

# Group Activity: Problem-Solving Quadrant

GRADES 2-12

| Math           |  |
|----------------|--|
| AREA OF FOCUS  | II Scaffolding and Supports for Simultaneous Development   |
| GUIDELINE      | 4 Opportunities for students to interact with and produce a variety of methods and representations   |
| SPECIFICATIONS | <p>4a Opportunities and guidance for students to generate and interpret a range of mathematical representations (symbols, manipulatives, graphs, tables, words, etc.) and methods</p> <p>4b Guidance on how to encourage students to make comparisons and connections across different representations and methods</p> |

## Description of resource and intended audience:

This is a tool for structuring students' engagement with mathematics by creating and connecting multiple representations of a mathematical relationship.

**Materials needed:** Graphic organizer

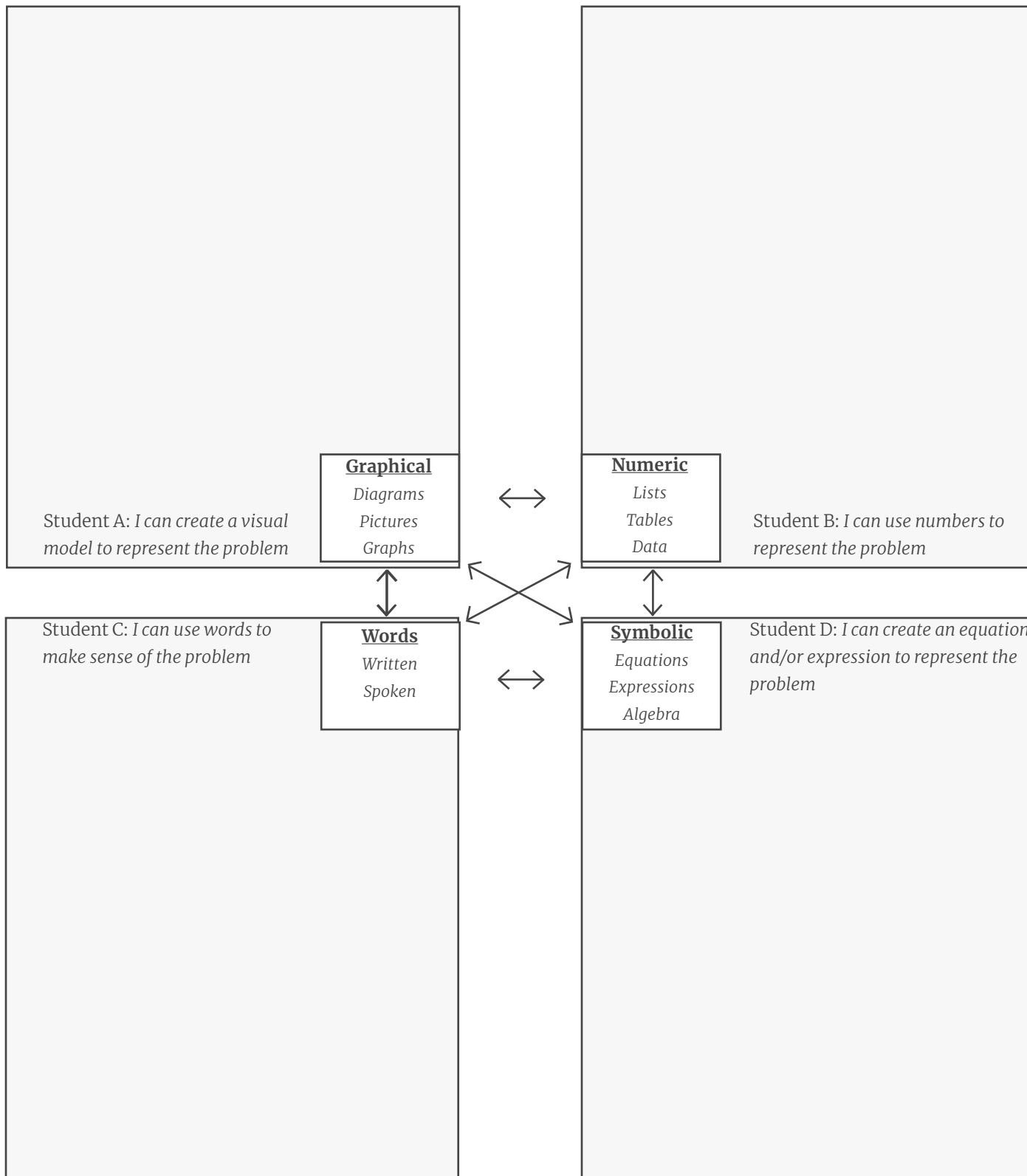
**Approximate time needed:** About 5-15 minutes (or longer depending on the complexity of the problem)

### Instructions:

Students work in groups of four to solve a math problem using multiple representations based on 'Rule of Four'. Each group member is assigned a specific role: Graphical, Numeric, Symbolic, and Words (as shown below). Students may either choose their roles or the teacher can assign roles considering students' strengths and areas of growth. Over time, the teacher should be vigilant to make sure that ELs are encouraged and supported to do more language-intensive roles (e.g., Words), keeping in mind that all roles require language to communicate mathematical thinking. The independent part of this activity allows students to practice creating a specific representation from among the Rule of Four. Then, the pair/group sharing part of the activity allows students to see and hear about other representations provided by their group members. Students can use Problem-Solving Quadrant Work Space (see below) to create a response and take notes during the sharing part of this activity. The activity allows time, space, and structure for students to engage in discourse by sharing their representations, justifying their responses, and making connections between different representations.



### Problem-Solving Quadrant: Student Work Space





## Works Cited

Rule of Four retrieved from [http://www.sfusdmath.org/uploads/2/4/0/9/24098802/rule\\_of\\_four.pdf](http://www.sfusdmath.org/uploads/2/4/0/9/24098802/rule_of_four.pdf)