# Got Linear Equations? Now What?

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## Common Core Standards

- Create equations and inequalities in one variable and use them to solve problems.
- Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non- viable options in a modeling context

## In the earlier unit we covered...

- Function tables
- Graphs
- Slope
- Intercepts
- Slope-intercept and point-slope form



- Identifying independent and dependent variables
- Identifying different types of correlations
- Interpreting intercepts
- Interpreting slope

#### Perfect Correlations Analyzing perfect correlations that exist in the real world

# Making the connections concrete

## What do you do with the data?

- Which is the independent variable? The dependent?
- What circumstances could have effected the data?
- Create a scatter plot and use technology to find the line of best fit.
- What type of correlation exists?
- Interpret the y-intercept from the line of best fit



- Interpret the meaning of the slope in terms of the experiment
- Use the equation to make future predictions

# Classroom experiment

#### The Wave

- Measure number of people v. time to complete the wave
- Materials:Stopwatch



### Now, let's analyze it!

- Independent/Dependent?
- Interpret slope and intercepts
- Type of correlation?
- What circumstances effect the data?
- Future predictions?



# Small Group Experiments

## Leaky Faucet

- Measure diameter of circle and number of drops
- Materials:
  - Paper towels
  - Eye droppers
  - Bowl with water
  - Rulers





- Use 2 different types of paper towels and collect the data for each
- Which type would you choose? Why?
- Create a commercial for the type you would choose.

## Bouncing Around

- Measure number of bounces v. time
- Materials:
  - Tennis balls
  - Stop watches





- Compare two or more of the scatter plots
- Why aren't they exactly the same?
- What could you infer from the differences in the graphs?

## Drop It Like It's Hot

- Measure drop height
  v. bounce height
- Materials
  - Tennis balls
  - Meter/yard sticks



## Extensions

- Use different types of balls (Super balls, tennis balls, basketballs)
- Analyze the differences in the data
- Why don't tennis players use super balls instead?
- Create a situation where one ball would be preferred over the others

## Need for Speed

- Measure height of ramp v. time
- Materials
  - Rulers
  - Toy cars
  - Stopwatches
  - Long pieces of cardboard or wood





- Use different types of toy cars/trucks
- Compare the graphs to determine which is the fastest

## I Once Caught A Fish This Big

 Measure height v. wing span

Materials
 Tape measures





- Research Da Vinci's Vitruvian Man and compare the data
- Research Golden Ratios in the human body

## Project Extensions

- Hang the reports on a bulletin board and provide the students sticky notes to stick on them with questions that they had based on the graphs given
- Have students create their own experiments where they find a linear relationship

## Thank you! sremphrey@ucfsd.net