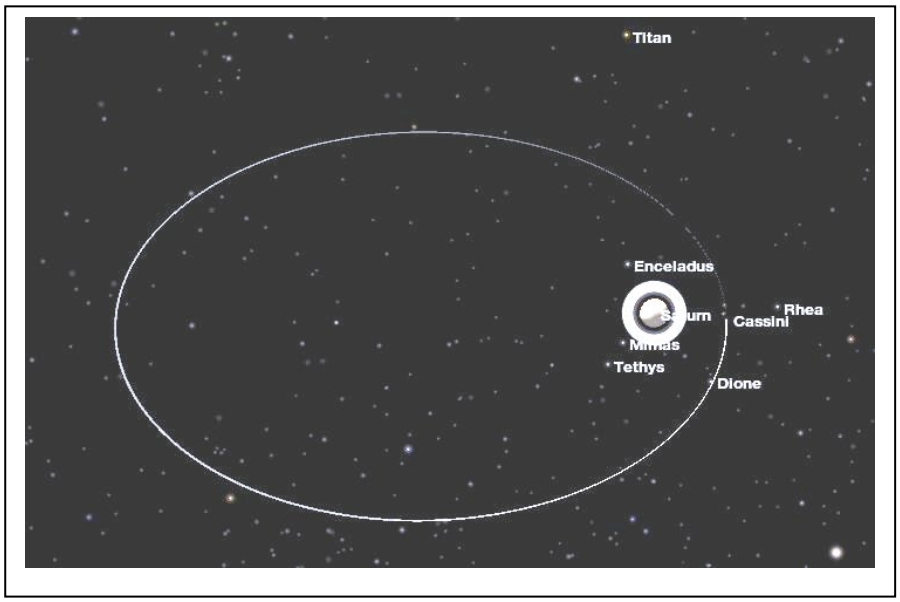
Eye Spy – Exploring the Cassini Mission to Saturn



Get the Data

Visit EOSS **http://1.usa.gov/OBdRGj** to recreate the scene shown above. Recommended operating system: MS Vista or later; Browser: MS Internet Explorer 8 or later.

Step 1 – Click on the 'Visual Controls' tab and make sure that the following items are selected with a 'white spot': spacecraft, planets, labels, orbit lines, trails and metric.

Step 2 - Activate the Distance Measuring tool and measure the distance between Cassini and the indicated moons of Saturn in the figure above.

Answering Questions

On October 15, 1997 the Cassini-Huygens spacecraft was launched on a 7-year journey to Saturn. The image above from *Eyes on the Solar System* shows the orbit of Cassini in June, 2012 along with some of the moons of Saturn.

Problem 1 – The radius of Saturn is 60,268 kilometers. Divide each of the measured distances in kilometers by the radius of Saturn. What are the distances between Cassini and the moons of Saturn in multiples of the radius of Saturn to two decimal places?

Problem 2 – Order the Cassini-Moon distances from closest to farthest.

Math Challenge

The distance to a particular moon from Cassini is 1.199 times the distance from Cassini to Mimas. Which moon is it?

Answer Key

Moon	Distance to Cassini (km)	Distance to Cassini in multiples of Saturn's radius.
Tethys	**537,600**	**8.92**
Rhea	**240,700**	**3.99**
Titan	**1,280,000**	**21.24**
Dione	**278,100**	**4.61**
Mimas	**448,400**	**7.44**
Enceladus	**479,700**	**7.96**

Problem 1 – The radius of Saturn is 60,268 kilometers. Divide each of the measured distances in kilometers by the radius of Saturn. What are the distances between Cassini and the moons of Saturn in multiples of the radius of Saturn to two decimal places? Answer: make sure that you round the decimal numbers properly. Example answers shown in last column. Student data may vary.

Problem 2 – Order the Cassini-Moon distances from closest to farthest. Answer: In the example above, the ordered moons are

Rhea (3.99),

Dione (4.61),

Mimas (7.44),

Enceladus (7.96),

Tethys (8.92) and

Titan (21.24).

Math Challenge: The distance to a particular moon from Cassini is 1.199 times the distance from Cassini to Mimas. Which moon is it?

Answer: 1.199 x 7.44 = 8.92, (or 1.199 x 448,400 km = 537,631 km), which is **Tethys**.