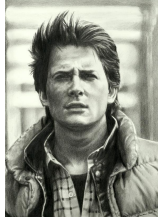
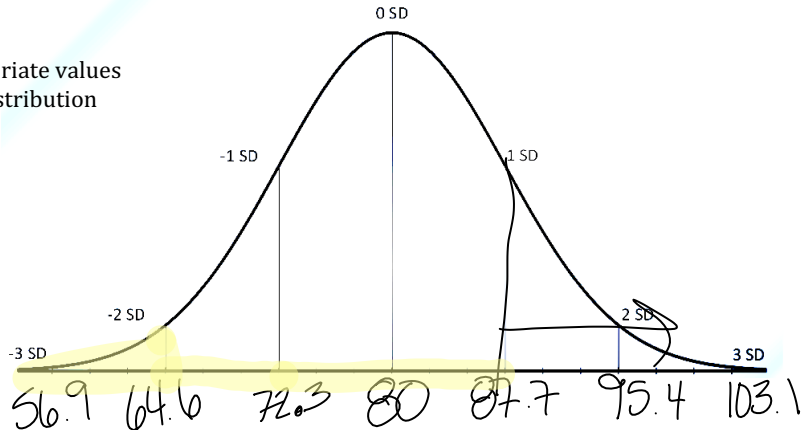


Lesson 2.2: Will Marty Make it Back to the Future?



After accelerating for 20 seconds, a DeLorean sports car has a wide range of speeds that it can achieve, depending on traction. The distribution of speed follows an approximately Normal distribution with a mean of 80 mph and a standard deviation of 7.7 mph.

1. Label the appropriate values on the normal distribution



2. What percentage of the runs will give the DeLorean a speed greater than 87.7 mph?

16%

3. What percentage of the runs will give the DeLorean a speed between 64.6 mph and 87.7 mph?

81.5%

4. What percentage of the runs will give the DeLorean a speed less than 64.6 mph?

2.5%

5. What percentage of the runs will give the DeLorean a speed less than 68.45 mph?

$\text{NORMCDF}(\overset{LB}{-\infty}, \overset{UB}{-1.5}, \overset{\text{mean}}{0}, \overset{SD}{1})$
 $Z\text{-score} = -1.5$
 $0.0668 \rightarrow 6.68\%$

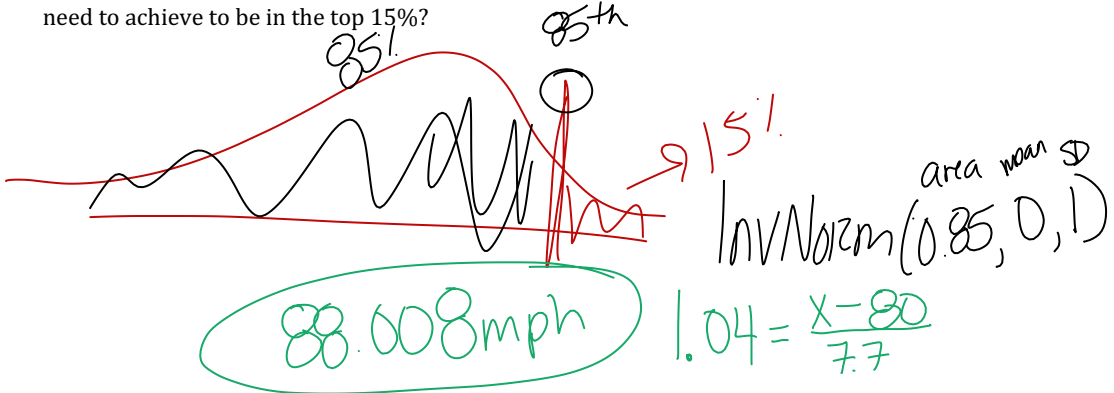
6. What percentage of the runs will give the Delorean a speed greater than 85 mph? Show work.

$z \rightarrow 0.65$
 $NORMCDF(0.65, \infty, 0, 1)$ (LB UB mean SD)
 0.2578
 25.78%

7. What percentage of the runs will give the Delorean a speed between 70 and 95 mph? Show work.

-1.30 1.95 LB UB mean SD
 $NORMCDF(-1.30, 1.95, 0, 1)$
 $0.8776 \rightarrow 87.76\%$

8. Marty wants his last run to be in the top 15% of all the possible speeds. What speed does he need to achieve to be in the top 15%?



5 FOR 5 1st ↓

Lesson 2.2 – Density Curves and Normal Distributions

Big Ideas:

$\text{NormCDF}(LB, UB, \text{mean}, SD)$

$\text{InvNorm}(\text{area}, \text{mean}, SD)$
to left

Draw pic
Label NC
Show work

Check Your Understanding:

When professional golfer Jordan Spieth hits his driver, the distance the ball travels can be modeled by a Normal distribution with mean 304 yards and standard deviation 8 yards.

1. On a specific hole, Jordan would need to hit the ball at least 290 yards to have a clear second shot that avoids a large group of trees. What percent of Spieth's drives travel at least 290 yards?

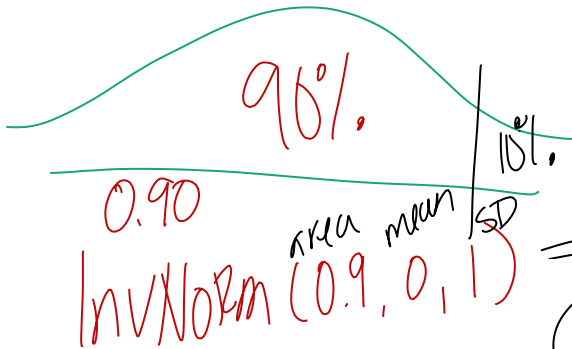


$$\frac{290 - 304}{8} = -1.75$$

$$\text{NormCDF}(-1.75, \infty, 0, 1)$$

$$0.9599 \text{ (95.99\%)}$$

2. On another golf hole, Spieth has the opportunity to drive the ball onto the green if he hits the ball a distance in the top 10% of all his drives. How far does the ball have to go?



0.90

$$\text{InvNorm}(0.9, 0, 1)$$

$$= 1.28 = \frac{x - 304}{8}$$

$$314.24 \text{ yds}$$

Homework: Pg 139 - 153, 55, 57, 59, 61, 63

