

1/23/2021

Percentages ~ Fractions, Decimals, Scientific Notation

Proportions: Ratio of two values: Top number is the “part”, and the bottom is the “whole”

$1/3$  = one part of three total parts

$14/91$  = fourteen parts out of a total of 91 parts

Proportions are numbers between 0 and 1, proper fractions.

Parts of a whole

Convert between fractions, decimals, percentages and scientific notation.

$2/5$

$$5 \overline{)2.000000}$$

$2/5 = 0.4$  terminating

$1/3 = 0.333333\dots$  repeating decimal

If the denominator contains only factors of 2 and 5, the decimal will terminate; if it any other factors, then it will repeat

Decimals can be converted to percentages by multiplying the decimal by 100%.

$2/5 = 0.4 = 40\% = 4/10$

$1/3 = 0.3333\dots = 33.33\dots\%$

$25\% = 0.25 = 25/100 = 1/4$

Scientific notation mostly used for numbers that are very large, or very small

In the TI, large numbers are 10 digits or more, but small numbers usually convert around 0.0001

Biden’s financial rescue plan is priced at \$1.9 Trillion:

1,900,000,000,000

$1.9 \times 10^{12} = 1.9E12$

$1/10,000 = 0.0001$

$1 \times 10^{-4} = 1E-04$

Do not write scientific notation on paper using E!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Percent change

$$\frac{New - Old}{Old}$$

New – Old = Change from previous value (difference between new and old values)

Relative to the old value = divide by the value

Growth, stock market increases: size of growth relative to the total size

Summarizing Data in Tables

To reduce the amount of information we have to process by summarizing the information in more convenient way

Categorical data = the different values are expressed in WORDS (numbers where it doesn't make sense to average the numbers)

Numerical data = things that are counted or measured

Percentiles:

What percent of the data is below the given value...

90<sup>th</sup> percentile: 90% of the data is smaller than the value given

The average height of men is 5'10", and standard deviation is 3 inches... 84<sup>th</sup> percentile is 6'1" : 84% of men are 6'1" or shorter. 97<sup>th</sup> percentile is around 6'4" : 97% of men are shorter than 6'4".

16<sup>th</sup> percentile 5'7": about 16% of men are shorter than 5'7"... about 2<sup>nd</sup> percentile is shorter than 5'4"

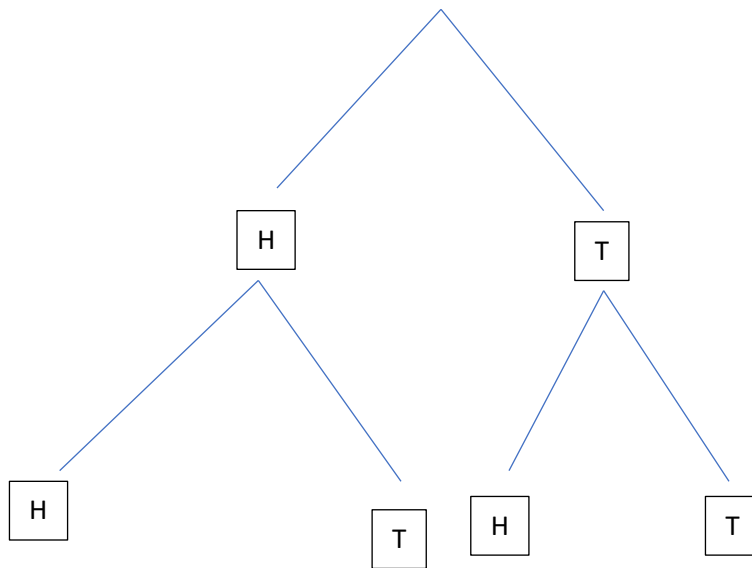
Counting

Suppose we flip a coin one time: what are all the possible outcomes?

H, T

Suppose we flip two coins: what are the possible outcomes?

HH, HT, TH, TT



Suppose I flip a coin three times? What are all the possible outcomes?

HHH, HHT, HTH, HTT, THH, THT, TTH, TTT

Rolling dice: 1, 2, 3, 4, 5, 6

Rolling 2 dice:

	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)