Unit 6: Objects and Patterns in the Sky (Space Systems)

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Title Section

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Science: Grade 1

Unit 6: Objects and Patterns in the Sky

Belleville Board of Education

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Unit Overview

In this unit, children will...

- identify and describe objects in the sky
- use evidence to describe predictable patterns of the sun, moon and stars
- observe and model patterns of the moon's phases
- use observations to describe characteristics of each season
- predict patterns of change that take place from season to season
- use observations to compare the amount of daylight from season to season
- explore how seasons affect people and animals

Enduring Understanding

- Students will observe the growth patterns of plants exposed to different amounts of sunlight, and collect and analyze data that explains how seasonal patterns of daylight affect plant growth.
- students will identify and describe objects in the sky and observe and describe predictable patterns of the sun, moon, and stars.
- students will make observations at different times of year to relate the amount of daylight to the time of year.

Essential Questions

Essential Questions for Uni**t 6 Project:**

Students can be prepared for their Unit 6 Project by asking the following questions:

- Why do we see the moon in the sky at night?

- Does the moon actually change?
- Why does it seem like the moon changes?
- How could you build a model that can show the cause for the moon's phrases?

Essential Questions:

- How do objects in the sky seem to change?
- What are patterns of daylight?
- Which seasons would you choose to plant flowers in with the most daylight?

Exit Skills

By the end of Grade 1, Science Unit 6, the students should be able to:

- describe how some objects change in the sky
- provide examples of the changes they describe
- identify why the changes are patterns
- describe the pattern of sunlight
- compare the amount of sunlight during the different seasons
- effectively explain how the change of sunlight relates to the seasons

New Jersey Student Learning Standards (NJSLS-S) & NGSS

SEP - Analyzing and Interpreting Data

SEP - Planning and Carrying Out Investigations

DCI - The Universe and its Stars

DCI - Earth and the Solar System

CCC - Patterns

CCC - Scientific Knowledge Assumes an Order and Consistency in Natural Systems

NextGen Science Standards

1-ESS1-1	Use observations of the sun, moon, and stars to describe patterns that can be predicted.
1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.
1-ESS1-1.1.1	Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Interdisciplinary Connections

Do the Math! pp. 288, 303

Lesson 1:

Connections to Math

1.G.A.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Connections to English Language Arts

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Lesson 2:

Connections to Math

MP.2 Reason abstractly and quantitatively.

1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem.

Connections to English Language Arts

W.1.7 Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

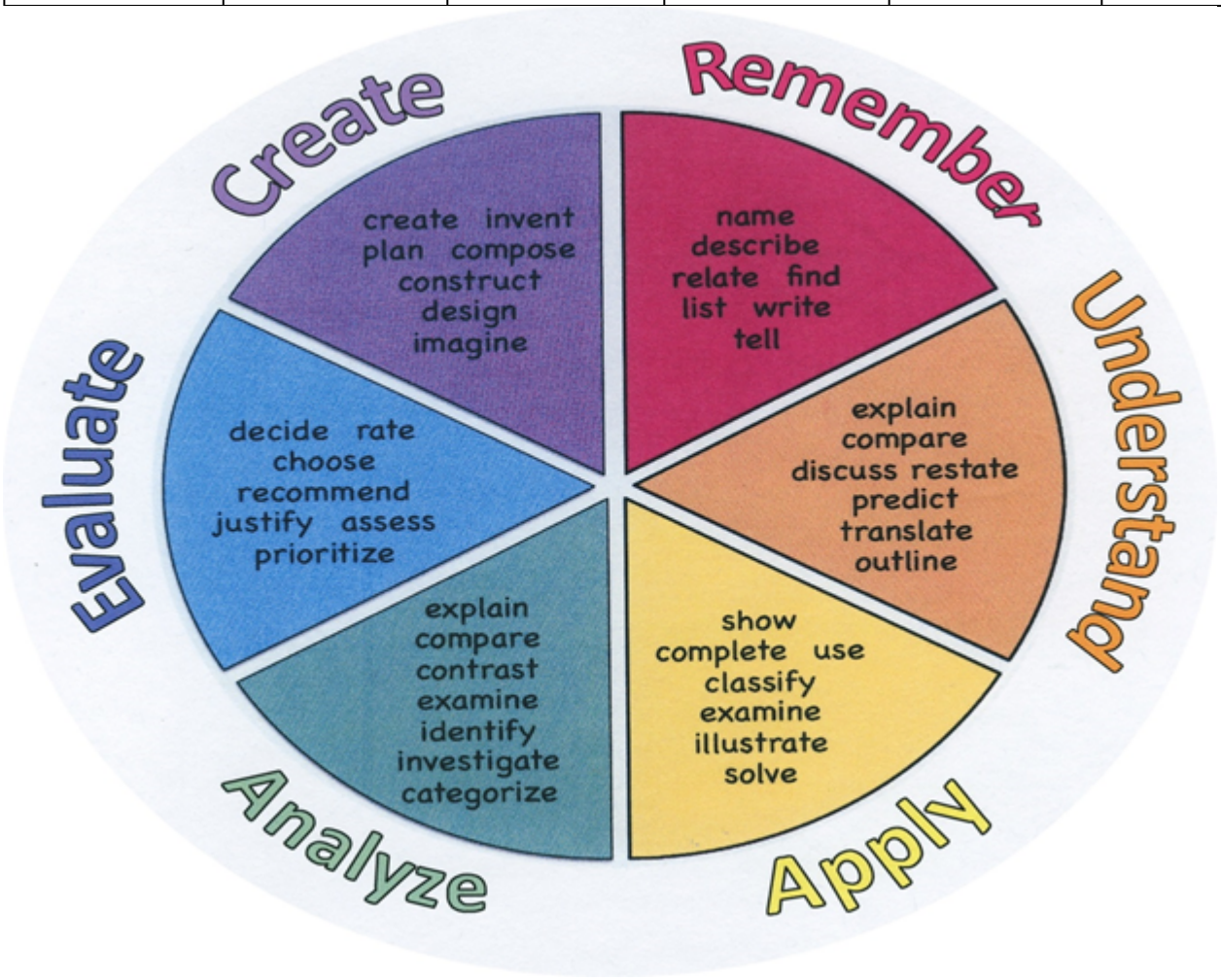
Learning Objectives

- SWDAT identify and describe objects in the sky
- SWDAT observe and describe predictable patterns of the sun, moon, and stars
- SWDAT explore the sun's apparent movement across the daytime sky
- SWDAT use their observations to make a claim that answers their question
- SWDAT make observations at different times of year to relate the amount of daylight to the time of year
- SWDAT compare what time the sun sets in three different seasons
- SWDAT make a claim about how the time of sunset changes from season to season

Action Verbs: Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise

Point Quote Recall Recognize Repeat Reproduce	Restate Rewrite Select Show Summarize Tell Translate Associate Compute Convert Discuss Estimate Extrapolate Generalize Predict	Change Classify Complete Compute Discover Divide Examine Graph Interpolate Manipulate Modify Operate Subtract	Discriminate Illustrate Outline Point out Separate	Test	Generate Integrate Prescribe Propose Reconstruct Revise Rewrite Transform



Suggested Activities & Best Practices

Vocabulary Game- Show the Word

Hands-On Activities: Observe the Pattern of the Sun & Observe Patterns of Sunset

Interactive Activity: Eyes on the Sky!

Unit Project

Take It Further

- Space Technology
- The Midnight Sun

Assessment Evidence - Checking for Understanding (CFU)

- Admit Tickets
- Anticipation Guide
- Compare & Contrast
- Create a Multimedia Poster
- DBQ's
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- HMH End-of-Year Test (Benchmark)
- HMH Mid-Year Test (Benchmark)
- HMH Performance-based Assessment (Alternative)
- Illustration

- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes (Formative)
- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit review/Test prep
- Unit tests (Summative)
- Web-Based Assessments
- Written Reports

Primary Resources & Materials

HMH Science Dimensions: Teacher Edition, Student workbooks, online resources

HMH Equipment & Safety Kits

HMH Science Dimensions S&E Leveled Readers

- On Level: How Can We Observe and Record Weather? How Does the Sky Seem to Change?
- Extra Support: How Can We Observe and Record Weather? How Does the Sky Seem to Change?
- Enrichment: Move It!; A Closer Look at Telescopes

Ancillary Resources

https://ngss-assessment.portal.concord.org/

Technology Infusion

HMH Science Dimensions "Explore online" sections embedded throughout online teacher/student edition to extend student learning

HMH Science Dimensions "Can you explain/solve it?" videos embedded throughout online teacher/student edition

Computer-based assessments

Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;
- Visual and Performing Arts.

CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP5.1	Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies,

	understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
CRP.K-12.CRP6.1	Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

21st Century Skills

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

Differentiation

Lesson Vocabulary (star, sun, moon, phases)

Leveled Readers (On Level, Extra Support, Enrichment)

Reinforce Vocabulary- To help students remember the vocabulary words, choose two objects and have students tell what the difference is between them. Invite students to make up riddles for others to solve. For

example, "You can see me in the daytime sky. What am I?"

RTI/Extra Support- Use a light bulb to represent a star. Use a ball wrapped in aluminum foil to represent the moon. Show how light from the light bulb reflects off the ball, as the sun's light reflects off the moon.

Extension- Research the names of some of the bright stars or constellations in the nighttime sky and share them with the class.

ELL- Point out and reinforce words associated with times of day including *daytime, nighttime, early morning, noon,* and *late afternoon*. To help students put these words into context, talk with them about what they might be doing at each time of day.

(ELL support resources include a glossary in English and Leveled Readers in Spanish and English)

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan

- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

- Provide modifications dictated by the IEP/504 Plan
- Modify assessment format
- Check work frequently for understanding

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multiple test sessions
- multi-sensory presentation
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

English Language Learning (ELL)

- Provide study guides
- Allow students to correct errors (looking for understanding)
- Allowing productions (projects, models, timelines, demonstrations, charts, etc.) to demonstrate student's learning

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

At Risk

- Tutoring by peers
- Using videos, illustrations, pictures, and drawings to explain or clarify
- Decreasing the amount of work represented or required

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives

- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

- Advanced problem-solving
- Higher order, critical and creative thinking skills, and discovery
- Utilize project based learning for a greater depth of knowledge

- Above grade level placement option for qualified students
- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge