Mth 102 – General Education Statistics – Practice Exam 2 – Solutions

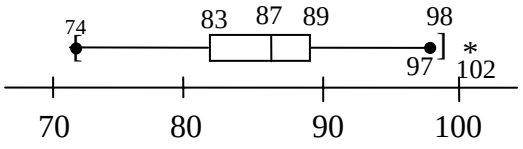
1.
   a. Mean would be best, since the scores are symmetric.
   b. Only mode would work here – this is qualitative data.
   c. A data set of salaries – even if all are professional football players – is always skewed. Median is best.

2. Since the mean is so much less than the median, these data are skewed left – the extreme low scores pulled the mean down, but did not affect the median.

3.
   a. $\sum x = 5+14+7+10+6+8+12+9+10+9+7+11 = 108$
   b. $\sum x^2 = 5^2+14^2+7^2+10^2+6^2+8^2+12^2+9^2+10^2+9^2+7^2+11^2 = 1046$

4. $s = \sqrt{\dfrac{\sum x^2 - \left(\sum x\right)^2 / n}{n-1}} = \sqrt{\dfrac{1046 - \dfrac{108^2}{12}}{12-1}} \approx 2.59$

5.
   $\min = 74$
   $Q_1 = x_8 = 83$ $\quad IQR = Q_3 - Q_1 = 89 - 83 = 6$
   $Med = x_{16} = 87$ $\quad lower\ \lim it = Q_1 - 1.5IQR = 74$ So 102 is a possible outlier.
   $Q_3 = x_{24} = 89$ $\quad upper\ \lim it = Q_3 + 1.5IQR = 98$
   $\max = 102$



6. B has a higher standard deviation, since it is less concentrated in the center.

7. Most scores will be within 3 standard deviations, so between 55 and 145.

8. Range only gives the difference between the highest and lowest, while standard deviation tells how far a typical observation is from the mean. A data set could be very concentrated with one extreme observation and give the same range as another data set that is very spread out.

9. This means that about 83% of individuals who took the exam performed at or below your score.

10. $z = \dfrac{x - \mu}{\sigma} = \dfrac{112 - 100}{15} = \dfrac{12}{15} = 0.8$

    This means you are 0.8 standard deviations from the mean.

11.
    a. $\bar{x} = 38$
    b. $Med = 38$
    c. $s = 19.2$

12. Based on the boxplot, the data are skewed left. The justification should be something about the long extension to the left, and the fact that the median is right of center.