

# 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

# Applying what we learn...

- ◆ 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
  - ◆ Number of gallons of gas purchased v. total cost

# 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

# What do you do with the data?

- ◆ 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

# Extensions

- ◆ 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

# Extensions

- ◆ 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

# Extensions

- ◆ 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

# Extensions

- ◆ Research the 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