Star System & Planet Maker

Ennead Games

Preface

Star System and Planet Maker

"Space is big. You just won't believe how vastly, hugely, mind-bogglingly big it is. I mean, you may think it's a long way down the road to the chemist's, but that's just peanuts to space…"
Douglas Adams, The Hitchhiker's Guide to the Galaxy

You are out there, being busy and exploring the big an empty void known as space and you encounter a star. What type of star is it? How many planets, if there are any, are in orbit? What about the planets themselves? All these questions and more can be answered with this publication.

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Disclaimer

Due to how complex the nature of star systems and planets can be in real life, this publication is not claiming in any way to be scientifically 100% accurate…at all. This is a deliberate design choice, to make it easier to use and not bogged down with too much detail. At the end of the day, this publication is for fun and idea prompting and assistance. If you need accuracy, there are plenty of free books, websites and resources out there worthy of your time and attention.

Contents

Quick System Generator

This collection of tables can be used as presented, or, as the starting point for a more detailed system profile.

Star type

Number of Stars

Roll once for the number of stars in the system, then, for multiple stars, roll for their nature in relation to the others.

D20	# of Stars
1 – 10	Single
11 - 18	Binary (2)
19	Tri-System (3)
20	Multiple

D20	Nature of Stars
1 – 5	Each star in the same is the same type
6 – 10	Each star in the system is a different type
11 – 15	Roll for one star, then next one is one tier above it, if possible
16 - 20	Roll for one star, then next one is one tier below it, if possible

Star Type

D20	Star Type
1	Proto
2	T Tauri
3 - 13	Main Sequence
14	Red Giant
15 – 16	White Dwarf
17 – 18	Red Dwarf
19	Neutron
20	Supergiant

System Contents

First, you need to determine how many major items are in the system and in orbit around the star(s) if anything.

Number of Non-stellar subjects

D20	Number of non-stellar subjects in system
1 – 2	0
3 – 4	1
5 – 6	2
7 – 8	3
9 – 10	4
11 – 12	5
13 – 14	6
15 – 16	7
17 - 18	8
19 - 20	9 + 1d10

Subject Type

Roll for each subject, starting at the closest to the star(s) and working outwards.

D20	Subject type
1	Anomaly/Unknown item/Something else not listed here
2	Artificial Structure/Item
3	Asteroid/Asteroid group
4 – 6	Asteroid Belt/Field
7	Comet
8	Dust clouds
9	Oort Cloud (1)
10 – 12	Planet – Dwarf/Micro
13 – 16	Planet – Gas
17 – 20	Planet – Terrestrial/Rocky

1 – Oort clouds are generally only found once per system, in the outermost orbit.

Detailed Tables

When making a star system you will probably not need every table present here. The tables are mostly in alphabetical order so you can find what you need easily.

Use the Quick System Generator as a starting point, if needed, and expand from there.

Stars

Main Sequence Type

This table is used to determine what the main sequence star is, or what other types of a star were when they were in their main sequence stage.

D100	Type	Colour
01 – 03	O	Blue
04 – 06	B	White to blue/white
07 – 09	A	White
10 – 15	F	Yellow-White
16 – 20	G	Yellow
21 – 30	K	Orange to Red
31 - 00	M	Red

O-Class stars are generally brighter and hotter than a B-class, which in turn are hotter and brighter than the A-class types etc. Sol, Earth's star, for example, is classed as a G type star.

The size of the star is linked to its age. The larger the star, the quicker it ages and dies.

A solar mass is in relation to the material contained in the star, using Sol as a baseline. The same applies to Solar Radius as well, so an "O" type star will have, typical, x16 the mass of our star and have a radius of around the 6 times larger. These numbers are, of course, approximate and some variation will occur.

Type	Solar Mass	Solar Radius
O	16	6
B	2d8	1d6
A	2d4	1d4
F	1d4	2
G	1	1
K	1/2	1/2
M	1/4	1/4

The mass of Sol is approximately 1.9891×1030 kg, which is 333,000 times the mass of the Earth. The Earth can also fit inside the Sun 1.3 million times.

Sol is approximately 100 times wider than Earth, giving it a radius of around 637,100 km.

Planets

Earth Baseline Details

References will be made to something being for example, [X] times larger than Earth, or a day is three times longer than a day on Earth etc.

Atmosphere - Nitrogen/Oxygen/Others
Atmospheric Pressure - 14.7 psi
Axil Tilt – 23.5 degrees
Diameter - 7,926.41 miles (12,756.32 kilometres)
Escape velocity: 11 km/s (approx.)
Gravity - 1
Orbit/Year - 365 days
Orbiting Items - 1 natural moon, 1 space station, multiple artificial satellites
Radius - 3,959 miles (6,371 kilometres)
Rotation/Day - 24 hours
Temperature (average) – 60 F/16 C
Type – Terrestrial

Remember that you will probably not need to roll on all these tables, as it may produce results that seem contradictory. Of course, there is nothing stopping you from using all of these tables and coming up with a reason why the contradictions are present in this system.

Size

The size of the planet affects many other features. Roll a d10 and make a note of the the number you get as it will be used in other aspects later.

D10	Size	Circumference
1	Miniscule	1d10+4
2	Tiny	2d10
3	Small	4d10
4 – 6	Average	10d10
7	Large	10d10 * 2
8	Huge	10d10 * 3
9	Enormous	10d10 * 4
10	Massive	10d10 * 5

Larger planets may exist but are beyond the scope of the publication. Consider them to be rare or unique.

For ease of design, the size of a planets moon can be no bigger than (size of planet – 2). So, for example, if you had a planet of Size 6, it could not have a moon(s) bigger than size 4.

The circumference is measured in 000's of km (Kilometres or 1000 meters). Example: Earth would be a Size 4 planet, at approx. 40,000 km circumference.

Atmosphere Type

There are two methods here for determining what the atmosphere of this planet, assuming it has one, is composed of:

1. Simplified
2. Random

Simplified determination

Rather than determining each chemical that primarily makes up the atmosphere, you simply roll and get a generic type, like "Icy" or "Earth-Like". Very few, if any atmospheres are made up of one gas, so this table tells you the primary gas or makeup of the atmosphere.

D12	Primary Gas/Effect
1	Ammonia/Toxic
2	Argon/Inert
3	Carbon Dioxide/Greenhouse
4	Chlorine/Corrosive
5	Earth-like/Standard
6	Helium/Inert
7	Hydrogen/Combustive
8	Icy/Cold
9	Methane/Toxic
10	Nitrogen/Suffocating
11	Oxygen/Combustive
12	Sulphur/Volcanic

Each point in APR (see Atmospheric Pressure aspect for more details) can also have the following effects. These effects can be negated or prevented if appropriate precautions are taken. This number is not a strict value, but to give you an idea of how dangerous the atmosphere can be.

Cold
Does cold and frost damage per second. Higher Apr increases this damage

Corrosive
Does APR amount of acid type damage per 60 earth seconds.

Combustive
Any ignition, spark or open flame has a chance to do fire + explosion damage. The higher the APR, the greater the chance of this occurring and the worse the explosion/fire when it does.

Greenhouse
This type is very hot and oppressive. This does AR in heat damage per second. Pressure damage based effects are doubled. Metal and stone can melt at the extremes. A Classic example of this type is Venus.

Inert
Although breathable by most races (racial differences not included), too much expose can cause "Inert Gas Narcosis" Symptoms include Light-headedness, reduced dexterity, euphoria, and impaired judgment. Each second of exposure to this atmosphere type has a chance equal to AR/10 of this occurring.

Standard/Earth-Like
This is the same as Earth, same problems as well as same benefits.

Suffocating
Breathing is virtually impossible here for anything not adapted to this atmosphere. The higher the APR, the quicker your body would think you are being suffocated.

Toxic
Each APR point represents how much poison-like damage is done to anyone who breathes this atmosphere and is not adapted to it.

Volcanic
Each AR point represents an active volcano. The atmosphere is also slightly corrosive. This is similar to a Corrosive atmosphere but divided the rating by 10

Random determination

Using this system you determine the main gases that make up the atmosphere and the rough %. Using this option does make for more detailed atmospheres, but, will result in more work for you.

The gases are present in order of magnitude. A Nitrogen/Ammonia atmosphere, for example, has more Nitrogen then an Ammonia/Nitrogen one. Use the details in the simplified chart to give you an idea of what gasses are present.

Determine % of gasses:
P = Primary, S=Secondary, T=Tertiary, with any % leftover being random trace gases.

D8	% of gas types
1	[P=1d5x10] [S=1d4x10]
2	[P=1d5x10] [S=1d5x10]
3	[P=1d6x10] [S=1d10][T=1d10]
4	[P=1d6x10] [S=1d20][T=2d10]
5	[P=1d8x10] [S=1d20]
6	[P=1d8x10] [S=1d10] [T=1d10]
7	[P=1d10x10] [S=1d10]
8	[P=1d10x10] [S=Any leftovers]

Atmospheric Pressure

Bigger planets generally have thicker atmospheres, but this is not always the case. Some smaller planets may have a thick oppressive atmosphere, like Venus which is 90+ times the pressure of Earth's atmosphere.

To determine the atmosphere rating or AR, use this formula and consult the table below.

AP = 1d10-3 + (1/2 Size Rating) + (1/2 Density Rating).

Amounts are rounded down when determining the value to input.

AP	Thickness	APR
0	Negligible/None	0
1	Trace	1
2	Light	2
3	Thin	4
4	Thinner	6
5	Below Standard	8
6	Standard	10
7	High	20
8	Thick	40
9	Slightly Dense	80
10	Dense	100
11	Very Dense	200
12	Super Dense	400
13+	Ultra-Dense	40 points per AP

The Atmospheric Pressure Rating (APR) can be used to give you an idea of how thick the atmosphere is in comparison to other planets. The AR column has two numbers, pre-set and random if you wish for more variety.

These values reflect typical values for this planet, at sea level or its equivalent. A simple rule to determine what the pressure is like when compared to Earth:

AR x 10 = % of pressure as it would be on Earth.

- The lower the pressure, the lower the temp needed to boil a liquid. Example: Water boils at 100 degree centigrade and would boil quicker in a lower APR region. Higher pressure would be the opposite.
- Any side effects from atmospheres types (see atmosphere type aspect section) are increased with higher pressure. Corrosive atmospheres are more corrosive the higher the APR is etc.
- Pressure greatly above or below any visitors home planet can have adverse effects on those not suitable to living there. A very high pressure can crush vehicles and life forms.

Axil Tilt

The axis is the point which the planet/moon spins around. The degree of the tilt is in relation to the orbital plane. The larger the tilt, the greater the variance, temperature wise, the seasons can be.

Degree of Tilt

D10	Degree of tilt
1	None - 0
2	Slight (1d10)
3	Minor (1d10 + 10)
4	Notable (1d10 + 20)
5	Moderate (1d10 + 30)
6	Large (1d10 + 40)
7	Great (1d10 + 50)
8	Severe (1d10 + 60)
9	Huge (1d10 + 70)
10	Extreme (1d10 + 80)

Day/Rotation

How long does it take for the planet (or moon) to rotate on its axis? This is measured in Earth-hours.
Day rating is = (1d10-1) + Size

(D10-1) + Size	Earth hours per day
1	1d4
2	1d8
3	1d10
4	2d10
5	4d10
6	5d10
7	6d10
8	7d10
9	8d10
10	9d10
11	10d10
12	12d10
13+	1d10 per day rating

Rotation Direction

The vast majority of planets rotate in the same direction when viewed from "above", but a few rotate in the other.

D100	Direction
01 – 70	Prograde/"Counter Clockwise"
71 - 00	Retrograde/"Clockwise"

Density/Gravity

As a good rule of thumb, the bigger the planet, the higher the density. A higher density may indicate a higher mineral makeup. It also increases the planets gravity and atmospheric thickness.

Roll a D10-1 and add the Planets size to this result. This is the planets density rating.

DR	Density	Gravity
1	Negligible	Negligible
2	Very Low	0.01 -> 0.04 (1d4)
3	Low	0.05 -> 0.10 (1d6+4)
4	Light	0.2 -> 0.4 (1d3)
5	Below Average	0.5 -> 0.7 (1d3)
6	Average	0.8 -> 1.2 (1d5)
7	Above Average	1.3 -> 1.7 (1d5)
9	Heavy	1.8 -> 2.0 (1d3)
9	Very Heavy	2.1 -> 2.5 (1d4)
10	Massive	2.6 -> 2.7 (1d2)
11	Enormous	2.8 -> 3.0 (1d3)
12+	Extreme	3.0 + 0.1 point(s) per size point

Gravity plays an important factor on any planet. A higher gravity makes things weigh more, makes it harder to reach escape velocity when trying to leave and many other factors. Earth is the base at 1.

For very simple calculations take the weight/escape velocity etc. it would be on Earth and multiply it by the gravity number.

Hydrosphere

The hydrosphere is also known as the amount of surface liquid that may be present on a planet or moon. Even worlds with strange atmospheres may have some liquid on the surface. It's the nature of that liquid that changes. On Earth-like planets, it may be water, but on others, it could be some form of liquid ammonia or something else more exotic. It might be frozen or be close to boiling away.

% Amount of land covered in liquid

D12	% Amount
1	0
2	01 – 05 (1d5)
3	06 – 15 (1d10 + 5)
4	16 – 25 (1d10 + 15)
5	26 – 35 (1d10 + 25)
6	36 – 45 (1d10 + 35)
7	46 – 55 (1d10 + 45)
8	56 – 65 (1d10 + 55)
9	66 – 75 (1d10 + 65)
10	76 – 85 (1d10 + 75)
11	86 – 95 (1d10 + 85)
12	96 – 100 (1d5 + 95)

Type of liquid

D20	Type of liquid
1 - 11	H20/Water
12	Ammonia
13	Bromine
14	Caesium
15	Francium
16	Gallium
17	Liquid Nitrogen
18	Liquid Oxygen
19	Mercury
20	Rubidium

Magnetic Field

A planets MF, or magnetic field rating, is a measure of the planets natural magnetic output. A strong magnetic field can affect biological and technological entities, albeit in different ways. It is expressed in Teslas (other species will have their own term for it), with Earth's magnetic field ranging from 30 microteslas (micro being 1000th) at the poles to approx. 60 microteslas at the equator. This gives the Earth an average magnetic field strength of 45 microteslas.

Not all planets have regional variances in their fields, but it's worth knowing if they do, in case you need to find an area safe for you to land and explore.

To give you an idea of the intensity of these fields, a typical bar magnet has a strength of about 10 microteslas, with a typical strong lab magnet, such as one you may find in an MRI, has a rating of 10 Teslas, which is about the limit for safe expose for humans without protection, while at the other end of the spectrum, a neutron star has at its surface 100 Mega (000s) Teslas!

D10-2 + DR	MR when compared to Earth
1	Less than 0
2	¼
3	½
4	1
5	2
6	4
7	8
8	16
9	32
10	64
11+	Doubles previous value for each point

MR Variation

This table is used for when you need to determine where the MF is variable.

D100	MF Planetary Variation
01 – 50	No major regional variance
51 – 55	Higher at a pole (randomly determined)
56 - 59	Higher at both poles
60 – 70	Higher at equator
70 – 75	Higher in random spots
76 - 80	Fluxing - Poles
81 – 85	Fluxing - Equator
86 – 90	Fluxing –Random spots
91 - 96	Fluxing – Whole planet
97	Unstable – Poles
98	Unstable – Equator
99	Unstable – Random Spots
00	Unstable – Whole planet

The amount of change from the average for the planet can be determined by 1d6 x 10, as a percentage.

Fluxing fields change over a period of time and are regular, almost like clockwork. The strength increases by regular amounts over a period of time (1d100 days) until it hits its peak. (Double base MFS). Then it drops by the same amount over the same period of time, dropping below its typical value until it has reached 1d6x10% below. Once this low has been reached, the field increases in strength and the cycle repeats.

Unstable fields are, as the name suggests, unstable, both in duration and strength. Every hour roll to see if there is a possible change and by how much.

Population/Lifeforms

Designers note – This aspect will be expanded in a future publication along with a life-form generator and inhabited planet maker for truly bizarre, wonderful and unique life forms and cultures.

D20	Highest Lifeform
01 – 05	None
06 – 10	Microbes
11 - 12	Algae
13	Fungi
14	Basic Plants
15	Base Animals (worms etc.)
16	Insects
17	Reptiles
18	Mammals
19	Hominids/Apes etc.
20	Sentient

Each result on the table above includes those that are above it on the list, so a planet with microbes and basic plants also have fungi as well.

Although the above table uses Earth-based life forms, this is just for example. Most, if not all planets would not share a similar life form evolutionary path to Earth. This is just to show you the level of complexity that life has achieved on this particular planet.

Primary Terrain

No one planet is 100% covered with one type of terrain, unless it's artificially constructed, but even then it's more like 99%. However, some planets are dominated by one type of terrain, be it forests or mountains etc.

D20	Primary Terrain
1	Aquatic - Deep
2	Aquatic – Shallow
3	Arctic/Frozen
4	Canyon
5	Desert
6	Exotic/"impossible"/Other
7	Forest
8	Glacier
9	Grassland
10	Hills
11	Islands
12	Jungle
13	Mountains/Valleys
14	Plains
15	Rivers/Lakes
16	Scrubland
17	Swamp/Bog
18	Tundra
19	Unnatural/Artificial
20	Wasteland/Devastation

Orbiting Bodies

An orbiting body is considered to be anything that has achieved, through natural or artificial means, a permanent orbit around a planet or moon.

D20	# of Orbiting bodies
1 - 10	Nothing
11 - 15	1
16	2
17	3
18	4
19	5
20	2d4

Once you have the number of orbiting bodies, you need to determine what they are. Each item will be at an appropriate location and distance from the subject it orbits.

D20	Orbiting body type
1 – 2	Cloud - Dust
3	Cloud – Gas
4 – 5	Debris – Natural
6 – 7	Debris – Artificial/Junk
8 - 16	Moon
17 – 18	Ring (d6: 1-2 "Ice " 3-4 "Rock" 5-6 "Mixture")
19 – 20 (*)	Artificial Construction – Space Station, weapons platform etc.

(*) – This number increases dramatically if the population on the planet it orbits has achieved space travel.

Position/System Order

One way to make things easier is to assume there are various possible slots for a planet (or moon) to go in. Each "slot" can, generally, hold one planet, asteroid belt or another orbiting body.

The easiest way to work this out is to imagine there are 20 possible orbit positions. Some systems may have more, but this a simplified way of determination of placement.

Position 1 is closest to the star with position 20 being the one that is the furthest possible distance away. Again, to make things easier, these positions are of roughly equal distances, with some minor variations. Roll a d20 for each major orbiting object, such as planets, to determine where it is. If you have an item already in that position, either roll again or move it to the nearest available position.

System Size

The end of the solar system is about 122 astronomical units (AU) away from the sun. Pluto is about 40 AU and Earth is 1 AU away from the Sun.

Knowing the size of your star system is helpful as it can guide the placement of planets and other orbiting bodies. Roll on the table below to determine, in AU, the size of the system.

Add +1 to the dice roll for every major orbiting body in the system.

D20	System Size (in AU)
1	1/4
2	1/3
3	1/2
4	2/3
5	¾
6	1
7	1d4
8	2d4
9	2d6
10	3d6
11	2d8
12	2d10
13	3d10
14	4d10
15	5d10
16	6d10
17	7d10
18	8d10
19	9d10
20+	1d10 AU per point of value

Temperature

Base Temperature

This table is modified by the position of the planet. Generally, the further the planet is away from its parent star, the colder it will be and the inverse is true: the closer it is to the star the hotter the base temperature will be.

Add (10 x slot position) to the roll.

D100	Base Temperature (F)
01	401 + (4d4 x 100)
02 – 10	301 – 400 (d100 + 300)
11 – 20	201 – 300 (d100 + 200)
21 – 30	101 – 200 (d100 + 100)
31 – 40	51 – 100 (d50 + 50)
41 - 60	-50 to 50 (d100)
61 – 70	Minus 51 – 100 (d50 + 50)
71 – 80	Minus 101 – 200 (d100 + 100)
81 – 90	Minus 201 – 300 (d100 + 200)
91 – 99	Minus 301 – 400 (d100 + 300)
00	Minus 401 + (4d4 x 100)

The numbers in ( ) are for when you require a defined number, so 301 – 400 (d100 + 300) means to roll a d100 and add 300 to get the exact value.
For entries 61 and above the values presented are negative temperatures.

Seasonal Difference

The temperature at the height of summer and winter can be vastly different. This is determined by the axial tilt. The greater the tilt, the greater the variance from the base, or typical, the temperature will become. So if you have a tilt of 45 degrees, the summer high point will be 45 degrees above typical/standard and the winter 45 degrees below. Regional and other variations can and will occur, but again, this is for simplicity

This is determined using Fahrenheit. To convert from Fahrenheit to Celsius quickly, subtract 30 from the value and divide by two.

Type

What is the classification of the planet? Is it a terrestrial or a gas planet?

D20	Planet Type
1 – 10	Terrestrial
11 - 20	Gas

Terrestrial planets are rocky/solid types and gas ones are as the name suggests – Mostly gas, but often with a smaller dense core

Year/Orbit Duration

How long does it take for the planet to orbit its parent body? This value is measured in Earth days. A local "year" compared to Earth is equal to the orbit time/365.

Add 1 to the dice roll for each "slot" the planet is in. E.g. If the planet is in orbit slot 3, add 3 to the roll.

D10 + Orbit Slot Value	Orbit time in Earth days
1	10d10
2	10d10 x 2
3	10d10 x 3
4	10d10 x 4
5	10d10 x 5
6	10d10 x 6
7	10d10 x 7
8	10d10 x 8
9	10d10 x 9
10	10d10 x 10
11 +	10d10 x number rolled

Glossary

Not all the terms listed here are used in this publication but are provided here as a handy resource for your games and stories.

Absolute zero
Absolute Zero is the lowest possible temperature, -273.16 degrees Celsius or 459.67 degrees Fahrenheit. "Space" typically has a temperature that never drops below 2.7 Kelvin or -270.45 Celsius.

Annular
Shaped like or forming a ring.

Aphelion
This is the point in the orbit of a planet, asteroid, or comet at which it is furthest from the sun.

Atmosphere
An atmosphere is a gaseous area surrounding a planet or other body. They are rarely made up of one gas type. Some can be quite inhospitable and dangerous to travel through, with others being classed as inert.

AU
AU = Astronomical Unit. This is equal to the rough distance between the Sun and Earth. 1 AU = 149,597,870,700 metres or about 150 million kilometres, or 93 million miles.

Axis
The axis is an imaginary straight line on which an object rotates.

Binary star
A binary Star is two stars orbiting each other.

Black Hole
Black Holes are objects of extreme density; with such strong gravitational attraction that even light cannot escape from it.

Clusters
A cluster is a group of stars or galaxies which are held together by their common gravity.

Comet
A comet is an icy small body that, when passing close to a star, warms and begins to release gases, a process called outgassing. This may be a one-off occurrence or have a long orbit that takes decades to repeat. Primitive cultures sometimes view them as omens.

Constellation
This is a group of stars that form a pattern when viewed from a certain location.

Density
This is a measure of cow compact or "squashed together" matter is.

Eclipse
An eclipse is an astronomical event that occurs when an astronomical object is temporarily obscured, either by passing into the shadow of another body or by having another body pass between it and the viewer.

Escape velocity
The Escape Velocity is the speed an object must have in order to escape from another object's gravity. The higher the gravity, the higher this speed required becomes.

Galaxy
A group of stars, planets, gas and dust held together by gravity.

Hydrosphere
A hydrosphere is the total amount of liquid, normally water, on a planet.

Kelvin
A measurement of temperature often used in astronomy. 0 degrees Kelvin equals -273 degrees Celsius and -459.4 degrees Fahrenheit. Has the same magnitude as Celsius. I.E. one degree in Kelvin is the same as one in Celsius.

Light Year
A Light Year (LY) is a unit of astronomical distance equivalent to the distance that light travels in one year, which is 9.4607 × 1012 km or nearly 6 million million miles.

Magnetosphere
This is the area around an object, such as a planet, where the influence of the object's magnetic field can be felt.

Main Sequence Star
Star type – A main sequence star covers, as the name suggests, those stars that are within the main sequence of their lifespan.

Mass
Mass is how much matter an object contains. It is important to point out that this is not the same as its weight, but it does contribute towards that aspect.

Neutron star
When a star of a certain size "dies", it can become a neutron star. Bigger stars can become black-holes. A neutron star is, for its size incredibly dense. They are so dense that a single teaspoon of material from a neutron star would weigh a billion tons

Oort cloud
A "shell" of icy objects found on the outermost part of the Sol System.

Orbit
An orbit is a path one celestial object takes around another object or a point in space.

Perturbations
This is the disturbances in the orbit of a celestial object caused by the gravitational pull of another object. Sometimes used to help detect otherwise useable planets in orbit around distant stars.

Plasma
Plasma is a state of matter after gas.

Prograde motion
Prograde motion is when a planet moves west-to-east relative to the stars. Sometimes referred to as counter-clockwise.

Protostar
A protostar is a large mass that forms by contraction out of the gas that can be found in stellar nurseries etc. Eventually, this can become a star in its own right.

Red Dwarf
These are main-sequence stars but they have such low mass that they're much cooler than stars like our Sun.

Red Giant
A red giant star is a dying star in the last stages of stellar evolution. Red giant stars reach sizes of 100 million to 1 billion kilometres in diameter (62 million to 621 million miles), 100 to 1,000 times the size of the sun today.

Retrograde motion
Retrograde motion is when a planet moves east-to-west relative to the stars. This is sometimes referred to as clockwise.

Satellite
A satellite is an object orbiting a larger one. This can be repeated for many levels and as such, a satellite may have its own orbiting bodies which in turn can have their own.

Solar wind
The solar wind is a steady flow of particles streaming out from the Sun and other stars, in all directions.

Star
A star is a luminous sphere of plasma held together by its own gravity. The nearest star to Earth is the Sun.

Stellar Graveyard
This area of a galaxy has a higher than average amount of dead or dying stars

Stellar Nursery
Sometimes called a molecular or interstellar cloud, this is an area of dust, plasma and gasses. Stars tend to form and grow here.

Supergiant
The largest stars in the Universe are supergiant stars. They burn up/use their hydrogen fuel at an enormous rate and will likely "die" in a supernova after only a few million years. The phrase "live fast die young" applies to these behemoths.

Supernova
A Supernova, or Nova, is a stellar explosion. They are extremely luminous (bright) and often give out a large burst of radiation that can for a short time, outshine a galaxy.

Synodic Period
The Synodic Period is the time it takes an object in space to reappear at the same point in relation to two other objects, such as the Earth and Sun.

T Tauri
A T Tauri star is a stage in a star's formation and evolution right before it becomes a main sequence star.

Terminator
A terminator or twilight zone is a moving line that separates the illuminated day side and the dark night side of a planetary body.

White Dwarf
A white dwarf star is formed when a star has completely run out of hydrogen fuel in its core and it lacks the mass to force higher elements into a fusion reaction.

Wormhole
A wormhole is an area of space-time that can be considered a shortcut to another area. They can be stable and always link the same areas, or unstable, in which case they are very risky to use. Some temporal issues may occur when using a wormhole.