

Slides from Data Display (Tutorial 18)

Organizing and Displaying Data

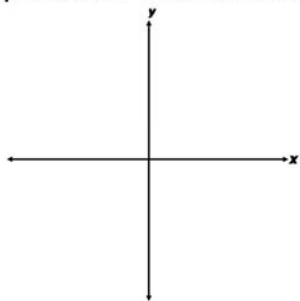
Bonnie Hutchins

This handout contains selected slides to use when reviewing this tutorial topic with or without the video. To access all slides, open thumbnail link on the tutorial interface.

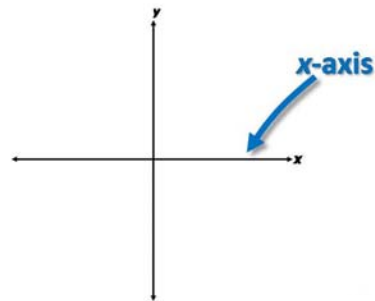
Objectives

- To graph on the coordinate plane
- To find measures of center
- To organize data into charts and tables
- To display data in graphs

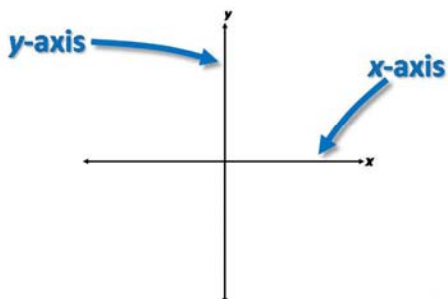
The **coordinate plane** is a mathematical system defined by two real number lines drawn perpendicular to each other



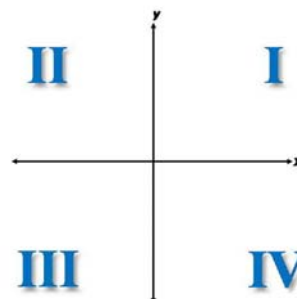
The **x-axis** is the horizontal number line in the coordinate plane



The **y-axis** is the vertical number line in the coordinate plane



A **quadrant** is one of the four regions formed by the axes of the coordinate plane



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Stem-and-Leaf Chart

(Data: 23 20 35 48 41 52 55 47 54 60)

- A stem-and-leaf chart is one way of displaying data and finding measures of center
- Each data value is divided so that the ones digit is the leaf and the rest of the number is the stem

10-Day Temperatures	
Stem	Leaf
2	0 3
3	5
4	1 7 8
5	2 4 5
6	0

Stem-and-Leaf Chart

(Data: 23 20 35 48 41 52 55 47 54 60)

- The **stems** are arranged numerically in the stem column
- The leaves are arranged numerically in the leaf column on the same line with the appropriate stem

10-Day Temperatures	
Stem	Leaf
2	0 3
3	5
4	1 7 8
5	2 4 5
6	0

Stem-and-Leaf Chart

(Data: 23 20 35 48 41 52 55 47 54 60)

- The **median** can be found by counting the leaves to the middle number (47.5)
- The **mode** can be found by looking at the leaves for each stem to see if a leaf value for a stem occurs multiple times (no mode)

10-Day Temperatures	
Stem	Leaf
2	0 3
3	5
4	1 7 8
5	2 4 5
6	0

Frequency Table

(Data: 23 20 35 48 41 52 55 47 54 60)

- Identify appropriate intervals: by 2's, 5's, 10's, etc
- Tally the data in each interval
- Count the number of tallies in each interval for the frequency

Temperature Intervals	Tally	Frequency
20-29		2
30-39		1
40-49		3
50-59		3
60-69		1

Frequency Table

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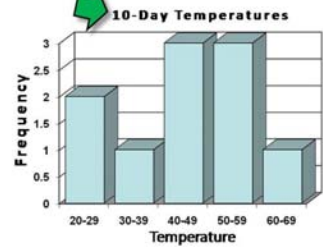
Graphs

- Once the data is arranged in some order, the data can be placed into a visual display or graph to show the relationship of the data
- The following graphs provide examples of how the data can be displayed

Constructing a Bar Graph

(Data: 23 20 35 48 41 52 55 47 54 60)

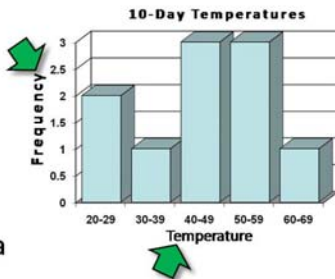
1. Title the graph
2. Use appropriate labels on x and y axes
3. Intervals are equally spaced
4. Draw bars to represent the data
5. Draw bars with uniform widths



Constructing a Bar Graph

(Data: 23 20 35 48 41 52 55 47 54 60)

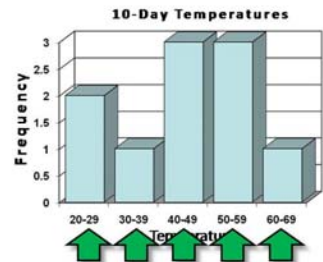
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Constructing a Bar Graph

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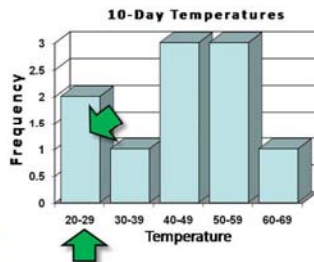
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Constructing a Bar Graph

(Data: 23 20 35 48 41 52 55 47 54 60)

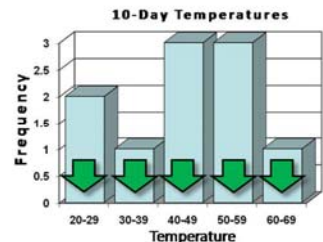
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Constructing a Line Graph

(Data: 23 20 35 48 41 52 55 47 54 60)

1. Title the graph
2. Use appropriate labels on x and y axes
3. Make appropriate horizontal and vertical scales

High Temperatures for March 1- March 10

Days	Temperature
1	23
2	20
3	35
4	48
5	41
6	52
7	55
8	47
9	54
10	60

Constructing a Line Graph

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Constructing a Line Graph

(Data: 23 20 35 48 41 52 55 47 54 60)

4. The horizontal axis is often time (minutes, hours, days, years, etc.) in a line graph
5. Use points to locate data
6. Connect consecutive points with line segments

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High Temperatures for March 1- March 10

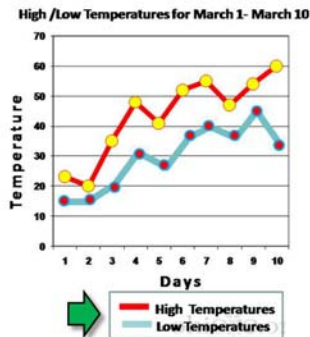
Days	Temperature
1	23
2	20
3	35
4	48
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6	52
7	55
8	47
9	54
10	60

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Adding Additional Data

(Data: 23 20 35 48 41 52 55 47 54 60)

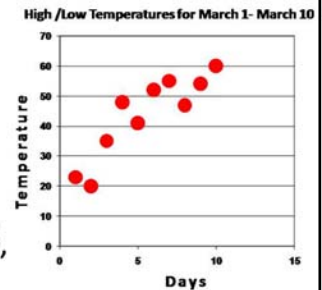
1. Make any needed changes to the title
2. A legend is helpful to explain which line is represents the high temperatures and which line represents the low temperatures



Construct Scatterplots

(Data: 23 20 35 48 41 52 55 47 54 60)

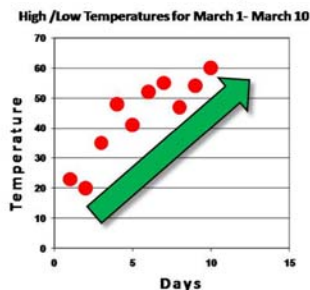
1. Follow the directions for a line graph, but do not draw the line segments
2. The information in a scatterplot can have a positive correlation, a negative correlation, or no correlation



Scatterplots

(Data: 23 20 35 48 41 52 55 47 54 60)

3. This data has a **positive correlation** because the data points show an upward trend



Scatterplots

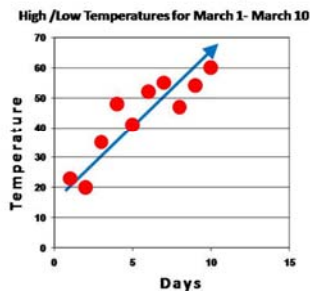
(Data: 23 20 35 48 41 52 55 47 54 60)

- If the data has a downward trend, then it would have a **negative correlation**
- If the data has no upward or downward trend, then there is **no correlation**

Scatterplots

(Data: 23 20 35 48 41 52 55 47 54 60)

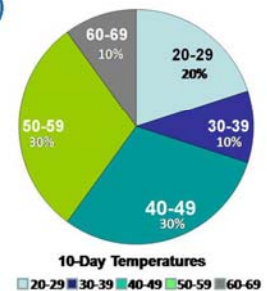
A **trend line**, or **line of best fit**, can be added to the scatterplot to show how the data clusters in a positive (or negative) correlation



Circle Graph

(Data: 23 20 35 48 41 52 55 47 54 60)

- **Circle graphs** (pie charts) are made up of sections
- Each section represents a percent of the total data. For example, if a section represents $\frac{1}{4}$ of the total data, then it would be 25% of the circle or 90°



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Summary

- Graph on the coordinate plane
- Find measures of center
- Organize data into charts and tables
- Display data in graphs

For more information about organizing and displaying data, view the Graphing Data tutorial 19