

## Second Grade

**Even and Odd Numbers** 

Tug Boat

Centimeter cubes or other math tools to represent the boats Blank paper or whiteboards and dry erase markers

- Show the first puzzle from Level 1. (Do not show students the puzzle with JiJi's Helping Hand.) Ask students, "What do you see? What do you think we need to do to help JiJi cross the bridge?"
- Have students turn and talk to a neighbor about how they think the puzzle is solved. Share students' ideas and try their suggestions. Discuss what has to happen with the boats in order for the bridge to open. Solve a few of the puzzles in Level 1.





- Display the first puzzle in Level 2. Ask students, "What is different about this puzzle compared to the ones we just did? How can we solve the puzzle now that all of the boats are on one side?" Have students work with a partner to solve. Provide math tools such as snap cubes, centimeter cubes., etc.
- Share students' answers and strategies for dividing the boats into two equal groups. Ask students how they know the bridge will open. Before you push the JiJi button, write out what their solution shows and ask it if is true (e.g. 4 =4 or 8 = 8) Repeat with the remaining puzzles in Level 2.
- Display the first puzzle in Level 3. Have students use math tools and work together to solve the puzzle. Before you press the JiJi button, work together to write an expression to represent both sides of the bridge. As you write the expression, boats connected together are represented as 1 number. For example, 2 + 3 + 1 = 4 + 2. Discuss as a class how to prove this expression is true.



- Repeat with the remaining lessons in Level 3.
- What do you have to do to get JiJi across? What do you need to do to make the bridge open?
- How do you know the bridge will open if you choose this solution?
- How can you show what you were thinking on your board/paper?
- Why will/won't that work?
- Explain why you agree/disagree with \_\_\_\_\_'s solution.
- Is this expression true? How could we prove it?
- Why is the number of boats always an even number?

How does the student:

- think about the boats they need to move? (Do they try to equal out each row? Do they understand that they only need to make sure there are an equal number of boats on each side?)
- write the equations? (Do they understand that the expressions on each side need to have the same total, but not necessarily the same numbers?)
- solve the puzzle? (Do they count the total and divide in half? Do they fair share out the boats? Do they make a 1-1 match on each side?