Soc 303 Math Review

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Math Review

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Converting Percentages to Fractions	Computing with a Percentage
Converting other Units of Measure	The math in this course is logical!

Fractions

- Fragment
- Part of a whole

- Small part
- Bit or portion
- Designated by placing one number over another number
  - 2/5 or 9/12
- Composed of two pats:
  - Numerator (number above the line)
  - Denominator (number below the line)
- Always reduce the fraction when you can
  - `9/12 = 3/4`

Decimals

Decimals are an amount that is less than one

- 1/10 = 0.10
- 1/100 = 0.01
- 1/1000 = 0.001

This is important when we test for significance in statistics

Percentages

- The number of times something occurs every 100 times
- A specific rate followed by the % sign
- A proportion of a whole
- Converting decimal to percentage:
  - multiply the decimal by 100

Rate

- A value or price (think gas price per gallon)
- A unit of something (think birthrate, cost of living, etc.)
- A ratio, proportion, or rank
- Usually expressed as a percentage

Ratio

- Relationship between things
- Relationship between numbers
- Reported as a fraction or numbers side by side
  - 2:10 is actually 2 out of 10 or 1 out of 5
- Can be reduced (as done above)

Proportion

- A relationship of one portion to another
- A relationship to the whole
- A relationship of one thing to another
- A ratio in which the elements in the numerator must be included in the denominator

Averaging: the Mean again!

- Average is the mean, in this class it is the arithmetic mean... it is not the median or mode!
- Computing is easy!
  - Add all the scores (numerator)
  - N = the number of items in the distribution (denominator)
- The equation: where Σ is the sum
  - $Average = \frac{\Sigma Scores}{N}$

Rounding

- Rounding approximates the total final number
- Do not round until the very end of the process!
- Carried to indicates what decimal place is used
  - 2 decimal places = 13.01
- In this class: we use two or three decimal places meaning: REPORT THREE PLACES
  - 13.013
- If the answer is to the nearest whole number
  - Round up (if 5 and over) -> 13.5 = 14
  - Round down (if lower than 5) -> 14.3 = 14

Converting Fractions to Percentages

- Divide the numerator by the denominator
- Multiply by 100
- Add a percent sign

```
60/80 = 0.75 * 100 = 75%
```

Converting Ratio to Percentage

- Divide the numerator by the denominator
- Multiply the result (quotient) by 100
- Add a percent sign
- To change 1:8 to a percentage

```
1/8 = 0.125 X 100 = 12.5%
```

Converting Decimals to Percentages

- Multiply the decimal by 100 (moves decimal point two places to the right)
- Add a percent sign
- Convert 0.75 to a percentage

```
0.75 * 100 = 75%
```

Converting Percentages and Fractions

- Remove the percent sign
- Place the percentage number in the numerator
- Place 100 in the denominator
- Convert to the lowest fraction
- Convert 25% to a fraction

```
25/100 = 1/4
```

Computing with a Percentage

- Convert the percent to a decimal
- Example 40% of 100 scores

```
0.40 * 100 = 40
```

Converting other Units of Measure

- May need to convert metric to U.S. standards
- Data must be analyzed in the same units
- Linear Measures

Unit	Conversion
1 cm	0.0328 foot; 0.3937 inch
1 inch	2.54 cm
1 foot	0.3048 meter
1 meter	1.0936 yd; 3.2808 feet; 39.37 inches
1 mile	1.6094 km
1 km	0.6214 miles

Weights and Liquids

- Weight Measures
  - 1 gm = 0.0022 lb; 0.0353 oz

  - 1 kg = 2.2046 lb
  - 1 lb = 0.4536 kg; 45.36 gm
  - 1 oz = 28.3495 gm
- Liquid Measures
  - 1 quart = 0.94633 liter
  - 1 liter = 0.2642 gallons; 1.0567 quarts