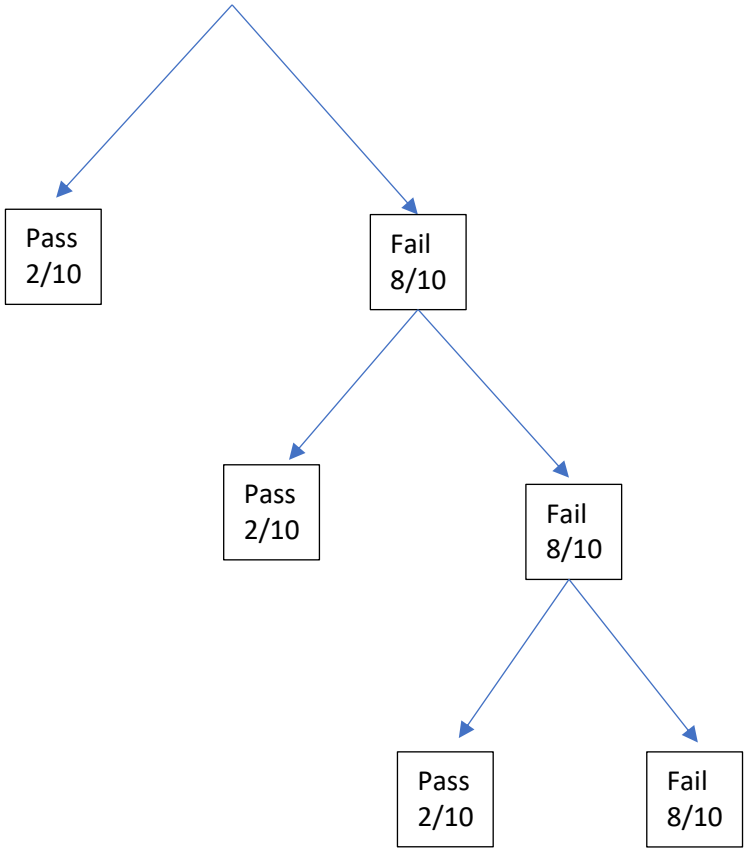
03/30/2021



$$\frac{2}{10}+\frac{8}{10}\times\frac{2}{10}+\frac{8}{10}\times\frac{8}{10}\times\frac{2}{10}=\frac{2}{10}+\frac{16}{100}+\frac{128}{1000}=0.488$$

Standard Error

Means: requires standard deviation, and the sample size.

$$SE=\frac{\sigma}{\sqrt{n}}=\frac{s}{\sqrt{n}}$$

σ is the population standard deviation (given in the problem)
s is the standard deviation of the sample (can be calculated)
n is the sample size

Proportions: requires proportion and the sample size.

$$SE = \sqrt{\frac{p(1-p)}{n}}$$

p is the proportion
n is the sample size

Standard Score (Z-score)

$$z = \frac{x - \mu}{\sigma} = \frac{x - \bar{x}}{s}$$

z is the standard score
x is the observation
μ is the population mean (must be given)
σ is the population standard deviation (must be given)
$\bar{x}$ is the sample mean (can be calculated)
s is the sample standard deviation (can be calculated)

Is to compare scores on two different distributions.

SAT has a mean of 500, and a standard deviation of around 100 (scores are between 200 and 800)
ACT has a mean of around 21, and a standard deviation of around 5 (scores range from 0 to 36)

Suppose you got 650 on the SAT, and 31 on the ACT. Which score is better?

Exponential vs. Linear Growth:

Exponential growth grows by multiplying each value by a constant number each time (common ratio).
Linear growth grows by adding a constant value each time (common difference)