

Understanding a Step

Introduction This guide discusses teaching a focusMATH Step, or lesson. This guide explains the organization of a Step, the resources for planning and teaching. Finally, this guide looks at the three parts that make up a Step.

In addition, this guide provides examples of several student–teacher interactions that might occur in a focusMATH classroom.


Overview of a Step Each Step is designed to cover a thirty- to forty-minute class period, but it can be covered in two days if necessary.

There are three parts to a Step.

Preparing to Teach a Step All the information to teach each Step is provided, so it is easy to prepare.

The objective of the lesson is identified and key vocabulary is listed. The materials needed for each lesson are also noted in the Teacher’s Edition. All manipulatives are included in the Student Manipulative Kit.

Another important part of preparation is the Math Background section. It contains essential information about the mathematics presented in every Step.



Math Background

- Ten is an important benchmark in the numeration system.
- Adding 10 helps prepare students to understand place-value concepts.

First-Grade Example This is an example of how to teach a Step, taken from first grade, Book A, Step 4-3.

First, think about what students should know by the end of the Step. In this example, students should be able use a Ten-Frame and counters to add 10 and one-digit numbers.

What materials are needed to teach this Step? The Ten-Frame from the Teaching Tools section at the back of the Teacher’s Edition and counters from the Student Manipulative Kit are needed for this Step.

Before beginning, read the Math Background section. In Step 4-3, the targeted information is *Ten is an important benchmark in the numeration system* and *Adding 10 helps prepare students to understand place-value concepts*.

Part 1: Concept Development

Part 1 of the lesson, Concept Development, provides teachers with problem-based instruction.

1 **Concept Development**
Use with Teaching Tool 5.

Purpose
You have learned to count on to add with 0, 1, and 2. Today you will learn how to add 10 to a number.

Pose the Problem
10 children are playing at a park. 4 more children join them. How many children are then playing at that park? Have students share their answers.

Model
Distribute one copy of Ten-Frame (Teaching Tool 5) and 20 counters to each student. Direct students' attention to the teaching tool. *Why do you think this teaching tool is called a ten-frame?* [Students should see that it is made up of 10 small picture-like frames.] *Pretend that each counter is a child. At first, how many children are playing at the park?* [10] Have students place one counter, yellow side up, in each section of the ten-frame. *Suppose 1 more child joins them. Place 1 more counter, this time red side up, under the ten-frame.*

Now, how many children are playing at the park? [11] Write " $10 + 1 = 11$ " on the board.

Suppose 1 more child joins them. Place 1 more counter, again red side up, under the ten-frame. Now, how many children are playing at the park? [12] Write " $10 + 2 = 12$ " on the board directly below the first addition sentence.

Suppose 1 more child joins them. Place 1 more counter, again red side up, under the ten-frame. Now, how many children are playing at the park? [13] Write " $10 + 3 = 13$ " on the board directly below the other two addition sentences.

Look for a pattern to add 10 + 4. What is 10 + 4? [14] **Ten (10)** is a special number. When you add a number between 1 and 9 to 10, you can change the zero in 10 to the number you are adding to find the sum. So, if 4 more children join the 10 children playing at the park, how many children are playing at the park? [14]

Problem-based instruction is an interactive activity that engage students and helps them make meaningful connections to their prior knowledge. It also allows for important student–teacher interaction and opportunities for students to interact with one another.

Strategic Questions

Strategic Questions provide support for making instruction explicit. Students have the opportunity to verbalize what they have learned and share the strategies they have used.

First-Grade Example

In this sample lesson, the teacher starts by stating the purpose of the lesson and reviewing what was covered in previous lessons.

Here is an example student-teacher interaction:

Teacher: "Does everyone remember how we learned how to count and to add with 0, 1, and 2? Well, today learn we're going to learn how to add 10 to a number."

"To start our lesson, I am going to give you a number story. Alright, everyone listen. 10 children are playing at a park. And 4 more children join them. How many children are playing at the park?"

"I'm going to give you each 20 counters and a tool called a Ten-Frame. Now, why do you think it's called a ten-frame?"

Student #1: "Because there are ten spaces?"

Student #2: "Because there are ten squares"

Teacher: “Great job, you’re both right! It’s called a ten-frame because there are 10 spaces or squares. Now, in our problem, about the children playing at the park, let’s pretend that each child at the park is a counter. I have yellow counters and red counters. But first, how many children are playing at the park?”

Students: “ten”

Teacher: “Great memory! Now, place one counter, yellow side up, in each section of the ten-frame. This is going to represent each of the 10 children that were at the park first.”

“Now, let’s pretend that one more child joins them. Place 1 more counter, but this time red side up, underneath the ten-frame. How many children now are playing at the park?”

Student #1: “Um, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 . . . eleven children”

Teacher: “Right! But, guess what? 1 more child joins them in the park. Now, what do you think you are going to do?”

Students: “Put another counter under the ten-frame!”

Teacher: “Great job, you’re right!”

Here, the students are beginning to understand why ten is a special number.

Part 2: Guided Practice

Here is Part 2 of the Step, “Guided Practice.” This part of the lesson allows students to begin working on exercises that provide scaffolded support. They also receive corrective feedback as they move toward working independently.

2 Guided Practice

Use with Exercises 1–6.

Have students use the ten-frame at the top of page 34 and counters to model each problem.

Exercises 5–6

Error Intervention

If students are uncertain about how to model the addition,

then remind them that addition can be written horizontally or vertically. Use Exercise 5 as an example. *Which number being added will you model in the ten-frame?* [10] *How many red counters will you show below the ten-frame?* [7]

What follows is an example of a student-teacher interaction for Part 2 of the Step.

First-Grade Example

Teacher: "Now, let's look at problem number 2 in our books. How can we solve this problem, $10 + 5$?"

Student #1: "I don't know"

Teacher: "How many counters will you put inside of the ten-frame?"

Student #1: "10"

Teacher: "And, how many red counters will you show below the ten-frame?"

Student #1: "5"

Teacher: "Right! Now what about $10 + 7$?"

Student #1: "I'll put 10 counters on the top and 7 counters under it to make 17!!"

Teacher: "Good job! Can you explain how you know there are 17 counters in all?"

Student #1: "I have 10 plus another number, all I have to do is put it here."

Teacher: "But what if I add $10 + 10$?"

Student #1: "110"

Student #2: "When I put 10 on my ten-frame and 10 red counters under it, I have 20."

Teacher: "So who's right? If you answered 20, great job. Now what can you tell me about adding with the number 10?"

Student #1: "It's easy to add with"

Teacher: "So, why do you think it's easy to add with?"

Student #1: "It ends with a zero and you can just put the other number there."

Teacher: "So, can you add it with all numbers?"

Student #1: "No, just the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9"

Error Intervention

Throughout a lesson, students may make errors. The Error Intervention suggestions help teachers monitor students' understanding.

Refer to the example lesson. One of the students was having difficulty solving the problem. The Error Intervention gave the teacher a great suggestion, to remind the student that addition can be written horizontally or vertically, to help get them back on track!

Quick Check

To make sure students are on target, there is Daily Formative Assessment called *Quick Check*. Teachers can use this to monitor student progress and adjust instruction.

Error Intervention

If students are uncertain about how to model the addition,

then remind them that addition can be written horizontally or vertically. Use Exercise 5 as an example. *Which number being added will you model in the ten-frame? [10] How many red counters will you show below the ten-frame? [7]*

At the end of the Guided Practice, the teacher in the example asked the students the Quick Check question to see if they were able to apply what they have learned. She also asked them to explain how they got their answers so she could see their strategies.

ELL Callouts

Also included in each Step are ELL callouts that provide suggestions for reinforcing students' knowledge of essential vocabulary terms.

ELL Use Vocabulary

To check understanding, ask a student to repeat and complete this sentence:
_____ is a special number that is easy to add with because you can replace the zero in this number with the other number being added to find the sum. [10]

Independent Practice

Part 3 of the Step is Independent Practice. During this part, students work through practice problems to reinforce the concepts during the lesson. The practice problems lead students to develop fluency with new skills.

First-Grade Example

To encourage independent practice, the teacher could say to the students, "I'd like for you to work through the rest of the problems in your student book. Remember, addition can be written in a column with a line underneath or with an equal sign."

Review

This guide looked at each part of a focusMATH Step. It also provided samples of student-teacher interactions that might occur in a focusMATH classroom.

For more information, please watch the other focusMATH tutorials on this Web site.