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Modeling the Moon's Motion and Phases Lab Activity

Aligned with All Published National Standards

ward's science

IMGN 250-8054

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framework for K-12 science education © 2012

* The Dimension I practices listed below are called out as **bold** words throughout the activity.

DIMENSION 1 Science and Engineering Practices

×	Asking questions (for science) and defining problems (for engineering)	×	Use mathematics and computational thinking
×	Developing and using models	×	Constructing explanations (for science) and designing solutions (for engineering)
	Planning and carrying out investigations	×	Engaging in argument from evidence
×	Analyzing and interpreting data	×	Obtaining, evaluating, and communicating information

DIMENSION 2 Cross Cutting Concepts

×	Patterns		Energy and matter: Flows, cycles, and conservation
	Cause and effect: Mechanism and explanation		Structure and function
×	Scale, proportion, and quantity		Stability and change
×	Systems and system models		

DIMENSION 3 Core Concepts

Discipline	Core Idea Focus
Earth and Space Science	ESS1: Earth's Place in the Universe

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Middle School Standards Covered	High School Standards Covered
MS.ESS1-1: Develop and use a model of the Earth-sun-moon system to describe the cyclic pattern of lunar phases, eclipses of the sun and moon, and seasons.	HS.ESS1- 4: Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.

national science education standards © 1996

Content Standards (K-12)			
×	Systems, order, and organization		Evolution and equilibrium
×	Evidence, models, and explanation		Form and Function
×	Constancy, change, and measurement		

Earth and Space Science Standards Middle School		Earth and Space Science Standards High School	
×	Earth in the Solar System	×	Origin and Evolution of the Earth System
		×	Origin and Evolution of the Universe

× Indicates standards covered in activity

learning objectives

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1B: Scientific Inquiry
4. The Physical Setting	4A: The Universe
	4B: The Earth
11. Common Themes	11A: Systems
	11C: Constancy and Change

activity objectives:

- To model the motion of the Moon.
- To observe the effects of the Moon's motions on Earth-bound observations.
- To discriminate between rotation and revolution.
- To understand the difference between a lunar month and a sidereal month.

time requirement:

Three 40 minute classes