

The name of this student text is
“*What kind of structure do comets have?*”

Comets have three parts: the nucleus, the coma and the tails. Use Tactile Card three to follow the description of these comet parts.

This graphic represents a slice through the comet, like a slice of an apple cut through its equator. Just like a whole apple extends in all directions, every part of the comet that you feel is also coming out at you and going back into the paper.

Find the card number, either in print or in Braille, in the upper left corner.

From the card number move your left pointer finger to the right.

Find the open circle starting point next to the card number.

Place another finger of your left hand on the edge of the card to help your pointer finger travel straight down from the starting dot.

Move your pointer finger down until you find the large filled oval in the middle of the dotted region of the graphic.

This solid center structure represents the nucleus of the comet. It is made of ices of volatile

compounds and rocky debris. It has a dark surface of different colors.

The nuclei of comets range in size from less than one kilometer in diameter to as large as three hundred kilometers.

On its longest axis, Comet Tempel One measures almost seven kilometers. This is about three-fourths of a mile.

As a comet approaches the sun, heat from the sun warms the surface of the nucleus. The ices sublime; that is, they change from a solid to a gas without going through the liquid phase.

As the gas leaves the comet's surface, it carries dust along with it. This "cloud" moves out in all directions, forming a coma, an atmosphere around the nucleus.

Move your finger out in any direction from the solid oval to feel the textured region inside the boundary line that represents the coma.

Can you feel that the nucleus is embedded in the coma? Together the nucleus and the coma form the head of a comet.

The solid dust particles and the gases from the nucleus and coma fan out to form a curved dust tail and a straight ion gas tail.

Move your finger to the right of the coma to feel two regions filled with different textures.

The top curved region represents the dust tail. This tail always points away from the sun. So sometimes this tail can be in front of the comet as the comet heads away from the sun along its orbit.

The bottom region represents the straight ion tail. The ion tail becomes visible when the sunlight causes the ions to fluoresce, giving off light. The ion tail often appears blue in color.

Energy from the sun ionizes some of the particles in the straight gas tail. These glowing ions emit a blue light as they move away from the energy source.

A third tail made up of atoms of sodium can also be seen in some comets.

Comet tails can vary in length from very short ones to those that extend millions of miles through space.

Comets don't have continents or molten rock. But there is evidence of flow of some kind on Tempel One as well as multiple layers that may have piled up over time.

The coma is the only atmosphere, so there is no water driven weathering as on Earth.