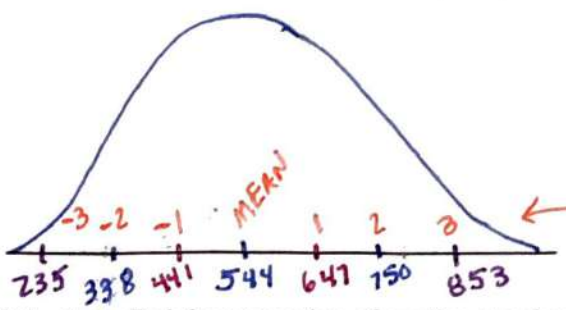
**Note: To receive full credit, clearly show the work; include labeled normal graph, z-score calculation(s), probability statement; and interpret your answer in the context of the problem.**

**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.

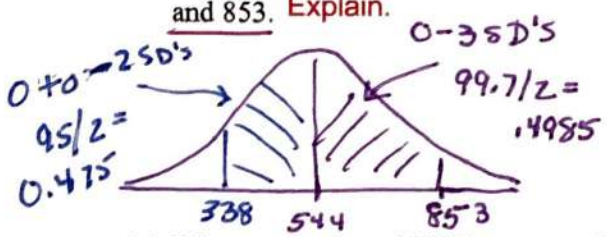
   (a) Make an accurate sketch of the distribution of these applicants' GRE scores. Be sure to provide a scale on the horizontal axis. Write the shorthand description of the given normal distribution. Tip: X(12345,56)

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



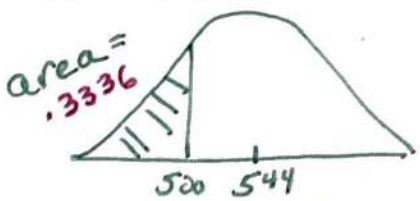

Z SCORES $\sim N(0,1)$ ← SD's

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




$P(338 \le X \le 853) =$
$.475 + 0.4985 =$
**0.9735**

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

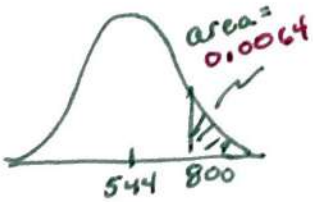



$Z = \frac{500 - 544}{103}$ $Z = -0.43$

$P(Z < -0.43) = .3336$

About 33% of GRE scores are less than 500.

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

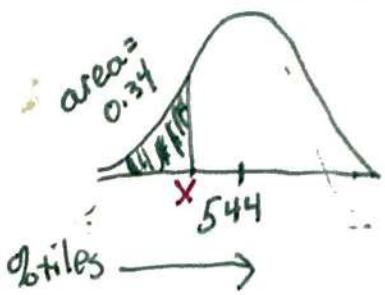



$Z = \frac{800 - 544}{103}$ $Z = 2.49$

$P(Z > 2.49) = 0.0064$

About 1% of GRE SCORES ARE ABOVE 800.

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




FIND ZSCORE $Z = -0.41$ ← 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