**What:** In apparent defiance of Kepler’s First Law, the orbit of Mercury is not an ellipse but a near ellipse in which the positions of perihelion and aphelion advance or creep forward or precess more than predicted by Newtonian mechanics (which does predict some precession because of the gravitational influence of the other planets upon Mercury) at the slow, but easily measurable rate of 43 seconds of arc per century (43”/100 years = 0.104”/cycle). This creep is inexplicable using Newtonian mechanics, but is predicted by Einstein’s theory of general relativity.

**Why:** The distance around an elliptical orbit \(d\) (the distance traversed between successive perihelion passages) is equal to a constant times the orbital perihelion distance, i.e., \(d = kr_p\), where \(r_p\) is the perihelion distance of the planet from the sun and \(k\) is a constant, different for every elliptical shape and size. General relativity implies that solar gravity bends, in this case stretches, space near the sun, increasing the distance \(r_p\), therefore increasing the distance \(d\) while the space further from the sun, at the position of Mercury’s orbit, is much less stretched. Therefore the stretched value of \(d\) slightly exceeds the distance around the elliptical orbit of Mercury and therefore the position of perihelion advances or precesses.