

St Aiden's Homeschool



Our Solar System

Comets

Compiled by Donnette E Davis
www.staidenshomeschool.com

Comets

Did You Know?

Scientists believe that comets are made up of material left over from when the Sun and the planets were formed. They think that about 100,000 million comets orbit the Sun. Some comets orbit the Sun like planets. Their orbits take them very close to and very far away from the Sun.



the Sun.

- A comet's tail can be millions of

Did You Know?

The Tshi people of Zaire call comets "hair stars".

Q: Since comets have no light of their own, how are we able to see them?

A: Comets reflect light from the Sun which makes them visible to us here on

A comet is made of dirty ice, dust, and gas. When a comet gets close to the Sun, part of the ice starts to melt. The solar winds then push the dust and gas released by the melting ice away from the comet. This forms the comet's tail. Every time a comet comes close to the Sun, a part of it melts. Over time, it will completely disappear.

A comet does not give off any light of its own. What seems to be light from the comet is actually a reflection of our Sun's light. Sunlight bounces off the comet's ice particles in the same way light is reflected by a mirror.

A few comets come close enough to the Earth for us to see them with our eyes. Halley's Comet, for example, can be seen from Earth every 76 years.



What is a Comet?

The Hale Bopp comet



Think of a comet as a big, dirty, gassy snowball. Comets are formed in the ring of rocks, dust, and ice that orbits the Sun beyond Pluto called the Kuiper Belt. Comets form when rocks, dust, and ice condense – that is, join together. As a comet grows larger, it starts to be pulled towards and around the Sun. Comets in our Solar System usually take many years to go around the Sun – from a few dozen years to many thousands of years. This is because they start to orbit the sun from very far away. They make long, egg-shaped orbits around the Sun instead of almost circular ones like the planets.

The comets that can be seen in the sky without telescopes are unusual because they are the biggest and brightest comets of all. You might have the chance to see one once or twice during your life. Most comets can only be seen with a telescope. The few that can be seen with human eyes are usually just hazy streaks or faint smudges in the night sky.

When comets are very far away from the Sun, they are covered in a coating of icy, black rocks and dust. As a comet approaches the Sun, however, the ice starts to melt. This creates large amounts of water and gas that break through the coating, freeing some of the dust and rocks. Sometimes this water, gas, rocks, and dust can be seen from the Earth as one or two tails streaming away from the comet. Even when only one tail can be seen, there are two, one made from the lighter gas and water, and the other from the rocks, dust, and chunks of ice.

Comets themselves are usually between a few kilometres and several hundred kilometres in size, but their tails can be several million kilometres long.

Seeing Comets in the Sky

The "great comets" that produce particularly spectacular tails are some of the rarest objects in our solar system. Usually they can only be seen about once every hundred years, so it is very rare to see one of these comets. The last great comet appeared in 1910, but it may still be another hundred years before another one comes near the Earth. Astronomers can't predict exactly how or when they will appear as there are still things about our Solar System that they don't understand. If you hear about a comet coming into the sky soon, follow the instructions below to watch it!

1. Find out if the comet is going to be in your area of the sky.
2. Tell your parents about the comet's arrival.
3. Get a telescope or binoculars and some chairs to view it. Many of the largest comets have never even needed a telescope to see them.
4. Ask your parents to take you to a park, the woods or another dark place away from city lights.
5. Look up into the sky and enjoy this amazing sight.

Usually the dust making up the comet's tail is so faint you can't see it. However, when the Earth's orbit takes it through one of these tails, the dust hits the Earth's atmosphere and burns up. These are the recurring **meteor showers** that happen from time to time, and most major meteor showers have now been identified either with an existing comet or the remains of a comet that was observed earlier, usually in previous centuries. When the Earth travels through this "swarm" of dust left behind, you can see **shooting stars** or **meteors** at night.

How many Comets are there?

No one really knows. All comets spend most of their orbit so far away from the sun that they can't be seen -- even with a telescope. However, every year amateur astronomers discover over 100 never-seen-before comets that have come close enough to be discovered. As of November 2005, astronomers have discovered 2 857 comets. Most of the comets we see either crash into the Sun, or leave the Solar System entirely. There might be millions of these comets that sooner or later will come within range of our telescopes.

Of all the comets that have ever been seen, astronomers only expect 253 comets to ever return.

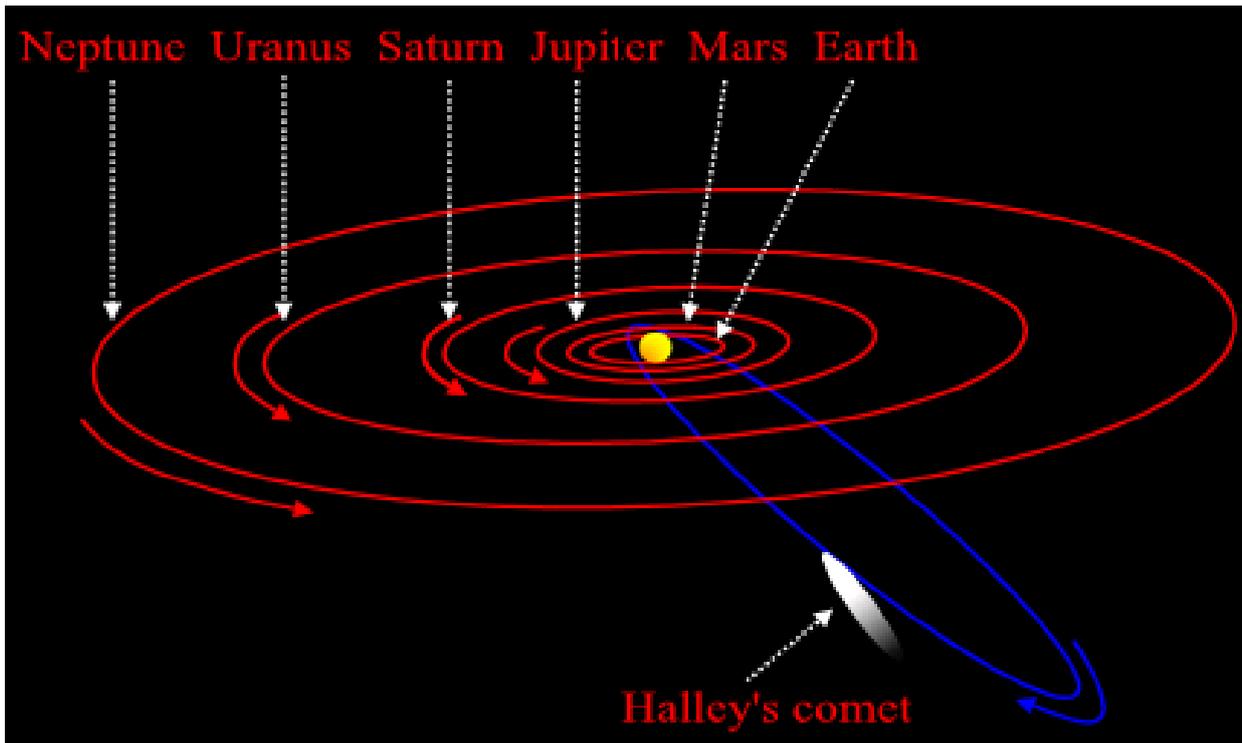
How is a Comet named?

Edmond Halley



A comet is usually named after the astronomer who first discovered it. When several people are involved in its discovery, sometimes you will see multiple names on a comet, like Comet Hale-Bopp, or Comet Shoemaker-Levy. It is generally considered to be a great honour to have a comet named after you.

What are some famous Comets in history?



This diagram shows the orbit of Halley's comet around the Sun. There are a few things to note about this orbit.

- *It is much more elongated than a planet's orbit.*
- *It is not in the same plane as the planets.*
- *It goes round its orbit in the opposite direction. This is called retrograde motion.*
- *The tail points directly away from the Sun.*

- Halley's Comet - Perhaps the most famous of all comets, and this was the first comet to be identified as a recurring comet.
- Comet Encke - The second comet to be identified as a recurring comet.
- Comet Shoemaker-Levy 9 - This was the first comet to have been observed hitting another body in the Solar System. In this case, it smashed into the planet Jupiter in what was possibly the most studied astronomical event in history.

Do comets bring bad luck?

In ancient times people didn't have a very good understanding of what comets really were or where they came from. They were seen as very unusual objects in the sky, and very temporary in nature as well. In some societies it was often a sign of bad events in the future when a comet arrived, associated with the death of a king or a significant military defeat. In other countries comets were considered to bring good luck, bringing increased fertility and more food. The ancient Chinese astronomers seem to have done the best job of actually recording when comets appeared in the sky, and left detailed descriptions of what they looked like and approximately where in the sky each comet was seen.

Even as recently as the 1910 appearance of Halley's Comet there was widespread panic when it was discovered that the Earth might pass through the tail of that comet. The panic was over the possibility of gases from the comet flooding the atmosphere of the Earth with poison. The reality was that there is so little gas in a comet tail that there is no measurable effect in the content of the Earth's atmosphere when an event like this occurs.

Student Activity ~ Comets

Describe a Comet.

What does a comet look like?

How Many Comets are there?

How is a Comet named?

Name some famous comets in history.

Why is it said that comets bring bad luck?
