

Chapter 6: The Standard Deviation as a Ruler and the Normal Model



Key Vocabulary:

- standard deviation
- standardized value
- rescaling
- z-score
- normal model
- parameter
- statistic
- standard Normal model
- 68-95-99.7 Rule
- normal probability plot

- $N(\mu, \sigma)$

Calculator Skills:

- normalpdf(
- normalcdf(
- invNorm(
- normal probability plot
- -1E99 and 1E99

1. What unit of measurement is used to describe how far a set of values are from the mean?
2. Explain how to *standardize* a value.
3. Briefly describe why *standardized units* are used to compare values that are measured using different scales, different units, or different populations.
4. How does adding or subtracting a constant amount to each value in a set of data affect the mean? Why does this happen?
5. How does multiplying or dividing a constant amount by each value in a set of data (also called rescaling) affect the mean? Why does this happen?
6. How does adding or subtracting a constant amount to each value in a set of data affect the standard deviation? Why does this happen?
7. How does multiplying or dividing a constant amount by each value in a set of data (also called rescaling) affect the standard deviation? Why does this happen?
8. How does *standardizing* a variable affect the shape, center, and spread of its distribution?

9. In what way does a *z-score* give an indication of how unusual a value is?
10. How would you describe the shape of a *normal curve*? Draw several examples.
11. Where on the *normal curve* are *inflection points* located?
12. When is it appropriate to use a *normal model* to model a set of data?
13. Explain the difference between \bar{y} and μ .
14. Explain the difference between s and σ .
15. Briefly explain the *68-95-99.7 Rule*.
16. What is a *percentile*?
17. Is there a difference between the 80th percentile and the top 80%? Explain.
18. Describe two methods for assessing whether or not a distribution is *approximately normal*.

