

MA.1.AR.2.2

Overarching Standard: MA.1.AR.2 *Develop an understanding of the relationship between addition and subtraction.*

Benchmark of Focus

MA.1.AR.2.2: Determine and explain if equations involving addition or subtraction are true or false.

Example: Given the following equations, $8 = 8$, $9 - 1 = 7$, $5 + 2 = 2 + 5$ and $1 = 9 - 8$, $9 - 1 = 7$ can be determined to be false.

Benchmark Clarifications

Clarification 1: Instruction focuses on understanding of the equal sign.

Clarification 2: Problem types are limited to an equation with no more than four terms. The sum or difference can be on either side of the equal sign.

Clarification 3: Addition and subtraction are limited to sums within 20 and related subtraction facts

Related Benchmark/Horizontal Alignment

- MA.1.NSO.1.3
- MA.1.NSO.2.1/2.2
- MA.1.AR.1.1/1.2
- MA.1.AR.2.2

Vertical Alignment

Previous Benchmarks	Next Benchmarks
MA.K.AR.2.1	MA.2.AR.2.1

Terms from the K-12 Glossary

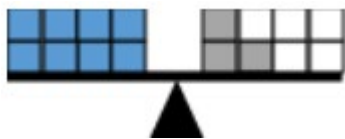
- Expression
- Equation
- Equal Sign

Purpose and Instructional Strategies

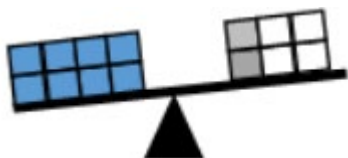
The purpose of this benchmark is for students to understand that the equal sign means “the same as.” In Kindergarten, students used objects or drawings to explain why addition or subtraction equations are true or false.

- Instruction should include a variety of problem types where the sum or difference can be on either side of the equal sign.

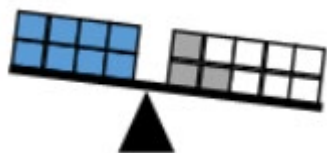
- Instruction may include the use of a balance with cubes to help students understand that the equal sign means the same as. (MTR.2.1, MTR.6.1).
 - For example, $8 = 3 + 5$ is true because 8 is the result of adding 5 and 3.



- For example, $8 = 2 + 4$ is false because 8 is more than 6, which is the result of adding 2 and 4.



- For example, $8 = 3 + 7$ is false because 8 is less than 10, which is the result of adding 3 and 7.



Common Misconceptions or Errors

- Students may not understand that the equal sign means “the same as,” since they may think the equal sign signals that the answer comes at the end. In these cases, it can be beneficial to use a scale where students can complete problems to discover if in fact they are equal.

Strategies to Support Tiered Instruction

- Teacher provides number cards to build balanced equations.
 - For example, using two sets of number cards 0 – 9, students build equations with two single digit addends on both sides.

$$4 + 3 = 6 + 1$$

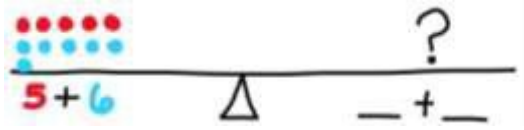
Alternatively, the teacher provides two of the missing addends and allows students to make the equation true using their number cards.

$$4 + _ = 6 + _$$



- Instruction provides opportunities to use a number balance to support understanding of the equal sign.
 - For example, students build the expression $5 + 6$ on one side of the balance and are asked to build an expression of equal magnitude of the other side. Students may

choose to use a 9 and a 2, an 8 and a 3, or a 7 and a 4. Since students cannot use an 11 and must use two separate numbers instead, they are dispelling the misconception that the equal sign means “the answer is.”



Questions to ask students:

- **How can you prove that $6 + 5 = 7 + 4$ is a balanced equation?**
 - Sample answer that indicates understanding: *This equation is balanced or the same on both sides. I know this because $6 + 5$ equals 11 and $7 + 4$ equals 11. They both equal the same so the equation is balanced.*
- **Which of these equations are true? Explain your thinking. $4 + 8 = 9$ or $9 = 5 + 4$**
 - Sample answer that indicates understanding: $9 = 5 + 4$ is true because I can draw a model and show that $5 + 4$ is the same value as 9. $4 + 8$ is false because 8 and 4 more is the same value as 12.
- **Ask students what the equal sign means?**
 - Sample answer that indicates understanding: it means that the value of what is on one side of the equal sign is the same value as that on the other side.

Instructional Tasks

Instructional Task 1

Lee had 14 building blocks. He then shared 6 of his blocks with his friend Remi. Create a true statement to show how many building blocks Lee has left.

Instructional Task 2 (MTR.4.1)

The answer to a problem is 15. Halsey says a true statement is $15 = 20 - 5$. Henry says a true statement is $11 + 4 = 15$. Who is correct? How do you know?

Instructional Items

Instructional Item 1

Tiffany says that $9 = 8 + 1$ is a true statement. Paulie says it is a false statement. Who do you agree with Tiffany or Paulie? Why?

Instructional Item 2

What does the equal sign in $11 = 10 + 1$ mean?

Instructional Item 3

Which of the following statements are true?

- a. $17 = 18 - 1$
- b. $16 = 16 + 1$
- c. $14 - 6 = 8$
- d. $12 = 12$
- e. $2 + 8 = 11$

Instructional Item 4

Create a true statement where 19 is the sum.

Instructional Item 5

Create a true statement where 17 is the difference.

Additional Resources:

[CPALMS Resources](#)

Khan Academy Video: [Equal Sign](#)

Resources/Tasks to Support Your Child at Home:

[Addition Scale](#)

[Understanding the Equal Sign](#)

Choose a target number less than 20. Use playing cards to find as many possible combinations of cards to reach the target number.

Write a variety of true and false addition and subtraction equations. Work together to sort them into the correct true or false pile.