# Mercury Quantities

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## Mercury: Orbit

| | Mercury | Earth | Mercury/Earth |
|---|---|---|---|
| Semi-major axis ($10^6$km) | 57.9 | 149.6 | 0.387 |
| Perihelion ($10^6$km) | 46.0 | 147.1 | 0.313 |
| Aphelion ($10^6$km) | 69.8 | 152.1 | 0.459 |
| Eccentricity | 0.2056 | 0.0167 | 12.311 |
| Inclination to ecliptic (deg) | 7.00 | 0.00 | - |
| Mean orbital velocity (m/s) | 47.89 | 29.79 | 1.608 |
| Sidereal orbital period (days) | 87.969 | 365.256 | 0.241 |
| Synodic period (days) | 115.88 | - | - |
| Sidereal rotation period (h) | 1407.6 | 23.9345 | 58.785 |
| Obliquity to orbit (deg) | -0.1 | 23.44 | 0.004 |

## Mercury: Body

| | | Mercury | Earth | Mercury/Earth |
|---|---|---|---|---|
| Mass ($10^{24}$kg) | | 0.3302 | 5.9736 | 0.055 |
| Volume ($10^{10}$km$^3$) | | 6.085 | 108.321 | 0.056 |
| Equatorial radius (km) | | 2440 | 6378 | 0.38 |
| Ellipticity | | 0.0000 | 0.0034 | 0.000 |
| Mean density (g/cm$^3$) | absolute | 5.427 | 5.520 | 0.983 |
| | Uncompressed | 5.3 | 4.1 | 1.3 |
| Eq. surface gravity (m/s$^2$) | | 3.70 | 9.78 | 0.378 |
| Escape velocity (km/s) | | 4.3 | 11.2 | 0.384 |
| GM ($10^6$kg$^3$/s$^2$) | | 0.02203 | 0.3986 | 0.0553 |
| Moment of inertia (C/MR$^2$) | | 0.33 | 0.3308 | 0.998 |
| $J_2$ ($10^{-6}$) | | 60 | 1082.63 | 0.055 |
| Bond albedo | | 0.056 | 0.385 | 0.145 |
| Visual geometric albedo | | 0.11 | 0.367 | 0.300 |
| Visual magnitude V(1,0) | | -0.42 | -3.86 | - |
| Solar irradiance (W/m) | at perihelion | 14490 | 1418 | 9.786 |
| | at aphelion | 6290 | 1326 | 4.743 |
| Black-body temperature (K) | | 442.5 | 247.3 | 1.789 |
| | maximum | about 700 | about 400 | - |
| | minimum | about 100 | about 200 | - |

## Mercury: Magnetosphere & Exosphere

| | | Mercury | Earth | Mercury/Earth |
|---|---|---|---|---|
| Magnetic field | dipole moment (T･m$^3$) | ~$5\times10^{12}$ | $8\times10^{15}$ | ~0.0006 |
| | at equator surface (nT) | ~$3\times10^2$ | $3\times10^4$ | ~0.01 |
| | at polar surface(nT) | ~$6\times10^2$ | $6\times10^4$ | ~0.01 |
| Atmosphere | at dayside surface (/cm$^3$) | ~$10^6$ | ~$3\times10^{19}$ | ~$10^{-13}$ |
| | ionosphere[F-layer] (/cm$^3$) | --- | ~$2\times10^6$ | --- |
| | composition | O,Na,He,K,H,Ca | $N_2$, $O_2$, Ar | --- |
| Solar wind | velocity (km/s) | ~430 | ~430 | ~1 |
| | density (/cm$^3$) | ~73-32 | ~7 | ~10-5 |
| | magnetic field (nT) | ~46-21 | ~6 | ~8-4 |
| | Alfven velocity (km/s) | ~120-80 | ~50 | ~2.4-1.6 |
| Magnetopause | distance (subsolar) | ~1.4$R_M$ | ~10$R_E$ | ~0.15 |
| Bow shock | distance (subsolar) | ~2$R_M$ | ~15$R_E$ | ~0.15 |