Statistics: Normal Calculations Practice

1. If a person has a negative z-score, did the person score higher or lower than the mean? ............... 

2. If a person has a negative z-score, it does not always mean that the person did not do well. Name a sport where having the lowest z-score would be the most desirable. 

............... 

For #3–9: The mean weight of adult American men is 180 pounds with standard deviation of 25 pounds. The weights are approximately normally distributed. Use the 68%-95%-99.7% Rule to approximate each of the following.

3. Using the values given, label the normal curve at the right with μ, μ ± σ, μ ± 2σ and μ ± 3σ. 

4. What percent of all adult American men have a weight less than 130 pounds? 

............... 

5. What percent of all adult American men have a weight between 130 and 265 pounds? 

............... 

6. What percent of all adult American men have a weight less than 230 pounds? 

............... 

7. What percent of all adult American men have a weight less than 105 pounds? 

............... 

8. The heaviest 16% of all men in weight weigh more than how many pounds? 

............... 

9. What weight separates the lowest 2.5% of all American men in weight from the remaining weights? ...........

For #10–17: Elephants have the longest pregnancy of all mammals. One species of elephants has a mean gestation period of 525 days and standard deviation of 32 days. Pregnancy length follows an approximately normally distribution.

10. Using the values given, label the normal curve at the right with μ, μ ± σ, μ ± 2σ and μ ± 3σ. 

11. The longest 16% of all elephant pregnancies last at least how many days? 

............... 

12. The middle 68% of all elephant pregnancies last between ...............
   and ............. days.

13. Only 2.5% of all elephant pregnancies last longer than ............ days.

14. What percent of elephant pregnancies last less than 461 days? ............

15. What percent of elephant pregnancies last between 525 and 557 days? ............

16. What percent of elephant pregnancies last between 493 and 589 days? ............

17. What percent of elephant pregnancies last less than 557 days? ............
In any given year, hundreds of thousands of college students take the Graduate Record Exam (GRE). The collection of their scores is approximately normally distributed with a mean score of 521 and standard deviation of 123. We abbreviate this as \( N(521, 123) \).

For EACH problem below, sketch the normal curve for the distribution and label the mean and the numbers 1, 2, and 3 standard deviations above and below the mean. Then shade the part of the sketch that the problem refers to.

1. Between what two scores do the middle 95% of all students fall?

2. What percent of all students score higher that 890?

3. What percent of students have a score between 398 and 644?

4. If a student’s score was the 84\(^{th}\) percentile, what is her score?