This is a resource and can be used as notes. You do not receive credit for completing it.

# Scatter Plots

| Pre-algebra Topics | Video Links & Practice Space |
|---|---|
| **Vocabulary**<br><br>1. **Association:** a way to describe the form, direction, or strength of the _____ between the two variables in a bivariate data set; for _____ data, descriptions include linear or nonlinear, positive or negative, strong or weak; for _____ data, descriptions include strong or weak<br><br>2. **Bivariate Data:** data that measures _____ characteristics of a population<br><br>3. **Line Graph:** a graph that displays numerical data using _____ line segments<br><br>4. **Data:** values that are collected together for reference or _____.<br><br>5. **Numerical Data:** a type of data that is _____; numerical data are quantitative<br><br>6. **Outlier:** a value that is much _____ or much_____ than the other values in a set of data<br><br>7. **Scatter Plot:** a graph in the coordinate plane representing a set of _____ numerical data that is used to observe the relationship between _____ variables | **Guided Notes:** Vocabulary Review (2:17) |

## Exploring Scatter Plots

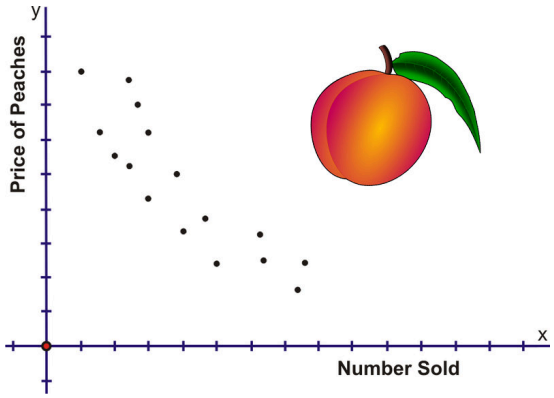
Have you ever wondered if the price of peaches affects how many are sold? To answer this question you may be given two sets of data to see how they are related if at all.

This data is known as bivariate data, which is numerical data that has two variables. The independent and the dependent.

After collecting the data you can analyze it in what is known as a scatter plot. A scatter plot is a set of ordered pairs (x, y) in the coordinate plane where each point represents the corresponding numbers from the two data sets.

**Guided Notes: Practice Problem 1 (1:30)**

What does this scatter plot tell us about the price of peaches and the number sold?




The _____ the price, _____ peaches will be sold.

## Scatter Plots | Direction

The overall pattern of movement from one side of the scatter plot to the other is known as the direction.

This is one way to describe the type of association in a scatter plot.

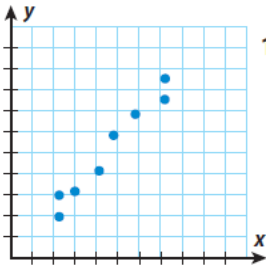
A scatter plot can have:

_____ association

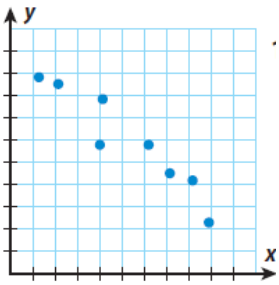
_____ association

_____ association

**Guided Notes: Practice Problem 2 (2:02)**




_____

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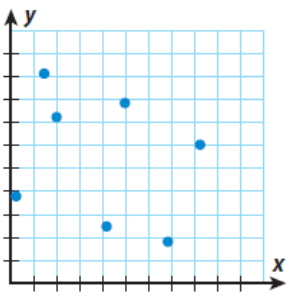



_____

## Scatter Plots | Outliers & Clusters

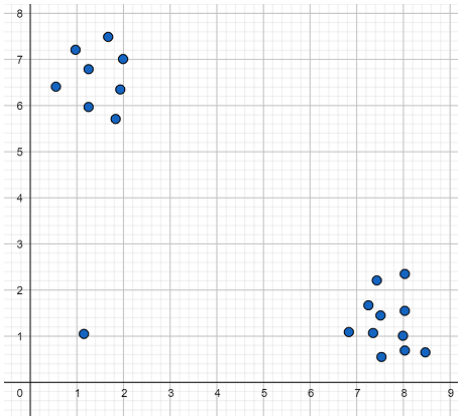
Sometimes, a scatter plot can have some unusual features, known as **outliers** and **clusters.**

Do not assume that you will always see an outlier or a cluster, but be on the lookout for these features if they do occur in the data.

A point that is farther away from all of the other data points is known as an **_____.**

A scatter plot may have an area where data seems to be grouped or gathered around a particular value. This is known as a **_____.**

**Guided Notes:** [Practice Problem 3 (1:22)]



_____ clusters (circle twice)

_____ outlier (circle once)

## Scatter Plots | Form

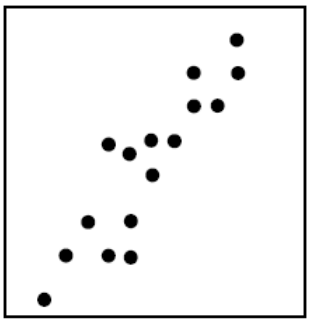
You have learned about how functions can be considered **linear** or **nonlinear.**

This association also applies to patterns found in **scatter plots**. This is another way to describe the type of association in a scatter plot.

A scatter plot with a _____ association shows a pattern that can be described by a straight line.

A scatter plot with a _____ association shows a pattern that can be described by a curve or another pattern that is not a straight line.

**Guided Notes:** [Practice Problem 4 (1:32)]



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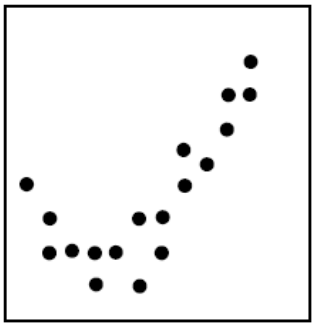

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**Scatter Plots | Strength**

The degree of the association between two variables can be described by their strength.

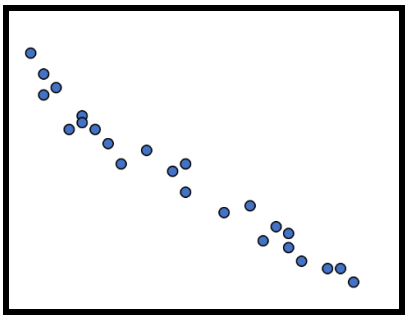
The **stronger** the association, the more closely the points are **grouped together**.

The **weaker** the association, the more widely **spread apart** the points are.

A scatter plot with a _____ association has points that appear to follow a single path, whether straight, curved, or bending all over the place.

A scatter plot with a _____ association has points that do not appear to follow a single path and have no noticeable trend or pattern.

**Guided Notes: Practice Problem 5 (1:48)**



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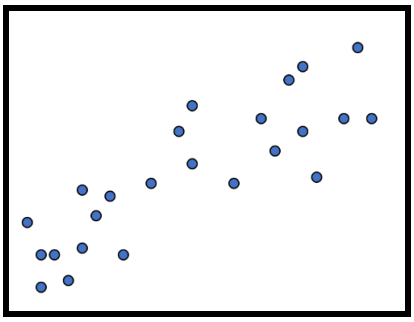

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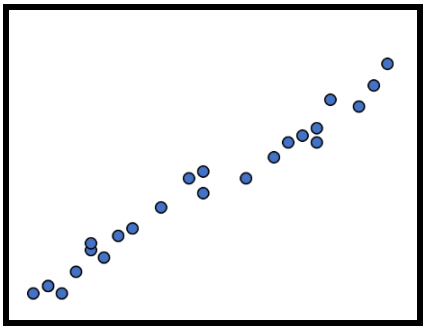
**Learn to describe Patterns of Association in a Scatter Plot**

Now let's put it all together. Click the video link to the right and answer the questions below the image. You've got this!!

**Guided Notes: Practice Problem 6 (1:43)**



Circle the best answer choice for each row below **after** watching the video.

- None | Negative | Positive
- Strong | Weak
- Nonlinear | Linear

## Constructing Scatter Plots

When there is a large amount of bivariate numerical data to try to analyze, it may be best to present it in a visual way.

You can create a scatter plot in order to see patterns and be able to properly describe the data.

**Step1:** Title the scatter plot and label the axes

- Identify the independent variable (x)
- Identify the dependent variable (y)
- Label the x-axis with the independent variable
- Label the y-axis with the dependent variable

**Step 2:** Choose an appropriate scale

- Use the range of values for each set and write the numbers in equal intervals

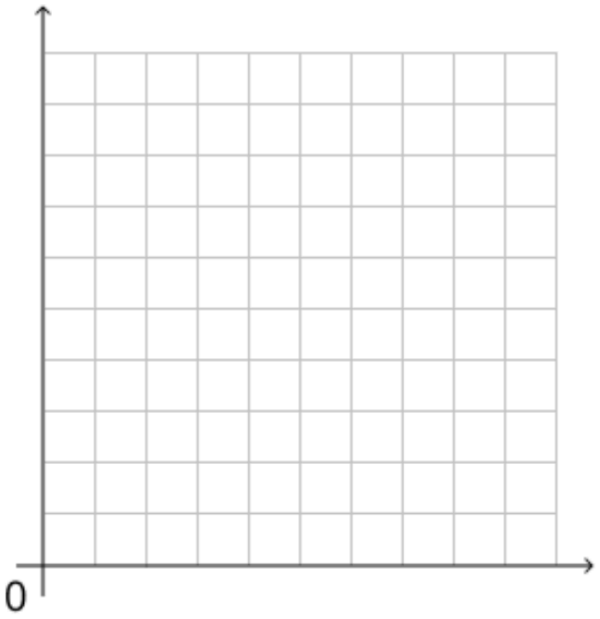
**Step 3:** Plot the bivariate data as ordered pairs

**Guided Notes:** Practice Problem 7 (3:38)

| | | | | |
|---|---|---|---|---|
| Hours Worked | | | | |
| Paycheck Amount | | | | |

Independent Variable: _____

Dependent Variable: _____



## Constructing Line Graphs

When someone is interested in seeing how the data changes over time in order to see the overall trend, or pattern, another type of graph should be used.

For this type of data that shows how a variable changes over time, **a line graph** should be created.

The process of constructing line graphs is quite similar to scatter plots. However, **in a line graph, the data points are connected together with line segments.**

**Step1:** Title the line graph and label the axes

- Identify the independent variable (x)
- Identify the dependent variable (y)
- Label the x-axis with the independent variable
- Label the y-axis with the dependent variable

**Step 2:** Choose an appropriate scale

- Use the range of values for each set and write the numbers in equal intervals

**Step 3:** Plot the bivariate data as ordered pairs

**Step 4:** Connect the data points with line segments

**Guided Notes:** [Practice Problem 8 (4:42)]

| Month | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall (inch) | | | | | | | | | | |

Independent Variable: _____

Dependent Variable: _____