

population - large group that is too large to collect data from all subjects

sample - subset of a population from which data can be collected and conclusions can be made that can be applied to the entire population

biased sample vs. random sample

margin of error - accounts for the variation between different samples

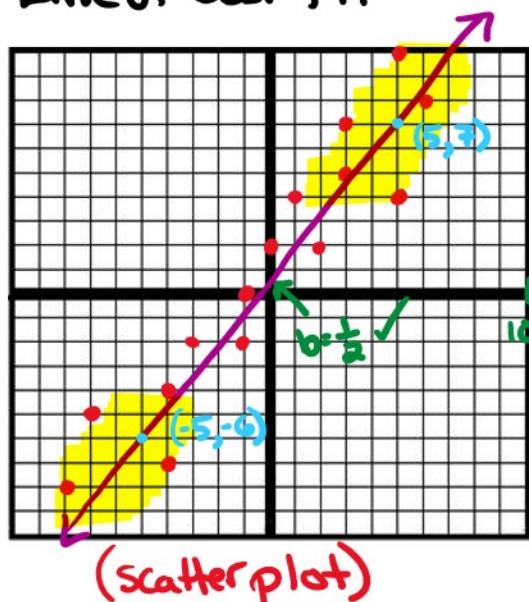
confidence interval - add and subtract the margin of error from the center of the data

ex 72% of students complete daily HW with a margin of error of 4%.

Confidence Interval: 68% to 76%

$$-4\% \uparrow 72\% \uparrow +4\%$$

Line of Best Fit:



① Draw a straight line through the "middle" of the points so that the distances of each point to the line are minimized

② Write the $y = mx + b$ equation by identifying two points on the line that have whole # coordinates

$$(-5, -6) \quad (5, 7) \quad m = \frac{7 - (-6)}{5 - (-5)} = \frac{13}{10}$$

$$y = \frac{13}{10}x + b$$

$$7 = \frac{13}{10} \cdot 5 + b$$

$$y = \frac{13}{10}x + \frac{1}{2}$$

positive slope
(rising line)

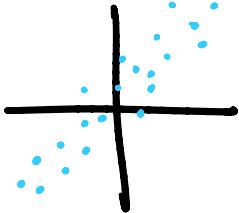
$$\begin{aligned} 7 &= \frac{13}{10} \cdot 5 + b \\ 7 &= \frac{13}{2} + b \rightarrow \boxed{\frac{1}{2} = b} \\ -\frac{13}{2} &\quad -\frac{13}{2} \end{aligned}$$

Predict a future Out come:

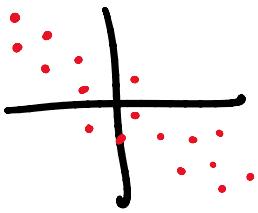
$$x = 20 \quad y = \underline{26.5}$$

$$y = \frac{13}{10}(20) + \frac{1}{2}$$

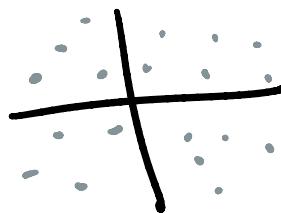
Types of Correlation (relationship between x and y)



Positive
x increases
y increases



Negative
x increases
y decreases



No Correlation