

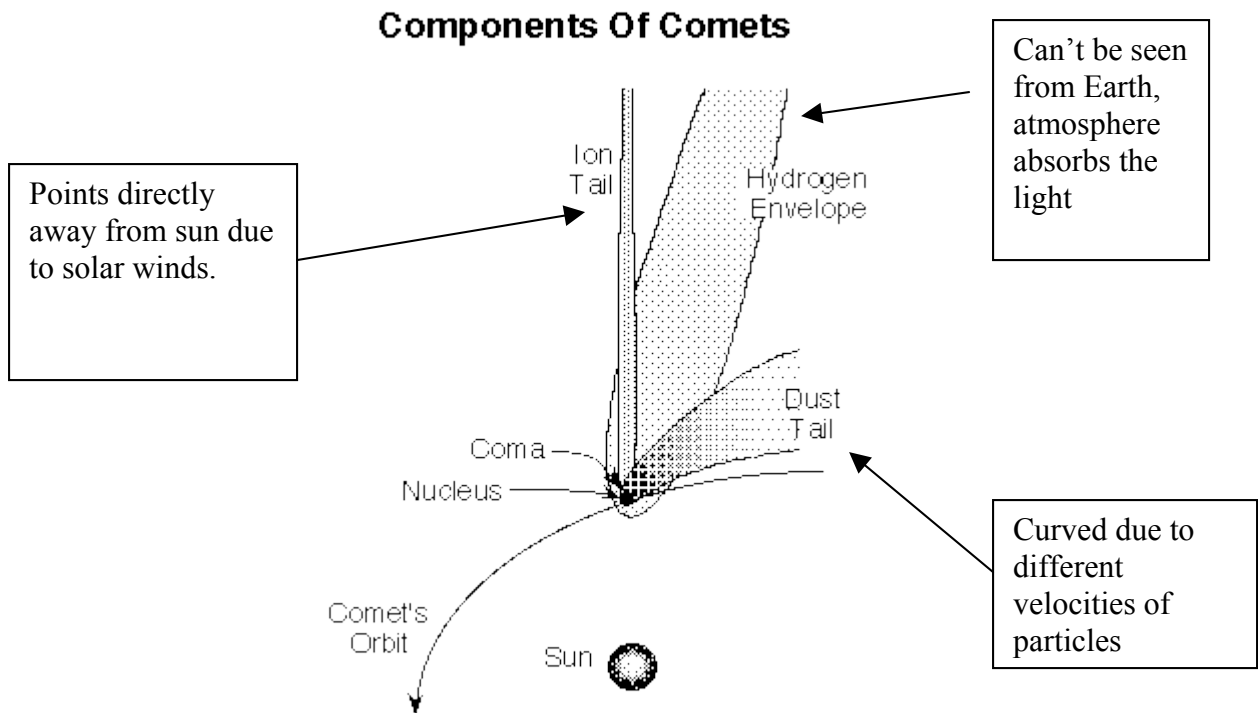
Name \_\_\_\_\_ Date \_\_\_\_\_

## Comet Notes

**Comets:** are called “dirty snowballs or “icy mud balls”. They are a mixture of both water and frozen gases and dust that for some reason didn’t incorporate into planets when the solar system was formed.

### Parts of the Comet (when near the sun)

- **nucleus:** relatively solid and stable, mostly ice and gas with a small amount of dust and other solids;
- **coma:** dense cloud of water, carbon dioxide and other neutral gases sublimated from the nucleus; will fluoresce as it gets closer to the sun, becomes brighter than reflected light at about 5 AU
- **hydrogen cloud:** huge (millions of km in diameter) but very sparse envelope of neutral hydrogen;
- **dust tail:** up to 10 million km long composed of smoke-sized dust particles driven off the nucleus by escaping gases; this is the most prominent part of a comet to the unaided eye;
- **ion tail:** as much as several hundred million km long composed of plasma and laced with rays and streamers caused by interactions with the solar wind.



## Life of comet:

It takes about 500 passes around the sun before a comet's ice and gas is lost leaving a rocky object very much like an asteroid in appearance. Most NEA may be "dead" comets.

If a comet's orbit comes near the sun, it will either impact one of the planets, the sun, or be ejected out of the solar system.

## Where do comets come from?

Comets are found in two main regions of the solar system: the Kuiper Belt and the Oort Cloud. There are two types of comets: short-period comets and long-period comets.

**Short period comets** – comets that frequently return to the solar system – probably come from the Kuiper Belt beyond the orbit of Neptune. Astronomers estimate that this belt contains at least 200 million objects, which are thought to have remained essentially unchanged since the birth of the solar system 4.5 billion years ago.

**Long-period comets**, which can take thousands of years to complete their orbits, are thought to emanate from the Oort Cloud, a vast group of frozen bodies that surrounds the solar system. The Oort Cloud is thought to extend 50,000 times the distance from the Earth to the Sun.

Oort Cloud comets, like their Kuiper Belt brothers, probably originated in the region of the solar system between Jupiter and Neptune, but were ejected from to the Oort Cloud by close encounters with the gravity of the giant planets.

Comets are kicked out of the Oort Cloud and the Kuiper Belt by the pull of the gravity of another object – a planet, a star, or another small body. They then begin their journey toward the inner solar system and the Sun.

## **Drawing of the Oort cloud and the Kuiper (rhymes with viper) belt**

