Study Guide Ch 14   **Math 7**   **Show all necessary calculations.**

1. Allen wants to collect data about the varsity basketball team at his high school. He gives the following survey to all members of the team.

Varsity Basketball Team Survey
1.What is your approximate height in inches?
2. About how many hours a week do you exercise?
3. Approximately how many hours do you sleep each night?
4. Approximately how many hours do you spend on homework each night?

   a.   What was the population of the survey?

   Allen's high school varsity basketball team members.

   b.   Is the data collected in the survey a census? Explain your reasoning.

   Yes - all members of the population took the survey.

   c.   After giving the survey, it is determined that 28% of the players spend 1–2 hours on homework each night. Was a parameter or statistic determined? Explain your reasoning.

   Parameter, because the entire population was surveyed.

2. Henry wants to know the mean number of minutes students spend on their computer each day. He selects a sample of 7 students using the random digit table beginning on line 14 shown.

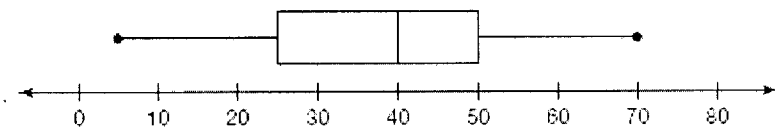| Line 14	14544	37134	54714	82401	67228	26531	19386	15457	17999	18306

   01 - 32

   a.   What is the sample size?

   7 students

   b.   Henry assigns each student a two-digit number beginning with 01 and ending with 32. Which students are chosen for the sample?

   Student #'s 14, 24, 01, 22, 31, 19, and 17

3. Use the box-and-whisker plot shown to identify the five-number summary.

min: 5   Q1: 25   median: 40   Q3: 50   Max: 70

4. Mr. Moore is installing new work benches in the wood shop. He wants the height of the benches to be best for students standing and working on projects. He decides to use the mean height of the students in the school as a guide. Rather than using the heights of all the students in the school, he decides to take a sample of students.

   a. What is the population for this problem?

   all students in the school.

   b. Suppose Mr. Moore decides to use 20 seventh graders as the sample. Is this sample a random sample? Explain your reasoning.

   No - It does not give all students in school an equal chance.

   c. Mr. Moore decides to use a random number generator to select 20 students from the school. Suppose that when choosing 20 students using the random generator on the graphing calculator, Mr. Moore's sample is all eighth graders. Does that mean the sample is not a random sample? Explain your reasoning.

   The sample is still random; all population members had an equal chance of being selected. The sample was all 8th graders by chance.

5. Jesse has a collection of 50 tangram pieces. Each piece has a different size, shape, and color. Each piece has a unique number between 01 and 50 printed on one side. He wants to select 5 pieces at random.

   a. How might Jesse randomly choose 5 tangram pieces?

   Example: Use a random # table and select first 5 two-digit numbers between 01-50. These are sample

   b. Flynn suggests the following method for selecting the pieces: put the pieces in a cloth bag and choose 5 pieces from the bag. Will Flynn's method result in a random sample? Explain your reasoning.

   Not random, because you will be more likely to choose the larger pieces.

   c. How can Jesse use a random number table to choose the pieces for his sample?
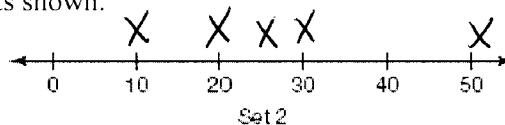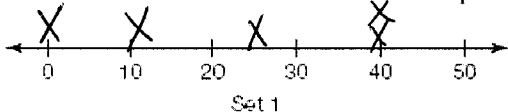
   See (a)

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6. Consider the following data sets.
   Set 1: ~~0, 10~~, 25, ~~40, 40~~
   Set 2: ~~10,~~ 20, 25, 30, ~~50~~

   . a.   Plot the data sets on the two separate line plots shown.

   Set 1

   Set 2

   b.   Calculate the median for each set.

   Set 1 : 25
   Set 2 : 25

   c.   Calculate the mean for each data set. Show some work for each set.

   Set 1: $\dfrac{0+10+25+40+40}{5} = \dfrac{115}{5} = 23$ Set 2: $\dfrac{10+20+25+30+50}{5} = \dfrac{135}{5} = 27$

   d.   What do you notice about the medians of the two sets of data?
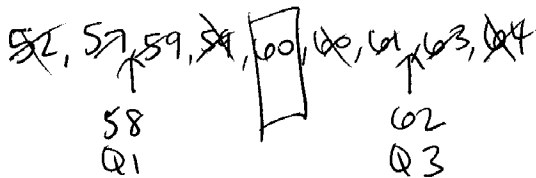
   they are equal

   e.   What do you notice about the means of the two sets of data?

   Set 2's mean (27) is higher than Set1's (23).

7. Coach Evans recorded the height, in inches, of each player on his two teams. The results are shown.

Team 1	Team 2
~~57~~, 64, ~~60, 60, 62, 59, 61, 63, 59~~	~~61, 57~~, 63, ~~62, 60~~, 64, ~~60, 62~~, 63

Calculate and interpret the IQRs of the heights for each team.

~~57~~, 57, 59, ~~59~~, |60|, ~~60, 61, 63, 64~~
   58   62
   Q1   Q3

IQR = 62-58 = 4

The mid- ~~50%~~ 50% of the heights for team 1 are between 62 and 58 inches with a range of 4 inches.

~~57~~, ~~60, 60, 61~~, |62| ~~62~~, 63, 63, ~~64~~
   60   63
   Q1   Q3

IQR 63-60 = 3

The mid- ~~50%~~ 50% of the heights of Team 2 are between 63 and 60 with a range of only 3 (less than Team 1).

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Team 2 players' heights are more consistent than Team