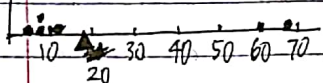3 2. ~~b.~~

6. a. $\dfrac{67 + 11 + 7 + 7 + 5}{5} = 19.4 \approx 19$

∴ The typical number of billionaires in the five states in the Northeast is 19.

b.

c. $s = \sqrt{\dfrac{(67-19.4)^2 + (11-19.4)^2 + (7-19.4)^2 \times 2 + (5-19.4)^2}{5-1}}$

$= 26.7$

≈ 27

∴This tells us that usually the number of billionaires of a state is ~~hi of~~ within 27 people of the mean, which is 19.4 people.

d. $|67-19.4| > |5-19.4| > |7-19.4| > |11-19.4|$

∴ 67 is farthest from the mean and contributes most to the standard deviation.

12. a. $10.833 > 9.00 > 8.241 > 8.034$

∴ The means are higher for those in pre-algebra.

b. The mean is higher for mothers.

c. $2.691 < 4.05 < \text{~~4.625~~} < 4.626$
    4.625

∴ Mothers of pre-algebra.

16. ~~8.~~ group A has the larger standard deviation, because in B more ~~frequency~~ data are close to the mean than in A.

~~the the vertex of each each frequency of~~

18. a. $[52.2\,cm + 2.5\,cm] = \text{~~62 cm~~} \text{~~cm~~} \text{~~49.7cm~~}$

$= \text{~~2.5 cm + 2.5 cm~~}\; 52.2\,cm + 2.5\,cm = 54.7\,cm$

$= \text{~~5.0 cm~~}$ ∴ The range is from 49.7cm to 54.7cm.

b. $54\,cm - 52.2\,cm = 1.8\,cm < 2.5\,cm$

∴ It is not.

30. a. $\dfrac{2400-1600}{400} = 2$, $\dfrac{3200-2400}{400} = 2$

∴ Approximately 95% of northeastern states ~~are~~ are expected to have crime rates between 1600 and 3200. 2800-2400

b. $\dfrac{2400-2000}{400} = 1$, $\dfrac{\text{~~2400-2000~~}}{400} = 1$

∴ Approximately 68% are between ~~2000~~ and 2000. 2000

c. $\dfrac{2400-400}{400} = 5 > 3$ ∴ About 99.7% of observations fall within 3 standard deviations of mean.

∴ No, because it ~~is~~ is smaller than 3 standard deviations ~~but~~ lower than the mean, so it is unlikely to happen.

32. a. $64 - 1 \cdot s = 64 - 1 \cdot 3 = 61$

∴ 61 inches.

b. $(70-64) \div s = 6 \div 3 = 2$

∴ the z-score is 2.

34. They are as unusual as each other, because the distribution is roughly symmetric since it is roughly bell-shaped.

38. a. $500 - 1.50 \cdot 100 = 350$

∴ 350 corresponds to a z-score of -1.50.

b. $500 + 1.8 \cdot 100 = 680$

∴ 680 corresponds to a z-score of 1.8.

42. a. ~~the median is~~ $(217+218) \div 2 = 217.5$

∴ The median is 217.5.

b. $Q1 = 198$, $Q2 = 268$

$IQR = 268 - 198 = 70$

50. $\therefore 337500 < 104.9589$ and they have a large diffrence.

$\therefore$ The distribution of their salary is skewed ~~to the left~~ negatively.

If I represent the owner, I would use the mean because it implies the typical salary of a player is already very high.

If I represent ~~the~~ a player, I would use the median because it implies most of the players' salaries are still relatively low.

The reason of a large discrepancy between the median and the mean is because there are a few players who ~~t~~ receive very high salaries, and therefore ~~they~~ their salaries ~~made~~ make the mean much larger than the median.

52. a. I would use mean and standard deviation, because the distribution is, roughly symmetric and bell-shaped. (unimodal,)

b. I would use the median and interquartaile; range because the distribution is not symmetric and it is roughly skewed (right) .

c. I would use median and interquartile range because they can be used ~~typically~~ ~~for~~ both for skewed distribution and symmetric distribution.

d. They are closer together in A, because the distribution is symmetric and ~~unimodal~~ bell-shaped.

e. They are farther apart in B, because the distribution is not symmetric. It is roughly right skewed. (and not bell-shaped!)

58. These men have greater variation in ~~the~~ brain size because the box of men's boxplot is longer, indicating a larger IQR.

60. C is Y because they have two outliers. M is X and P is Z because the data are closer together in Z than in X, in P than in M.