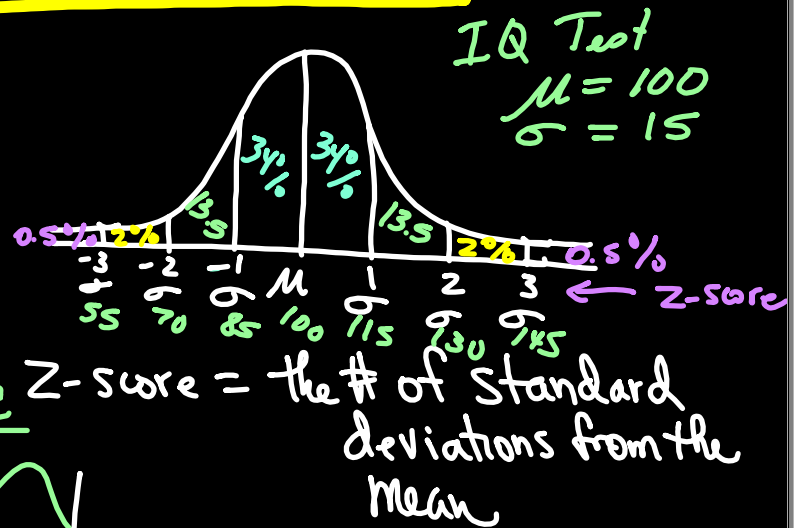
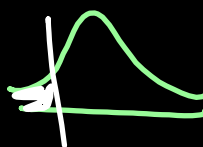
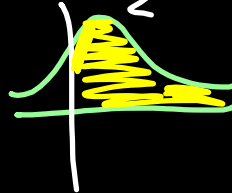
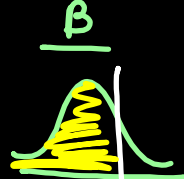
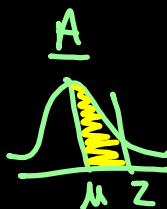


NORMAL DISTRIBUTION



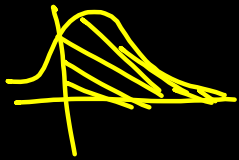
Z



Z-score = the # of Standard deviations from the Mean

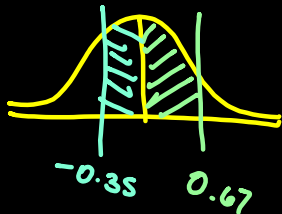
Normal Distribution

- 1) What % of the normal curve is above a z-score of -0.96 ?

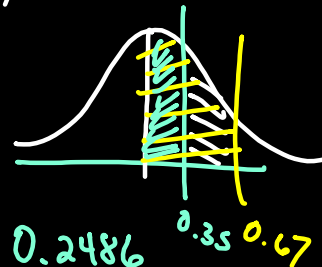


$$0.8315 = 83.15\%$$

- 2) Find % of the normal curve between $z = -0.35$ + $z = 0.67$

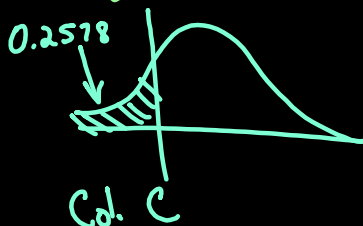


$$\begin{array}{r} 0.1368 \\ + 0.2486 \\ \hline 0.3854 \end{array}$$



$$\begin{array}{r} 0.2486 \\ - 0.1368 \\ \hline 0.1118 \end{array}$$

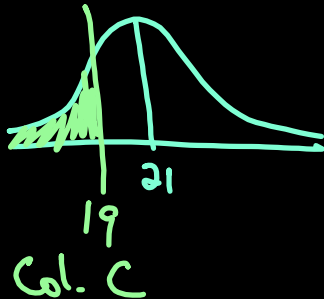
- 3) The area (%) below z is 0.2578.
What is the z-score?



$$z = -0.65$$

ACT $\mu = 21$
 $\sigma = 4.7$

Billie Jean scored 19 on ACT.
 What is her percentile rank?



0.3336
 33rd percentile

$Z = \#$ of standard deviations from the mean

$$Z = \frac{19 - 21}{4.7} = \frac{\text{Raw Score} - \text{Mean}}{\text{St. Dev.}}$$

$$= \frac{-2}{4.7}$$

$$Z = \frac{x - \mu}{\sigma}$$

$$Z = -0.43$$

Billy Bob scored at the 73rd percentile.

What was his raw score?



Col. B

$$Z = \frac{x - \mu}{\sigma}$$

$$4.7 \cdot 0.61 = \frac{x - 21}{4.7} \cdot 4.7$$

$$2.867 = x - 21$$

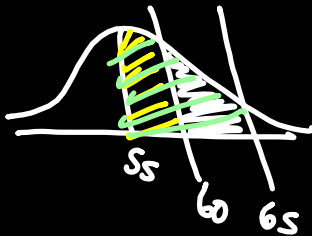
$$23.867 = x$$

$$\boxed{24 = x}$$

Tire Store — 200 tires in stock

Life of tires: Mean = $\mu = 55,000$ miles
St. Dev = $\sigma = 4000$ miles

How many of the tires in stock will last between 60,000 miles + 65,000 miles?



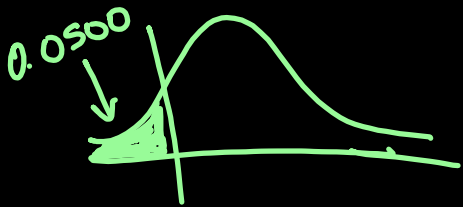
$$Z = \frac{65,000 - 55,000}{4,000} \quad Z = \frac{60,000 - 55,000}{4,000}$$

$$= \frac{10,000}{4,000} \quad = \frac{5,000}{4,000}$$

$$= 2.5 \quad = 1.25$$

$$\begin{array}{r} 0.4938 \\ - 0.3944 \\ \hline 0.0994 \times 200 \\ = 19.88 \approx \boxed{20 \text{ tires}} \end{array}$$

AAA batteries
 $\mu = 350$ days
 $\sigma = 10$ days



Col. C

raw
score

The company will replace (free of charge) batteries with life in the lowest 5%. What is the cut off point (in days) for replacement?

$$10 \cdot \frac{-1.65}{10} = \frac{x - 350}{10}$$

$$-16.5 = x - 350$$

$$333.5 = x$$

$$334 \text{ days} = x$$