

# PROPERTIES OF OPERATIONS: ADDITION & SUBTRACTION

$$4 + 6 = 10$$

GRADE **1**

- Teacher Guidelines ▶ pages 1 – 2
- Instructional Pages ▶ pages 3 – 4
- Activity Page ▶ page 5
- Practice Page ▶ pages 6 – 7
- Homework Page ▶ page 8
- Answer Key ▶ page 9

# Classroom Procedure:

1. Introduce the lesson by explaining to students there are two bowls and 12 apples. How many apples are in each bowl? Have students come up and arrange the apples into the bowls. Write down the addition equation for each student. When there are no more equations left, ask students what do you notice? Do you see any patterns?
2. Distribute Properties of Operations: Addition and Subtraction content pages. Read the content with students and frequently stop to check for understanding. The math terms will be difficult for 1<sup>st</sup>-grade students!
3. Distribute the Activity Page. Assist students with the Activity Page and demonstrate the instructions.
4. Distribute the Practice Page. Demonstrate the Practice and assist students who may have difficulty understanding the instructions. The Activity and Practice make great center practices in small groups!
5. Distribute the Homework Page. Review the answers with the students—correct any misconceptions or misunderstandings.
6. In closing, ask students to write an example of the commutative property on their paper and share it with a shoulder partner. Then write an example of the associative property and share it with their opposite shoulder partner.

Lesson Title: **Properties of Operations: Addition and Subtraction**

Subject: **Math**

Approximate Grade Level: **1**

**Objectives:** The students will apply properties of operations as strategies to add and subtract.

**State Educational Standards\***

LB.MATH.CONTENT.1.OA.B.3,  
LB.MATH.CONTENT.1.OA.D.7, &  
LB. MATH.CONTENT.1.OA.B.4

**Class Sessions (45 minutes):**

1 – 2 Class Sessions

**Teaching Materials/Worksheets:**

Content Pages (2), Activity Page (1), Practice Pages (2), Homework Pages (2)

**Student Supplies:**

Activity: Dominoes

Practice: Number cubes

**Prepare Ahead of Time:**

Copies of worksheets

**Options for Lesson:** Using songs to teach the properties from videos, making up stories about commuting, creating large posters to be displayed in the classroom about each property, or posting problems around the room on colored paper for students to solve are all ways to extend the lessons and add group work and movement to the class. Students love to draw! Have them invent and draw superheroes or cartoon strips using the properties.

\*Lessons are aligned to meet the education objectives and goals of most states. For more information on your state objectives, contact your local Board of Education or Department of Education in your state.

# Teacher Notes

In this lesson, students will explore addition’s commutative and associative properties. Using manipulatives, students will solidify their understanding of how addends can be rearranged without changing the sum of an equation. Students will enjoy using dominoes and number cubes to engage with equations.

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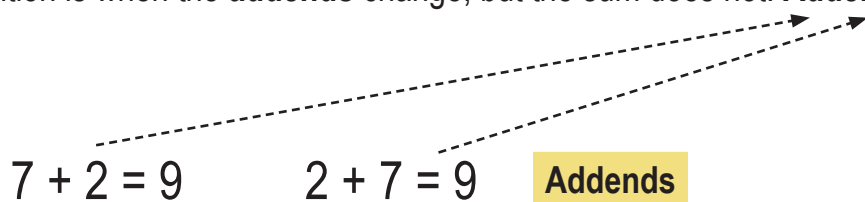
# Properties of Operations: Addition and Subtraction

## Commutative Property

The word 'commute' means to go back and forth. People commute to work. They go from their home to their job. Then they go from their job back to their home. Students commute to school. They go from their home to school. When school ends, they go home.

The **commutative property** of addition is when the **addends** change, but the sum does not. **Addends** are the numbers you add!

- Here is an example:

$$7 + 2 = 9 \quad 2 + 7 = 9 \quad \text{Addends}$$


Seven and two are the addends. They switch places. Nine is the **sum**. It does not change.

- Here is another example:

$$4 + 6 = 10 \quad 6 + 4 = 10$$

Four and six are the addends. They switch places. Ten is the sum. It does not change.

The order in which you add numbers does not change the sum. So, for example, if you want to count the number of fish in a tank, you can count the yellow fish first and then the red fish. Or you can count the red fish first and then the yellow fish. Either way, there is the same number of fish in the tank.

## Property of Addition

To **associate** means to group things together. For example, sometimes we group play games at recess. In that case, you **associate** with other students who want to play the same game.

# Properties of Operations: Addition and Subtraction

## Associative Property of Addition

When there are more than two addends, you can add them using the associative property. This means you can group them to add. Often the associative property will use parenthesis to group two numbers together.

- **Here is an example:**

You can group the 1 and 3. Then add 5.

$$(1 + 3) + 5$$

Or you can group the 3 and 5. Then add 1.

$$1 + (3 + 5)$$

You can group the 1 and 5. Then add 3. Write it in the space.

$$( \quad + \quad ) + \quad$$

How you group them doesn't matter. The sum will always be nine.

- **Here is another example:**  $2 + 8 + 4$

You can group the 2 and 8. Then add 4.

$$(2 + 8) + 4$$

Or you can group the 8 and 4. Then add 2.

$$2 + (8 + 4)$$

You can group the 2 and 4. Then add 8. Write it in the space.

$$( \quad + \quad ) + \quad$$

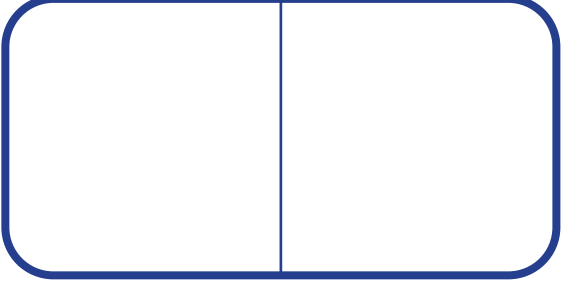
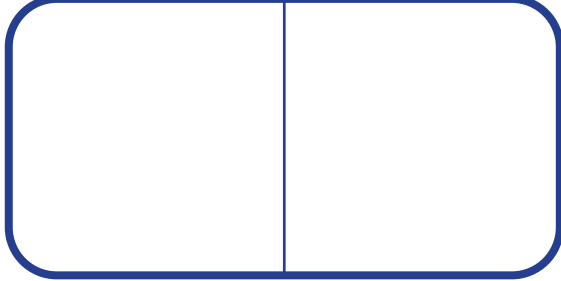
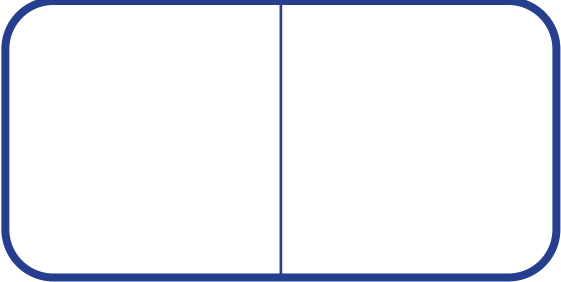
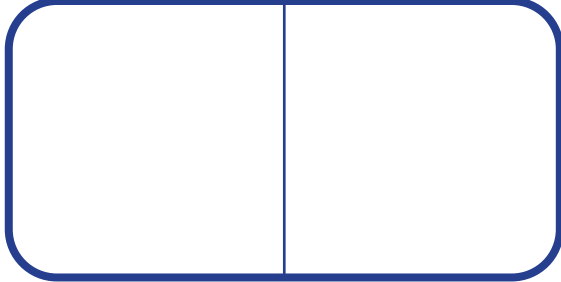
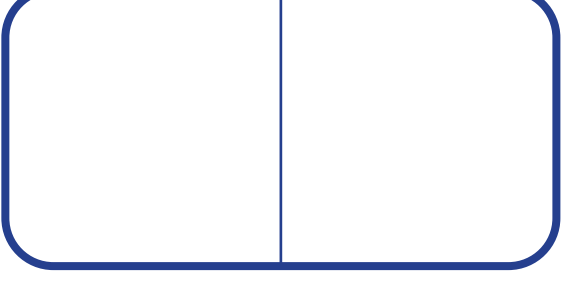
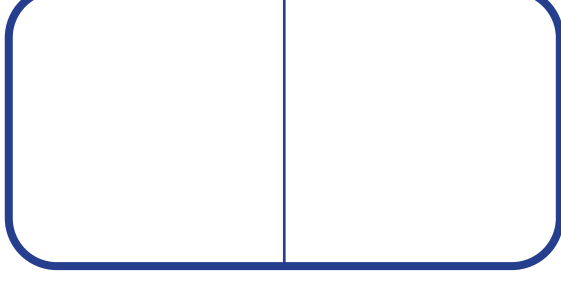
It doesn't matter how you group them. The sum will always be fourteen.

Draw a picture in the box of  $2 + 8 + 4$ . Next, draw circles around a group of 2 and 8. Add the 4. What is the sum?



**Instructions: Choose a domino. Draw the domino and write an addition equation.**

Turn the domino and change the addends. Write the new addition equation.

  $\underline{\quad} + \underline{\quad}$	=	  $\underline{\quad} + \underline{\quad}$
  $\underline{\quad} + \underline{\quad}$	=	  $\underline{\quad} + \underline{\quad}$
  $\underline{\quad} + \underline{\quad}$	=	  $\underline{\quad} + \underline{\quad}$



# Practice

Name \_\_\_\_\_ Date \_\_\_\_\_



Instructions: Roll the number cubes. Fill in the three squares and create an addition problem. Use the associative property to solve.

$$(\square + \square) + \square = \underline{\quad} + (\underline{\quad} + \underline{\quad})$$

$$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$$

$$\underline{\quad} = \underline{\quad}$$

$$(\square + \square) + \square = \underline{\quad} + (\underline{\quad} + \underline{\quad})$$

$$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$$

$$\underline{\quad} = \underline{\quad}$$

$$(\square + \square) + \square = \underline{\quad} + (\underline{\quad} + \underline{\quad})$$

$$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$$

$$\underline{\quad} = \underline{\quad}$$



Instructions: Roll the dice to fill in the three squares and create an addition problem. Use the associative property to solve. **SAMPLE ANSWER -**

ANSWERS WILL VARY

$$(1 + 2) + 4 = 1 + (2 + 4)$$

$$3 + 4 = 1 + 6$$

$$7 = 7$$

$$(\square + \square) + \square = \underline{\quad} + (\underline{\quad} + \underline{\quad})$$

$$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$$

$$\underline{\quad} = \underline{\quad}$$

$$(\square + \square) + \square = \underline{\quad} + (\underline{\quad} + \underline{\quad})$$

$$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$$

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# Homework

Name \_\_\_\_\_ Date \_\_\_\_\_



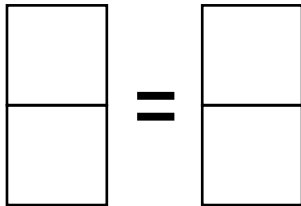
Instructions: Write the missing number that makes the equation true.

Draw a picture to support your answer.

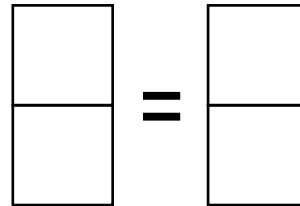
$$\underline{\quad} + 3 = 3 + 7$$

Draw dots (pips) on the dominoes to show the commutative property for:

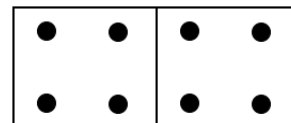
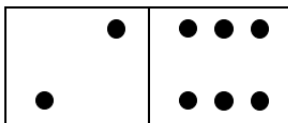
$5 + 4$



$1 + 3$



Emile says the two dominoes below show the commutative property because they both add to 8. Armond says she is not correct. Who is correct? Explain below.



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Instructions: Write the missing number that makes the equation true.

Draw a picture to support your answer.

$$\underline{7} + 3 = 3 + 7$$

$$\begin{array}{r} \text{XXXX} \\ \text{XXX} \end{array} + \text{XXX} = \begin{array}{r} \text{XXXXX} \\ \text{XXXXX} \end{array}$$

Draw dots (pips) on the dominoes to show the commutative property for:

5 + 4

1 + 3

Emile says the two dominoes below show the commutative property because they both add to 8. Armond says she is not correct. Who is correct? Explain below.

●	● ● ●
●	● ● ●

● ●	● ●
● ●	● ●

Armond is correct. While the sum is 8, the addends are not reversed.