

## Real-Life Application: When Will I Ever Use This?

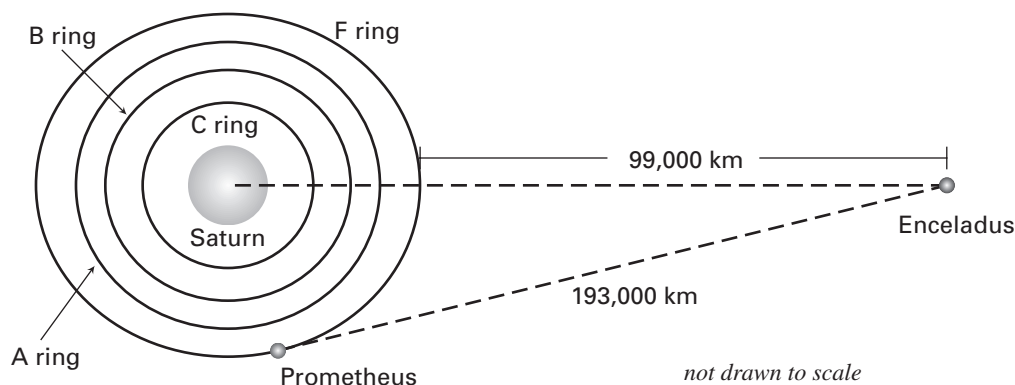
For use with pages 629–635

### Saturn

The sixth planet from the sun and the second largest planet in the solar system is Saturn. Christiaan Huygens first discovered rings circling around Saturn in 1659. Two main rings (A and B) and one faint ring (C) can be seen from Earth. Pictures taken from Voyager I show four additional faint rings. Although these rings look continuous from Earth, the rings are actually made of countless small particles each in its own independent orbit. These ring particles appear to be composed primarily of ice. Some may be made of rocky particles with icy coverings. The origin of the rings of Saturn is unknown. Until very recently, Saturn was thought to be the only planet with rings circling around the planet. In 1977, faint rings were discovered around Uranus, Jupiter, and Neptune.

Saturn has 18 named satellites (or moons). Some of these satellites play a vital role in keeping the rings in place. One of these satellites, Prometheus, is the third of Saturn's known satellites and is located in the F-ring. Despite what is known about Saturn, its rings, and surrounding satellites, the whole system is very complex and is poorly understood.

On October 15, 1997, NASA, along with the European Space Agency, the Italian Space Agency, and several separate European partners launched the Cassini mission to explore Saturn, its system of rings, and the many satellites. The Cassini mission is set to arrive in Saturn's orbit on July 1, 2004.



Use the diagram above to answer the following questions.

1. Describe the type of line segment between the two satellites Enceladus and Prometheus.
2. Estimate the radius from the center of Saturn to its F-Ring.
3. Find the distance between the center of Saturn and Enceladus.