

A model of the sun, the earth, and the inner planets: to guide your observations, to share the power of models for thinking.

All the Parts; no tools required.

The Orrery

Isaac Newton (1642 - 1727) worked out the mathematics of the movement of the planets. Charles Boyle, the Earl of Orrery, commissioned George Graham to build a mechanical model of Newton's Ideas in 1700. Orrery's name stuck.

A Learning Tool

When Eli Whitney went to Yale in 1788, science as a subject was still new. The first Orrery purchased by Yale arrived from Germany broken. Whitney fixed it, a hint of the practical mechanical skills that would make him famous.

Models

All models are imperfect. This model shows the size of Mercury, Venus, Earth and the Moon relative to each other. Does the Sun fit that Scale? Can you find how many times larger than the earth the sun is? What color are the planets in our model?

This Model shows that the Earth is about 3 times as far away from the sun as Mercury. But the Earth is 12,000 Earth diameters away from the Sun ($12,000 \times 3/4" = 9000$ inches or about 750 feet.) How far should Mercury be from the Sun?

Some solar models show why we experience the seasons. This one doesn't. Why not?

Questions

These challenges will start you experimenting. discuss the problems with your friends.

Where in the World are you?

Decorate the Earth.

Make a small mark to show where you are. Does your location matter in how will you see Mercury? Will it change the stars you see?

Glossary: remember the facts.

Number of hours in a day: Demonstrate a day.

Number of days in a month: Demonstrate a month.

Number of months in a year: Demonstrate a year.

Will this model show days accurately?

Next Challenges:

Demonstrate an eclipse of the sun.

Demonstrate a full moon.

Demonstrate a full moon.

Figure out which way the Earth turns. Would astronauts living on the moon see Earth Phases?

Links

The NASA Website:

<http://www.nasa.gov>

Lunar Eclipses:

<http://www.mreclipse.com/Special/LEprimer.html>

Explore the solar system. This applet shows the current positions of the planets:

<http://order.ph.utexas.edu/clock>

Solar System Live is an interactive Orrery on the Web:

<http://www.fourmilab.ch/solar/solar.html>

Solar System Simulator:

<http://space.jpl.nasa.gov>

Explore the Planets:

<http://pds.jpl.nasa.gov/planets>