1.6 - Mean, Median, Mode, and Range

measures of central tendency

→ average $\dfrac{\text{add up all \#'s}}{\text{the \# of \#s}}$

Vocabulary:
- Mean
- Median → middle #
- Mode → the # that occurs most often
- Range → the difference between the largest & smallest #
- Outlier
- Stem and Leaf Plot

a data value much larger or smaller than the other data

stem | leaf

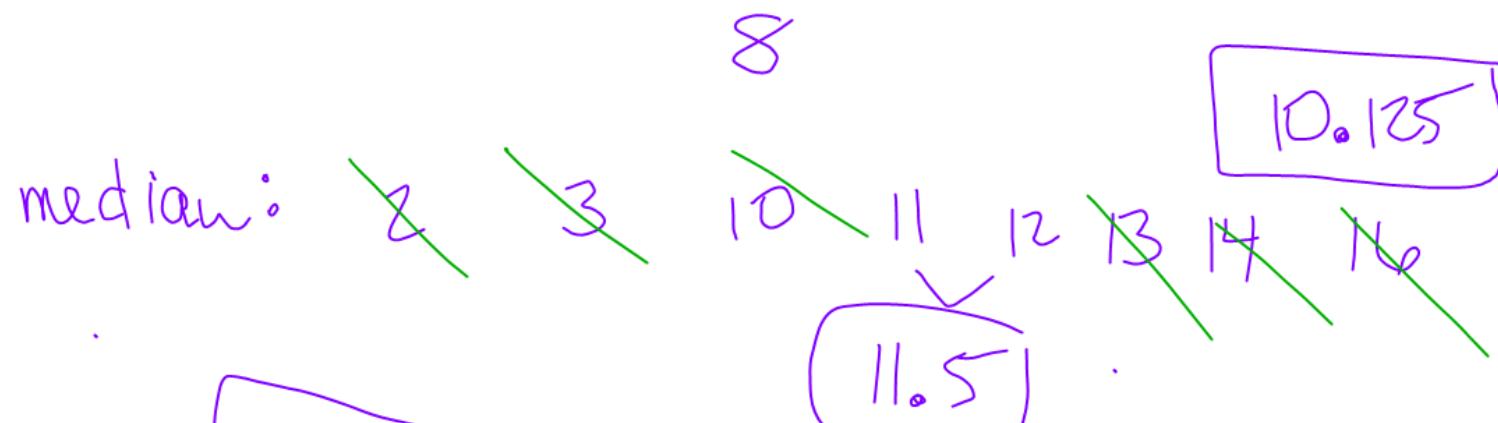| stem	leaf
1	2 3 9 9
2	4 5
3	1
4	2 3 6 8 9

Key

1|2 = 12

1 **EXAMPLE** Find the mean, median, and mode of the data below. Determine which measure of central tendency best describes the data.

14 (10)(2) 13 16 (3) 12 11

mean: $\dfrac{14 + 10 + 2 + 13 + 16 + 3 + 12 + 11}{8} = \dfrac{81}{8} =$

$\boxed{10.125}$

median: 2 3 10 11 12 13 14 16

$\boxed{11.5}$

mode: $\boxed{\text{NO mode}}$

the median best describes the data.

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Find the mean, median, and mode. Which measure of central tendency best describes the data?

11   12

#1. weights of textbooks in ounces: 12, 10, 9, 15, 16, 10

9 10 10 12 15 16

mean: 12   mode: 10

median: 11   median or mean

#3. time spent of internet in min/day: 75, 38, 43, 120, 65, 48, 52

mean: 63   38 43 48 52 65 75 120

median: 52

63

mode: None   mean

2 EXAMPLE Suppose your grades on three science exams are 82, 94, and 89. What grade do you need on your next exam to have an average of 90?

mean

$$\frac{82 + 94 + 89 + x}{4} = 90$$

$$\cancel{4} \cdot \frac{265 + x}{\cancel{4}} = 90 \cdot 4$$

$$265 + x = 360$$
$$-265 \qquad -265$$

$$x = 95$$

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Write and solve an equation to find the value of x.

#7. 100, 121, 105, 113, 108, x

mean: 112

$$\frac{547 + x}{6} = \frac{112}{\cdot 6}$$

$$547 + x = 6 \cdot 112$$
$$-547 \qquad -547$$

$$\boxed{x = 125}$$

#8. 31.7, 42.8, 26.4, x

mean: 35

$$\frac{100.9 + x}{4} = \frac{35}{\cdot 4}$$

$$100.9 + x = 140$$
$$-100.9 \qquad -100.9$$

$$\boxed{x = 39.1}$$

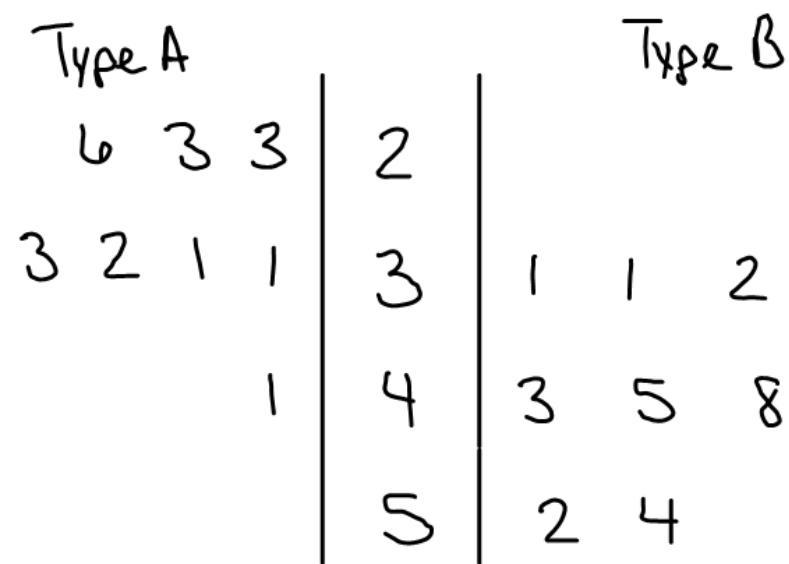**5 EXAMPLE** Find the mean of the city mileage and the mean of the highway mileage for 16 new cars.

**New Car Mileage
(in mi/gal)**

City		Highway
8 7	1	
6 4 1 0	2	2 4
8 6	3	0 0 2 3 8
	4	3

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Find the mean, median, mode, and range of each side of teh stem-and-leaf plot.

#19.   Growth of 2 varities of tulip plants

	Type A				Type B	
6 3 3	2					
3 2 1 1	3	1 1 2				
1	4	3 5 8				
	5	2 4				

Homework Problems:

pg. 44 #21, 24, 28, 32, 37, 39