1. P(z < -1.54) ________________

2. P(z < 2.01) ________________

3. P(z > 0.93) ________________

4. P(z < 4.91) ________________

5. P(z > 12.4) ________________

6. P(z > 0) ________________

7. P(-3.41 < z < -2.37) ________________

8. P(-1 < z < 1) ________________

The app: https://davidf628.github.io/applets/stats_standard_normal_distribution.html can be used to help visualize standard normal probabilities in this section and also in module 3.4 when using inverse normal distributions.

Standard normal distributions are helpful, but they only apply when we are working with a data set that has a mean of zero and a standard deviation of one. If we convert our data values into z-scores, however, we will have a data set that has a mean of zero and a standard deviation of one.

Recall from earlier that this formula is:

$$\frac{-\mu}{\sigma}$$

1. Heights of women are normally distributed with a mean of 63.8 inches and a standard deviation of 2.9 inches. In order to be a Rockette dancer at New York City's Radio City Music Hall, a woman must be between 66 inches and 70.5 inches tall. What is the probability that a randomly selected woman meets the height requirement of the Rockettes?

2. Weights of newborn babies in the United States are normally distributed with a mean of 3420 g and a standard deviation of 495 g. A newborn weighing less than 2200 g is considered to be at risk. What percentage of babies is in the "at risk" category?

3. The Accreditation Council for Graduate Medical Education found that medical residents' mean number of hours worked in a week is 81.7. Suppose the number of hours worked per week is approximately normally distributed with a standard deviation of 6.9 hours. What is the probability that a randomly chosen resident works more than 85 hours in a week?