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Line of Fit

Notes	Video Links & Practice Space
Vocabulary **Line of Fit:** a line drawn on a scatter plot to _____ the relationship between two sets of data; also known as a _____ line **Linear Equation:** a polynomial equation that contains a _____ of _____ 1, but no term of higher degree. **Scatter Plot:** a graph in the coordinate plane representing a set of _____ numerical data that is used to observe the relationship between _____ variables. **Slope:** the _____ of the change in the _____ direction (y direction) to change in the _____ direction (x direction), often expressed as the change in y divided by the change in x. **Y-intercept:** the value of y at the point where a line or graph intersects the _____; the value of x is 0 at this point.	Vocabulary (1:49)

Determine a Line of Fit

One way to predict other points on a scatter plot is by drawing a line of fit.

A line of _____ is exactly as it sounds, a line that fits the data.

This line describes the overall pattern of the movement in the _____ set and summarizes the relationship between the two variables.

To draw a line of fit, you draw a line on the scatter plot that seems to be close to most of the _____ points.

In other words, **the distances between the data points and the line of fit are as small as possible** for a good line of fit.

A line of fit should show the general direction of a group of points on a scatter plot.

It should also have roughly half of the points above and half of the points _____ the line.

It is not necessarily going to pass through every point, but it may pass through one or more points.

Some lines of fit **do not directly pass through** any of the data points.

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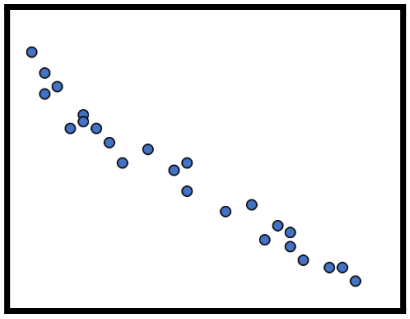
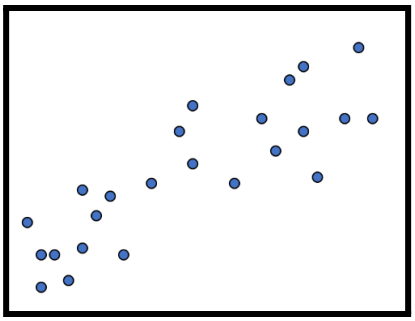
Practice

1. Draw the line of best fit



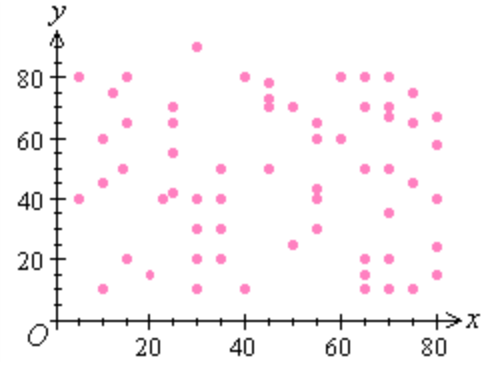
Practice Problem 1 (1:51)

2. Draw the line of best fit



Practice Problem 2 (1:16)

3. Determine the association.



This scatter plot has _____ association.

This means there is _____ line of fit.

Practice Problem 3 (1:00)

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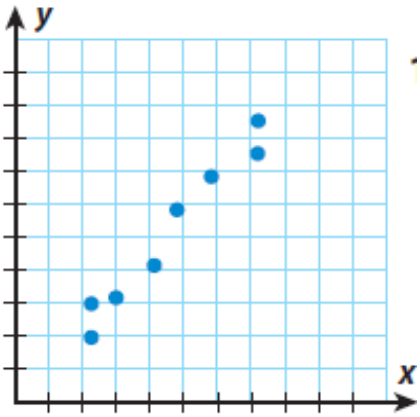
Sketch a Line of Fit

When given a scatter plot, you can use different tools such as a ruler or straight edge (or even a piece of spaghetti) to draw a line of fit.

Using these tools will allow you to model different lines of fit so you **can choose the one that fits the data best.**



Sketching a line of fit (1:44)

The Equation of the Line of Fit

When a scatter plot shows a linear pattern, you can sketch a line of fit for the data.

This line of fit can be represented with an equation and can be used to describe the relationship between the two variables.

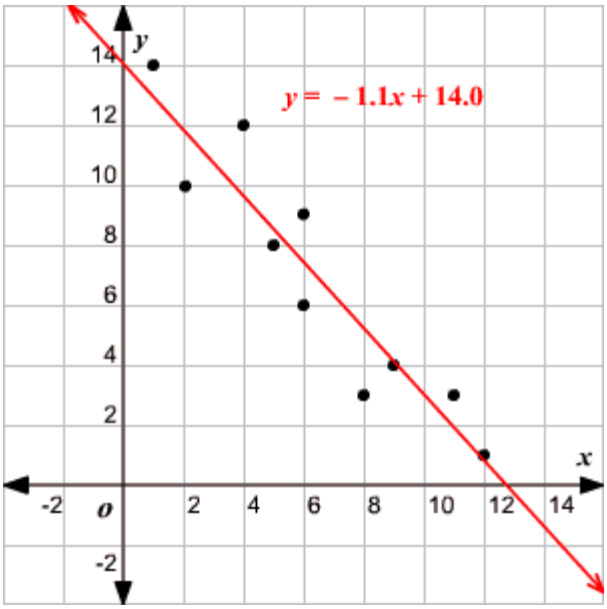
Remember, a line can be written in slope-intercept form:

_____

m = the _____ , how the line _____

b = the _____, where the line _____

Equation of the line of fit (1:27)



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Finding the Equation of the Line of Fit

To find the equation of the line of fit, you must first calculate the slope of the line, m, using any two points from the line.

Points that fall where the grid lines intersect are ideal because their coordinates can be easily identified.

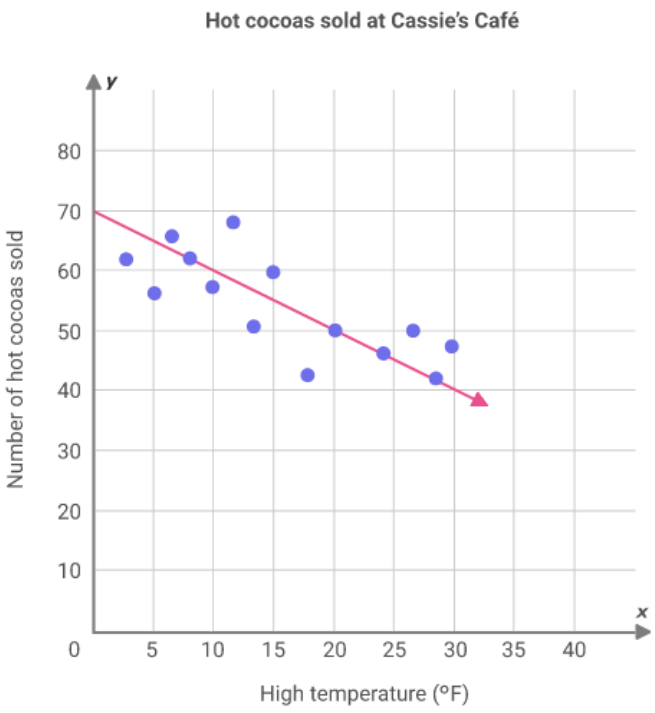
Once we have the slope we need to identify the y-intercept. For most graphs this is fairly easy.

You can **visually** identify where the line crosses or touches the y-axis (vertical axis, up & down).

Think Fast - The line of the graph is moving *downward from left to right*. This means that our slope **must be**:

- Positive
- Negative
- Zero
- Undefined

Finding the equation for the line of fit (4:05)



Slope: _____

Y-int: _____

Equation: _____

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Interpret the Equation of the Line of Fit

Now that we found the equation for the line of best fit we can interpret what it means for this real world situation.

Our equation was: _____

Interpreting Slope

Our slope was _____

This means that…

Interpreting Y-Intercept

Our y-intercept was _____

This means that…

Interpreting the line of fit (1:56)