

AFM Unit 2 Test Review

KEY

1. Find the measures of central tendency given: 300, 24, 40, 50, 60, 40, 36, 24, 52, 67, 93.

a) Mean: 71.45 b) Median: 50 c) Mode: 40

d) Standard Deviation: 78.38 e) What does the standard deviation tell you about the data?
 that the data is spread out

- f) Calculate the mean, median, mode, and standard deviation WITH/OUT 300. Explain how and WHY your values changed.

\bar{x} : 48.6 Mode: 40 Because 300 was an outlier
 s_x : 21.00 and it caused the \bar{x} and s_x to be higher

2. The San Antonio Spurs won the 2006 NBA Championship. This table gives the total points scored by each player during that season.

Total Points Scored by San Antonio Spurs Players (2005-2006 Season)					
Player	Points	Player	Points	Player	Points
Brent Barry	635	Francisco Elson	350	Fabrizio Oberto	349
Matt Bonner	275	Midvin Ely	89	Tony Parker	1429
Bruce Bowen	510	Michael Finley	740	Reno Udrih	340
Jackie Butler	41	Miami Gintochilli	1240	Jacque Vaughn	192
Tim Duncan	1599	Robert Horry	268	James White	50

- a) Find the five-number summary. Min = 41 Q1 = 192 Median = 349 Q3 = 740 Max = 1599

- b) Calculate the interquartile range. c) What is the range of this data?

$740 - 192 = 548$ $1599 - 41 = 1558$

3. Determine which type of sampling (Cluster, Convenience, Random, Stratified, or Systematic) is being used in each of the following situations.

- a. Farmer Joe separates his apple tree farm into 10 regions. He counts the number of apples produced in just one of the regions and uses that estimate to predict the number of apples produces on the whole farm. **cluster**
- b. Mr. Daly samples his class by picking 10 numbers of his hat and each number is assigned to a student. **Random**

- c. To study the amount of time students spend doing homework each day Mrs. Boyette surveys 25 freshmen, 25 sophomores, 25 juniors, and 25 seniors. **Stratified**

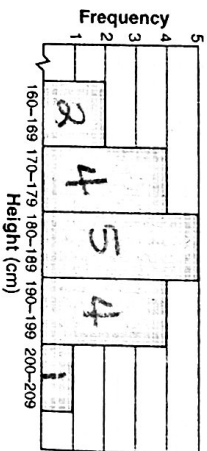
d. The school librarian wants to determine how many students use the library on a regular basis. She asks every 3rd student that comes into the library. **systematic**

e. Crabtree Valley Mall is trying to determine what type of food is most popular among its shoppers. The surveyors ask people that are in eating in the mall's food court. **convenience**

4. The test average in Mrs. Stislack's class was at 78 with a standard deviation on 4.5. The test average in Mr. Seguin's class was an 83 with a standard deviation of 6.1. Which class was more consistent and how do you know?

Mrs. Stislack's class because the standard deviation is smaller.

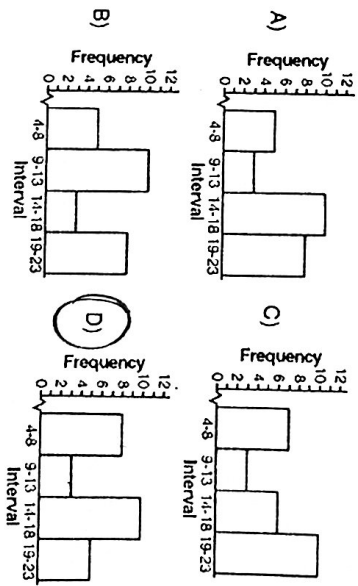
5. The accompanying histogram shows the heights of the students in Kyra's health class.



- What is the total number of students in the class?
 A) 15 B) 209 **C) 16** D) 5

6. Which one of the following histograms represent the data in the table below?

Interval	Frequency
4-8	8
9-13	3
14-18	10
19-23	5



For problems 7 - 9, use the box plot below which represents the test score earned on a science test.



7. According to the diagram shown, what is the median score?
 A) 75 B) 70 C) 85 D) 77
8. According to the diagram shown, what score represents the first quartile?
 A) 55 B) 70 C) 100 D) 75

9. A score of 85 on the box plot shown refers to:

- A) the third quartile
 B) the maximum score
 C) the median
 D) the mean

10. Mr. Fisher finished grading a set of 400 tests for his Spanish 1 class. He decided to assign grades based on a normal distribution. The mean of the scores was a 75. The standard deviation was 5.

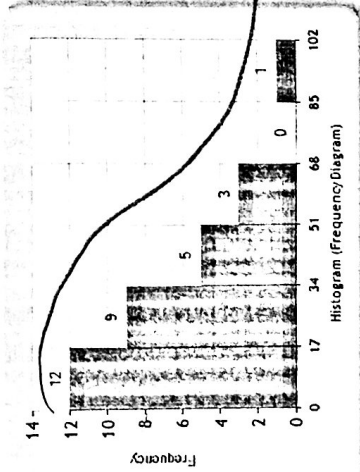
a. How many students received an A (90 or higher)?

$$\text{normalcdf}(90, 999, 75, 5) = 0.00134(400) = 0.5 \text{ so maybe 1 student}$$

b. How many students received an C (70-79.9)?

$$\text{normalcdf}(70, 79.9, 75, 5) = 0.6778(400) = 271.1 \text{ so around 271 students}$$

11. The histogram below shows the age of attendees at a family holiday celebration.



Describe the shape of the histogram (symmetric, skewed left, skewed right, uniform), indicate which interval contains the center, and give the range for the data.

- Right or Positively skewed

- 17-34 would contain center
 Range 0-102

30 pieces of data

$$IQ2 = 29 \quad 18.5 - 1.5(29) = -25$$

$$\uparrow \quad 47.5 + 1.5(29) = 91 \quad \leftarrow$$

12. The amount of money spent by 25 shoppers at Holly Days was 3, 12, 29, 37, 65, 72, 42, 30, 19, 8, 10, 25, 31, 45, 76, 14, 26, 93, 33, 45, 110, 26, 17, 50, and 34

a. Find the Five Number Summary for the data set.

$$\text{Min} = 3 \quad Q1 = 18.5 \quad \text{Median} = 31 \quad Q3 = 47.5 \quad \text{Max} = 110$$

b. Calculate if there are any outliers in the data set. If there are, what are the outliers?

93 and 110 are outliers

13. Find the z-score:

a) $\bar{x} = 70, \sigma = 3, x = 57$

$$z = \frac{57 - 70}{3} = -4.3$$

b) $\bar{x} = 0.5, \sigma = 0.1, x = 513$

$$z = \frac{513 - 0.5}{0.1} = 5125$$

14. A battery manufacturer finds that their batteries have a mean life of 100 hours with a standard deviation of 4 hours. What is the z-score for a battery that has a life of 90 hours?

$$z = \frac{90 - 100}{4} = -2.5$$

15. If the z-score is 0.9 and the mean is 150, with a standard deviation of 20, what was the original data point?

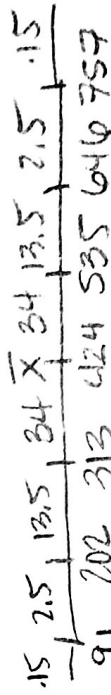
$$0.9 = \frac{x - 150}{20} = 168 = x$$

16. Assume that the distribution of wait times spent by women in a restroom line at a sporting event is 6.5 minutes. Elizabeth waited for 4.2 minutes and had a z-score of 1.75. Calculate the standard deviation for the wait to use the restroom. Round your answer to the nearest hundredth.

$$1.75 = \frac{4.2 - 6.5}{s_x} \quad s_x = -1.31$$

17. In March 1990 the scaled scores on the SAT verbal section had mean 424 and standard deviation 111.

a. Create a normal distribution curve that goes from 3 standard deviations below the mean to three standard deviations above the mean.



b. What percentage of students scored below a 313?
 0.158
 15.9%

c. What percentage of students scored above a 202?
 0.977
 97.7%

d. What percentage of students scored between a 535 & 757?
 0.157
 15.7%

e. If a student scored in the 84th percentile, what was his or her score?
 around
 535