Today

Continue with 1-variable Statistics

Fri & Mon

Review for Final Exam

Return Textbook on Monday

any HW QUESTIONS ??

Tues and Wed

Final Exam

Pull out you your HW

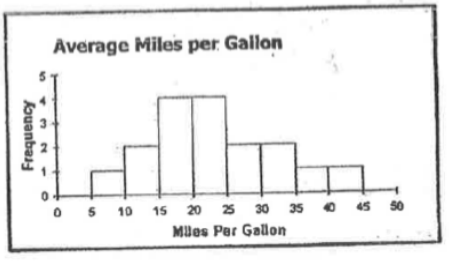
Class Notes provided

(your notes returned tomorrow)

Start with Questions 1 to 4 (review)

Classwork (Stat Day 2) – Part 1 Review from last class

1



a) Count the total frequency

_____

b) Calculate the percent of the cars that provide a fuel economy of 30 mpg or higher.

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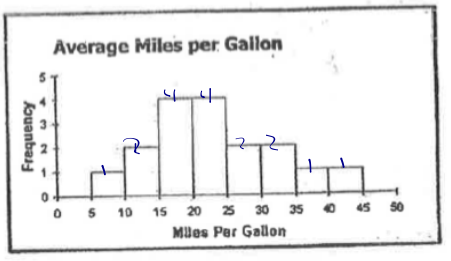

a) Count the total frequency

17

b) Calculate the percent of the cars that provide a fuel economy of 30 mpg or higher.

$\frac{4}{17} \times 100 = 23.5\%$

Score (x)	Frequency (f)
41	2
44	1
47	5
50	6
53	12
56	3

Find the mean score

$\bar{x} =$ (show formula) $=$ (critical totals) $=$ (answer rounded to 0.1)

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Find the mean score

$\bar{x} = \frac{\Sigma f \cdot x}{\Sigma f} = \frac{1465}{29} = 50.5$

show formula — critical totals — answer rounded to 0.1

1-Var Stats L1

```
1-Var Stats
 x̄=50.51724138
 Σx=1465
 Σx²=74459
 Sx=4.014444363
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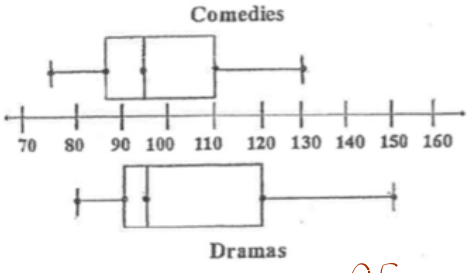
Janelle recorded the length, in minutes, of each movie in her collection. These box-and-whiskers plots show the data for the comedies and dramas.



a) The median Drama time is about 95 minutes?
b) What percent of Comedies were above 110 min? 25%
c) The IQR for Drama is 30 minutes.
d) 75 % of the Dramas were greater than 90 minutes.

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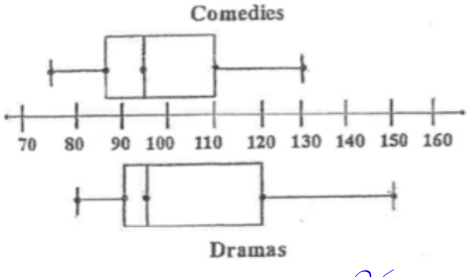


a) The median Drama time is about 95 minutes?
b) What percent of Comedies were above 110 min? 25
c) The IQR for Drama is 30 minutes.
d) 75 % of the Dramas were greater than 90 minutes.

4. The difference between life and death is often just minutes when it comes to stopping bleeding. Two emergency procedures are being compared for their in stopping bleeding at the scene of accidents. The time from when 911 was to the time that paramedics reported the bleeding stopped was recorded for procedure A. The data is shown below (in minutes).

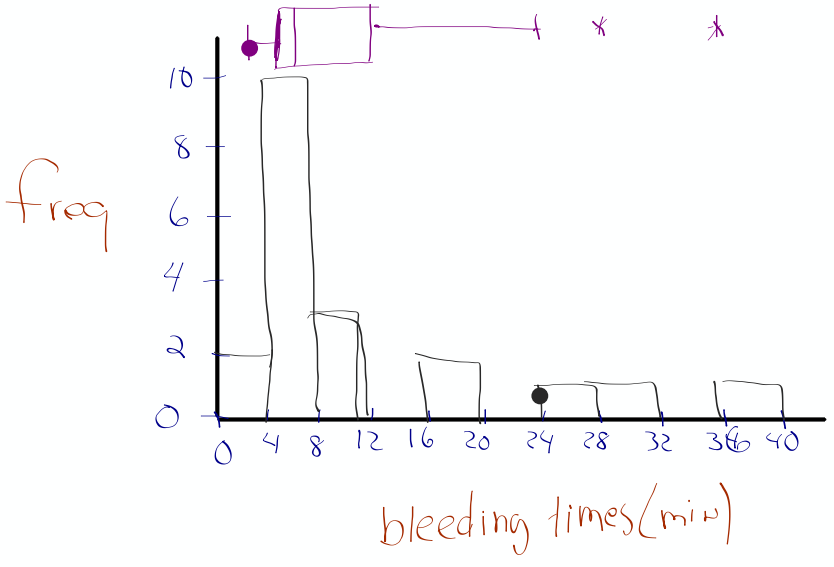
Bleeding Times for Procedure A

7	36	7	4	24	8	10
3	3	5	4	17	6	5
19	29	5	6	10	4	

checksum 212

Enter these times as data into your GDC, L_1 and then continue to the back side.

a) On your GDC make an appropriate histogram of the bleeding times and follow the calculator instructions as necessary (5 to 10 bar requirement). Make a neat sketch of it below, fully labeled.



b) Calculate the mean and median bleeding times and include units.

Mean 10.6 min Median 6.5 min

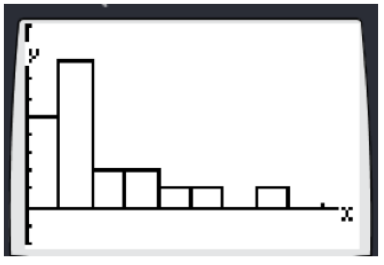
Given the distribution you see in the histogram, which of these two is more reliable, if any?

6.5 min is a better representation of typical bleeding times because of the skewness of the distribution.

c) Determine which times are outliers, if any.

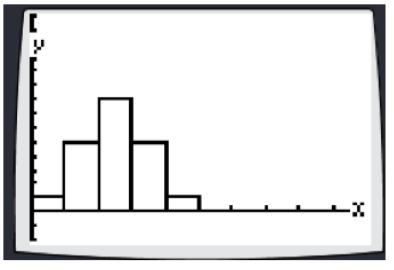
d) Compare histograms and statistics for both procedures. You should notice the big difference in how the variation of bleeding times compares between times for **Procedure A** and **Procedure B**

Procedure A bleeding times



$\bar{x} = 10.6\,\text{min} \pm 9.2\,min$

Procedure B bleeding times



$\bar{x} = 12.0\ \text{min} \pm 4.5\,min$

Procedure has a higher variability of bleeding times.

Stop

Goal

Calculate and use the Standard Deviation to measure variation in a data set.

follow the powerpoint and fill in your notes

Part 2- Standard Deviation (*A statistic of variation of data*)

1. When prompted, write down the 5 very difficult numbers ____ ____ ____ ____ ____

Part 2- Standard Deviation (*A statistic of variation of data*)

1. When prompted, write down the 5 very difficult numbers 3 4 5 1 2

re-order

1 2 3 4 5

by the way, these numbers stand for the # of dogs

just
watch

DATA SET 3 4 5 1 2

1 2 3 4 5

what's the mean?

1 2 3 4 5

What is the average distance from the mean?

Whaaaat?

1 2 3 4 5

How far is each value from the mean?

You'll have to ask each value "how far are you from the mean?"

1 2 3 4 5

How far is each value from the mean ?

$2 + 1 + 0 + 1 + 2 = \frac{6}{5} = 1.2$

So 1.2 dogs is the average dist. from the mean (sort of)

The Standard Deviation is the average distance from the mean (sort of)

What did we just do ??

1 2 3 4 5

$$= \frac{(1-3)^2+(2-3)^2+(3-3)^2+(4-3)^2+(5-3)^2}{5}$$

$$= \sqrt{\frac{(-2)^2+(-1)^2+(0)^2+(1)^2+(2)^2}{5}} = \sqrt{\frac{10}{5}}$$

$$= \sqrt{2 \text{ dogs}^2}$$

$$= 1.4 \text{ dogs}$$

is the std.

- How can we force a number to be positive?

and now the formula....

write this down on your notes

Std. Deviation $= \sigma = \sqrt{\frac{(x_i - \bar{x})^2}{n}}$

Formula for σ =

3 4 5 1 2

$= (-3) \quad (-3) \quad (-3) \quad (-3) \quad (-3)$

-

take the individual distances from the mean

$(3-3) \quad (4-3) \quad (5-3) \quad (1-3) \quad (2-3)$

$\sigma = (\quad - \quad)$

square them

$(3-3)^2$ $(4-3)^2$ $(5-3)^2$ $(1-3)^2$ $(2-3)^2$

$$\sigma = (X_i - \overline{X})$$

Take their sum

$$(3-3)^2 + (4-3)^2 + (5-3)^2 + (1-3)^2 + (2-3)^2$$

$$\sigma = (X_i - \overline{X})^2$$

Average

$$\frac{(3-3)^2+(4-3)^2+(5-3)^2+(1-3)^2+(2-3)^2}{5}$$

$$\sigma = \sum (x_i - \bar{x})^2$$

Square root

$$\sqrt{\frac{(3-3)^2+(4-3)^2+(5-3)^2+(1-3)^2+(2-3)^2}{5}}$$

Standard Deviation $\sigma = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}$

$\bar{x}$ = 3 dogs ± 1.2 dogs

So....

Standard deviation is the square root of the average of the squared distances from the mean

Repeat
for

2 6 7 9

No
GDC

2 6 7 9

Now with GDC

Assignment

Worksheet 2001