

## Work with addition and subtraction equations

**Standard 1.OA.7** Understand the meaning of the equal sign, and determine whether equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false?  $6 = 6$ ,  $7 = 8 - 1$ ,  $5 + 2 = 2 + 5$ ,  $4 + 1 = 5 + 2$ .

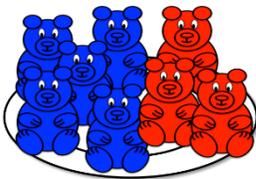
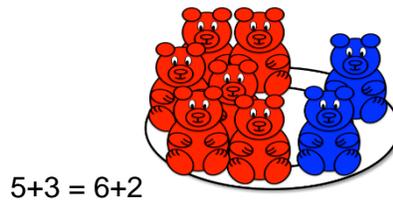
**Key elements:** Students need to understand the meaning of the equal sign. Equal means “the same as”. Students need to understand that in a true statement with the equal sign, the total quantities on either side of the equal sign must be equivalent to each other. Critical to this understanding is the concept that quantities on both sides of the equal sign are separate quantities and have to be looked at in the relationship to each other. Students also need to understand what true and false mean.



**Balance Scales:** When given the equation  $6=6$  students use a balance scale and weighted objects to determine if both quantities on each side of the equal sign are the same. (Be sure that the scales are calibrated correctly and that all the items being measured weigh the same.) If the scale balances, the equation is equal or true. If the scale is not balanced the

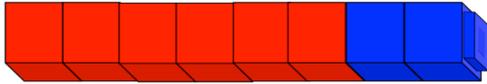
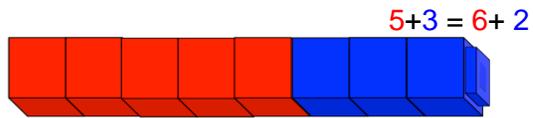
equation is not equal or is false.

**Set Model:** The expressions on each side of the equal sign can be modeled with manipulatives. The students act out the expression using plates and manipulatives. They then compare the quantities on each plate and determine if they are the same. If they are the same equation is true, if not it is false.



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**Bar Model:** Using different colored unifix cubes, student act out the expression on each side of the equal sign. By comparing the lengths of the unifix cube trains created, students can see if the quantities are equal.



As students continue to grow in their understanding of true and false equations, they begin to draw these models using circles to compare quantities, eventually moving to solving each expression then comparing the results.