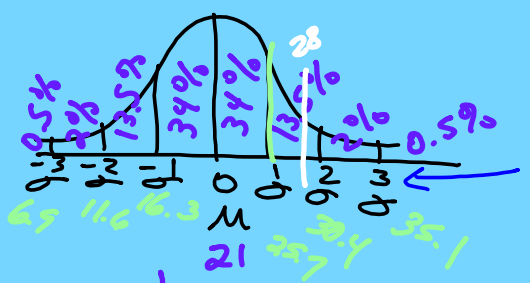
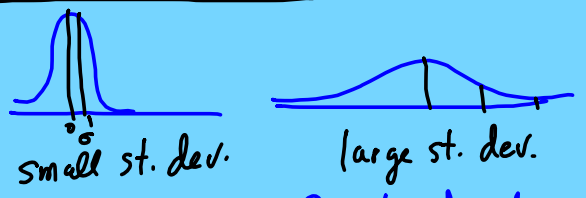
November 1, 2021

Normal Distribution — Population Data





Z-score = # of standard deviations from the mean.

ACT — $\mu = 21$

$\sigma = 4.7$

77th percentile

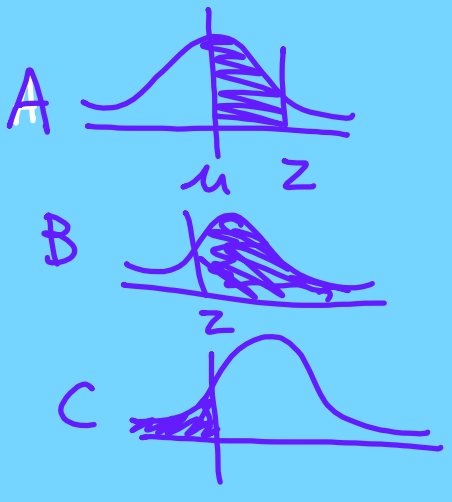
Score = 28 What is percentile rank?

$Z = \frac{x - \mu}{\sigma}$ $\frac{28-21}{4.7} = \frac{7}{4.7} = 1.49$

Col. B

0.9319

= 93rd percentile



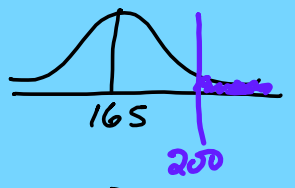
Football

$\mu = 165$

$\sigma = 28$ lb.

44 players

If the team is normally distributed, how many players weigh over 200 lbs.?



$$Z = \frac{200-165}{28} = \frac{35}{28} = 1.25$$

$0.1056 * 44 = 4.64$

4-5 players

Coach will cut the smallest 20% of team. What is the cutoff weight?

$$-0.84 = \frac{x - 165}{28} \quad \cdot 28$$

$$-23.52 = x - 165$$

$$+165 \quad +165$$

$$141.48 = x$$

141.5 lb.

Calculator

Menu - Stats - Distributions

#1 Normalpdf — Don't use

#2 Normalcdf — Find % given raw score

#3 InvNorm — Find raw score given %.

↑ must give % to left of cutoff line

InvNorm(0.88, 21, 4.7)

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

1) Billy Bob scored 17 on ACT. What is his percentile rank?

NormCdf(0, 17, 21, 4.7) = 0.197 ≈ 20th percentile

What score is cutoff for top 12% of students?