1

PEMDAS

Parenthesis ( )
Exponent ^
Multiplication *, Division / (same level)
Addition +, Subtraction - (same level)

P
E
MD
AS

2

%, fractions, decimals, 1 out of…

- 12 is what percent of 16?
  - numerator/denominator*100 (% total)
  - 12/16*100 = 75%
- Percent to fraction
  - (Least common denominator)
  - 12/16 LCD = ?
  - 75/100 LCD = ?
- Percent to decimal
  - %/100
  - 75/100 = ?
- "One out of…"
  - 1/% in decimal
  - Express 0.63% into "one out of…"

3

Percentage change

- Last year's budget was P83,251,980. This year, you're told, the budget will be cut to P80,754,421. By how many percent will the budget decrease?
  - (80,754,421-83,251,980)/83,251,980*100 = ?
  - (New – Old)/Old*100

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Percentage change

- Last year's budget was P83,251,980. This year, you're told, the budget will be cut by 3%. What will this year's budget be?
  - 83,251,980*0.97
  - Value*(1 - % in decimal)

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Percentage change

- This year's budget will be cut by 3% to P80,754,421. What was the previous budget?
  - 80,754,421/.97
  - Value/(1 - % in decimal)
- This year's budget will be increased by 3% to P80,754,421. What was the previous budget?
  - 80,754,421*1.03
  - Value*(1 + % in decimal)

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% - %

- A Reuters Institute study found concern about false or misleading information online among adult Filipinos rising from 56% last year to 64% this. How would you report the difference?
- Concern over online misinfo rose by:
  - 8 **percentage points** (64% - 56%)
  - 14.3% (64-56)/56*100

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Mean, median, mode

- Mean = simple average
  - sum of numbers/count of numbers
- Median = middle value (typical)
  - Sort all the values from lowest highest
  - (n+1)/2 (odd)
  - n/2 and (n/2)+1 (even)
- Mode = most common or frequent value

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Ratios

- Relationship between two numbers
- Ratio = a/b

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Rates

- Various functions but useful to compare two dissimilar places or events
  - COVID-19 infections in different countries
  - Crimes in different capitals
  - Deaths from various disease
  - GDP

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Rates for small numbers

location	Total cases as of 9/15/2020	population	total cases/pop'n	% (per 100)	cases per 100,000	cases per million
Brunei	145	449,002	0.000322938	0.0323%	32	323
Cambodia	275	16,767,851	1.64004E-05	0.0016%	2	16
Indonesia	225,030	275,501,344	0.000816802	0.0817%	82	817
Laos	23	7,529,477	3.05466E-06	0.0003%	0	3
Malaysia	9,946	33,938,216	0.000293062	0.0293%	29	293
Myanmar	3,299	54,179,312	6.08904E-05	0.0061%	6	61
Philippines	265,863	115,559,008	0.002300669	0.2301%	230	2,301
Singapore	57,454	5,637,022	0.010192261	1.0192%	1,019	10,192
Thailand	3,480	71,697,024	4.85376E-05	0.0049%	5	49
Vietnam	1,063	98,186,856	1.08263E-05	0.0011%	1	11

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Rates for large numbers

- GDP, national debt
- Per capita = Value / population (aka per person)

Country	Population ('000)	GDP	Rank	GDP per capita	Rank
Brunei	430.0	13,925	10	32,383	2
Cambodia	16,592.1	27,165	8	1,637	9
Indonesia	272,248.4	1,185,777	1	4,355	5
Lao PDR	7,337.8	19,635	9	2,676	8
Malaysia	32,576.3	372,770	5	11,443	3
Myanmar	55,295.0	72,863	7	1,318	10
Philippines	110,198.0	393,612	4	3,572	7
Singapore	5,453.6	394,579	3	72,352	1
Thailand	65,213.0	505,890	2	7,758	4
VietNam	98,506.2	361,962	6	3,675	6

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CPI, purchasing power, inflation

- CPI = change in the average retail prices of a fixed basket of goods and services commonly purchased by households relative to a base year
- You can use CPI to compute purchasing power of peso and inflation rate
- Adjusting for inflation
  - CPI Now
  - CPI Then
  - Value

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Minimum wage in Metro Manila

Year	Wage	CPI
2018	537	100.0
2022	570	115.3
2023	610	121.1 (as of Jun 2023)

Year	Wage	Purchasing power
2018	537	1.00
2022	570	0.87
2023	610	0.83 (as of Jun 2023)

(1) How much is the minimum wage in Metro Manila in 2018 worth today?
*(CPI New/CPI Earlier)*Earlier Value*

(2) How much is the new wage at real prices (2018)?
*Value * Purchasing power now*

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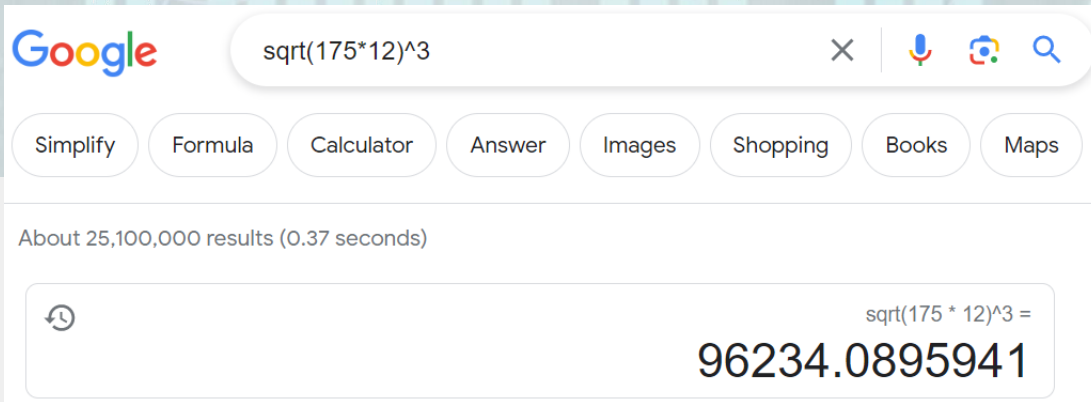
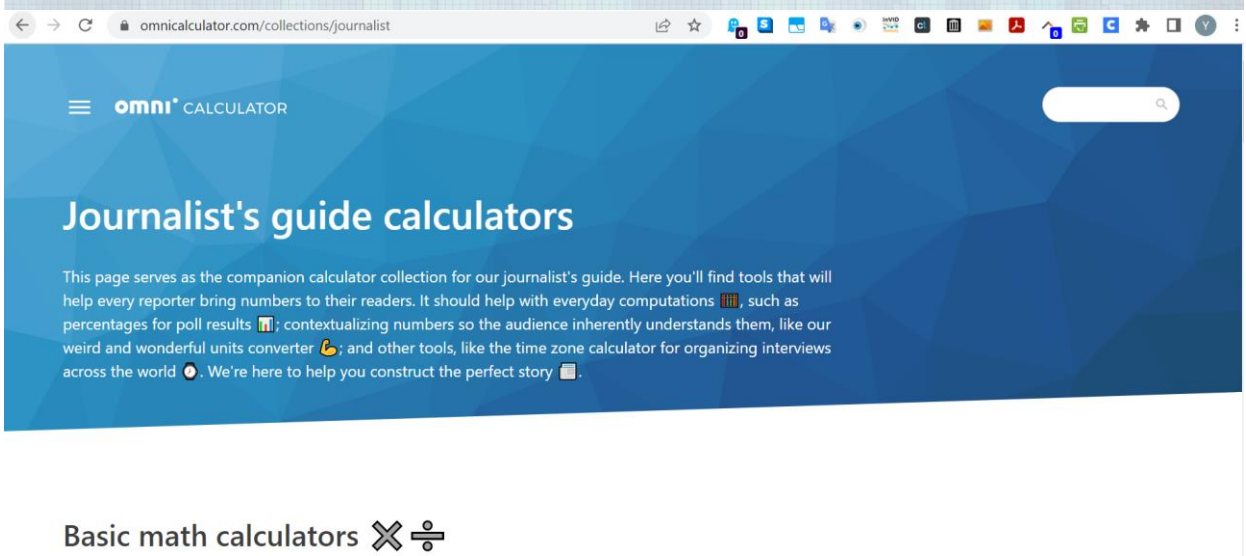
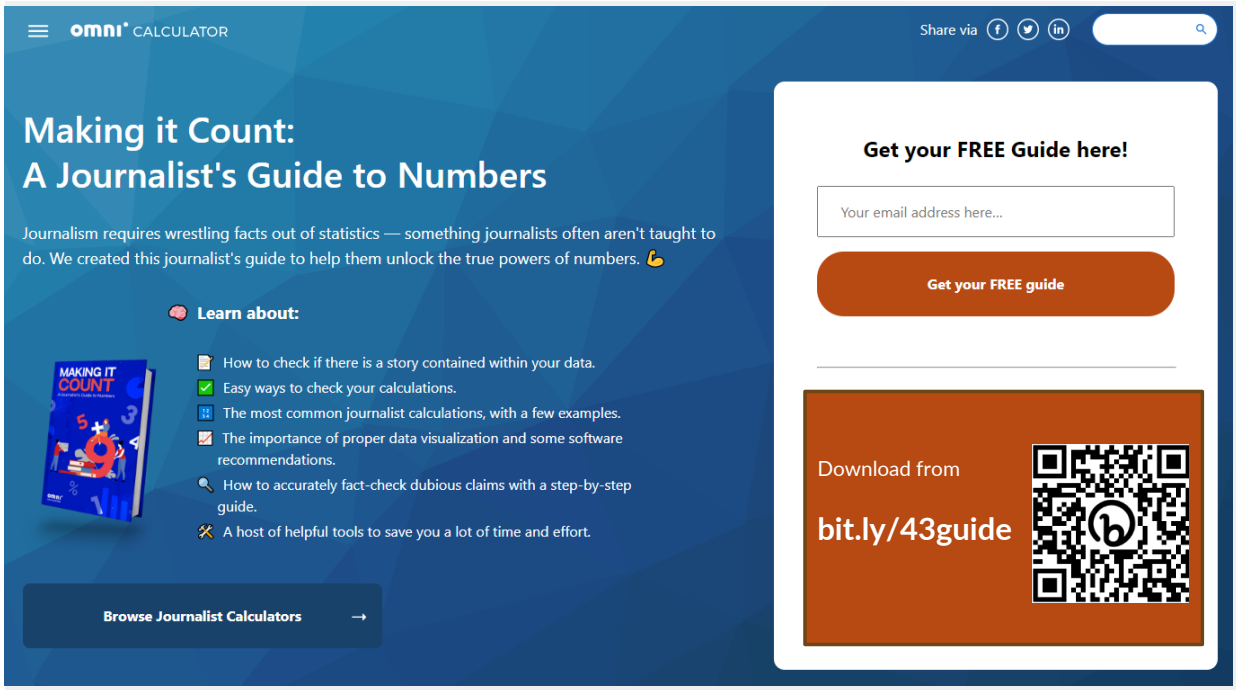
Google search



15



16



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Standard deviation

- How dispersed the data is around the mean
- What to remember
  - 68% of values within 1 standard deviation from the mean
  - 95% values within 2 standard deviations from the mean
  - 99.7% of values within 3 standard deviations from the mean
- Example
  - Average score = P100; SD = P17
  - 68% = P83 to P117’95% = $66 to P134; 99.7% = P45 to P151

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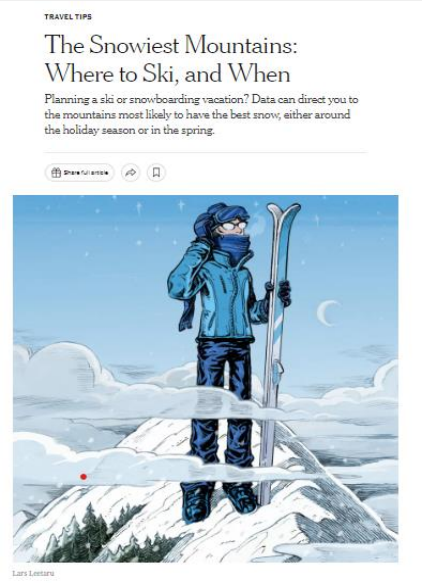
A story of standard deviations



TRAVEL TIPS

The Snowiest Mountains: Where to Ski, and When

Planning a ski or snowboarding vacation? Data can direct you to the mountains most likely to have the best snow, either around the holiday season or in the spring.

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Lars Leetaru

https://www.nytimes.com/2019/11/27/travel/best-snow-skiing.html

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