

Homework 2

Math 243

June 23, 2020

Exercise 1

Recall the stemplot you created in yesterday's homework. It should have looked something like this:

```
0 | 8
1 | 000134
1 | 5555677
2 | 0
2 | 67
3 |
3 | 6
```

Create a boxplot representing this data set (but do not bother looking for outliers).

Exercise 2

The following four numbers represent the yearly salaries of four different school district employees, in thousands of dollars.

35 45 50 110

Calculate the standard deviation of this data set. Show all work. What does this number represent?

Exercise 3

Let's do some thinking about standard deviation.

- (a) The number 3 is part of a four-number data set. What must the other three numbers be (repeats allowed) so that the data set has the smallest possible standard deviation?

- (b) Choose four numbers from among the whole numbers 0 to 10 (repeats allowed) that have the largest possible standard deviation.

Exercise 4

Here are the amounts of money (cents) in coins carried by 10 students in a statistics class:

50 35 0 97 76 0 0 87 23 65

- (a) The mean of these data is...

- (b) The median of these data is...

- (c) The standard deviation of these data is...

Exercise 5

The summer monsoon brings 80% of India's rainfall and is essential for the country's agriculture. Records going back more than a century show that the amount of monsoon rainfall varies from year to year according to a distribution that is approximately Normal with mean 852 millimeters (mm) and standard deviation 82 mm. Use the 68-95-99.7 rule to answer the following questions.

- (a) Between what values do the monsoon rains fall in 95% of all years?

- (b) How small are the monsoon rains in the driest 2.5% of all years?

Exercise 6

In 2007, when she was a high school senior, Eleanor scored 640 on the mathematics part of the SAT. The distribution of SAT math scores in 2007 was normal with mean 515 and standard deviation 114. Gerald took the ACT Assessment mathematics test and scored 28. ACT math scores for 2007 were normally distributed with mean 21.0 and standard deviation 5.1. Find the standardized scores for both students.

Exercise 7

Use a z-table to find the proportion of the standard Normal distribution that satisfies each of the following statements. (You can find one of these on the syllabus page of Canvas.) Additionally, draw a picture of the distribution.

(a) $z < -0.55$

(b) $z > -0.55$

(c) $z > -2.27$

(d) $-2.27 < z < -0.55$