

AFM STATS QUIZ WARM UP

NAME key

1. Calculate the mean, median and mode from this frequency distribution.

| | | | | | | |
|-----------|-----|----|----|----|----|----|
| Score | 100 | 83 | 94 | 63 | 75 | 30 |
| Frequency | 3 | 5 | 1 | 3 | 4 | 1 |

Mean 78.12 Median 83 Mode 83

(Note: Handwritten notes include "5 times" pointing to the frequency of 83 and "100" crossed out under the median.)

2. Find the standard deviation for the following: Show all algebraic work for credit!

$x =$ 20, 15, 17, 23, 11

$\bar{x} = 18.5$

| X | $x - \bar{x}$ | $(x - \bar{x})^2$ |
|---------|---------------|-------------------|
| 25 | 6.5 | 42.25 |
| 20 | 1.5 | 2.25 |
| 15 | -3.5 | 12.25 |
| 17 | -1.5 | 2.25 |
| 23 | 4.5 | 20.25 |
| 11 | -7.5 | 56.25 |
| $n = 6$ | | $\Sigma = 135.5$ |

$$s_x = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

$$\frac{135.5}{5} = 27.1$$

$$\sqrt{27.1}$$

St. dev = 5.2058

3. Suppose a meal at Chipotle costs, on average \$8.50 with a standard deviation of \$2.00. A meal at Angus Barn costs, on average, \$85.00 with a standard deviation of \$10. For which restaurant is price more VOLATILE? → unstable/inconsistent

St dev / mean
 Chipotle: $\frac{2}{8.5} = 23.5\%$ Angus Barn: $\frac{10}{85} = 11.76\%$

Chipotle is more volatile

4. Determine the type of sample used (voluntary response, random, stratified, cluster, systematic, convenience): EXPLAIN YOUR ANSWER!!!

a) Mr. Enns asks 3 freshmen, 3 sophomores, 3 juniors, and 3 seniors if underclassmen should be allowed to go off campus for lunch.

Stratified → divided into subgroups, a few from each group are chosen

b) Ms. Norris assigns each student a number then uses the random number generator on the calculator to choose 5 students for an activity.

random → everyone has the same probability of being chosen

c) Food Lion gives each 100th customer a survey about their shopping experience.

systematic → "fixed rule"

5. Determine whether or not bias exists: explain your answer

A researcher asks 50 parents at a FVHS basketball game if they think extra funding should be given to the orchestra or the basketball team.

yes → they will prob. want it to go to the basketball team

6. Determine if the following are experiments or observational studies: explain your answer

a) After participating in a 3-week intensive cardio-pilates class, women aged 30-40 found a 15% increase in strength and flexibility.

obs. study → no one made them take the class

b) A researcher studied the premature aging in identical twins where one twin was a regular smoker and the other was not.

obs study → treatment was not imposed, they were not told whether to smoke or not

7. Fuquay Varina High School is playing Middle Creek in a 5-game series of tennis matches. Fuquay has a 60% chance of winning each match, while Middle Creek has a 40% chance. Create a simulation to determine the sample statistics for FVHS winning the series.

FV wins → 1, 2, 3, 4, 5, 6
MC wins → 7, 8, 9, 10

RandInt(1, 10, 5) 5 game series

| TRIAL | OUTCOME | Did Fuquay win? | TRIAL | OUTCOME | Did Fuquay win? |
|-------|---------|-----------------|-------|---------|-----------------|
| 1 | | | 6 | | |
| 2 | | | 7 | | |
| 3 | | | 8 | | |
| 4 | | | 9 | | |
| 5 | | | 10 | | |

or cando:

FV → 1, 2, 3

MC → 4, 5

Sample Statistic: $\frac{\# \text{ of wins}}{\text{total \# trials}}$