

**Name:**

**Elementary Statistics**

**HW 3.4 – Part 1**

1. James Madison, the fourth president of the United States, was 163 cm tall. His height converts to the z-score of -2.28 when included among the heights of all presidents.
  - a. Is his height above or below the mean?
  - b. How many standard deviations is Madison's height away from the mean?
2. If your score on your next statistics test is converted to a z score, which of these z scores would you prefer: -2.00, -1.00, 0, 1.00, 2.00? Why?
3. As of this writing, Barack Obama is President of the United States and he has a net worth of \$3,670,505. The 17 members of the Executive branch have a mean net worth of \$4,939,455 with a standard deviation of \$7,775,948 (based on data from [opensecrets.org](http://opensecrets.org)).
  - a. What is the difference between President Obama's net worth and the mean net worth of all members of the Executive Branch?
  - b. How many standard deviations is that (the difference found in part (a))?
  - c. Convert President Obama's net worth to a z score.
  - d. If we consider "usual" amounts of net worth to be those that convert z scores between -2 and 2, is President Obama's net worth usual or unusual?

4. In the process of designing aircraft seats, it was found that men have hip breadths with a mean of 36.6 c, and a standard deviation of 2.5 in.
- What are the z-scores that separate the unusual hip breadths from those that are usual?
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5. As of this writing, Sandra Bullock was the last woman to win an Oscar for Best Actress and Jeff Bridges was the last man to win for Best Actor. At the time of the awards ceremony, Sandra Bullock was 45 years of age and Jeff Bridges was 60 years of age. Based on Data Set 11 in Appendix B, the Best Actresses have a mean age of 35.9 years and a standard deviation of 11.1 years. The Best Actors have a mean age of 44.1 years and a standard deviation of 9.0 years. (All ages are determined at the time of the awards ceremony.)
- Find each of the z-scores for the ages of Sandra Bullock and Jeff Bridges when they won the Oscars?
  - Relative to their genders, who was younger when winning the Oscar: Sandra Bullock or Jeff Bridges? Explain.
6. Use the following duration times (seconds) of 24 eruptions of the Old Faithful geyser in Yellowstone National Park. The duration times are scored from lowest to highest. Find the indicated quartile.

110	120	178	213	234	234	235	237	240	243	245	245
250	250	251	252	254	255	255	259	260	266	269	273

a.  $Q_1$

b.  $Q_3$

