Name: Answers

1) Each person in a random sample of ten ninth graders was asked two questions:
   - How many hours did you spend watching TV last night?
   - What is the total value of the coins you have with you today?

Here are the data for these ten students:

Student	Hours of TV	Total Value of Coins (in dollars)
1	2	0.00
2	1	0.89
3	0	2.19
4	3	0.15
5	4	1.37
6	1	0.36
7	2	0.25
8	2	0.00
9	4	0.54
10	3	0.10

a) Construct a dot plot of the data on <u>hours of TV</u>. Would you describe this data distribution as approximately symmetric or as skewed?
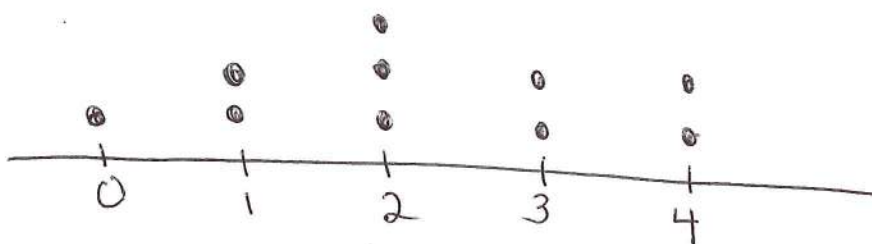
Approximately symmetric.

b) If you wanted to describe a typical number of hours of TV for these ten students, would you use the mean or the median? Calculate the value of the measure you selected and explain why you chose what you chose.
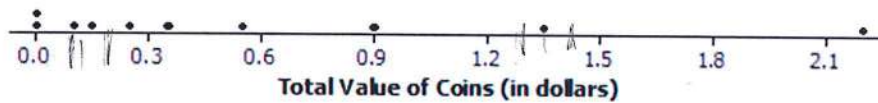
$\bar{x} = 2.2$

median $= 2$

Either the mean or the median would work since they're close to each other. The median seems most appropriate, though, since the mean was affected by the extra "4."

c) Here is a dot plot of the data on total value of coins.

Total Value of Coins (in dollars)

$0, 0, \sim.1, \sim.15, \sim.25, \sim.35, \sim.55, .9, 1.35, 2.2$

Calculate the values of the mean and the median for this data set.

$$\overline{x} = .585 = .59$$

$$\sigma x = .676 = .68$$

d) Why are the values of the mean and the median that you calculated in question (c) above so different? Which of the mean and the median would you use to describe a typical value of coins for these ten students?

This data is skewed right (i.e. has a long tail to the right) so the mean is more affected by that than the median.

2) Ten members of a high school girls' basketball team were asked how many hours they studied in a typical week. Their responses (in hours) were: 20, 13, 10, 6, 13, 10, 13, 11, 11, 10.

a. Using the axis given below, draw a dot plot of these values. (Remember, when there are repeated values, stack the dots with one above the other.)
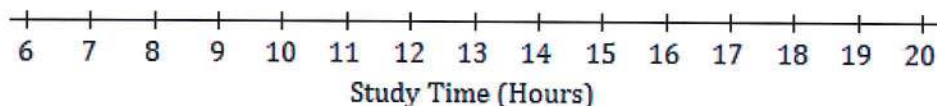

Study Time (Hours)

b. Calculate the mean study time for these students.

c. Calculate the deviations from the mean for these study times, and write your answers in the appropriate places in the table below.

Number of Hours Studied	20	13	10	6	13	10	13	11	11	10
Deviation from the Mean										

3) The study times for 14 girls from the soccer team at the same school as the one above are shown in the dot plot below.

Study time (hours)
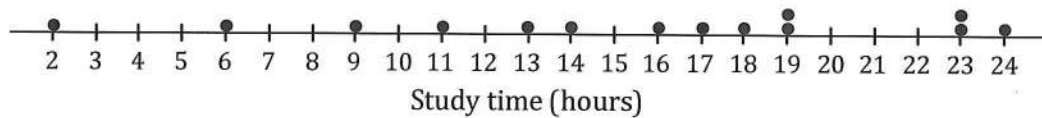
a) Based on the data, would the deviations from the mean (ignoring the sign of the deviations) be greater or less for the soccer players than for the basketball players?

The data seems a bit skewed left so the median might be best.

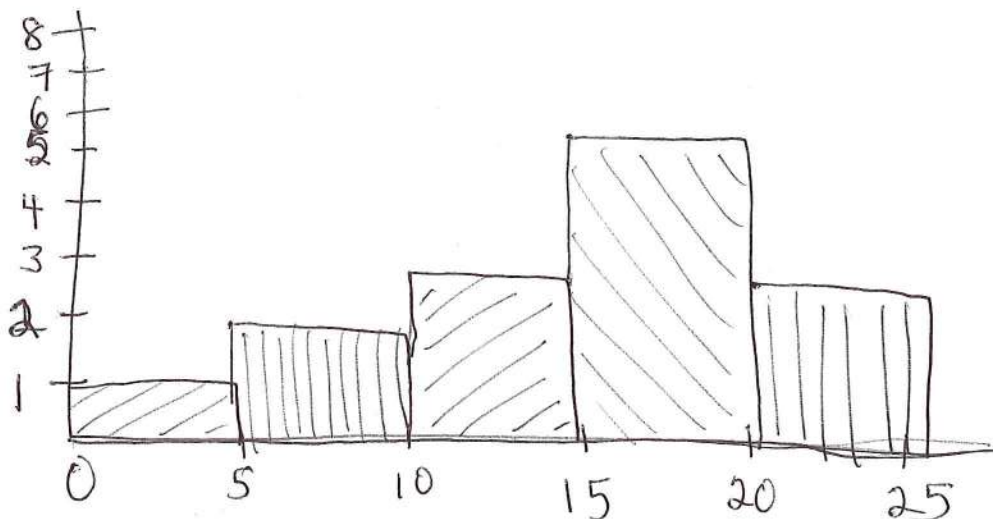b) Using your calculator, find the standard deviation of this set of data.

$$2, 6, 9, 11, 13, 14, 16, 17, 18, 19, 19, 23, 23, 24$$

$\overline{x} = 15.29$ median $= 16.5$ $\boxed{\sigma x = 6.33}$

c) Create a histogram of the data shown above in the dot plot. Have the intervals go up by increments of 5 on the x-axis.

	freq
0-4	1
5-9	2
10-14	3
15-19	5
20-24	3

4) All the members of a high school softball team were asked how many hours they studied in a typical week. The results are shown in the histogram below.
(The data set in this question comes from Core Math Tools, www.nctm.org.)
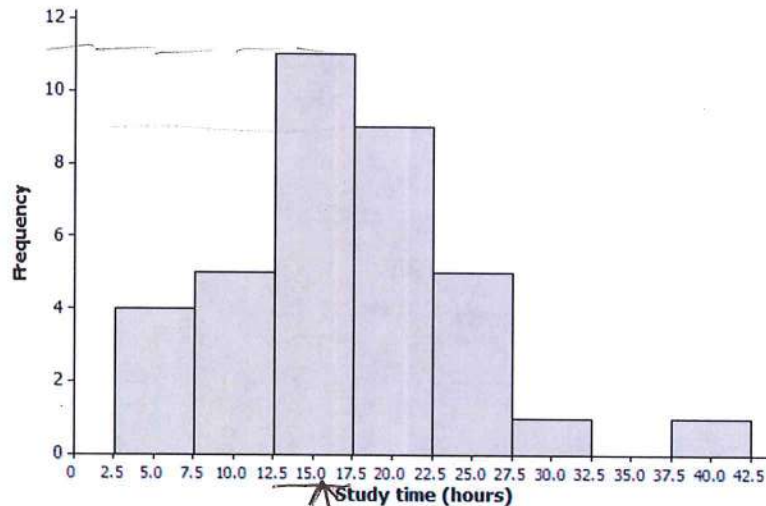
a. We can see from the histogram that four students studied <u>around</u> 5 hours per week. How many students studied <u>around</u> 15 hours per week?

11 students

b. How many students were there in total?

$4 + 5 + 11 + 9 + 5 + 1 + 0 + 1 = 36$ students

c. Suppose that the four students represented by the histogram bar centered at 5 had all studied exactly 5 hours, the five students represented by the next histogram bar had all studied exactly 10 hours, and so on. If you were to add up the study times for all of the students, what result would you get?

5, 5, 5, 5, 10, 10, 10, 10, 10, 15, 15, 15, 15, 15, 15,
15, 15, 15, 15, 15, 20, 20, 20, 20, 20, 20, 20, 20, 20,
25, 25, 25, 25, 25, 30, 40 = 610

d. What is the mean study time for these students as described in part (c)? (You might want to use your calculator for this!)

$$\overline{X} = \frac{610}{36} = 16.94$$

e. What is the standard deviation of this data set (as described in part c and d)?

$\sigma = 7.39$

Mixed Review

5) Solve for x: $2x + 7 = -3x - 13$

$$+3x +3x$$

$$5x + 7 = -13$$
$$-7 -7$$

$$5x = -20$$

$$\frac{5x}{5} = \frac{-20}{5}$$

$$\boxed{x = -4}$$

6) Solve for x: $8 = -\dfrac{3}{7}x + 5$

$$-5 -5$$

$$-\frac{7}{3} \cdot \frac{3}{1} = -\frac{3}{7} x \cdot \frac{7}{3}$$

$$\boxed{-7 = x}$$

7) Solve for x: $2(x+9) - 5x = 7 + 2(3x - 1)$

$$2x + 18 - 5x = 7 + 6x - 2$$

$$-3x + 18 = 6x + 5$$
$$+3x +3x$$

$$18 = 9x + 5$$
$$-5 -5$$

$$13 = 9x$$

$$\frac{13}{9} = \frac{9x}{9}$$

$$\boxed{x = \frac{13}{9}}$$

8) Solve the system using any strategy you choose:

$$2x + y = 8$$
$$+ \quad 8x - y = 12$$

$$\frac{10x}{10} = \frac{20}{10}$$

$$x = 2$$

$$2(2) + y = 8$$

$$4 + y = 8$$
$$-4 -4$$

$$y = 4$$

$$\boxed{(2, 4)}$$