

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.

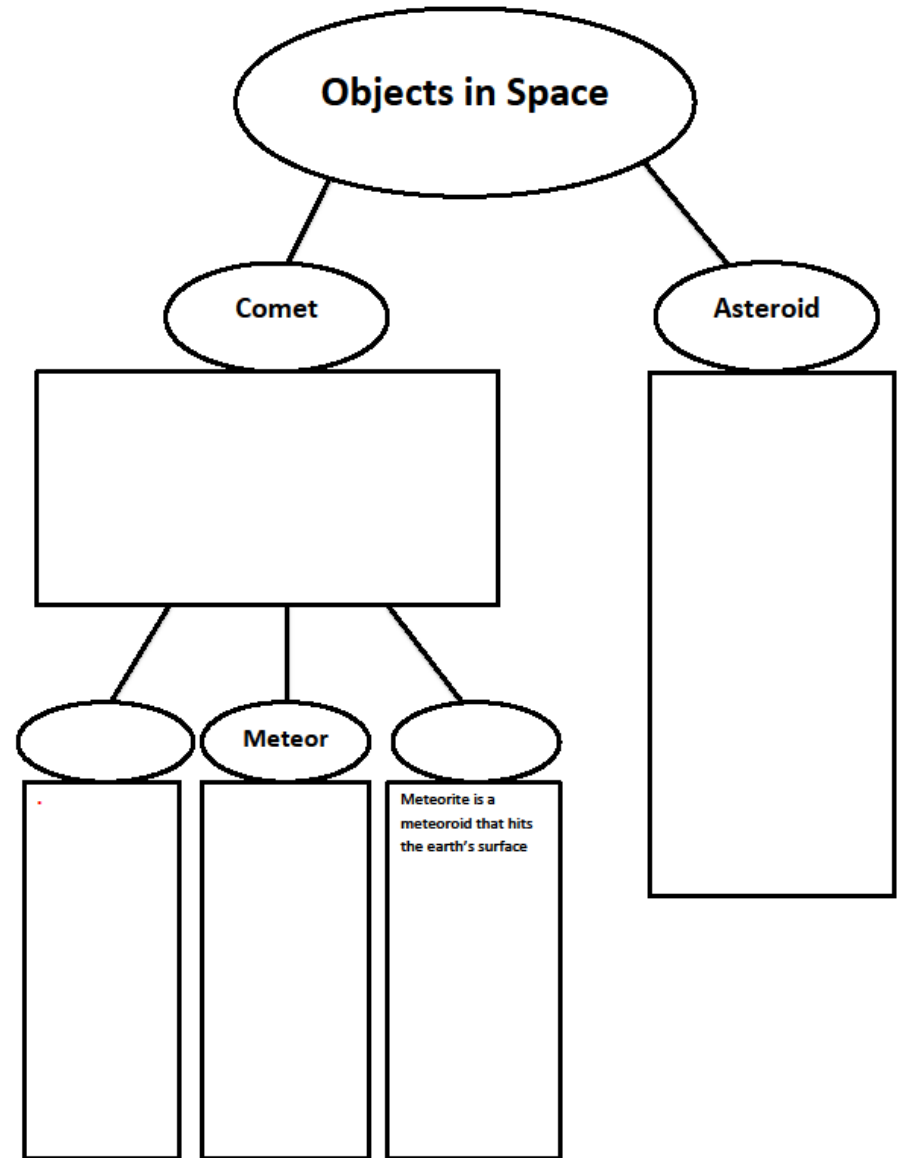


# Activating Strategy

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.

Before Lesson	Characteristic	After Lesson
Comet   Meteor   Asteroid	Its structure is considered to be like a large dirty snowball.	Comet   Meteor   Asteroid
Comet   Meteor   Asteroid	It is made up of dust and rock that burn up in the Earth's atmosphere.	Comet   Meteor   Asteroid
Comet   Meteor   Asteroid	It is a rock made up of similar material that formed the planets.	Comet   Meteor   Asteroid
Comet   Meteor   Asteroid	It is made of dust and rock mixed with frozen water, methane, & ammonia.	Comet   Meteor   Asteroid
Comet   Meteor   Asteroid	Smaller pieces of rock broken from this object become meteoroids.	Comet   Meteor   Asteroid
Comet   Meteor   Asteroid	It is considered harmless even though they can be observed from Earth.	Comet   Meteor   Asteroid
Comet   Meteor   Asteroid	Most of these are located between the orbits of Mars and Jupiter.	Comet   Meteor   Asteroid

Use the graphic organizer to record important information.



The background is a collage of six images of comets. Top-left: A comet with a bright orange and red tail. Top-middle: A comet with a long, thin white tail. Top-right: A comet with a blue and purple tail. Bottom-left: A comet with a bright white tail. Bottom-middle: A comet with a multi-colored tail (green, yellow, red, blue). Bottom-right: A comet with a bright white tail. In the top right corner, there is a small image of a galaxy cluster.

# Comets

<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](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)
- When a comet moves farther away from the sun, the tail disappears

[http://www.windows2universe.org/comets/comet\\_model\\_interactive.html](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](http://amazing-space.stsci.edu/resources/explorations/comets/lesson/make_nf.html)



After a comet has passed close to the Sun many times, it breaks apart. The small pieces from the comet spread out.

These pieces of dust and rock, along with those coming from other sources, are called Meteoroids.



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**.

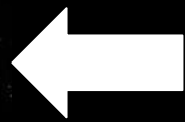
What's the difference?



# Meteoroid, Meteor, Meteorite?

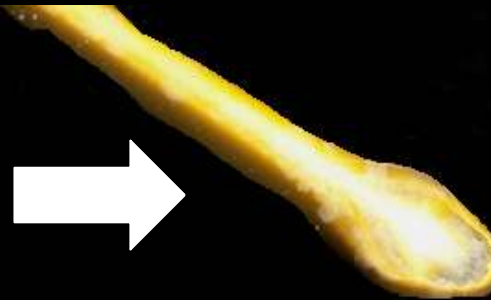
The difference is just based on where the rock is located when you are describing it.



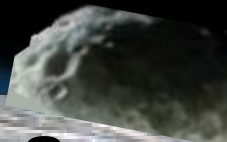


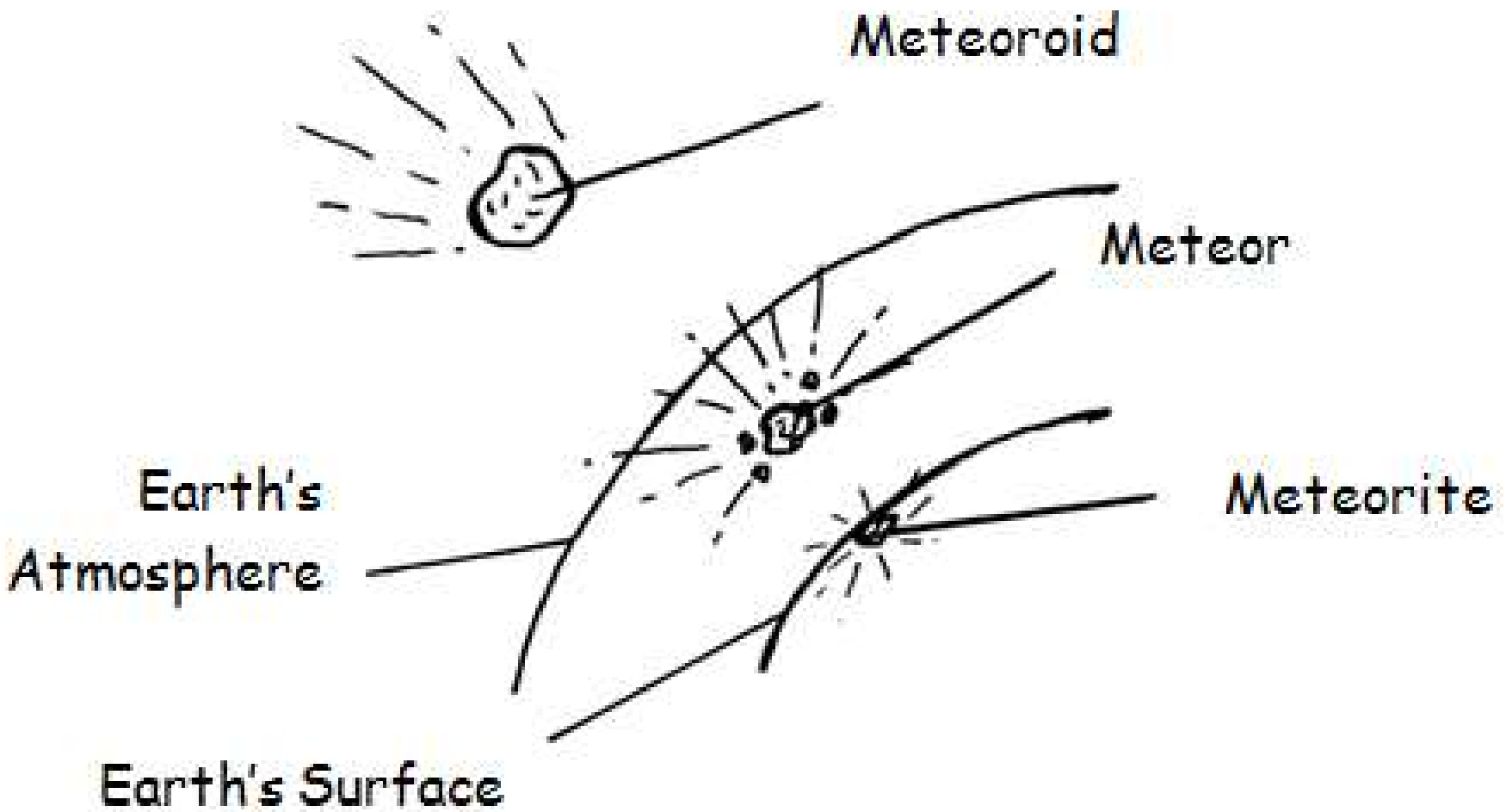
Meteoroid is a “space rock”  
that is still in space

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



**Meteorite** is a  
meteoroid that hits  
the 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.



# Asteroids



# Asteroid

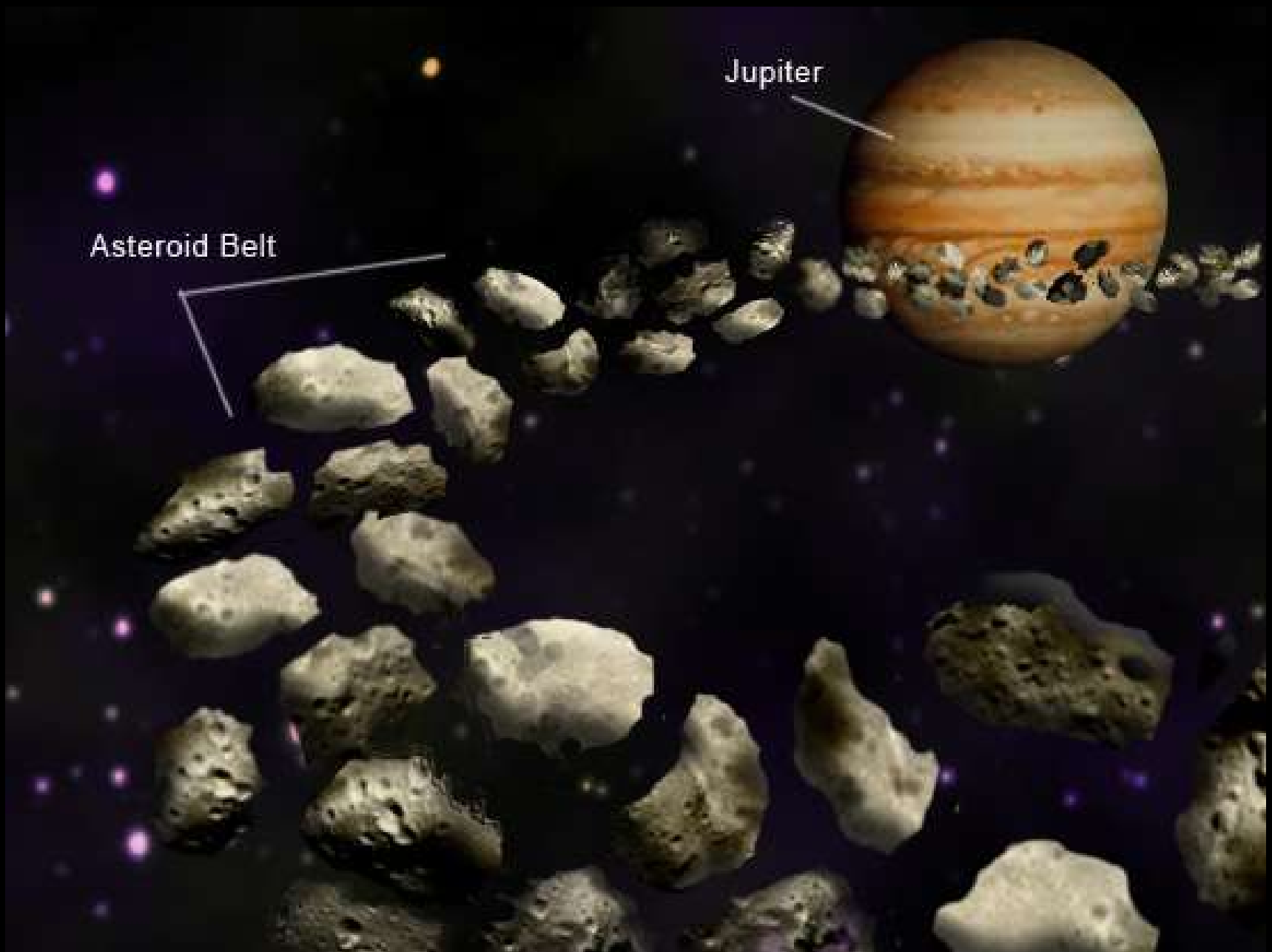
- A piece of rock similar to the material formed into planets.
- An Asteroid is smaller than a planet but larger than a meteoroid

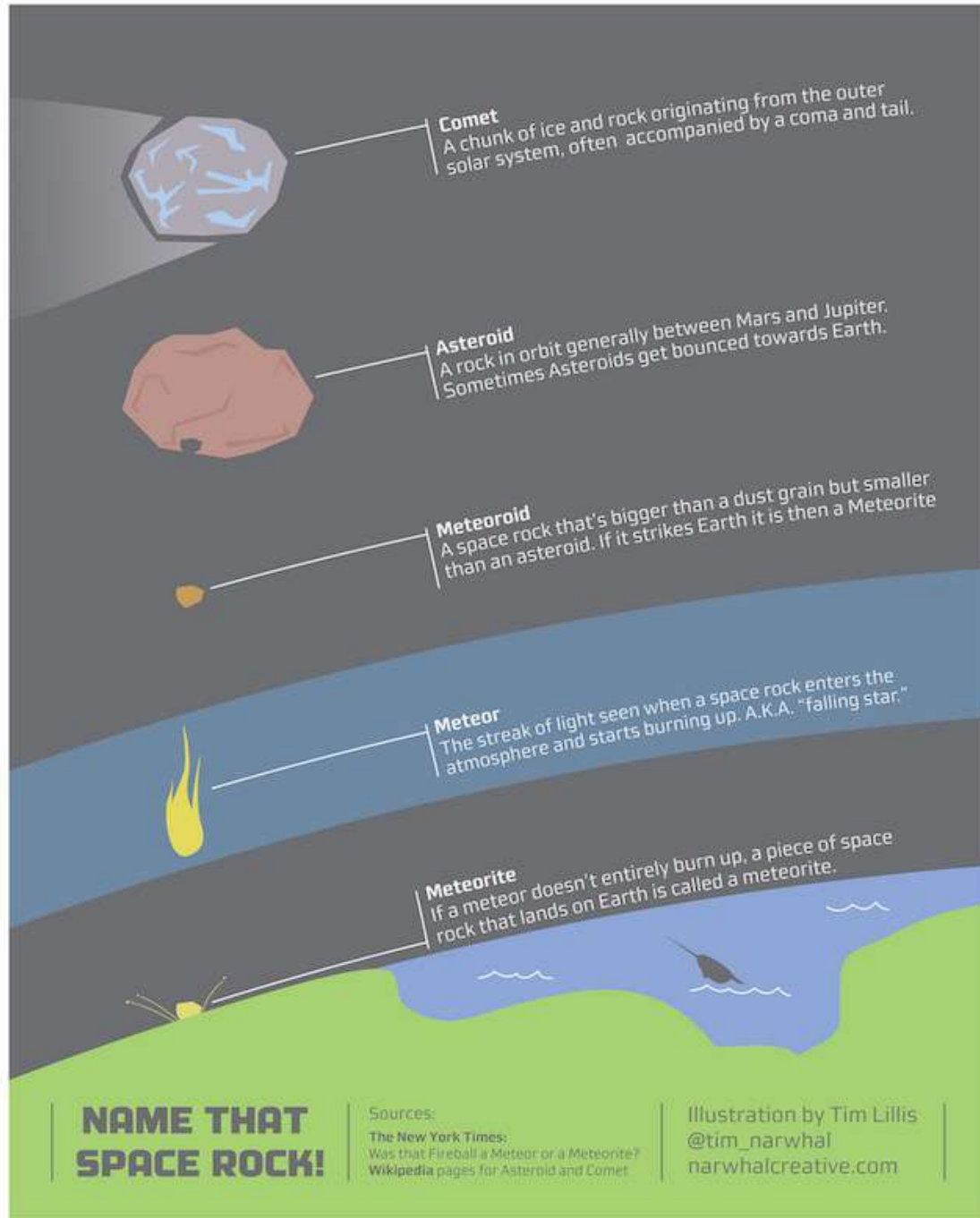


# Asteroid

- 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







**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

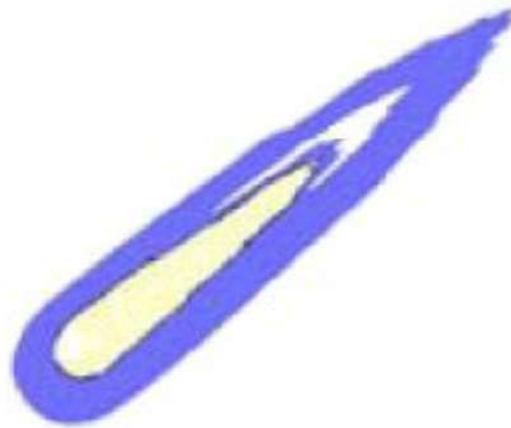
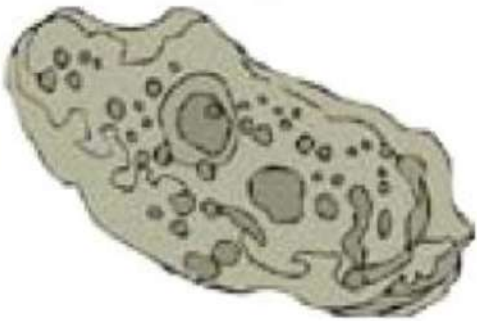
Illustration by Tim Lillis

@tim\_narwhal

narwhalcreative.com

# Comet, Meteor or Asteroid?

Explain how you know.



# Possible Activities

- Scale Size Comet, Meteoroid, Asteroid
- Asteroids, Meteoroids, Comets Path Worksheet
- Let's Cook Up a Comet!
- Triple Venn Diagram or Triple Comparison Organizer





# Summarizing Strategy

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# teacher check

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# Objects in Space

## Comet

- Comets are composed of dust and rock mixed with frozen water, methane, and ammonia
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- When a comet nears the sun, some of it melts and forms a long tail (gases in the comet are vaporized by the sun)
- When a comet moves farther away from the sun, the tail disappears

## Meteoroid

Meteoroid is a "space rock" that is still in space

- These pieces of dust and rock from a comet, along with those coming from other sources, are called Meteoroids.

## Meteor

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

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

## Meteorite

Meteorite is a meteoroid that hits the earth's surface

## Asteroid

A piece of rock similar to the material formed into planets.

An Asteroid is smaller than a planet but larger than a meteoroid

Most asteroids are located in an area between the orbits of Mars and Jupiter called the Asteroid Belt.

They are there because the gravity of Jupiter might have kept a planet from forming in the area