below)

Performance Expectations: (PE) (Established Goals / Content Standards)

- 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.

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> ● Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1-2) <p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> ● Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1) 	<p>ESS1.A: The Universe and its Stars</p> <ul style="list-style-type: none"> ● Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1-ESS1-1) <p>ESS1.B: Earth and the Solar System</p> <ul style="list-style-type: none"> ● Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2) 	<p>Patterns</p> <ul style="list-style-type: none"> ● Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-ESS1-1),(1-ESS1-2) - ----- <p>Connections to Nature of Science</p> <p>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</p> <ul style="list-style-type: none"> ● Science assumes natural events happen today as they happened in the past. (1-ESS1-1) ● Many events are repeated. (1-ESS1-1)

Enduring Understandings (1-3 max)
Students will understand that:

Essential Questions (1-2 EQ per EU)

<ul style="list-style-type: none"> • Patterns of the sun, moon, and stars can be observed, described and predicted. • The amount of daylight changes depending on the time of year. <p>Possible Misunderstanding(s):</p> <ul style="list-style-type: none"> • How the moon can be in the day and night sky. • That many different patterns are happening at the same time. 	<ul style="list-style-type: none"> • How does the sun, moon, and Earth work together to make day and night? • What are star patterns and how do we see them? • Why does the amount of daylight change with the seasons?
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Stage 2 – Model Assessments

<p>Summative Performance Task(s):</p> <p>1-ESS1-1:</p> <ul style="list-style-type: none"> • The teacher provides an anchor chart displaying the patterns of the moon. Moon Patterns <ul style="list-style-type: none"> ○ Students will complete the chart and draw the next 2 phases of the moon. <p>1-ESS1-2</p> <ul style="list-style-type: none"> • The teacher provides an anchor chart displaying the patterns of light at different times of the year. Patterns of Light and Dark (1-ESS1-2) <ul style="list-style-type: none"> ○ What patterns do you notice about your day? ○ Next spring will it be light or dark when you wake up? <p>Extension - Teacher will create another chart displaying the patterns of light at different times of the year in the southern hemisphere. Students look for new patterns and make new predictions?</p> <p>Audience:</p> <ul style="list-style-type: none"> • Peer, self-reflection, teacher 	<p>Formative Evidence:</p> <ul style="list-style-type: none"> • Slide Diagnostic Questions • Oral Comprehension Checks • Teacher Observation • Class Discussion/Anecdotal Notes • Mystery Science Assessments - Spinning Sky: Sun, Moon & Stars
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Stage 3 – Learning Plan Resources and Activities

<p>Suggested Resources for Planning:</p> <p>Phases of the Moon Song</p> <p>Mystery Science</p> <p>Grade 1 Mystery Science Planning Guide</p> <p>Mystery Science Supply List</p> <p>New Jersey Center for Teaching & Learning</p> <p>Wonders of Science</p> <p>Standard Based Grading:</p> <p>1-ESS1-1 Analysis Chart</p>
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[1-ESS1-2 Analysis Chart](#)

Learning Activities:

1-ESS1-1:

- Observation Journal - Students will record observations of the moon, sun, and stars throughout the unit. They will identify patterns and draw conclusions based on their observations for each section.
- Class Moon Calendar - students bring home the calendar to draw in the moon, make observations, etc.
- [The Sun, Earth, Moon, and Star Lesson Slides](#)
 - This includes:
 - KLEWS Chart (ongoing graphic organizer)
 - Daytime Sky Observations
 - Class Demonstrations
 - Diagnostic Assessment Questions
 - Moon Pattern Sequence and Ordering
 - Oreo Investigation
 - Nighttime Observations (HW)
- [Mystery 1: Could a statue's shadow move?](#)
- [Mystery 3: How can the sun help you if you're lost?](#)
- [Mystery 5: Why do the stars come out at night?](#)

1-ESS1-2:

- [Mystery 4 Read Along: Why do you have to go to bed early in the summer?](#)
- [Patterns of Light and Dark](#)

Phenomena Videos:

- [Seeing the Moon During the Day](#)
- [Total Solar Eclipse](#)
- [Dubai 24 Hour Timelapse](#)
- [Time Lapse: The Difference Between summer and winter in Finland](#)

NEWSELA:

- [The Shortest Day of the Year is Right Around the Corner](#)
- [Earth's Moon, The Fifth Largest in the Solar System](#)

Suggested Methods:

- Phenomena based learning
- Problem Based Learning (PBL)
- Inquiry-Based Learning
- Case studies
- Engaging in Argument w/ evidence