



## THE STAR★WITNESS

### Supplemental Educational Support Materials

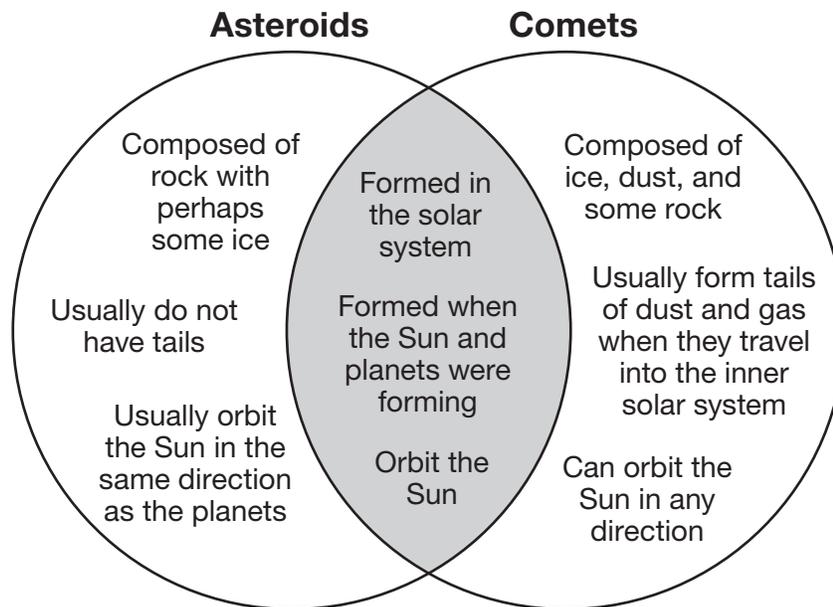
for Special Feature: “Asteroid with Six Comet-like Tails Surprises Astronomers”

#### Discussion questions

**Q1:**

**What are some similarities and differences between asteroids and comets?**

**Answer:**



**Q2:**

**Scientists suggest two ways the asteroid tails formed. The asteroid tails may have been the result of a collision, or the asteroid is spinning so fast that material is spinning off of it, creating the tails. What evidence is presented in the story to support one idea over the other?**

**Answer:**

Scientists say that if the tails resulted from a collision, there would have been one big blast of dust, not several smaller blasts, as shown in the Hubble images. They also report that the six tails were created in six periodic ejection events over a series of five months.

Educational Product	
Educators & Students	Grades 5–8

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**Q3:**

**What evidence do astronomers have for concluding that the object with tails is an asteroid and not a comet?**

**Answer:**

One of the primary pieces of evidence is the location of the object in the asteroid belt. Another clue is that it appears to have a similar orbit as other pieces of a larger asteroid that broke apart in a collision roughly 200 million years ago. Meteorites from these bodies show evidence of being heated, which means that any ices in the original rock would be driven off, causing changes to the rocks and making them metamorphic rocks.

## Vocabulary words

**Astronomer**

A scientist who studies the universe and the celestial bodies residing in it, including their location, motion, composition, and history. Many of the scientists at the Space Telescope Science Institute are astronomers. Astronomers from all over the world use the Hubble Space Telescope.

**Asteroid**

A small solar system object composed mostly of rock. Most of these objects orbit the Sun between Mars and Jupiter. Their diameters range anywhere from 33 feet (10 meters) to about 620 miles (1,000 kilometers). The largest known asteroid, Ceres, has a diameter of 606 miles (975 kilometers).

**Comet**

An object made of ice, dust, and rock, often referred to as a “dirty snowball.” Typically a few kilometers in diameter, comets orbit the Sun in paths that either allow them to pass by the Sun only once or that repeatedly bring them through the solar system (as in the 75-year orbit of Halley’s Comet). A comet’s “signature” long, glowing tail is formed when the Sun’s heat warms the coma or nucleus, which releases vapors into space.

**Vaporize**

The process of becoming a gas, generally as a result of heat. Both liquids and solids can be vaporized into a gas.

**Hubble Space Telescope**

An orbiting telescope that collects light from celestial objects in visible, near-ultraviolet, and near-infrared wavelengths. The telescope’s primary mirror is 2.4 meters (8 feet) wide. It orbits the Earth about every 96 minutes and is powered by sunlight collected with its two solar arrays.

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**Orbit**

The act of traveling around a celestial body, or the path followed by an object moving around a celestial body. For example, the planets travel around, or orbit, the Sun because the Sun's gravity keeps them in their paths, or orbits.

**Education Standards****Common Core Standards for English Language Arts**

<http://www.corestandards.org/ELA-Literacy/CCRA/R/>

**College and Career Readiness Anchor Standard for Reading****CCSS.ELA-Literacy.CCRA.R.10**

Read and comprehend complex literary and informational texts independently and proficiently.