Section 2.4-2.5 Self-Test Solutions

1) If the standard deviation is equal to 4, then the variance is:

    a) 1
    b) 2
    c) 4
    d) 16 standard deviation is *s*, variance is *s* squared
    e) 64

2) Questions 14-16 are based on the data set :   1   3   4   5   6   11

If the 11 in the data set was replaced by a 110, then

    a) The standard deviation would get larger - The variability increases when the data is more spread out
    b) The standard deviation would get smaller
    c) The standard deviation would stay the same
    d) Can't tell from the information given

3) The average price of houses in a subdivision is $120,000 with a standard deviation of $10,000. What can we say about the percent of houses priced between $110,000 and $130,000?

    a) Approximately 68%
    b) Approximately 95%
    c) At least 75%
    d) At least 88.9%
    e) Nothing - Use Chebychev's inequality when it isn't approximately normal. "At least 0%" of the data has to be within 1 standard deviation (120,000-10,000=110,000 to 120,000+10,000=130,000)

4) The average price of houses in a subdivision is $120,000 with a standard deviation of $10,000. What can we say about the percent of houses priced between $90,000 and $150,000?

    a) Approximately 68%
    b) Approximately 95%
    c) At least 75%
    d) At least 88.9%   - Use Chebychev's inequality when it isn't approximately normal and the percent for 3 standard deviations (120,000-3x10,000=90,000 to 120,000+3x10,000=150,000)
    e) Nothing

5) The average amount of time a biology homework assignment takes is approximately normally distributed with a mean of 21 minutes and a standard deviation of 6 minutes. What can we say about the percent of students who finish between 15 and 27 minutes?

    a) Approximately 68% - Says normal so 68/95/99.7 rule for 1 standard deviation (21-6=15, 21+6=27)
    b) Approximately 95%
    c) At least 75%
    d) At least 88.9%
    e) Nothing

6) The average amount of time a biology homework assignment takes is approximately normally distributed with a mean of 21 minutes and a standard deviation of 6 minutes. What z-score would a student finishing in 18 minutes have?

    a) -2

    b) -0.5   z = (value – mean)/sd = (18-21)/6 = -3/6 = -1/2

    c) 0.5

    d) 0.57

    e) 2

7) Physics classes are notorious for having very low grades on their exams (that get curved at the end of the semester). The first exam's scores in one semester were approximately normally distributed with a mean of 40 and a standard deviation of 10.   The second exam's scores were approximately normally distributed with a mean of 30 and a standard deviation of 5.   Use the z-scores to determine which would be a better score, a 50 on exam 1 or a 40 on exam 2?

    a) 50 on exam 1

    b) 40 on exam 2 The exam 1 score has a z of (50-40)/10=10/10=1, exam 2 score has a z of (40-30)/5=2. So exam 2's score is better.

    c) The two scores are equivalent