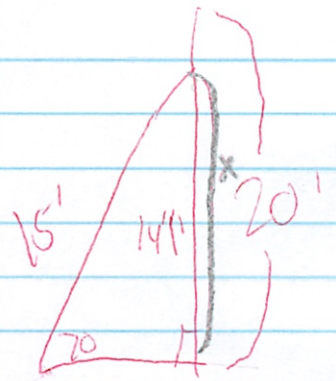
Pole Cat

p501

5/6 Assigned
5/9 Acted



$\sin 70 = \frac{opp}{hyp} = \frac{x}{15}$

$\sin 70 = \frac{x}{15}$

$15(\sin 70) = x$

$15(.9396) = x$

$4.1 = x$

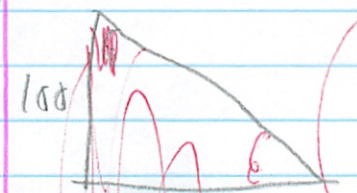
Diana 5'6" + 1' reach
15' ladder.

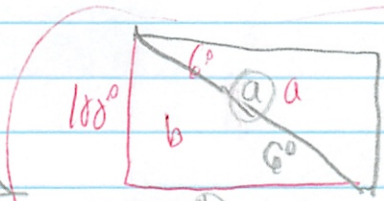
14'1" ← ladder height on pole (top of ladder)
6'6" ← her + reach
20'7" ← She can make it

Smokey + Dude (#23)

5/8

1.b





Find 0

$\tan 6 = \frac{x}{100}$

$100(\tan 6) = x$

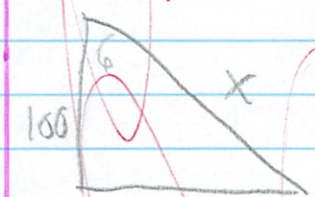
$.1051(100) = x$

$x = 10.51$ - He is 10.51

? correct

See Re-d Next Pg.

1a.



$\cos(6) = \frac{100}{x}$

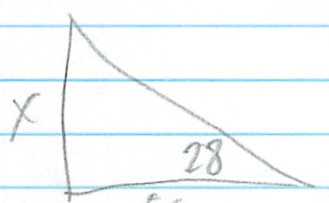
$(\cos 6)x = 100$

$\frac{.9945x}{.9945} = \frac{100}{.9945}$

? correct

$x = 100.5508$ ft from fire

2



$\tan 28 = \frac{x}{50}$

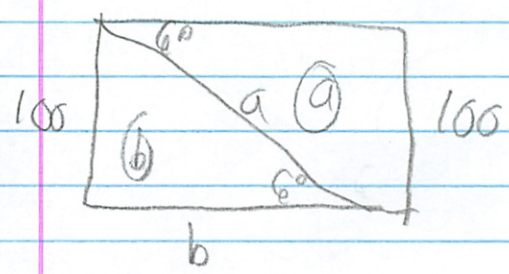
$\tan 28(50) = x$

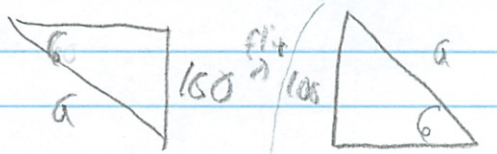
$.5317(50) = x$

$26.58 = x$

26.58 ft tall

#123 Again



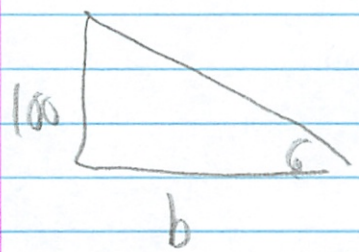
1a. 

$\sin 6 = \frac{100}{a}$

$(\sin 6)a = 100$

$\frac{(.1045)a}{.1045} = \frac{100}{.1045}$

$a = 956.67$ ft

b 

$\tan 6 = \frac{100}{b}$

$(\tan 6)b = 100$

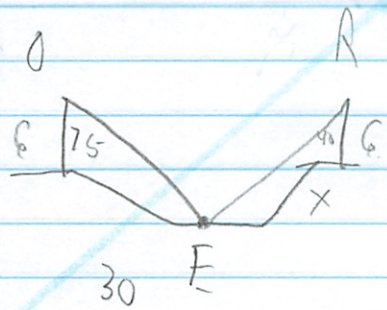
$\frac{(.1051)b}{.1051} = \frac{100}{.1051}$

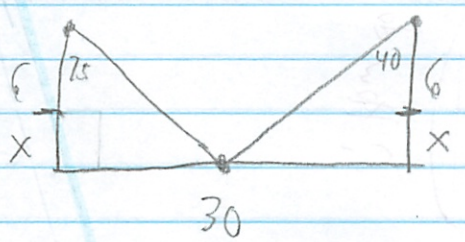
$b = 951.43$ ft

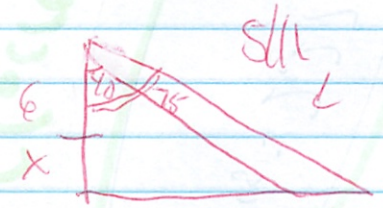
Dog in a bitch

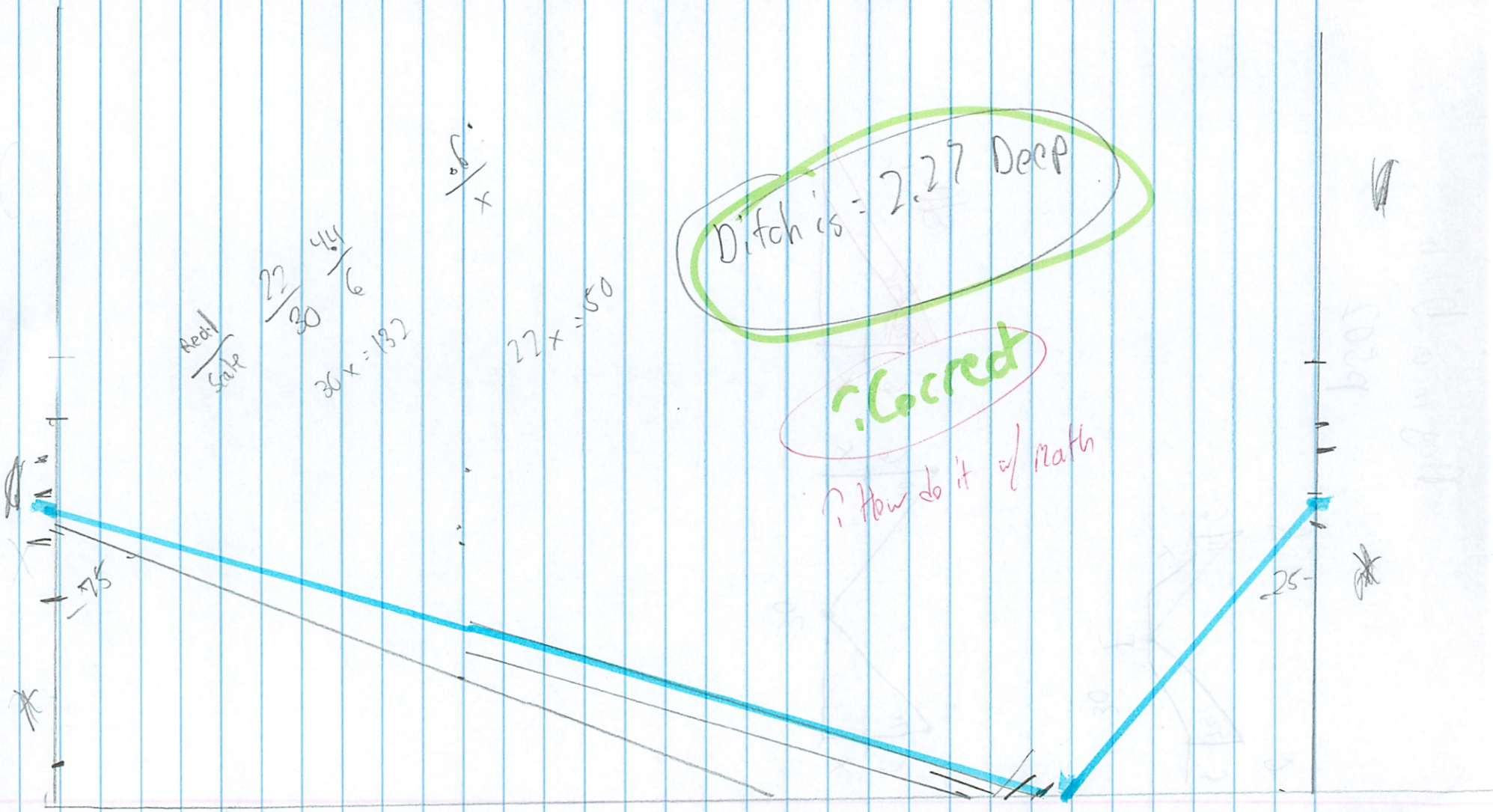
p502

5/12








Ditch is = 2.27 Deep
Correct
? How do it w/ math
Real / Scale
22/30 44/6
30x = 132
22x = 50
5/x
.75
25

Name Michael Plasmeier

Date 5/9

Show All Work

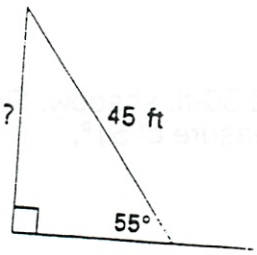
1) A 45-ft ladder makes an angle of 55° with the ground. How high up the wall does the ladder reach?

$\sin 55 = \frac{x}{45}$

$45(\sin 55) = x$

$45(.8191) = x$

36.86 ft up



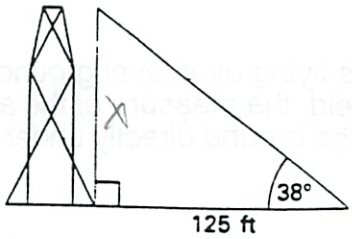
2) At a point 125 ft from the base of a tower, the angle of elevation of the top of the tower has a measure of 38°. How high is the tower?

$\tan 38 = \frac{x}{125}$

$125(\tan 38) = x$

$125(.7812) = x$

97.66 ft tall



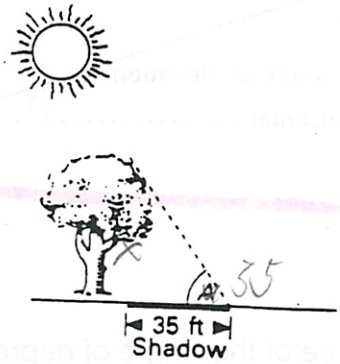
3) A tree casts a shadow that is 35 ft. long. The angle of elevation, angle A is 55°. How high is the tree?

$\tan 55 = \frac{x}{35}$

$35(\tan 55) = x$

$35(1.428) = x$

49.98 ft tall



4) A 20-ft. ladder is leaning against a wall. The foot of the ladder forms an angle of elevation of measure 65° with the ground. How far is the top of the ladder from the ground?

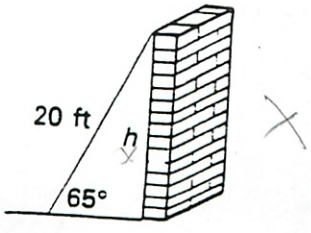
$\sin 65 = \frac{x}{20}$

$20(\sin 65) = x$

$20(.9063) = x$

18.13 ft up

Round Correctly



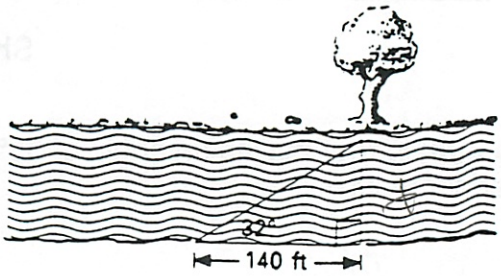
5) To estimate the width of a lake, Bob stood directly opposite a large tree. He then walked 140 ft. along the bank and approximated the measure of the angle between his line of sight to the tree and the lake's edge as 32°. Find the approximate width of the lake.

$\tan 32 = \frac{x}{140}$

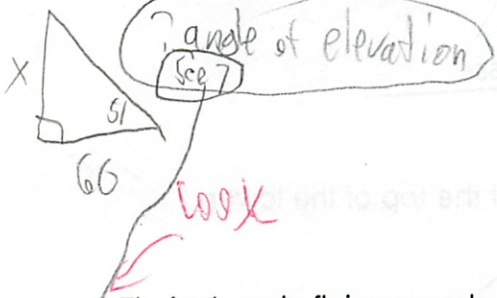
$140(\tan 32) = x$

$140(.6248) = x$

87.48 ft wide



6) A tree casts a 60-ft. shadow. Find the height of the tree if the angle of elevation of the sun has a measure of 51°.



? angle of elevation

Seg 7

Tan X

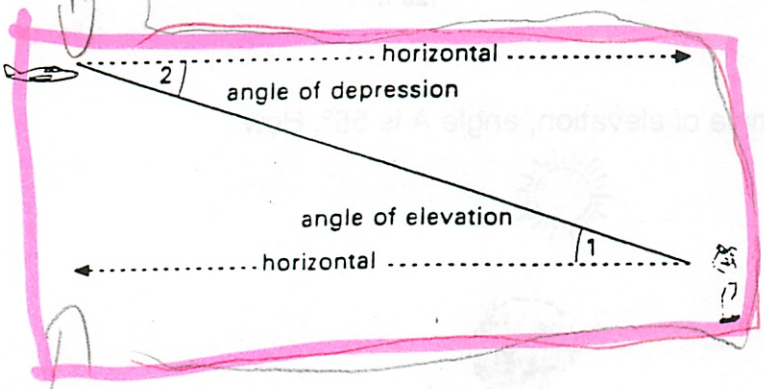
$\tan 51 = \frac{x}{60}$

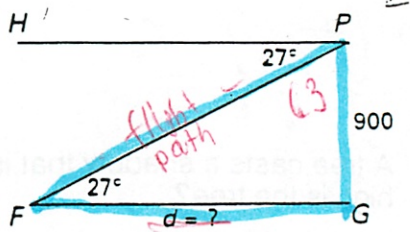
$60(\tan 51) = x$

$60(1.234) = x$

74.09 ft tall

7) A plane is flying over level ground at an altitude of 900 m. When the pilot sights a landing field, the measure of the angle of depression is 27°. Find the distance from the point on the ground directly under the pilot to the landing field.





ground

$\tan 27 = \frac{900}{d}$

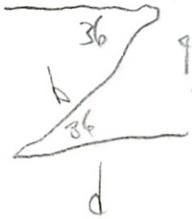
$(\tan 27)d = 900$

$(.5095)d = 900$

$\frac{.5095}{.5095} \quad \frac{900}{.5095}$

981.3 m

8) The measure of the angle of depression 36°. The altitude of the plane is 9,000 ft.
   a) Find the ground distance d from the plane to the runway.
   b) Find the flight distance from the plane to the runway.



(a) $\tan 36 = \frac{9000}{d}$

$(\tan 36)d = 9000$

$(.7265)d = 9000$

$\frac{.7265}{.7265} \quad \frac{9000}{.7265}$

d = 12387 ft

(b) $\sin 36 = \frac{9000}{b}$

$(\sin 36)b = 9000$

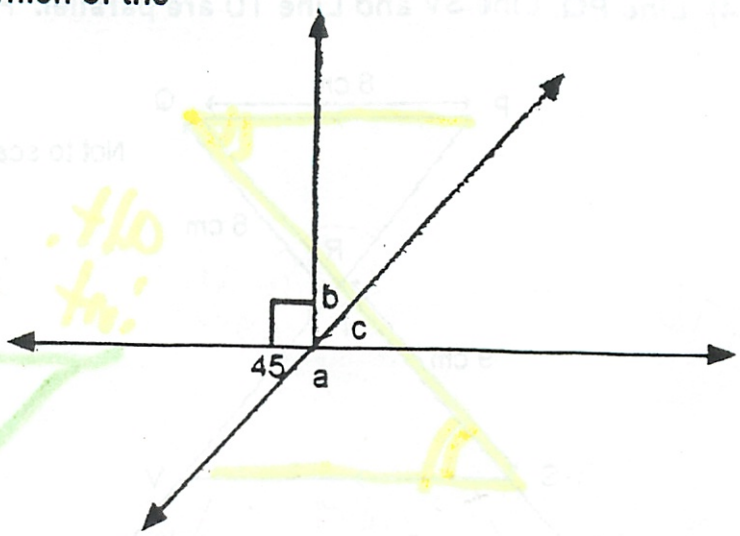
Four to finish $(.5877)b = \frac{9000}{.5877}$

Remember Units

b = 15311

Michael Plasmeier

1) For the figure at the right, which of the following must be true?



1) a = 3c

2) a = 90

3) b = c

A) 1 only B) 1 & 2 only C) 2 only D) 1,2 & 3 E) 1 & 3 only

Circled wrong one → (stupid mistake)

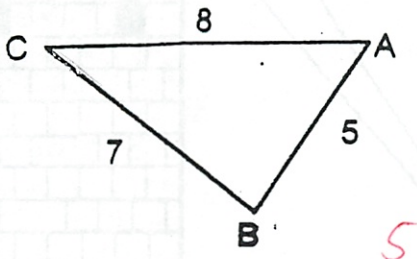
2) What must be true about the sides of any triangle?

It must be smaller than the 2 other sides combined (Triangle Inequality)

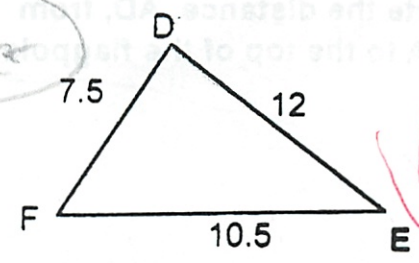
All Add up to 180°

Finish

3) Are the following triangles similar. Explain your answer.



No order



$\frac{8}{10.5} \quad \frac{5}{7.5} \quad \frac{7}{12}$ or $\frac{5}{7.5} \quad \frac{7}{10.5} \quad \frac{8}{12}$

then cross X

$\frac{5}{12} \quad \frac{7}{10.5} \quad \frac{8}{7.5}$

Go from largest → smallest

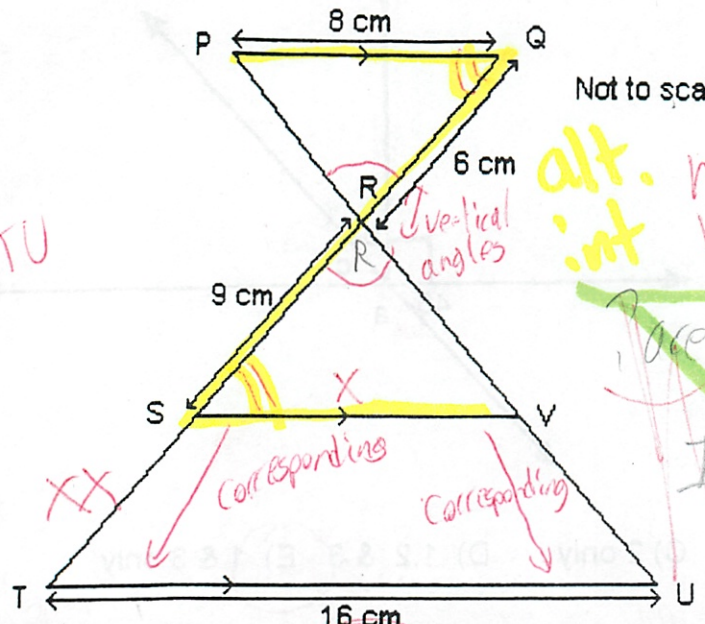
$8(7.5) = 10.5(5)$ $7(7.5) = 5(10.5)$

$60 \neq 52.5$ $52.5 = 52.5$ ✓ $(10.5) = 12(7)$

$57.5 \neq 84$

No not similar because I don't see the sides in proportion and Nothing tells me what order to put it in

4) Line PQ, Line SV and Line TU are parallel. Find SV and ST.



Not to scale

alt. int. how 2 angles are = because 2 angles are =

vertical angles

corresponding

corresponding

RSV ~ RTU

RS/RT SV/TU VR/UR

9/12 = X/16

144/12 = 12X/12

RT = 12

12 − 9 = 3

Do the rest!

XX = 3

PRQ ~ VRS

Prove ΔPQR ~ ΔSVR

I can't do this

How to do this

PR/VR RQ/RS QP/SP

6/9 = 8/X

6X = 72

6 6

X = 12

5) Calculate the height BD, of the flag above the ground

38.281 ft

Need QV

6) Calculate the height, CD, of the flagpole.

Do 88.281 − 33.24 = 5.041 ft

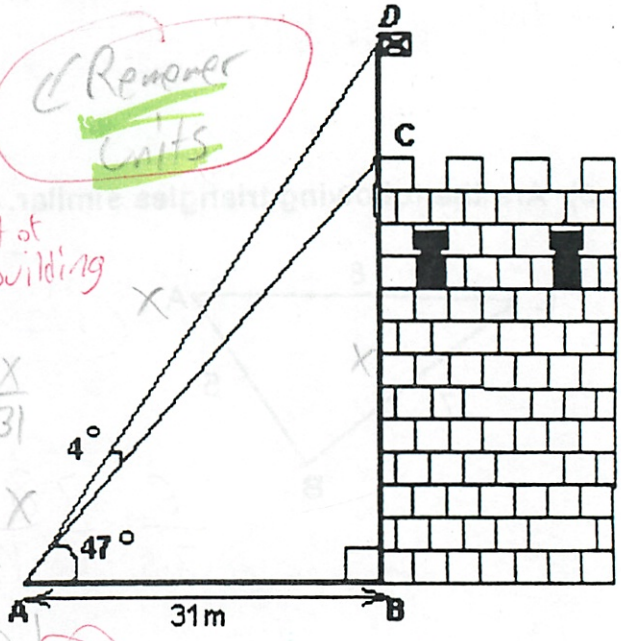
33.24 ft

Remove Units

Height of building

7) Calculate the distance, AD, from point A to the top of the flagpole.

30.37 ft



5) Tan(4+47) = X/31

Tan 51 = X/31

31(Tan 51) = X

31(1.234) = X

38.281 = X

6) Tan 47 = X/31

31(Tan 47) = X

31(1.0723) = X

33.24 = X

7) Cos(4+47) = 31/X

Cos(51) = 31/X

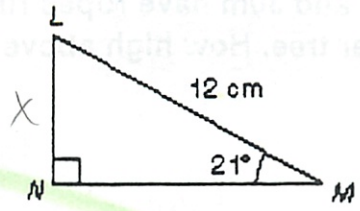
X(Cos 51) = 31

.6293X = 31

.6293 .6293

X = 30.37

8) **Find LN.**



$\sin 21 = \frac{x}{12}$

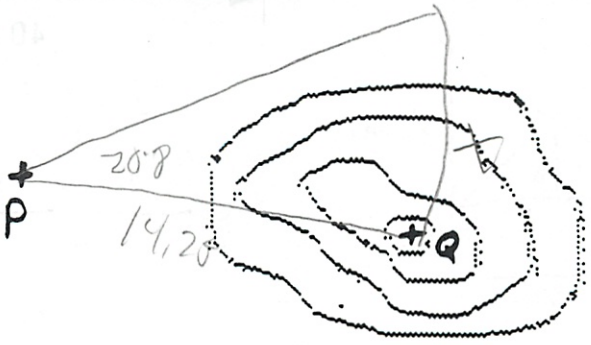
$12(\sin 21) = x$

$12(.3583) = x$

$4.3 = x$

$\overline{LN} = 4.3$ cm

9) **A surveyor stands at a Point P. She measures the angle of elevation of the mountain top Q as 20.8 degrees and its horizontal distance as 14.25 km. Find the height of the mountain.**



$\tan 20.8 = \frac{x}{14.25}$

$14.25(\tan 20.8) = x$

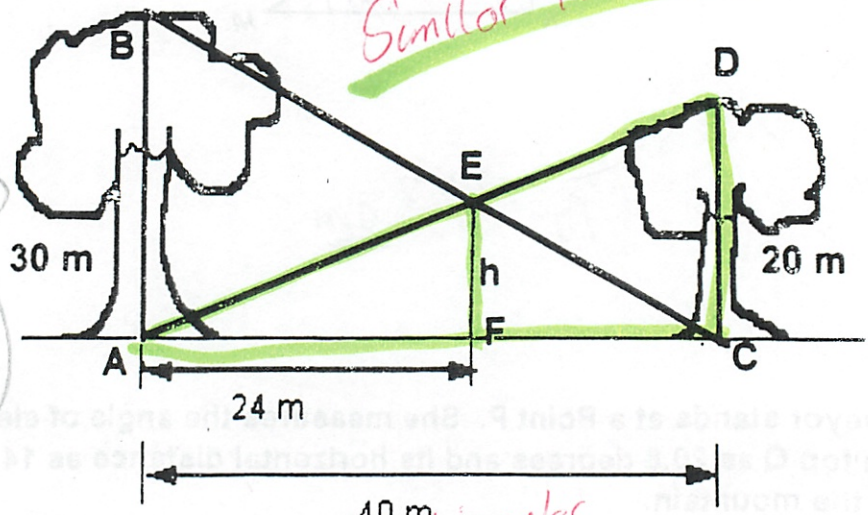
$14.25(.3798) = x$

5.413 km

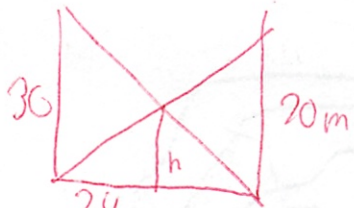
Not good picture because topo lines represent birds-eye view

10) Two trees of height 20m and 30m have ropes running from the top of each tree to the bottom of the other tree. How high above the ground do the ropes intersect?

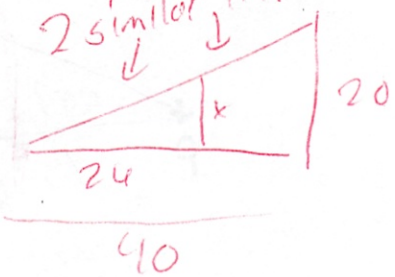
Similar triangles



Have not done dog yet



2 similar triangles



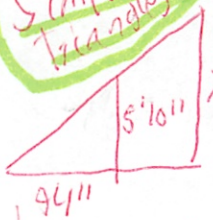
$\frac{20}{40} = \frac{x}{24}$

$\frac{40x}{40} = \frac{480}{40}$

$12 = x$

Similar Triangles

11) I need to cut down a tree that's shading my garden and drop it between the garden and another tree; if it's taller than 59 feet it will smash my lilac bush. I measured the tree's shadow and my shadow standing next to it - the tree's shadow was 76'8", and mine was 94 inches. I'm 5'10"; will the tree land on the lilac?



It is shorter so will not hit, But that doesn't mean you can cut it down

$\tan \angle A = \frac{70}{94}$

$\tan \angle A = .7446$

$\tan^{-1} \angle A = 36.67°$

$\tan(36.67) = \frac{x}{926}$

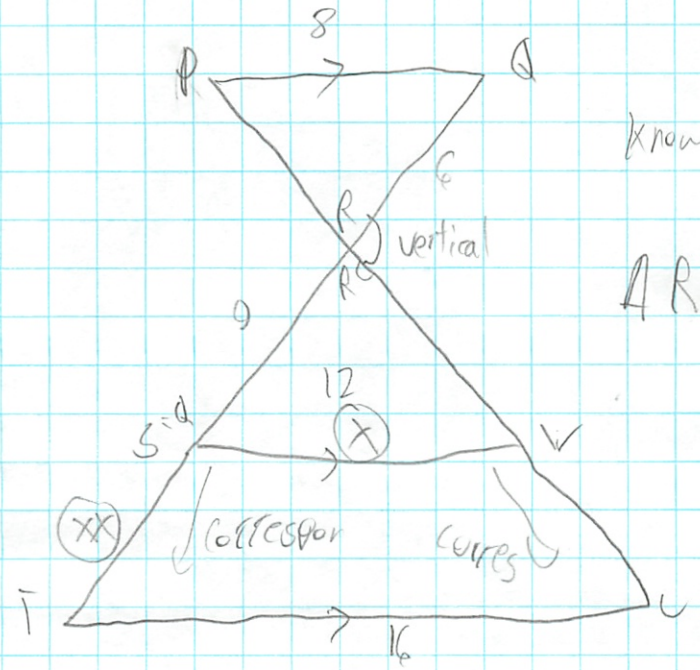
$926(\tan 36.67) = x$

$926(.7445) = x$

$x = 684.99$ inches

or 57'1"

Study 5/12



know its Similar

$\triangle RPQ \sim RUS$

$\frac{RP}{RU} \quad \frac{PQ}{US} \quad \frac{QR}{SR}$

$\frac{8}{x} \quad \frac{6}{9}$

$\frac{6x}{6} = \frac{72}{6}$

$x = 12$

$\triangle RTU \sim \triangle RSV$

$\frac{RT}{RS} \quad \frac{TU}{SV} \quad \frac{UR}{VR}$

$\frac{x}{9} \quad \frac{16}{12} = \frac{?}{?}$

why not

$\frac{9+xy}{9} = \frac{16}{12}$

$\frac{144}{12} = \frac{12x}{12}$

$12 = x = 9 + xy$

$-9 \quad -9$

$3 = xy$

Shadows Assessment
55 Points

Name Michael Plasreier
Date 5/12

8848

50/55

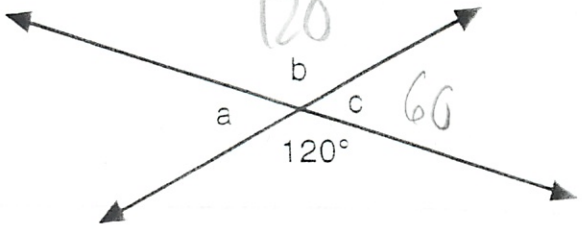
Circle the correct answer to the following questions.

1) For the intersecting lines at the right, which of the following must be true? {3 points}

1) b = 2c

2) $a = \frac{b}{2}$

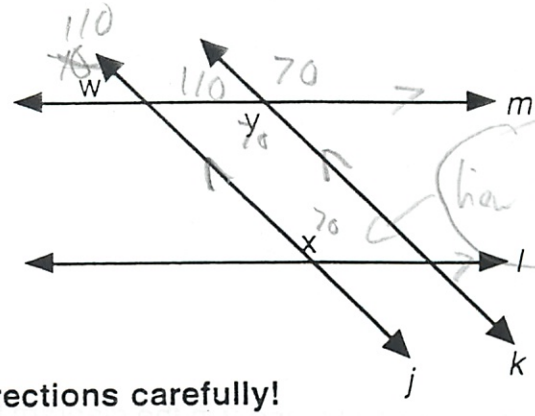
3) a + 120 = b + c



A) 1 only B) 1 and 2 only C) 2 only D) 2 and 3 only E) 1, 2 and 3

2) In the figure to the right *j* is parallel to *k* and *l* is parallel to *m*. If x + y = 140, what is the value *w*? {3 points}

A) 20 B) 40 C) 70 D) 110 E) 140

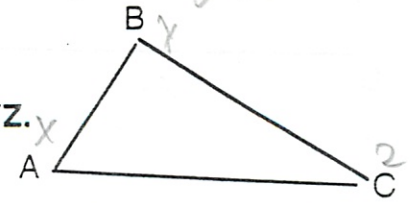


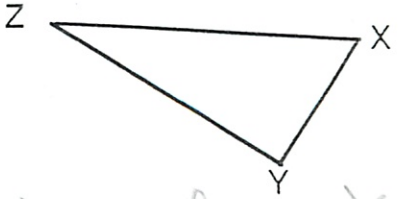
Complete each of the following. Read directions carefully!

Is it possible to construct a triangle with sides of the given lengths? Answer yes or no, if no explain why not. {3 points}

3) 1 cm, 5 cm, 6 cm No, the 2 smallest sides

Δ ABC is similar to Δ XYZ. {3 points each}

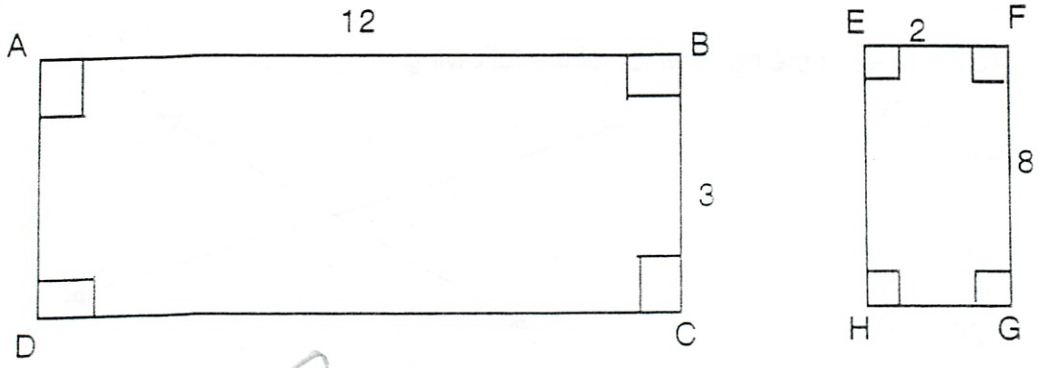




4) Identify two pairs of corresponding angles. A and X B and Y

5) Identify 2 pairs of corresponding segments. AB and XY CA and ZX

6) Determine if the two polygons below are similar. If they are similar explain why you know they must be similar. If they are not similar explain why you know they can not be similar.{5 points}



All angles = ✓ good

Sides in preportion ✗ $\frac{12}{2} = \frac{3}{8}$ → 8(12) : 3(7)

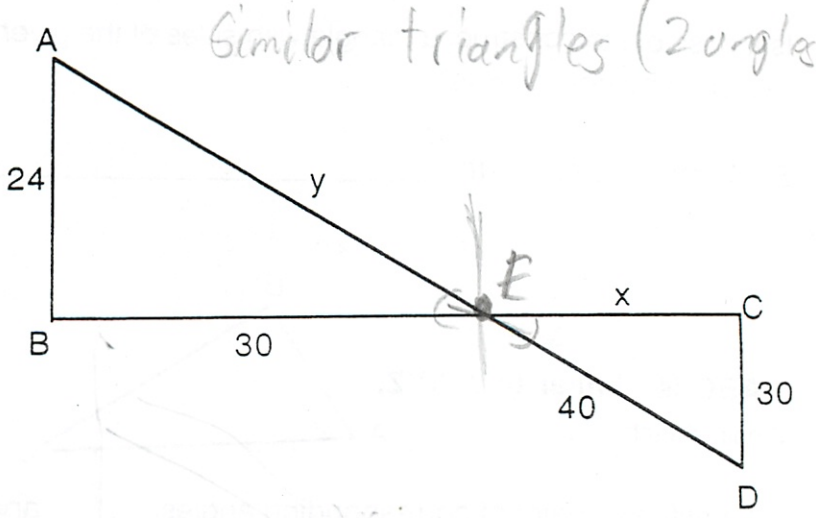
96 ≠ 6 ✗ -3

No, the sides are not in preportion, so it's not similar

7) Find the values of **x** and **y** in the diagram below. Show all work for credit! {6 points}

$\overline{AB} \parallel \overline{CD}$

Similar triangles (2 angle =)



X

$\frac{24}{30} \quad \frac{Y}{40}$

$\frac{AB}{CD} = \frac{AE}{ED}$

$\frac{30Y}{30} = \frac{960}{30}$

Y = 32

X

$\frac{24}{30} = \frac{30}{X}$

$\frac{AB}{ED} = \frac{BE}{CE}$

$\frac{900}{24} = \frac{24X}{24}$

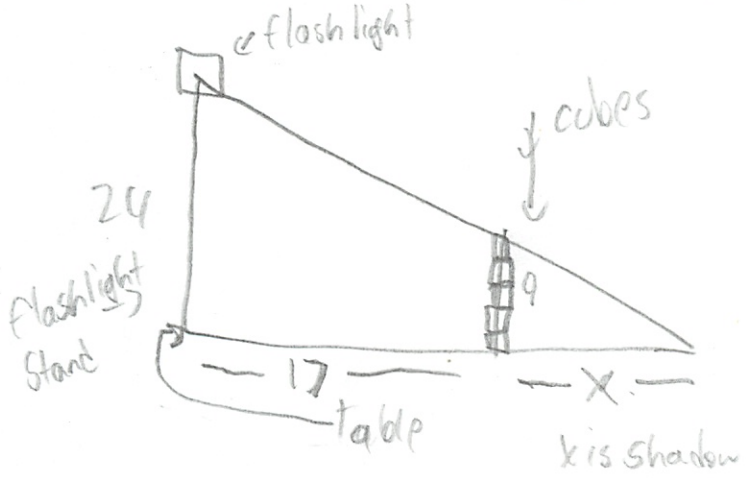
X = 37.5

(3)

8) There is a tower of cubes 9 inches tall, placed on a table. You are shining a flashlight at the tower, and the flashlight is mounted on a stand so that it is 24 inches above the table top. The distance from the bottom of the tower to the spot on the table directly below the flashlight is 17 inches. How long is the shadow cast by the tower?

a) Draw and label a diagram {3 points}

b) Show all work clearly! {5 points}



similar triangles

$\frac{24}{9} = \frac{17+x}{x}$

$24x = 9(17+x)$

$24x = 135 + 9x$

$-9x \quad -9x$

$\frac{15x}{15} = \frac{135}{15}$

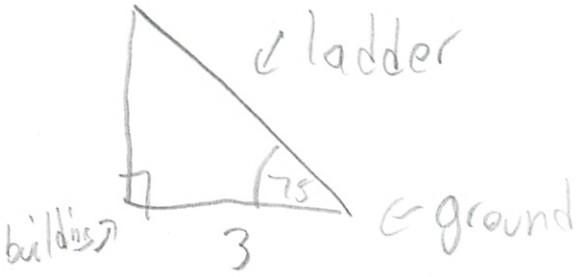
$x = 9$

The shadow is 9 in long

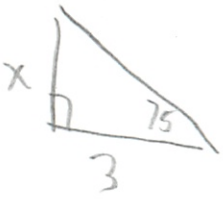
(2)

9) A ladder is leaning up against a building. The bottom of the ladder is 3 feet away from the bottom of the building, and makes an angle of 75 degrees with the ground.

a) Draw and label a diagram. {3 points}



b) How high up on the building does the ladder reach? Show all work! {5 points}



$\tan 75 = \frac{opp}{adj} = \frac{x}{3}$

$\tan 75 = \frac{x}{3}$

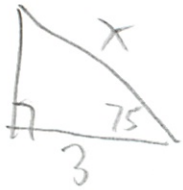
$3(\tan 75) = x$

$3(3.7320) = x$

$11.196 = x$

ladder reaches 11.196 ft up building

c) How long is the ladder? Show all work? {5 points}



$\cos 75 = \frac{adj}{hyp} = \frac{3}{x}$

$\cos 75 = \frac{3}{x}$

$(\cos 75)x = 3$

$\frac{.2588x}{.2588} = \frac{3}{.2588}$

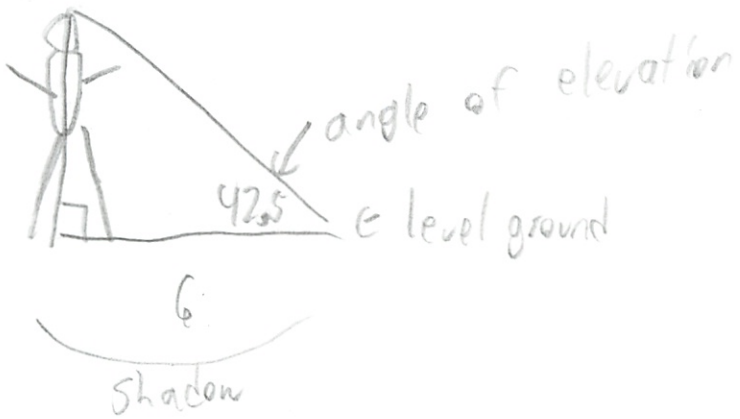
$x = 11.591$

Ladder is 11.59 ft long

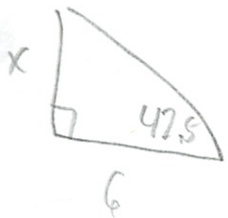
0

10) Carrie is standing on level ground and has a shadow which is 6 feet long. The angle of elevation of the sun is 42.5 degrees.

a) Draw and label a diagram. {3 points}



b) How tall is Carrie? Show all work! {5 points}



$\tan 42.5 = \frac{opp}{adj} = \frac{x}{6}$

$\tan 42.5 = \frac{x}{6}$

$6(\tan 42.5) = x$

$6(.9163) = x$

$5.49 = x$

Carrie is 5.49 feet tall

0

Pit + Pendulum

5/13

Mean → Average $\frac{\sum_{i=1}^{n} x_i}{n} = \bar{x}$ $\bar{x}$ = symbole of mean

Median → the "middle" number

Mode → most frequently occuring #

range → difference from high to lo

Standard deviation

All measures of central tendency

2, 2, 3, 3, 4, 4, 4, 5, 6, 7

n = 11 (11 numbers above) ↑ count 5 from

to find in median 11/2 = 5 1/2

median = 4

mode = 4 $\bar{x}$ = 4

another way to write: 2(2) + 2(3) + 4(4) + 1(5) 1(6) 1(7)

4 + 6 + 16 + 5 + 6 + 7 = 44/11 = 4

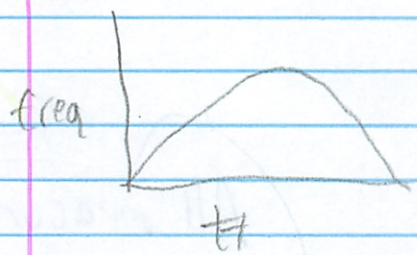
↑ # of pieces

w/ even number of data

3 [4 5] 6

(4+5)/2 = 4.5 = media-

Tossed a dice



normal or bell curve

Coin Flip #8

5/15

Heads

7	6	8	7
4	7	3	6
6	5	6	5
7	7	6	5
7	5	8	100
7	4	6	
7	6	5	
5	5	5	
7	6	4	
4	3	7	
5	4	7	
7	7	7	
6	3	5	
3	5	5	
5	5	7	
5	8	5	
2	3	3	
5	6	7	
2	4	7	
3	3	4	
6	8	5	
2	3	7	
3	6	7	
5	4	7	
5	5	3	
6	6	4	
5	6	6	
5	4	3	
5	3	4	
5	3	4	
6	3	6	
6	3	3	

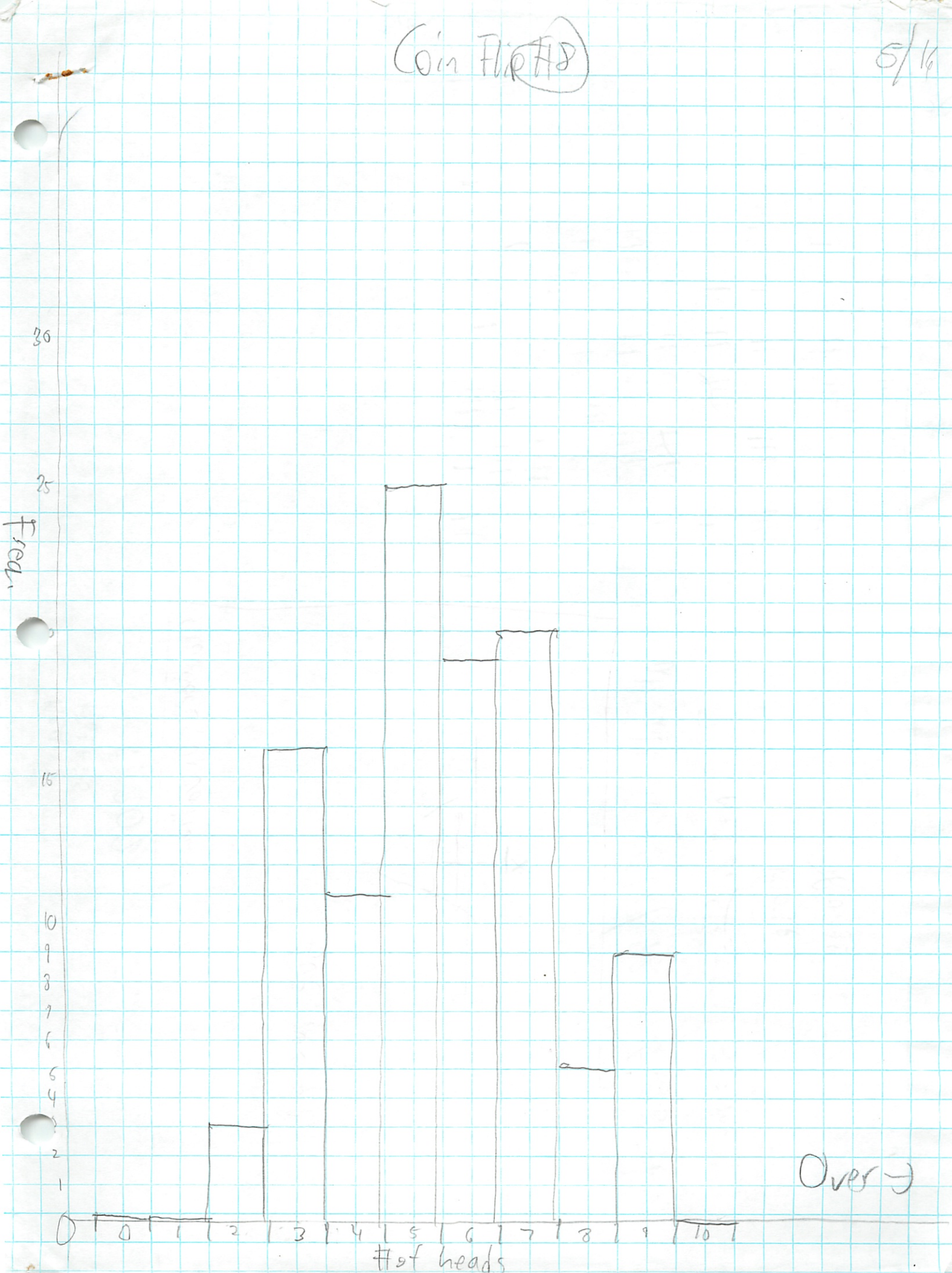
Median 5
Mode 5
Mean 5.24
Range 7

Count 0 - 0
Count 1 - 0
" 2 - 3
" 3 - 16
" 4 - 11
" 5 - 25
" 6 - 19
" 7 - 20
" 8 - 5
" 9 - 1
" 10 - 0

(32)

Coin Flip HW

5/16

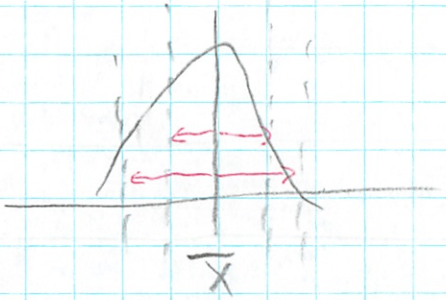


mean: 3
Mode: 5

$\sum f = 302$

Standard Deviation

see next pg



Freq

0 1 2 3 4 5 6 7 8 9 10

6 2 5 6 12 25 27 15 5 0 0

all add to 518/98 = 5.28 = mean

median $\frac{515}{2} = 5$ 5 = median

mode 6

Range: 7

Use ~~#3~~ data

Standard Deviation

P334

8/16

5.3 = mean

$x_i - \bar{x} =$	$(x_i - \bar{x})^2$	Freq	
$1 - 5.3 = -4.3$	18.49	x 2	36.98
$2 - 5.3 = -3.3$	10.89	x 5	54.45
$3 - 5.3 = -2.3$	5.29	x 6	31.74
$4 - 5.3 = -1.3$	1.69	x 12	20.28
$5 - 5.3 = -.3$	.09	x 25	2.25
$6 - 5.3 = .7$	.49	x 27	13.23
$7 - 5.3 = 1.7$	2.89	x 15	42
$8 - 5.3 = 2.7$	7.29	x 6	43.74

244.67 / 98 = 2.4966

1.58 = σ

to make all positive

x Freq

Create a set of data that matches each set of restrictions.

1. Martin played in 5 basketball games. The mean number of points that he scored was 12. The median number of points he scored was 14.

8, 8, 14, 14, 16 - must add to (5×12)

2. Denise played in 5 basketball games also. Her mean number of points scored is 18. Her range of points scored was 9.

17, 19, 19, 19, 21

3. Six students kept track of how much time they spent watching TV in a week. Their mean time was 8 hours. Their mode time was 9 hours.

8 6 6 9 9 18 order 6, 6, 8, 9, 9, 18

4. Ramon bought 5 books. Their mean cost was $15.20. Their median cost was $18. The most expensive book cost $24.

5 6.50 18 19.5 24

15.20 × 5 = 76 - 24 - 18 = 34/3

5. In a certain I.Q. test, an I.Q. of 100 is considered "average." Six students take this I.Q. test and have a mean score of 100,

   a. What is the greatest number of the six students who could have a score that is above "average?" Give a set of scores that demonstrates this.

0, 0, 0, 0, 0, 600 (5)

101, 101, 101, 101, 101, 95

   b. What is the smallest number of the six students who could have a score that is above "average?" Give a set of scores that demonstrates this.

50 50 51 300 50 99 (1) Not really

~~or 100, 100, 100, 100, 100, 100 (0) none above ave.~~

6. Garrison Keillor claims that in Lake Wobegon, Minnesota, "All the children are above average." Is this possible? Explain.

Yes, the average is figured from past tests and is nation-wide/international, figured Dr PHD

$\bar{X}$

The **mean** for a set of values is obtained by adding the numbers and dividing the result by the number of values that were added.

The **median** for a set of numbers is found by arranging the numbers in increasing or decreasing order, then choosing the middle number. For an even numberof values, the median is obtained by taking the two middle numbers and averaging them.

The **mode** for a set of values is the number that occurs most often. If all of the numbers are different, there is no mode. If two different numbers occur most often then there are two modes.

The **range** for a set of data is the difference between the highest and lowest values.

1. For the following set of numbers, find the mean, median and mode (if any),

   5, 8, 8, 11, 13

   Mean: 9 Median: 8 Mode: 8 Range: 8

2. For the following set of numbers, find the mean, median and mode (if any),

   15, 8, 12, 11, 4, 18, 14, 9

   Mean: 11.375 Median: 11.5 Mode: — Range: ~~9~~ 14

   $11\frac{3}{8}$ or 11.4 (Round to .1)

3. Marvin bought 5 items at a mean (average) cost of 40¢.

   Find two different sets of prices that would give this result.

   .40 .40 .40 .40 .40 .35 .35 .40 .45 .45

   do .40 x 5 and - 1 at a time ↑ opps

4. Six students each worked on a term paper for their history class. They each spent a different whole number of hours on their papers. The average (mean) time spent by the students was 20 hours. The student who spent the least time spent 9 hours. The student who spent the most time spent 25 hours. Find three possibilities for the amounts of time the other 4 students spent on their papers.

   9, 20, 20, 21, 25, 25 9, 21, 21, 23, 21, 25 9, 18, 18, 25, 25, 25

Seven students were complaining about how much time they had to spend on schoolwork over their spring vacation. Their mean time was 15 hours. Make up a data set for each of the requirements given below. For each requirement, demonstrate that your data set meets the requirement by finding the mean, median, and mode.

1. The mean is larger than the median.

8, 9, 10, 11, 12, 15, 40

Mean: 15 Median: 11 Mode: —

105 Total

2. The median is larger than the mean.

5, 5, 10, 20, 20, 20, 25

Mean: 15 Median: 20 Mode: 5

3. The mean is larger than the mode.

4, 4, 4, 13, 20, 30, 30

Mean: 15 Median: 13 Mode: 4

4. The mode is larger than the mean.

4, 6, 7, 20, 20, 23, 25

Mean: 15 Median: 20 Mode: 20

5. The mode is larger than the median.

3, 6, 7, 20, 23, 23, 23

Mean: 15 Median: 20 Mode: 23

6. The median is larger than the mode.

4, 4, 4, 13, 25, 25, 90

Mean: 15 Median: 13 Mode: 4

7. The mean, median, and mode are equal.

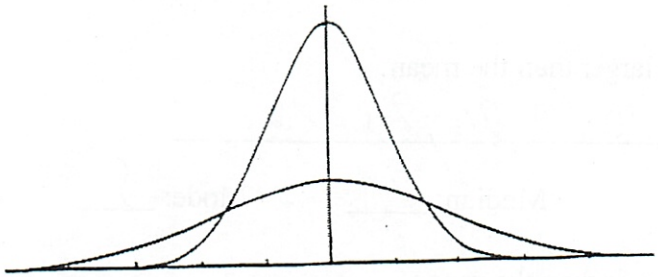
15, 15, 15, 15, 15, 15, 15

Mean: 15 Median: 15 Mode: 15

What Is Standard Deviation?

The **standard deviation** of a set of data measures how "spread out" the data set is. In other words, it tells you whether all the data items bunch around close to the mean or if they are "all over the place."

The superimposed graphs below show two normal distributions with the same mean, but the taller graph is less "spread out." Therefore, the data represented by the taller graph has a smaller standard deviation.



Calculation of Standard Deviation

Here is a list of the steps for calculating standard deviation.

1. Find the mean.
2. Find the difference between each data item and the mean.
3. Square each of the differences.
4. Find the average (mean) of these squared differences.
5. Take the square root of this average.

Organizing the computation of standard deviation into a table like the one on the next page can be very helpful. This table is based on a data set of five items: 5, 8, 10, 14, and 18. The mean for this data set is 11. The mean of a set of data is often represented by the symbol $\bar{x}$, which is read as "x bar."

The computation of the mean is shown below the table to the left. On the right below the table, step 4 of the computation of the standard deviation is broken down into two substeps: (a) adding the squares of the differences and (b) dividing by the number of data items.
The symbol usually used for standard deviation is the lower case form of the Greek letter sigma, written σ.

x	$x - \bar{x}$	$(x - \bar{x})^2$
5	-6	36
8	-3	9
10	-1	1
14	3	9
18	7	49

sum of the data items = 55
number of data items = 5
$\bar{x}$ (mean of the data items) = 11

sum of the squared differences = 104
mean of the squared differences = 20.8
σ (standard deviation) = $\sqrt{20.8} \approx 4.6$

Suppose you represent the mean as $\bar{x}$, use n for the number of data items, and represent the data items as x_1, x_2, and so on. Then the standard deviation can be defined by the equation

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}}$$

Standard Deviation and the Normal Distribution

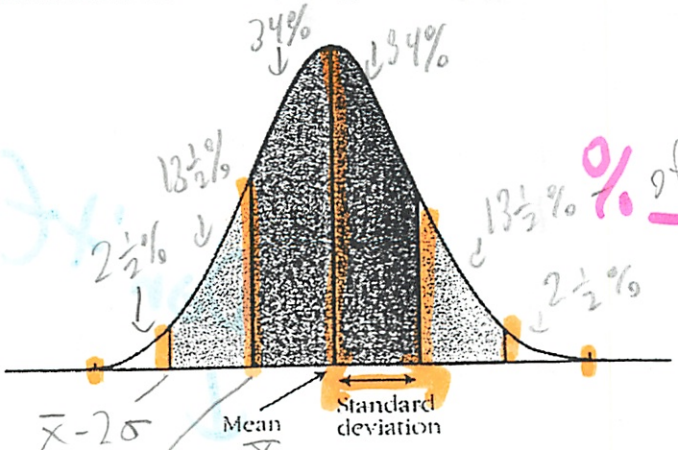
The normal distribution was identified and studied initially by a French mathematician, Abraham de Moivre (1667-1754). De Moivre used the concept of normal distribution to make calculations for wealthy gamblers. That was how he supported himself while he worked as a mathematician.

One of the reasons why standard deviation is so important for normal distributions is that there are some principles about standard deviation that hold true for any normal distribution. Specifically, whenever a set of data is normally distributed, these statements hold true.

Approximately 68% of all results are within one Standard deviation of the mean.

Approxinialcly 95% of all results are within two standard deviations of the mean.

These facts can he explained in terms of area, using the diagram "The Normal Distribution."



The Normal Distribution

In this diagram, the darkly shaded area stretches from one standard deviation below the mean to one standard deviation above the mean; it is approximately 68% of the total area under the curve.

The light and dark shaded areas together stretch from two standard deviations below the mean to two standard deviations above the mean, and constitute approxilliatcly 95% of the total area under the curve.

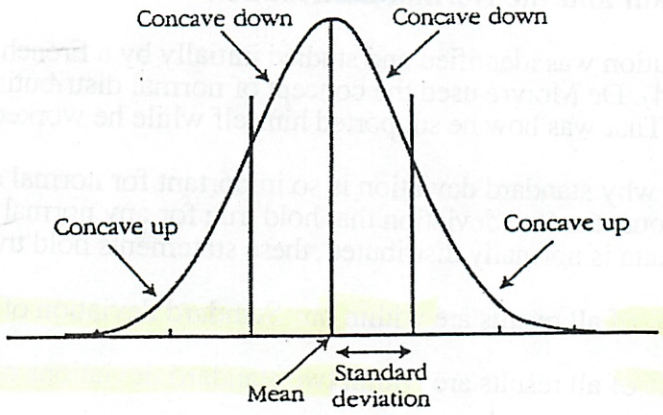
So standard deviation provides a good rule of thumb for deciding whether something is "rare."

Geometric Interpretation of Standard Deviation

Geometrically, the standard deviation for a normal distribution turns out to be the horizontal distance from the mean to the place on the curve where the curve changes from being concave down to concave up.

In the diagram "Visualizing the Standard Deviation;' the center section of the curve, near the mean, is concave down, and the two "tails" (that is, the portions farther from the mean) are concave up.

The two places where the curve changes its concavity, marked by the vertical lines, are exactly one standard deviation from the mean, measured horizontally.



Practice

x	$x-\bar{x}$	$(x-\bar{x})^2$
5	-3	9
7	-1	1
8	0	0
9	1	1
11	3	9

$\bar{x} = 8$ $\quad 20/5 = 4$

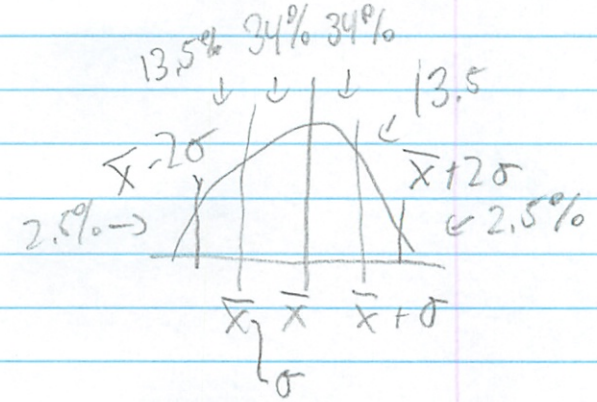
Don't forget the square root

$\sqrt{4} = 2$

Stand. Diviation Review

5/26

10
11
11 $\bar{x} = 11.9$
11 median - 12
12 mode - 12
12 range - 3
12 stand. div.
13
13
13
13



Stand D.V

x_i	$\cdot$	Freq(x_i)	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	Freq$(x_i)(x_i - \bar{x})^2$
10	×	1	-1.9	3.61	3.61
11	×	2	-.9	.81	1.62
12	×	4	1	.01	.04
13	×	3	1.1	1.21	3.63
		$n=10$			8.90

$n = 10$

.89

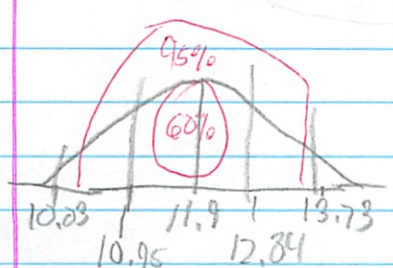
Find $\bar{x}$ $10(1) + 11(2) + 12(4) + 13(3)$

$10 + 22 + 48 + 39$

$\frac{119}{n = 10}$

$= 11.9$

$\sigma = \sqrt{\frac{\Sigma f(x_i)(x_i - \bar{x})^2}{n}}$ $\sigma = .9433$



Data Pratice

5/20

Measures of Central Tend

$\bar{x}$:

Med:

Mode:

Range:

σ =

Graph w/ σ + $\bar{x}$

x_i	Freq(x_i)	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	Freq(x_i)$(x_i - \bar{x})^2$
0	0	-5.06	25.60	0
1	7	-4.06	16.48	115.36
2	36	-3.06	9.36	336.96
3	101	-2.06	4.24	428.24
4	125	-1.06	1.12	140
5	209	-.06	.00	0
6	162	.94	.88	142.56
7	100	1.94	3.76	376
8	30	2.94	8.64	259.2
9	11	3.94	15.52	170.72
10	4	4.94	24.40	97.6
				2069.64 / n
				2066.64 / 785 =
				2.63

$\sigma = 1.6225$

so different

$1(7) + 2(36) + 3(101) + 4(125) + 5(209) + 6(162) + 7(100) + 8(30) + 9(11) + 10(4)$

$n = 785$

$7 + 72 + 303 + 500 + 1045 + 972 + 700 + 240 + 99 + 40$

$3978 / n$

$3978 / 785 = 5.06 = \bar{x}$

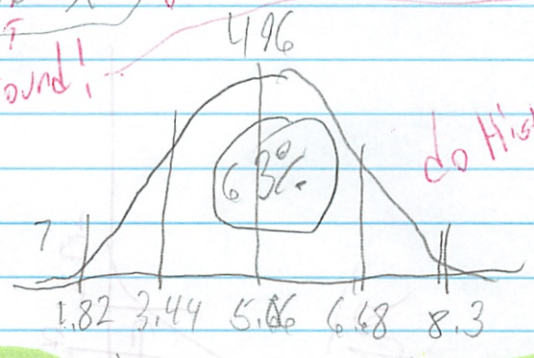
round!

$\sigma = 5.0675$

Med = 5

Mode = 5

Range = 9



do Histogram →

763

79%

Variance

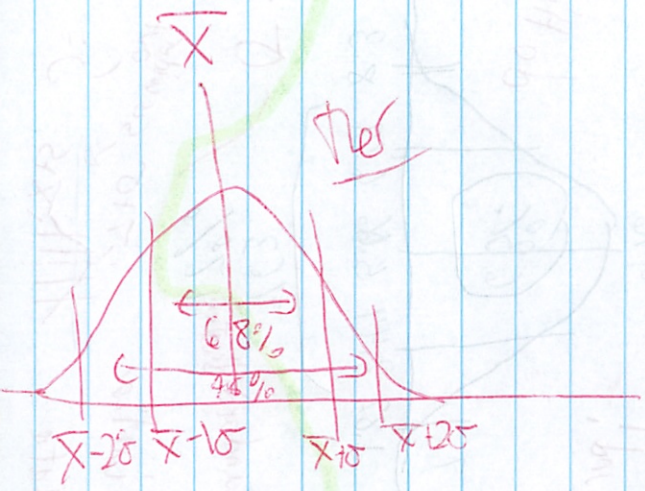
σ = population standard deviation (large amt of data)

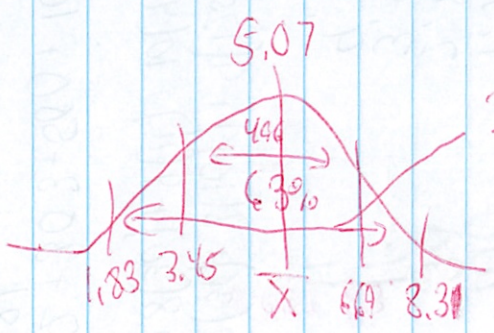
$$\sigma = \sqrt{\frac{\sum f(x_i)(x_i - \bar{x})^2}{n}}$$

s = sample std dviation (small amount of data)

$\bar{x} \pm \sigma$ $\bar{x} \pm 2\sigma$ $\bar{x} \pm 3\sigma$ sig widen out

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





$2 < x < 8 \quad \frac{763}{785} = 97\%$

Super Set

n = 124,249

x_i #	Freq
0	191
1	1171
2	5581
3	14518
4	25766
5	30475
6	25441
7	14327
8	5472
9	1199
10	145

off interval

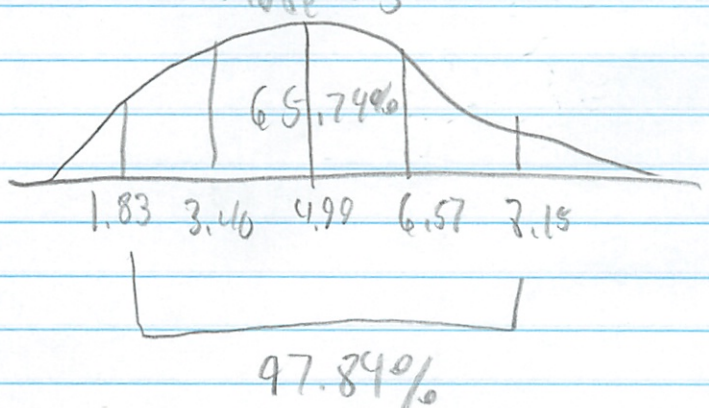
$\bar{x} = 4.99$

$\sigma = 1.5831$

range = 10

median = 5

mode = 5



97.84%

In Class Data practice

over here

x_i	$f(x_i)$	$x_i(fx_i)$	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	$f(x_i)(x_i - \bar{x})^2$
14	7	98	-5.69	32.38	453.27
15	6	90	-4.69	22	131.98
16	11	176	-3.69	13.62	149.78
17	19	323	-2.69	7.24	137.44
18	44	792	-1.69	2.86	125.67
19	37	703	-.69	.48	17.62
20	38	760	.31	.10	2.59
21	25	525	1.31	1.72	42.90
22	27	594	2.31	5.34	144.67
23	14	322	3.31	10.96	153.34
24	15	360	4.31	18.58	278.64
25	4	100	5.31	28.20	112.78
26	2	52	6.31	39.82	79.63
27	1	27	7.31	53.44	53.44
	250 = n	4922			1883.25

4922 / 250 = 19.69 = $\bar{x}$

1883.25 / 250 = 7.53

$\sigma = \sqrt{7.53} = 2.74$

Should do w/ this!

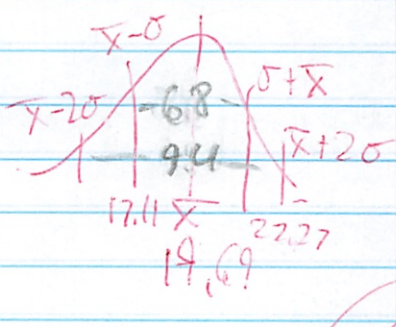
Column through the middle

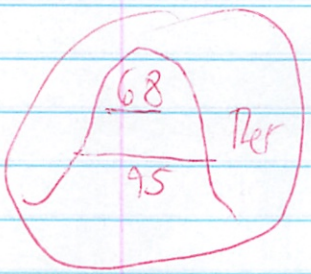
Watch

Mode = ~~20~~ 18 Read!

Median = 20

Range = 13





Suppose to do this

More Data to (1) Graph (2) Find the mean, etc

x_i	$f(x_i)$
40	1
4.4	2
4.6	11
4.3	1
4.5	5
4.7	32
4.9	112
4.8	80
5.0	131
5.1	67
5.2	29
5.3	26
5.4	10
5.5	5
5.7	1
5.6	2
6.0	1

All Measures of Central Tendency

Using 1-Var Stat

$\bar{x} = 17.68$

$n = 34$

$\sigma = 31.26$

$s = 31.73$

130 = Range

Median = 5.05

Mode = 1

Data

By hand

		$x_i - \bar{x}$	$(x_i - \bar{x})^2$
1		-16.68	278.22
1	median $= \frac{5+5.1}{2} = 5.05$	-16.68	278.22
1		-16.68	278.22
1		-16.68	278.22
2	Mode = 1	-15.68	245.86
2	Range = 131 − 1 = 130	-15.68	245.86
4		-13.68	187.14
4.3	Median − $\bar{x} = 601/34 = 17.68$	-13.38	179.02
4.4	$n = 34$	-13.28	176.36
4.5		-13.18	173.71
4.6		-13.08	171.09
4.7	$\Sigma (x_i - \bar{x})^2 = 33226.56$	-12.98	168.48
4.8	$34 =$	-12.88	165.89
4.9	977.25	-12.78	163.33
5	$\sqrt{\ } =$	-12.68	160.78
5	$\sigma = 31.26$	-12.68	160.78
5.		-12.68	160.78
5.1	$\Sigma (x_i - \bar{x})^2 = 33226.56$	-12.58	158.26
5.2	$33 =$	-12.48	155.75
5.3	1006.87	-12.38	153.26
5.4	$\sqrt{\ } =$	-12.28	150.80
5.5	$s = 31.73$	-12.18	148.31
5.6		-12.02	145.43
5.7		-11.88	143.52
6		-11.68	136.42
10		-7.68	58.93
11		-6.68	44.58
26		8.32	69.28
29		11.32	128.27
32		14.32	205.16
67		49.32	2432.81
80		62.32	3884.22
112 − 131		94.32 − 113.32	7896.93 − 12842

Data

$-3.58 = \bar{x} - \sigma$

30 oc
88%
fit in 1
σ

32 oc
94%
fit 2
σ

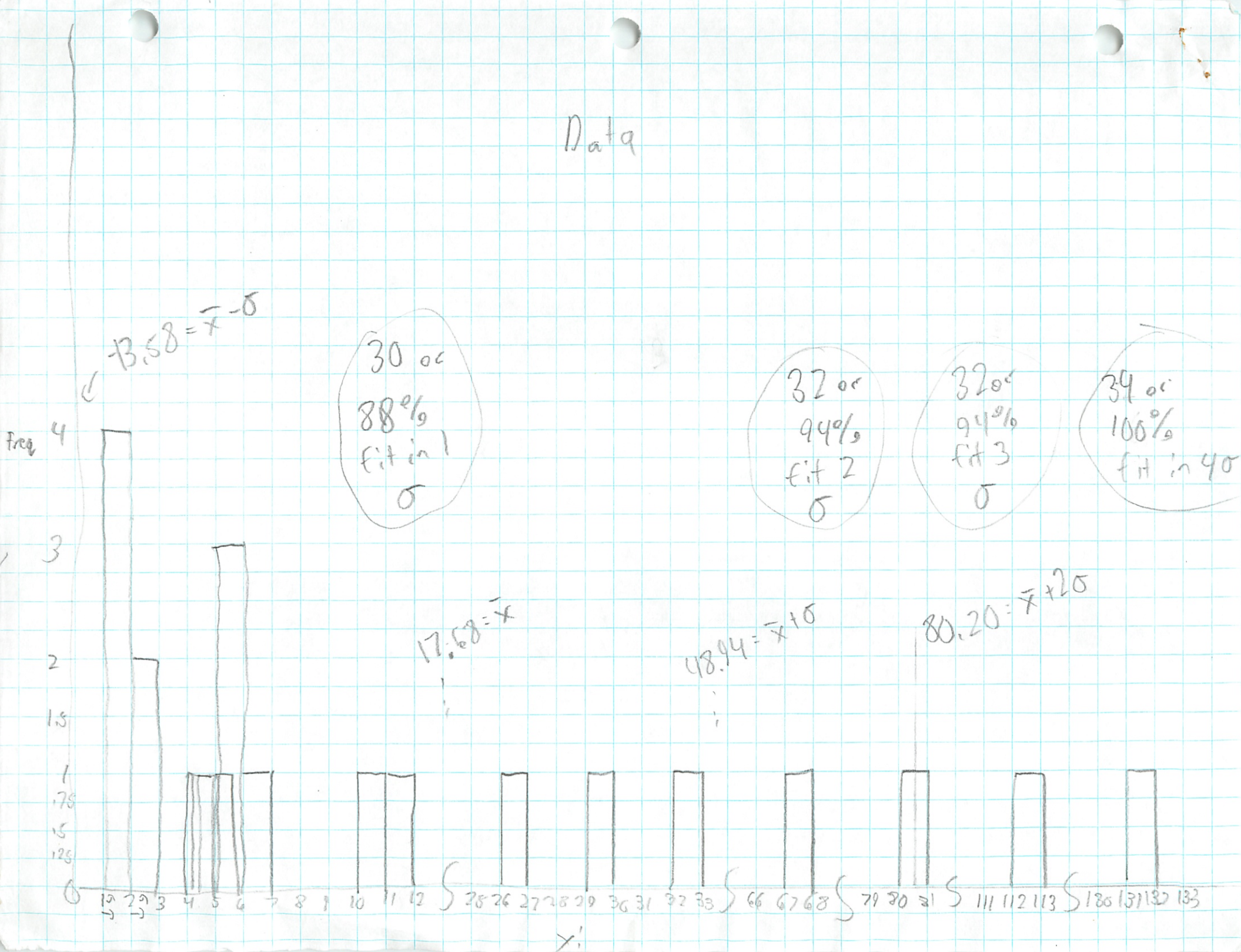
32 oc
94%
fit 3
σ

34 oc
100%
fit in 40

$17.68 = \bar{x}$

$48.94 = \bar{x} + \sigma$

$80.20 = \bar{x} + 2\sigma$



Warmup

5/26

1. $y = f(x) = x + 3$ — Find $f(3)$ (6)

y intercept

3 + 3 =

is

$f(3) = 3 + 3$
$= 6$

(0, 3)
m = 1

f(means function.

f(x) also means y =

2. $y = f(x) = 2x - 1$ Find $f(-1)$ — means where x is pct -1

$f = x - 1$ (x = 1)

$2(-1) - 1$
$-2 - 1 = -3$

m = 2
(0, -1)

$y = mx + b$

3. $g(x) = x^2 + 2x$ Find $g(6)$

can have different letter

$6^2 + 2(6)$
$36 + 12 = 48$

Function eval at 6 equals 48

Proper $g(x) = x^2 + 2x$
$g(6) = 6^2 + 2x$
$= 36 + 12$
$= 48$

Data

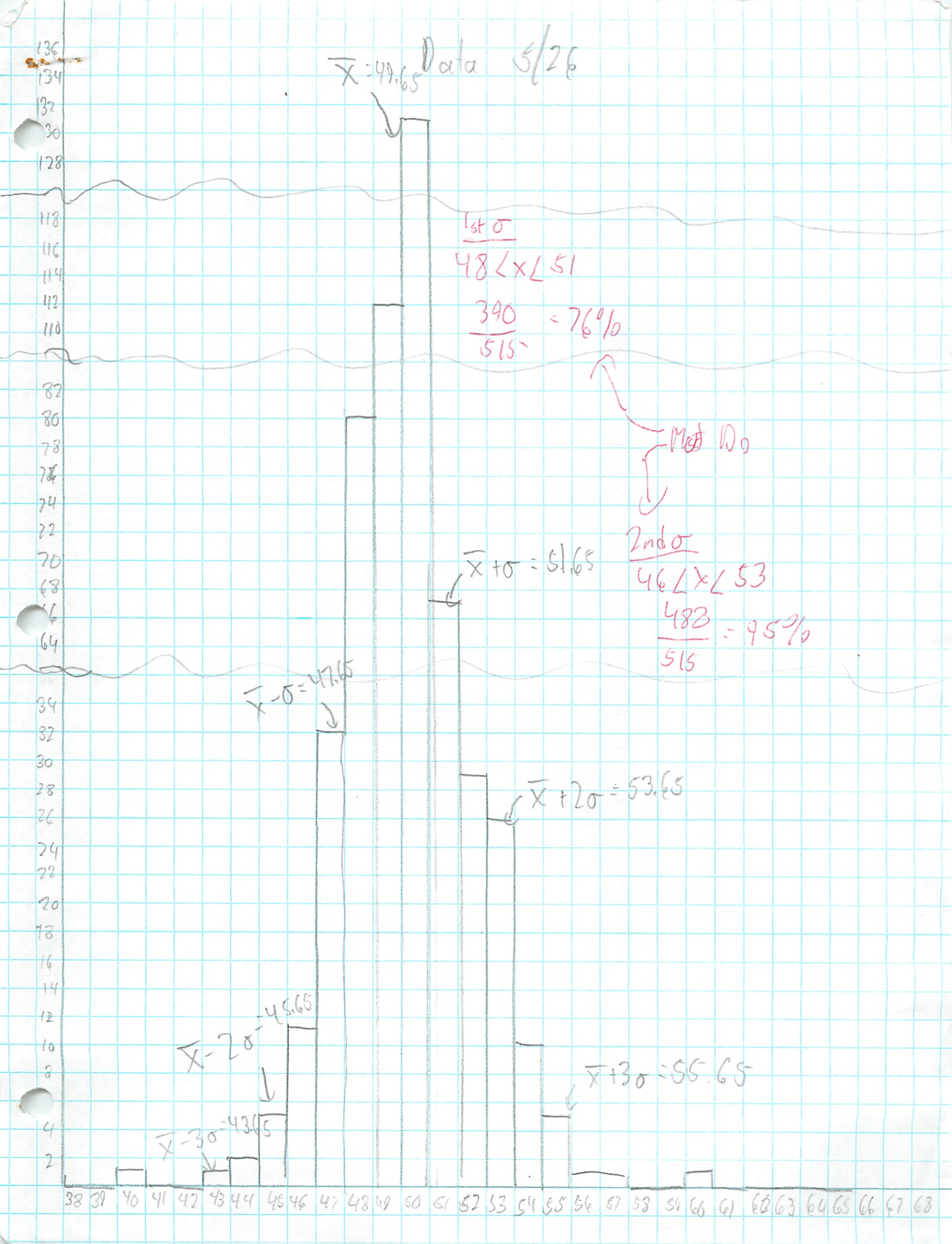
Find centroid
tendency
Graph

x_i	Freq(x_i)	(x_i) freq(x_i)	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	$(x_i - \bar{x})^2$ freq(x_i) $\Sigma / 26$
40	1	40	-9.65	93.12	93.12
41	0	0	0	0	0
42	0	0	0	0	0
43	1	43	-6.65	44.22	44.22
44	2	88	-5.65	31.92	63.85
45	5	225	-4.65	21.62	108.11
46	11	506	-3.65	13.32	146.55
47	32	1504	-2.65	7.02	224.72
48	80	3840	-1.65	2.72	217.80
49	112	5488	-.65	.42	47.32
50	131	6550	.35	.12	16.05
51	67	3417	1.35	1.82	122.11
52	29	1508	2.35	5.52	160.15
53	26	1374	3.35	11.22	291.79
54	10	540	4.35	18.92	189.23
55	5	275	5.35	28.62	143.11
56	1	56	6.35	40.32	40.32
57	1	57	7.35	54.02	54.02
58	0	0	0	0	0
59	0	0	0	0	0
60	1	60	10.35	107.12	107.12
	515	25571			2069.59 / 515 =
	n	515 =			4.02
		49.65			$\sqrt{\ }$ =
		$\bar{x}$			σ = 2.00

Median = 516/2 = 257 → 50

Mode = 50

Range = 60 - 40 = 20

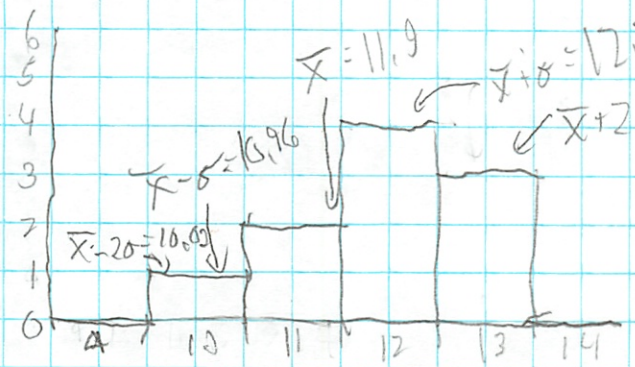

$\bar{x}$ = 49.65 Data 5/26
1st σ
48 < x < 51
390/515 = 76%
Met 1D
2nd σ
46 < x < 53
483/515 = 95%
$\bar{x}$ + σ = 51.65
$\bar{x}$ - σ = 47.65
$\bar{x}$ + 2σ = 53.65
$\bar{x}$ - 2σ = 45.65
$\bar{x}$ + 3σ = 55.65
$\bar{x}$ - 3σ = 43.65

x_i	freq (x_i)	x_i (freq x_i)	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	freq $x_i(x_i - \bar{x})^2$
10	1	10	−1.9	3.61	3.61
11	2	22	−.9	.81	1.62
12	4	48	.1	.01	.04
13	3	39	1.1	1.21	3.63
	10 = n	119			8.9
		10(n)			10
		11.9 = $\bar{x}$			$\sqrt{.89}$ =
					.94 = σ

Median = 12

Mode = 12

Range 13 − 10 = 3



There:

68 - 10

95 20

11, 12, $\frac{6}{10}$ = 60% in 1σ

2 + 4 = 6

11, 12, 13, $\frac{9}{10}$ = 90% in 2σ

6 + 3 = 9

5/31

57, 59, 60
72, 70, 67
62, 64, 65
63, 64, 63
63, 66, 64
66, 66

x_i	freq x_i	x_i freq	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	freq $x_i (x_i - \bar{x})^2$
57	1	57	-7.29	53.2	53.2
58	0	0	—	—	0
59	1	59	-5.29	28.03	28.03
60	1	60	-4.29	18.44	18.44
61	0	0	—	—	0
62	1	62	-2.29	5.26	5.26
63	2	126	-1.29	1.67	3.35
64	3	192	-.29	.09	.26
65	2	130	.71	.5	1
66	3	198	1.71	2.91	8.73
67	1	67	2.21	7.32	7.32
68	0	0	—	—	0
69	0	0	—	—	0
70	1	70	5.71	32.56	32.56
71	0	0	—	—	0
72	1	72	5.71	59.38	59.38
	17 = n	1093			217.03

Median = 64

Mode = 64 & 66

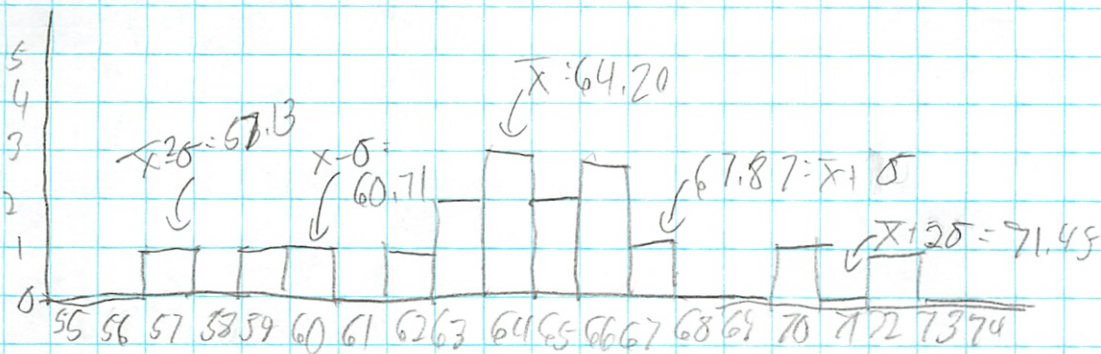
Range 72 - 57 = 15

$1093 / 17 = 64.29$

$217.03 / 17 = 12.80$

$\sigma = 3.58$

$3.58 : \sigma$



σ: 61, 62, 63, 64, 65, 66, 67

0 + 1 + 2 + 3 + 2 + 3 + 1

13 → $\frac{13}{17}$ = 76% versus 86%

2σ: 58, 59, 60 : 68, 69, 70, 71

0, 1, 1, 13, 0, 0, 0

16 → $\frac{16}{17}$ = 94% vs. 95%

Name Michael Plasmeier 8848 Pit assessment

Date 6/1 (20 points)

20

Show all work in an organized way. (Columns and correct symbols could help!) Label all areas clearly. Be sure to show all necessary calculations.

10, 11, 11, 12, 12, 12, 12, 13, 13, 13

Given the following data {10, 12, 13, 12, 13, 11, 12, 11, 13, 12} find:

{1 pt} 1) the mode 12 {1 pt} 2) the range 3

{1 pt} 3) the median 12 {1 pt} 4) the mean 11.9

{10 points} 5) the standard deviation .943

x_i	freq(x_i)	x_i(freq(x_i))	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	$[x_i - \bar{x}]^2$ freq(x_i)
10	1	10	-1.9	3.61	3.61
11	2	22	-.9	.81	1.62
12	4	48	.1	.01	.04
13	3	39	1.1	1.21	3.63
	10 = n	119			8.9
		10 =			10 =
		11.9 = $\bar{x}$			.890
					$\sqrt{\ }$ =
					.943 = σ

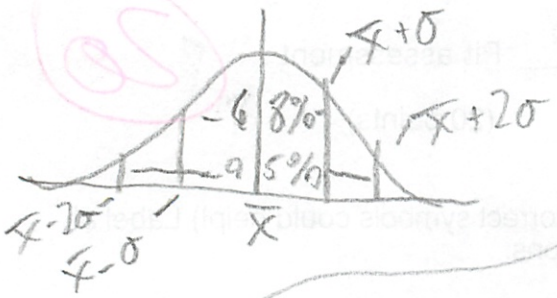
Median = 10/2 = 5 · Count 5 in → 12

Mode = 12

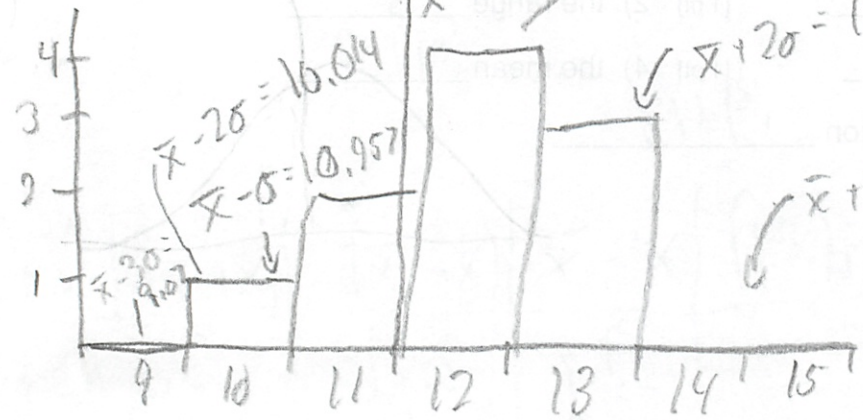
Range 13 - 10 = 3

OVER

1.



2.



$1\sigma = 11, 12$

$2 + 4 = 6$ or $\frac{6}{10} = 60\%$

$2\sigma = \ldots 13$

$6 + 3 = 9$ or $\frac{9}{10} = 90\%$

3. 2nd [+] 7 [1] [2] Stat Enter [1] [0] Enter [1] [1] Enter [1] [2] Enter [1] [3] Enter → [1] Enter [2] Enter [4] Enter [3] Enter Stat → Enter 2nd [1] [7] 2nd [2] Enter