Other than the sun, planets, and moon, what other objects are found in the Solar System?

In this lesson, we are going to be comparing comets, meteors, and asteroids which are found in the Solar System.

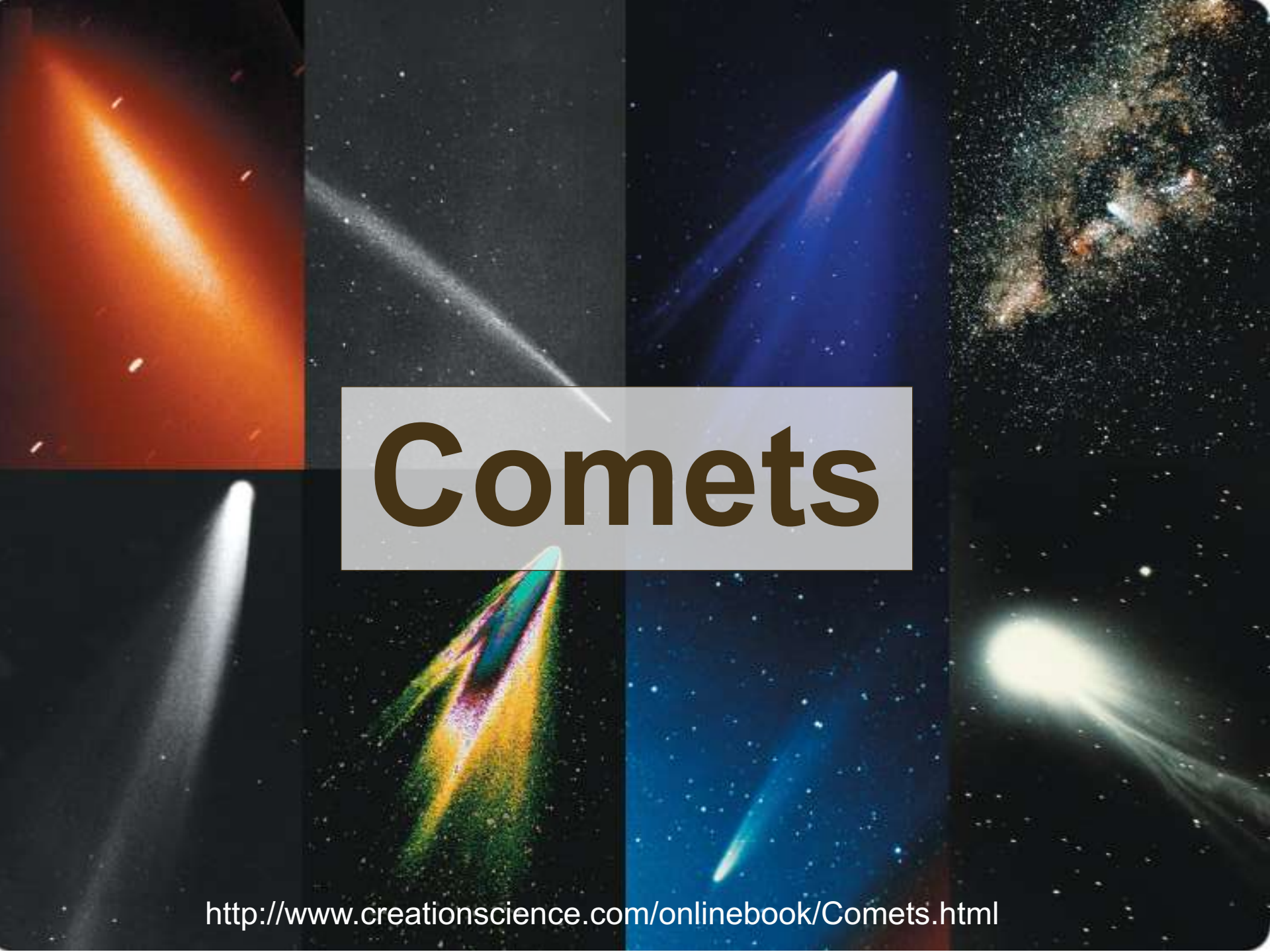
Essential Question:

What is the difference between a comet, meteor, and asteroid?

Standard S6E1f. Describe the characteristics of comets, asteroids, and meteors.

Activating Strategy

Complete the “Before the Lesson” section of the Comets, Meteors, and Asteroids Anticipation Guide by selecting which object each statement describes based on your prior knowledge.



http://www.creationscience.com/onlinebook/Comets.html

Comets

- Comets are composed of dust and rock mixed with frozen water, methane, and ammonia
- Comets are considered to be like a large, dirty snowball

Comets

Comets travel around the sun in elliptical orbits

http://www.classzone.com/books/earth_science/terc/content/visualizations/es2706/es2706page01.cfm?chapter_no=visualization

Comets

- When a comet nears the sun, some of it melts and forms a long tail (gases in the comet are vaporized by the sun)
- A comet has 2 tails, a dust tail and a gas tail.
- When a comet moves farther away from the sun, the tail disappears

http://www.windows2universe.org/comets/comet_model_interactive.html

http://www.solarsystemscope.com/ison/

http://amazing-space.stsci.edu/resources/explorations/comets/lesson/make_nf.html

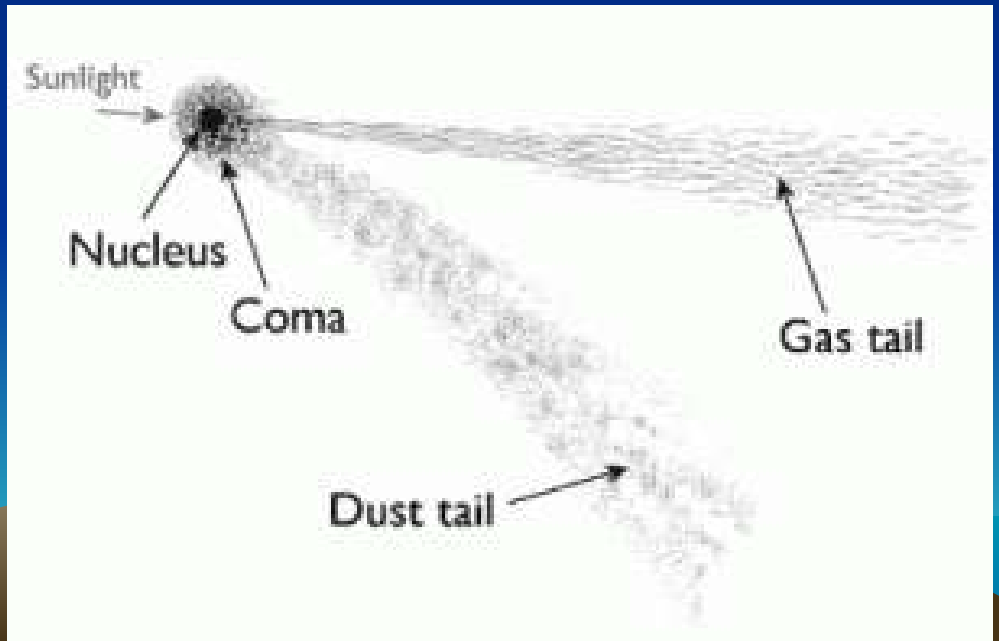
- PARTS OF A COMET

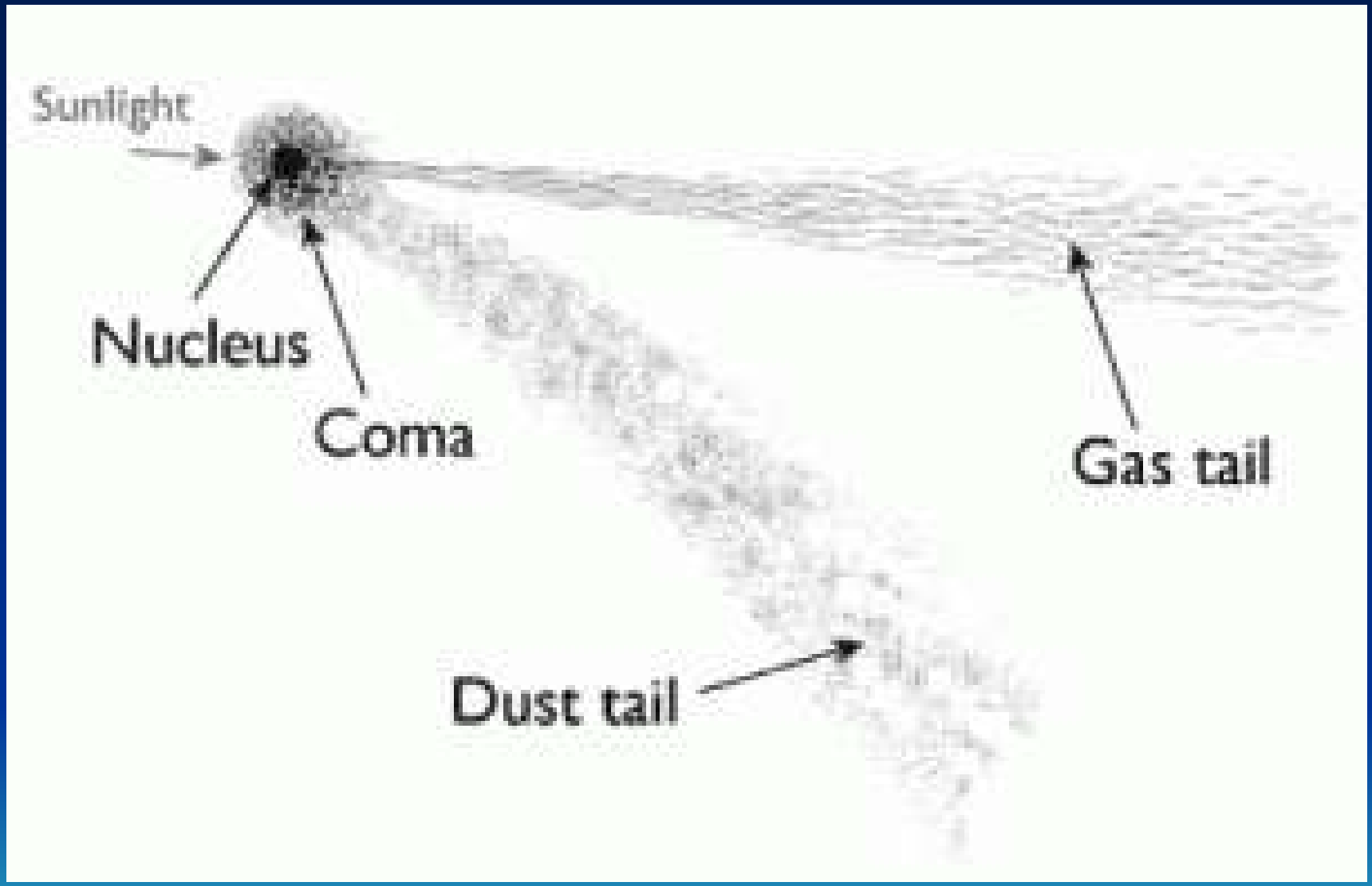
Nucleus: The nucleus is the frozen center of a comet's head. It is composed of ice, gas, and dust.

Coma: The coma is a blob of gas that surrounds the nucleus of a comet; The coma is composed of water vapor, carbon dioxide gas, ammonia, and dust.

Gas Tail: A tail of charged gases (ions) always faces away from the sun because the solar wind.

Dust Tail: The dust tail is a long, wide tail composed of tiny dust particles ; this tail curves slightly due to the comet's motion.




Sunlight
Nucleus
Coma
Gas tail
Dust tail

Where do comets come from?

- **Comets come from the Kuiper belt and Oort Cloud that is beyond Pluto's orbit.**

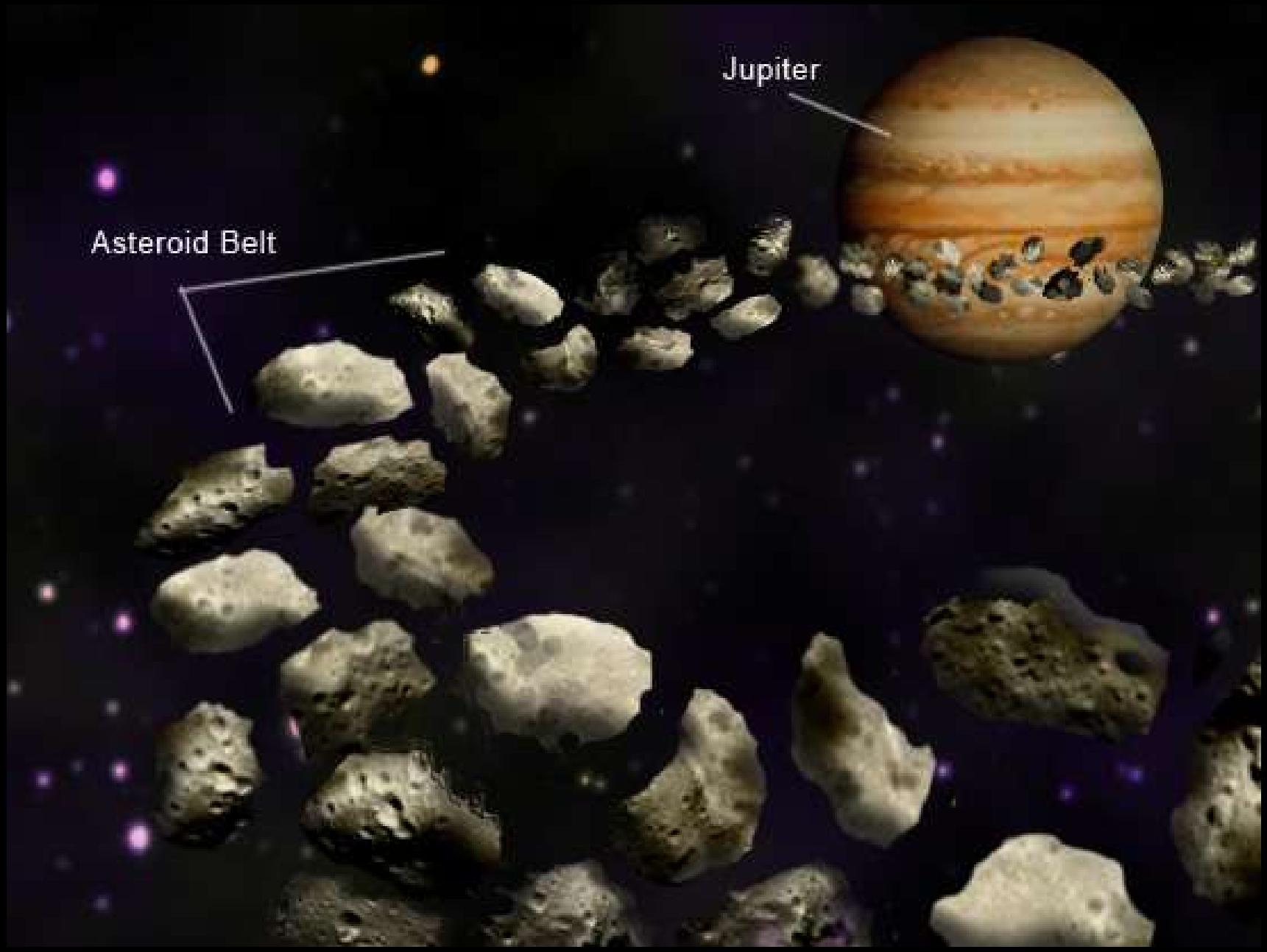

Asteroids

Asteroid

- A piece of rock similar to the material formed into planets.
- An Asteroid is smaller than a planet but larger than a meteoroid

Asteroid

- Most asteroids are located in an area between the orbits of Mars and Jupiter called the Asteroid Belt.
- Why are they located there?
- The gravity of Jupiter might have kept a planet from forming in the area


Jupiter
Asteroid Belt

You may have noticed that in the last slide we used the term **Meteoroids** to describe objects in the sky, but your essential question and the standard say **Meteor**.

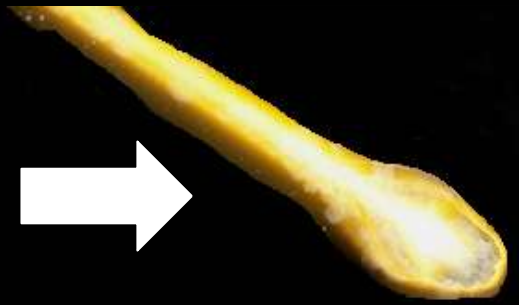
What's the difference?

Meteoroid, Meteor, Meteorite?

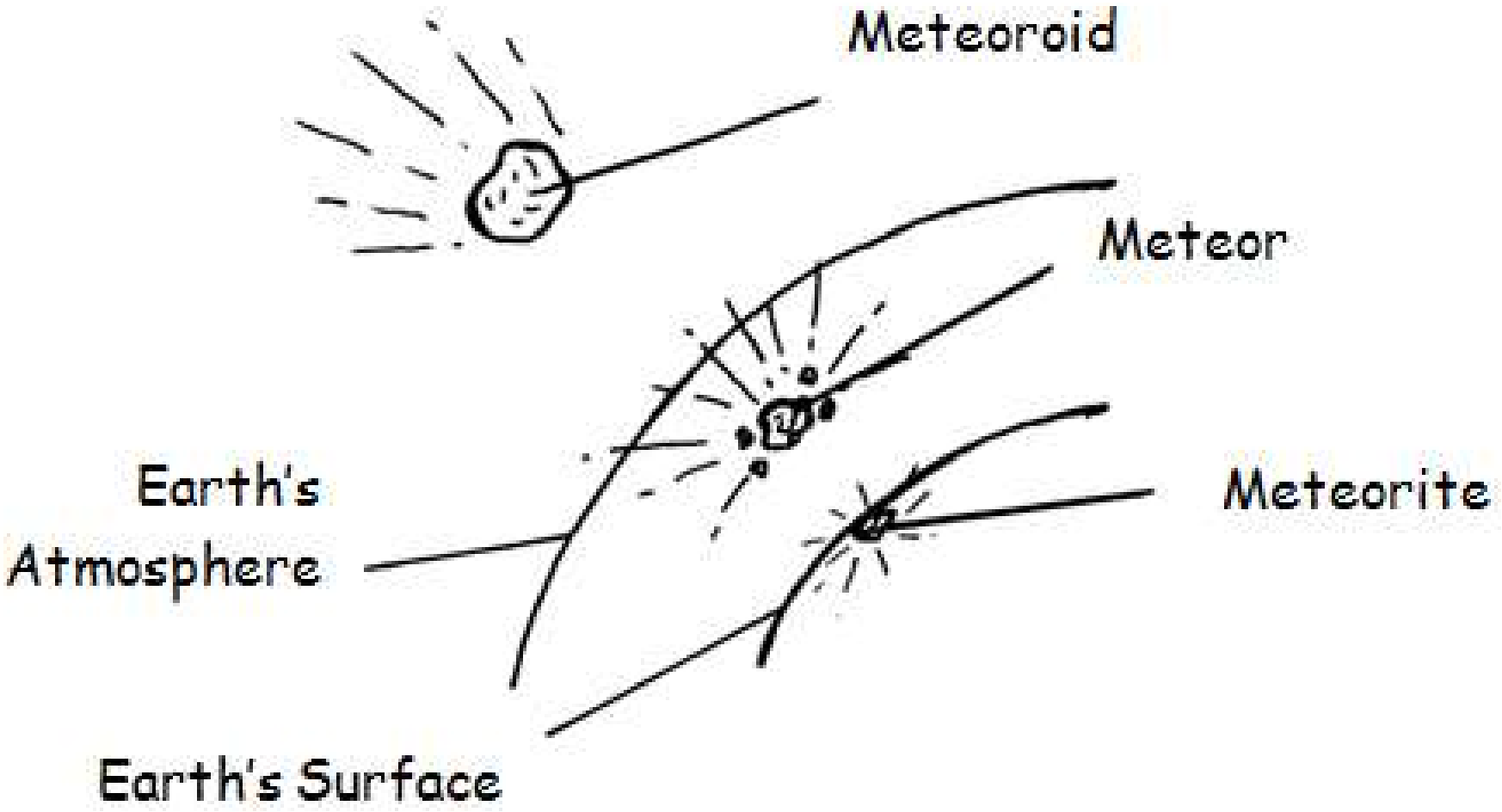
The difference is just based on where the rock is located when you are describing it.

Meteoroid is a “space rock” that is still in space

Meteor is a meteoroid that burns up in the earth’s atmosphere (called a Shooting Star)



Meteorite is a meteoroid that hits the earth’s surface

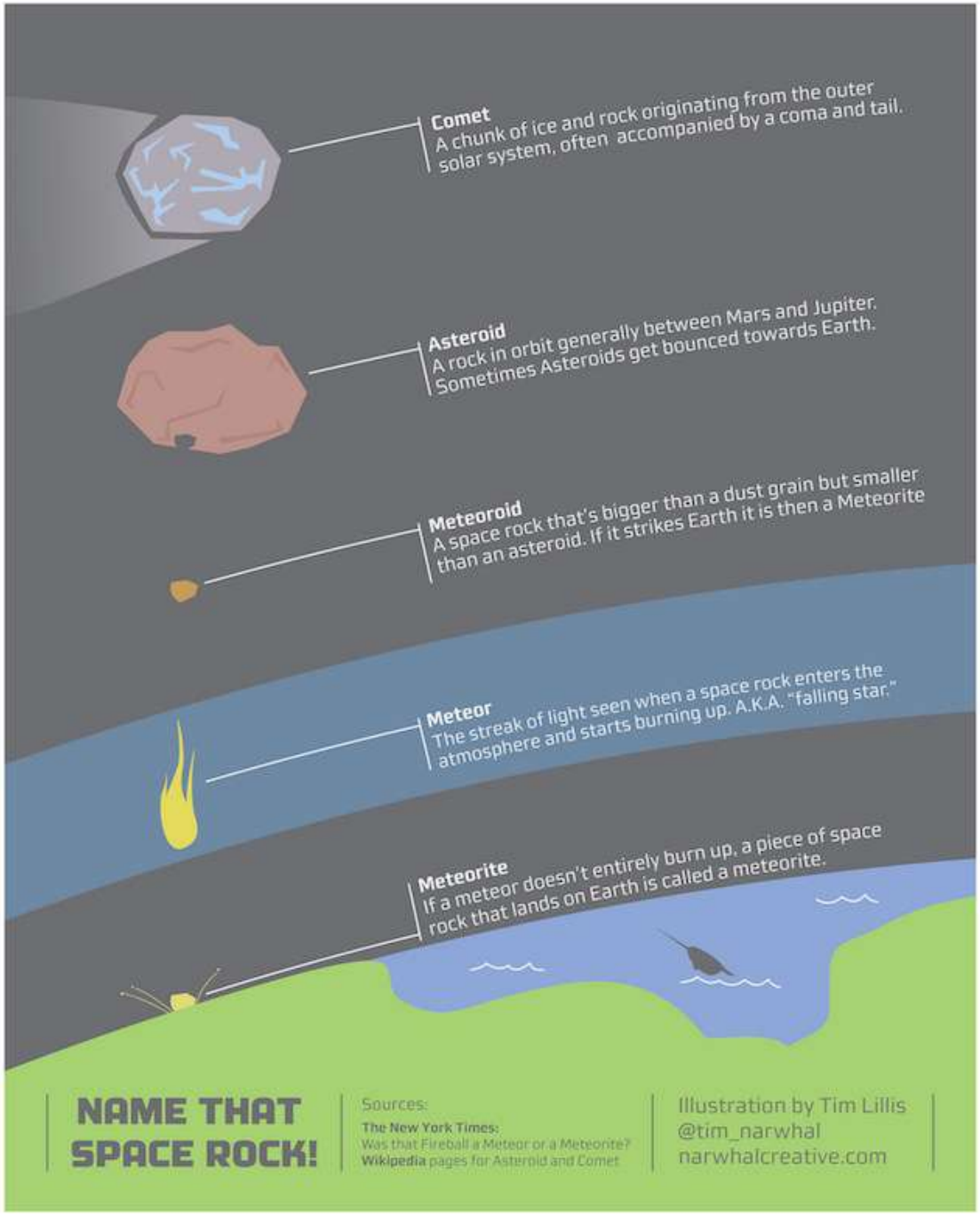

Meteoroid
Meteor
Earth's
Atmosphere
Meteorite
Earth's Surface

A Meteor is considered harmless even though it can be viewed from earth at times.

Distributed Summarizing

On your notes sheet, explain the difference between a comet, meteoroid, and meteor.

When instructed, turn to an elbow partner and share your answer.


Comet
A chunk of ice and rock originating from the outer solar system, often accompanied by a coma and tail.
Asteroid
A rock in orbit generally between Mars and Jupiter. Sometimes Asteroids get bounced towards Earth.
Meteoroid
A space rock that's bigger than a dust grain but smaller than an asteroid. If it strikes Earth it is then a Meteorite
Meteor
The streak of light seen when a space rock enters the atmosphere and starts burning up. A.K.A. "falling star."
Meteorite
If a meteor doesn't entirely burn up, a piece of space rock that lands on Earth is called a meteorite.
NAME THAT SPACE ROCK!
Sources:
The New York Times:
Was that Fireball a Meteor or a Meteorite?
Wikipedia pages for Asteroid and Comet
Illustration by Tim Lillis
@tim_narwhal
narwhalcreative.com

Summarizing Strategy

Complete the “After the Lesson” section of the Comets, Meteors, and Asteroids Anticipation Guide by selecting which object each statement describes.