

Teacher Idea Kit for

Abraham Lincoln: The Case of the Missing Moon



**A Space Science Program
For Grades 3 – 6**

Presented by

**ABBITT
PLANETARIUM**



Funded in part by:

Langley 
Federal Credit Union
Spirit of community. Warmth of family.
Pride of membership.



Abraham Lincoln: The Case of the Missing Moon

Suggested for Grades 3 – 6

Objectives

After visiting the planetarium for Abraham Lincoln: The Case of the Missing Moon, the student should be able to:

1. Identify the ways in which the Moon influences the Earth and vice versa.
2. Explain the formation of the Moon and how the Moon came to appear in our skies as it does today.

State Standards of Learning Objectives

This planetarium presentation addresses the following Virginia State SOLs:

Science: 3.8, 4.1, 4.8, 6.8

Vocabulary

Abraham Lincoln:	America's 16 th president. Lincoln was president of the United States during the Civil War. Prior to becoming president, Lincoln was a successful trial lawyer in Illinois.
comet:	A celestial body comprised mostly of ice and dust. Comets warm as they approach the Sun and develop spectacular tails that can be millions of miles long.
eclipse:	The blocking of the Sun by a celestial body such that its shadow passes across another celestial body.
impact:	A collision between two celestial bodies.
Meteor shower:	A regular recurring fall of meteors into the Earth's atmosphere, usually caused by the Earth passing through the debris left behind by the passage of a comet.
Moon :	The Earth's only natural satellite.
phases:	Changes in the apparent shape of the celestial body cause by the perspective of the observer as compared to the position of the Sun.
revolution:	The motion of a body around a central object or point
rotation:	The motion of a body around an internal axis.
tides :	The twice daily rise and fall of the levels of bodies of water on the Earth caused by the gravitational influence of the Moon and to a lesser extent, the Sun.

Background Material for Abraham Lincoln: The Case of the Missing Moon

Crime-solving dramas have been a popular television genre for decades, as demonstrated by the long-term success of the CSI and Law & Order family of programs. There is something compelling about a mystery, especially a mystery which involves someone famous or well-known. This program capitalizes on that fact to demonstrate to students the effectiveness of applying scientific principles to solving mysteries of many varieties, including historical ones.

Abraham Lincoln was a successful trial lawyer in Illinois before he became President of the United States. His most celebrated trial was a murder case, and in that trial, Lincoln took

the rare step of introducing scientific evidence to defend his client and disprove the statements of eyewitnesses. Lincoln's primary piece of evidence was an almanac which disputed the amount of moonlight available to the witness, and cast doubt on his entire testimony. For over 150 years, historians and astronomers have argued about whether or not Lincoln actually had science on his side, or did he make a fake document showing exactly what he needed to set his client free? Today, we have the ability to answer this question using forensic astronomy.

In this program, the students will discover the case presented to Lincoln through a recreation based on actual court documents from the period. A thorough scientific investigation of the Moon is undertaken, and the question of Lincoln's honesty answered. Students will see how modern science can help unravel historical mysteries, and how investigative techniques can be applied to questions of science. A question and answer period is included to address student questions at the conclusion of the program.

Concepts Covered During the Planetarium Visit

1. The Moon influences in the Earth in numerous ways. The most prominent of these are the tides, but other effects of the Moon's gravitational influence can also be seen, including the braking of the rotation of the Earth.
2. The Moon was most likely formed in a massive impact event on the early Earth. Debris from the impact thrown into orbit around the Earth eventually coalesced to form the Moon. Various gravitational effects between the Earth and Moon have resulted in the Moon we know today.

Pre-Visit Activities

We recommend that you conduct at least one of these activities with the class before your visit to the planetarium theater. Be sure to raise questions that can be left unanswered until the discussion period in the show.

1. Discuss Abraham Lincoln and his life. Emphasize his years before becoming president.
2. Study the Moon. Can you identify any features? Watch the Moon through one month. Do you see any changes taking place during this period?
3. Learn about court procedures and trials during the 1800s. How are they different from the court procedures we use today? In what ways are they similar?

Post-Visit Activities

We recommend that you conduct at least one of these activities with your class following their visit to the planetarium theater.

1. Investigate the early lives of some of our other presidents. Do any involve mysteries such as the one we explored in Lincoln's life? How can science help in solving these mysteries?

2. Make a chart of the height of the first quarter Moon in the south every month throughout the school year. Can you explain why the height of the Moon might be changing? The first quarter Moon is visible early in the evening and is the easiest to chart. You can call the Virginia Living Museum at (757) 595-1900 x256 to find out more information on when to look for the first quarter Moon.

3. Visit the Lincoln Memorial or Mount Rushmore, or another famous site involving Abraham Lincoln. Discover something new about our enigmatic 16th president!

Recommended Books and Web Sites

Planisphere: A planisphere is a device used to find objects in the sky. It shows the user a picture of the night sky at the precise day and time in question. Planispheres can be purchased online or in the VLM Gift Store.

The Sky Observer's Guide: A Golden Guide by R. Newton Mayall, Margaret Mayall and Jerome Wyckoff, Golden Press, New York.

SpaceWeather: SpaceWeather.com

Jet Propulsion Laboratory Homepage: <http://www.jpl.nasa.gov>

Astronomical Museum: <http://boas3.bo.astro.it/dip/Museum/MuseumHome.html>

NASA: <http://nasa.gov>

The National Radio Astronomy Observatory: <http://www.nrao.edu/>

Virginia Living Museum Astronomy: <http://www.thevlm.org>

