Statistics
Fall 2022
Lecture 1

Math 227

M - Th 6:00 - 8:35AM

8 - week Course

Basic Math:

1) Reduce $\frac{75}{120} = \frac{3 \cdot 25}{3 \cdot 40} = \frac{5 \cdot 5}{5 \cdot 8} = \boxed{\frac{5}{8}}$

Homework → Study Guide
www.mymathclasses.com

1) $\frac{5}{8}$

2) Write .004 in

a) Reduce Fraction

$.004 = \frac{4}{1000} = \frac{4 \cdot 1}{4 \cdot 250} = \frac{1}{250}$

a) $\frac{1}{250}$

b) percent notation

$.004 = .004(100)\% = \boxed{.4\%}$

b) .4%

Scientific Notation $N \times 10^{n}$ ← any integer

$1 \le N < 10$

$5.2 \times 10^{8} = 5.20000000 = 520,000,000$

$4.75 \times 10^{-5} = 000004.75$

$= 0.0000475$

40% of 350 students were in favor of online classes. How many of them were favor of online classes?

Pre-Algebra Problem: What is 40% of 350?

$x = 40\% \cdot 350$

$= .4(350)$

$= 140$

Designated Area → 5) 140

Calc. → use TI-83 or TI-84

use your calc. to find

1) $\dfrac{63-85}{\frac{16}{\sqrt{25}}} = \dfrac{-22}{\frac{16}{5}} = \dfrac{-22}{3.2} = \boxed{-6.875}$

Round to whole → -7

1-decimal → -6.9

2-decimal → -6.88

2) $1.96 \cdot \sqrt{\dfrac{(.2)(.8)}{100}} = 1.96 \cdot \sqrt{\dfrac{.16}{100}}$

$= 1.96 \cdot \dfrac{.4}{10} = 1.96 \cdot (.04)$

$= .0784$

Round to 1-decimal → .1

2-decimal → .08

3-decimal → .078

! Factorial

$n! = n(n-1)(n-2)(n-3)\cdots 3\cdot 2\cdot 1$

$0! = 1$

$4! = 4\cdot 3\cdot 2\cdot 1 = 24$

$5! - 3! = 5\cdot 4\cdot 3\cdot 2\cdot 1 - 3\cdot 2\cdot 1$

$= 120 - 6 = \boxed{114}$

$$\frac{8!}{5!\cdot 3!} = \frac{8\cdot 7\cdot 6\cdot 5\cdot 4\cdot 3\cdot 2\cdot 1}{5\cdot 4\cdot 3\cdot 2\cdot 1\cdot 3\cdot 2\cdot 1} = \frac{56}{1} = \boxed{56}$$

Consider a standard deck of playing cards, what percent of them are red Aces?

Left Side: Handouts

Study Guides

Right Side: Videos

52 Cards

2 Red Aces

2 is what percent of 52?

$2 = \frac{P}{100}\cdot 52$

$2 = .52P \qquad P = \frac{2}{.52} = 3.846$

Round to whole %. $\Rightarrow 4\%$

" " 1-decimal $\Rightarrow 3.8\%$

All Your questions will be answered before class begins, during office hours, using SI Sessions, or visit tutoring lab.

My office hrs

Mondays & Wednesdays	12:30 – 2:00
Tuesdays & Thursdays	4:30 – 6:00

Given $y = 2.5x - 20$

Do not write 0 like $\emptyset$.

1) Find y when $x = 8$

$y = 2.5(8) - 20 = 20 - 20 = \boxed{0}$

2) Find x when $y = 20$

$20 = 2.5x - 20$

$20 + 20 = 2.5x$

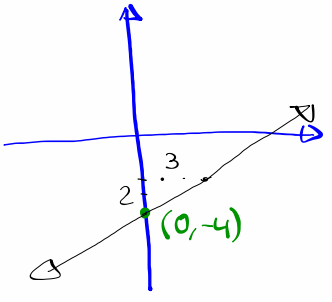
$\frac{40}{2.5} = x$ $\quad \boxed{x = 16}$

Graph $y = \frac{2}{3}x - 4$

Slope-Int. form

Y-Int $(0, -4)$

$m = \frac{2}{3}$



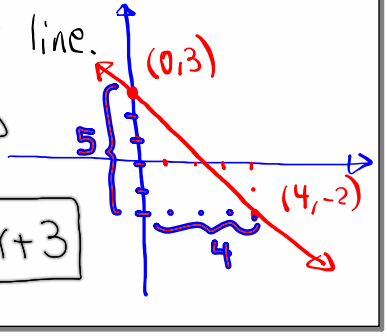
Plot the following points $(0,3)$ & $(4,-2)$

draw the line that contains them,

find equation of that line.

$m = \frac{-5}{4}$ $\quad y = mx + b$

Y-Int $\rightarrow (0,3)$ $\quad \boxed{y = \frac{-5}{4}x + 3}$



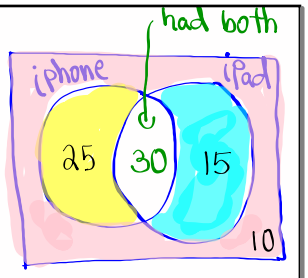
I surveyed 80 people,

25 had iphone only.

15 had iPad only.

10 had neither of them. Total = 80

Construct Venn Diagram.



We are done with SG 1.

Check Canvas for due date & availability date

check grade book in Canvas.

Visit my website www.mymathclasses.com and explore, take care of last page of the syllabus.

What is statistics? SG 2

It is about collect information, organize them, graph them, do certain computations, with some degree of confidence draw conclusion & make predictions.

Two Branches

1) Descriptive Statistics

Collecting information and work with them.

2) Inferential Statistics

When we learn from descriptive statistics & make predictions.

Also study of chances.

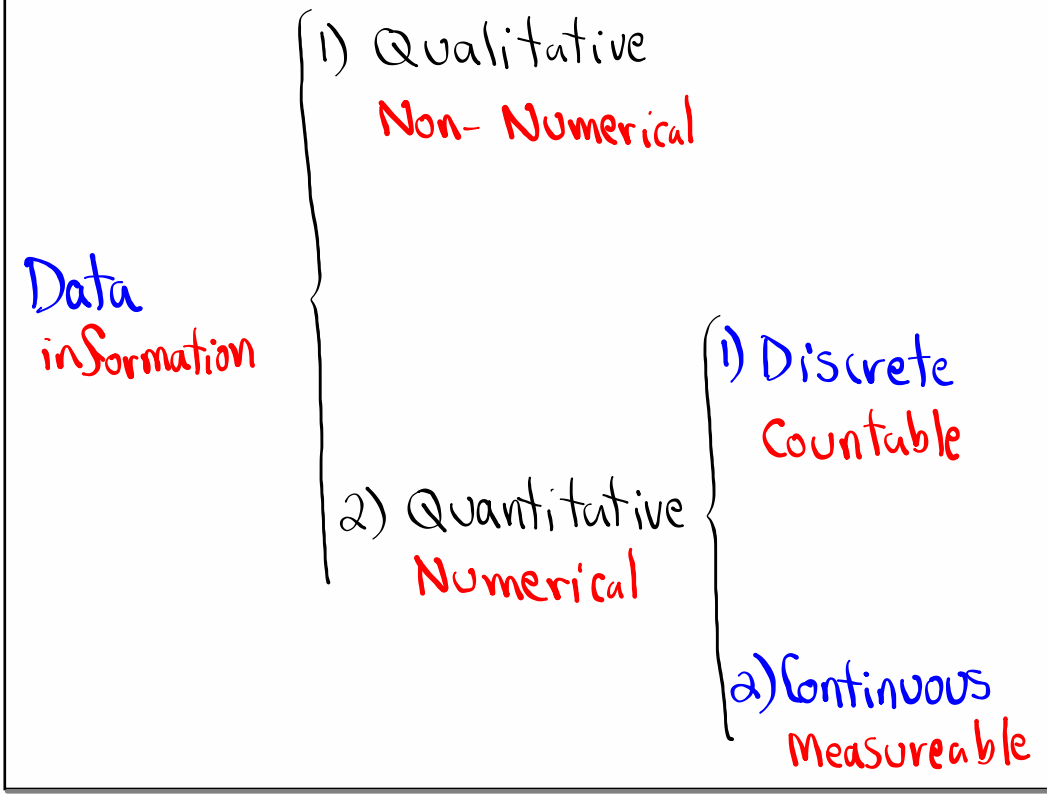
Collecting information $\Rightarrow$ Sample

Entire field of interest $\Rightarrow$ Population

We work with Samples to learn about Population.

Sample $\Leftrightarrow$ Statistic

Population $\Leftrightarrow$ Parameter



Level of Measurements:

1) Nominal — Names, Colors, Type of Cars
Red, White, Blue

2) Ordinal — Order is meaningful.
Small, Medium, Large

3) Ratio — Ratio is meaningful.
Small 12 oz
Large 24 oz
⇒ 12 to 24
1 to 2.

4) Interval — Range of Values
90% – 100% ⇒ A
Shipping Cost ⇒ 1lb – 4.9lb.
⇒ $5.
distance between two cities
40 to 45 miles.

Methods on collecting data:

1) Systematic — when every Kth item Selected.
Select every 5th call.

2) Stratified — Divide into groups,
Select few from each group
Male → 3
Female → 7

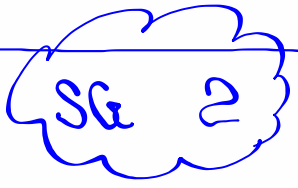
3) cluster — Divide into groups
Select few groups
Collect data from everyone in the Selected groups
ELAC offers 1000 total Sections.
Let's Select 50 of these Sections, then ask all Students in these 50 Sections to do student Survey.

4) Random / Convenience
"Least reliable method"

Experiment vs observation

Experiment: You observe changes after some actions taken.

observation: You observe changes without taking any actions.



Class QZ 1:

1) what time does this class stats?

6:00 AM

2) what kind of calculator are allowed for this class? TI-83 or TI-84

3) Evaluate: $\frac{52-40}{\frac{5}{\sqrt{16}}} = \frac{12}{\frac{5}{4}} = \frac{12}{1.25} = 9.6$