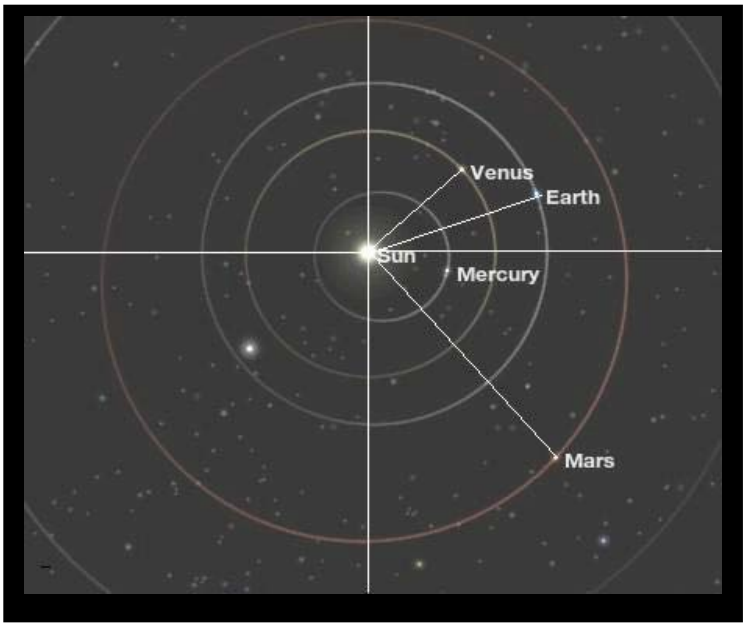
Eye Spy – Exploring Coordinates in the Solar System



Get the Data

Visit EOSS **http://1.usa.gov/RkSMFA** 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 Tool' by pointing cursor at a planet name label (example 'Sun') and right-clicking mouse. Select bottom function 'Measure distances'. Then point to destination target name label (example 'Mars') and left-click mouse to open From-To measurement panel. Read out the distance in kilometers. Also provided is the light travel time!

Answering Questions

Our solar system is shaped like a round, flat disk. If you were in a spaceship hovering over the sun's position, you might see the view shown above of the locations of the planets in our solar system and their orbits. With rectangular, Cartesian 'X-Y' coordinates, we can locate each planet on this flat plane using its (X,Y) coordinates. We could also use another 'round' coordinate system called the polar coordinate system. Instead of the ordered pair (X,Y) we use the ordered pair (R,θ) called polar coordinates.

R is the distance in millions of kilometers from the Origin (the sun) to the location of the planet. θ is the angle measured in degrees counterclockwise from the horizontal line through the Origin starting on the right. For example, in the figure above, Earth is at R=151 and at an angle θ of 18^{o} so we write: (151, 18^{o}).

Math Challenge

Problem 1 – What planet is located at (106, 25^{o})?

Problem 2 – What planet is located at (234, 313^{o})?

Answer Key

Problem 1 – What planet is located at (106, 25^{o})? Answer: Venus.

Problem 2 – What planet is located at (234, 313^{o})? Answer: Mars.