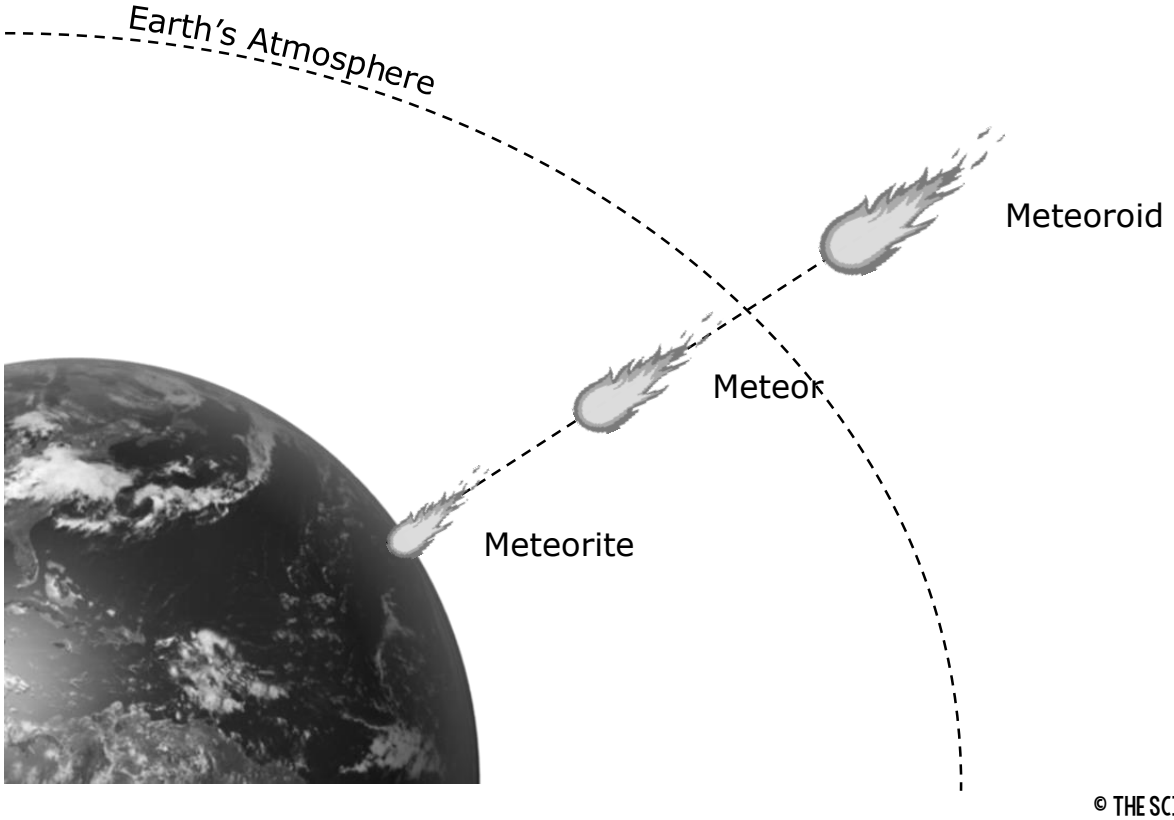
Name: _____ Date: _____

Asteroids, Meteors, and Comets

Science Literacy Article

There are many celestial (space) objects other than just the sun and planets.

- **Asteroids** are large, rock-shaped objects that orbit the Sun. They are generally *smaller in size than planets* and are composed of rock and metal. Most asteroids are large enough to have numerous *craters* on their surfaces. The majority of asteroids in our solar system are located in the **asteroid belt** which lies between the orbits of Mars and Jupiter. A few examples of asteroids in our solar system are Ceres, Vesta, and Juno.
- **Meteoroids** are rocky objects that orbit the Sun. They are often composed of the metals nickel and iron. Meteoroids are *much smaller* in size than asteroids. In fact, most meteoroids are only about the size of a pebble. They are most likely small pieces of asteroids or comets that have broken off. Meteoroids change their name depending on where they are. When a meteoroid enters the Earth's atmosphere, is it referred to as a **meteor**. Meteors can heat up to nearly 2,000 degrees Celsius and produce a *streak of light in the sky* as they travel through the atmosphere. For this reason, meteors are often referred to as "shooting stars." When a meteor hits or lands on Earth's surface, it is then referred to as a **meteorite**. Most meteorites are very small, cause little damage, and usually only weigh a few pounds. Meteorites are classified into three groups called stony, stony-iron, and iron meteorites.



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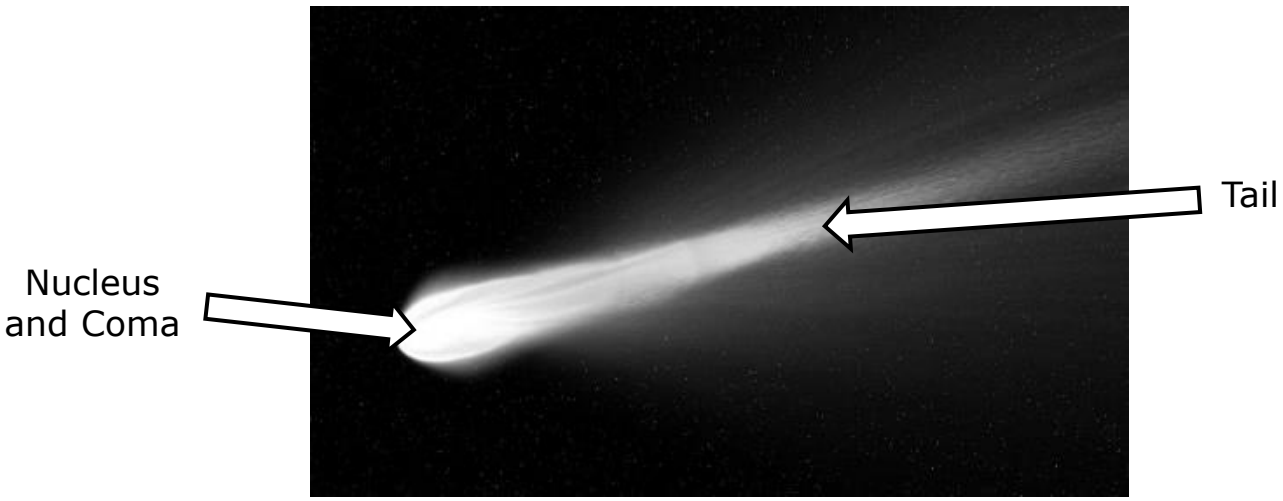
- **Comets** are chunks of ice and dust that travel through space. They are often referred to as "dirty snowballs." Comets revolve around the Sun in *long, elliptical orbits*. Due to these extremely long, elliptical orbits, comets often take much longer than planets or other celestial objects to orbit the Sun. For example, Halley's comet takes 75 years to revolve around the Sun once. However, that's nothing compared to the comet named Hyakutake. This comet takes over 100,000 years to revolve around the Sun just one time! Although the composition of comets sounds simple, the structure of a comet can be broken down into specific parts:
  - The **nucleus** of a comet is the inner layer of its head.
  - The **coma** is the outer layer of its head.
  - The **tail** of a comet is actually broken down into two different parts known as the dust tail and ion tail. The **dust tail** forms as sunlight pushes small, solid particles away from a comet's nucleus. The **ion tail** forms when ultraviolet light from the Sun ionizes the atoms in a comet's coma. Solar wind then carries the ions *outward and away from the Sun* which results in a straighter and narrower tail than the dust tail. Both of these tails can be millions of kilometers long.



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