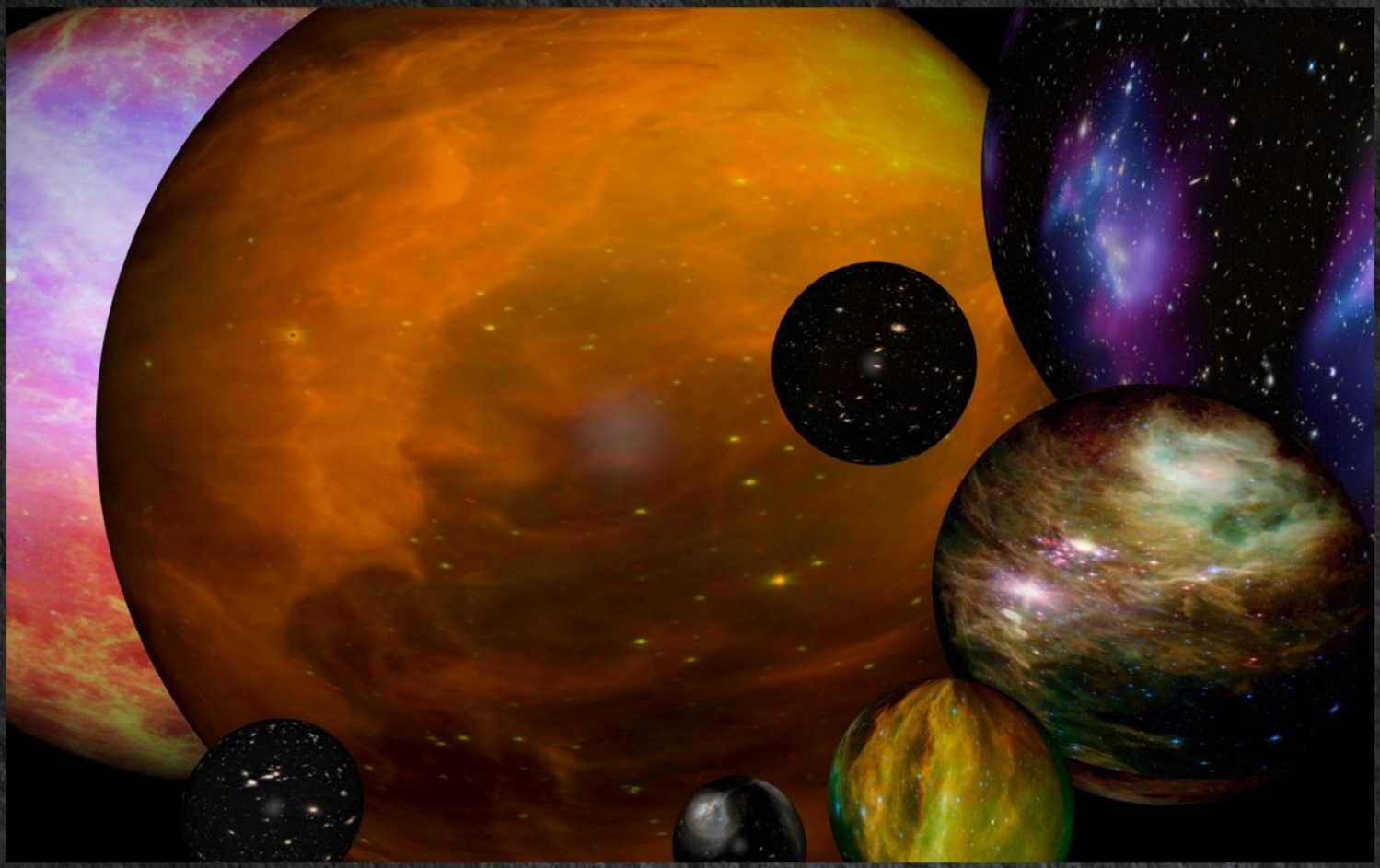

Multiverse Kit Part 3
Planet Details

Introduction

Multiverse Kit Part 3
Planetary Details

You've found a planet, or, you need to describe the current on your players are. They are asking questions, scanning away and have a need to know the answers to some pressing questions, such as:

- What is the atmosphere composed of?
- What is the gravity like?
- The size and other details of the planet?

This Kit-part will cover those basic questions about the planet itself. Part 4 of this kit will deal with any inhabitants the planet may have, plus what technology they may have to work with.

Notes:

- This kit can be used to cover moons and standard planets as well.
- There is some overlap with the planet guide in part 2. This is intentional, as this part goes into detail about the planetary body itself. This may be used in place of the guide there or a supplement to it.
- The calculations and details here are very simplified for ease of play and in no way represent just how complex the real figures and details would be.

Credits

Author
Christopher Kentlea
Produced by
Ennead Games
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Contents

Planet Details

Most of the charts and details below apply to Terrestrial, or non-gas, planets. Either ignore anything that doesn't make sense for a giant, or use it to make for a more interesting world.

Example: normally a gas-giant would not support any civilisation, but your explorers find traces of life in the atmosphere.

Physics

Size

The size of the planet affects many other features. Roll a d10 and make a note of this number, it will be used in other factors later.

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

D10	Size	Circumference
1	Minuscule	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

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.

Density

As a good rule of thumb, the bigger the planet, the higher the density. A higher density may also indicate a higher mineral make up. It also increases gravity and atmosphere thickness.

Roll a D10-1 and add the Planets size to this result.

D10 + Size	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)
8	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

1d3 results may achieved by rolling a d6 and halving the result, rounding down.

1d2 results can be any dice roll. Odd =1, Evens =2.

Gravity
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 besides.

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. This is by no means scientifically accurate, but speeds up play.

Earths escape velocity: 11 km/s (approx.)

Atmosphere Pressure

Generally, bigger planets 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 Earths.

When working out Atmosphere details, round down, with a minimum of 1.

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

Result	Thickness	Atmosphere Rating
0	None/Negligible	0
1	Trace	1
2	Thin	2 (1d2)
3	Thin	4 (1d4)
4	Thin	6 (1d6
5	Thinner	8 (1d8)
6	Standard	10 (1d10)
7	Thicker	20 (2d10)
8	Thick	40 (4d10)
9	Slightly Dense	80 (8d10)
10	Dense	100 (10d10)
11	Very Dense	200 (20d10)
12	Super Dense	400 (40d10)
13 +	Ultra Dense	400 + (40d10 + 1d10 per AP point)

The AR column has two numbers, pre-set and random, if you wish for variety in design.

These values reflect typical values for this planet, at sea level or equivalent.

Simple rule to determine what the pressure is like compared to Earth:
AR x 10 = % of pressure as it would be on Earth.

Some Suggested Effects of Atmosphere Pressure

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

Atmosphere Type

There are two methods here for determining what the atmosphere is composed of.

1. Generic/simplified
2. Random chemical composition

Simplified
Rather that determining each chemical that makes up the atmosphere, you simply roll and get a generic type, like “Icy” or “Earth Like”.

Randomised
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.

Simplified Atmosphere types

D12	Primary Atmosphere
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 AR (Atmosphere Rating) can also have the following effects. These effects can be negated or prevented if appropriate precautions are taken.

Type	Effect
Cold	Does AR cold/frost damage per second
Corrosive	Does AR amount of acid type damage per 60 earth seconds
Combustive	Any ignition/spark has a chance to do fire + explosion damage in a radius equal to AR x 10 (with same amount in damage)
Greenhouse	Very hot and oppressive. Does AR in heat damage per second Pressure damage/effects are doubled
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 exposed to this has a chance equal to AR/10 of this occurring
Standard	Same as Earth, same problems as well as same benefits.
Suffocating	Breathing is impossible here for anything not adapted to this atmosphere. Each AR point
Toxic	Each AR represents how much poison damage is done to anyone who breaths this atmosphere , with every breath
Volcanic	Each AR point represents an active volcano. The atmosphere is also slightly corrosive (As Corrosive but divided the rating by 10)

Of course, other types do exist. Feel free to create your own, or come up with unique atmospheres for your own worlds.

Randomised Atmosphere types

The gases are present in order of magnitude. A Nitrogen/Ammonia atmosphere for example has more Nitrogen then Ammonia/Nitrogen one.

Use the details in the simplified chart to give you an idea of what effects the various gases have.
Determine % of gasses:
P = Primary, S=Secondary, T=Tertiary, with any % leftover being random trace gases.

D8	% of gasses
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=Left over]

If you get, for example a 70/30 mix of cold/corrosive then the cold effect would be 70% of what it would be if the atmosphere was 100% cold and 30% if it was corrosive etc.

Day
How long does it take for the planet to rotate on is 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

Year
How long does it take for the planet to orbit its parent body? This is measured in Earth-days.

D10	1 orbit (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

A local ”year” compared to Earth is equal to the orbit time/365.

Tilt
Does the planet have a perfect axis, is it tilted a bit like Earth, or has something happened to make it rotate almost on its side like Uranus.

It is the angle between its rotational axis and its orbital plane.

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

Hydrosphere

Also known as the amount of surface liquid that may be present. Even worlds with strange atmospheres may have 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.

D12	% of land mass covered in liquid
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)

Magnetic Field

The measure of the planets natural magnetic output. A strong magnetic field can affect biological and technological entities, albeit in different ways. It is expressed is Teslas, 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.

D100	
01 – 50	No major regional variance
51 – 55	Higher at a pole
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 average by the same amount it increased. 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. Each hour

To give an idea of the intensity of these fields, I bar magnet has about 10microteslas, a typical strong lab magnet, such as one you may find in a MRI, has 10 Teslas strength (and is about the limit for safe expose for humans), while at the other end of the spectrum, a neutron star has at its surface 100 Mega(000s) Teslas!

1d10-2 + size	Base MFS
1	Negligible
2	1
3	2
4	4
5	8 (Earth Standard)
6	16
7	32
8	64
9	128
10	256
11+	Doubles with each point

Knowing the MFS of your home planet is important (assume it same as Earths or [1]). Your unshielded/protected organic and technological components are affected by a weaker or stronger field several ways, such as:

Lower MFS than home world:

- Radiation effects from space would increase due to a thinner atmosphere
- Navigation may be harder, if not impossible

Higher MFS than home world:

- Technology may not work properly, especially if they contain any ferrous materials
- Prolonged exposes causes long term health problems, both mental and physical
- Some materials may start to behave in odd ways

Each point doubles the strength of the MF, determines chances (and strength) of effects etc. against unprotected entities.

Other Information

Orbiting Bodies - Natural

D20	# of bodies
01 – 10	Nothing
11 – 15	1
16	2
17	3
18	4
19	5
20	6

Orbiting Bodies Types

D8	Type
1	Cloud - Dust
2	Cloud – Gas
3	Debris
4 -5	Moon
6	Plasma Storm
7	Ring
8	Something Else/Artificial

Primary/Dominant 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.

D12	
1	Canyons
2	Desert
3	Forest
4	Glacier/Ice/Tundra
5	Islands
6	Mountains
7	Plains
8	Scrubland
9	Volcanic
10	Wasteland/devastation
11	Swamp/Bog
12	Exotic/Unnatural/Artificial

Highest Life forms

D20	
01	None
02	Microbes, no plants
03 – 04	Microbes, algae
05 – 06	Microbes, fungi
07 – 10	Microbes, basic plants
11 – 14	Base animals (worms etc.)
15 – 16	Insects
17 – 18	Mammalian level
19	Hominids/Higher Life
20	Sentient Life

Each result on the chart 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 chart uses Earth based life forms, this is just for example. Most, if not all planets would not share a similar life form evolution to Earth. This is just to show you the level of complexity that life has achieved on this particular planet.

Coming Soon

The Multiverse Kit Part 4
*Sentient Life *

The final core part of the MVK will deal with the inhabitants of the planet you have found. It will assume they are sentient, but how developed are they? Are they native to the planet or do they come from elsewhere. All these questions and more will be answered in Part 4.