

Wrangling Ratios and Perfecting Proportions

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- **A Ratio**
 - compares two quantities
 - does not need to have the same units
 - refers to a multiplicative relationship between two quantities
 - Examples:
 - 2 boys to 3 girls
 - 1 cup OJ concentrate to 2 quarts water

- **A Proportion**

- Equates two ratios

- Projects a ratio into another situation

- Examples:

- On a map 1 inch represents 15 miles. How many miles apart are two towns that are 2.5 inches apart on the map?

- The recipe calls for one part sugar to 3 parts flour. How much sugar is needed if I am using 12 cups of flour?

Let's explore!

- You will need:
 - Activity sheet
 - String
 - Beads
 - Ruler
 - Scissors
- Make sure that you read all instructions prior to beginning your project

Grab your partner! Do-si-do

- Without talking, find three more people who have bracelets with the same ratio that you have.
 - How do you know that they have the same ratio?
 - Does their bracelet look like yours?
 - Do they have the same number of beads that you have?

- With your partner/group, create a table:
 - L1 = number of white beads
 - L2 = number of colored beads
- How can you use this table to answer the questions from the back of your activity sheet?

- Create L3 to be the total number of beads
- What observations can you make?

- Create a scatterplot with `xlist = white beads`; `ylist = colored beads`.

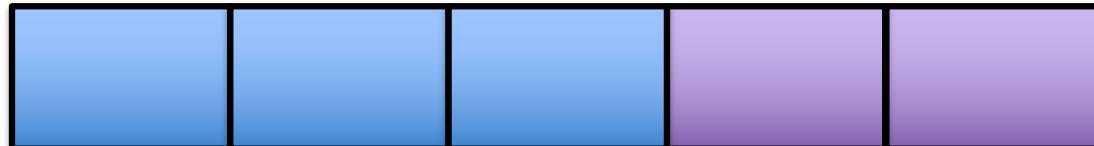
• What do you notice?

- Create a scatterplot with $xlist = \text{white beads}$ and $ylist = \text{total beads}$.
 - Create a second scatterplot with $xlist = \text{colored beads}$ and $ylist = \text{total beads}$.
 - Graph both scatterplots.
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- What do you observe?
 - How are the two scatterplots related? How are they different?

Proportional Reasoning

- Part to Part
- Part to Whole
- Representations

- Sam, the ranch cook, made sausage and bacon for breakfast. Each cowboy could choose one meat, and Sam had just enough. Sam notices that for every 3 cowboys who choose bacon, 2 cowboys choose sausage. There are 60 cowboys. How many chose bacon?



- Build a table with bacon in L1 and sausage in L2.
- Create a scatterplot of bacon to sausage.
- Create a rule to model this relationship.

- Create L3 to be the total number of cowboys.
- Create a scatter plot of bacon to cowboys.
(Hint: which lists are these?)
- Create a rule to model this relationship.

- $\frac{\text{bacon}}{\text{cowboys}} = \frac{3}{5}$

- $(5c) \frac{b}{c} = \frac{3}{5} (5c)$

- $5b = 3c$

- $\frac{5}{3} b = c$

In Summary...

- Part to Part
- Part to Whole
- Ratio Table
- Scatterplot
 - goes through the origin
- Rate of Change
- Representations
 - tabular
 - graphical
 - pictorial
 - verbal

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