**Newsroom Math Crib Sheet**

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**To convert a fraction into a decimal:**

* Divide the top number by the bottom number
* Examples: 5/8 = 0.625 17/64 = 0.265…

**To convert a decimal into a percentage:**

* Multiply by 100 (or simply move the decimal two places to the RIGHT)
* Examples: 0.658 = 65.8% 1.255 = 125.5%

**To turn a percentage into a decimal:**

* Divide by 100 (or simply move the decimal two places to the LEFT)
* Examples: 43.7% = 0.437 148.2% = 1.482

**To get X% of Y:**

* Turn X% into a decimal, then *multiply* it by Y
* Example: 20% of 90 = 0.20 \* 90 = 18 130.5% of 45 = 1.305 \* 45 = 58.7…

**To compare X and Y using percentages (X is what percent of Y?):**

* X is (X/Y \* 100) percent of Y
* Example: 5 and 8: 5/8 = .625 = 62.5%, so 5 is 62.5% of 8
* Example: 8 and 5: 8/5 = 1.6 = 160%, so 8 is 160% of 5

**To compare X and Y using percentage differences:**

* X is ((X/Y –1) \* 100) MORE/LESS than Y
* Use MORE THAN if the answer is positive, and LESS THAN if it’s negative
* Example: 5 and 8: 5/8 –1 = .625 – 1 = -0.375 = -37.5%, so 5 is 37.5% less than 8
* Example: 8 and 5: 8/5 –1 = 1.6 – 1 = .6 = 60%, so 8 is 60% more than 5

**To compare a NEW number with an OLD number using percentage change:**

* NEW has increased/decreased ((NEW/OLD –1) \* 100) percent since OLD
* Or use the formula you learned in middle school: ((new-old)/old)\*100
* Use INCREASED if the answer is positive, and DECREASED if it’s negative
* Example: This year’s $8 million budget is a 60% increase over last year’s $5 million budget.
* Example: This year’s $5 million budget is a 37.5% decrease from last year’s $8 million budget.

**To calculate rates (the number of events per some standard unit):**

* Do this to account for different size populations
* RATE = (EVENTS / POPULATION ) \* (“PER” Unit)
* Example Problem: If there were 320 murders in a population of 1,937,086, what is the murder rate per 100,000?
* First, divide the 320 murders by 1937086 = 0.0001652…
* Now multiply 0.0001652… by 100,000 = 16.5 murders per 100,000 population

**To calculate the effect of inflation using the Consumer Price Index (CPI):**

 Price Now = CPI Now

 Price Then CPI Then

* With this formula, all you need is any three of the numbers to calculate the fourth.
* Example: Assume CPI now = 233.5; CPI in 1965 was 31.6; price of gas in 1965 was $0.30 per gallon.

Pnow / 0.30 =233.5 / 31.6

Pnow = (233.5 / 31.6) \* 0.30 = 7.39 \* 0.30 = 2.22; so gas in 1965 cost the equivalent of $2.22 per gallon today

**Newsroom statistics:**

* Mean (average): Add the numbers, then divide by how many numbers there are
* Median: Sort the numbers in order, then find the middle value
* Sampling error margin: 1/√N (example: sample of 625: 1/√625 = 1/25 = 0.04 = +/- 4 points)

**Crowd estimating:**

* Calculate crowd area in square feet (length x width)
* Divide by 10 for a loose crowd (people are at arm’s length from each other)
* Divide by 7.5 for a tight crowd (people are more shoulder to shoulder)