Represent and solve problems involving addition and subtraction

Standard 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, for example, by using drawings and equations with a symbol for the unknown number to represent the problem.

Please Note:

- First grade is within 20 and second grade is within 100
- First grade involves only one-step word problems and second grade introduces two-step word problems.

Key Elements: solve one and two step word problems within 100 using different strategies.

Creating Equations for Word Problems:

When given a word problem students may come up with two different types of equations: a situation equation or a solution equation. Depending on the task/question one may be more appropriate for solving the problem.

- Situation Equations involve the operation that matches the context of the word problem.
- Solution Equations involve an equation within the fact family using the given information in the word problem but does not match the context of the word problem.
- Example: Example: Rebecca had $34 saved in her piggy bank. For her birthday she received more money from her family. Now she has $61 in her piggy bank. How much money did Rebecca get for her birthday?
    - Situation Equation: 34 + ____ = 61
    - Solution Equation: 61 - 34 = _____

Students may begin by writing a situation equation but then switch to a solution equation when solving depending on preferred math strategies.

It should also be noted that some problem types are easier to solve using a solution equation, rather than a situation equation.

Students do not necessarily need to understand the vocabulary of situation or solution equations but rather they need to be able to recognize when it is appropriate for an equation to match a word problem (situation) and when it is not necessary (solution).

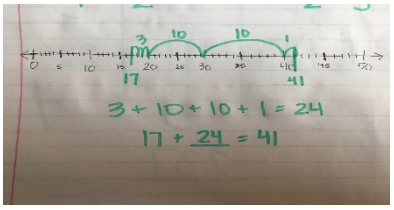
Word Problem Types (substitute larger numbers)

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

Models for Word Problem Types:

Add To - Result Unknown: Base Ten Block Picture Example: 23 + 49 = _____	**Add To - Change Unknown: Number Line** **Example: 17 + _____ = 41** 

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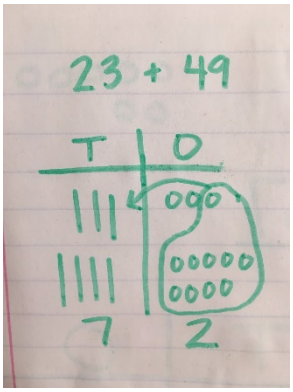
<td> 
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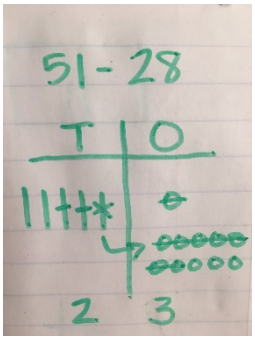
<td>Take From – Result Unknown:
Base Ten Block Picture
Example: 51 – 28 = _____
 
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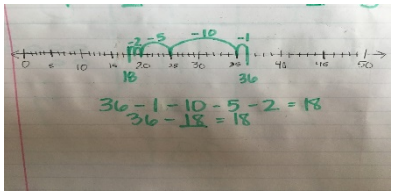
<td>Take From – Change Unknown:
Number Line
Example: 36 - _____ = 18
 
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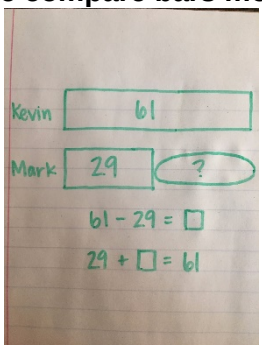
<td>Compare – Difference Unknown:
Compare Bars
* Students can choose which equation/strategy is easiest to solve once they have set up the compare bars model.
 
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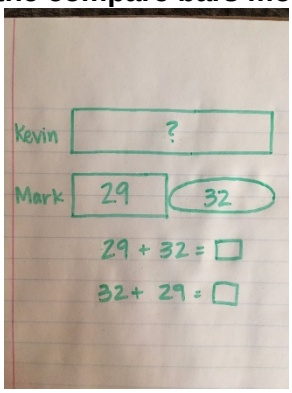
<td>Compare – Bigger Unknown:
Compare Bars
* Students can choose which equation/strategy is easiest to solve once they have set up the compare bars model.
 
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<td>Compare – Smaller Unknown:
Compare Bars</td>
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*** Students can choose which equation/strategy is easiest to solve once they have set up the compare bars model.**