The SG System

-AN OBSCURE JOKE THAT WENT TO FAR-

CREATED BY WILL FRONDORF

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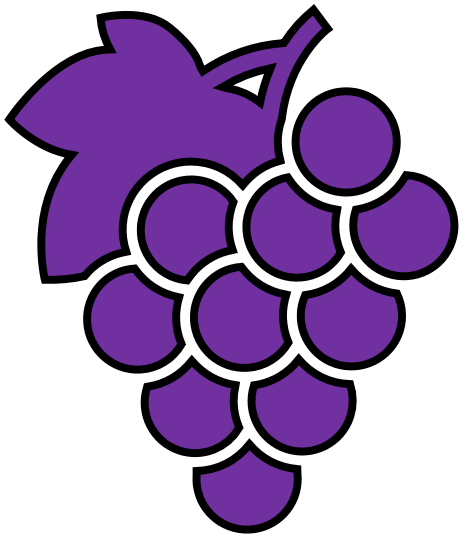

CREATED BY WILL FRONDORF

Le Système de raisin des unités

The Grape System of Units

The SG System

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What is the SG System?

The Grape System of Units, or SG System, is at its core, a joke gone too far. This is a fictional system of units, similar to the universally recognized SI system or the Customary System of the United States. However, what makes the SG system different is that it is entirely based on average values of properties of grapes. There is no intention at all of this ever being used for anything ever, nor is it meant to be taken seriously in the slightest. I'll provide a more detailed explanation of the SG System in a bit.

Why is the SG System?

The SG System started as a simple throwaway joke in the middle of a joke conversation about stupid unit systems and dumb, yet true, scientific facts between myself and a few of my friends in college. On a crisp, cold day in February, amongst Smoots and conversations about the density of hollow main sequence stars, I simply stated a joke that would change my life for the next 30 seconds in ways I would never imagine. "Hey guys," I joked, "wouldn't it be stupid if someone made a system of units based on something stupid? Like, I don't know, grapes or something." After about 0.2 seconds of thought, I immediately began the write-up and mad scramble of ideas that would eventually become the SG system. After months of off and on work, and copious amounts of stubborn dedication to a joke gone too far, I created a monster: an entire joke system of units based around grapes.

How is the SG System?

Doing pretty good actually, thanks for asking. He's been on a health kick lately and has started a podcast about politics and farming. His long-time girlfriend recently helped get him out of his badminton addiction. The wedding is scheduled for June.

Seriously what is this thing?

The SG System is simply a joke. But what is it really? This whole thing is exactly what you think it is: a system of units based on properties and qualities of grapes. Yes, it's a joke. Yes, it's a meme. Yes, it's ridiculous. And yes, I have gone all out and turned that joke into a serious thing, with no semblance of sanity or reasoning. No, I'm not sorry, it's me, this should've been expected. You're welcome.

The SG System takes all of the values measured by units in the SI System and converts them into new units I have made up based on different things relating to grapes. Yes, grapes. The fruit. Surprisingly enough, this was actually a fairly easy process to start once I had a few properties figured out. Most of the base units are formed on assumptions or just generalized data, such as my units for temperature or luminous intensity. Some units are based on actual experimental data, mostly the units used in circuits and electronics. Who knew that poking several grapes from the university's main dining hall with a multimeter would've been a thing I had to do while in college? Speaking of these weird units, they all of course have the dumbest and most idiotic names, all rooted in grape puns obviously. Many units are named in a way that's formatted "grape" plus a word or the value that the unit is measuring. For example, the grecond (grape second), grass (grape mass), or grel (grape electric potential).

The SG System is a Base-10 system like SI, so no insane conversions of orders of magnitude or anything like that here. At least, that's what one would think…The SG System is a system based on very large scales of numbers. Lots of units have absolutely insane conversions into SI, many of which have conversion factors in orders of magnitude much larger than any sense would say. Because the SG unit for time is to the order of negative eleven, many units in SG will be hugely huge or hugely small as many giant orders of magnitude are thrown around ore causally than they should be expected to be.

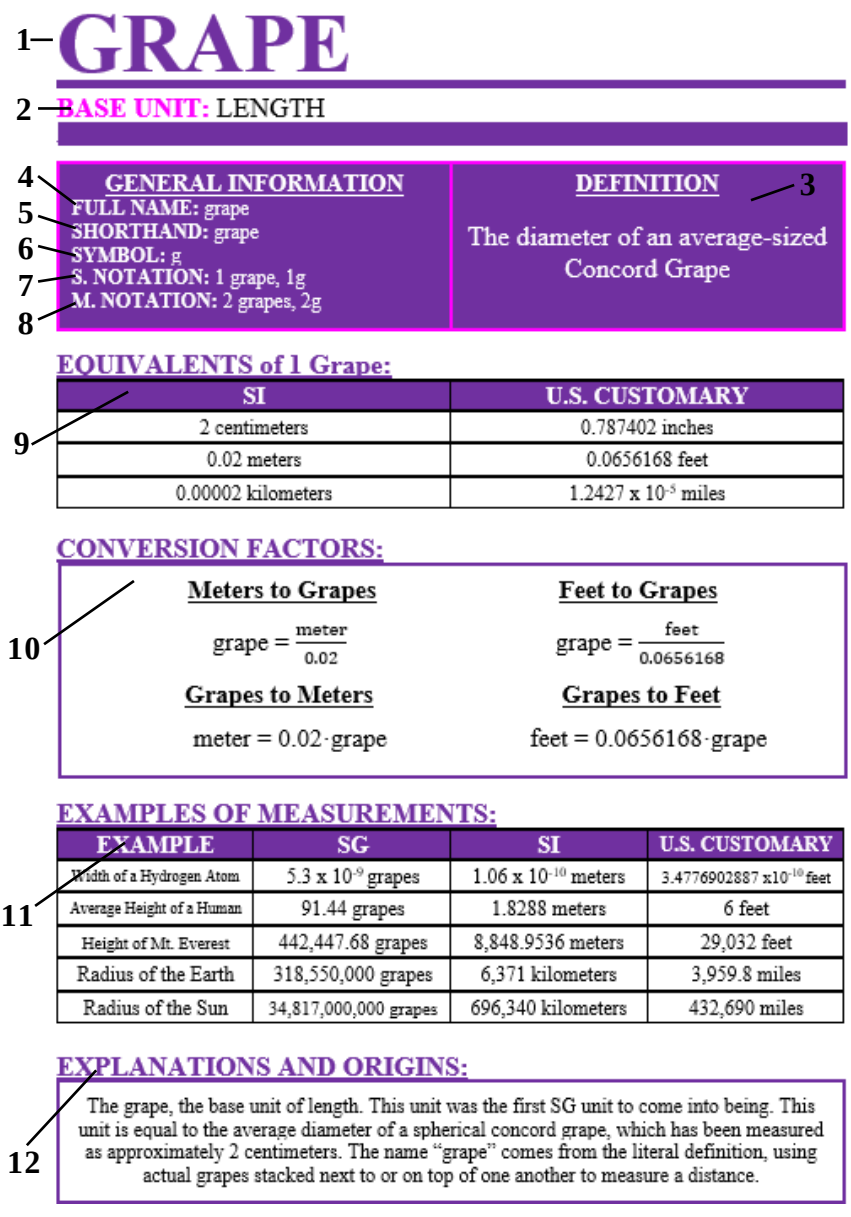
This guidebook you're reading is a document that informs you of each unit in the SG system, with information on how to use them, what and where they come from, and how to notate them. In addition to documenting individual units, this book contains various tables and charts that serve a variety of functions: lists of various physical and natural constants in their SG equivalents; derived quantities in their SG equivalents, and unique prefixes for denoting orders of magnitudes in order to help use an understand the SG System more efficiently.

What is this that I'm reading?

This here, within the confines of this binder, is the official papers that birth the SG System into existence. This is the guidebook for the entire idea; a brief history of its origins, the introduction of the units in the system, conversions to actually used systems, prefixes, derived quantities, and some physical constants converted into SG. This guidebook is a reference for anyone insane enough to make use of the system, both seriously and as a joke. The SG system, similar to the SI, CGS, Imperial, or U.S. Customary systems of units, is comprised of both base and derived units.

This guidebook uses expanded scientific notation when utilizing exponents or orders of magnitude. For example, if the number 50,000 were written in this guidebook, it would be written as 5×10^4. Scientific e-notation is not used in this guidebook.

While this guidebook contains information for the SG system as a whole, the primary purpose of it is the units within the system. This guidebook lists every unit of the SG system in extreme detail. Each unit has its own dedicated page detailing various pieces of information. Below is an image of an example page with a guide explaining each section of each units' pages.



1– GRAPE

2– BASE UNIT: LENGTH

GENERAL INFORMATION	DEFINITION (3)
4– FULL NAME: grape 5– SHORTHAND: grape 6– SYMBOL: g 7– S. NOTATION: 1 grape, 1g 8– M. NOTATION: 2 grapes, 2g	The diameter of an average-sized Concord Grape

EQUIVALENTS of 1 Grape:

SI (9)	U.S. CUSTOMARY
2 centimeters	0.787402 inches
0.02 meters	0.0656168 feet
0.00002 kilometers	1.2427×10^{-5} miles

CONVERSION FACTORS: (10)

Meters to Grapes	Feet to Grapes
$\text{grape} = \frac{\text{meter}}{0.02}$	$\text{grape} = \frac{\text{feet}}{0.0656168}$
Grapes to Meters	**Grapes to Feet**
$\text{meter} = 0.02 \cdot \text{grape}$	$\text{feet} = 0.0656168 \cdot \text{grape}$

EXAMPLES OF MEASUREMENTS: (11)

EXAMPLE	SG	SI	U.S. CUSTOMARY
Width of a Hydrogen Atom	5.3×10^{-9} grapes	1.06×10^{-10} meters	$3.4776902887 \times 10^{-10}$ feet
Average Height of a Human	91.44 grapes	1.8288 meters	6 feet
Height of Mt. Everest	442,447.68 grapes	8,848.9536 meters	29,032 feet
Radius of the Earth	318,550,000 grapes	6,371 kilometers	3,959.8 miles
Radius of the Sun	34,817,000,000 grapes	696,340 kilometers	432,690 miles

EXPLANATIONS AND ORIGINS: (12)

The grape, the base unit of length. This unit was the first SG unit to come into being. This unit is equal to the average diameter of a spherical concord grape, which has been measured as approximately 2 centimeters. The name "grape" comes from the literal definition, using actual grapes stacked next to or on top of one another to measure a distance.

1. Unit's shorthand name

2. What the unit is representative of

3. Unit's full definition (s)

4. The formal full name of the unit

5. The colloquial shortened form of the unit's longer name, used in the guidebook

6. The unit's symbol

7. Examples of the proper notation when writing about a single instance of the unit in question

8. Examples of the proper notation when writing about multiple instances of the unit in question

9. Table showcasing conversions of a single instance of the SG unit in question into common equivalents in both the SI and U.S. Customary systems

10. Conversion equations to the turn the SG unit into its SI (and where applicable U.S. Customary) equivalent unit

11. Table showcasing common examples of real-world measurements of SG values with their SI (and where applicable U.S. Customary) equivalent units

12. A brief description of the real-world logic and reasoning of the unit's definitions and gimmicks, as well as the etymology of the unit's name

BASE SG UNITS

A BRIEF RUNDOWN

The SG base units are the standard units of measurement defined by the Grape System of Units (SG). They are notably a basic set from which all other SG units can be derived. All derived SG units are comprised of these seven base units. The base unit's definitions and functions are all relatively straightforward and little scientific knowledge is required to fully understand them.

Each base unit is defined through simple definitions that are rather different than their derived unit counterparts. The base units' definitions are all comprised of hard-set values that were not determined by real mathematics. Rather, I choose the values that each one was equivalent to. All the choices I made were obviously rooted in logic and at least some level of scientific reasoning, but they are all simply the values that they are because I said so. All the derived units are obviously all defined mathematically.

The units and their physical quantities are the bunch for amount of substance, the grape for length, the grass for mass, the grecond for time, the grel for electric current, the green for luminous intensity and the Vine for temperature.

The following pages contain a list of each base unit in the SG system, with one unit per page, each possessing details, example measurements, and conversions into other systems of units.

Units are listed in alphabetical order by the units' names.

BUNCH

BASE UNIT: AMOUNT OF SUBSTANCE

GENERAL INFORMATION	DEFINITION
FULL NAME: bunch **SHORTHAND:** bunch **SYMBOL:** Bn **S. NOTATION:** 1 bunch, 1Bn **M. NOTATION:** 2 bunches, 2Bn	0.227584583753 moles

EQUIVALENTS of 1 Bunch:

SI	U.S. CUSTOMARY
0.227584583753 moles	

CONVERSION FACTORS:

Moles to Bunches

$$\text{bunch} = \frac{\text{mole}}{0.227584583753}$$

Bunches to Moles

$$\text{mole} = 0.227584583753 \cdot \text{bunch}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
1 mole	4.39397073171 bunches	1 mole	
2 moles	8.78794146343 bunches	2 moles	
3 moles	13.1819121951 bunches	3 moles	
4 moles	17.5758829269 bunches	4 moles	
5 moles	21.9698536586 bunches	5 moles	

EXPLANATIONS AND ORIGINS:

The bunch, the base unit for the amount of substance. This unit gets its name literally from a bunch of grapes, a bundle of them you get off the vine. The bunch was defined to be 0.227584583753 moles from taking the molar mass of 4.1 grams of water (as grapes are 82% water, I took 82% of 5 grams, giving the 4.1). Water has a molar mass of 18 grams per mole, so we find 4.1/18 = 0.227584583753.

GRAPE

BASE UNIT: LENGTH

GENERAL INFORMATION	DEFINITION
FULL NAME: grape **SHORTHAND:** grape **SYMBOL:** g **S. NOTATION:** 1 grape, 1g **M. NOTATION:** 2 grapes, 2g	The diameter of an average-sized Concord Grape

EQUIVALENTS of 1 Grape:

SI	U.S. CUSTOMARY
2 centimeters	0.787402 inches
0.02 meters	0.0656168 feet
0.00002 kilometers	1.2427×10^{-5} miles

CONVERSION FACTORS:

Meters to Grapes

$$\text{grape} = \frac{\text{meter}}{0.02}$$

Feet to Grapes

$$\text{grape} = \frac{\text{feet}}{0.0656168}$$

Grapes to Meters

$$\text{meter} = 0.02 \cdot \text{grape}$$

Grapes to Feet

$$\text{feet} = 0.0656168 \cdot \text{grape}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Width of a Hydrogen Atom	5.3×10^{-9} grapes	1.06×10^{-10} meters	$3.4776902887 \times 10^{-10}$ feet
Average Height of a Human	91.44 grapes	1.8288 meters	6 feet
Height of Mt. Everest	442,447.68 grapes	8,848.9536 meters	29,032 feet
Radius of the Earth	318,550,000 grapes	6,371 kilometers	3,959.8 miles
Radius of the Sun	34,817,000,000 grapes	696,340 kilometers	432,690 miles

EXPLANATIONS AND ORIGINS:

The grape, the base unit of length. This unit was the first SG unit to come into being. This unit is equal to the average diameter of a spherical concord grape, which has been measured as approximately 2 centimeters. The name "grape" comes from the literal definition, using actual grapes stacked next to or on top of one another to measure a distance.

GRASS

BASE UNIT: MASS

GENERAL INFORMATION	DEFINITION
FULL NAME: grape mass **SHORTHAND:** grass **SYMBOL:** gM **S. NOTATION:** 1 grape mass, 1 grass, 1gm **M. NOTATION:** 2 grape masses, 2 grasses, 2gm	The mass of an average-sized Concord Grape

EQUIVALENTS of 1 Grass:

SI	U.S. CUSTOMARY
5,000 milligrams	0.17637 ounces
5 grams	0.0110231 pounds
0.005 kilograms	5.5116×10^{-6} tons

CONVERSION FACTORS:

Grams to Grass

$$\text{grass} = \frac{\text{gram}}{5}$$

Pounds to Grass

$$\text{grass} = \frac{\text{pound}}{0.0110231}$$

Grass to Grams

$$\text{gram} = 5 \cdot \text{grass}$$

Grass to Pounds

$$\text{pounds} = 0.0110231 \cdot \text{grass}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Mass of a Proton	3.345×10^{-25} grasses	$1.6726219 \times 10^{-27}$ kg	$3.6875000785 \times 10^{-27}$ lbs
Mass of an average Human	12,400 grasses	62 kg	136.687 lbs
Mass of an average Blue Whale	18,143,694.8 grasses	90,718.474 kg	200,000 lbs
Mass of the Earth	1.1944×10^{27} grasses	5.972×10^{24} kg	6.583×10^{21} tons
Mass of the Sun	3.978×10^{32} grasses	1.989×10^{30} kg	2.192×10^{27} tons

EXPLANATIONS AND ORIGINS:

The grass, the base unit of mass. This unit was the third SG unit to come into being. This unit is equal to the average mass of a spherical concord grape, which has been measured as approximately 5 grams. The name "grass" comes from the combination of the words "grape" and "mass", which literally is what this unit is measuring.

GREEN

BASE UNIT: LUMINOUS INTENSITY

GENERAL INFORMATION	DEFINITION
FULL NAME: grape sheen **SHORTHAND:** green **SYMBOL:** gR **S. NOTATION**: 1 grape sheen, 1 green, 1gR **M. NOTATION:** 2 grape sheens, 2 greens, 2gR	27 candelas

EQUIVALENTS of 1 Green:

SI	U.S. CUSTOMARY
27000 millicandelas	
27 candelas	
0.027 kilocandelas	

CONVERSION FACTORS:

Candelas to Greens

$$\text{green} = \frac{\text{candela}}{27}$$

Greens to Candelas

$$\text{candela} = 27 \cdot \text{green}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
1 Candle	0.037 greens	1 candela	
3 Candles	0.011 greens	3 candelas	
5 Candles	0.185 greens	5 candelas	
7 Candles	0.259 greens	7 candelas	
25-watt lightbulb	5 greens	135 candelas	

EXPLANATIONS AND ORIGINS:

The green, the base unit of luminous intensity. Like the candela, the "green" is a very odd unit and is defined is a similarly odd way. Like other base units, the green is simply set to a specific quantity of candelas, based solely on my own will and desire to do so. The number 27 was chosen as it is my favorite number, and the "grape sheen" name was a simple choice.

GREL

BASE UNIT: ELECTRIC CURRENT

GENERAL INFORMATION	DEFINITION
FULL NAME: Electric Grape Potential **SHORTHAND:** grel **SYMBOL:** gE **S. NOTATION:** 1 Electric Grape Potential, 1grels, 1 gE **M. NOTATION:** 2 Electric Grape Potential, 2 grels, 2 gE	$\frac{\text{Smuck}}{\text{grecond}}$

EQUIVALENTS of 1 Grel:

SI	U.S. CUSTOMARY
367,245.755763 milliamps	
367.245755763 amps	
0.367245755763 kiloamps	

CONVERSION FACTORS:

Amps to Grels

$$\text{grel} = \frac{\text{amp}}{367.245755763}$$

Grels to Amps

$$\text{amp} = 367.245755763\ \text{grel}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
5 microamp current	1.36×10^{-8} grels	0.000005 amps	
2 milliamp current	5.45×10^{-6} grels	0.002 amps	
17 amp current	0.0463 grels	17 amps	
21 kiloamp current	57.18 grels	21,000 amps	
50 megaamp current	136,148.61 grels	50,000,000 amps	

EXPLANATIONS AND ORIGINS:

The grel, the base unit of electric current. The "grape electric potential" is an odd name, and it actually is a bit of a misnomer. One would think that the "potential" in the formal name would indicate electric potential and thus be converted into volts in practice, but alas, it's current, not voltage. To help mitigate confusion, I recommend using "grel" more often.

GRECOND

BASE UNIT: TIME

GENERAL INFORMATION	DEFINITION
FULL NAME: grape second **SHORTHAND:** grecond **SYMBOL:** gS **S. NOTATION:** 1 grape second, 1 grecond 1gs **M. NOTATION:** 2 grape seconds, 2 greconds, 2gs	Amount of time it takes light traveling at 299,792,458 meters per second to travel across a single SG unit of distance (the grape)

EQUIVALENTS of 1 Grecond:

SI	U.S. CUSTOMARY
6.671282×10^{-11} seconds	
1.853134×10^{-14} hours	
$2.115449772 \times 10^{-18}$ years	

CONVERSION FACTORS:

Seconds to Greconds

$$\text{grecond} = \frac{\text{second}}{6.671282 \times 10^{-11}}$$

Greconds to Seconds

$$\text{Second} = 6.671282 \times 10^{-11} \cdot \text{grecond}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
1 Day	1.2951034×10^{15} greconds	86,400 seconds	
1 Week	9.0657238×10^{15} greconds	604,800 seconds	
1 Year	4.730268×10^{17} greconds	31,556,952 seconds	
Age of the Earth	2.1744786×10^{27} greconds	4.6 billion years	
Age of the Universe	6.4761646×10^{27} greconds	13.7 billion years	

EXPLANATIONS AND ORIGINS:

The grecond, the base unit of time. This unit was the second SG unit to come into being. This unit is equal to the time it takes light to travel across 2 centimeters of distance, which is the same as the base unit for length in SG. The name "grecond" comes from combining the words "grape" and "second" as this unit is literally the number of seconds to cross a grape.

VINE

BASE UNIT: TEMPERATURE

GENERAL INFORMATION

FULL NAME: Ambient Vineyard Temperature
SHORTHAND: Vine
SYMBOL: V
S. NOTATION: 1 Ambient Vineyard Temperature, 1 Vine, 1V
M. NOTATION: 2 Ambient Vineyard Temperature, 2 Vine, 2V

DEFINITION

The average temperature of the San Francisco Bay Area in July 2019

EQUIVALENTS of 1 Vine:

SI	IMPERIAL
292.8722 Kelvin	67.5 °Fahrenheit
19.72222 °Celsius	

CONVERSION FACTORS:

Kelvin to Vine

$$\text{Vine} = \frac{9}{5}\cdot(\text{Kelvin}-273.15)-34.5$$

Fahrenheit to Vine

$$\text{Vine} = \text{Fahrenheit} - 66.5$$

Vine to Kelvin

$$\text{Kelvin} = ((\text{Vine}+66.5)-32)\cdot\frac{5}{9}+273.15$$

Vine to Fahrenheit

$$\text{Fahrenheit} = \text{Vine} + 66.5$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	IMPERIAL
Freezing Point of Water	-34.5 V	273.15 K	32 °F
Boiling Point of Water	145.5 V	373.15 K	212 °F
Hottest Recorded Day on Earth	67.5 V	329.82 K	134 °F
Average Human Body	32.1 V	310.15 K	98.6 °F
Core of the Sun	26,999,473.83 V	15,000,000 K	26,999,540.33 °F

EXPLANATIONS AND ORIGINS:

The Vine, the base unit of temperature. This unit is defined to based on the temperature information of California wine country. While Napa Valley is the heart of California wine, the San Francisco Bay Area as a whole provided a more general temperature average that was appropriate to use for the Vine. The Vine is named for the thing it's based on: grape vines.

DERIVED SG UNITS

A BRIEF RUNDOWN

SG derived units are units of measurement derived from the seven base units specified by the Grape System of Units. They are either dimensionless or can be expressed as a product of one or more of the base units, possibly scaled by an appropriate power of exponentiation. As each derived unit is composed of various base units, the following pages of unit descriptions give most unit definitions in base units where able, but many also contain definitions that utilize other derived units.

The following pages contain a list of each derived unit in the SG system, with one unit per page, each possessing details, example measurements, and conversions into other systems of units.

Units are grouped into various sections, with each section being a group of units that all apply to various fields of science and engineering. The six sections are Dimensionless Units, Force Units, Electrical Units, Photoelectric Units, Magnetic Units, and Radioactivity Units. Units are listed alphabetically withing their respective sections with a few exceptions in order to preserve a mathematical and textbook-style narrative.

GOUNCE

DERIVED DIMENSIONLESS UNIT: FREQUENCY

GENERAL INFORMATION	DEFINITION
FULL NAME: grape bounce **SHORTHAND:** gounce **SYMBOL:** gB **S. NOTATION:** 1 grape bounce, 1 gounce, 1 gB **M. NOTATION:** 2 grape bounces, 2 gounce, 2 gB	$\frac{1}{\text{grecond}}$

EQUIVALENTS of 1 Gounce:

SI	U.S. CUSTOMARY
14,989,622,684,215.71875 millihertz	
14,989,622,684.21571875 Hertz	
14,989,622.68421571875 kilohertz	

CONVERSION FACTORS:

Hertz to Gounce

$$\text{gounce} = \frac{\text{Hertz}}{14{,}989{,}622{,}684.21571875}$$

Gounce to Hertz

$$\text{Hertz} = 14{,}989{,}622{,}684.21571875 \cdot \text{gounce}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Minimum of Human Hearing Range	1.3342564×10^{-9} gounce	20 Hertz	
Maximum of Human Hearing Range	1.33425×10^{-6} gounce	20,000 Hertz	
Maximum of Blue Whale Call	2.6685128×10^{-9} gounce	40 Hertz	
Frequency of Wow! Signal	0.0947322044 gounce	1.42×10^{9} Hertz	
Frequency of Violet Light	50,034.615 gounce	7.5×10^{14} Hertz	

EXPLANATIONS AND ORIGINS:

The gounce, the derived unit of frequency. This absurd unit is derived from dividing 1 by the SG unit of time, the grecond. The gounce gets its name from combining the words “grape” and “bounce”, as it is measuring frequency, which is often depicted as sound waves oscillating up and down, similar to a grape bouncing up and down in place.

GRANGLE

DERIVED DIMENSIONLESS UNIT: ANGLE

GENERAL INFORMATION	DEFINITION
FULL NAME: grape angle **SHORTHAND:** grangle **SYMBOL:** gra **S. NOTATION:** 1 grangle, 1gra **M. NOTATION:** 2 grangles, 2gra	The angle subtended from the center of a circle which intercepts an arc equal in length $\frac{1}{114,120}$ times the radius of the circle

EQUIVALENTS of 1 Grangle:

SI	U.S. CUSTOMARY
$\frac{1}{317}$ degrees	
0.00005505770511 radians	

CONVERSION FACTORS:

Degrees to Grangles

$$\text{grangle} = 317 \cdot \text{degree}$$

Radians to Grangles

$$\text{grangle} = (\text{radian} \cdot \frac{180}{\pi}) \cdot 317$$

Grangles to Degrees

$$\text{degree} = \frac{\text{grangle}}{317}$$

Grangles to Radians

$$\text{radian} = \frac{\text{grangle}}{317} \cdot \frac{\pi}{180}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	DEGREES	RADIANS
Axial Tilt of the Earth	7449.5 gra	23.5°	0.4101524 rad
Right Angle	28,530 gra	90°	1.5708 rad
Full Circle	114,120 gra	360°	6.28319 rad
One Gradian	285.3 gra	0.9°	0.015708 rad
One Arcsecond	5.072 gra	0.016°	0.00027925268 rad

EXPLANATIONS AND ORIGINS:

The grangle, the unit two-dimensional angles are measured in the SG system. There are 317 grangles in a one degree. The 317 value is derived from the following logic: approximately 3.5 pounds of grapes are used to make 1 standard jar of jelly, which 1587.57 grams of grapes. Using the SG definition of grass, this comes to be 317.514 grapes, which when rounded to a whole number, is 317. A circle is then hypothetically cut into 317 pieces, each one containing a certain value of degrees. I then defined by sheer willpower alone that there are 317 parts in a single degree, giving us the grangle.

CONCORDIAN

DERIVED DIMENSIONLESS UNIT: SOLID ANGLE

GENERAL INFORMATION	DEFINITION
FULL NAME: concordian **SHORTHAND:** concordian **SYMBOL:** con **S. NOTATION:** 1 concordian, 1con **M. NOTATION:** 2 concordians, 2con	Half of the solid angle subtended at the center of a unit sphere by a unit area on its surface

EQUIVALENTS of 1 Concordian:

SI	U.S. CUSTOMARY
2 steradians	

CONVERSION FACTORS:

Steradians to Concordians

$$\text{concordian} = \frac{\text{steradian}}{2}$$

Concordians to Steradians

$$\text{steradian} = 2 \cdot \text{concordian}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Square Arcsecond	1.18×10^{-11} concordians	2.35×10^{-11} steradians	
Quarter of a Sphere	0.39 concordians	$\frac{\pi}{4}$ steradians	
Half of a Sphere	1.57 concordians	π steradians	
Three Quarters of a Sphere	3.53 concordians	2.25π steradians	
Full Sphere	6.28 concordians	4π steradians	

EXPLANATIONS AND ORIGINS:

The concordian, the derived unit for solid angle. The solid angle is the measure of the surface area of a sphere over its radius squared. The concordian measures half of that distance, so if one finds the solid angle in steradians, the SI for solid angle, a concordian would be half of that measurement. The "concordian" name comes from the concord grape, the type most of SG is based on.

SQUISH

DERIVED FORCE UNIT: PRESSURE

GENERAL INFORMATION	DEFINITION
FULL NAME: Squish **SHORTHAND:** Squish **SYMBOL:** Q **S. NOTATION:** 1 Squish, 1Q **M. NOTATION:** 2 Squish, 2Q	$\frac{\text{Wine}}{\text{grape}^2}$

EQUIVALENTS of 1 Squish:

SI	U.S. CUSTOMARY
5.6×10^{20} millipascals	81,218,274,111,675.1 Pounds per Square Inch
5.6×10^{17} pascals	
5.6×10^{14} kilopascals	

CONVERSION FACTORS:

Pascals to Squish

$$\text{squish} = \frac{\text{pascals}}{5.6 \times 10^{17}}$$

PSI to Squish

$$\text{squish} = \frac{\text{PSI} \cdot 6895}{5.6 \times 10^{17}}$$

Squish to Pascals

$$\text{pascals} = 5.6 \times 10^{17} \cdot \text{squish}$$

Squish to PSI

$$\text{PSI} = \frac{\text{squish} \cdot (5.6 \times 10^{17})}{6895}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
One Atmosphere	1.81×10^{-13} squish	101,325 pascals	14.6959 PSI
One Bar	1.79×10^{-13} squish	100,000 pascals	14.5038 PSI
Bottom of Marianas Trench	1.94×10^{-10} squish	1.08592×10^{8} pascals	15,750 PSI
Core of the Sun	0.04732142857 squish	2.65×10^{16} pascals	3.84×10^{12} PSI
Core of a Neutron Star	2.86×10^{16} squish	1.6×10^{34} pascals	2.32×10^{30} PSI

EXPLANATIONS AND ORIGINS:

The squish, the derived unit of pressure. This unit's name makes quite a lot of sense. The "squish" represents pressure, the amount of force something is exerting on something else. In this case, it is named in reference to the energy needed to squish a grape. This unit was originally called the "Squish Factor", but was eventually shortened to simply "squish"

WINE

DERIVED FORCE UNIT: FORCE

GENERAL INFORMATION	DEFINITION
FULL NAME: Wine **SHORTHAND:** Wine **SYMBOL:** W **S. NOTATION:** 1 Wine, 1W **M. NOTATION:** 2 Wines, 2W	$\frac{\text{grass} \cdot \text{grape}}{\text{grecond}^2}$

EQUIVALENTS of 1 Wine:

SI	U.S. CUSTOMARY
$2.24688788215 \times 10^{16}$ millinewtons	5,051,211,495,834.289 pounds
$2.24688788215 \times 10^{13}$ Newtons	
$2.24688788215 \times 10^{10}$ kilonewtons	

CONVERSION FACTORS:

Newtons to Wine

$$\text{Wine} = \frac{\text{Newton}}{2.24688788215 \times 10^{13}}$$

Pounds to Wine

$$\text{Wine} = \frac{\text{pound-force} \cdot 4.44822}{2.24688788215 \times 10^{13}}$$

Wine to Newtons

$$\text{Newton} = 2.24688788215 \times 10^{13} \cdot \text{Wine}$$

Wine to Pounds

$$\text{pound-force} = \frac{\text{Wine} \cdot 2.24688788215 \times 10^{13}}{4.44822}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Raindrop Hitting the Ground	1.48284×10^{-17} Wines	0.0003332 Newtons	7.49×10^{-5} pounds
Average Amateur Boxer Punch	$1.112650088 \times 10^{-10}$ Wines	2,500 Newtons	562.0224 pounds
Small Car Crashing into Wall at 60 mph	$2.184862021 \times 10^{-8}$ Wines	490,914 Newtons	110,361.858 pounds
Thrust of S-IC Rocket Engine	$1.562160724 \times 10^{-9}$ Wines	35,100 Newtons	78,907.9393 pounds
Gravity between Earth and the moon	8,839,177.138 Wines	1.986064×10^{20} Newtons	4.46×10^{19} pounds

EXPLANATIONS AND ORIGINS:

The Wine, the derived unit of force. The Wine derives its name from the drink as a reference to the amount of effort needed to crush grapes into wine, similar to how newtons are a measurement of the amount of effort needed to move objects. The Wine is an immensely small unit, so most practical use of wine requires using higher orders of magnitude.

CHALICE

DERIVED ELECTRICAL UNIT: CAPACITANCE

GENERAL INFORMATION	DEFINITIONS
FULL NAME: Chalice **SHORTHAND:** Chalice **SYMBOL:** C **S. NOTATION:** 1 Chalice, 1C **M. NOTATION:** 2 Chalices, 2C	1. $\frac{\text{Smuck}}{\text{golt}}$ 2. $\frac{\text{grecond}}{\text{Dio}}$

EQUIVALENTS of 1 Chalice:

SI	U.S. CUSTOMARY
3.5×10^{-4} millifarads	
3.5×10^{-7} farads	
3.5×10^{-10} kilofarads	

CONVERSION FACTORS:

Farads to Chalices

$$\text{Chalice} = \frac{\text{farad}}{3.5 \times 10^{-7}}$$

Chalices to Farads

$$\text{farad} = 3.5 \times 10^{-7} \cdot \text{Chalice}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
1 picofarad capacitor	0.00000285714 Chalices	1×10^{-12} farads	
1 nanofarad capacitor	0.002285714 Chalices	1×10^{-9} farads	
1 microfarad capacitor	2.85714 Chalices	1×10^{-6} farads	
1 millifarad capacitor	2857.14 Chalices	1×10^{-3} farads	
1 farad capacitor	2,857,142.85 Chalices	1 farad	

EXPLANATIONS AND ORIGINS:

The Chalice, the derived unit for electric capacitance. This unit gets its name from the chalice itself, an ancient drinking goblet commonplace among royalty and medieval imagery. Chalices are drinkware that hold liquid, so it seems appropriate that the unit used to measure the storage of energy in something have a name with a similar use.

DIO

DERIVED ELECTRICAL UNIT: ELECTRIC RESISTANCE

GENERAL INFORMATION	DEFINITIONS
FULL NAME: Dionysus **SHORTHAND:** Dio **SYMBOL:** D **S. NOTATION:** 1 Dionysus, 1 Dio, 1D **M. NOTATION:** 2 Dionyses, 2 Dios, 2D	1. $\frac{1}{\text{grail}}$ 2. $\frac{\text{grel}}{\text{golt}}$

EQUIVALENTS of 1 Dio:

SI	U.S. CUSTOMARY
5,246,367.93947 milliohms	
5246.36793947 ohms	
5.24636793947 kilohms	

CONVERSION FACTORS:

Ohms to Dios

$$\text{Dio} = \frac{\text{Ohm}}{5246.36793947}$$

Dios to Ohms

$$\text{Ohm} = 5246.36793947 \cdot \text{Dio}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
6 ohm resistor	0.001143648343 dios	6 ohms	
50 ohm resistor	0.009530402857 dios	50 ohms	
2 kilohm resistor	0.3812161143 dios	2000 ohms	
40 kilohm resistor	7.624322286 dios	40,000 ohms	
7 megaohm resistor	1334.2564 dios	7,000,000 ohms	

EXPLANATIONS AND ORIGINS:

The Dio, the derived unit for electric resistance. The "Dio" is one of the so-called "Deific Units" of the SG system; ones named in honor of various wine deities from Greek and Roman mythology. Dionysus was the Greek god of wine and parties, and like the other "Deific Units", it makes sense in an ironic way that a unit that represents electrical resistance is named for someone known to do the opposite frequently.

FLUSH

DERIVED ELECTRICAL UNIT: ELECTRIC INDUCTANCE

GENERAL INFORMATION

FULL NAME: Flush
SHORTHAND: Flush
SYMBOL: F
S. NOTATION: 1 flush, 1F
M. NOTATION: 2 flushes, 2F

DEFINITIONS

1. $\frac{\text{golt}\cdot\text{grecond}}{\text{grel}}$
2. $\frac{\text{Liber}}{\text{grel}}$
3. Dio·grecond

EQUIVALENTS of 1 Flush:

SI	U.S. CUSTOMARY
3.5×10^{-4} millihenries	
3.5×10^{-7} henries	
3.5×10^{-10} kilohenries	

CONVERSION FACTORS:

Henries to Flushes

$$\text{flush} = \frac{\text{henry}}{3.5\ x\ 10^{-7}}$$

Flushes to Henries

$$\text{henry} = 3.5 \times 10^{-7} \cdot \text{flush}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
22 nanohenry inductor	0.06 flushes	2.2×10^{-8} henries	
3 microhenry inductor	8.57 flushes	3×10^{-6} henries	
5 millihenry inductor	14,285.71 flushes	0.005 henries	
12 henry inductor	34,285,714.29 flushes	12 henries	
7 kilohenry inductor	20,000,000,000 flushes	7000 henries	

EXPLANATIONS AND ORIGINS:

The flush, the derived unit for electrical inductance. The "flush" is unique in its name in that it has basically nothing to grapes or grape derivatives. The flush's name is a reference to a toilet flushing, the idea being how one flushes water down a toilet like how electricity flows into a device. Other names I considered were the "sink", "facet", and "tap".

GOLT

DERIVED ELECTRICAL UNIT: VOLTAGE, POTENTIAL

GENERAL INFORMATION	DEFINITIONS
FULL NAME: grape volt **SHORTHAND:** golt **SYMBOL:** gV **S. NOTATION:** 1 grape volt, 1 golt, 1gV **M. NOTATION:** 2 grape volts, 2 golts, 2gV	1. $\frac{\text{Raisin}}{\text{golt}}$ 2. $\frac{\text{gress}}{\text{Smuck}}$

EQUIVALENTS of 1 Golt:

SI	U.S. CUSTOMARY
70 millivolts	
0.07 volts	
0.00007 kilovolts	

CONVERSION FACTORS:

Volts to Golts

$$\text{golt} = \frac{\text{volt}}{0.07}$$

Golts to Volts

$$\text{volt} = 0.07 \cdot \text{golt}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Human Nerve Cell	1.07 golts	0.075 volts	
AA, AAA, D, C Batteries	21.43 golts	1.5 volts	
Car Battery	34.286 golts	24 volts	
Household Electricity in North America	1,714.29 golts	120 volts	
Lightning Strike	2,142,857,142.86 golts	150,000,000 volts	

EXPLANATIONS AND ORIGINS:

The golt, the derived unit for electric potential. The golt, like the volt, is a small unit. The "grape volt" is a simple name and is unique in the SG system in that it has a fairly simply and uninspired name. It is literally just the voltage of something on the grape scale. "Golt" is pretty fun to say though, isn't it?

GRAIL

DERIVED ELECTRICAL UNIT: CONDUCTANCE

GENERAL INFORMATION	DEFINITION
FULL NAME: grail **SHORTHAND:** grail **SYMBOL:** gL **S. NOTATION:** 1 grail, 1gL **M. NOTATION:** 2 grails, 2gL	1. $\frac{1}{\text{Dio}}$ 2. $\frac{\text{grel}}{\text{golt}}$

EQUIVALENTS of 1 Grail:

SI	U.S. CUSTOMARY
0.19060805 millisiemens	
0.00019060805 siemens	
0.00000019060805 kilosiemens	

CONVERSION FACTORS:

Siemens to Grails

$$\text{grail} = \frac{\text{siemens}}{0.00019060805}$$

Grails to Siemens

$$\text{siemens} = 0.00019060805 \cdot \text{grail}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
1 m of Copper	312,683,540,910.26 grails	59.6×10^6 siemens	
1 m of Aluminum	197,788,078,730.15 grails	37.7×10^6 siemens	
1 m of Zinc	87,089,711,058.90 grails	16.6×10^6 siemens	
1 m of Platinum	50,679,916,194.52 grails	9.66×10^6 siemens	
1 m of Gallium	35,570,375,962.61 grails	6.78×10^6 siemens	

EXPLANATIONS AND ORIGINS:

The grail, the derived unit of conductance. This unit gets its name in a similar fashion to the "chalice", in that it is named for how much of something can be stored or held in something else. A grail, like a chalice, is medieval drinking glass used by royalty and other social elite of the time, befitting of the exclusive and inane nature of the SG system.

GRESS

DERIVED ELECTRICAL UNIT: ENERGY, HEAT, WORK

GENERAL INFORMATION

FULL NAME: grape press
SHORTHAND: gress
SYMBOL: gP
S. NOTATION: 1 grape press, 1 gress, 1gP
M. NOTATION: 2 grape presses, 2 gresses, 2gP

DEFINITIONS

1. grape·Wine
2. Chalice·golt
3. Raisin·grecond

EQUIVALENTS of 1 Gress:

SI	U.S. CUSTOMARY
4.4937758×10^{17} millijoules	3.313994×10^{14} foot-pounds
4.4937758×10^{14} joules	
4.4937758×10^{11} kilojoules	

CONVERSION FACTORS:

Joules to Gress

$$\text{gress} = \frac{\text{joule}}{4.4937758 \times 10^{14}}$$

Foot-pounds to Gress

$$\text{gress} = \frac{\text{foot-pound}}{3.313994 \times 10^{14}}$$

Gress to Joules

$$\text{joule} = 4.4937758 \times 10^{14} \cdot \text{gress}$$

Gress to Foot-pounds

$$\text{foot-pound} = 3.313994 \times 10^{14} \cdot \text{gress}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
One Thermochemical Calorie	$9.3106559 \times 10^{-15}$ gresses	4.184 joules	3.08596 foot-pounds
1 kilowatt-hour	$8.01108057 \times 10^{-9}$ gresses	3.6×10^{6} joules	2,655,223.737 foot-pounds
1 megaton of TNT	9.31065586316 gresses	4.184×10^{15} joules	3.08×10^{15} foot-pounds
Energy of Yellowstone Supervolcano	1846.99913155 gresses	8.3×10^{17} joules	6.12×10^{17} foot-pounds
Energy Produced by the Sun every Second	845,614,060,230 gresses	3.8×10^{26} joules	2.8×10^{26} foot-pounds

EXPLANATIONS AND ORIGINS:

The gress, the derived unit of energy. The name "gress" comes from shorting "grape press", which is not the unit of pressure like one may think. It is instead named for the amount of energy needed to perform the action of squishing grapes, as opposed to the state of being squished that the Squish unit represents.

RAISIN

DERIVED ELECTRICAL UNIT: POWER

GENERAL INFORMATION	DEFINITIONS
FULL NAME: Raisin **SHORTHAND:** Raisin **SYMBOL:** R **S. NOTATION:** 1 Raisin, 1R **M. NOTATION:** 2 Raisins, 2R	1. $\frac{\text{gress}}{\text{grecond}}$ 2. golt·grel

EQUIVALENTS of 1 Raisin:

SI	U.S. CUSTOMARY
6.7360004×10^{27} milliwatts	
6.7360004×10^{24} watts	
6.7360004×10^{21} kilowatts	

CONVERSION FACTORS:

Watts to Raisins

$$\text{raisin} = \frac{\text{watt}}{6.7360004 \times 10^{24}}$$

Raisins to Watts

$$\text{watt} = 6.7360004 \times 10^{24} \cdot \text{raisin}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Average Halogen Lightbulb	$1.3361044 \times 10^{-23}$ Raisins	90 watts	
Average LED Lightbulb	$8.9073629 \times 10^{-25}$ Raisins	6 watts	
Power used in the Human Brain	$1.7814726 \times 10^{-24}$ Raisins	12 watts	
Power used in High-Quality Blenders	$2.2268407 \times 10^{-22}$ Raisins	1500 watts	
Power of the Sun	57.0961961344 Raisins	3.846×10^{26} watts	

EXPLANATIONS AND ORIGINS:

The Raisin, the derived unit of power. The Raisin was one of the first derived units developed, alongside units like the Wine and Smuck. As raisins are simply dried out grapes left exposed to heat, it seems appropriate that the name is representative energy flowing over time, given the process needed to create real raisins in the first place.

SMUCK

DERIVED ELECTRICAL UNIT: ELECTRIC CHARGE

GENERAL INFORMATION	DEFINITIONS
FULL NAME: Smucker **SHORTHAND:** Smuck **SYMBOL:** Sm **S. NOTATION:** 1 Smucker, 1 Smuck, 1Sm **M. NOTATION:** 2 Smuckers, 2 Smucks, 2Sm	1. grel · grecond 2. Chalice · golt

EQUIVALENTS of 1 Smuck:

SI	U.S. CUSTOMARY
2.45×10^{-5} millicoulombs	
2.45×10^{-8} Coulombs	
2.45×10^{-11} kilocoulombs	

CONVERSION FACTORS:

Coulombs to Smucks

$$\text{smuck} = \frac{\text{coulomb}}{2.45 \times 10^{-8}}$$

Smucks to Coulombs

$$\text{coulomb} = 2.45 \times 10^{-8} \cdot \text{smuck}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Charge of Static Electricity	122.4489796 Smucks	3×10^{-6} Coulombs	
Charge of Lightning	612,244,897.959 Smucks	15 Coulombs	
Charge of Average AA Battery	204,081,632,653 Smucks	5000 Coulombs	
Charge of Average Smartphone Battery	440,816,326,531 Smucks	10,800 Coulombs	
One Ampere Hour	146,938,775,510 Smucks	3600 Coulombs	

EXPLANATIONS AND ORIGINS:

The Smuck, the derived unit of electric charge. This unit's name has no real association with the quantity it represents, sadly. It was used to simply add to the humor of the SG system as a whole. This unit's name, "Smucker" is obviously a direct reference to the Smucker company, a brand of fruit products known for its jellies and jams.

GROE

DERIVED PHOTOELECTRIC UNIT: LUMINOUS FLUX

GENERAL INFORMATION	DEFINITION
FULL NAME: groe **SHORTHAND:** groe **SYMBOL:** gO **S. NOTATION:** 1 groe, 1gO **M. NOTATION:** 2 groes, 2gO	Green · concordian

EQUIVALENTS of 1 Groe:

SI	U.S. CUSTOMARY
0.01851851852 lumens	

CONVERSION FACTORS:

Lumens to Groes

$$\text{groe} = \frac{\text{lumen}}{0.01851851852}$$

Groes to Lumens

$$\text{lumens} = 0.01851851852 \cdot \text{groe}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
90 lumen lightbulb	4,860 groes	90 lumens	
200 lumen lightbulb	10,800 groes	200 lumens	
1100 lumen lightbulb	59,400 groes	1,100 lumens	
2400 lumen lightbulb	129,600 groes	2,400 lumens	
4000 lumen lightbulb	216,000 groes	4,000 lumens	

EXPLANATIONS AND ORIGINS:

The groe, the derived unit of luminous flux. This unit gets its name as an intentional corruption of "grow", as grapes grow and ripen, they get larger and ready for consumption, similar to how objects glow brighter as more electricity is pumped into them. The name is also (albeit unintentionally) a subtle corruption and rhyme to "glow".

SPROUT

DERIVED PHOTOELECTRIC UNIT: ILLUMINANCE

GENERAL INFORMATION	DEFINITION
FULL NAME: sprout **SHORTHAND:** sprout **SYMBOL:** Sp **S. NOTATION:** 1 sprout, 1Sp **M. NOTATION:** 2 sprouts, 2Sp	$\frac{groe}{grape^2}$

EQUIVALENTS of 1 Sprout:

SI	U.S. CUSTOMARY
0.0074074 millilux	
0.0000074074 lux	
0.0000000074074 kilolux	

CONVERSION FACTORS:

Lux to Sprouts

$$\text{sprout} = \frac{\text{lux}}{0.0000000074074}$$

Sprouts to Lux

$$\text{lux} = 0.0000000074074 \cdot \text{sprout}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Full Moon on Clear Night	6,750.01 sprouts	0.05 lux	
Office Hallway Light	10,800,010.8 sprouts	80 lux	
Overcast Sky	13,500,013.5 sprouts	100 lux	
Sunrise/Sunset	54,000,054 sprouts	400 lux	
Direct Sunlight	6,750,006,750.01 sprouts	50,000 lux	

EXPLANATIONS AND ORIGINS:

The sprout, the derived unit for illuminance. This unit is named as such as a reference to how grapes, like any other plants, grow and develop. While sprouts, saplings, and such don't have any clear reference or connection to light, one could make a connection in how the lighting and energy of objects displays a reference to how plants require light to mature.

BACH

DERVIED MAGNETIC UNIT: MAGNETIC INDUCTION

GENERAL INFORMATION

FULL NAME: Bacchus
SHORTHAND: Bach
SYMBOL: B
S. NOTATION: 1 Bacchus, 1 Bach, 1B
M. NOTATION: 2 Bacchuses, 2 Bachs, 2B

DEFINITIONS

1. $golt \cdot \frac{grecond}{grape^2}$
2. $\frac{Lib}{grape^2}$
3. $\frac{Wine}{grel * grape}$

EQUIVALENTS of 1 Bach:

SI	U.S. CUSTOMARY
3.0591068×10^{16} milliteslas	
3.0591068×10^{13} teslas	
3.0591068×10^{10} kiloteslas	

CONVERSION FACTORS:

Tesla to Bachs

$$\text{Bach} = \frac{\text{tesla}}{3.0591068 \times 10^{13}}$$

Bachs to Tesla

$$\text{Tesla} = 3.0591068 \times 10^{13} \cdot \text{Bach}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
One Gauss	3.268928×10^{-18} Bachs	0.0001 teslas	
Human Brain	3.268928×10^{-26} Bachs	1×10^{-12} teslas	
Microwave Oven	$1.9613568 \times 10^{-19}$ Bachs	6×10^{-6} teslas	
Neodymium Magnet	$4.5764993 \times 10^{-14}$ Bachs	1.4 teslas	
Strength of an MRI	$9.8067841 \times 10^{-14}$ Bachs	3 teslas	

EXPLANATIONS AND ORIGINS:

The Bach, the derived unit of magnetic induction. The "Bach" is one of the so-called "Deific Units" of the SG system; ones named in honor of various wine deities from Greek and Roman mythology. Bacchus was the Roman god of agriculture and wine, and as this unit represents the amount of magnetic strength in something, it makes sense to name in honor of someone who is known to hold their drink inside themselves quiet well.

LIBER

DERIVED MAGNETIC UNIT: MAGNETIC FLUX

GENERAL INFORMATION	DEFINITIONS
FULL NAME: Liber **SHORTHAND:** Liber **SYMBOL:** L **S. NOTATION:** 1 Liber, 1L **M. NOTATION:** 2 Libers, 2L	1. $\frac{\text{gress}}{\text{grel}}$ 2. $\text{bach} \cdot \text{grape}^2$

EQUIVALENTS of 1 Liber:

SI	U.S. CUSTOMARY
1.2236427×10^{15} milliweber	
1.2236427×10^{12} weber	
1.2236427×10^{9} kiloweber	

CONVERSION FACTORS:

Webers to Libs

$$\text{liber} = \frac{\text{weber}}{1.2236427 \times 10^{12}}$$

Libs to Webers

$$\text{weber} = 1.2236427 \times 10^{12} \cdot \text{liber}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
6 microwebers	4.9×10^{-18} libers	0.000006 webers	
2 milliwebers	1.63×10^{-15} libers	0.002 webers	
3 webers	2.45×10^{-12} libers	3 webers	
17 kilowebers	1.39×10^{-8} libers	17,000 webers	
5 megawebers	4.09×10^{-6} libers	5,000,000 webers	

EXPLANATIONS AND ORIGINS:

The Liber, the derived unit of magnetic flux. The "Liber" is one of the so-called "Deific Units" of the SG system; ones named in honor of various wine deities from Greek and Roman mythology. Liber was another name for Bacchus, the Roman god of wine. The Liber is an extremely small unit, so its practical uses require immense orders of magnitude.

GRACT

DERIVED RADIOACTIVITY UNIT: CATALYTIC ACTIVITY

GENERAL INFORMATION	DEFINITION
FULL NAME: Grape Activation Unit **SHORTHAND:** gract **SYMBOL:** grt **S. NOTATION:** 1 Grape Activation Unit, 1 gract, 1grt **M. NOTATION:** 2 Grape Activation Units, 2 gracts, 2grt	$\frac{\text{bunch}}{\text{grecond}}$

EQUIVALENTS of 1 Gract:

SI	U.S. CUSTOMARY
$2.928692798 \times 10^{-7}$ millikatals	
$2.928692798 \times 10^{-10}$ katals	
$2.928692798 \times 10^{-13}$ kilokatals	

CONVERSION FACTORS:

Katals to Gracts

$$\text{gract} = \frac{\text{katal}}{2.928692798 \times 10^{-10}}$$

Gracts to Katals

$$\text{katals} = 2.928692798 \times 10^{-10} \cdot \text{gract}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
1 katal	3,414,492,638.77 gracts	1 katal	
2 katals	6,828,985,277.55 gracts	2 katals	
3 katals	10,243,477,916.32 gracts	3 katals	
4 katals	13,657,970,555.09 gracts	4 katals	
5 katals	17,072,463,193.87 gracts	5 katals	

EXPLANATIONS AND ORIGINS:

The gract, the derived unit of catalytic activity. This odd unit, like the obscure katal, measures catalytic activity of substances, meaning the number of enzymes catalyzing a given number of moles of any substrate per one second/grecond of time. The "grape activation unit" earns its simple name as it is the amount of energy being used to start a reaction.

ROT

DERIVED RADIOACTIVITY UNIT: RADIOACTIVITY

GENERAL INFORMATION	DEFINITION
FULL NAME: rot **SHORTHAND:** rot **SYMBOL:** rot **S. NOTATION:** 1 rot, 1rot **M. NOTATION:** 2 rots, 2rot	$\frac{1}{\text{grecond}}$

EQUIVALENTS of 1 Rot:

SI	U.S. CUSTOMARY
14,989,622,684215.72 millibecquerel	
14,989,622,684.21572 becquerel	
14,989,622.68421572 kilobecquerel	

CONVERSION FACTORS:

Becquerels to Rots

$$\text{rot} = \frac{\text{becqurel}}{14{,}989{,}622{,}684.21572}$$

Rots to Becquerels

$$\text{becquerel} = 14{,}989{,}622{,}684.21572 \cdot \text{rot}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Amount of potassium-40 in the Human Body	$2.93536408 \times 10^{-7}$ rots	4400 becquerels	
Amount of cabon-14 on Earth	567,058,970 rots	8.5×10^{18} becquerels	
Nuclear Explosion	5.3370256×10^{14} rots	8×10^{24} becquerels	
One Rutherford	0.00006671282 rots	1,000,000 becquerels	
One Curie	2.46837434 rots	37,000,000,000 becquerels	

EXPLANATIONS AND ORIGINS:

The rot, the derived unit of radioactivity. This unit is equal to the reciprocal grecond, indicating something decays as a rate of 1 disintegration per an amount of greconds. The name “rot” comes from the idea that radioactivity is something decaying and breaking down, which a rotting, decaying fruit is certainly similar to, thus the name.

SOUR

DERIVED RADIOACTIVITY UNIT: ABSORBED DOSE

GENERAL INFORMATION	DEFINITION
FULL NAME: sour **SHORTHAND:** sour **SYMBOL:** Sr **S. NOTATION:** 1 sour, 1Sr **M. NOTATION:** 2 sours, 2Sr	The diameter of an average-sized Concord Grape

EQUIVALENTS of 1 Sour:

SI	U.S. CUSTOMARY
$8.9800393546 \times 10^{18}$ milligrays	
$8.9800393546 \times 10^{15}$ grays	
$8.9800393546 \times 10^{12}$ kilograys	

CONVERSION FACTORS:

Grays to Sours

$$\text{sour} = \frac{\text{gray}}{8.9800393546 \times 10^{15}}$$

Sours to Grays

$$\text{gray} = 8.9800393546 \times 10^{15} \cdot \text{sour}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Dose for Treating Tumors	6.75×10^{-15} sours	60 grays	
Dose for Treating Lymphomas	2.25×10^{-15} sours	20 grays	
Dose for Treating Breast Cancer	6.75×10^{-16} sours	2 grays	
Dose from Abdominal CT Scan	8.99×10^{-19} sours	0.008 grays	
Dose for Pelvic CT Scan	6.74×10^{-19} sours	0.006 grays	

EXPLANATIONS AND ORIGINS:

The sour, the derived unit of absorbed dose of radiation. As absorbing radiation is obviously quite a bad thing, this unit deserved a name befitting of its nature. As radiation can destroy biological life on a cellular level, it earned the name “sour”, similar to how grapes left out too long often rot and turn sour themselves, just like things exposed to radiation.

SWETE

DERIVED RADIOACTIVITY UNIT: EQUIVALENT DOSE

GENERAL INFORMATION	DEFINITION
FULL NAME: swete **SHORTHAND:** swete **SYMBOL:** Sw **S. NOTATION:** 1 swete, 1Sw **M. NOTATION:** 2 swetes, 2Sw	$\frac{\text{gress}}{\text{grass}}$

EQUIVALENTS of 1 Grape:

SI	U.S. CUSTOMARY
$8.900393546 \times 10^{18}$ millisieverts	
$8.900393546 \times 10^{15}$ sieverts	
$8.900393546 \times 10^{12}$ kilosieverts	

CONVERSION FACTORS:

Sieverts to Swetes

$$\text{swete} = \frac{\text{sievert}}{8.900393546 \times 10^{15}}$$

Swetes to Sieverts

$$\text{sievert} = 8.900393546 \times 10^{15} \cdot \text{swete}$$

EXAMPLES OF MEASUREMENTS:

EXAMPLE	SG	SI	U.S. CUSTOMARY
Banana	1.1×10^{-23} swetes	9.8×10^{-8} sieverts	
Airport Security Screening	2.81×10^{-23} swetes	2.5×10^{-7} sieverts	
Full-body CT Scan	1.69×10^{-21} swetes	0.000015 sieverts	
6-month Stay on the ISS	8.99×10^{-21} swetes	0.00008 sieverts	
Fatal acute dose to Cecil Kelley in 1958	4.04×10^{-15} swetes	36 sieverts	

EXPLANATIONS AND ORIGINS:

The Swete, the derived unit for equivalent dose. This unit is named as "swete" as a corruption of "sweet". The choice to intentionally misspell it is purely for comedic effect and serves no real practical use. The swete, like the sievert, is an incredibly small unit and thus higher orders of magnitudes should be used in practical applications of this unit.

DERIVED SG QUANTITIES

A BRIEF RUNDOWN

Now as well know, these units are meaningless until they are used for something. Sure, measuring important quantities and values is vital, it's why they do that in the first place anyway. However, there are other quantities that can be formed from both base and derived units. There are "derived quantities", not units per say but rather values and other "units" that measure more complex things in the world and are formed from combining various units in complex and intriguing ways.

Obviously, these quantities are nothing new nor are they unique to the SG System, ever system of units employs all of these quantities and the values and physical things these quantities describe don't change; it is simply the units being used that change. Therefore, the quantities presented in this guidebook are the same used across the world, they simply are being expressed in their equivalent SG units.

The following pages contain various tables that detail many of these derived quantities. Obviously, there are many more that exist that did not make it to this guidebook, and I invite anyone insane enough to derive these additional quantities themselves. The following tables are grouped into sections, those being: Kinematic Quantities, Mechanical Quantities, Molecular Quantities, Electromagnetic Quantities, Photometric Quantities, and Thermodynamic Quantities. These tables show the quantity being described and compare the SG and SI definitions of that quantity, presented both in written name and unit symbolization.

KINEMATIC SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
speed, velocity	grape per grecond	$g \cdot gS^{-1}$	$grape \cdot grecond^{-1}$	$m \cdot s^{-1}$
acceleration	grape per grecond squared	$g \cdot gS^{-2}$	$grape \cdot grecond^{-2}$	$m \cdot s^{-2}$
jerk, jolt	grape per grecond cubed	$g \cdot gS^{-3}$	$grape \cdot grecond^{-3}$	$m \cdot s^{-3}$
snap, jounce	grape per grecond to the fourth	$g \cdot gS^{-4}$	$grape \cdot grecond^{-4}$	$m \cdot s^{-4}$
angular velocity	grangle per grecond	$gra \cdot gS$	$grangle \cdot grecond^{-1}$	$rad \cdot s^{-1}$
angular acceleration	grangle per grecond squared	$gra \cdot gS^{-2}$	$grangle \cdot grecond^{-2}$	$rad \cdot s^{-2}$
frequency drift	gounce per grecond	$gb \cdot gS^{-1}$	$gounce \cdot grecond^{-2}$	$Hz \cdot s^{-1}$
volumetric flow	cubic grape per grecond	$g^3 \cdot gS^{-1}$	$grape^3 \cdot grecond^{-1}$	$m^3 \cdot s^{-1}$

MECHANICAL SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
area	square grape	g^2	$grape^2$	m^2
volume	cubic grape	g^3	$grape^3$	m^3
momentum, impulse	Wine-grecond	$W \cdot gS$	$Wine \cdot grecond$	$N \cdot s$
angular momentum	Wine grape grecond	$W \cdot g \cdot gS$	$Wine \cdot grape \cdot grecond$	$N \cdot m \cdot s$

MECHANICAL SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
torque, moment of force	Wine grape	W·g	Wine·grape	N·m
yank	Wine per grecond	W·gS^{-1}	Wine·grecond-1	N·s-1
wavenumber, optical power, curvature, spatial frequency	reciprocal grape	g^{-1}	grape^{-1}	m^{-1}
area density	grass per square grape	gM·g^{-2}	grass·grape^{-2}	kg·m-2
density, mass density	grass per cubic grape	gM·g^{-3}	grass·grape^{-3}	kg·m-3
specific volume	cubic grape per grass	g^{3}·gM-1	grape^{3}·grass-1	m^{-3}·kg^{-1}
action	gress-grecond	gP·gS	gress·grecond	J·s
specific energy	gress per grass	gP·gM^{-1}	gress·grass^{-1}	J·kg-1
energy density	gress per cubic grape	gP·g^{-3}	gress·grape^{-3}	J·m-3
surface tension, stiffness	Wine per grape	W·g^{-1}	Wine·grape-1	N·m-1
heat flux density, irradiance	Raisin per square grape	R·g^{-2}	raisin·grape^{-2}	W·m^{-2}
kinematic viscosity, thermal diffusivity, diffusion coefficient	square grape per grecond	g^{2}·gS^{-1}	grape^{2}·grecond-1	m^{2}·s^{-1}
dynamic viscosity	Squish-second	Q·Gs	squish·grecond	Pa·s
linear mass density	grass per grape	gM·g^{-1}	grass·grape^{-1}	kg·m^{-1}

MECHANICAL SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
mass flow rate	grass per grecond	gM·gS^{-1}	grass·grecond^{-1}	kg·s^{-1}
radiance	Raisin per concordian square grape	R·(con·g^{2})$^{-1}$	raisin·(concordian·grape^{2})$^{-1}$	W·(sr·m^{2})$^{-1}$
spectral radiance	Raisin per concordian cubic grape	R·(con·g^{3})$^{-1}$	raisin·(concordian·grape^{3})$^{-1}$	W·(sr·m^{3})$^{-1}$
spectral power	Raisin per grape	R·g^{-1}	raisin·grape^{-1}	W·m^{-1}
absorbed dose rate	Sour per grecond	Sr·gs^{-1}	Sour·grecond^{-1}	Gy·s^{-1}
fuel efficiency	grape per cubic grape	g·g^{-3}	grape·grape^{-3}	m·m^{-3}
spectral irradiance, power density	Raisin per concordian square grape	R·g^{-3}	raisin·grape^{-3}	W·m^{-3}
energy flux density	gress per square grape grecond	gP·(g^{2}·gS)$^{-1}$	gress·(grape^{2}·grecond)$^{-1}$	J·(m^{2}·s)$^{-1}$
compressibility	Reciprocal squish	Q^{-1}	squish^{-1}	Pa^{-1}
radiant exposure	gress per square grape	gP·g^{-2}	gress·grape^{-2}	J·m^{-2}
moment of inertia	grass square grape	gM·g^{2}	grass·grape^{2}	kg·m^{2}
specific angular momentum	Wine grape second per grass	W·g·gS·gM^{-1}	Wine·grape·grecond·grass^{-1}	N·m·s·kg^{-1}
radiant intensity	Raisin per concordian	R·con^{-1}	raisin·concordian^{-1}	W·sr^{-1}
spectral intensity	Raisin per concordian grape	R· (con·g)$^{-1}$	raisin·(concordian·grape)$^{-1}$	W·(sr·m)$^{-1}$

MOLECULAR SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
molarity, amount of substance concentration	bunch per cubic grape	$Bn \cdot g^{-3}$	$bunch \cdot grape^{-3}$	$mol \cdot m^{-3}$
molar volume	cubic grape per bunch	$grape^{3} \cdot Bn^{-1}$	$grape^{3} \cdot bunch^{-1}$	$m^{3} \cdot mol^{-1}$
molar heat capacity, molar entropy	Raisin per Vine bunch	$R \cdot (V \cdot Bn)^{-1}$	$Raisin \cdot (Vine \cdot bunch)^{-1}$	$J \cdot (K \cdot mol)^{-1}$
molar energy	Raisin per bunch	$R \cdot Bn^{-1}$	$Raisin \cdot bunch^{-1}$	$J \cdot mol^{-1}$
molar conductivity	grail square grape per bunch	$gL \cdot g^{2} \cdot Bn^{-1}$	$grail \cdot grape^{2} \cdot bunch^{-1}$	$S \cdot m^{2} \cdot mol^{-1}$
molality	bunch per grass	$Bn \cdot gM^{-1}$	$bunch \cdot grass^{-1}$	$mol \cdot kg^{-1}$
molar mass	grass per bunch	$gM \cdot Bn^{-1}$	$grass \cdot bunch^{-1}$	$kg \cdot mol^{-1}$
catalytic efficiency	cubic grape per bunch grecond	$g^{3} \cdot (Bn \cdot gS)^{-1}$	$grape^{3} \cdot (bunch \cdot grecond)^{-1}$	$m^{3} \cdot (mol \cdot s)^{-1}$

ELECTROMAGNETIC SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
electric displacement field, polarization density	Smuck per square grape	$Sm \cdot g^{-2}$	$Smuck \cdot grape^{-2}$	$C \cdot m^{-2}$
electric charge density	Smuck per cubic grape	$Sm \cdot g^{-3}$	$Smuck \cdot grape^{-3}$	$C \cdot m^{-3}$
electric current density	grel per square grape	$gE \cdot g^{-3}$	$grel \cdot grape^{-3}$	$A \cdot m^{-2}$
electrical conductivity	grail per grape	$gL \cdot g^{-1}$	$grail \cdot grape^{-1}$	$S \cdot m^{-1}$
permittivity	Chalice per grape	$C \cdot g^{-1}$	$Chalice \cdot grape^{-1}$	$F \cdot m^{-1}$

ELECTROMAGNETIC SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
magnetic permeability	Flush per grape	$F \cdot g^{-1}$	$Flush \cdot grape^{-1}$	$H \cdot m^{-1}$
electric field strength	golt per grape	$gV \cdot g^{-1}$	$golt \cdot grape^{-1}$	$V \cdot m^{-1}$
magnetization, magnetic field strength	grel per grape	$gE \cdot g^{-1}$	$grail \cdot grape^{-1}$	$A \cdot m^{-1}$
exposure (X/Gamma ray)	Smuck per grass	$Sm \cdot gM^{-1}$	$Smuck \cdot grass^{-1}$	$C \cdot kg^{-1}$
resistivity	Dio grape	$D \cdot g$	$Dio \cdot grape$	$\Omega \cdot m$
linear charge density	Smuck per grape	$S \cdot g^{-1}$	$Smuck \cdot grape^{-1}$	$C \cdot m^{-1}$
magnetic diploe moment	gress per Bach	$gp \cdot Bc^{-1}$	$gress \cdot Bach^{-1}$	$J \cdot T^{-1}$
electron mobility	square grape per golt grecond	$g^2 \cdot (gV \cdot gS)^{-1}$	$grape^2 \cdot (golt \cdot grecond)^{-1}$	$m^2 \cdot (V \cdot s)^{-1}$
magnetic reluctance	Reciprocal Flush	F^{-1}	$Flush^{-1}$	H^{-1}
magnetic vector potential	Liber per grape	$L \cdot g^{-1}$	$Liber \cdot grape^{-1}$	$Wb \cdot m^{-1}$
magnetic rigidity	Bach grape	$Bc \cdot g$	$Bach \cdot grape$	$T \cdot m$
magnetomotive force	grel grangle	$gE \cdot gra$	$grel \cdot grangle$	$A \cdot rad$
magnetic susceptibility	grape per Flush	$g \cdot F^{-1}$	$grape \cdot Flush^{-1}$	$m \cdot H^{-1}$

PHOTOMETRIC SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
luminous energy	groe-grecond	gO·Gs	groe·grecond	lm·s
luminous exposure	Sprout-grecond	Sp·gs	sprout·grecond	lx·s
luminance	green per square grape	$gR \cdot g^{-2}$	$green \cdot grape^{-2}$	$cd \cdot m^{-2}$
luminous efficacy	groe per raisin	$gO \cdot R^{-1}$	$green \cdot Raisin^{-1}$	$lm \cdot W^{-1}$

THERMODYNAMIC SG DERIVED QUANTITIES:

QUANTITY	NAME	SG SYMBOL	FULL WRITTEN DEFINITION	SI SYMBOL
heat capacity, entropy	gress per Vine	$gP \cdot V^{-1}$	$gress \cdot Vine^{-1}$	$J \cdot K^{-1}$
specific heat capacity, specific entropy	gress per grass Vine	$gP \cdot (V \cdot gM)^{-1}$	$gress \cdot (Vine \cdot grass)^{-1}$	$J \cdot (K \cdot kg)^{-1}$
thermal conductivity	Raisin per grape Vine	$R \cdot (g \cdot V)^{-1}$	$Raisin \cdot (grape \cdot Vine)^{-1}$	$W \cdot (m \cdot K)^{-1}$
thermal resistance	Vine per Raisin	$V \cdot R^{-1}$	$Vine \cdot Raisin^{-1}$	$K \cdot W^{-1}$
thermal expansion coefficient	reciprocal Vine	V^{-1}	$Vine^{-1}$	K^{-1}
temperature gradient	Vine per grape	$V \cdot g^{-1}$	$Vine \cdot grape^{-1}$	$K \cdot m^{-1}$

SG CONSTANTS

A BRIEF RUNDOWN

A physical constant, sometimes known as a "fundamental physical constant" or a "universal constant", is a physical quantity that is generally believed to be both universal in nature and have constant notation in time. There are many physical constants in science, some of the most widely recognized being the speed of light in vacuum c, the gravitational constant G, the Planck constant h, the electric constant ε_0, and the elementary charge *e*. Physical constants can take many dimensional forms: the speed of light signifies a maximum speed for any object and its dimension is length divided by time; while the fine-structure constant α, which characterizes the strength of the electromagnetic interaction, is dimensionless.

The following pages contain tables listing various fundamental constants in science converted into their SG equivalents. The tables compare the SG, SI, and U.S. Customary values of each constant shown. Tables are grouped into sections, with each section's respective contestants within. The sections are Astronomical Constants, Electrical Constants, Molecular Constants, and Miscellaneous Constants.

ASTRONOMICAL CONSTANTS:

CONSTANT	SG NOTATION	SI NOTATION	U.S CUSTOMARY NOTATION
Acceleration due to Gravity	2.1823519 x 10^{-18} grapes·grecond^{-2}	9.807 m·s^{-2}	32.174 ft·s^{-2}
Speed of Light	1 grape·grecond^{-1}	299,792,458 m·s^{-1}	983,571,056.43044 ft·s^{-1}
Astronomical Unit	7.48 x 10^{12} grapes	1.496 x 10^{11} m	9.296 x 10^{7} mi
Lightyear	4.7305 x 10^{17} grapes	9.461 x 10^{15} m	3.104 x 10^{16} ft
Parsec	1.543 x 10^{18} grapes	3.086 x 10^{16} m	1.012 x 10^{17} ft
Boltzmann Constant	5.29745084247 $\frac{\text{grass}}{\text{V}} \cdot \frac{\text{grape}^2}{\text{grecond}^2}$	1.381 x 10^{-23} J·K^{-1}	5.657301651×10^{-24} ft-lb/°R
Stefan-Boltzmann Constant	4.4547233 x 10^{-47} Raisin·grape^{-2}·Vine^{-4}	5.670374419 x 10^{-8} w·m^{-2}·K^{-4}	5.670374419 x 10^{-8} w·m^{-2}·K^{-4}
Gravitational Constant	1.856478925 x 10^{-28} $\frac{\text{grape}^3}{\text{grass}\cdot\text{grecond}^2}$	6.674 x 10^{-11} m^3·kg^{-1}·s^{-2}	6.674 x 10^{-11} m^3·kg^{-1}·s^{-2}
Mass of the Earth	1.1944 x 10^{27} grasses	5.972 x 10^{24} kg	1.317 x 10^{25} lbs
Mass of the Sun	3.978 x 10^{32} grasses	1.989 x 10^{30} kg	4.385 x 10^{30} lbs

ELECTRICAL CONSTANTS:

CONSTANT	SG NOTATION	SI NOTATION	U.S CUSTOMARY NOTATION
Faraday Constant	897,078,703,919 S·Bn^{-1}	96485.3 C·mol^{-1}	96485.3 C·mol^{-1}
Coulomb Constant	6.0025002 x 10^{-16} wine·grape^2·smuck^{-2}	8.9875517923 x 10^9 N·m^2·C^{-2}	8.9875517923 x 10^9 N·m^2·C^{-2}
Hall Effect Constant	4.9020128992 dios	25812.807 ohms	25812.807 ohms
Impedance of Free Space	0.07180783316 dios	376.730313668 ohms	376.730313668 ohms
Hartree Energy	9.7 x 10^{-33} gresses	4.359744722 x 10^{-18} J	4.359744722 x 10^{-18} J

MOLECULAR CONSTANTS:

CONSTANT	SG NOTATION	SI NOTATION	U.S CUSTOMARY NOTATION
Avogadro's Number	6.022×10^{23} mol^{-1}	6.022×10^{23} mol^{-1}	6.022×10^{23} mol^{-1}
Elementary Charge	6.54×10^{-12} smucks	1.602×10^{-19} C	1.602×10^{-19} C
Mass of Electron	1.8218×10^{-28} grasses	9.109×10^{-31} kg	2.008×10^{-30} lbs
Mass of Neutron	3.35×10^{-25} grasses	$1.6749274 \times 10^{-27}$ kg	3.692583×10^{-27} lbs
Mass of Proton	3.346×10^{-25} grasses	1.673×10^{-27} kg	3.688×10^{-27} lbs
Dalton (Atomic Mass Unit)	3.32×10^{-25} grasses	$1.6605391 \times 10^{-27}$ kg	3.660862×10^{-27} lbs
Bohr Radius	2.65×10^{-9} grapes	5.29×10^{-11} m	1.73556×10^{-10} ft

MISCELLANEOUS CONSTANTS:

CONSTANT	SG NOTATION	SI NOTATION	U.S CUSTOMARY NOTATION
Absolute Zero	-526.17 Vine	0 K	-459.67 °F
Density of Water	0.015952 grass·grape^{-3}	997 g·m^{-3}	62.4 lbs·ft^{-3}
Planck's Constant	9.836802×10^{-59} gress·grecond^{-1}	6.626×10^{-34} J·s^{-1}	6.626×10^{-34} J·s^{-1}
Permeability of Free Space	7.53921×10^{-15} Wine·grel^{-2}	1.257×10^{-6} N·A^{-2}	1.257×10^{-6} N·A^{-2}
Permittivity of Free Space	$1.01190718 \times 10^{-8}$ chalice·grape^{-1}	8.854×10^{-12} F·m^{-1}	8.854×10^{-12} F·m^{-1}
Year in Seconds	4.73×10^{17} greconds	3.154×10^{7} seconds	3.154×10^{7} seconds
Hyperfine Transition	0.613266388 gounce	9,192,631,770 Hz	9,192,631,770 Hz
Magnetic Flux Quantum	1.69×10^{-27} libers	$2.067833848 \times 10^{-15}$ Wb	$2.067833848 \times 10^{-15}$ Wb

SG
CONVERSIONS

A BRIEF RUNDOWN

While the SG System is obviously the most superior and serious system of units that exists, it is nice to be able to efficiently turn SG units into other, more practical ones like SI units, and of course vice versa. While the individual unit pages contain tables with conversion factors to go between SG, SI, and in some cases US Customary units, I thought it appropriate to put all of those conversion factors into one spot to make it easier to quickly convert units across multiple systems.

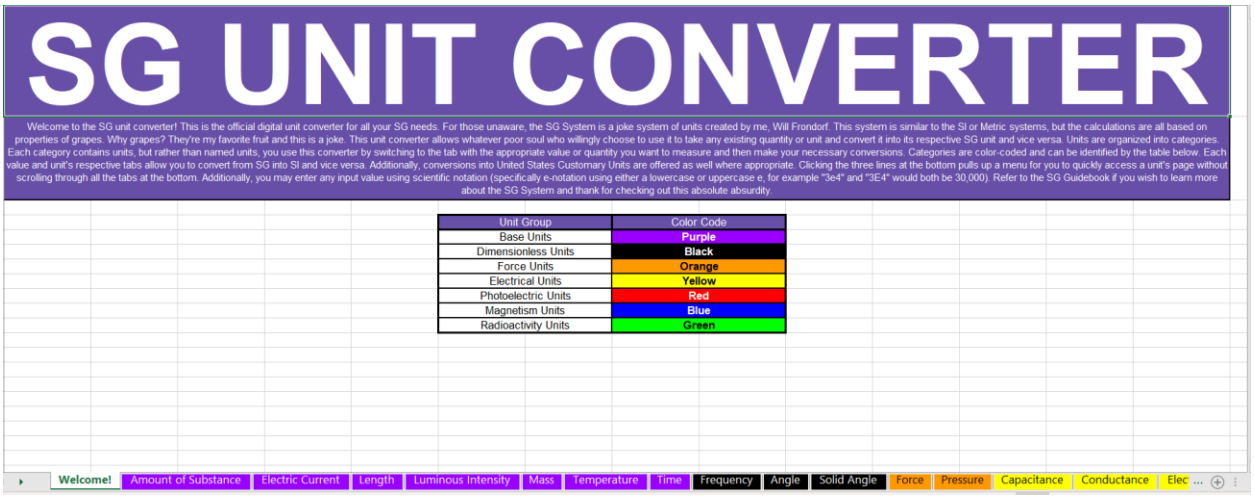
Additionally, to make working with bigger numbers even easier on you when converting. I have created a Unit Calculator in Microsoft's Excel software. You can use this to simply put in whatever SG or SI values you wish and convert them into the opposing unit system. Instructions on how to use the Calculator are all in the program itself. You can download the Excel fie for yourself by copying the URL posted in this guidebook or by scanning the QR code you'll come across later.

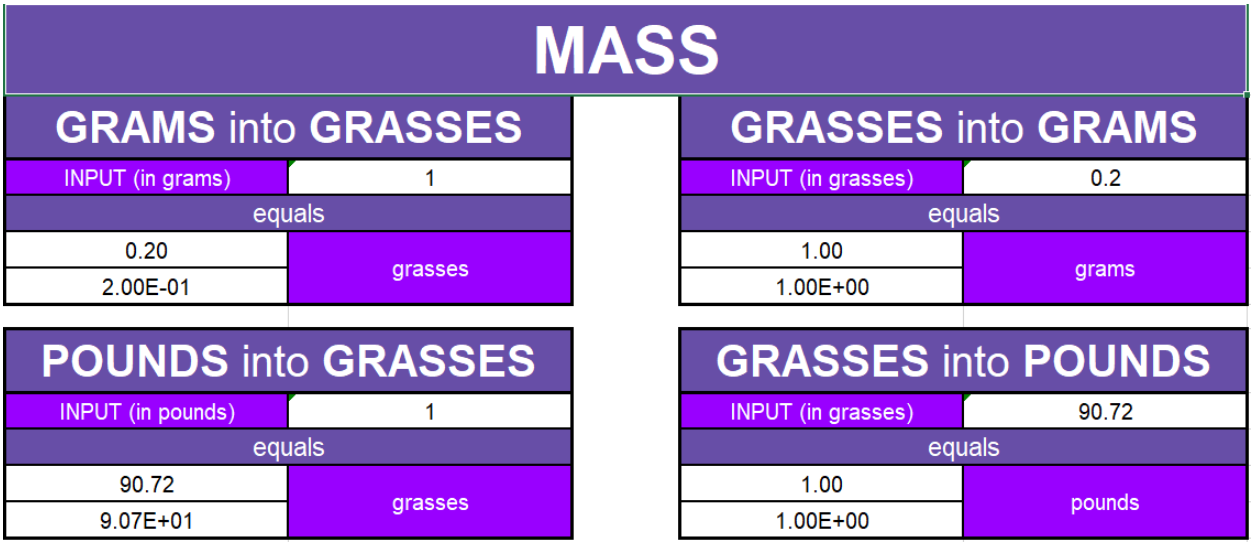
The following pages contain the conversion table and details on how to download the converter for yourself.

SG Unit		Conversion Factor		SI Unit
bunch	multiply by	0.227584583753	divide by	mole
grape		0.02		meter
grass		5		gram
green		27		candela
grel		367.245755763		ampere
grecond		6.671282×10^{-11}		second
Vine		see unit's page		kelvin
gounce	multiply by	14989622684.2157	divide by	hertz
grangle	divide by	317	multiply by	degrees
concordian		2		steradians
squish	multiply by	5.6×10^{17}	divide by	pascal
wine		22468878821500		newton
chalice	multiply by	3.5×10^{-7}	divide by	farad
dio		5246.36793947		ohm
flush		3.5×10^{-7}		flush
golt		0.07		volts
grail		1.9060805×10^{-4}		siemens
gress		4.4937758×10^{14}		joule
raisin		6.7360004×10^{24}		watt
smuck		2.45×10^{-8}		coulomb
groe	multiply by	0.01851851852	divide by	lumen
sprout		7.4074×10^{-6}		lux
bach	multiply by	3.0591068×10^{13}	divide by	tesla
liber		1.2236427×10^{12}		weber
gract	multiply by	$2.928692798 \times 10^{-10}$	divide by	katal
rot		14989622684.2157		becquerel
sour		$8.900393546 \times 10^{15}$		gray
swete		$8.900393546 \times 10^{15}$		sievert

In order to use this table, use the following process. If you start with a SG quantity, take that number and multiply it by the appropriate conversion factor to find the equivalent SI unit. If you start with a SI quantity, that that number and divide it by the appropriate conversion factor to find the equivalent SG unit. Exceptions are made for the two angle units and temperature, sorry.

To help make the use of the SG System easier, I have meticulously handcrafted a massive unit converter. This is a gigantic Excel spreadsheet that acts as a unit calculator for you to use whenever you need. This spreadsheet contains a separate sheet for each unit in the SG system. Simply input your unit into the converted and the behind-the-scenes math will do its magic and turn the number you entered into the opposing unit system. Yes. This is a thing I have made.





You can download this spreadsheet, alongside a PDF of this entire guidebook, via the Github repository I have created for the SG System. You can access the repository via this link or the corresponding QR code below: https://github.com/TheBrickEngineer/SG-System

SCAN ME

SG PREFIXES

A BRIEF RUNDOWN

While the SG system is a Base-10 system just like the SI System, the sheer scale of the SG System (both mathematically and in general absurdity) warrants use of much larger numbers across the board, with ridiculously large or small exponents coming into play quite frequently. Because of this, the pre-existing exponent prefixes are not enough to function properly when using the SG System. Thus, additional prefixes are required. This section of the guidebook details the new prefixes.

The following pages contain a pair of tables. One is the list of standard SI prefixes for positive exponents with the additional SG ones. The other is a list of standard SI prefixes for positive exponents with the additional SG ones. In both tables, the additional SG prefixes are written in bold, purple font to help distinguish them from the standard SI prefixes.

SG PREFIXES

NAME	SYMBOL	BASE 10	DECIMAL
vinna	**V**	**10^{51}**	**1,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000**
winna	**W**	**10^{39}**	**1,000,000,000,000,000,000,000,000,000,000,000,000,000**
raisa	**R**	**10^{30}**	**1,000,000,000,000,000,000,000,000,000,000**
jamma	**J**	**10^{27}**	**1,000,000,000,000,000,000,000,000,000**
yotta	Y	10^{24}	1,000,000,000,000,000,000,000,000
zetta	Z	10^{21}	1,000,000,000,000,000,000,000
exa	E	10^{18}	1,000,000,000,000,000,000
peta	P	10^{15}	1,000,000,000,000,000
tera	T	10^{12}	1,000,000,000,000
giga	G	10^{9}	1,000,000,000
mega	M	10^{6}	1,000,000
kilo	k	10^{3}	1,000
hecto	h	10^{2}	100
deca	da	10^{1}	10
-	-	10^{0}	1

These four additional SG prefixes are jamma-, raisa-, winna-, and vinna-. For example, 3 x 10^{27} grapes is 3 jammagrapes or 9 x 10^{51} raisins is 9 vinnaraisins. All four additional SG prefixes are references to food products that are created using grapes. Each one ends in the letter "a" just like all of the other positive exponent prefixes. The jamma- prefix is a reference to grape jam. Raisa- is a reference to raisins. Winna- is a reference to wine. Vinna- is intended to be a reference to grape vinegar, but it is also a subtle reference to wine again, as *vin* is the French word for wine.

SG PREFIXES

NAME	SYMBOL	BASE 10	DECIMAL
-	-	10^{0}	1
deci	d	10^{-1}	0.1
centi	c	10^{-2}	0.01
milli	m	10^{-3}	0.001
micro	μ	10^{-6}	0.000,001
nano	n	10^{-9}	0.000,000,001
pico	p	10^{-12}	0.000,000,000,001
femto	f	10^{-15}	0.000,000,000,000,001
atto	a	10^{-18}	0.000,000,000,000,000,001
zepto	z	10^{-21}	0.000,000,000,000,000,000,001
yocto	y	10^{-24}	0.000,000,000,000,000,000,000,001
jello	**j**	**10^{-27}**	**0.000,000,000,000,000,000,000,000,001**
raiso	**r**	**10^{-30}**	**0.000,000,000,000,000,000,000,000,000,001**
winno	**w**	**10^{-39}**	**0.000,000,000,000,000,000,000,000,000,000,000,001**
vinigro	**v**	**10^{-51}**	**0.000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,001**

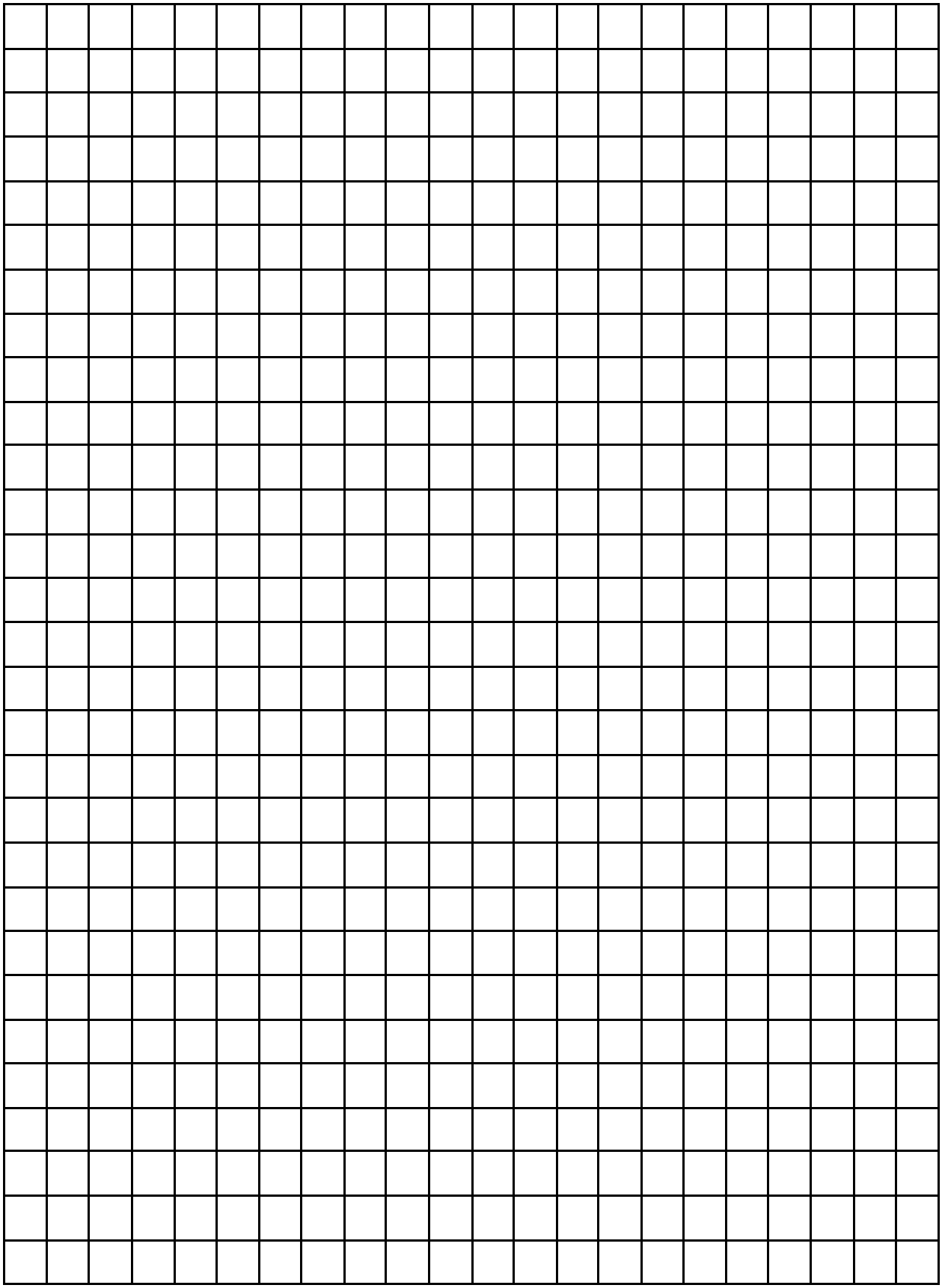
These four additional SG prefixes are jello-, raiso-, winno-, and vinigro-. For example, 6×10^{-30} grels is 6 raisogrels or 2×10^{-51} squish is 2 vinigrosquish. All four additional SG prefixes are references to food products that are created using grapes. Each one ends in the letter "o" just like all of the other negative exponent prefixes. The jello- prefix is a reference to grape jelly. Raiso- is a reference to raisins. Winno- is a reference to wine. Vinigro- is a reference to grape vinegar.

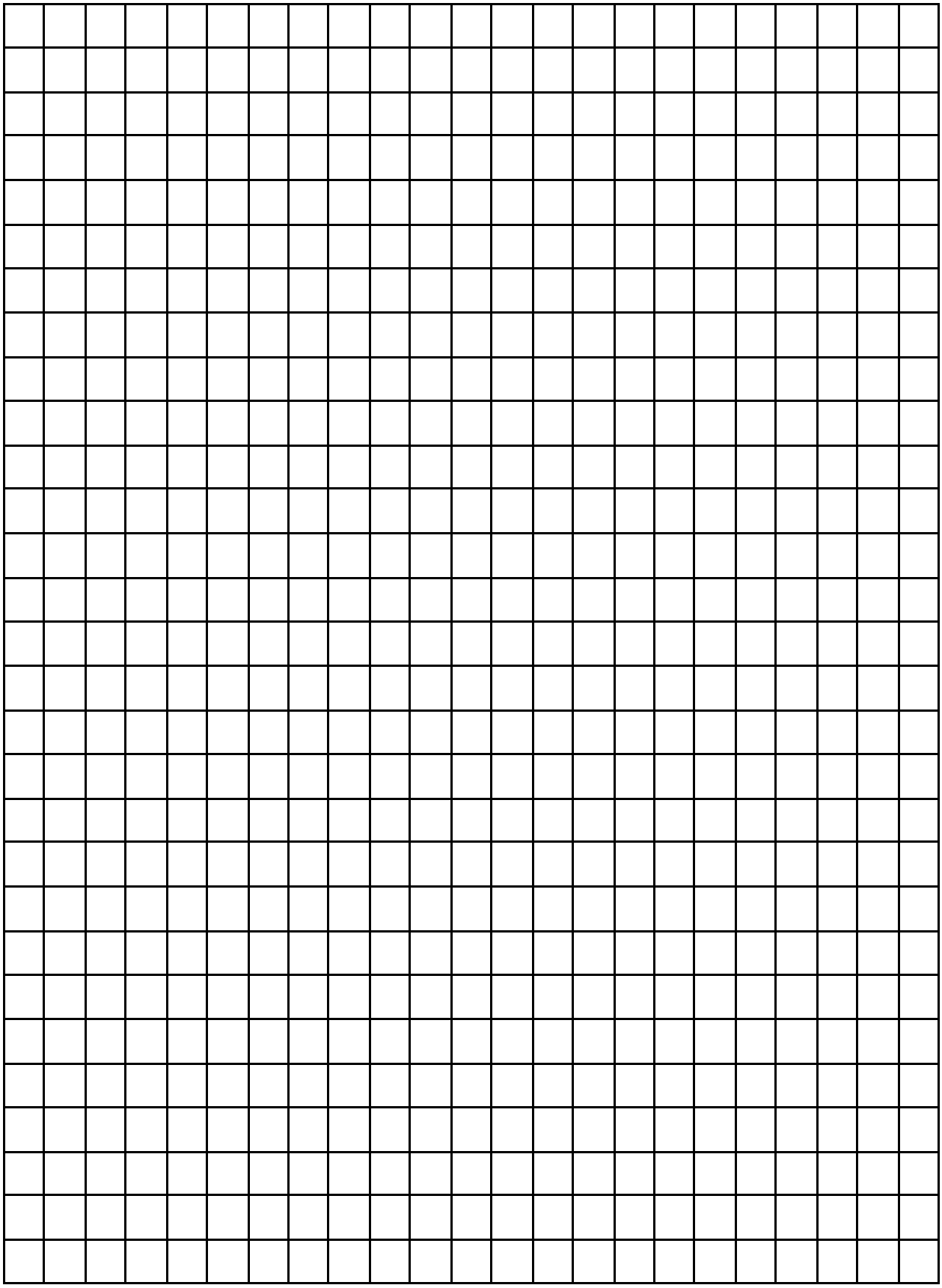
NOTES

A BRIEF RUNDOWN

The following section is a notes section. This section of the guidebook is for any general notes or extra details any users of this guidebook have while making use of the SG system. Take any notes, jot down ideas, extra examples, expanded definitions, etc.

The Notes section contains two pages of lined paper for written notes as well as two pages of graph paper for any plotting one may need.





Thank you all so much for entertaining this absolute dumpster fire of a project and please feel free to take the SG System as an entity as seriously or comedically as you desire. While this a complete joke, I do feel as though it merits some use, especially in fields like astronomy or quantum physics. Ironic. I just want to say thank you to the reader for making it through this book. I hope all of your efforts using the SG System are as fruitful as I hope. I wish to extend a personal thank you to David Vestal, fellow HPU physics alum, whose efforts in helping me with the SG System are recognized personally on a daily basis. Without his help in checking my math and explaining how and where some more complex units and quantities come from the SG System would not be as complex and intricate as it is, so thank you David for your help. I wish to also thank Dr. Brad N. Barlow, astrophysicist, teacher, and mentor at HPU for his not only existing, but inspiring me to start this project despite him not knowing about it at all until its debut. This has been the SG System, and I thank you so much for bearing with my insanity and I hope all of you enjoy what honestly may just be may magnum opus.

-Will