### Spreadsheet Smarter, not Harder

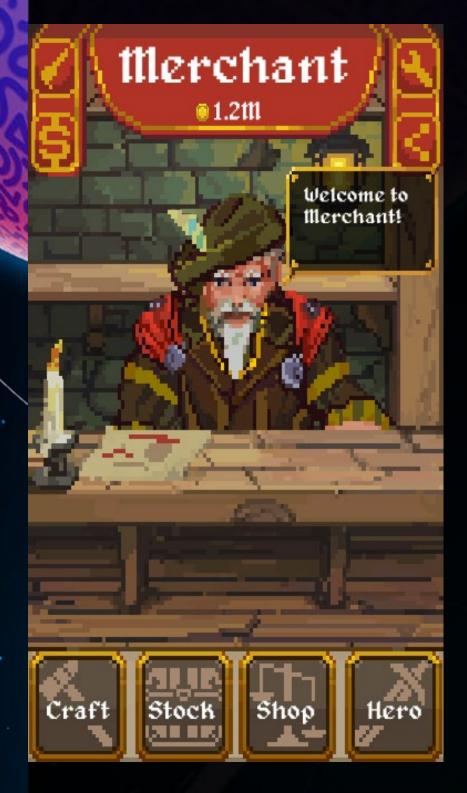
Tyler Coleman Founder @ Retora Games

GAME DEVELOPERS CONFERENCE | July 19-23, 2021

https://tinyurl.com/SpreadsheetSmarter

# love spreadsheets.





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"Don't worry, we'll parse it out later" - Jeshua Johnson

"I like to make them colorful" - Garrett Savo

"You could ask about a specific monster's blood type, family ancestry, or social security number and Tyler would have a spreadsheet for that." - Terry Nguyen

c	0	1	Rectange Rectange	H H	1	1	K	L	M	N
Tier	Sub Story	Title Desc	Description (Long)	Action A	Action B	Action C	Action D	Pools	isStory	Image
1	Basic	An Unresponsive Freighter	There's a fleighter in scanning range, PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?	FreighterDrone-Basic	FreighterScan-Basic	FreighterLoot-Basic	FreighterAvoid	Develict		ship_event.png
3	Fungus	An Unresponsive Freighter	There's a freighter in scanning range, PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?	FreighterDrone-Fungus	FreighterScan-Fungus	FreighterLoot-Fungus	FreighterAvoid	Deretict		ship_event.png
	2000	An Unresponsive Freighter	There's a freighter in scanning range, PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?	FreighterDrone-Pirates	FreighterScan-Pirates	FreighterLoot-Pirates	FreighterAvoid	Derelict		ship_event.png
3	Zombies	An Unresponsive Freighter	There's a treighter in scanning range, PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?	FreighterDrone-Zombies	FreighterScan-Zombies	FreighterLoot-Basic	FreighterAvoid	Derelict		ship_event.png
2	RobotKiller	An Unresponsive Freighter	There's a theighter in scanning range, PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?	FreighterDrone-Robot	FreighterScan-Robot	FreighterLoot-Basic	FreighterAvoid	Derelict		ship_event.png
	Reactor	A Station in Distance	A nearby space station is sending it's distress signal PNAME, what should use do?	StationDenne Deartor	StationScan Reactor	Stationi ont Bearing	StationAurist	Station		distress_event.p
		A Station in Distress	A nearby space station is sending it's distress signal PNAME, what should we do?	StationDrone-Riot	StationScan-Riot	StationLoot-Riot	StationAvoid	Station		distress_event p
1	Riot	A Station in Distress	A nearby space station is sending it's distress signal PNAME, what should we do?	StationDrone-Riot	StationScan-Riot	StationLoot-Riot	StationAvoid	Station		distress_event ;
1	Bandits	A Station in Distress	A nearby space station is sending it's distress signal PNAME, what should we do?	StationDrone-Bandits	StationScan-Bandits	StationLoot-Bandits	StationAvoid	Station		distress_event p
3	Plague	A Station in Distress	A nearby space station is sending it's distress signal PNAME, what should we do?	StationDrone-Plague	StationScan-Plague	StationLoot-Plague	StationAvoid	Station		distress_event ;
2	Cargo	A Station in Distress	A nearby space station is sending it's distress signal PNAME, what should we do?	StationDrone-Cargo	StationScan-Cargo	StationLoot-Cargo	StationAvoid	Station		distress_event.p
4	CrazedAl	A Station in Distress	A nearby space station is sending it's distress signal PNAME, what should we do?	StationDrone-CrazedAl	StationScan-CrazedAl	StationLoot-CrazedAl	StationAvoid	Station		distress_event.p
1	Basic	A Trader Looking for a Deal	A nearby trader hails us. They offer us a trade of goods and gossip.	TraderGoodDeal-Basic	TraderBaseDeal-Basic	TraderBadDeal-Basic	TraderAvoid	Trader		cargo_event pro
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		and the second sec	A nearby space station is sending it's distress signal PNAME, what						TRUE	cargo_event.png distress_event.p
			Dangerl Quarantine protocols at a hospital have been broken! All personnel and visitors have been exposed! Since you're immune to the							
3	Awla	The Quarantine has Broken!	pathogen, you're the perfect candidate to get things back in order. Six different medical outposts are under attack from robots all at once.	QuarantineFal-Attack	QuarantineFail-Research	QuarantineFall-Assist	QuarantineFall-Avoid	Awta	TRUE	distress_event.p
3	Awki	Robots Are Attacking	almost as if this was a coordinated effort. What should we do? When it comes to researching the pathogen, there are two research	SaveOutposts-Attack	SaveOutposts-Defend			Awlici	TRUE	distress_event ;
1	A-144	Caland a Danasanh Tanasi	teams at the forefront. Sigma Team and Theta Team. Which team do	Exation/Scient Thirds	Exclose Press				-	1
	Tier 1 3 2 3 2 1 1 1 1 1 1 3 2 4 1 1 1 2 4 1 1 3 2 4 1 1 3 3 3 3 3 3 3	Tier       Sub Story         1       Basic         3       Fungus         2       Pirates         3       Zombies         3       Zombies         3       Zombies         1       Reactor         1       Reactor         1       Rot         1       Rot         1       Rot         1       Rot         1       Bandits         3       Piague         2       Cargo         4       CracedAl         1       Basic         1       GoodDeal         2       Pirate         2       Treasure         1       Freight         1       Basic         4       Refugues         3       RobotAttack         1       Barnb         1       Aviti         3       Aviti	Tiersub StoryTitle Desc1BasicAn Unresponsive Freighter3FungusAn Unresponsive Freighter2PiratesAn Unresponsive Freighter3ZombiesAn Unresponsive Freighter3ZombiesAn Unresponsive Freighter1ReactorA Station in Distress1RotA Station in Distress1RotA Station in Distress1BanditsA Station in Distress3PlagueA Station in Distress3PlagueA Station in Distress4CrazedAlA Station in Distress1BasicA Trader Looking for a Deal1GoodDealA Trader Looking for a Deal1GoodDealA Trader Looking for a Deal2PirateA Trader Looking for a Deal1BasicA Loose Cargo Container3RobotAttackA Loose Cargo Container3RobotAttackA Loose Cargo Container3AvkiA Station in Distress3AvkiA Station in Distress	Tier         Sub Story         Title Desc         Description (Long)           1         Basic         An Utresponsive Freighter         Ther's a beighter in scarning range. PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?           3         Fungus         An Utresponsive Freighter         Ther's a beighter in scarning range. PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?           2         Pirates         An Utresponsive Freighter         Ther's a beighter in scarning range. PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?           3         Zombies         An Utresponsive Freighter         Ther's a beighter in scarning range. PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?           3         Zombies         An Utresponsive Freighter         Ther's a beighter in scarning range. PNAME, but it looks to be dead in space. No engine signature, no detectable life signs. What are your orders?           1         Rector         A Station in Distress         A neatry space station is sending it's distress signal PNAME, what should we do?           1         Root         A Station in Distress         A neatry space station is sending it's distress signal PNAME, what should we do?           1         Baoks         A Station in Distress         A neactry space station is sending it's distress signal PNAME, what	Tier         Sab Story         Title Desc         Description (Long)         Action A           1         Basic         An Urresponsive Freighter         There's a fleighter in scarning range. PLAME, but it looks to be dead in space. No engine signature, no detectable life signs. Vihat are your orders?         Preighter/Done-Flagt           2         Pungus         An Urresponsive Freighter         There's a fleighter in scarning range. PLAME, but it looks to be dead in space. No engine signature, no detectable life signs. 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PRAME, built is a too in domain in too in some company. PRAME, built is a too in domain i

"What's not to love about a good spreadsheet? It's got lines, it's got boxes, it's got procedurally-generated events about traveling through space and meeting all kinds of aliens while trying to not have an existential crisis about ethics... it's got it all, really!" - Anna Webster

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*"It's thanks to working with Tyler on Space Merchant that I now think in spreadsheets. I can't help it. Even my dreams have a data table." -El* 



Tyler Merchant Stuff @tylermakesgames

#### Alright Game Dev Twitter... How do you feel about spreadsheets?

Love em, live in em

Indifferent

Begrudgingly use them

Never touch the stuff

220 votes · Final results

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#### **59.5%**

...

17.3%

#### 16.4%

6.8%

# Apparently, I'm not alone.

## Why should you use them?

### Why should I spreadsheet?

Keep things organized (sometimes you want tidy little boxes, rows and columns)

Quick filtering/sorting (gotta sort a list of names? Filter something? We gotchu)

Lightweight alternative to specialized tools (the swiss army knife of game dev)

Data Validation (Think of it like data-oriented spellcheck)

Everybody's doing it (yeah, I'll resort to peer pressure)





## **GD**(

### How should you use them?

### Common Uses

Production-Sprint and milestone planning, task lists w/ status & time tracking

Art/Audio-Tracking assets through the Pipeline

Design- Gameplay content (items, dialogue, levels, loot tables, etc)

Biz Dev-Tracking costs and revenue, calculating user value, retention, etc.

Marketing-Tracking contacts, keys given out, moderator lists, etc.

QA- Bug lists w/ repro steps and current status

And a ton more



## Don't just take it from me...



Spreadsheets are the BEST! I use them to organize my thoughts, crunch numbers, handle localization, and even store game data exported directly into Unity. - Sarah Northway @sarah northway



Literally all of Boyfriend Dungeon was written right into Google Sheets. Not just the numbers for balancing... Every single piece of text, in every language. Can you believe in word processing programs you can't reference line numbers easily when bugfixing or playtesting? Pathetic! - Tanya Short @tanyaxshort



Power Up Audio uses spreadsheets for team scheduling, asset tracking, VO production, and more. We're a team working in multiple projects simultaneously, so we'd be completely lost without some way to track the state of audio across those titles. - Kevin Regamy @regameyk



I've found it to be super useful - with tabs separating different art fields like textures or vfx, and then color coding to indicate priority or status of assets. I really can't think of a simpler way to represent tasks. The services you see advertised like Asana or Monday just seem to bog down the process, at least as far as art goes - Mario Castañeda @wrackune



### Sometimes, Begrudgingly Used

I definitely have a love/hate relationship with them. They keep many things organized but sometimes having to consistently update them is a drag for an artist. I prefer to just run wild, but I understand their importance in keeping on top of projects. - Gabrielle @elloradatura



### Sometimes, Begrudgingly Used

I use them on every project. They are critical. Yet my spreadsheet skills improve at a glacial pace, so I always feel I'm inefficient. They struggle with the multidimensional, high data intensity requirements of Actual Game Data. Even my most complex ones are just a poorly maintained sketch. The game data is the ultimate truth. So most spreadsheets get out of sync at some point. You can drive the game data directly from the spreadsheet, but this is also fragile.

-Daniel Cook @danctheduck



## **GD**

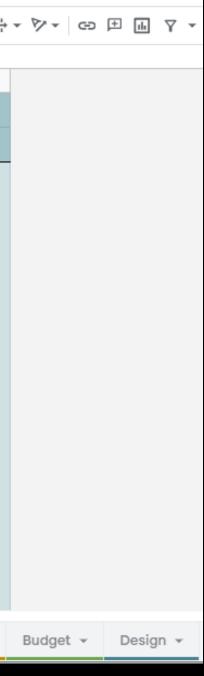
## Time To Use Spreadsheets Smarter!

## tinyurl.com/SpreadsheetSmarter

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#### tinyurl.com/SpreadsheetSmarter

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#### Software Options

	Microsoft Excel	Google Sheets	Calc (LibreOffice)	WPS Office	Zoho	Numbers (Mac)
Cloud Based?	No, Has Feature	Yes	No	No	Yes	No, Has Feature
Free?	No, Free on Mobile	Yes	Yes	Yes	Yes for Individual	Yes
Formulas?	Yes	Yes	Yes	Yes	Yes	Yes
Data Validation?	Yes	Yes	Yes	Yes	Yes	Yes
Filters?	Yes	Yes	Yes	Yes	Yes	Yes
Charts?	Yes	Yes	Yes	Yes	Yes	Yes
Reason to Use?	Already Own It, use Micro Office Suite	Cloud, Lots of Integrations, You Trust Google	Prefer Open Source	Prefer Open Source	Want Cloud, don't want to use Google/Microsoft	Have a Mac

There is very little to no differences for the features I'll be showing

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### Features We'll Check Out

- Filters & Sorting
- **Conditional Formatting**
- Data Validation
- **Useful Conditionals**
- **VLOOKUP**
- String Formatting
- Exporting to JSON or XML
- **User Made Buttons**



## **Pivot Tables?**



### **Pivot Tables**



## Filters

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### Filters

Make sure to select only the data you want in the filter

Add filters from the Data menu (in most Apps)

Works best with Headers for each column

Little **V** Dropdowns on Headers allow for quick Filter/Sort access



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2	Birch	Fernlight		Knight	48	Cream	Prongwallow	
3	Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum	
4	Fox	Blackblossom	~	Swashbuckler	45	Lilac	Bucklestein	
5	Mih	Pei		Arcanist	45	Rose	Tyrogate	
6	Dirgoud	Mirebu	$\checkmark$	Shaman	44	Gold	Mizzlewatch	
7	Hedrath	Flatbeard	<ul> <li></li> </ul>	Spiritwalker	44	Scarlet	Aetherdale	
8	Lia	Eim		Mystic Knight	42	Umber	Duffergate	
9	Vi-Ra	Nucrald	$\checkmark$	Guardian	42	Velvet	Harmony Sanctum	
10	Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh	
11	Bramble	Oakpuff		Sorcerer	40	Lemon	Steward Citadel	
12	Nastraeck	Goldrock	$\checkmark$	Shadowdancer	40	Cream	Liontooth Keep	
13	Nuznuth	Heavyhelm	$\checkmark$	Archmage	40	Gold	Tyrogate	
14	Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow	
15	Eveningpony	Coarsebones	~	Monk	39	Coal	Gizmohold	
16	Groognok	Brewguard	$\checkmark$	Prophet	39	Obsidian	Steward Citadel	
17	Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn	
18	Strelborth	Feathertaker	$\checkmark$	Shaman	39	Jade	Gizmohold	

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#### Filters

Filter data based on criteria you select

Can use checkboxes to select specific values or conditions for ranges

Can also be used to Sort

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4	Earth	Aspenhorn		Jester	27	Orange	Duffergate
5	Ragerabbit	Badsmirk		Spiritwalker	15	Malachite	Mizzlewatch
6	Stirgirk	Battleflaw	$\checkmark$	Marauder	20	Purple	Harmony Sanctum
7	Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn
8	Trevan	Beechcrystal	$\checkmark$	Elementalist	25	Vanilla	Juggervale
9	Sardim	Behla	$\checkmark$	Spiritwalker	29	Obsidian	Swartham
10	North	Birdwax		Jeweler	28	Violet	Aetherdale
11	Fox	Blackblossom	~	Swashbuckler	45	Lilac	Bucklestein
12	Groognok	Brewguard	$\checkmark$	Prophet	39	Obsidian	Steward Citadel
13	Nem	Chardev		Shadowdancer	20	Teal	Bucklestein
14	Eveningpony	Coarsebones	$\checkmark$	Monk	39	Coal	Gizmohold
15	Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh
16	Aeden	Daisywink		Glazier	24	Lilac	Liontooth Keep
17	Blem	Dewhand	$\checkmark$	Arcanist	9	White	Gizmohold
18	Lia	Eim		Mystic Knight	42	Umber	Duffergate
19	Strelborth	Feathertaker	$\checkmark$	Shaman	39	Jade	Gizmohold
20	Birch	Fernlight		Knight	48	Cream	Prongwallow
21	Hedrath	Flatbeard	$\checkmark$	Spiritwalker	44	Scarlet	Aetherdale
22	Dewdrop	Flirtyshine	$\checkmark$	Swashbuckler	27	Cobalt	Bucklestein
23	Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum
24	Boggoug	Forgeaxe		Warlock	35	Turquoise	Glockburgh
25	Karma	Frosttree	$\checkmark$	Gunslinger	25	Blond	Steward Citadel
26	Storm	Gemfreeze		Warlock	23	Satin	Prongwallow
27	Nastraeck	Goldrock	$\checkmark$	Shadowdancer	40	Cream	Liontooth Keep
28	Nuznuth	Heavyhelm	$\checkmark$	Archmage	40	Gold	Tyrogate
29	Moptop	Honeymeadow		Bard	23	Maroon	Sootgate
30	Arus	Isunda	Ē	Sorcerer	6	Auburn	Swartham
31	Thobus	Lightbasher		Paragon	28	Jasper	Aetherdale
32	Bonepelt	Lightcrest		Guardian	20	Jade	Sootgate
33	Frostbite	Lillybush		Elementalist	35	Velvet	Duffergate
34	Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow
35	Ridge	Meadowglade		Elementalist	18	Jasper	Juggervale
36	Dataroug	Merrymail		Runecaster	23	Orange	Swartham

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### **Excel-** Custom Sort List

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### **Custom Sort**

Can be used to sort text by a nonalphabetical order

Great for things like:

- Days of the Week, Months of Year
- Critical, High, Mid, Low for priority

This feature doesn't exist in Google Sheets without a formula The quick hack is to add a number to each category (1-High, 2-Mid, 3-Low)

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3	Review current Inventory	High		Medium	Informational			
4	See enemy info	High		Medium	Informational			
5	View currently idling heroes	High		Medium	Informational			
	Look at new region that was unlocked	High		Low	Informational			
- AL	Talk to Guild	Low		Medium	Informational			
-	Look at compendium	Low		Low	Informational			
	View battle log	Low		Low	Informational			
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and the second second	View Current Events	Medium		Rare	Informational			
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-	View options menu (sound, etc)	Medium		Low	Informational			
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-	Upgrade Town Building	Critical		Low	Major Action			
	Hire a new Hero	Critical		Low	Major Action			
-	Buy in-app purchases	Critical		Rare	Major Action			
ALCORDON D	Send Hero on a Quest	Critical		High	Minor Action			
	Craft an Item	Critical		Medium	Minor Action			
25	Sell an Item	Critical		Medium	Minor Action			
and the second second	Heal hero	Critical		High	Minor Action			
	Send worker to work	Critical		Medium	Minor Action			
-	Choose party for quest	Critical		Low	Minor Action			
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### **Conditional Formatting**

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#### Conditional Formatting

Add a little color to your sheets!

Great for highlighting important info

Useful options:

- Text Contains for any string you need to highlight
- Date is Before/After today (deadlines amirite)
- Text is Empty, set to red to indicate empty cell that needs data
- Value is not between X & Y when looking to validate value ranges

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3	Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum		
4	Fox	Blackblossom	$\checkmark$	Swashbuckler	45	Lilac	Bucklestein		
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6	Dirgoud	Mirebu	$\checkmark$	Shaman	44	Gold	Mizzlewatch		
7	Hedrath	Flatbeard	~	Spiritwalker	44	Scarlet	Aetherdale		
8	Lia	Eim		Mystic Knight	42	Umber	Duffergate		
9	Vi-Ra	Nucrald	$\checkmark$	Guardian	42	Velvet	Harmony Sanctum		
10	Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh		
11	Bramble	Oakpuff		Sorcerer	40	Lemon	Steward Citadel		
12	Nastraeck	Goldrock	$\checkmark$	Shadowdancer	40	Cream	Liontooth Keep		
13	Nuznuth	Heavyhelm	$\sim$	Archmage	40	Gold	Tyrogate		
14	Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow		
15	Eveningpony	Coarsebones	~	Monk	39	Coal	Gizmohold		
16	Groognok	Brewguard	$\checkmark$	Prophet	39	Obsidian	Steward Citadel		
17	Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn		
18	Streiborth	Feathertaker	$\checkmark$	Shaman	39	Jade	Gizmohold		
19	Seanroscu	Mimestun	$\checkmark$	Guardian	38	Turquoise	Tyrogate		
20	Sundew	Olivecreek	$\checkmark$	Mage	37	Black	Steward Citadel		
21	Aeden	Twistygarden	$\checkmark$	Gladiator	35	Satin	Juggervale		
22	Boggoug	Forgeaxe	$\checkmark$	Warlock	35	Turquoise	Glockburgh		
23	Frostbite	Lillybush		Elementalist	35	Velvet	Duffergate		
24	Rhubarb	Airswamp		Bard	34	Cream	Duffergate		
25	Pinecone	Woodgrove		Bounty Hunter	32	Gold	Liontooth Keep		
26	Sardim	Behla	~	Spiritwalker	29	Obsidian	Swartham		
27	North	Birdwax		Jeweler	28	Violet	Aetherdale		
28	Thobus	Lightbasher		Paragon	28	Jasper	Aetherdale		
29	Dewdrop	Flirtyshine	~	Swashbuckler	27	Cobalt	Bucklestein		N. N
30	Earth	Aspenhorn		Jester	27	Orange	Duffergate		Ĺ

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### Formatting- Scale

You can format a range based on a scale of values

It defaults the range to lowest and highest values found, but you can manually tweak the range You can also change the colors

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2	Rhubarb	Airswamp		Bard	34	Cream	Duffergate		
3	Flamefang	Ancienteye		Ranger	24	Umber	Juggervale		
4	Earth	Aspenhorn		Jester	27	Orange	Duffergate		
5	Ragerabbit	Badsmirk		Spiritwalker	15	Malachite	Mizzlewatch		
6	Stirgirk	Battleflaw	$\checkmark$	Marauder	20	Purple	Harmony Sanctum		
7	Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn		
8	Trevan	Beechcrystal	$\checkmark$	Elementalist	25	Vanilla	Juggervale		
9	Sardim	Behla	$\checkmark$	Spiritwalker	29	Obsidian	Swartham		
10	North	Birdwax		Jeweler	28	Violet	Aetherdale		
11	Fox	Blackblossom	$\checkmark$	Swashbuckler	45	Lilac	Bucklestein		
12	Groognok	Brewguard	~	Prophet	39	Obsidian	Steward Citadel		
13	Nem	Chardev		Shadowdancer	20	Teal	Bucklestein		
14	Eveningpony	Coarsebones	~	Monk	39	Coal	Gizmohold		
15	Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh		
16	Aeden	Daisywink		Glazier	24	Lilac	Liontooth Keep		
17	Blem	Dewhand	$\checkmark$	Arcanist	9	White	Gizmohold		
18	Lia	Eim		Mystic Knight	42	Umber	Duffergate		
19	Strelborth	Feathertaker	$\checkmark$	Shaman	39	Jade	Gizmohold		
20	Birch	Fernlight		Knight	48	Cream	Prongwallow		
21	Hedrath	Flatbeard	$\checkmark$	Spiritwalker	44	Scarlet	Aetherdale		
22	Dewdrop	Flirtyshine	~	Swashbuckler	27	Cobalt	Bucklestein		
23	Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum		
24	Boggoug	Forgeaxe	~	Warlock	35	Turquoise	Glockburgh		
25	Karma	Frosttree		Gunslinger	25	Blond	Steward Citadel		
26	Storm	Gemfreeze		Warlock	23	Satin	Prongwallow		
27	Nastraeck	Goldrock		Shadowdancer		Cream	Liontooth Keep		
28	Nuznuth	Heavyhelm		Archmage	40	Gold	Tyrogate		
29	Moptop	Honeymeadow		Bard	23	Maroon	Sootgate		
30	Arus	Isunda		Sorcerer	6	Auburn	Swartham		
31	Thobus	Lightbasher		Paragon	28	Jasper	Aetherdale		
32	Bonepelt	Lightcrest		Guardian	20	Jade	Sootgate		
33	Frostbite	Lillybush	П	Elementalist	35	Velvet	Duffergate		
34	Thuh-Keoveth	Luunvehnihr		Mystic Knight	40	Scarlet	Pronowallow		

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#### al format rules

×

other rule



## Formatting w/ Custom Formula

#### Formatting w/ Formula

Format one cell based on the value in another cell

Start with a "=" then the formula. Use the first related cell as reference.

In this example, column J is highlighted yellow if the cell is checked (TRUE), but if the cell to the right of it (in column K) is checked (TRUE), it switches to Green

UI     UI     Approved for Dev     Assets     Assets       Drafted =     Mockup =     for Dev     Uploaded =     Implement       Implement     Implement     Implement     Implement       Implement     Implement     Implement	ed <del></del>

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#### Formatting w/ Formula

You can also check for specific text values

In this example, I'm changing the class color to the NPC's favorite color (Teal as example)

Because I'm formatting cells D1 to D999, I use cell F1 for the formula. This will relate D1 to F1, D2 to F2, and so on

1		Conditional format rules							
1	• <i>f</i> x								
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1	First Name =	Last Name 👳	NPC? =	Class =	Level =	Favorite Color =	Location =		1 Add another rule
2	Birch	Fernlight		Knight	48	Cream	Prongwallow		
3	Fox	Blackblossom	$\checkmark$	Swashbuckler	45	Lilac	Bucklestein		
4	Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum		
5	Mih	Pei		Arcanist	45	Rose	Tyrogate		
6	Hedrath	Flatbeard	$\checkmark$	Spiritwalker	44	Scarlet	Aetherdale		
7	Dirgoud	Mirebu	$\checkmark$	Shaman	44	Gold	Mizzlewatch		
8	Lia	Eim		Mystic Knight	42	Umber	Duffergate		
9	Vi-Ra	Nucraid	$\checkmark$	Guardian	42	Velvet	Harmony Sanctum		
10	Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh		
11	Nastraeck	Goldrock	$\checkmark$	Shadowdancer	40	Cream	Liontooth Keep		
12	Nuznuth	Heavyhelm	~	Archmage	40	Gold	Tyrogate		
13	Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow		
14	Bramble	Oakpuff		Sorcerer	40	Lemon	Steward Citadel		
15	Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn		
16	Groognok	Brewguard	$\checkmark$	Prophet	39	Obsidian	Steward Citadel		
17	Eveningpony	Coarsebones	$\checkmark$	Monk	39	Coal	Gizmohold		
18	Strelborth	Feathertaker	$\checkmark$	Shaman	39	Jade	Gizmohold		
19	Seanroscu	Mimestun	$\checkmark$	Guardian	38	Turquoise	Tyrogate		
20	Sundew	Olivecreek	$\checkmark$	Mage	37	Black	Steward Citadel		
21	Boggoug	Forgeaxe	$\checkmark$	Warlock	35	Turquoise	Glockburgh		
22	Frostbite	Lillybush		Elementalist	35	Velvet	Duffergate		
23	Aeden	Twistygarden	$\checkmark$	Gladiator	35	Satin	Juggervale		
24	Rhubarb	Airswamp		Bard	34	Cream	Duffergate		
25	Pinecone	Woodgrove		Bounty Hunter	32	Gold	Liontooth Keep		
26	Sardim	Behla	$\checkmark$	Spiritwalker	29	Obsidian	Swartham		
27	North	Birdwax		Jeweler	28	Violet	Aetherdale	-	

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### Data Validation

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tinyurl.com/SpreadsheetSmarter

### **Data Validation Dropdowns**

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### Data Validation Dropdowns

Create dropdowns on cells

Data > Data Validation (List in Excel, Range in Sheets)

You can prevent values that don't match the validation with error messages (Reject Input in Sheets)

Plays nice with Filters!

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Birch	Fernlight		Knight	48	Cream	Prongwallow		Prongwallow	Arcanist	Cream
Fox	Blackblossom	$\checkmark$	Swashbuckler	45	Lilac	Bucklestein		Bucklestein	Archmage	Lilac
Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum		Harmony Sanctum	Bard	Teal
Mih	Pei		Arcanist	45	Rose	Tyrogate		Tyrogate	Bounty Hunter	Rose
Hedrath	Flatbeard	~	Spiritwalker	44	Scarlet	Aetherdale		Aetherdale	Elementalist	Scarlet
Dirgoud	Mirebu		Gunslinger	44	Gold	Mizzlewatch		Mizzlewatch	Gladiator	Gold
ja	Eim		Mystic Knight	42	Umber	Duffergate		Duffergate	Guardian	Umber
/i-Ra	Nucraid		Guardian	42	Velvet	Harmony Sanctum		Glockburgh	Gunslinger	Velvet
ake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh		Liontooth Keep	Infiltrator	Turquoise
Nastraeck	Goldrock		SecretBadGuy	40	Cream	Death Cave of Doom		Steward Citadel	Jester	Lemon
Nuznuth	Heavyhelm	~	Archmage	40	Gold	Tyrogate		Boneburn	Knight	Sienna
Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow		Gizmohold	Mage	Obsidian
Bramble	Oakpuff		Sorcerer	40	Lemon	Steward Citadel		Juggervale	Marauder	Coal
Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn		Swartham	Monk	Jade
Groognok	Brewguard		Prophet	39	Obsidian	Steward Citadel		Sootgate	Moonlord	Black
Eveningpony	Coarsebones	$\checkmark$	Monk	39	Coal	Gizmohold			Mystic Knight	Satin
Streiborth	Feathertaker		Ranger	39	Jade	Gizmohold			Paragon	Violet
Seanroscu	Mimestun	~	Guardian	38	Turquoise	Tyrogate			Prophet	Jasper
Bundew	Olivecreek	~	Mage	37	Black	Steward Citadel			Ranger	Orange
Boggoug	Forgeaxe		Warlock	35	Turquoise	Glockburgh			Runecaster	Cobalt
rostbite	Lillybush		Elementalist	35	Velvet	Duffergate			Sorcerer	Vanilla
Aeden	Twistygarden		Gladiator	35	Satin	Juggervale			Spiritwalker	Blond
Rhubarb	Airswamp		Bard	34	Cream	Duffergate			Sunlord	Maroon
Pinecone	Woodgrove		Bounty Hunter	32	Gold	Liontooth Keep			Swashbuckler	Purple
Bardim	Behla	~	Spiritwalker	29	Obsidian	Swartham			Transmuter	Indigo
North	Birdwax		Runecaster	28	Violet	Aetherdale			Warlock	Malachite
Thobus	Lightbasher		Paragon	28	Jasper	Aetherdale			Warmage	Almond
Earth	Aspenhorn		Jester	27	Orange	Duffergate			Warrior	White
Dewdrop	Flirtyshine	$\checkmark$	Swashbuckler	27	Cobalt	Bucklestein				Auburn
Trevan	Beechcrystal	~	Elementalist	25	Vanilla	Juggervale				
Karma	Frosttree	~	Gunslinger	25	Blond	Steward Citadel				
lobath	Opalminer		Transmuter	25	Vanilla	Glockburgh				
lamefang	Ancienteye		Ranger	24	Umber	Juggervale				
Aeden	Daisywink		Glazier	24	Lilac	Liontooth Keep				
Storm	Gemfreeze		Warlock	23	Satin	Prongwallow				
Noptop	Honeymeadow		Bard	23	Maroon	Sootgate				
Datgroug	Merrymail		Runecaster	23	Orange	Swartham				
Hesol	Vutsk		Transmuter	21	Obsidian	Boneburn				

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### **Data Validation Checkboxes**

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### **Data Validation** Checkboxes

You can create checkboxes (as seen in previous examples) with Data Validation.

Useful for pipeline and tasklists

By default they create "FALSE" and "TRUE" values in those cells, which can also be used in IF()

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2	CollectionBoxMenu	1-High					
3	Craft Confirm Overlay	1-High					
4	Craft Select Menu	1-High					
5	Craft Slot Select Overlay	1-High					
6	Crafter Icon	1-High					
7	Crafter List Menu	1-High					
8	Currency Reward Popup	1-High					
.9	Hero Consumable Overlay	1-High					
10	Hero Equip Item Overlay	1-High					
11	Hero Icon	1-High					
12	Hero List Menu	1-High					
13	Hero Skills Overlay	1-High					
14	Hero Stats Menu	1-High			2	2	
15	Item Icon	1-High					
16	Item Info Frame	1-High					Ō
17	Location Overlay	1-High					
18	Login Failed Overlay	1-High					
19	Login Menu	1-High					
20	Quest Finish Menu	1-High		ō			
.21	Region Map Menu	1-High					
22	Sell Confirm Overlay	1-High					
23	Shop Menu	1-High					
24	Single Item Reward Popup	1-High					
25	Stock Menu	1-High					
26	World Map Menu	1-High	0		ō		
27	Building Upgrade Overlay	2-Mid					
28	Confirm Leave Guild Overlay	2-Mid			ō		
29	Create Guild Overlay	2-Mid					n
30	Find A Guild Menu	2-Mid	ū	0			n
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# **GD**

### **Cell References in Formulas**

"CELL" is representing a reference to cell, such as "A1"

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### Conditionals

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## CONDITION, IF\_TRUE, IF\_FALSE

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### **CELL > 30,** "Over 30", "Under 30"

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=IF(CONDITION, IF\_TRUE, IF\_FALSE)

A basic condition, if TRUE, do X, otherwise do Y

In this example, if the cell in Column F is true (checked) then it makes Total Enemies 1, otherwise it does a formula on the width and height to determine Total Enemies

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1	Name	Level ID	Width	Height	Difficulty	Is Boss	Total Enemies	Reward Lvl			
2		1	30	30	0.1						
3		2	14	40	0.2						
4		3	4	20	0.3				(	Constants:	
5.		4	10	40	0.4						
ŝ.		5	4	25	0.5	~			Diffi	culty Increase:	0.1
ĥ		6	26	40	0.6				E	nemies P. Size	1.00%
		7	6	25	0.7				Reward by	Enemy & Diff:	1
		8	36	20	0.8						
)		9	10	30	0.9						_
l.		10	6	20	1	~					
5		11	18	35	1.1						
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1		13	30	25	1.3						
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5		15	32	35	1.5	$\checkmark$					
		16	10	30	1.6						
		17	28	25	1.7						
		18	8	30	1.8						
		19	2	35	1.9						
											1

### =IF( F2, 1, \$K\$6 \* (C2 \* D2) )

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# G

### F(ISBLANK(CELL), IF\_BLANK, IF\_DATA

A way to change formulas if a reference cell is blank

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### **IF(ISBLANK(***A***2),** *B***2,** *A***2** \* **B2**) If A2 is empty, then use B2. If not, use A2 \* B2

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# COUNTIF (Range, Criteria)

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### COUNTIF()

Used to count or sum values of a certain condition in a range

"How many rows of my data have X in column Y?"

"How many tasks are assigned to Dev?"

"How many items with the type Sword are in this loot table?"

*"How many assets are marked for* Ready for Unwrap?"

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1	First Name 👳	Last Name 👳	NPC? =	Class =	Level =	Favorite Color =	Location =	-				
2	Birch	Fernlight		Knight	48	Cream	Prongwallow					
3	Fox	Blackblossom	$\checkmark$	Swashbuckler	45	Lilac	Bucklestein			Totals?		
4	Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum		Tyrogate			
5	Mih	Pei		Arcanist	45	Rose	Tyrogate		Aetherdale			
6	Hedrath	Flatbeard	$\checkmark$	Spiritwalker	44	Scarlet	Aetherdale		Mizzlewatch			
7	Dirgoud	Mirebu	$\checkmark$	Shaman	44	Gold	Mizzlewatch		Duffergate			
8	Lia	Eim		Mystic Knight	42	Umber	Duffergate					
9	Vi-Ra	Nucrald	$\checkmark$	Guardian	42	Velvet	Harmony Sanctum					
10	Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh					
11	Nastraeck	Goldrock	~	Shadowdancer	40	Cream	Liontooth Keep					
12	Nuznuth	Heavyhelm	$\checkmark$	Archmage	40	Gold	Tyrogate					
13	Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow					
14	Bramble	Oakpuff		Sorcerer	40	Lemon	Steward Citadel					
15	Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn					
16	Groognok	Brewguard	$\checkmark$	Prophet	39	Obsidian	Steward Citadel					
17	Eveningpony	Coarsebones	$\checkmark$	Monk	39	Coal	Gizmohold					
18	Strelborth	Feathertaker	$\checkmark$	Shaman	39	Jade	Gizmohold					
19	Seanroscu	Mimestun	~	Guardian	38	Turquoise	Tyrogate					
20	Sundew	Olivecreek	~	Mage	37	Black	Steward Citadel					
21	Boggoug	Forgeaxe	~	Warlock	35	Turquoise	Glockburgh					
22		Lillybush		Elementalist	35	Velvet	Duffergate					
23	Aeden	Twistygarden		Gladiator	35	Satin	Juggervale					



# SUMIF() & AVERAGEIF()

They have the same format

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# SUMIF(Range, Criteria, Sum\_Range)

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### SUMIF() & AVERAGEIF()

Can be used to sum or average all values when a condition is met on the same row

Instead of counting up one for each value, you can use a second range to sum or average the accepted rows

*"What is the average level of* weapons in this item list"

*"What is the total poly count of the* prop assets in this list"

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1	First Name =	Last Name =	NPC? =	Class =	Level =	Favorite Color =	Location =					
2	Birch	Fernlight		Knight	48	Cream	Prongwallow					
3	Fox	Blackblossom		Swashbuckler	45	Lilac	Bucklestein			Totals?	Total Power	
4	Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum		Tyrogate	3		1
5	Mih	Pei		Arcanist	45	Rose	Tyrogate		Aetherdale	4		
6	Hedrath	Flatbeard	$\checkmark$	Spiritwalker	44	Scarlet	Aetherdale		Mizzlewatch	3		
7	Dirgoud	Mirebu	$\checkmark$	Shaman	44	Gold	Mizzlewatch		Duffergate	4		
8	Lia	Eim		Mystic Knight	42	Umber	Duffergate					
9	Vi-Ra	Nucrald	~	Guardian	42	Velvet	Harmony Sanctum					
10	Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh					
11	Nastraeck	Goldrock		Shadowdancer	40	Cream	Liontooth Keep					
12	Nuznuth	Heavyhelm	~	Archmage	40	Gold	Tyrogate					
13	Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow					
14	Bramble	Oakpuff		Sorcerer	40	Lemon	Steward Citadel					
15	Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn					
16	Groognok	Brewguard	~	Prophet	39	Obsidian	Steward Citadel					
17	Eveningpony	Coarsebones		Monk	39	Coal	Gizmohold					
18	Strelborth	Feathertaker	~	Shaman	39	Jade	Gizmohold					
19	Seanroscu	Mimestun	~	Guardian	38	Turquoise	Tyrogate					
20	Sundew	Olivecreek	$\checkmark$	Mage	37	Black	Steward Citadel					
21	Boggoug	Forgeaxe	~	Warlock	35	Turquoise	Glockburgh					
22	Frostbite	Lillybush		Elementalist	35	Velvet	Duffergate					
23	Aeden	Twistygarden	$\checkmark$	Gladiator	35	Satin	Juggervale					
24	Rhubarb	Airswamp		Bard	34	Cream	Duffergate					
25	Pinecone	Woodgrove		Bounty Hunter	32	Gold	Liontooth Keep					
26	Sardim	Behla	$\checkmark$	Spiritwalker	29	Obsidian	Swartham					
27	North	Birdwax		Jeweler	28	Violet	Aetherdale					P
28	Thobus	Lightbasher		Paragon	28	Jasper	Aetherdale					
29	Earth	Aspenhorn		Jester	27	Orange	Duffergate					
30	Dewdrop	Flirtyshine	$\checkmark$	Swashbuckler	27	Cobalt	Bucklestein					
31	Treven	Reachcrustal		Flamontalist	25	Vanilla	lunnenrale					



# Cell Reference From Other Sheets

GAME DEVELOPERS CONFERENCE | July 19-23, 2021

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E2	$\rightarrow$ $f_X$ = ", descr = """ & Components!	T2 & IF(ISBLANK(Components!U	J2 <b>),"","∖n" &amp;</b> Components	:U2) & """"	
	A	В	С		E
1	local componentData = {}	ents!T2 Co	mponents	!U2	
2	componentData["Iron Bar"] = {		, class = "Component"	, subType = "Bar"	, descr = "A bar of pure iron\nEssential component for many different items"
3	componentData["Hydrogen Power Core"] = {	name = "Hydrogen Power Core	, class = "Component"	, subType = "Power Core"	, descr = "Rich hydrogen pulsating with energy\nEssential component for many different items"
4	componentData["Carbon Fiber"] = {	name = "Carbon Fiber"	, class = "Component"	, subType = "Fiber"	, descr = "Strong lightweight filaments of Carbon\nEssential component for many different items"
5	componentData["Oxygen Tank"] = {	name = "Oxygen Tank"	, class = "Component"	, subType = "Air Tank"	, descr = "Tanks of pure oxygen created by Terrans\nEssential component for many different items"
6	componentData["Circuit Board"] = {	name = "Circuit Board"	, class = "Component"	, subType = "Circuit Board"	, descr = "A thin board containing a current of electricity\nEssential component for many different items"
7	componentData["Nitrogen Coolant"] = {	name = "Nitrogen Coolant"	, class = "Component"	, subType = "Coolant"	, descr = "Once opened a puff of frozen mist escapes\nEssential component for many different items"
8	componentData["Targeting System"] = {	name = "Targeting System"	, class = "Component"	, subType = "Sensor"	, descr = "Laser sensor made from Carbon & Aluminum\nUsed to craft Weapons"
9	componentData["Fuel Injector"] = {	name = "Fuel Injector"	, class = "Component"	, subType = "Injector"	, descr = "A precise instrument that delivers fuel\nUsed to craft Weapons"
10	componentData["Pulse Absorbers"] = {	name = "Pulse Absorbers"	, class = "Component"	, subType = "Absorber"	, descr = "Absorbs ultrashort-pulsed wavelengths\nUsed to craft Weapons"
11	componentData["Hydrogen Ambiplasma"] = {	name = "Hydrogen Ambiplasm	, class = "Component"	, subType = "Ambiplasma"	, descr = "Extremely reactive plasmacareful now\nUsed to craft Weapons"
12	componentData["Tachyon Infuser"] = {	name = "Tachyon Infuser"	, class = "Component"	, subType = "Infuser"	, descr = "Infuses particles that travel faster than light\nUsed to craft Weapons"
13	componentData["Phazer Glass"] = {	name = "Phazer Glass"	, class = "Component"	, subType = "Glass"	, descr = "Sharp atom splitting crystals\nUsed to craft Weapons"
14	componentData["Gravity Flooring"] = {	name = "Gravity Flooring"	, class = "Component"	, subType = "Flooring"	, descr = "Without it we might all float down here\nUsed to craft Equipment"
15	componentData["Air Filtration System"] = {	name = "Air Filtration System"	, class = "Component"	, subType = "Filtration"	, descr = "Wait we're supposed to clean it?\nUsed to craft Equipment"
16	componentData["Gimbal Stabilizer"] = {	name = "Gimbal Stabilizer"	, class = "Component"	, subType = "Stabilizer"	, descr = "Micro balancing support for precise movement\nUsed to craft Equipment"
17	componentData["Ambient Speakers"] = {	name = "Ambient Speakers"	, class = "Component"	, subType = "Sound System"	, descr = "What! huh!did you say something?\nUsed to craft Equipment"
18	componentData["Holographic Panel"] = {	name = "Holographic Panel"	, class = "Component"	, subType = "Screen"	, descr = "A three-dimensional projected display\nUsed to craft Equipment"
19	componentData["Iron Plating"] = {	name = "Iron Plating"	, class = "Component"	, subType = "Plating"	, descr = "A sturdy defensive plate of pure iron\nUsed for build Defenses"
20	componentData["Fiber Sheeting"] = {	name = "Fiber Sheeting"	, class = "Component"	, subType = "Sheeting"	, descr = "A strong fibrous material\nA component of Defenses"
21	componentData["Stasis Field"] = {	name = "Stasis Field"	, class = "Component"	, subType = "Stasis Field"	, descr = "A field rendering everything inside motionless\nA component of Defenses"
22	componentData["Vibration Dampeners"] = {	name = "Vibration Dampeners	, class = "Component"	, subType = "Dampeners"	, descr = "Reduces vibrations protecting your ship\nA component of Defenses"
23	componentData["Hyperweave"] = {	name = "Hyperweave"	, class = "Component"	, subType = "Cloth"	, descr = "Think super space kevlar!\nA component of Defenses"
24	componentData["Bastion Particles"] = {	name = "Bastion Particles"	, class = "Component"	, subType = "Particles"	, descr = "Blue nano particles that line defense shields\nA component of Defenses"
25	componentData["Magnetic Particles"] = {	name = "Magnetic Particles"	, class = "Component"	, subType = "Particles"	, descr = "Yellow particles held together magnetically\nA component of Defenses"
26	componentData["Deriluim Particles"] = {	name = "Deriluim Particles"	, class = "Component"	, subType = "Particles"	, descr = "Glowing particles that confuse and disorient\nA component of Defenses"
27	componentData["Power Supply"] = {	name = "Power Supply"	, class = "Component"	, subType = "Power Core"	, descr = "Delivers essential power to all parts of a ship\nUsed to power Ships"
28	componentData["Space Engine"] = {	name = "Space Engine"	, class = "Component"	, subType = "Engine"	, descr = "Experience the wonders of space travel \nUsed to power Ships"
29	componentData["Power Supply II"] = {	name = "Power Supply II"	, class = "Component"	, subType = "Power Core"	, descr = "A stronger, superior version of power supply\nUsed to power Ships"
30	componentData["Space Engine II"] = {	name = "Space Engine II"	, class = "Component"	, subType = "Engine"	, descr = "Go boldly where no man has gone before\nUsed to power Ships"
31	componentData["Al Core"] = {	name = "Al Core"	, class = "Component"	, subType = "AI Core"	, descr = "I'm sorry Dave. I'm afraid I can't do that\nUsed for crafting Ships"
32	componentData["Iron Frame"] = {	name = "Iron Frame"	, class = "Component"	, subType = "Frame"	, descr = "A sturdy frame made of solid iron\nUsed for crafting Buildings"

The Sheet Name as part of the Cell Reference, separated by a !

ComponentsSXSW -

Sheet4 -

Components

COMPONENT DATA

GDC<sup>®</sup> GAME DEVELOPERS CONFERENCE | July 19-23, 2021 | #GDC21

Components FULL -

Component Types 👻

### ImportedRanges •

- gone before\nUsed to power Ships"

- f power supply\nUsed to power Ships"

# Fill Down/Right

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### Fill Down/Right

Fill Cells with Formulas with the cell references changing based on direction of the fill

Ctrl - D and Ctrl-R to fill a selection Down or to the Right, respectively

Can also use the blue corner rect

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## GDO

### \$ROW\$COLUMN

Locks a cell reference. Instead of A2 it's \$A\$2

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# \$ROW\$COLUMN

Great for static values that need to be referenced across a range of cells

\$ before the Row or Column values will lock those values when doing a fill

Instead of C\$1 becoming C2, C3, C4 as you fill down, it stays as C1 Instead of \$A3 becoming B3, C3, D3 on a fill to the right, it stays at A3

"= \$C\$1" can be filled across a whole sheet and still only reference C1

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## **GD**

### String Concat using '&' = "my value is " & CELL

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### = <u>CELL</u> & " " & <u>CELL</u>

Useful for creating content filenames and references

You can use strings and cell references together

= "Mesh/" & CELL & " OBJ" as a way to take an asset name and generate a filename with folder hierarchy baked in

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2		Birch	Fernlight		Knight	48	Cream	Prongwallow
3		Fox	Blackblossom	$\checkmark$	Swashbuckler	45	Lilac	Bucklestein
4		Aqua	Flutterfrost		Warmage	45	Teal	Harmony Sanctum
5		Mih	Pei		Arcanist	45	Rose	Tyrogate
6		Hedrath	Flatbeard	$\checkmark$	Spiritwalker	44	Scarlet	Aetherdale
7		Dirgoud	Mirebu	$\checkmark$	Shaman	44	Gold	Mizzlewatch
8		Lia	Eim		Mystic Knight	42	Umber	Duffergate
9		Vi-Ra	Nucrald	$\checkmark$	Guardian	42	Velvet	Harmony Sanctum
10		Lake	Cricketwillow		Infiltrator	41	Turquoise	Glockburgh
11		Nastraeck	Goldrock	$\checkmark$	Shadowdancer	40	Cream	Liontooth Keep
12		Nuznuth	Heavyhelm	$\checkmark$	Archmage	40	Gold	Tyrogate
13		Thuh-Keoveth	Luupvehpihr		Mystic Knight	40	Scarlet	Prongwallow
14		Bramble	Oakpuff		Sorcerer	40	Lemon	Steward Citadel
15		Persimmon	Beechbay		Swashbuckler	39	Sienna	Boneburn
16		Groognok	Brewguard	$\checkmark$	Prophet	39	Obsidian	Steward Citadel
17		Eveningpony	Coarsebones	$\checkmark$	Monk	39	Coal	Gizmohold
18		Strelborth	Feathertaker	~	Shaman	39	Jade	Gizmohold
19		Seanroscu	Mimestun	$\checkmark$	Guardian	38	Turquoise	Tyrogate
20		Sundew	Olivecreek	$\checkmark$	Mage	37	Black	Steward Citadel
21		Boggoug	Forgeaxe	~	Warlock	35	Turquoise	Glockburgh
22		Frostbite	Lillybush		Elementalist	35	Velvet	Duffergate
23		Aeden	Twistygarden		Gladiator	35	Satin	Juggervale
24		Rhubarb	Airswamp		Bard	34	Cream	Duffergate
25		Pinecone	Woodgrove		Bounty Hunter	32	Gold	Liontooth Keep
26		Sardim	Behla	$\checkmark$	Spiritwalker	29	Obsidian	Swartham
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### **GD**

### =LOWER(SUBSTITUTE(CELL,"","\_"))

Lower snake case, "Big Rock 01" becomes "big rock 01"

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# VLOOKUP()

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### = VLOOKUP(Ref, Range, Index)

Great for looking up a Cell's additional values in a tables

Used to look up a specific value in a table, then find a value to the right of it.

=VLOOKUP(CELL, COLUMN:COLUMN, NUMBER, FALSE)

INDEX is the amount of columns over from the first one. In the example, the data is in column G, the 7th column over

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Flamefang	Ancienteye		Ranger	*	24	Umber *	Juggervale
Earth	Aspenhorn		Jester	*	13	Auburn -	Duffergate
Ragerabbit	Badsmirk		Spiritwalker	Ŧ	15	Indigo *	Mizzlewatch
Stirgirk	Battleflaw		Marauder	*	20	Obsidian *	Harmony Sanc
Persimmon	Beechbay		Swashbuckler	٠	39	Turquoise *	Boneburn
Trevan	Beechcrystal		Elementalist	*	25	Almond -	Juggervale
Sardim	Behla		Spiritwalker	*	29	Obsidian *	Swartham
North	Birdwax		Runecaster	*	28	Violet -	Aetherdale
Fox	Blackblossom	Image: A start and a start	Swashbuckler	*	45	Lilac *	Bucklestein
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Nem	Chardev		Warlock	*	20	Teal *	Bucklestein
Eveningpony	Coarsebones		Monk	*	39	Gold *	Gizmohold
Lake	Cricketwillow		Infiltrator	*	41	Turquoise *	Glockburgh
Aeden	Daisywink		Bard	Ŧ	24	Lilac *	Liontooth Keep
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Lia	Eim		Mystic Knight	Ŧ	10	Umber *	Duffergate
Strelborth	Feathertaker	~	Ranger	*	39	Jade -	Gizmohold
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Hedrath	Flatbeard		Spiritwalker	-	44	Scarlet *	Aetherdale
Dewdrop	Flirtyshine		Swashbuckler	*	27	Cobalt -	Bucklestein
Aqua	Flutterfrost		Warmage	*	45	Teal *	Harmony Sanc
Boggoug	Forgeaxe		Warlock	*	35	Turquoise -	Glockburgh
Karma	Frosttree		Gunslinger	-	25	Maroon ~	Steward Citade
Storm	Gemfreeze		Warlock	*	23	Satin *	Prongwallow
Nastraeck	Goldrock		Arcanist	*	40	Cream *	Tyrogate
Nuznuth	Heavyhelm		Archmage	*	40	Gold +	Tyrogate
Moptop	Honeymeadow		Bard	*	23	Maroon *	Sootgate
Arus	Isunda		Sorcerer	*	6	Auburn +	Swartham
Thobus	Lightbasher		Paragon	Ŧ	28	Jasper *	Aetherdale
Bonepelt	Lightcrest		Guardian	+	20	Jade +	Sootgate
Frostbite	Lillybush		Elementalist	Ŧ	15	Cobalt ~	Duffergate
Thuh-Keoveth	Luupvehpihr		Mystic Knight	*	40	Scarlet -	Prongwallow
Ridge	Meadowglade		Elementalist	*	18	Jasper +	Juggervale
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### **Export Sheet Data**

tinyurl.com/ExportSheetData

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### **Export Sheet Data**

tinyurl.com/ExportSheetData

A useful addon to Google Sheets that allows you to export a sheet or selection into JSON or XML

Lots of settings and options to get the right data format

If you already know why having content output to XML or JSON is helpful, then this addon is for you

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9	Vi-Ra	Nucrald	~	Guardian	42	Velvet	Harmony Sanctum									
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30	Dewdrop	Flirtyshine		Swashbuckler	27	Cobalt	Bucklestein									
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32	Karma	Frosttree	~	Gunslinger	25	Blond	Steward Citadel									
33	Hobath	Opalminer		Transmuter	25	Vanilla	Glockburgh									
34	Flamefang	Ancienteye		Ranger	24	Umber	Juggervale									
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# Google Sheets [Code Button]

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### Google Sheets [Code Button]

Create a button on your Sheet using a Drawing and GS code (Javascript)

Access GS scripts from Extensions > App Scripts

Once assigned, the button will trigger the function to run

Great for validating extensive data & sending to an external source

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tinyurl.com/SpreadsheetSmarter

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