

Prep for Quiz 5

Note: the actual quiz will not be this long. There are more problems here than will appear on the actual quiz.

- I. A sample of 25 Solano College students were asked to keep track of their college related expenses (transportation, food during school hours, supplies, etc., but not books) for one month. The following is a stem-and-leaf plot of amount each spent (in dollars). (Note that this is Minitab output and includes the 'depth' column, leftmost, which you can ignore or make use of).

Stem-and-leaf of Yield N = 25
Leaf Unit = 10.0 *Note*

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2 1 24
8 1 567999
(8) 2 01223444
9 2 5679
5 3 134
2 3 7
1 4
1 4 6
    
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1. Compute the midrange $(120 + 460) / 2 = 580 / 2$ $\$ 290$
2. Find the mode (if there is one) $\$ 240$
3. Compute the range $460 - 120$ $R = \$ 340$
4. Give the five-number summary $\frac{180+190}{2} \rightarrow$ 120, 185, 230, 280, 460 $\frac{270+290}{2} \rightarrow$

II. Find the following measures for the set of data in the table.

1. Mean (note the sum of the x's is given) $54/6$ $\bar{x} = 9$
2. Complete the following table and compute the variance and standard deviation (show work)

x	$x - \bar{x}$	$(x - \bar{x})^2$
4	-5	25
6	-3	9
8	-1	1
10	1	1
11	2	4
15	6	36
Σ 54	0	76

$$s^2 = \frac{76}{5} = 15.2$$

$$s = \sqrt{15.2} \approx 3.89871...$$

$\rightarrow 3.90$
rounded to hundredths

$$s^2 = 15.2$$

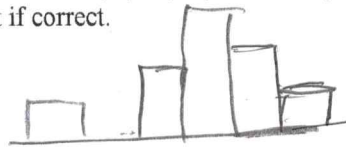
$$s = 3.90$$

III. Use your TI calculator (you don't want to do this by hand) create the specified histogram and to find the sample mean and sample standard deviation (do not round your answers for the mean and standard deviation, list what your calculator gives you) for the following data:

15, 12, 19, 16, 7, 22, 20, 14, 18, 17, 15

1. Create a histogram for this data with cutpoints at 6, 9, 12, ..., 24. When you get the histogram on your screen raise your hand and I will initial it if correct.

X_{min} 6 Y_{min} -1
 X_{max} 24 Y_{max} 4.5
 X_{scl} 3 Y_{scl} 1



← roughly
 # digits may differ by calculator
 OK: ✓

2. report the mean (do not round)

$\bar{x} = \underline{15.90909091}$

3. report the standard deviation (do not round)

$s = \underline{4.109855118}$

4. report the five-number summary

from your calculator 7, 14, 16, 19, 22

IV. Use the Empirical Rule (68-95-99.7% rule) to answer the following questions for the distribution of weights of newborn lambs which is approximately normal (bell-shaped) with a mean of 24 kg and a standard deviation of 3 kg. (Hint: make a sketch and make use of the symmetry of bell-shaped data.)

1. Approximately what proportion of the weights will be between 21 and 27?

± 1 st. dev.

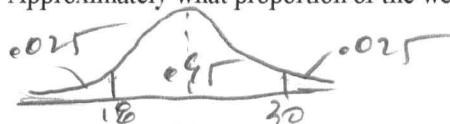
.68 or 68%

2. Between what two numbers will there be about 95% of all the weights?

± 2 st. dev. ie ± 6 $24-6$ to $24+6$

18 and 30

3. Approximately what proportion of the weights will be more than 18 kg.



.975 or 97.5%

V. Alex and Joey are friends on their high school track and field team. Alex is a shot putter who won his event in the state meet with a throw of 70.4 feet. Joey is a long jumper who won his event with a jump of 25.1 feet. They argue over who did better in their event. The shot put finalists had a mean of 67.2 feet and a standard deviation of 5.2 feet. The long jump finalists had a mean of 23.9 feet and a standard deviation of 1.7 feet. Settle their argument by computing a z-score for each.

$$z_{Alex} = \frac{70.4 - 67.2}{5.2} \approx .6538$$

Alex's z-score: .65

$$z_{Joey} = \frac{25.1 - 23.9}{1.7} \approx .7059$$

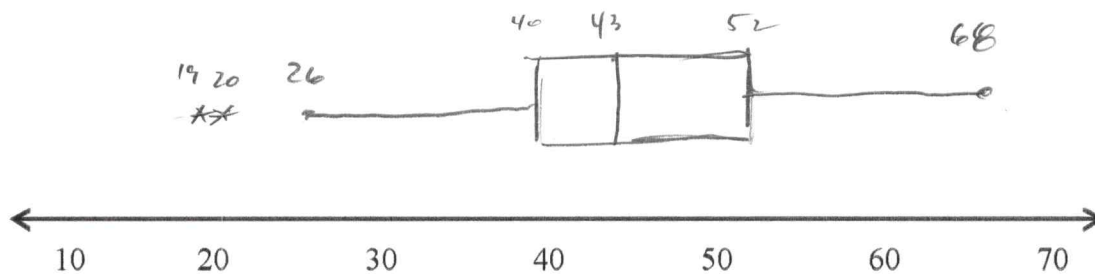
Joey's z-score: .71

Conclusion:

Joey's long jump was slightly better than Alex's put.

VI. Given the data (note that is only a partial set of the data) 19, 20, 26, ..., 65, 67, 68 and the following five-number summary: 19, 40, 43, 52, 68. Find:

- Find the midquartile, $(40+52)/2 = \frac{92}{2}$ $midQ = \underline{46}$
- Find the interquartile range, $52 - 40$ $IQR = \underline{12}$
- Based on the $1.5(IQR)$ criterion find the lower and upper fences.
 $1.5(12) = 18$
 $f_L = 40 - 18 = 22$ $f_L = \underline{22}, f_U = \underline{70}$
 $f_U = 52 + 18 = 70$
- Sketch the boxplot (box-and-whisker plot), (sketch *horizontally*, above the axis, indicating outliers, if there are any, with *)



VII. Identify which variable is the response and guess whether the relationship is positive or negative.

- A study has shown that a student's grade (G) in college elementary statistics is related to the number of absences (A) they have had during the semester.
response: G
Positive (+) or Negative (-) -
- The number of alcoholic beverages (B) a person has had over a two hour period is related to their blood alcohol level (L).
response: L
Positive (+) or Negative (-) +
- A weather balloon is launched from ground level and it is observed that the air temperature (T) outside the balloon is related to the balloon's altitude (A) above sea level.
response: T
Positive (+) or Negative (-) -

VIII. Place the following correlation coefficients in order from the one which indicates the weakest linear association to the one which indicates the largest linear association. 0.23, -0.73, 0.44, -0.33, 0.64

0.23, -0.33, 0.44, 0.64, -0.73