THE STAR WITNESS

Supplemental Educational Support Materials

for Special Feature: "The Red Planet:
Up Close and Personal"

Discussion questions

Q1.
How are the features on Mars similar to and different from features on Earth?

Answer:
Mars has canyons and volcanoes that are similar to those of Earth. Unlike Earth, the planet is bone dry. (NOTE: Mars' craters are not like craters found on Earth. Craters on Mars have some weathering due to dust storms. The weathering of Earth's craters by wind and water makes them smoother and less distinct.)

Q2.
Study the two images of Mars showing nearly opposite sides of the planet. Describe the similarities and differences between the two images.

Answer:
Some similarities:
The southern ice cap is a feature common to both images, as are the smooth-looking areas in the northern hemisphere and the dark, rough-looking (rocky) areas in the southern portion of the planet.

Some differences:
On the Aug. 26 image, some of the unique features are: the "shark-fin" shape on the top, right (Syrtis Major); the circular orange feature below the center of the image (Hellas impact basin); and the small, round feature in the darker region above the Hellas Basin (Huygens Crater). There appear to be more areas of dark, rough terrain on the Aug. 26 image than on the Aug. 27 image.

On the Aug. 27 image, the largest volcano in the solar system (Olympus Mons) is a unique feature. Other features unique to this side are: the large, dark oval ring of material on the lower right side (Solis Lacus, or the "Eye of Mars"); and the arch above the "eye" (Valles Marineris, which is a system of Martian canyons).

Q3.
What two factors combined to make these observations of Mars so special?

Answer:
The first factor happens about every two years. It is when Mars is opposite the Sun in our sky. This event is called "opposition." When Mars is in opposition, it appears full and bright. The

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second factor is due to the shape of the planets' orbits (the paths the planets follow). Earth's orbit is almost circle-shaped, but Mars' orbit is more oval-shaped. On Aug. 27, 2003, Earth was slightly farther from the Sun than normal, and Mars was closer to the Sun than normal. This means that Earth and Mars were unusually close to each other (see illustration of Mars at opposition). The opposition occurred when the paths of the two planets are about as close as they get.

Q4.
What do you think life on Earth will be like in 2287, when another close meeting with Mars occurs?

Answer:
The year 2287 is more than 250 years from now. Many things will be different. Just think of how many changes have occurred over the past 250 years. In 1750, America was still part of England. People were leaving England to settle in a country they called the "new world." Traveling by ship from Europe and Africa was dangerous. Many of the new settlers were farmers who built log cabins in frontier territory. They often had only one or two sets of clothes and shoes were hard to find. They had to grow or gather their food — there were no grocery stores. In 1776, these new settlers won their freedom from England and began a new country — the United States of America.

In the late 1700's, traveling on land meant walking or riding a horse. There were no cars. James Watt built the steam engine in 1775, but it wasn't until 1869 that a railroad stretched across the country. The telephone was invented in 1876. The light bulb was invented in 1879. The first airplane was built in 1903. The first Model T car was built in 1908. Indoor plumbing was still only a dream of many rural folks in the 1930s.

Vocabulary words

Hemisphere
Half of a spherical or roughly spherical body; for example, the northern and southern halves of the earth, above and below the equator.

Meteoroid
A small, solid object moving through space. A meteoroid produces a meteor when it enters Earth's atmosphere.

Opposition
The point at which a planet appears opposite the Sun in our sky. During the Martian opposition, for example, Mars and the Sun are on opposite sides of the Earth.

Orbit
The act of traveling around a celestial body; or the path followed by an object moving in the gravitational field of a celestial body. For example, the planets travel around, or orbit, the Sun because the Sun's gravitational field keeps them in their paths, or orbits.