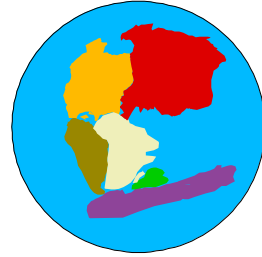


A Gazillion



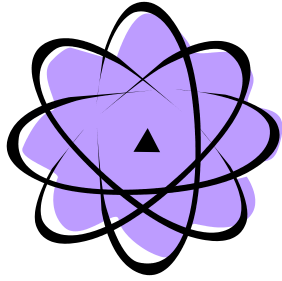
Million **P**roblems



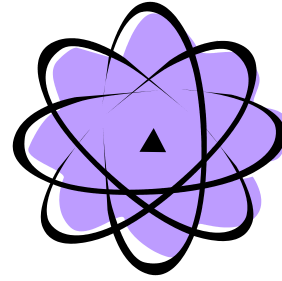
How big is a million?

$$1,000,000 \approx 10^6$$

- ❖ How tall would a tower of a million legos be?
- ❖ How thick would a football field be layered with a million pieces of popcorn?
- ❖ How much of New Jersey could you cover with a million post its?
- ❖ How big would a parking lot be to hold a million cars?



Billion **P**roblems



How big is a billion?

$$1,000,000,000 \quad \underline{\underline{=}} \quad 10^9$$

- ❖ How tall would a tower of a billion legos be?
- ❖ How thick would a football field be layered with a billion pieces of popcorn?
- ❖ How much of New Jersey could you cover with a billion post its?
- ❖ How big would a parking lot be to hold a billion cars?



T rillion P roblems



How big is a trillion?

1, 000, 000, 000, 000 \approx 10¹²

- ❖ How tall would a tower of a trillion legos be?
- ❖ How thick would a football field be layered with a trillion pieces of popcorn?
- ❖ How much of New Jersey could you cover with a trillion post its?
- ❖ How big would a parking lot be to hold a trillion cars?



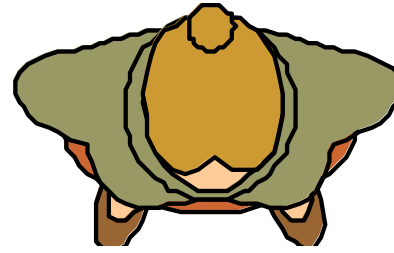
How big is a quintillion?

1,000,000,000,000,000,000 = 10¹⁸

- ❖ How tall would a tower of a quintillion legos be?
- ❖ How thick would a football field be layered with a quintillion pieces of popcorn?
- ❖ How much of New Jersey could you cover with a quintillion post its?
- ❖ How big would a parking lot be to hold a quintillion cars?
- ❖ *What has 600,000 quintillion things in it?*



Googol **P**roblems



How big is a googol?

10^{100}

- ❖ How tall would a tower of a googol legos be?
- ❖ How thick would a football field be layered with a googol pieces of popcorn?
- ❖ How much of New Jersey could you cover with a googol post its?
- ❖ How big would a parking lot be to hold a googol cars?

G_{oogolplex} P_{roblems}

How big is a googolplex?

$10^{10^{100}}$

or

10^{GOOGOL}

- ❖ How tall would a tower of a googolplex legos be?
- ❖ How thick would a football field be layered with a googolplex pieces of popcorn?
- ❖ How much of New Jersey could you cover with a googolplex post its?
- ❖ How big would a parking lot be to hold a googolplex cars?

A GAZILLION ... DIMENSIONAL ANALYSIS

Scientific	American	Scientific	American
10^0	One	10^{90}	Novemvigintillion
10^1	Ten	10^{93}	Trigintillion
10^2	Hundred	10^{96}	Untrigintillion
10^3	Thousand	10^{99}	Duotrigintillion
10^6	Million	10^{100}	<i>Googol</i>
10^9	Billion	10^{102}	Tretrigintillion
10^{12}	Trillion	10^{105}	Quattuortrigintillion
10^{15}	Quadrillion	10^{108}	Quintrigintillion
10^{18}	Quintillion	10^{111}	Sextrigintillion
10^{21}	Sextillion	10^{114}	Septentrigintillion
10^{24}	Septillion	10^{117}	Octotrigintillion
10^{27}	Octillion	10^{120}	Novemtrigintillion
10^{30}	Nonillion	10^{123}	Quadragesimillion
10^{33}	Decillion	10^{126}	Unquadragesimillion
10^{36}	Undecillion	10^{129}	Duodecimesimillion
10^{39}	Duodecillion	10^{132}	Tredecimesimillion
10^{42}	Tredecillion	10^{135}	Quattuordecimesimillion
10^{45}	Quattuordecillion	10^{138}	Quinquagesimillion
10^{48}	Quindecillion	10^{141}	Sexagesimillion
10^{51}	Sexdecillion	10^{144}	Septuagesimillion
10^{54}	Septendecillion	10^{147}	Octogagesimillion
10^{57}	Octodecillion	10^{150}	Novemagesimillion
10^{60}	Novemdecillion	10^{153}	Centumagesimillion
10^{63}	Vigintillion	10^{156}	Uncentumagesimillion
10^{66}	Unvigintillion	10^{159}	Duocentumagesimillion
10^{69}	Duovigintillion	10^{162}	Trecentumagesimillion
10^{72}	Trevigintillion	10^{165}	Quattuorcentumagesimillion
10^{75}	Quattuorvigintillion	10^{168}	Quingentumagesimillion
10^{78}	Quinvigintillion	10^{171}	Sexcentumagesimillion
10^{81}	Sexvigintillion	10^{174}	Septingentumagesimillion
10^{84}	Septenvigintillion	10^{177}	Octingentumagesimillion
10^{87}	Octovigintillion	10^{180}	Novemcentumagesimillion
		10^{googol}	<i>Googolplex</i>
		$10^{\text{googolplex}}$	<i>Googolplexian</i> (the largest number with a name)