

40. Kepler's law of periods, expressed as a ratio, is

$$\left(\frac{a_M}{a_E}\right)^3 = \left(\frac{T_M}{T_E}\right)^2 \implies 1.52^3 = \left(\frac{T_M}{1\text{ y}}\right)^2$$

where we have substituted the mean-distance (from Sun) ratio for the semimajor axis ratio. This yields $T_M = 1.87\text{ y}$. The value in Appendix C (1.88 y) is quite close, and the small apparent discrepancy is not significant, since a more precise value for the semimajor axis ratio is $a_M/a_E = 1.523$ which does lead to $T_M = 1.88\text{ y}$ using Kepler's law. A question can be raised regarding the use of a ratio of mean distances for the ratio of semimajor axes, but this requires a more lengthy discussion of what is meant by a "mean distance" than is appropriate here.