Multiverse Kit
Galaxies Stars and Planets

Introduction

No matter the game, whatever the game system, they all have one thing in common. They exist in a world, which in itself, is contained in a universe.
Some also say there is more than one universe, the so-called Multi-verse theory. What is different is the details of the universe and plane in which it resides

Your players have started asking difficult questions. What are the rules of the plane we heading to? Does the universe have borders, does time work the same way, with many, many more decisions being needed.

This is where the Multi-Verse Kit (MVK) comes in. The MVK is a series of random charts to help generate ideas, fill in blanks or simple give basic details about the areas in which your players roam. Using a top-down approach, the MVK will cover the building-blocks of

The MVK is done in separate parts, so you can take what you want from it. Just need ideas about making a new planet? Need some quick details about the plane you are heading to? Just use the part you want.

The MVK is system-generic and, for the most part, suitable for fantasy & sci-fi settings. You may get weird results, but work with it, as it helps generate some of the most memorable places.

Authors Note/Disclaimer:

Some liberties have been taken compared to the real items that they share their name with. This has been done deliberately for ease of use and to reduce the astronomical (pun intended) amount of formula and equations that may be needed.

Compared to what's out there, this system is highly simplified.

This system presented here can be used to design planets and system for the players to visit, or even to provide details about their home system

Credits & Legal

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Galaxies

The size of the universe will determine the amount of galaxies will be present. Most galaxies tend to be 100,000 light years across and about 3000 ly in height.

The typical distance between each galaxy is about 2,000,000 light years, so travel between them will take a long time unless you have a highly developed form of travel.

There are several typical types of galaxies.

D8	Type
1	Dwarf
2	Elliptical
3	Elongated
4	Irregular
5	Ring
6	Spherical
7 - 8	Spiral

Dwarf galaxies
Typically half the size of a normal galaxy. Roll again to determine the shape of this galaxy.

Elliptical
These can range in shape from almost spherical to almost a line. With the exception of irregular, these have some of the most varity.

Elongated
A form of elliptical where the galaxy is a lot longer than it is wide.

Irregular
These are normally formed when a regular galaxy type is damaged by either natural means (such as one galaxy merging with another) or some kind of super weapon.

Ring
As the name suggests, the majority of the stars in this type are in a ring. Quite often there is a cluster of stars in the middle that the others orbit around.

Spherical
Some scholars classify these as a form of elliptical galaxy. They are, for the most part, equal sized in all directions. There may, or may not, be a central object that the star systems orbit around.

Spiral
Spiral galaxies have 2+ arms (D6+1) with a central cluster in the middle the arms are all linked to. The centre tends to have a very high concentration of young stars.

If you need/want to determine the size of your galaxy, roll:

D100 x 1000 for cross section
D4 x 1000 for height (if applicable)

Half these numbers for dwarf galaxies.

There also exist so-called Mega-galaxies. These are very rare, and normally you only find them in the largest or oldest of universes.

They are formed in many ways, one of them is when one galaxy absorbs or crashes into another. The bigger it gets, the greater the chance of it “eating” another galaxy.

Other types do exist, but some types should be unique and/or rare across the multi-verse.

Some suggestions are:

- Artificial/Constructed
- All one type of matching star
- No planets
- Phased
- Prison
- Sentient
- Part of a cluster or super cluster of galaxies

Galaxy Features

It's rare that galaxies have just stars & planets.

There is a 50% chance for a galaxy to have something apart from stars/star clusters. Some have more than 1.

Although smaller, localised version of these features may exist, the ones below are big enough or important enough to be dealt with on the galactic level

Roll a D4 to decide how many features this galaxy has.

D12	
1	Barrier
2	Black Hole
3	Chaos Zone
4	Exotic star
5	Nebula
6	Null-space
7	Phased space
8	Rift
9	Stella Graveyard
10	Stella Nursery
11	Tachyon River
12	Wormhole

More galaxy features will be added in a MVK supplement at a future date.

Barrier
This barrier, made from an unknown substance almost impassable substance, blocks off part of the entire galaxy. The reason for its construction is also a mystery.

Black Hole
A massive Black Hole moving through the galaxy eating all in its path. Luckily it is very, very slow and its path is predictable

Chaos Zone
The rules of reality are weaker or non-existence here.

Exotic star
A non-standard star. A "Cold Star", one that is artificial, anything goes that is considered "abnormal".

Nebula
Nebulas can be dangerous yet stunningly beautiful areas of gas, dust and other materials. No two nebulas are the same.

Null-space
A true void, no dust, few particles. Travel through this area is almost impossible.

Phased Space
An area of space that is out of sync with the rest of reality. Occasionally comes back into phase with the rest of the galaxy. Can be as small as a planet, or, as large as a solar system.

Rift
A spatial rift is a physical opening in the space-time continuum, which allows for passage from one point to another. This other place may be another time, parallel universe or a gateway to what some may consider to be hell.

Stella Graveyard
An area where this is an unusually high areas of stars that are no-longer in the main sequence

Stella Nursery
An area where there is a high level of star formation. Often found in/near nebulas

Tachyon River
This "river" of superfast particles, normally flows in one direction. If you can survive riding this river you can travel from one part of space to another very quickly. Unlike a wormhole you stay in this reality.

Wormhole
A shortcut through another dimension. Comes in two main types: Stable and unstable. Travel through can be easy or difficult.

Stars & systems

Number of Stars

Most average galaxies have approximate 100,000,000,000 (100 billion) stars. Dwarf galaxies, as you expect, typically have half this number. Some have a lot, lot more.

As you can imagine this would be impractical to generate and record each one. As such the next section can be used to generate the typical star systems found in the galaxy, then again for each different one (or the ones that your players actually visit).

Need an actual number?

Roll a D100, if you get 100, roll again and add the result. Add 9 zeros to the end of that number and there is the approximate number of stars system your galaxy has.

Your players have finally picked a star system to visit from the billions out there. Or you need to determine the details of the current system or next one over.

D12	
01 – 04	Single Star
05 – 10	Binary
11	Tri-system (3 stars)
12	Multiple (2d2)

01 - 12	Main Sequence
13 – 14	Neutron
15 – 16	Pulsar
17 – 18	Red Giant
19 – 20	Young/New

Main Sequence
Covers the majority of stars you would find

Binary & Multiple Stars
Binary stars are where one star orbits another. Binary stars are quite common in the universe. They often have planets and other orbiting bodies.

Neutron
A neutron star is the left over remains of a supernova

Pulsar
A pulsar is a rapidly spinning neutron star that emits energy in pulses.

Red Giant
These stars are dying. Their hydrogen fuel has been used up, they have swelled to enormous sizes and their light is dimming.

Young/New
This star has just left the protostar stage and planets and other celestial bodies may be starting to form around it.

Main Sequence Stars

D100	Type	Colour
1	O	Blue
2	B	White to blue/white
3	A	White
4 – 6	F	Yellow white
7 – 14	G	Yellow
15 – 30	K	Orange to Red
31 – 00	M	Red

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

The size of the star is linked to its age. The larger the star, the quicker it ages and dies.
(See lexicon for details about Solar Mass & Radius)

Type	Solar Mass	Solar Radius
O	16	6
B	2D8	1d6
A	2d4	1d4
F	1d4	2
G	1	1
K	½	½
M	¼	¼

Orbiting Objects

First determine how many objects are orbiting the star(s).

Number of Orbiting Objects

D8	
1	Nothing
2	1
3	1d4
4	1d6
5	1d8
6	1d10
7	1d12
8	1d20

Now that you know what, if anything, is orbiting the star, you have to determine what this may be

The distance between the orbiting objects can be roughly/simply worked out as follows (add the distance to previous object distance):

100d100 x 10000 km (average 50,500,000 km)

Again, for ease of calculations, the orbits can be assumed to be roughly circular.

Type of Orbiting Objects

D20	Orbiting Object
1-2	Artificial Structure
3-9	Asteroid Belt
10	Comet
11-16	Planet
17-18	Oort Cloud
19	Stellar Creature
20	Spatial Distortion

Artificial Structure
Something that would not form naturally. This could be anything from a space station, to a wrecked shipyard to a wormhole.

Asteroid Belt
An asteroid belt could be the remains of a now-destroyed planet. Or it is the left over from the formation of the system. Whatever the reason, this orbiting body is a massive collection of asteroids and minor planets.

Comet
A small icy body that orbits the star. The orbit a comet can vary from once a year to once every 1000 years. Roll 100d100 to determine how regular the comet is.

Oort cloud
Found at the outer edge of a system this spherical cloud is the home of comets and vast quantities of dirty ice. In some system, the Oort cloud is so dense it acts as a barrier.

Planet
The term planet comes from the ancient Greek term meaning "wandering star". They come in many sizes and types, more so than the stars.

Very rarely (less than 1% of the time), you get two planets (or more) sharing the same orbit. There are two options here:

- They orbit around a central point and that point orbits around the star.
- They are roughly equal distance from each other on the orbit.

Generally, these multi-planet orbits do not form naturally, but, as always, exceptions do occur.
See the next section for more information and charts about planets.

Stellar Creature
Not all life in the universe is planet bound. Some are microscopic, other are large enough to be mistaken for small planets in their own rights. For the most part they are orbiting the star for heat and/or resources to survive.

Spatial Distortion
This could be anything, from a simple area of space in which travel is difficult, to a temporal rift to wormholes and more.

Future “MVK Supplemental” will detail more orbiting objects

Planets

Your players are excited –a planet has been spotted. Now, comes the next hard part – your curious players demand some details about it.

The term planet in this section also applies to moons etc.

Types

Formed planets, not including proto-planets in new/young star systems, generally come in two broad types (with other sub-types within)

For ease of record keeping and calculations, there is a 50% chance of either.

Gas Giants
A gas giant is a large planet that is not primarily composed of rock or other solid matter. They often have a core made from a type of rock or metal or other exotic material. The gas they are made from is comprised of large fractions of oxygen, carbon, nitrogen, and sulphur.
Example : Jupiter or Saturn

Terrestrial
A terrestrial planet is a planet that is composed primarily of silicate rocks or metals.

D20	Planet Type
1 - 3	Barren
4 -5	Frozen
6 -7	Inferno
8 -9	Molten
10 – 11	Ocean
12 – 13	Primordial
14 – 15	Radiated
16 – 17	Terrain Biased
18 - 19	Toxic
20	Unstable

Barren
This planet has no atmosphere. Generally covered in dust and craters.
Example: Earth's Moon

Frozen
Mostly made from or covered in ice. This ice may be frozen water or another liquid/gas. Tends to be found in the outer edges of a system, but if the ice has a high melting point (due to the material it is made from) then it may be closer to the star. They generally have no atmosphere to speak of.

Inferno
Inferno planets are highly volcanic with acidic and dangerous atmospheres.
Example: Venus

Molten
Unlike Inferno planets, molten planets are either still forming or breaking apart. They may have recently been involved in a collision or are simply under high gravity stress.

Ocean
Ocean worlds are entirely covered in liquid. This liquid may be water, but also may be another liquid.

Primordial
A primordial planet is young on the planetary scale. An atmosphere may be present but weak .Life forms may exists but barely above single-cells.

Radiated
For some reason, due to a problem with atmosphere or due to high concentrations of nuclear material, this planet has high levels of radiation. The nature of this radiation varies from planet to planet.

Terrain Biased
This planet is covered, for the most part, in a certain type of terrain. Very few planets, if any, are solely one type. Most planets of these types have variable terrain across the globe.
Example: Earth

Toxic
This planet type has an atmosphere but it is toxic to most life forms. It may be acidic, or something in the ground. Life forms may develop here.

Unstable
Due to its position to the star or another planet, this planet is in flux. Its orbit may be variable, it may be about to break apart. Whatever the reason, this planet type is dangerous for all.

For the most part, there are only a few planets where life has formed. The nature of this life is another matter and is determined by the planet or moon on which it resides.

Naming Systems

Naming the Star
The star is named and then the planets are numbered working outwards. Moons of the various planets are then numbered using a different system, like Roman Numerals.

Example:
Sol (the sun) would make Earth known under this system as Sol – 3
The Moon would be recorded as Sol – 3 - i

Naming each item
The star, planet, moon and major asteroid has a unique name. This can result in more record keeping, but can add a lot of flavour to a system. Within some star system, the names follow a theme.

Codes
Each star system would have a code assigned to it. Each planet, moon or other major body has a variant of this code.
Examples:
Star code: SX-45
Planet code: SX-45(P2)
Moon code: SX-45(P2-M4)

Combined
Combing the above systems, the Star may have a code, but a planet that is important may be named.

Details

You may want to provide some basic planetary details to your players, to help them decide if they wish to explore there

To make things easier, the details given here are in comparison to Earth, which is assumed to be the standard/default for most game worlds.

Details on Earth's size etc. can be found in the lexicon

Gravity
How strong is the gravity compared to the home world?

Orbit speed
Generally, the closer to the body it travels around, the faster the orbit speed. This determines the planets "year".

Rotation
How fast does the planet spin on its axis? This determines the planets "day".

Size
How big is the planet? Bigger planets may have bigger gravity, but this is not always the case.
If the planet is a gas giant the size can be determined by

For each of these categories

D100	Compared to Earth
01	1d4+5 x 10 % less
02 - 05	Up to 50% less(2d20+1d10)
06 - 10	Up to 40% less(2d20)
11 - 15	Up to 30% less(1d20+1d10)
16 - 20	Up to 20% less (1d20)
21- 25	Up to 10% less (1d10)
26-75	Same as Earth
76-80	Up to 10% more(1d10)
81-85	Up to 20% more(1d20)
86-90	Up to 30% more(1d20+1d10)
91-95	Up to 40% more(2d20)
96-99	Up to 50% more(2d20+1d10)
00	1d4+5 x 10 % more

Tilt
Does the planet spin on its axis perfectly? Or like Uranus in Earth's system, is it tiled almost 90% degrees from "normal".

D10	Tilt
1	0
2	1d10
3	1d10 + 20
4	1d10 +30
5	1d10 + 40
6	1d10 + 50
7	1d10 + 60
8	1d10 + 70
9	1d10 + 80
10	90

Orbiting body

Now you can determine what, if anything orbits or surrounds the planet.

Distance for each body can be determined in the same way as for planets around a star, just with a smaller distance.

1d100 x 000 km

D20	
1	Cloud
2	Moon - Broken
3-10	Moon(s)(1d8 moons)
11-15	Nothing
16-19	Ring system
20	Storm

Nothing
Nothing natural orbits this body. This does not stop artificial items from being placed in orbit.

Moon
For the most part, most moons are considered barren. If you want more random varied system, treat the moon as planet. It has to be smaller than the planet it orbits. Moons can have their own smaller moons or objects in orbit around them, at a rough distance of 1d100 x 00 km.

Moon – Broken
The remains of another body are here.Broken and for all intents and purposes destroyed. The remains may fall back to the parent body or form a ring. Any resources deep within the moon are now exposed, but may be difficult to get to due to the amount of rocks and other debris.

Ring system
Considered by some to be a beautiful feature for any planet, or even moon, to have . These flat, disc-shaped regions tend to form around the equator. They are made from a mixture of ice, dust and other small particles.

Example: Saturn

Cloud
This cloud may be ice, dust or some kind of gas. Whatever this material is made from, the denser it is, the harder it is to travel or scan etc. Generally it's not dangerous to travel through a cloud, but it is harder.

Storm
When a storm surrounds a planet, it can wreak havoc with those who may dwell within and those who are trying to get there.

Some storms act like a barrier of charged plasma, other are more electrical in nature

Some systems may have artificial orbiting bodies. This may have been placed by sentient beings from within the system or those from outside to monitor or examine this system. This is something that will covered later.

Something to bear in mind is anything you may find in orbit around a planet may be found in orbit around one, or more, of its moons.

Lexicon

Black Hole
A region of space-time that prevents anything, including light, from escaping. What happens to anything that falls into this region is for the most part, unknown.

Dwarf Galaxy
Has half the typical number of stars of a typical galaxy

Elliptical galaxy
This galaxy type covers those from an almost spherical type to an elongated type.

Galaxy
An immense conglomerations, or grouping, of stars

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

Minor Planets
In essence, a larger form of asteroid.

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.

Ring galaxy
Galaxy type - is a galaxy with a circle-like appearance.

Solar Mass
The mass of the star of which the planet Earth orbits around. Is about two nonillion kilograms. (10^{30})

Solar Radius
The solar radius is approximately 695,500 kilometres (432,450 miles) or about 110 times the radius of the Earth

Spiral galaxy
Galaxy type - consist of a rotating disk of stars and interstellar medium, along with a central bulge of generally older stars

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.

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

Tachyon
A hypothetical particle that always moves faster than light.

Wormhole
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.

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Earth's Details
Atmosphere: Nitrogen/Oxygen/Others
Gravity: 1
Orbit: 365 days
Rotation: 24 hours
Radius 3,959 miles (6,371 kilometres)
Diameter 7,926.41 miles (12,756.32 kilometres).
Type: Terrestrial (Terrain)