

# Who Shares My Function? - Linear with Graphs and Stories

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Summary	Students will make groups by finding other students who have the same quadratic or linear function in different representations.
Goals	<ol style="list-style-type: none"><li>1. Understand the meaning of "function".</li><li>2. Understand how different representations can show the same function.</li><li>3. Understand how to use different sources to create a representation of a function using algebraic notation.</li></ol>
Materials	Handouts, Poster Markers, Large Graph Paper
Duration	45 minutes
Keywords	Contextualized Situations Full Class Discussion Function Representations Interpretation of Graphs Interpretation of Stories Linear Functions Production of Equations Slope Small Group Work

### Activity Plan:

1. Students are each given a piece of paper containing *either* a story or a graph regarding the total amount of tons a bridge weighs and how many tons it can support. Students are told to "find the other students who share your function."

2. Before finding their partners, each student is allowed to pose one question to the class that he/she believes will help them find their partner more easily. (Do not give examples beforehand unless absolutely necessary as the goal is to see what types of spontaneous questions arise, such as mentioning points, relationships, slopes, etc.)

3. Students will eventually place themselves into groups. Each group will have a story and a graph.

4. Once paired, each group holds a small group discussion about the relationship depicted in their story and graph, produces an equation for their function, and writes it on a large piece of paper.

5. Each small group presents and explains their work to the class.

6. Closure: Sometimes, we describe a line using two words: slope and  $y$ -intercept. The  $y$ -intercept is where the line crosses the  $y$ -axis.

What is the  $y$ -intercept for your graphs?

What is the value of  $x$  when the line crosses the  $y$ -axis?

Who knows what slope is?

If no answer is given, introduce and discuss the following definitions in relation to some of the graphs students have worked with: The slope is how steep your line is relative to other lines on the same coordinate plane. When we describe slope using a number, it is the amount that  $y$  changes when  $x$  increases by 1. What is the slope of your graphs? Ask students to examine each graph and figure out the slope.

Slope Definitions:

- the rate of change
- a ratio
- the steepness of the line relative to other lines in the same plane
- the amount that  $y$  changes when  $x$  increases by 1
- rise over run
- $\Delta y$  over  $\Delta x$

**Handout: Who shares my Function? – Linear with graphs and stories**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

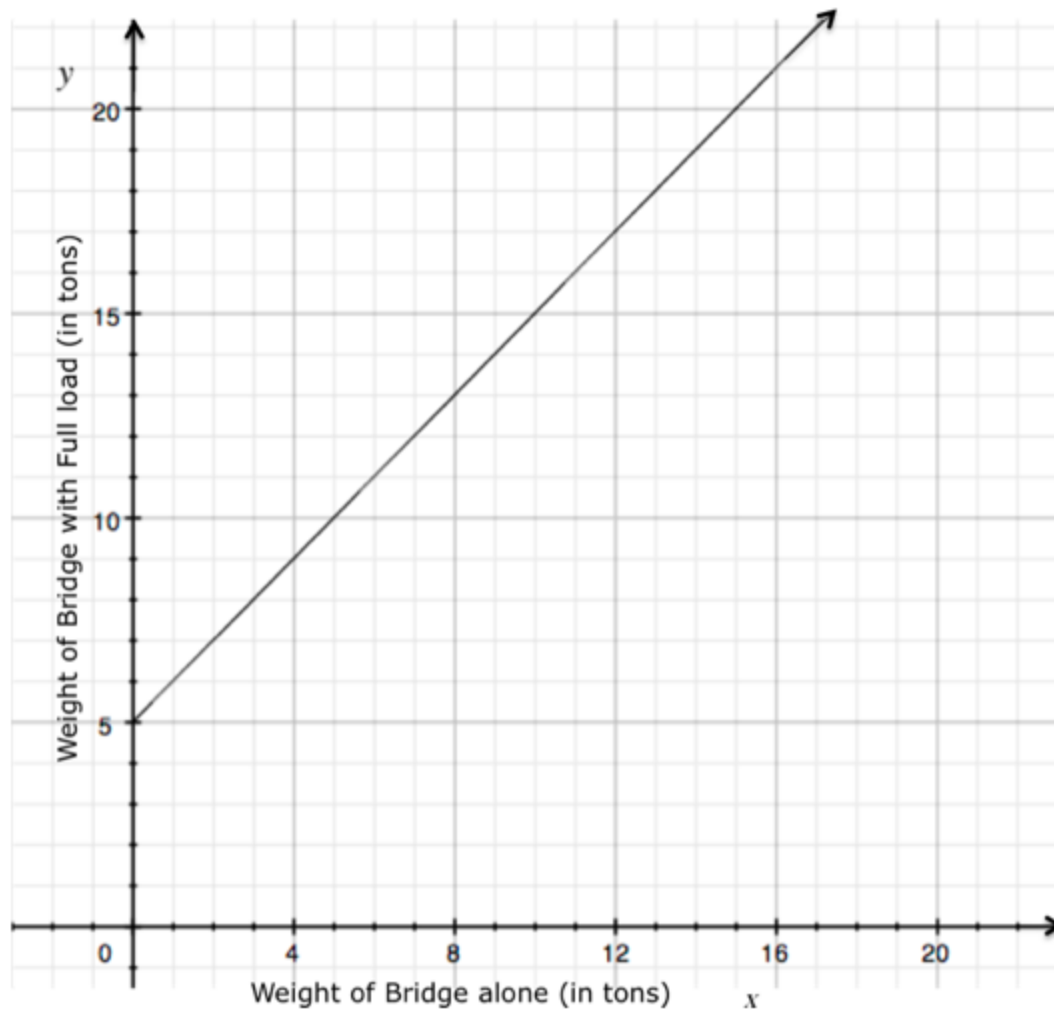
Name(s) of student(s) who share my function: \_\_\_\_\_

**Boston is trying to hire a company to build a bridge. Company N builds bridges. In addition to its own weight, each bridge can support 5 tons.**

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Name(s) of student(s) who share my function: \_\_\_\_\_



**Handout: Who shares my Function? – Linear with graphs and stories**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

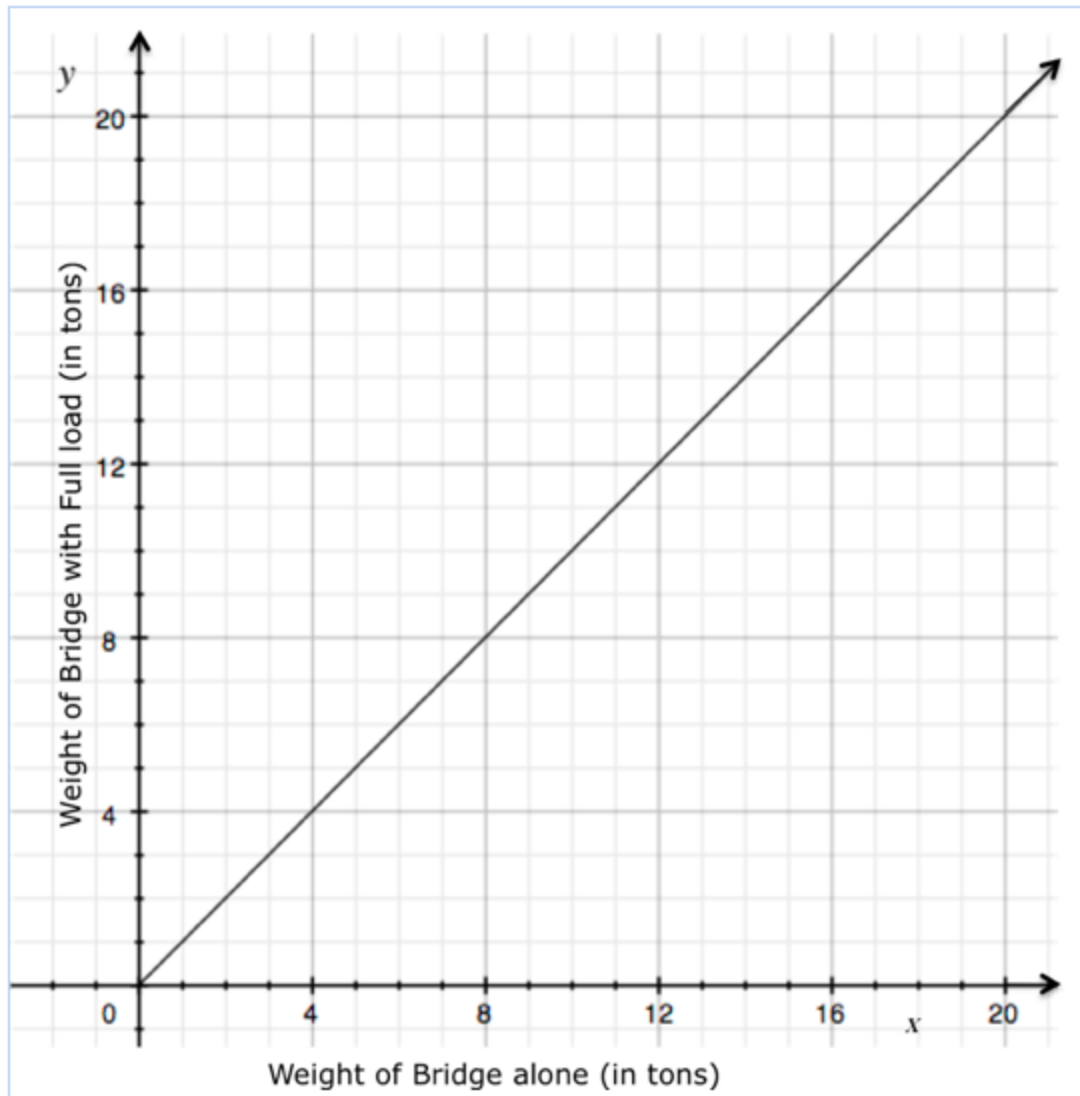
Name(s) of student(s) who share my function: \_\_\_\_\_

**Boston is trying to hire a company to build a bridge. Company S builds sculpture bridges that are pieces of art: they are only for looking at. Each bridge cannot support any weight except for the weight of the bridge itself.**

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Name(s) of student(s) who share my function: \_\_\_\_\_



**Handout: Who shares my Function? – Linear with graphs and stories**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

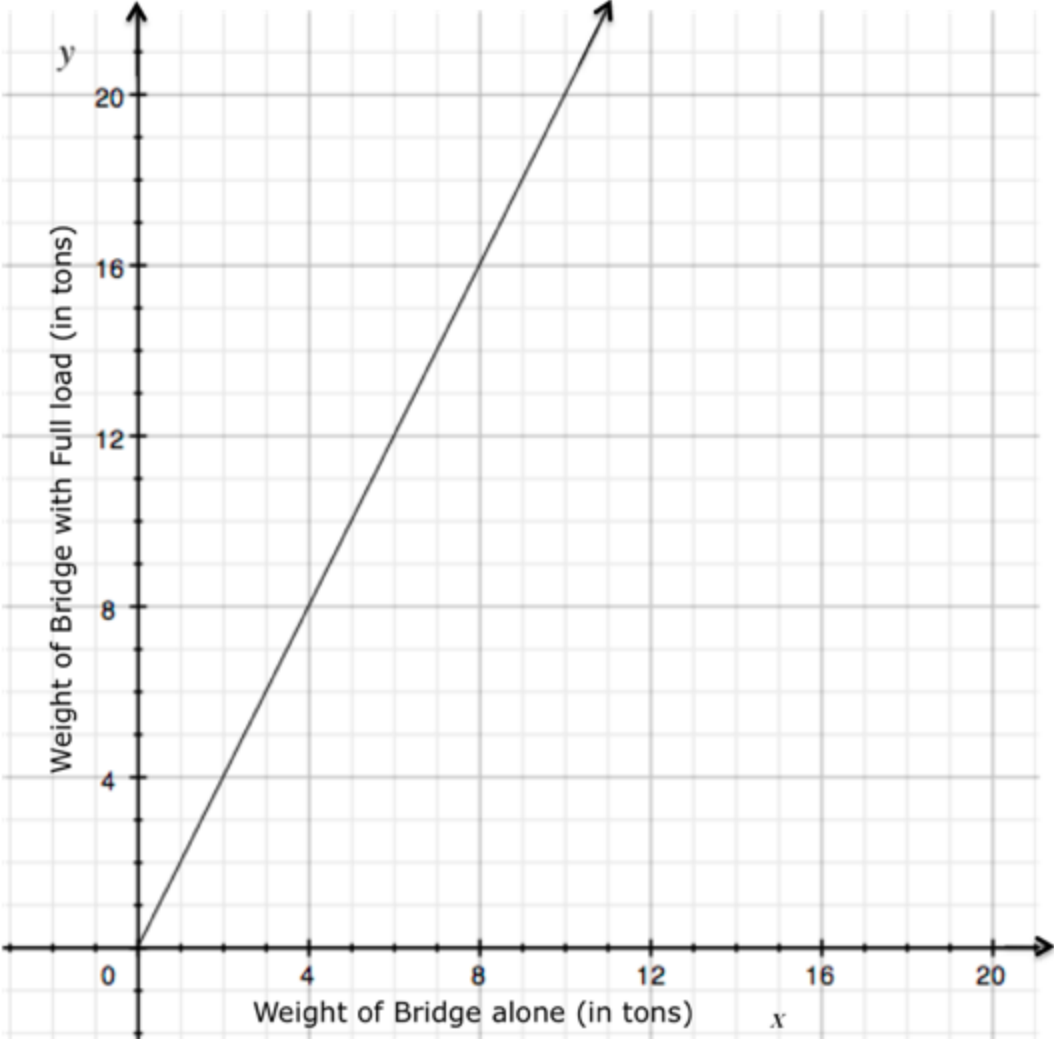
Name(s) of student(s) who share my function: \_\_\_\_\_

**Boston is trying to hire a company to build a bridge. Company L can build a bridge that can support its own weight, plus a load that is the same weight as the bridge.**

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Name(s) of student(s) who share my function: \_\_\_\_\_





**Handout: Who shares my Function? – Linear with graphs and stories**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

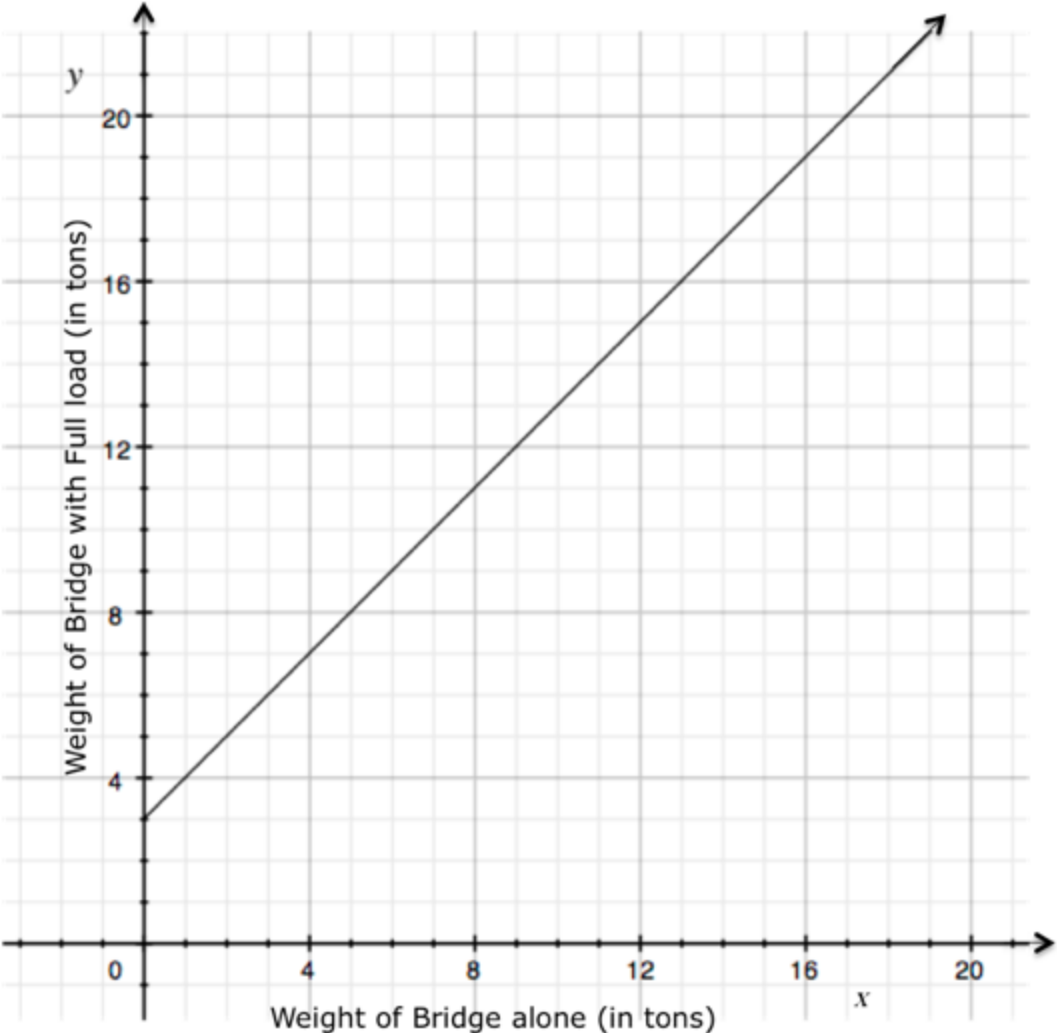
Name(s) of student(s) who share my function: \_\_\_\_\_

**Boston is trying to hire a company to build a bridge. Company K builds bridges. In addition to its own weight, each bridge can support 3 tons.**

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Name(s) of student(s) who share my function: \_\_\_\_\_



**Handout: Who shares my Function? – Linear with graphs and stories**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Name(s) of student(s) who share my function: \_\_\_\_\_

**Boston is trying to hire a company to build a bridge. Company I builds bridges that can support its own weight, plus a load that is half the weight of the bridge.**

# Handout: Who shares my Function? – Linear with graphs and stories

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Name(s) of student(s) who share my function: \_\_\_\_\_

