

Compose, Decompose, and Subitize

Objectives

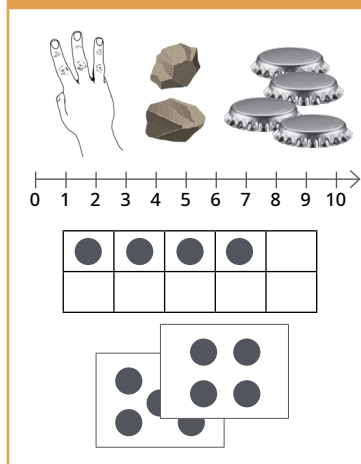
This mini-module aims to help teachers:

- Describe some important number skills that children learn in the early primary grades.
- Identify some activities and materials to practice number skills.
- Practice a new teaching activity.

Illustration of Teaching



Recommended Materials



REFLECT:

- Which students made mistakes?
- What do you think they misunderstood?
- What other mistakes do you think students might make? Why?

Ideas to Consider

The teacher asked the students to compose a number using a group of 3 and a group of 2. The student on the left was correct—these groups compose the number 5. There are different reasons the other children could have made their mistakes, and the teacher should try to identify what they misunderstood. They may not be able to count well, or they might not have understood the teacher's instructions.

The teacher could ask students to show them how they made the groups, or guide them in counting a group of 3 and a group of 2. The teacher may also tell a story about two groups being joined—for example, *There were 3 girls and 2 boys playing football. How many children were playing football? Show me with your counters.* Using examples from everyday life can help children understand what they are being asked to do. It also links the math they learn in their lesson to their own experiences and prepares them to use math in their everyday lives. In this mini-module, you will learn how to support students as they compose, decompose, and subitize quantities.



ACTIVITY: COMPOSE A NUMBER

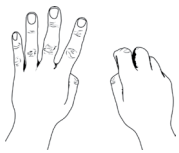
This activity can be completed alone, in pairs, or with a group of teachers. Discuss your responses to the questions.

Purpose: Identify a way of composing numbers of other smaller quantities.

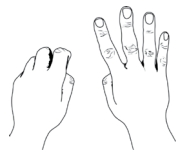
Materials needed: None

Instructions

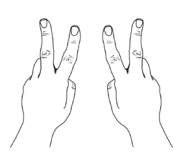
- Reflect and discuss: **How many ways can you make the number 4 using the fingers on your two hands?**
- Work together to identify all the different ways of making 4. You may have colleagues use their hands to show 4 in different ways at the same time.
- Ways of showing 4:



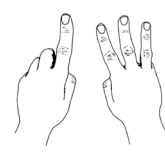
4 and 0



0 and 4



2 and 2



1 and 3





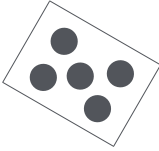

3 and 1

- Reflect and discuss: **What could this activity help children understand about numbers?**

What Do Children Learn about Composing, Decomposing, and Subitizing?

These are skills that children learn as they build a strong understanding of numbers. To **compose** means to put different groups together to form a larger group. To **decompose** is the opposite—it means to break a larger group down into smaller groups. Children learn to compose and decompose using real objects that they can hold and move.

Children learn how to identify smaller quantities quickly and visually, without counting each object. This skill is called **subitizing**, and it can be very useful in everyday life. With practice, children are able to subitize up to 5 objects easily. They are able to subitize larger numbers by composing smaller quantities. For example, they could see a group of 4 and a group of 3 and identify that the total quantity is 7, without counting the objects one by one.

Children should be able to . . .	What does this mean?	Example
Compose numbers	Put a number together using its parts.	Composing a group of 4 and a group of 2 makes 6. 
Decompose numbers	Break a number down into its parts.	5 can be decomposed into a group of 2 and a group of 3. 
Subitize	Identify a small number quickly and visually, without counting.	"How many dots?"  "I see 5."
Subitize by grouping	Identify a number quickly and visually by subitizing smaller numbers that it is composed from.	"How many dots?"  "4 and 3 make 7." or "5 and 2 make 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?
- Share your idea of a story problem that could be used to teach or practice "**Decompose numbers.**"
- Why do you think it's important for children to learn how to subitize? When might they use this skill in their everyday lives?

Teaching Practice

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



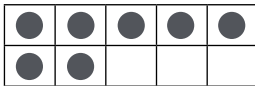
ACTIVITY: SUBITIZE A QUANTITY

Purpose: Subitize to count dots (identify quantities without counting objects one by one).

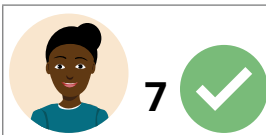
Materials needed: Picture of ten frames showing the numbers 1 to 10 (see the bottom of this page). Draw a picture of each ten frame on a different sheet of paper.

Instructions

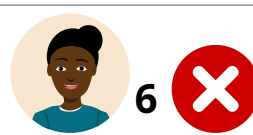
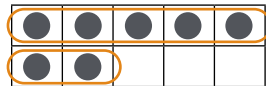
- Say: ***I am going to show you a picture. I want you to tell me how many dots are in the picture. I want you to think about it and be ready to share your answer and how you got it. Put your thumb up when you are ready to share.***
- Show a picture of a ten frame to all students for three seconds. Show it one or two more times, until most students have their thumb up.



- Say: ***Raise your hand if you want to share how many dots are in the picture.***
- Invite different students to share their numbers, and record them on the board.
- Ask students to explain how they found their answers. Show them the ten frame and allow them to explain.



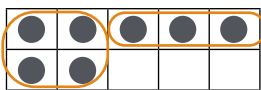
I saw 5 dots and 2 dots. Together they make 7.



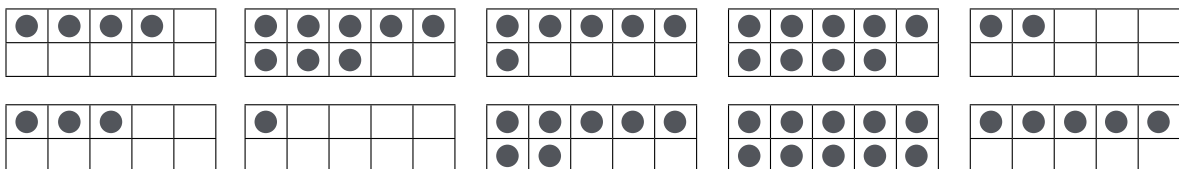
I counted 1, 2, 3, 4, 5, 6.

(Tip: Invite other students to explain how they subitized 7. Afterward, identify any other ways yourself, and count the dots one by one to verify.)

- Together with students, count the dots in groups. They may see groups of 4 and 3:



- Say: ***We have different ways to make 7. We can have a group of 5 and a group of 2. We can have a group of 4 and a group of 3.***
- Repeat with different ten frame pictures.



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