Newsroom Math Cheat 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 = 58.75

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 = 0.625 = 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 = 0.625 – 1 = -0.375 = -37.5%, so 5 is 37.5% less than 8
- Example: 8 and 5: 8/5 – 1 = 1.6 – 1 = 0.6 = 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
- Note: this is the same as (NEW-OLD)/OLD
- 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):

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\frac{\text{Price Now}}{\text{Price Then}} = \frac{\text{CPI Now}}{\text{CPI Then}}
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With this formula, all you need is any three of the numbers to calculate the fourth.
- Example: Is UK petrol more expensive in real cost today than it was in 2007?
  - CPI in 2013 is 123.0; CPI in 2007 was 104.7; price of gas in 2007 was €0.967 per liter.
  - X / 0.967 = 123.0 / 104.7
  - X = (123.0 / 104.7) * 0.967 = 1.17 * 0.967 = 1.13
  - Therefore, gas in 2007 cost the equivalent of €1.13 per liter in 2013 prices, so the actual price of €1.55 is much more expensive

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 meters (length X width)
- For a loose crowd (people are at arm’s length), there will be about one person per square meter
- Multiply square meters by 1.3 for a tight crowd (people are more shoulder to shoulder)