

NAME Key Fall 2016

QUIZ WARM UP - STATISTICS

1. Answer the following using the **EMPIRICAL RULE**:

The mean is 9 and the standard deviation is 1.

a) % between 8 and 11? 81.5%

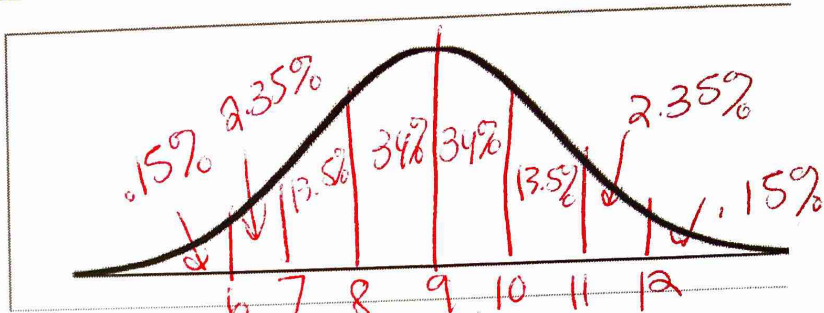
b) % lower than 7? 2.5%

c) If 175 people are involved, how many were between 7 and 10 minutes? $(.815)(175) = 142.625$ ~143 people

d) If someone was at 10, what percentile are they in?

who you did better than →

84th percentile



3. Answer the following **using your calculator**: *INCLUDE YOUR CALC SET UP*

The average score on a math test was a 79 with a standard deviation of 5. No extra credit was offered so the maximum possible score was a 100.

a) % of students who scored between a 70 and 80?

$\text{normcdf}(70, 80, 79, 5) = .5433$

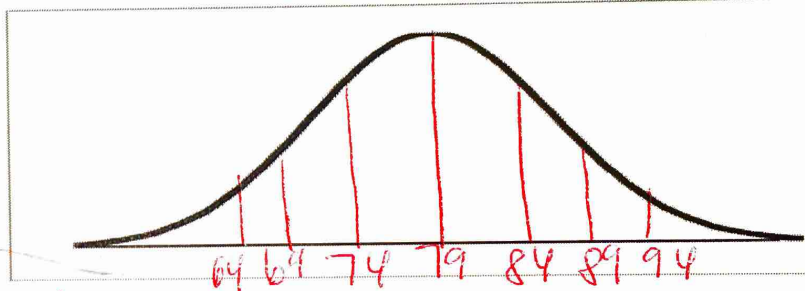
b) % of students who did better than a 90?

$\text{normcdf}(90, 100, 79, 5) = .0139$

c) If Jill is in the top 32% of the class, what did she make on the test?

$\text{invnorm}(.68, 79, 5) = 81.33$

(Note: A small normal distribution curve is drawn to the left with a shaded area of 32% to the right of a vertical line.)



The average on the math test was an 80 with a st. dev of 3 pts. The average on the chemistry test was a 78 with a standard deviation of 5 pts. If you made an 89 on your math test and your friend made an 89 on her chemistry test, who did better? EXPLAIN.

Math
 $\frac{89-80}{3} = 3$

Chem
 $\frac{89-78}{5} = 2.2$

You did better on the test b/c your z-score is higher!

4. ANSWER THE FOLLOWING USING THE STANDARD NORMAL PROBABILITY TABLE:

The average on a chemistry test was a 78 with a standard deviation of 5.

a) % of students who did better than an 86?
 $z = \frac{86-78}{5}$
 $z = 1.6$
 look up on table: .9452
 $1 - .9452 = .0548$

B) % of students who scored lower than a 70?
 $z = \frac{70-78}{5}$
 $z = -1.6$
 look up on table
 $.0548$

c) If you're in the bottom 15%, what did you get on the test?
 look for .15 in table:
 closest value $\rightarrow .1492$
 z-score $\rightarrow -1.04$

Solve using z-score formula
 $-1.04 = \frac{x-78}{5}$
 $-5.2 = x-78$
 $x = 72.8$

d) If you're in the top 5%, what did you get on the test?
 look for .95 in table
 closest \rightarrow split between
 .9495 & .9505
 1.64 1.65
 ↓ ↓
 1.645

$1.645 = \frac{x-78}{5}$

$8.225 = x-78$

$x = 86.225$