

Note: To receive full credit, clearly show the work; include labeled normal graph, z-score calculation(s), probability statement; and interpret your answer in the context of the problem.

Chapter 2 Review - Part 2

AP Statistics

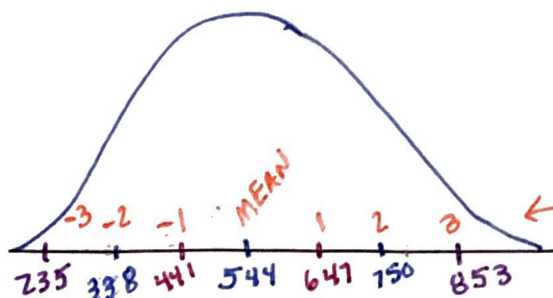
Name:

2021 KEY

1. The Graduate Record Examinations are widely used to help predict the performance of applicants to graduate schools. The range of possible scores on a GRE is 200 to 900. The psychology department at a university finds that the scores of its applicants on the quantitative GRE are approximately Normal with mean = 544 and standard deviation = 103.

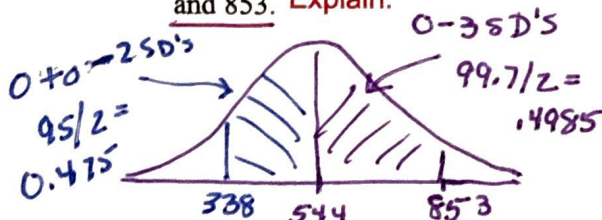
- (a) Make an accurate sketch of the distribution of these applicants' GRE scores. Be sure to provide a scale on the horizontal axis. Write the shorthand description of the given normal distribution. Tip: X(12345,56)

$X = \text{GRE Score}$
 $\sim N(544, 103)$



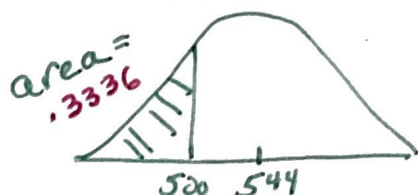
$Z \text{ SCORES } \sim N(0,1)$

- (b) Use the 68-95-99.7 rule to find the proportion of applicants whose score is between 338 and 853. Explain.



$$P(338 \leq X \leq 853) = 0.475 + 0.4985 = 0.9735$$

- (c) What proportion of GRE scores are below 500? Answer in context

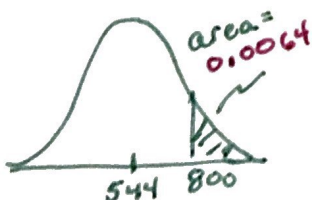


$$Z = \frac{500 - 544}{103} \quad Z = -0.43$$

$$P(Z < -0.43) = 0.3336$$

About 33% of GRE Scores are less than 500.

- (d) What proportion of GRE scores are above 800? Answer in context



$$Z = \frac{800 - 544}{103} \quad Z = 2.49$$

$$P(Z > 2.49) = 0.0064$$

About 1% of GRE Scores ARE ABOVE 800.

- (e) Calculate and interpret the 34th percentile of the distribution of applicants' GRE scores.

FIND ZSCORE $Z = -0.41 \leftarrow \text{invNorm}(.34, 0, 1)$

$$Z = -0.41 = \frac{X - 544}{103}$$

Solve w/ Algebra $X = (-0.41)(103) + 544$
 $X = 501.77$

GRE SCORES BELOW 501 FALL IN THE 34th percentile

