

# MA.1.AR.1.1

**Overarching Standard: MA.1.AR.1** *Solve addition problems with sums between 0 and 20 and subtraction problems using related facts.*

## **Benchmark of Focus**

MA.1.AR.1.1: Apply properties of addition to find a sum of three or more whole numbers.

*Examples:*  $8 + 7 + 2$  is equivalent to  $7 + 8 + 2$  which is equivalent to  $7 + 10$  which equals 17.

## Benchmark Clarifications

*Clarification 1:* Within this benchmark, the expectation is to apply the associative and commutative properties of addition. It is not the expectation to name the properties or use parentheses. Refer to Properties of Operations, Equality, and Inequality (Appendix D).

*Clarification 2:* Instruction includes emphasis on using the properties to make a ten when adding three or more numbers.

*Clarification 3:* Addition is limited to sums within 20.

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## **Related Benchmark/Horizontal Alignment**

- MA.1.NSO.2.1/2.2
  - MA.1.AR.2.2
  - MA.1.M.2.3
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## **Vertical Alignment**

<b>Previous Benchmarks</b>	<b>Next Benchmarks</b>
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MA.K.AR.1.1	MA.2.AR.2.1
MA.K.AR.1.2	

## **Terms from the K-12 Glossary**

- Equation
  - Expression
  - Associative Property of Addition
  - Commutative Property of Addition
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## **Purpose and Instructional Strategies**

The purpose of this benchmark is for students to explore addition and think flexibly when it comes to adding three numbers together, such as rearranging addends, looking for doubles, making a ten, etc. In Kindergarten, students found ways to make a ten when given a digit 1

through 9. Students also find ways to represent a given number from 0 to 10 as the sum of two numbers. (*MTR.2.1, MTR.5.1*)

- Instruction includes use of manipulatives to model addition problems within 20. (*MTR.5.1*)

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### Common Misconceptions or Errors

- Students may not understand that when three numbers are rearranged the sum will still be the same. In this case, open a class discussion by showing the following expressions **A.**  $3 + 9 + 4$  and **B.**  $9 + 4 + 3$  and ask students what they notice about the expressions. Once a student notices that both expressions have the same exact numbers but that the numbers are arranged in a different order ask, "Do you think they will have the same sum?" Have students share how they could solve the expressions using a strategy. Then discuss the sums of both equations being 16 and when one adds the same numbers together, but in a different order it will always have the same total.

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### Strategies to Support Tiered Instruction:

- Instruction provides opportunities to use a set of three number cards and make multiple equations with three addends. Students solve all equations and then discuss how they are similar and different.
  - For example, students choose three numbers from a set of number cards and create the equations below. After students have finished solving the equations, they answer and discuss the following questions: How are the equations different? Students should discuss how the order of the addends is different in each equation. How are the equations the same? Students should conclude that the sum is always the same no matter the order in which the addends are added. Would the same thing happen if we used three different number cards? Would we be able to create equations in which the addends are in different orders? Would the sum be the same no matter the order in which we add the addends?

$$\begin{array}{l} \boxed{5} + \boxed{3} + \boxed{8} = \underline{\quad\quad} \\ \boxed{4} + \boxed{5} + \boxed{8} = \underline{\quad\quad} \\ \boxed{8} + \boxed{5} + \boxed{3} = \underline{\quad\quad} \end{array}$$

- Instruction provides opportunities to build equations with three addends in multiple orders to explore the concept of the commutative property.
  - For example, the teacher provides the expression  $3 + 2 + 4$ . Students build each addend using snap cubes and determine the sum. Teacher records the student work on chart paper. Teacher gives the students another expression  $2 + 4 + 3$ . Students build each addend using snap cubes and determine the sum. Teacher adds the student work to the chart paper. Teacher gives the students a final expression  $4 + 3 + 2$ . Students build each addend and determine the sum.

Teacher adds the students work to the chart paper. Teacher asks “How are these equations similar? How are they different? What do you think would happen if we solved  $3 + 4 + 2$ ?”

**Questions to ask students:**

- **When adding the numbers: 2, 5, 8 how would you group the numbers to find the total?**
  - Sample answer that indicates understanding: *I would group the 2 and 8 to make a ten. Then I would add 10 and 5 more to make 15*
- **What strategy could you use to add the numbers: 3, 7, 3?**
  - Sample answer that indicates understanding: *I could add 3 and 7 to make a ten. Then I could add 10 and 3 more to make 13. OR I could 3 and 3 because I know my doubles. That would give me 6 and then add 7 more to make 13.*

**Instructional Tasks**

*Instructional Task 1 (MTR.2.1)*

Provide students with three different colors of manipulatives (six of each color), three dice and a recording sheet.

- Part A. Student rolls three dice and set out that many one-color manipulatives per die that they rolled. Student arranges the manipulatives to create an addition sentence then records it.
- Part B. Student rearrange their manipulatives to create a new addition sentence and records it. Student thinks of another way they could get to their sum by creating a true equation.

Roll 1	Roll 2	Roll 3	Addition Sentence/Sketch	New Addition Sentence/Sketch	True Equation
3	4	6	$3 + 4 + 6 = 13$ 	$6 + 4 + 3 = 13$ 	$10 + 3 = 13$

*Instructional Task 2*

Melonie is working on solving an addition problem with three numbers. She says that she can make a ten with two of her numbers then add the third number. What could two of Melonie’s numbers be that would make a ten?

**Instructional Items**

*Instructional Item 1*

Using three digits, create an addition sentence that would have a sum of 18.

*Instructional Item 2*

The total of three numbers is eleven. What could the three numbers be?

*Instructional Item 3*

How many different ways can you get a total of seventeen when you toss three six-sided dice? Record each way.

*Instructional Item 4*

Which of the following addition problems will get the same sum as  $2 + 6 + 2 + 4$ ?

- a.  $2 + 8 + 7$
- b.  $2 + 4 + 8$
- c.  $4 + 8 + 2$
- d.  $8 + 6$
- e.  $10 + 3 + 1$

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**Additional Resources:**

[CPALMS Resources](#)

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

Encourage your child to add the three numbers in different ways. Then encourage them to reflect on why they ordered the numbers the way they did to add the three numbers.

Make adding three numbers relevant, by having them add three different objects at your home, such as:

- Add the total number of dimes, nickels, and pennies in the coin jar.
- Add the total number of red, green, and purple skittles.

[Video: Khan Academy – Add 3 Numbers](#)

[Video: Khan Academy – Add 3 Numbers Practice](#)