

STARDOME OBSERVATORY & PLANETARIUM FACTS, RESOURCES AND ACTIVITIES ON...

COMETS

Comets are small Solar System bodies, comprising of rock and ice, often in very long, and highly elliptical orbits around the Sun. The famous Halley's Comet for instance appears in the skies of Earth around every 75 years and its orbit takes it almost as close to the Sun as Mercury. 30 years later though, its orbit will have taken it further from the Sun than Neptune.

When they are seen from Earth, comets have long, hair-like tails. The word comet, in fact, comes from the Greek *κομήτης* (kā-mēt) meaning 'wearing long hair'. These tails are formed when heat and light from the Sun vaporises ice on the main body of the comet, the nucleus, allowing it to stream into space, carrying small pieces

of rocky material along with it. This can only happen while the comet is relatively close to the Sun. When comets are out in the depths of the Solar System, they don't have tails at all.

In the past, comets were often regarded as omens of doom and disaster and indeed the

orbits of comets sometimes put them on a collision course with planets. Comet impacts were observed on Jupiter in 1994, twice in 1998, and in 2004. Fortunately for us, the strong gravitational pull of Jupiter and to a lesser extent other large gas giant planets in the outer Solar System protects the inner planets, including Earth. Many hazardous objects that would otherwise make it into the inner Solar System are pulled into these larger planets instead or flung into different orbits by their gravitational influence.

In November 2014, mankind will attempt the first soft landing on a comet, when the European Space Agency's (ESA's) unmanned Rosetta spacecraft drops the Philae lander onto the surface of comet Churyumov-Gerasimenko. Rosetta is already in orbit around the comet and has already provided us with incredible images of the comet nucleus.

check out these other resources...

blogs.esa.int/rosetta/
solarsystem.nasa.gov/planets/profile.cfm?Object=comets

Did anyone's parents or grandparents see Halley's comet?

Who has seen a comet before?

DISCUSSION POINTS



1



2



3

1. Halley's Comet. IMAGE CREDIT: NASA
2. Comet McNaught. IMAGE CREDIT: ESO
3. Comet Churyumov-Gerasimenko as seen by Rosetta. IMAGE CREDIT: ESO

Science Content / Curriculum Link

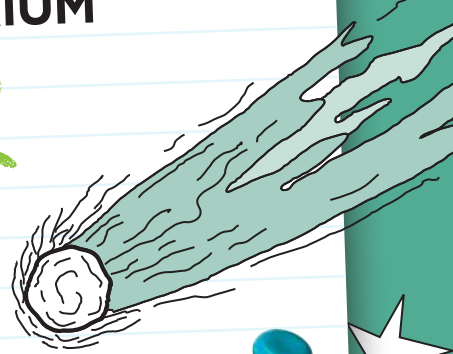
COMETS AND SPACE EXPLORATION. APPRECIATE THAT SCIENTISTS ASK QUESTIONS ABOUT OUR WORLD THAT LEAD TO INVESTIGATIONS AND THAT OPEN-MINDEDNESS IS IMPORTANT BECAUSE THERE MAY BE MORE THAN ONE EXPLANATION.



ACTIVITY

STARDOME OBSERVATORY & PLANETARIUM

CREATE YOUR OWN COMET



Objective...

Create a comet showing the main comet parts.

You'll need...

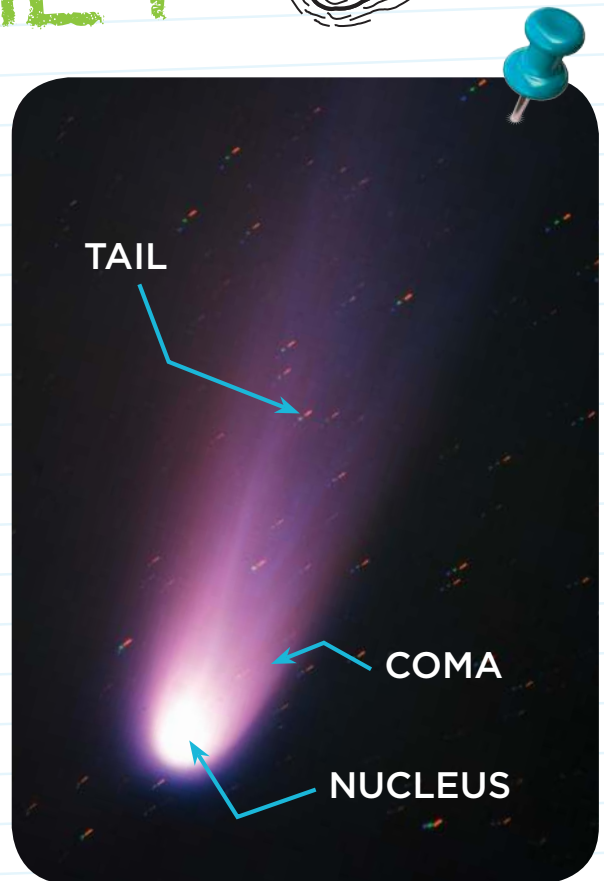
- ⇒ Balloons
- ⇒ Paper mache
- ⇒ Streamers for the tail
- ⇒ String

Blow up the balloon so it is a small sphere and tie it off. This is the nucleus of the comet.

Cover with paper mache (except for the knot) and wait for it to dry. This is your comet coma. Paint the paper mache in your favourite colour. Tie a piece of string to the end of the balloon.

On the opposite side of the balloon knot, stick or tape ribbons, streamers or pieces of paper. Select two different colours or sorts, one will be the Ion tail and the other the Dust tail.

Holding the string and spinning it around above your head will look like a comet flying by.



Halley's Comet. IMAGE CREDIT: NASA

Make up a name and a story to go with your comet. When will we be able to see it? What part of the Universe did it come from?

Take a photo of your comets and send it to education@stardome.org.nz - we'd love to hear from you!

Dust Tail - a dust tail is made up of small, solid particles from the coma.

Ion Tail - An ion tail is made up of gas that is released from the nucleus of the comet when it is heated by the Sun.



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09 624 1246