

Created by Ana Boero

Warm Up 4/(10.1 rounded to the nearest whole number)

1.  $(x^2)^5$  **GET A CALCULATOR!**

2.  $(a^4b)^2$

3.  $(2m^3)^4$

4.  $\left(\frac{5g^{50}}{6h^{30}}\right)^2$

### Plan for The Week

- Data Displays
- Frequency Tables
- Quiz Thursday
- We are off Friday!

Remember:

- What is the mean of a set of data?

Remember

- What is the median of a set of data?

Remember:

- What is the mode of a set of data?

Remember:

- What is the range of a set of data?

Remember:

- What is an outlier of a set of data (general definition)?

HERE THERE BE MONSTERS!  
 (average size noted below each door)  
 WHICH DOOR WILL YOU CHOOSE?



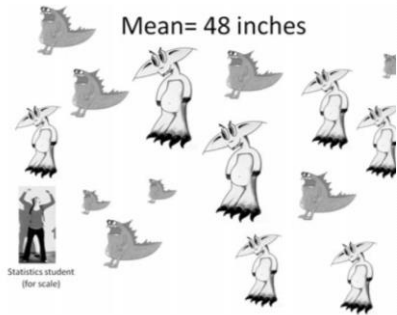
An evil statistics teacher has trapped you in a room, but there are three doors you can use to escape. The problem is, he has put a group of monsters behind each door, with varying heights.

HERE THERE BE MONSTERS!  
 (average size noted below each door)  
 WHICH DOOR WILL YOU CHOOSE?

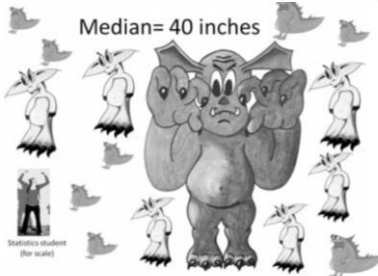


- The average size of the monsters behind door 1 is 48 inches tall.
- Behind door 2, all of the monsters are lined up from smallest to biggest, and the monster in the middle of the line is 40 inches tall.
- Behind door 3, the most common monster height is 25 inches.
- You are trying to avoid the HUGE monsters - they are the most dangerous.

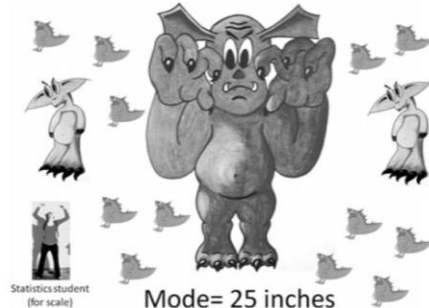
Mean = 48 inches

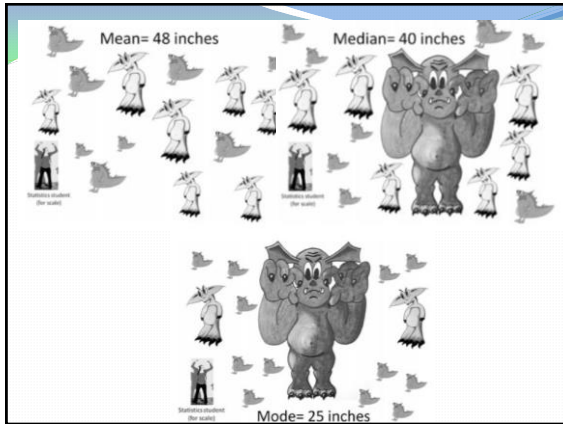


Median = 40 inches



Mode = 25 inches





Find the mean, median, and mode:

• House Prices in a neighborhood:

- \$100,000
- \$300,000
- \$300,000
- \$300,000
- \$3,000,000

Which measures are good representations of the "typical" house price in this neighborhood?

Find the mean, median, and mode:

• # of homework problems assigned by a teacher on 10 different days:

- 4, 5, 5, 6, 8, 11, 12, 12, 13, 14

Which measures are good representations of the "typical" # of homework problems assigned?

Find the mean, median, and mode:

• Heights of 8 trees in a park:

- 8, 10, 10, 12, 30, 30, 30, 30

Which measures are good representations of the "typical" tree height?

Data Display Types We will Focus On

- Stem and Leaf Plots
- Dot Plots
- Histograms
- Box and Whisker Plots

A **stem-and-leaf** plot arranges data by dividing each data value into two parts. This allows you to see each data value.

The digits other than the last digit of each value are called a stem.

The last digit of a value is called a leaf.

2 | 3

Key: 2|3 means 23

The key tells you how to read each value.

The temperature in degrees Celsius for two weeks are given below. Use the data to make a stem-and-leaf plot.

7, 32, 34, 31, 26, 27, 23, 19, 22, 29, 30, 36, 35, 31

**Temperature in Degrees Celsius**

Stem	Leaves
0	7
1	9
2	2 3 6 7 9
3	0 1 1 2 4 5 6

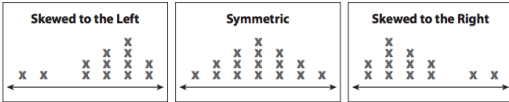
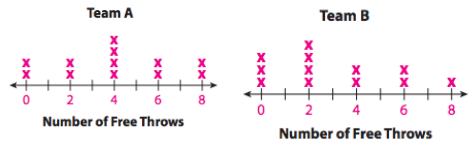
The tens digits are the stems.

The ones digits are the leaves. List the leaves from least to greatest within each row.

Key: 1|9 means 19

**Dot Plot**

Free Throws Shot	0	2	4	6	8
Members of Team A	2	2	4	2	2
Members of Team B	3	4	2	2	1



The left side data points skew the mean

The data is balanced

The right side data points skew the mean

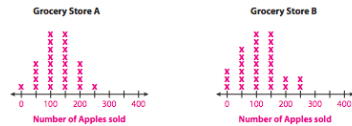
The mean is usually around the middle of the "clump" of data.

If there are a lot of points to the left of the "clump", then it will "pull" the mean in that direction, so the data is skewed to the left.

**Dot Plot**

The table shows the number of days, over the course of a month, that specific numbers of apples were sold by competing grocers.

Number of Apples Sold	0	50	100	150	200	250	300
Grocery Store A	1	4	8	8	4	1	0
Grocery Store B	3	6	8	8	2	2	1



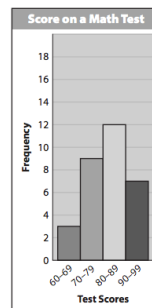
The distribution for grocery store A is left-skewed/right-skewed/symmetric

The distribution for grocery store B is left-skewed/right-skewed/symmetric.

State whether each set of data is left-skewed, right-skewed, or symmetrically distributed.

- A. 3, 5, 5, 3      symmetric
- B. 1, 1, 3, 1      right-skewed
- C. 7, 9, 9, 11      symmetric
- D. 5, 5, 3, 3      symmetric
- E. 19, 21, 21, 19      symmetric

**Histograms**



- A. Look at the histogram of "Scores on a Math Test." Which axis indicates the frequency?  
The vertical axis shows the frequency for each interval.
- B. What does the horizontal axis indicate?  
The horizontal axis shows the test scores.
- C. How is the horizontal axis organized?  
It is organized in groups of 10.
- D. How many had scores in the interval 60-69? 3
- E. How many had scores in the interval 70-79? 9
- F. How many had scores in the interval 80-89? 12
- G. How many had scores in the interval 90-99? 7

## Histogram vs. Bar Graph

**Bar Graph**

**Histogram**

A histogram is different from a bar graph.  
 A histogram has quantitative data. A bar graph has categorical data.  
 In a histogram, you can analyze the shape of the data.  
 In a bar graph, you can't, because the bars could be rearranged and it would mean the same thing.

## Histogram

Listed are the scores from a golf tournament.  
 68, 78, 76, 71, 69, 73, 72, 74, 76, 70, 77, 74, 75, 76, 71, 74

Create a frequency table. The data values range from **68** to **78**, so use an interval width of 3, and start the first interval at **68**.

Score Interval	Frequency
68-70	3
71-73	4
74-76	7
77-79	2

**Golf Tournament Scores**

Check that the sum of the frequencies is **16**.  
 $3 + 4 + 7 + 2 = 16$

Use the frequency table to create a histogram.

## Estimate the mean of the data set

about 9 days

**Maria's Vacations**

A **box-and-whisker plot** can be used to show how the values in a data set are distributed. The minimum is the least value that is not an outlier. The maximum is the greatest value that is not an outlier.

You need five values to make a box-and-whisker plot: **the minimum, first quartile, median, third quartile, and maximum.**

3, 4, 5, 5, 6, 6, 7, 8, 9, 10, 10, 10, 11, 11, 12, 12, 12, 13, 15, 20

**Minimum**  
3

**Quartile 1**  
6  
median of first half of data

**Quartile 2**  
10  
median of whole set of data

**Quartile 3**  
12  
median of second half of data

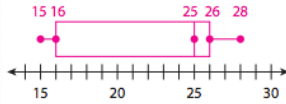
**Maximum**  
20

Add to your notes:  
 Interquartile Range is from Q<sub>1</sub> to Q<sub>3</sub>

### Create a Box and Whisker Plot

25, 28, 26, 16, 18, 15, 25, 28, 26, 16

15, 16, 16, 18, 25, 25, 26, 26, 28, 28  
 Min     $Q_1$     Median     $Q_3$     Max



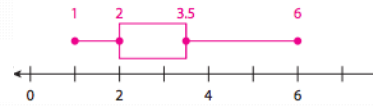
MARK YOUR NUMBERS ABOVE WHERE YOU PLOT THEM.

### Create a Box and Whisker Plot

The numbers of goals scored by Lisa's soccer team in 13 games are listed below.

2, 3, 4, 1, 1, 3, 4, 2, 6, 2, 2, 3, 2

1, 1, 2, 2, 2, 2, 3, 3, 3, 4, 4, 6



MARK YOUR NUMBERS ABOVE WHERE YOU PLOT THEM.

## Homework

- Worksheet