CONJUNCTION RATES

The following tables gives the approximate time required (in years) for two planets to complete an orbit "cycle" relative to one-another. This may be from conjunction (nearest approach) to conjunction, opposition (furthest approach) to opposition, or from one Hohmann orbit ejection window to the next. This table doesn't take into account orbital eccentricities and perturbations that may affect these times to varying degrees.

	Period	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Mercury	0.2408225	0.3958009	0.3172553	0.2762169	0.2458383	0.242839	0.2415391	0.2411993	0.2410786
Venus	0.6151826		1.59869	0.9142273	0.6488485	0.6283652	0.6197349	0.6175028	0.6167123
Earth	0.9999786			2.135349	1.092085	1.035283	1.012063	1.006124	1.004027
Mars	1.88071105				2.235276	2.0096	1.923916	1.902566	1.895081
Jupiter	11.856523					19.90468	13.81195	12.78218	12.45177
Saturn	29.423519						45.12299	35.72137	33.25529
Uranus	83.747407							171.4443	126.4423
Neptune	163.72321								481.7072
Pluto	248.0208								

Examples:

Mercury, with a period of approximately 0.24 years (less than 3 months), has its closest approach to Earth every 0.3172553 years (nearly 4 months). The "extra" time is that required to "catch-up" with the Earth as it has moved forward in its orbit during the same period of time.

The Earth-Mars Hohmann ejection window on March 10, 2001 (MJD 51978) won't be available again until approximately April 28, 2003 (MJD 52757=51978+2.135349*365.25). NOTE: due to orbital eccentricities, the actual ejection window occurs on June 5.

Trevor Johns
trevorjohns@yahoo.com
www.freehomepages.com/tjohns