Planets Fact Sheet
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Mercury
Mass: 0.3302 x 1024 kg
Volume: 6.083 x 1010 km3
Average radius: 2439.7 km
Average diameter: 4879.4 km
Mean density: 5.427 g/cm3
Escape velocity: 4.3 km/s
Surface gravity: 3.7 m/s2
Visual magnitude: −0.42
Natural satellites: 0
Rings? – No
Semimajor axis: 57,910,000 km
Orbit period: 87.969 days
Perihelion: 46,000,000 km
Aphelion: 69,820,000 km
Mean orbital velocity: 47.87 km/s
Maximum orbital velocity: 58.98 km/s
Minimum orbital velocity: 38.86 km/s
Orbit inclination: 7.00°
Orbit eccentricity: 0.2056
Sidereal rotation period: 1407.6 hours
Length of day: 4222.6 hours
Discovery: Known since prehistoric times
Minimum distance from Earth: 77,300,000 km
Maximum distance from Earth: 221,900,000 km
Maximum apparent diameter from Earth: 13 arc seconds
Minimum apparent diameter from Earth: 4.5 arc seconds
Maximum visual magnitude: −1.9

Venus
Mass: 4.8685 x 1024 kg
Volume: 92.843 x 1010 km3
Average radius: 6051.8 km
Average diameter: 12103.6 km
Mean density: 5.243 g/cm3
Escape velocity: 10.36 km/s
Surface gravity: 8.87 m/s2
Visual magnitude: −4.40
Natural satellites: 0
Rings? – No
Semimajor axis: 108,210,000 km
Orbit period: 224.701 days
Perihelion: 107,480,000 km
Aphelion: 108,940,000 km
Mean orbital velocity: 35.02 km/s
Maximum orbital velocity: 35.26 km/s
Minimum orbital velocity: 34.79 km/s

Orbit inclination: 3.39°
Orbit eccentricity: 0.0067
Sidereal rotation period: 5832.5 hours
Length of day: 2802.0 hours
Discovery: Known since prehistoric times
Minimum distance from Earth: 38,200,000 km
Maximum distance from Earth: 261,000,000 km
Maximum apparent diameter from Earth: 66.0 arc seconds
Minimum apparent diameter from Earth: 9.7 arc seconds
Maximum visual magnitude: −4.6

Earth
Mass: 5.9736 x 1024 kg
Volume: 108.321 x 1010 km3
Average radius: 6,371.0 km
Average diameter: 12,742 km
Mean density: 5.515 g/cm3
Escape velocity: 11.186 km/s
Surface gravity: 9.798 m/s2
Visual magnitude: −3.86
Natural satellites: 1
Rings? – No
Semimajor axis: 149,600,000 km
Orbit period: 365.256 days
Perihelion: 147,090,000 km
Aphelion: 152,100,000 km
Mean orbital velocity: 29.78 km/s
Maximum orbital velocity: 30.29 km/s
Minimum orbital velocity: 29.29 km/s
Orbit inclination: 0.00°
Orbit eccentricity: 0.0167
Sidereal rotation period: 23.9345 hours
Length of day: 24.0000 hours
Axial tilt: 23.45°

Mars
Mass: 0.64185 x 1024 kg
Volume: 16.318 x 1010 km3
Average radius: 3,389.5 km
Average diameter: 6,779 km
Mean density: 3.933 g/cm3
Escape velocity: 5.03 km/s
Surface gravity: 3.71 m/s2
Visual magnitude: −1.52
Natural satellites: 2
Rings? – No
Semimajor axis: 227,920,000 km
Orbit period: 686.980 days
Perihelion: 206,620,000 km
Aphelion: 249,230,000 km
Mean orbital velocity: 24.13 km/s
Orbit inclination: 1.850°
Orbit eccentricity: 0.0935
Sidereal rotation period: 24.6229 hours

Length of day: 24.6597 hours
Axial tilt: 25.19 °
Discovery: Known since prehistoric times
Minimum distance from Earth: 55,700,000 km
Maximum distance from Earth: 401,300,000 km
Maximum apparent diameter from Earth: 25.1 arc seconds
Minimum apparent diameter from Earth: 3.5 arc seconds
Maximum visual magnitude: −2.91

Jupiter
Mass: 1,898.6 x 1024 kg
Volume: 143,128 x 1010 km3
Average radius: 69,911 km
Average diameter: 139,822 km
Mean density: 1.326 g/cm3
Escape velocity: 59.5 km/s
Surface gravity: 24.79 m/s2
Natural satellites: 63
Rings? – Yes
Semimajor axis: 778,570,000 km
Orbit period: 4,332.589 days
Perihelion: 740,520,000 km
Aphelion: 816,620,000 km
Mean orbital velocity: 13.07 km/s
Orbit inclination: 1.304°
Orbit eccentricity: 0.0489
Sidereal rotation period: 9.9250 hours
Length of day: 9.9259 hours
Axial tilt: 3.13°
Discovery: Known since prehistoric times
Minimum distance from Earth: 588,500,000 km
Maximum distance from Earth: 968,100,000 km
Maximum apparent diameter from Earth: 50.1 arc seconds
Minimum apparent diameter from Earth: 29.8 arc seconds
Maximum visual magnitude: −2.94

Saturn
Mass: 568.46 x 1024 kg
Volume: 82,713 x 1010 km3
Average radius: 58,232 km
Average diameter: 116,464 km
Mean density: 0.687 g/cm3
Escape velocity: 35.5 km/s
Surface gravity: 10.44 m/s2
Natural satellites: 60
Rings? – Yes
Semimajor axis: 1,433,530,000 km
Orbit period: 10,759.22 days
Perihelion: 1,352,550,000 km
Aphelion: 1,514,500,000 km
Mean orbital velocity: 9.69 km/s
Orbit inclination: 2.485°
Orbit eccentricity: 0.0565
Sidereal rotation period: 10.656 hours

Length of day: 10.656 hours
Axial tilt: 26.73°
Discovery: Known since prehistoric times
Minimum distance from Earth: 1,195,500,000 km
Maximum distance from Earth: 1,658,500,000 km
Maximum apparent diameter from Earth: 20.1 arc seconds
Minimum apparent diameter from Earth: 14.5 arc seconds
Maximum visual magnitude: 0.43

Uranus
Mass: 86.832 x 1024 kg
Volume: 6,833 x 1010 km3
Average radius: 25,362 km
Average diameter: 50,724 km
Mean density: 1.270 g/cm3
Escape velocity: 21.3 km/s
Surface gravity: 8.87 m/s2
Natural satellites: 27
Rings? – Yes
Semimajor axis: 2,872,460,000 km
Orbit period: 30,685.4 days
Perihelion: 2,741,300,000 km
Aphelion: 3,003,620,000 km
Mean orbital velocity: 6.81 km/s
Orbit inclination: 0.772°
Orbit eccentricity: 0.0457
Sidereal rotation period: 17.24 hours
Length of day: 17.24 hours
Axial tilt: 97.77°
Discovery: 13 March 1781
Minimum distance from Earth: 2,581,900,000 km
Maximum distance from Earth: 3,157,300,000 km
Maximum apparent diameter from Earth: 4.1 arc seconds
Minimum apparent diameter from Earth: 3.3 arc seconds
Maximum visual magnitude: 5.32

Neptune
Mass: 102.43 x 1024 kg
Volume: 6,254 x 1010 km3
Average radius: 24,622 km
Average diameter: 49,244 km
Mean density: 1.638 g/cm3
Escape velocity: 23.5 km/s
Surface gravity: 11.15 m/s2
Natural satellites: 13
Rings? – Yes
Semimajor axis: 4,495,060,000 km
Orbit period: 60,189 days
Perihelion: 4,444,450,000 km
Aphelion: 4,545,670,000 km
Mean orbital velocity: 5.43 km/s
Orbit inclination: 1.769°
Orbit eccentricity: 0.0113
Sidereal rotation period: 16.11 hours

Length of day: 16.11 hours
Axial tilt: 28.32°
Discovery: 23 September 1846
Minimum distance from Earth: 4,305,900,000 km
Maximum distance from Earth: 4,687,300,000 km
Maximum apparent diameter from Earth: 2.4 arc seconds
Minimum apparent diameter from Earth: 2.2 arc seconds
Maximum visual magnitude: 7.78

We've written many articles about the Solar System. Here's an article about how many moons there are in the Solar System, and here's an article about the formation of the Solar System.

If you'd like more info on the Solar System, check out NASA's Planetary Fact Sheet.

We've recorded several episodes of Astronomy Cast about the Solar System. Start

	Mars	Earth	Ratio (Mars/Earth)
Semimajor axis (106 km)	227.92	149.60	1.524
Sidereal orbit period (days)	686.980	365.256	1.881
Tropical orbit period (days)	686.973	365.242	1.881
Perihelion (106 km)	206.62	147.09	1.405
Aphelion (106 km)	249.23	152.10	1.639
Synodic period (days)	779.94	–	–
Mean orbital velocity (km/s)	24.07	29.78	0.808
Max. orbital velocity (km/s)	26.50	30.29	0.875
Min. orbital velocity (km/s)	21.97	29.29	0.750
Orbit inclination (deg)	1.850	0.000	–
Orbit eccentricity	0.0935	0.0167	5.599
Sidereal rotation period (hrs)	24.6229	23.9345	1.029
Length of day (hrs)	24.6597	24.0000	1.027
Obliquity to orbit (deg)	25.19	23.44	1.075
Inclination of equator (deg)	25.19	23.44	1.075

	Jupiter	Earth	Ratio (Jupiter/Earth)
Semimajor axis (106 km)	778.57	149.60	5.204
Sidereal orbit period (days)	4,332.589	365.256	11.862
Tropical orbit period (days)	4,330.595	365.242	11.857
Perihelion (106 km)	740.52	147.09	5.034
Aphelion (106 km)	816.62	152.10	5.369
Synodic period (days)	398.88	–	–
Mean orbital velocity (km/s)	13.06	29.78	0.439
Max. orbital velocity (km/s)	13.72	30.29	0.453
Min. orbital velocity (km/s)	12.44	29.29	0.425

Orbit inclination (deg)	1.304	0.000	–	
Orbit eccentricity	0.0489	0.0167	2.928	
Sidereal rotation period (hrs)	9.9250*	23.9345	0.415	
Length of day (hrs)	9.9259	24.0000	0.414	
Obliquity to orbit (deg)	3.13	23.44	0.134	
Inclination of equator (deg)	3.13	23.44	0.134	

Orbital parameters

	Saturn	Earth	Ratio (Saturn/Earth)
Semimajor axis (106 km)	1,433.53	149.60	9.582
Sidereal orbit period (days)	10,759.22	365.256	29.457
Tropical orbit period (days)	10,746.94	365.242	29.424
Perihelion (106 km)	1,352.55	147.09	9.195
Aphelion (106 km)	1,514.50	152.10	9.957
Synodic period (days)	378.09	–	–
Mean orbital velocity (km/s)	9.68	29.78	0.325
Max. orbital velocity (km/s)	10.18	30.29	0.336
Min. orbital velocity (km/s)	9.09	29.29	0.310
Orbit inclination (deg)	2.485	0.000	–
Orbit eccentricity	0.0565	0.0167	3.383
Sidereal rotation period (hrs)	10.656*	23.9345	0.445
Length of day (hrs)			

Orbital parameters

	Uranus	Earth	Ratio (Uranus/Earth)
Semimajor axis (106 km)	2,872.46	149.60	19.201
Sidereal orbit period (days)	30,685.4	365.256	84.011
Tropical orbit period (days)	30,588.740	365.242	83.749
Perihelion (106 km)	2,741.30	147.09	18.637
Aphelion (106 km)	3,003.62	152.10	19.748
Synodic period (days)	369.66	–	–
Mean orbital velocity (km/s)	6.80	29.78	0.228
Max. orbital velocity (km/s)	7.11	30.29	0.235
Min. orbital velocity (km/s)	6.49	29.29	0.222
Orbit inclination (deg)	0.772	0.000	–
Orbit eccentricity	0.0457	0.0167	2.737
Sidereal rotation period (hrs)	-17.24*	23.9345	0.720
Length of day (hrs)	17.24	24.0000	0.718
Obliquity to orbit (deg)	97.77	23.44	–
Inclination of equator (deg)	82.23	23.44	3.508

	Neptune	Earth	Ratio (Neptune/Earth)
Semimajor axis (106 km)	4,495.06	149.60	30.047
Sidereal orbit period (days)	60,189.	365.256	164.79

Tropical orbit period (days)		59,799.9	365.242	163.73
Perihelion (106 km)	4,444.45	147.09	30.216	
Aphelion (106 km)	4,545.67	152.10	29.886	
Synodic period (days)	367.49	–	–	
Mean orbital velocity (km/s)		5.43	29.78	0.182
Max. orbital velocity (km/s)		5.50	30.29	0.182
Min. orbital velocity (km/s)		5.37	29.29	0.183
Orbit inclination (deg)	1.769	0.000	–	
Orbit eccentricity	0.0113	0.0167	0.677	
Sidereal rotation period (hrs)		16.11*	23.9345	0.673
Length of day (hrs)	16.11	24.0000	0.671	
Obliquity to orbit (deg)	28.32	23.44	1.208	
Inclination of equator (deg)		28.32	23.44	1.208