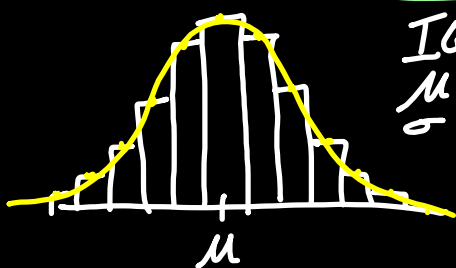
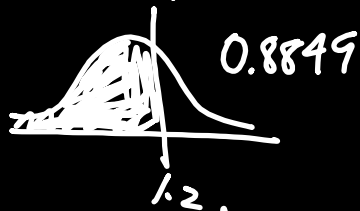
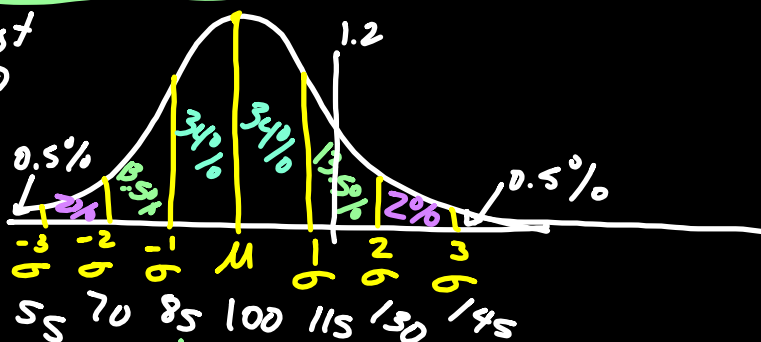


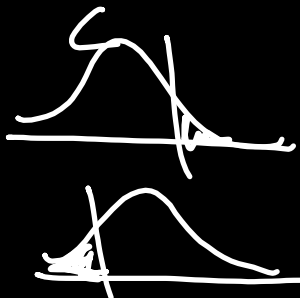
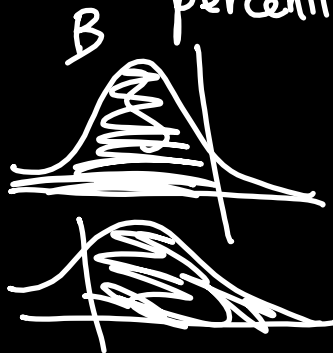
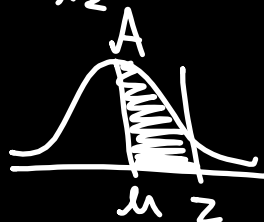
# NORMAL DISTRIBUTION



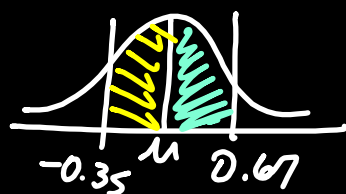
**IQ Test**  
 $\mu = 100$   
 $\sigma = 15$



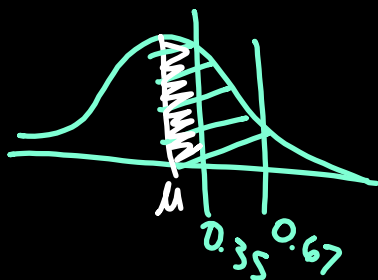
percentile rank = % to left



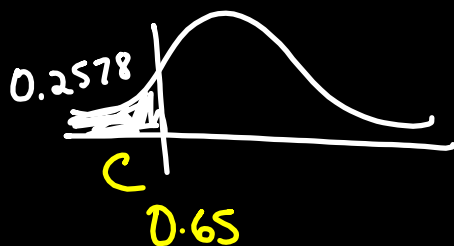
1) Find % between  $Z = -0.35$   $Z = 0.67$



$$\begin{array}{r} 0.67 \quad 0.2486 \\ 0.35 \quad 0.1368 \\ \hline 0.3854 \end{array}$$



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



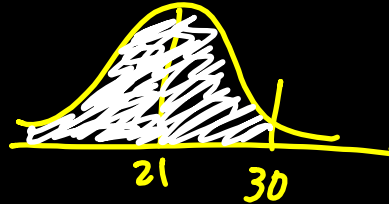
Find z-score for  
 $Z = -0.65$

ACT

$$\mu = 21$$

$$\sigma = 4.7$$

Marvelous Marvin  
scored 30.  
What is his percentile  
rank



Z-score = # of standard  
deviations  
from the mean

$$\frac{30 - 21}{4.7} = \frac{9}{4.7} = 1.91$$

$$Z = \frac{\text{Raw score} - \text{Mean}}{\text{St. Dev.}} = \frac{x - \mu}{\sigma}$$

$$\frac{Z}{1.91} = \frac{B}{0.9719} \approx 97^{\text{th}} \text{ percentile}$$

Edwina scored at  
the 30<sup>th</sup> percentile?

What was her raw  
score? 0.3000



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

$$\frac{-0.52}{4.7} = \frac{x - 21}{4.7}$$

$$-2.44 = x - 21$$

$$18.56 = x$$

Tire Store has 200 tires in stock

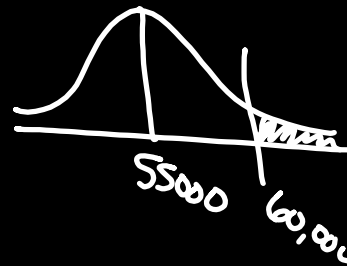
$$\mu = 55,000 \text{ mi.}$$

$$\sigma = 4,000$$

How many will last more than  
60,000 miles?

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

$$Z = 1.25$$



$$\begin{array}{c} Z \\ 1.25 \end{array} \quad \begin{array}{c} C \\ .1056 \end{array}$$

$$200 \times .1056 = 21.12 \\ \approx 21 \text{ tires}$$