**Hohmann Transfer Orbit -** Fire up the orbit simulator at

<http://www.windows2universe.org/physical_science/physics/mechanics/orbit/orbit_shape_interactive.html>

Explore how to send a spacecraft to Jupiter. To minimize fuel usage, a Hohmann transfer orbit is the trajectory used for the spacecraft. This is an orbit whose perihelion (point closest to the sun) is1 AU and whose aphelion (point furthest from the sun) is the distance of the destination. Using the orbit simulator, determine the semi-major axis and eccentricity of the Hohmann orbit needed for a spacecraft travelling from Earth to Jupiter (pretend “your planet” is the spacecraft).

1. Semi-major axis:
2. Eccentricity:
3. Using Kepler’s third law, what will be the travel time from Earth to Jupiter?
4. Can a spacecraft be launched at any time to reach Jupiter? If not, why not?