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**Unit 1: Optional Reading - Asteroid FAQ**

**Asteroid Lore**

A camera on the Near Earth Asteroid Rendezvous

(NEAR Shoemaker) spacecraft orbiting asteroid Eros was used to construct this image of Eros on February 29, 2000 from an orbital altitude of about 200 kilometers (124 miles). The diameter of the crater near the top is 5.3-km (3.3-mi).

1. **What are asteroids made of?**

All the bodies in the Solar System are made of elements in the periodic table, but which elements varies from object to object.

Some asteroids have probably been around since the Solar System first formed, so analyzing the matter in asteroids helps to understand the formation of the Solar system. Asteroids are made of rock and metals like iron and nickel.

1. **How do we see asteroids?**

They do not give off their own light, but reflect sunlight as they orbit the Sun, like planets and moons.

1. **How big are asteroids?**

Asteroids are much smaller than most moons and planets. They range in size from a few hundred meters to a few hundred kilometers. Bodies that are a lot less than a hundred meters or so, would probably be categorized as meteoroids and not asteroids.

1. **Where are asteroids found and how fast do they move?**

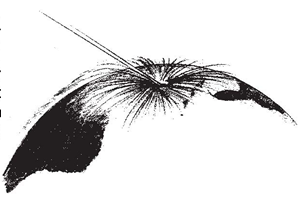
Asteroids change position in our starry sky as they orbit the Sun. Since they are part of our own Solar System, they are closer to us than the background stars. Most asteroids are found in the inner Solar System, inside the orbit of Jupiter.

Even though they are moving very fast in their orbits, thousands of kilometers per hour, they appear to move slowly through the sky, since they are many millions of kilometers away from us. The asteroids that are closer to the Sun move faster than those that are farther out near the orbit of Jupiter.

Our Earth also orbits the Sun and rotates on its axis, so it is the combined motions of the asteroids and Earth that cause the shift in positions of the asteroids in our images. The speed of an asteroid in its orbit does not vary as much as speed of a comet, since asteroid orbits are usually not as elongated as comet orbits.

1. **Can an asteroid or comet crash into Earth?**

Yes, but not very often--once every several million years or so on the average.

1. **What happens when an asteroid crashes into Earth?** 

That depends on the size of the asteroid (or comet, in the case of comet impact). A number of craters have been discovered on the Earth, such as the Barringer Meteor Crater in Arizona. That one is somewhat over a kilometer in diameter and was caused by an approximately 50 meter-sized object striking the ground at that site, one twentieth the size of the crater.

Most craters on Earth have been worn away by erosive processes due to wind and water. Craters on the Moon are still obvious because of the lack of an atmosphere and the resultant erosion.

There is a crater in the Gulf of Mexico near the Yucatan Peninsula which was found to be about 65 million years old, created just about when the dinosaurs and other species became extinct. The object was probably about 15-30 km (10-20 miles) across, created a hole about 30 km (20 miles) deep, and it was converted instantly into white hot vapor along with parts of the ground where it hit. It must have created debris that crashed down in neighboring areas, and it threw dust into the Earth’s atmosphere circling the globe, dimming the sunlight. Hot debris raining down over vast areas probably caused even green vegetation to dry out and burst into flames spontaneously, causing global forest fires.

1. **What should we be doing about the possibility of an asteroid striking Earth?**

It would behoove us to seek advance warning of such an approaching body whose orbit may intersect the orbit of Earth. Such an object is called a ***near Earth object***, a term that includes both asteroids and comets. An asteroid could come in quickly, but it may be technically possible to deflect an asteroid from an Earth impact course, if there is enough advance warning. The techniques you have learned in this session are the techniques astronomers use to search for such bodies.

**SOURCE: Adapted from the Hands-On Solar System Student Book, pp. 30-31.** [**http://handsonuniverse.org/usa/wp-content/uploads/sites/3/2017/12/HOSS-SG2006.pdf**](http://handsonuniverse.org/usa/wp-content/uploads/sites/3/2017/12/HOSS-SG2006.pdf)