

CHAPTER 2: Foundations of Addition and Subtraction

MINI-MODULE A

Understand Addition

Objectives

This mini-module aims to help teachers:

- Identify some strategies and materials that can be used to teach and practice addition.
- Practice a new teaching activity.

Recommended Materials

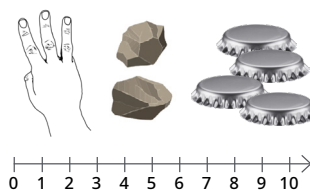
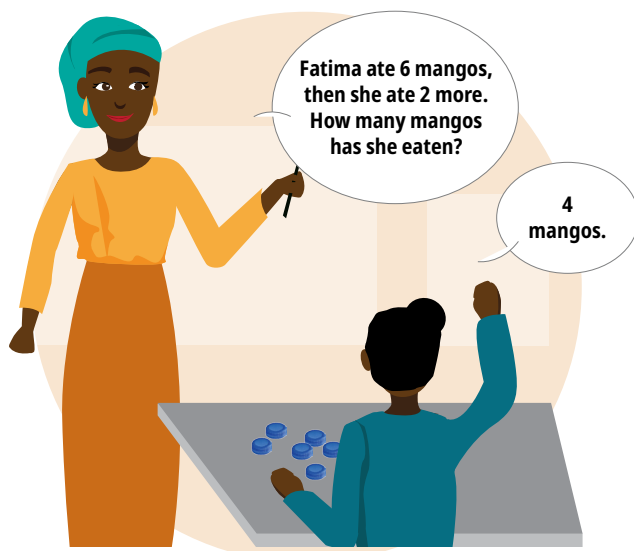


Illustration of Teaching



REFLECT:

- Why do you think the student said 4?
- What do you think the student misunderstands?
- What would you do to support this student?

Ideas to Consider

The student seems to have counted out 6 counters in total, but they answered that Fatima has eaten only 4 mangos. They seem to have taken away the 2 mangos that Fatima ate last, instead of adding 2 more.

The student may not understand the story, or they may not understand how to add using counters. The teacher should assess what it is that the student misunderstands. The teacher may ask the student to show their work again using counters and to explain what they have done. If the student misunderstood the story, the teacher could retell it in a different way. If they misunderstand how to use counters to add, the teacher could demonstrate and then ask the child to try again. The teacher should repeat with many other examples to give the student more practice.



ACTIVITY: STRATEGIES FOR ADDITION

This activity can be completed alone, in pairs, or with a group of teachers. Discuss your responses to the questions.

Purpose: Identify some strategies for adding two numbers.

Materials needed: Counters

Instructions

- Read the story aloud: ***There were 4 children playing football, and 5 more joined them. How many children were playing football all together?***
- Reflect and discuss: ***How do you think children would solve this problem? What strategies could be used?***
- Try each method in the box below.

Method 1: Combine two sets of counters.

- Count out a set of counters for each group of children:



- Put the counters together, and count to find the total:



Method 2: Make one set of counters and "count on" the second set.

- Count out 4, then count on by 5 more:



- Reflect and discuss: ***What other methods have you and your students used for addition?*** (e.g., number line, drawing a picture)



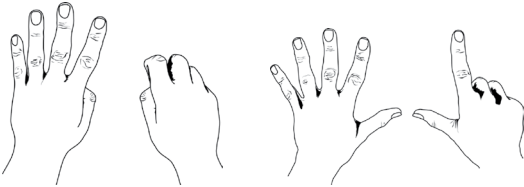
What Do Children Learn about Addition?

Children should learn two different meanings of addition. One is the idea of putting two groups together. Another is the idea of increasing one quantity by another. They should also learn some properties of addition, such as:

- The order of numbers doesn't matter ($2 + 3$ is the same as $3 + 2$).
- Adding 0 doesn't change the number ($3 + 0 = 3$).

There are two common strategies for addition: counting all together, and counting on. Children should be introduced to both processes in order: first they count all together, then they count on. To "count all together," two groups are combined together and the total is counted. In the "counting on" method, children start at one number (usually the larger number) and "count on" by the second number. The "counting on" method is useful to children later on, when they work with larger numbers. For example, the sum $84 + 3$ can be found by counting on: "85, 86, 87."

Addition is related to composition, which is introduced in *Chapter 1: Numbers and Quantities*. To compose a number, children put it together using its parts. This prepares them to add two quantities by combining groups.

Children should be able to . . .	What does this mean?	Example
Understand addition as combining two sets	One meaning of addition is to put two (or more) groups together.	"I have a group of 4 bottle caps and a group of 3 bottle caps. How many do I have altogether?"
Understand addition as increasing an amount	One meaning of addition is to increase the size of one set.	"I have 4 bottle caps. I get 3 more bottle caps. How many bottle caps do I have altogether?"
Add by counting all	Add by putting two groups together and counting the total.	$4 + 3 =$ What is the sum of 4 and 3? Count out a group of 4 and a group of 3, then count the total:  "1, 2, 3, 4, 5, 6, 7"
Add by counting on	Add by "counting on" from one number by another number to find the total.	$4 + 3 =$ What is 3 more than 4? Count out 4 objects, and count on 3 more:  "4 ... 5, 6, 7" Raise 4 fingers and count on 3 (raise 1 finger with each count):  "4 ... 5, 6, 7"

Reflection

Write your responses down or discuss your ideas with your colleagues:

- Think of your own students. Which skills from the above table do you think they would find challenging? Why? How can you support them?
- Why do you think it is important for children to learn different strategies for addition?
- Do you have any ideas of new addition strategies that you would like to try in your classroom? What are they?

Teaching Practice

This practice activity may be completed by teachers with their own class or with a smaller group of students.





ACTIVITY: ADD WITH COUNTERS AND A PICTURE

Purpose: Follow instructions to add using counters.

Materials needed: At least 10 objects (e.g., seeds) and writing materials (e.g., pen and exercise book) for each student.

- Give 10 objects (e.g., seeds) to each student.
- Say: **Count 5 seeds and put them on your table. Make sure you have 5 seeds. Put them on the side, in a group. Count 2 more seeds and make another group with those. Put your two groups of seeds together.**
- Ask: **How many seeds are there in total?**
- Invite different students to share.
- Say: **Very good. We counted a group of 5, and then 2 more. It makes 7 all together.**

	
<p><i>I made a group of 5 and put another group of 2. I have 7.</i></p>	<p><i>I made a group of 5 and took away a group of 2. I have 3.</i></p> <p><i>(Tip: Make sure students understand your words. Explain the meaning of the words if needed and emphasize them when you say a problem. These words tell students to add: “more,” “another,” “together,” “in total.”)</i></p>

- Say: **Now, take a piece of paper and draw what you did.**
- Repeat with other examples.



This document is licensed under a Creative Commons Attribution 4.0 International License.
<https://creativecommons.org/licenses/by/4.0/>

NOVEMBER 2024

AUTHORS: Brittany Meredith, Annie Savard, Mercy Kazima, Yasmin Sitabkhan, and Wendi Ralaingita