Grade Level/Course: Grade 2

Lesson/Unit Plan Name: Represent Unknowns Using Multiple Methods

Rationale/Lesson Abstract: Students often can answer simple one and two-step word problems when they are assisted in understanding the problem. Students need to be taught algebraic thinking which involves choosing, combining, and applying effective strategies for answering quantitative questions. These questions should include unknowns in all positions.

Timeframe: Introduction = 3 days
Ongoing use of dialogue and strategies with all word problems

Common Core Standard(s):

2.OA.1
Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Instructional Resources/Materials:

- Bank of one-step and two-step word problems
- Math Notebooks or white boards
- Writing tools

Activity/Lesson:

Objective 1: Students will be able to draw a bar model to represent the scenario in any given word problem within 100.

Objective 2: Students will be able to write an equation with a symbol to represent the unknown (result unknown, change unknown, start unknown).

Objective 3: Students will be able to use a number line to represent a scenario in a given word problem and then use that number line to solve.

Activity 1:

Students need exposure to many types of one and two-step word problems in 2nd grade. One of the best ways to have them break-down the word problem into a situation they understand is through the use of a bar model. By using a bar model, the student is able to create a visual representation that explicitly shows which part of the equation is the unknown, the result, the change, or the start.

There are 22 students on the playground. Then 18 more students showed up. How many students are on the playground now? (Result unknown)

22 students	18 students
	

Mrs. B had 14 lollipops. Mr. A gave her some more. She now has 39 lollipops. How many lollipops did Mr. A give her? (Change Unknown)

14 Lollipops	
39 Lollipops	

There were some cars parked in the stadium parking lot. 45 more cars came and parked in the lot. There are now 92 cars altogether. How many cars were parked in the stadium parking lot in the beginning? (Start Unknown)

	45 Cars
92 Cars	

There are 12 red marbles and 14 green marbles in a jar. Carlos put 13 more blue marble in the jar. How many marbles are in the jar now? (Two-step word problem, result unknown)

12 Red Marbles	14 Green Marbles	13 Blue Marbles
		

Activity 2:

Now that students have created bar models as the visual representation for the given word problem, students are better equipped to write an equation where the unknown is represented by a symbol.

There are 22 students on the playground. Then 18 more students showed up. How many students are on the playground now? (Result unknown)

22 + 18 = 

Mrs. B had 14 lollipops. Mr. A gave her some more. She now has 39 lollipops. How many lollipops did Mr. A give her? (Change Unknown)

14 +  = 39

There were some cars parked in the stadium parking lot. 45 more cars came and parked in the lot. There are now 92 cars altogether. How many cars were parked in the stadium parking lot in the beginning? (Start Unknown)

 + 45 = 92

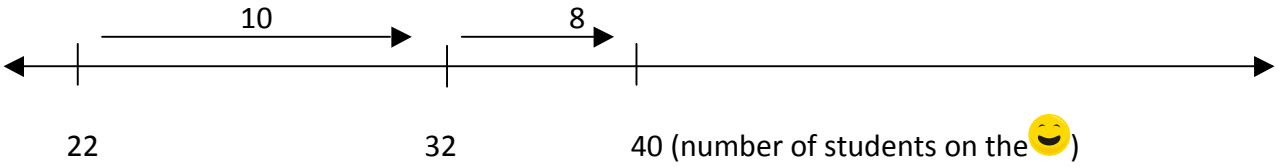
There are 12 red marbles and 14 green marbles in a jar. Carlos put 13 more blue marble in the jar. How many marbles are in the jar now? (Two-step word problem, result unknown)

12 + 14 + 13 = 

Activity 3:

Another strategy for students to visually represent their understanding of a word problem is through the use of a number line. The number line then can also be used to solve the problem.

There are 22 students on the playground. Then 18 more students showed up. How many students are on the playground now? (Result unknown)



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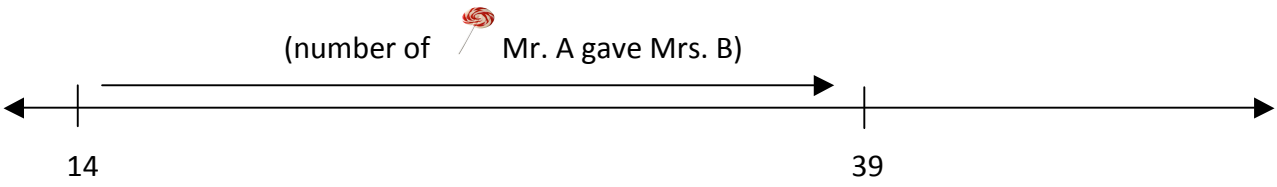

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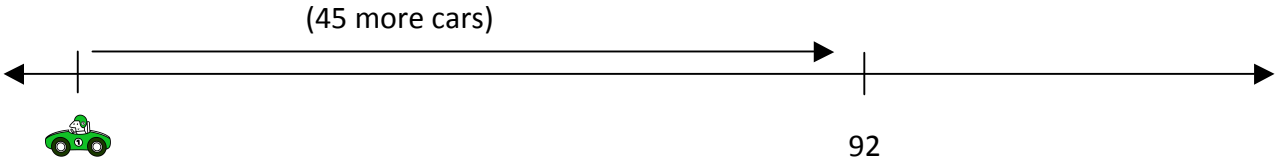

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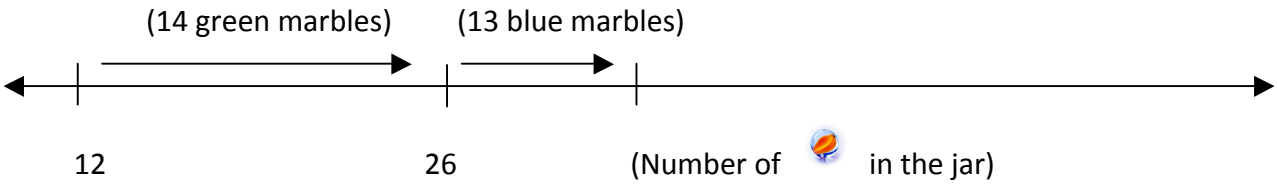

Assessment:
The students' work can serve as the informal assessment piece for these activities. An exit ticket can also be used at the end of the three lessons. An example is below.

<table>
<tr><td colspan="3">Show three different ways the following problem can be represented. Use a bar model, an equation, and a number line.
There were 24 people in line at the movie theatre. Some more people got in line. There were now 67 people standing in line. How many people joined the line?</td></tr>
<tr><td>Bar Model:</td><td>Equation:</td><td>Number Line:</td></tr>
</table>

