

## AFM HW 7 - Dot Plots & Stem & Leaf Plots

①

2	2
3	5
4	5 6 7
5	2 5 5 8
6	1 3 5 6 8 9 9
7	0 1 2 5
8	4
9	1

② type data into calc (STAT → edit)

109, 123, 128, 132, ..., 178

$\underline{\text{min}} : 109$      $\underline{Q1} : 136$      $\underline{\text{med}} : 152$      $\underline{Q3} : 167$      $\underline{\text{max}} : 178$   
 $\quad \quad \quad -46.5$      $\underline{\text{IQR}} : 31$      $\quad \quad \quad +46.5$

any values  
less than 89.5  
are outliers

$\rightarrow 89.5$      $\underline{1.5(\text{IQR})} : 46.5$

$213.5$  any values  
higher than 213.5  
are outliers

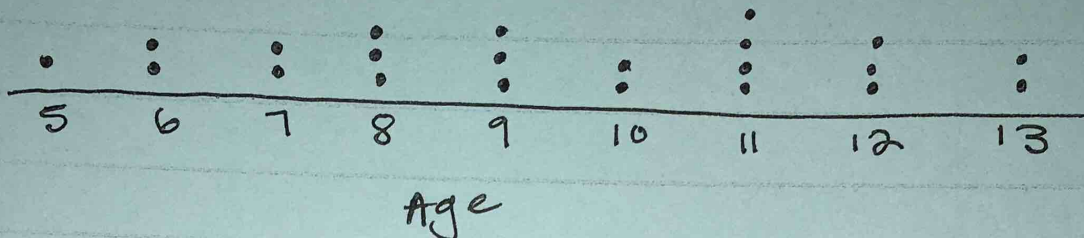
no outliers 😊

③ (a) 1    (b) 3    (c) 11

④ A boxplot would be a better choice because if you do a stem and leaf plot there would only be 2 stems!

5

Frequency



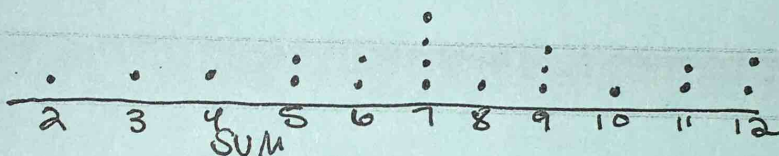
(b)  $13 - 5 = 8$

(c) mode = 11

(d) 11

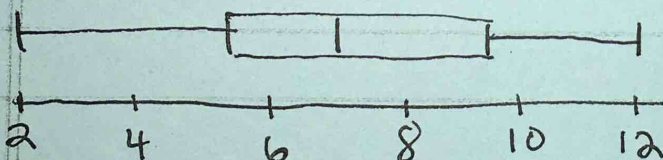
(6) Dot Plot:

frequency



Box Plot:

min: 2    Q1: 5.5    med: 7    Q3: 9.5    max: 12



(7) <sup>a</sup>

0	5
1	0 0 2 5 6 9 9
2	2 6
3	7 7 7 9

(b)  $\bar{x} = 21.7$

median = 19

mode = 37

(8) 11 people (just count the stems)

9

	A				B				
	6	4	1	2	2	4	7	7	7
9	3	3	1	3	3	9			
	7	0		4	3	7			
	7	5	2	5	3	6	9		

- 10
- a) Helena has lower monthly temperatures. It has multiple temperatures in the 20s & 30s while Seattle's coldest temperature is 41.
- b) Helena has more varied temperatures. It gets colder than Seattle and warmer than Seattle. The Range for temperatures for Helena is  $48^\circ$  ( $68-20$ ) while it is only  $25^\circ$  ( $66-41$ ) for Seattle.
- c)  $44.5^\circ$       d)  $51.5^\circ$

11

	Period 1						Period 2										
						2	5					2	5				
						6	5	3	2	2	6	2	4	5	6	8	
						6	7					0	1	3	3	5	8
9	8	8	5	4	3	3	8					3	4	9			
						7	5	1	1	0	9	0	1				

12

	Big Ten				Big East							
	8	6	5	0	7							
8	5	2	1	0	1	1	3	3	4	7	8	9
		2	1	0	2	0	1	1	5			

13 STAT → edit  
 STAT → calc → 1-Var STATS  $L_1, L_2$   
 $\bar{x} = 2.64$     med = 2.5    mode = 2

14 MATH:                      ENGLISH:  
 $z = \frac{78-70}{4}$                        $z = \frac{78-74}{16}$   
 $z = 2$                                $z = .25$

A score of 78 would have a higher standing in math because you are 2 standard deviations higher than the average. In English class it is only  $\frac{1}{4}$  of a standard deviation higher.

15 st dev of 8:                      st dev of 16:  
 $z = \frac{73-65}{8}$                        $z = \frac{73-65}{16}$   
 $z = 1$                                $z = .5$

I would rather have a standard deviation of 8 b/c it gives me a higher z-score which means I did better!

16) a) source of bias: "many people have said" encourages the responder to agree to stay consistent with popular opinion, "dangerous", "Do you agree"

New Question: Do you believe there is a need for stricter laws on the possession of weapons?

b) Source of bias: "dangerous and have deadly side effects", "cancer", "wouldn't you agree", "to save the lives of many"

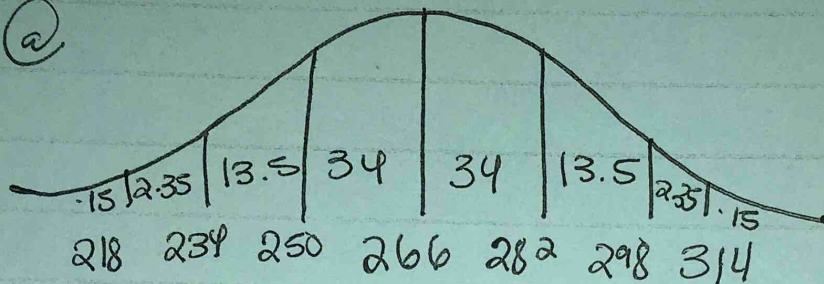
New question: Do you think smoking should be controlled?

17) (A) Systematic → they are using a set rule  
(B) Cluster → dividing population into categories randomly selecting some from each group.

18) (A) Experiment → The researchers are imposing a treatment by giving the group drugs.  
(B) Observational Study → no treatment is imposed, these people just work out or don't but no one is making them do anything.

19

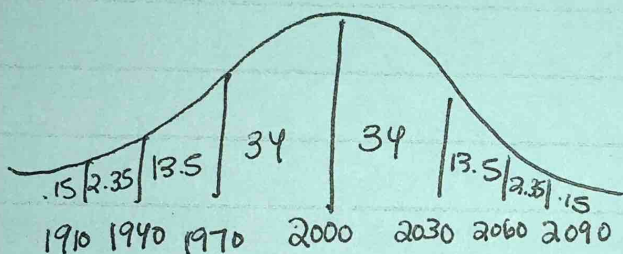
a



b) 49.85%

c) 250 - 282 days

20



$$\text{normcdf}(2065, \text{SBN}, 2000, 30) = .0151 \rightarrow 1.5\%$$

It is somewhat unusual because most batteries won't last that long but 1.5% of batteries will last that long so it is possible!

21

a) .0618

b) .9868

c) .8133

d) .0010

e) <sup>15%</sup>

look for .1500

closest  $\rightarrow$  .1492

-1.04

f) <sup>35%</sup>

look for .6500

closest  $\rightarrow$  .6517

0.39

g) <sup>7%</sup>

look for .9300

closest  $\rightarrow$  .9306

1.48

h) <sup>45%</sup>

look for .4500

closest  $\rightarrow$  .4483

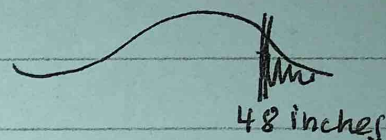
-0.13

22 **★ the mean is 40 inches ★**

a **★ be careful with your units ★**

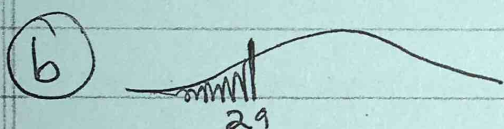
4 feet  $\rightarrow$  48 inches!

$$z = \frac{48 - 40}{6}$$



$$z = 1.33 \leftarrow \text{look up in z-table!}$$

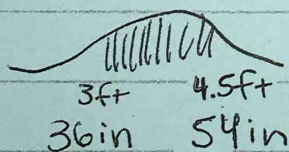
$$.9082 \rightarrow 1 - .9082 = .0918 \text{ or } 9.18\%$$



$$z = \frac{29 - 40}{6}$$

$$z = -1.83 \rightarrow .0336 \text{ or } 3.36\%$$

c **★ change to inches ★**



$$z = \frac{36 - 40}{6}$$

$$z = \frac{54 - 40}{6}$$

$$z = -.67$$

$$z = 2.33$$

↓

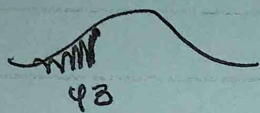
↓

$$.2514$$

$$.9901$$

$$.9901 - .2514 = .7387 \text{ or } 73.87\%$$

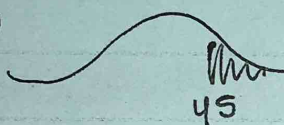
(d)



$$z = \frac{43 - 40}{6} = .5 \rightarrow .6915$$

$$.6915(1000) \approx 692 \text{ children}$$

(f)



$$z = \frac{45 - 40}{6} = .83 \rightarrow .7967$$

$$1 - .7967 = .2033$$

$$(.2033)(1000) \approx 203 \text{ children}$$

(23)

(A) If his mom lives at this nursing home then his reviews at the end of the trial period will probably be great because his mom and all her friends want to be super nice to him!

(B) Parents at a chorus concert will probably have strong opinions that they do not want fine arts to be cut. Also, there are other taxpayers who may have an opinion on this proposal who don't have children! Asking only parents will leave out some teachers, community members, etc.

(C) States in the Northeast may have different priorities than those in other regions. There are also lots of people who vote Republican but aren't registered as Republican who may have an opinion.



(D) Think of the kind of people who are listed in the phone book... a lot of old ~~old~~ people! Many younger people are not listed so you would be missing out on information from that population.

- (E)
- Some teenagers don't wear leggings
  - Many teenagers shop online instead of in a store
  - Many teenagers don't shop in the Juniors Department

$$(24) \quad \frac{67 + 62 + 74 + 68 + X}{5} = 70$$

$$271 + X = 350$$

$$X = 79$$

$$(25) \quad \frac{82 + 82 + 82 + 82 + 70}{5} = X \quad 79.6$$

(26) min: 54      Q1: 65      med: 69      Q3: 73      Max: 76

