AP Statistics Name: _____

Calculator Practice

A.M.D.G.

Use your calculator to answer each of the following. Remember the following facts:

μ = population mean σ = population standard deviation

$\bar{x}$ = sample mean s = sample standard deviation

$$z = \frac{x - \mu}{\sigma}$$

1) In the general population, the mean IQ score is 100 and the standard deviation is 15, and IQs follow a normal distribution. Determine each of the following:
   a. Where is the center 68% of IQ scores? The center 95%?

   b. What percentile rank would an IQ of 70 be?

   c. A certain student claims that their IQ is 135. What is the *z*-score for this value? Use your calculator to find the proportion of the population that this student is higher than.

   d. Suppose that this student is part of a club at the college prep school she attends that only allows students with an IQ of 135 or higher. If there are 35 members of the club who have this IQ or better, do you think that the population of the school has a normal distribution for IQs? Why or why not?

2) Using the same mean and standard deviation of IQs as in problem 1, determine each of the following:

a. An IQ of 140 is considered genius. What proportion of the population has this IQ **or higher**? If California has a normal distribution of IQs and a population of 40 million, how many geniuses would you expect to find in California?

b. A person with a severe developmental disability (who would likely need daily care and supervision) has an IQ at or below 35. What proportion of the population would fall into this category? Assuming a population of 40 million, how many Californians would likely fall into this category?

3) You download an app that claims to be able to gauge your IQ. After playing a series of games, it says that your IQ is in the top 0.020 of the population (the top 2.0%). What is the *z*-score for this value? What is the IQ score associated with this value?

4) After playing a different set of games on the same app, it claims that your IQ is only in the top 10%. What is the *z*-score for this value? What is the IQ score associated with this value?

5) Suppose you know that the mean birth weight in the US is 7.6 pounds with a standard deviation of 0.225 pounds and follows a normal distribution. Find each of the following:
   a. What is the *z*-score of the bottom 1% (0.01) of babies in the US?

b. What is the weight of the bottom 1% (0.01) of babies in the US?

c. What is the weight of the top 1% (0.01) of babies in the US?

d. What is the *z*-score of the top 1% (0.01) of babies in the US?

e. What is the *z*-score of the middle 50% of babies in the US?

f. What is the weight range of the middle 50% of babies in the US?