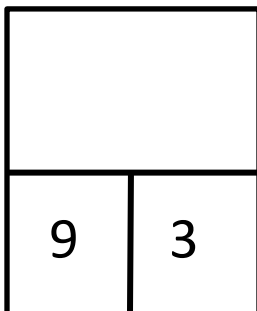


Addition and Subtraction Story Structures

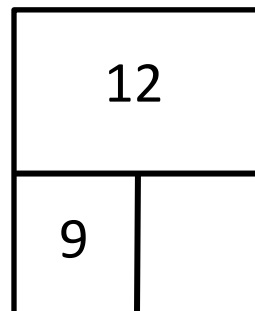
- There are 4 basic types of addition / subtraction story structures: Join, Separate, Part/Whole, and Comparison. With the Join and Separate types, there are subtypes: Result unknown, change unknown, and start unknown. The Result Unknown type is the most common and easily solved. The other two often pose problems for students, so practice with these structures should help.
- Allow students opportunities to solve problems like these with manipulatives, pictures, and graphic organizers before attaching to an equation.
- Helps students realize there are multiple ways to solve a problem.
- Knowing these types of structures strengthens the relationship between addition and subtraction.
- Students can practice making up problems of their own given the problem model.
- Use the whole, part, part model (see below) for joining, separating and part/whole types of problems. Students can place manipulatives inside a large whole, part, part graphic organizer (attached).
- Use the bar models for comparison problems.
- Make sure students understand the role of the equal sign (=) in all types of problem solving situations.

It means **“the same as.”**

- What is on the left of the equal sign should be “the same as” what is on the right of the equal sign.
- Think of an equation as a balance scale.



When both of the parts are known, add to find the whole.



When the whole and one of the parts is known, you can add or subtract:

$$9 + \underline{\quad} = 12 \text{ or}$$

$$12 - 9 = \underline{\quad}$$

Join Problems:

| Sample Story for each type | Problem Model | Notes |
|--|------------------------------|--|
| Mary had 9 apples. John gave her 3 more. How many apples does Mary have now? | $9 + 3 = \underline{\quad}$ | Result unknown. Easiest type. |
| Mary had 9 apples. John gave her some more. Now she has 12. How many did John give her? | $9 + \underline{\quad} = 12$ | Change unknown. What goes with 9 to make 12? Use manipulatives to check. |
| Mary had some apples. John gave her 3. Now she has 12. How many apples did Mary have at first? | $\underline{\quad} + 3 = 12$ | Start unknown. What goes with 3 to make 12? Use manipulatives to check. |

Separate Problems:

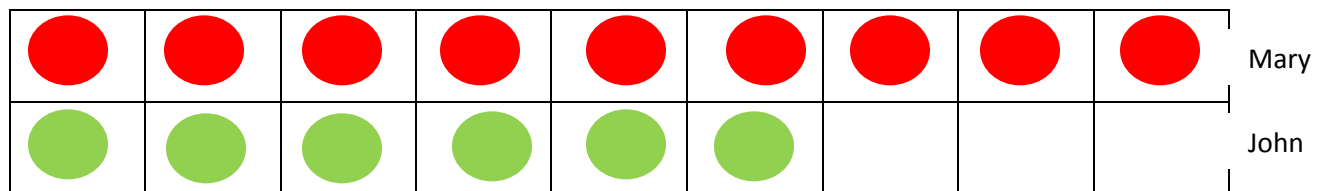
| Sample Story for each type | Problem model | Notes |
|--|------------------------------|---|
| Mary had 12 apples. She gave 9 to John. How many apples does Mary have now? | $12 - 9 = \underline{\quad}$ | Result unknown |
| Mary had 12 apples. She gave some to John. Now Mary has 3 apples. How many did she give to John? | $12 - \underline{\quad} = 3$ | Change unknown. Find difference between 12 and 3. Use manipulatives to check. |
| Mary had some apples. She gave 9 to John. Now Mary has 3 apples. How many did she have at first? | $\underline{\quad} - 9 = 3$ | Start unknown. Find the start by adding. Use manipulatives to check. |

Part-Whole Problems:

| Sample Story for each type | Problem model | Notes |
|--|-----------------------------|---|
| John has 3 red apples and 6 green apples. How many apples in all? | $3 + 6 = \underline{\quad}$ | Whole unknown. Parts known. Think of number bonds. |
| John has 3 red apples and some green apples. He has 9 apples all together. How many green apples does John have? | $3 + \underline{\quad} = 9$ | Whole known. One part known. Think of number bonds. |

Comparison Problems:

Have students keep track of who has more / who has less. Use manipulatives or drawings before trying to write an equation.



| Sample Story for each type | Problem model | Notes |
|--|-----------------------------|--|
| Mary has 9 apples and John has 6 apples. How many more apples does Mary have than John? (Or how many fewer apples does John have than Mary?) | $9 - 6 = \underline{\quad}$ | Use models to show the difference (graphs, cubes, etc.) Find the difference. |
| Mary has 3 more apples than John. John has 6. How many apples does Mary have? | $6 + 3 = \underline{\quad}$ | Start with known (John). Then add the additional amount. |
| Mary has 3 more apples than John. Mary has 9 apples. How many apples does John have? | $9 - 3 = \underline{\quad}$ | Start with known (Mary). Then subtract the other amount. |

