

# MA.K.AR.2.1

Overarching Standard: MA.K.AR.2 *Develop an understanding of the equal sign.*

## Benchmark of Focus

MA.K.AR.2.1: Explain why addition or subtraction equations are true using objects or drawings.

## Example

The equation  $7 = 9 - 2$  can be represented with cupcakes to show that it is true by crossing out two of the nine cupcakes.

## Benchmark Clarifications

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

*Clarification 2:* Problem types are limited to an equation with two or three 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.

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## Related Benchmark/Horizontal Alignment

- MA.K.NSO.1.4
- MA.K.NSO.2.3
- MA.K.NSO.3.1/3.2
- MA.K.AR.1.1/1.2/1.3

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## Vertical Alignment

Previous Benchmarks <a href="#">VPK</a>	Next Benchmarks MA.1.AR.2.1 MA.1.AR.2.2
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## Terms from the K-12 Glossary

- Equal Sign
- Equation

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## Purpose and Instructional Strategies

The purpose of this benchmark is to provide explicit opportunities for students to deepen understanding by justifying their solutions and explaining strategies they have chosen, as well as developing an understanding of the equal sign. (*MTR.6.1, MTR.4.1*)

- Instruction may present equations in different forms, such as  $a + b = c$  or  $c = a + b$  (MTR.2.1)
  - Instruction focuses on understanding and supporting, not only identifying whether an equation is true.
  - Instruction helps students understand that the equal sign does not mean to compute but relates quantities to one another.
  - Instruction includes the use of context to provide a purpose for adding or subtracting, and to support and scaffold student drawings. (MTR.7.1)
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### Common Misconceptions or Errors

- Students may think that “equals” just means to compute and may not recognize equations and expressions represented in non-standard ways, such as with pictures or manipulatives.
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Questions to ask students:

**Ask:** 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  $5 + 4$  equal 9 or I can start at 5 and count up 4 which makes 9.  $4 + 8$  is false because 8 and 4 more equals 12.”

**Ask:** How can you prove that  $11 = 6 + 5$  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. They both equal the same amount, so the equation is balanced or the equation is true.*
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### Instructional Tasks

#### *Instructional Task 1*

Decide if each equation is true or false. Draw a picture or write a new equation to defend your answer.

$$3 + 7 = 13$$

$$12 = 17 - 5$$

$$7 + 6 = 13$$

$$3 + 4 = 7$$

$$7 = 6 + 2$$

$$9 = 13 - 3$$

$$12 = 21$$

## Instructional Task 2

Lamar says that there are 6 blue marbles and 7 green marbles. Jackie says that there are 13 marbles. Who is right? Draw a picture and write an equation to prove your answer.

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## Instructional Items

### Instructional Item 1

Draw a picture to show that  $17 = 7 + 10$ .

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## Additional Resources:

CPALMS: [MA.K.AR.2.1](#)

Khan Academy Video: [Equal Sign](#)

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## Resources/Tasks to Support Your Child at Home:

When discussing equations make sure to say “the same as” instead of “equals” when reading the equation. It helps children understand that the equal sign doesn’t mean the equation is finished, it means you are balancing both sides to be the same or equal. (Example:  $15=7+8$ . Say, “15 is the same as 7 combined with 8.”)

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

Task: Write a variety of true and false addition and subtraction equations. Work together to sort them into the correct true or false pile. Make sure that the answer is on both sides of the equal sign in your examples. (ie.  $4+7=11$ ,  $11=4+7$ )

True or False Board				
True	False			
		$1+0=2$	$7-3=4$	$2+4=7$
		$9+1=1$	$3+5=8$	$5+2=7$
		$3+3=6$	$4-2=2$	$3-1=3$
		$6-2=4$	$9-2=7$	$4+4=9$
		$4+1=5$	$8-3=6$	$0+2=0$
		$2+2=4$	$7+1=6$	$6-1=5$
		$9-5=4$	$2+1=3$	$6+3=9$
		$8-2=7$	$5-3=2$	$4+4=8$

Is It True or False?		
Part 1: Circle the word to show whether the equation or number sentence is true or false.		
1. $7 = 8 - 1$	True	False
2. $1 + 1 + 3 = 7$	True	False
3. $12 + 2 - 2 = 12$	True	False
4. $9 + 3 = 10$	True	False
5. $5 + 3 = 10 - 2$	True	False

Online Game: [Addition Scale](#) - This interactive game has students completing equations to make the statement true.