

Some Cosmographic Data.

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- To determine the distance traveled by Earth in its revolution about the sun, note that Earth is at a nominal radial distance of **92.9×10^6 miles**; whereas, circumferentially: $c = 2\pi r_s = 583.7 \times 10^6$ mi; or, **584-million miles!**
- In so revolving, Earth is relatively barreling through space at a very high rate of speed, relative to the sun; in that one such revolution is denoted in time by a year, which is **365.25 days**, or **8.7666×10^3 hours**; thus, Earth's speed is: $v = d/t = 583.7 \times 10^6 \text{ mi} \div 8.7666 \times 10^6 \text{ hrs} = 66.5879 \times 10^3 \text{ mph}$; or, **66,588 mph**—and, that's fast!
- For Earth's spherical circumference, note its mean spherical radius of **3.960×10^3 mi**, an equatorial deviation of **+3.34 mi**, and a polar deviation of **-10.0 mi**; thus, Earth's mean circumference is: $c = 2\pi r_e = \underline{24,882 \text{ miles}}$.
- Earth's circumference also is measured in degrees of Latitude, whereas it is defined that one nautical mile (nm) is equal to one minute of Latitude, and that 60 minutes of Latitude equals 1 degree of Latitude, such that the circumference of the earth is a 360-degree great circle of Latitude. Therefore, the distance-conversion factor is: **24.8815×10^3 (statue) mi \div 360 degrees \times 60 minutes of Latitude = 1.1519 miles/nautical mile (nm).**
- Further, in that speed is measured in distance-made-good per unit of time, the speed-conversion factor is: **1.1519 mph per kts (nautical miles per hour)**; thus, to obtain **mph** multiply **kts** by **1.1519 mph/kts**.
- In regard to rotational speed, the Earth rotates about its polar axis from west-to-east in a time denoted as one day, or 24 hours; therefore, a point on the equator, again relative to the sun, is traveling at a speed: $v = d/t = 24.8815 \times 10^3 \text{ mi} \div 24 \text{ hrs} = 1.0367 \times 10^3 \text{ mph}$, that is, **1,037 mph**—or, **900 kts**—spinning, incessantly.
- The mass-weight of the Earth can be determined by multiplying its mean density, $\rho = 344.7 \text{ lbs/cu-ft}$, by its nominal spherical volume, $V = 38.289 \times 10^{21} \text{ cu-ft}$; whereas, **$147.2 \times 10^9 \text{ cu-ft} = 1.0 \text{ cubic-mile}$** ; therefore, the mass-weight of the Earth is: $m = \rho V = 344.7 \text{ lbs/cu-ft} \times 38.289 \times 10^{21} \text{ cu-ft} = \underline{13.2 \times 10^{24} \text{ lbs}}$; whereas, 10^{24} is a trillion-trillion, that's 24 zeroes (1,000,000,000,000 x 1,000,000,000,000)-- and, in pounds, that's big!
- Earth Notes:
 - (1) In overall review of this cosmographic data, one might construe, in a relative sense, in comparing Mother Earth to us, her inhabitants, that she is both big and fast. As such, being that big (**m**), and that fast (**v**), if she collides with anything in space, then the transfer of momentum, that is, **$m \cdot v$** , would indeed be *earth-shaking*.
 - (2) For scalable comparison to a 12-inch diameter world-globe, the depth of the earth's atmosphere—troposphere, stratosphere, and the upper limits of the ionosphere's F-layer—is a gaseous cover of only about a quarter of an inch-- 0.25 inch.
 - (3) Also for comparison to a 12-inch diameter world-globe, the earth's surface-roughness given the peak of Mount Everest at an altitude of 29,028 feet would be about 218 microns, like the doubled thickness of a dollar-bill.
 - (4) And, scaling the sun to be a 12-inch diameter sphere, about the size of a basketball, then comparably the earth would be a sphere about the size of a BB at a diameter of 0.18 inch in radial-orbit, and around the basketball-sun at a scaleable distance of about 107 feet. That's like holding the basketball at the 50-yard line while the BB revolves about at a distance comparable to one being down and around the 15-yard line.
 - (5) For a volume comparison—a cubed-radius relation-- the sun is about 300,000 times larger than the earth, whereas the sun's density, weight-to-volume, is only one-fourth of that of the earth, that is, the sun is much larger than the earth but only is about one-fourth as heavy. Patently, the sun must be Hydrogen-based—and, it is! BUT, much more importantly, like that upon which our survival depends, the thermo-nuclear fusion reaction of Hydrogen, which incessantly is being re-cycled by the sun, results in a sun-surface temperature of **5,750 degrees Kelvin**, and a sun-power-density of **84,000 HP per square-meter**-- which would melt a 40-foot thick sheet of ice in one minute. And, you can feel the radiant heat at 93-million miles. How about that for a re-cycled energy source—an incessant one!

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