Lesson 11-5: Measures of Central Tendency.....page #

Essential Question: What are the measures of central tendency and affects of outliers for statistical data?

Feb 28-8:07 AM

Recall that the **mean**, **median**, and **mode** are measures of central tendency - the values that describe the center of a data set.

The **mean** is the sum of the values in the set divided by the number of values. It is often represented as $\bar{x}$. $\bar{x} = \frac{\Sigma x}{n}$

The **median** is the middle value or the mean of the two middle values when the set is ordered numerically.

The **mode** is the value of values that occur most often.
A data set may have one mode, no mode, or several modes.

1, 2, 2, 2, 3, 3 2

1 1 2 2 3 1, 2

1 2 3 4 no mode

Feb 16-9:52 AM

Do your answers make sense based on the data set?

Find the mean, median, and mode of the data.

deer at a feeder each hour: 3, 0, 2, 0, 1, 2, 4

mean = $\frac{12}{7}$ = 1.71

median = 2

mode = 0, 2

Find the mean, median, and mode of the data set

{6, 9, 3, 8}

3, 6, 8, 9

mean 6.5

median = 7

mode no mode

Find the mean, median, and mode of the dat

{2, 2, 5, 6, 6, 6}

$\frac{27}{6}$ = 4.5

5.5

6

Feb 16-9:55 AM

A *weighted average* is a mean calculated by using frequencies of data values. Suppose that 30 movies are rated as follows:

Movie Ratings					
Rating	★★★★	★★★	★★	★	no stars
Number of Movies	8	12	7	2	1

4 4 4 4 4 4 4 4

weighted average of stars =

$$\frac{8(4) + 12(3) + 7(2) + 2(1) + 1(0)}{8 + 12 + 7 + 2 + 1} = \frac{84}{30} = 2.8 \text{ stars}$$

Feb 16-9:56 AM

Show your work!!!!

The probability distribution of successful free throws for a practice set is given below. Find the expected number of successes for one set.

Number of Good Free Throws, *n*	0	1	2	3
Prob. of *n* Good Free Throws	$\frac{3}{20}$	$\frac{3}{20}$	$\frac{1}{5}$	$\frac{1}{2}$

$(0 \times \frac{3}{20}) + (1 \times \frac{3}{20}) + (2 \cdot \frac{1}{5}) + (3 \cdot \frac{1}{2})$

2.05 $\frac{41}{20}$

Feb 16-9:57 AM

Show your work!!!!

The probability distribution of the number of accidents in a week at an intersection, based on past data, is given below. Find the expected number of accidents for one week.

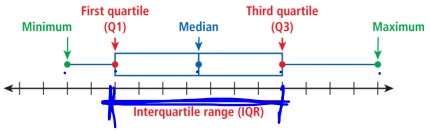
Number of accidents *n*	0	1	2	3
Probability of *n* accidents	0.75	0.15	0.08	0.02

(0 · .75) + (1 · .15) + 2(.08) + (3 · .02)

.37 37%

Feb 16-9:57 AM

A *box-and-whisker plot* shows the spread of a data set. It displays 5 key points: the **minimum** and **maximum** values, the **median**, and the **first** and **third quartiles**.



The quartiles are the medians of the lower and upper halves of the data set. If there are an odd number of data values, do not include the median in either half.

The *interquartile range*, or IQR, is the difference between the 1st and 3rd quartiles, or Q3 – Q1. It represents the middle 50% of the data.

Feb 16-9:57 AM

Make a box-and-whisker plot of the data. Find the interquartile range.
{6, 8, 7, 5, 10, 6, 9, 8, 4}

Step 1 Order the data from least to greatest.
4, 5, 6, 6, 7, 8, 8, 9, 10

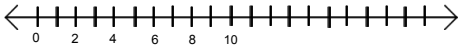
Step 2 Find the minimum, maximum, median, and quartiles.

4, 5, 6, 6, 7, 8, 8, 9, 10
Mimimum
Median
Maximum
First quartile 5.5
Third quartile 8.5

Step 3 Show the 5 number summary. { __ __ __ __ __ }

Step 4 Draw a box plot.

IQR = ____



Feb 16-9:58 AM

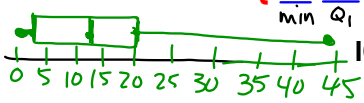
Make a box-and-whisker plot of the data. Find the interquartile range.

{ 2, 2, 3, 10, 10, 15, 15, 20, 25, 44 }

44 - 2 = 42

{ 2 3 12.5 20 44 }
min Q_1 mrd Q_3 max

IQR = 20 - 3 = 17



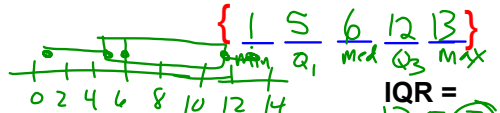
Feb 16-9:58 AM

Make a box-and-whisker plot of the data. Find the interquartile range.

{ 1,5,5,6,9,12,13 }

{ 1 5 6 12 13 }
min Q_1 mrd Q_3 max

IQR = 12 - 5 = 7



Feb 28-11:06 AM

Assignment:

p. 833 #1-8, 13-19

Feb 16-10:00 AM