

Normal Distribution/Empirical Rule/Z-Scores Definitions and Concepts

1. Determine the median and mean of the following data sets and describe if the distribution would be approximately normal, skewed left, or skewed right.
 - a. 12, 11, 15, 13, 28, 9, 33
 - b. 70, 65, 75, 72, 65, 71, 69
 - c. 88, 90, 80, 92, 87, 2, 66

2. Why is the Empirical Rule sometimes referred to as the “68-95-99.7 rule”?

3. In words, describe what a z-score represents.

4. If $z = 2.21$, is our x value on the left or right of a normal distribution? What if $z = -6.68$?

5. If we obtain a z-score and look it up on a z table, does the number we get from the table represent the area under a normal curve to the left of our z-score, the probability of getting an x value to the left of our z-score, or are those two options identical?

6. Draw a normal curve with $\mu=50$ and $\sigma=8$, including the numbers at ± 1 , ± 2 , and ± 3 standard deviations from the mean and the percentages under the curve between standard deviations.
7. If $\mu=88$, $\sigma=15$, and $z=1.12$, what x value gave us that z -score? Start by stating the z -score formula.
8. If $z = 3.29$, without looking at a z table, do you think the area to the right of this z value will be very large or very small?
9. Without looking at a z -table, which of the following would be larger:
 - a. The percentage to the left of $z = -1.02$ or to the right of $z = 2.01$?
 - b. The percentage to the right of $z = -2.57$ or to the left of $z = 0.41$?
 - c. The percentage to the left of $z = 2.89$ or to the left of $z = -3.07$?