

## VOCABULARY:

**Aurora Borealis:** A natural light in the sky particularly in the Arctic and Antarctic regions caused by the collision of charged particles with atoms in the high altitude thermosphere.

**Constellations:** Any of the 88 groups of stars as seen from the earth and the solar system.

**Eclipse:** The obscuration of the light of the moon by the intervention of the earth between it and the sun (lunar eclipse).

**Ellipse:** A closed, symmetric curve shaped like an oval which can be formed by intersecting a cone with a plane that is not parallel or perpendicular to the cone's base.

**Milky Way:** The spiral galaxy containing our solar system.

# Show Me Science

## The Wonders of Astronomy & Space

## The History of Astronomy



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**K4602DVD**  
**Teachers Guide**

## SYNOPSIS:

Ancient civilizations such as the Babylonians, the Chinese and the Greeks studied the stars without the benefit of telescopes and yet identified patterns of stars that we still use today. These early scientists collected the first data in the science of Astronomy.

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## CURRICULUM UNITS:

- Astronomy
  - Integrated science
  - Physical science
  - Physics
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## CAREER OPPORTUNITIES:

- Astronaut
- Astronomer
- Astrophysicist
- Engineer
- Physicist

## PROGRAM OVERVIEW:

Beginning with the Babylonians who named the constellations and charted the rising and setting of the sun, this program presents a detailed survey of important contributions to this branch of science.

Kepler developed three laws of planetary motion. They are: planets orbit in ellipses rather than circles, that planets move faster when nearer the Sun, and that different orbital periods – as when Earth’s orbit overtakes that of Mars - are why planets appear to make loops in the sky against the background stars. Although Kepler’s laws explained the movements of stars and planets much better than Ptolemy’s theory, it wasn’t until Galileo Galilei that more than a few people accepted the heliocentric theory.

Sir Issac Newton made several contributions to our understanding of Astronomy. He developed the first reflecting telescope, split sunlight into a spectrum of colors and most importantly, worked out the theory of gravity. Newton’s work supported Kepler’s laws and modern Astronomy was born. With the development of more powerful telescopes, new discoveries came rapidly. In the early 20th century, Edwin Hubble used a technique called spectroscopy, which analyzes the pattern of color from stars, to determine that the universe was expanding

## ISSUES & CRITICAL THINKING:

1. Describe the evidence that supports the theory that the planets orbit the sun.
2. Explain why a person living in the Northern hemisphere will not be able to see the Southern Cross.
3. Discuss how Newton’s law of universal gravitation supported Kepler’s laws of planetary motion.

Ask students to research exceptional advances in technology that helped astronomers and their discoveries.