Name: **Date:**

Unit 11, Day 5 Practice **Period:**

Learning Targets

- I can calculate and interpret Z-scores and standard deviations in a real world context

1) A researcher is studying the amount of time high school students take to complete a test. The data collected for the study produced a mean of 80 minutes and a standard deviation of 8 minutes. What is the z-score for a time of 90 minutes and what does it represent?

z-Score

The number of standard deviations an element is away from the mean

$$\text{z-score}\,(z) = \frac{x - \mu}{\sigma}$$

$\mu = mean\ of\ the\ data\ set$
$\sigma = standard\ deviation\ of\ data\ set$
$x = element\ of\ data\ set$

1. Statistical information for a data set is given. • The mean is 23.4 • The z-score for 21 is -1.5 What is the standard deviation for this data set?	2. Statistical information for a data set is given. • The standard deviation is 2.1 • The z-score for 13.0 is 1.2 What is the mean for this data set?
3. Statistical information for a data set is given. • The mean is 99 • The z-score for 83 is -1.2 What is the standard deviation for this data set?	4. Statistical information for a data set is given. • The standard deviation is 8.7 • The z-score for 64 is 0.6 What is the mean for this data set?

5. Statistical information for a data set is given. • The mean is 18.1 • The standard deviation is 5.6 What is the z-score for 16 in this data set?	6. The data set shown has a mean of 55.8 and a standard deviation of 13.2, rounded to the nearest tenth. $\{31, 40, 42, 51, 55, 56, 56, 58, 62, 67, 72, 80\}$ How many of these data points have a z-score less than 0.5? List your answers below.
7. Draw a sketch of the normal curve to represent the information above in #5.	8. The data set shown has a mean of 21.9 and a standard deviation of 5, rounded to the nearest tenth. $\{15, 17, 17, 18, 23, 24, 26, 27, 30\}$ How many of these data points have a z-score greater than 1.2?

More Practice:

- **A normally distributed data set has μ = 22 and σ = 1.5.**
  - **What would be the value of an element of this data set with z-score = 2?**

  - **What would be the value of an element of this data set with z-score = -3?**