**Orbit of the Sun around the Galaxy**

The Sun follows a (mostly) circular orbit around the center of the Milky Way with an orbital speed of 220 km s-1. The distance to the Galactic Center is a mere 26,000 light years (2.4 x 1017 km or 1.7 x 109 AU).

a. How many years does it take the Sun to complete one full orbit around the Milky Way?

**Helpful Information**

Kepler’s Law: P2=a3/Mass

1 AU = 150,000,000 km

1 parsec = 3.26 light years

1 parsec = 206265 AU

Circumference = 2r

b. We know from radiocarbon dating that the Sun formed 4.6 billion years ago. How many orbits has the Sun completed around the Galaxy since the Sun formed?

c. Estimate the mass of the Milky Way from the Sun’s orbit using Kepler’s law. (This is just the amount of mass interior to the Sun’s orbit.)