Name: Solutions

Date: 2/5/2025

Math 130

Quiz 2

Some formulas you may need: $\bar{x} = \frac{\sum x}{n}$ $s = \sqrt{\frac{\sum (x-\bar{x})^2}{n-1}} = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}}$

1. (8 points) Here is some data: 16 8 8 4 5 16 5 8

Data in increasing order: 4, 5, 5, 8, 8, 8, 16, 16

For this data, find the

a) mean

$\bar{x} = \frac{4+5+\cdots+16}{8} = \frac{70}{8} = 8.75$

b) median

$\tilde{x} = \frac{8+8}{2} = \frac{16}{2} = 8$

c) mode

$= 8$

d) midrange

$= \frac{\text{low} + \text{high}}{2} = \frac{4+16}{2} = \frac{20}{2} = 10$

e) range

$= \text{high} - \text{low} = 16 - 4 = 12$

f) standard deviation

$\sum x^2 = 4^2 + 5^2 + \cdots + 16^2 = 770$

$\sum x = 4 + 5 + \cdots + 16 = 70$

$s = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}} = \sqrt{\frac{770 - \frac{(70)^2}{8}}{8-1}}$

$s = 4.743416490$

g) variance

$s^2 = (4.743416490)^2$

$= 22.5$

2. (2 points) Here are two data sets.

Data Set 1: 5, 27, 89, 95, 148, 150

Data Set 2: 321, 325, 321, 323, 326, 327

Let s_1 be the standard deviation of data set 1 and let s_2 be the standard deviation of data set 2. Which one is larger, s_1 or s_2? Explain! (Do not calculate s_1 or s_2)

s_1 is larger than s_2

bec. data set 1 is more spread out than data set 2