

Fish Stories

Grade 3

Activity #323

Relevant Chapter in the *Digi-Block Comprehensive Teacher's Guide*:

Book III, 3-4: Modeling Multiplication, pages 87 - 90

Overview

Students model multiplication involving a 2- or 3-digit number by a single digit multiplier. They express the process in pictures, words, and numbers.

Objectives

Thinking Skills: Students use packed blocks to model the base ten representation of multiplication of a 2- or 3-digit number by 3. They begin to develop an algorithm as they "show what they do with numbers."

Mastery Skills: Students learn to model, record, and express 2-digit by 1-digit multiplication with numbers.

Materials

Each pair of students needs:

- 1-3 blocks-of-100 (Students can unpack to get the blocks they need for particular problems.)
- 1 place value mat with digit cards
- Dry erase marker **or** 2 long strings to separate groups on the place mat
- "Fish Story" Activity Sheet 1

- "Here's the Fish Story . . . Told with Numbers" Activity Sheet 2

Class Introduction



(20 minutes)

Read, or tell a story similar to "The Big Brag" from Dr. Seuss's Yertle the Turtle and Other Stories. Discuss how people sometimes exaggerate a story to add effect and get attention. Mention "fish stories" and other examples from students' lives.

Explain to students that you need their help telling a fictitious story about a boy (or girl) named Brad (or Brenda) who was notorious for telling stories.







- For example, say:
Every time a friend named a number of things that were special to him or her, Brad would always brag that he had three times the number! Unfortunately, Brad gets himself into trouble because he can't figure out what three times the number actually is! He needs help figuring this out.
- Begin with a simple multiplication story. For example, say:
**Lori told Brad that she counted 15 blocks in her bag.
 "That's nothing," said Brad, "I have *three times* as many!"
 Lori asked doubtfully, "Just how many is THAT?"
 Brad got pretty red in the face.
 "I'll help you figure it out," said Lori, "but no more fish stories for me!"**

Have students show Lori's 15 blocks on their place mats:

Tens	Ones
	

Ask, How can we show 3 times as many? How would we write the problem with numbers?

- Have students describe and then add two more sets of 15 blocks to their mats. To distinguish the 3 sets of 15, have students draw a dry erase marker line or use a string to separate the sets on their mats.

	Tens	Ones
15 blocks →		
15 blocks →		
15 blocks →		

- Have students write the problem with numbers. Be sure students understand the meaning of the digits, numbers, and symbols:
 $3 \times 15 = \underline{\quad}$
- Display a copy of "Fish Story" Activity Sheet 1 to give an example of how students may record what they are doing with the blocks.

Have students describe the blocks. Sketch, or have a student sketch, the blocks on the activity sheet.

- Students will likely describe the 3 blocks-of-ten, or (3×10) , and the 3 sets of 5 single blocks, or (3×5) . If not, help students identify these parts.
- Repeat students' words in describing these parts. For example, say, **So what you're telling me is that 3×15 looks like 3 10's and 3 5's, or 3×10 and 3×5 ?**
- Have students remove the strings or lines and describe the blocks as 3 tens (or 30) and 15 ones, or $30 + 15$.
- Help students make the connection between multiplication and repeated addition: three groups of 15 is the same as 3×15 .

Ask, How many blocks does Brad claim to have? (45)

Ask, How can I show this with digit cards?

- Students should be quick to anticipate packing ten singles to make a block-of-10 and setting the digit cards to show the final product, 45.
- Have a student volunteer show how this packing and moving can be recorded on the activity sheet.
- The final product is 45 - That's a lot of blocks!

Ask, **How could we show what we did with numbers?**

- Have students suggest how they can represent what they did with the blocks to solve 3×15 . Guide students, as they share algorithms.
- Students may express partial products and then name the sum. Some *possible* algorithms may look like these:

$$\begin{aligned}
 15 + 15 + 15 &= \\
 (10 + 10 + 10) + (5 + 5 + 5) &= \\
 30 + 15 &= 45
 \end{aligned}$$

$ \begin{array}{r} 15 \\ \times 3 \\ \hline 30 \\ + 15 \\ \hline 45 \end{array} $	15	$ \begin{aligned} 3 \times 10 &= 30 \\ 3 \times 5 &= 15 \\ 30 + 15 &= 45 \end{aligned} $
---	-------------------------------------	--

$$\begin{aligned}
 3 \times 15 &= \\
 3 \times (10 + 5) &= \\
 (3 \times 10) + (3 \times 5) &= \\
 30 + 15 &= 45
 \end{aligned}$$

- Be sure to connect each part of a student's written recording with the model he or she drew or made with blocks.

Activity

(10 -15 minutes)

Provide materials to pairs of students with Activity Sheet 1, "Fish Story," and have them begin creating a story problem by filling in the blanks.

- Brainstorm ideas for the story problem.
- Assign appropriate 2- or 3-digit number to pairs of students. For students who find this activity difficult, consider choosing a number that would not require regrouping. For students who need a challenge,

choose a 2-digit or 3-digit number that will require regrouping when multiplied by three. Students could also “chance it” and use numbers on a spinner or die.

- Have students record what they do on the activity sheet, showing the sets of blocks before and after they are packed.

Give each pair Activity Sheet 2, “Here’s the Fish Story . . . Told with Numbers,” and have pairs record what they did with numbers.

- Tell students NOT to write their names on the front of their Activity Sheet 2; they may do so on the back of the paper if they wish.

Closure

(15 minutes)

As students are finishing up, collect the two activity sheets from each pair. Put 3 exemplary pairs aside to use for discussion. If it is possible to make transparencies of the pairs, they would work nicely for the following discussion.

Bring the whole class together. Display the 3 selected Activity Sheet 1 stories/drawings for the class to study.

- Say, **I need your help matching these fish stories and drawings to the numbers that go with them.**
- Shuffle the matching three Activity Sheet 2 papers and place them randomly around the pictures.
- Have students think about the matches independently, then discuss their ideas quietly with classmates.
- Invite students to discuss their reasons for matching drawings to numbers. Pay special attention to the numbers and how they show what happens in the drawing.

At a later time, continue with the matching activity. Some students may want to refine their algorithm after seeing examples of classmates’ work. Strongly encourage them to do so.

Assessment

During the Introduction, do students -

- Understand the multiplication situation and model the problem accordingly?
- Pack and find the product accurately?
- Contribute ideas for connecting the model/drawing with numbers?

As students are working in pairs, do they -

- Draw a picture to show the sets of blocks before and after they are packed?
- Name the product?
- Express what they have done with numbers?
- Describe how their numbers and operation signs connect to their block drawings?

Use the activity sheets to assess students' progress in developing an algorithm for multiplication. Because this is a pair activity, it may be necessary to have some students repeat it independently in order to more accurately judge their level understanding.

Extensions

- Mix up and display the remaining activity sheets on a bulletin board, so passersby can practice matching "written and drawn" stories with "number" stories.
- Have student write and solve a fish story involving a multiplier other than three. Provide larger sheets of paper for drawings, if necessary.

Fish Story

_____ told Brad he counted _____.

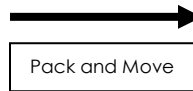
"That's nothing," said Brad, "I have *three times* as many!"

_____ asked doubtfully, "Just how many is THAT?"

Brad got pretty red in the face.

"I'll help you figure it out," said _____, "but no more fish stories for me!"

Hundreds	Tens	Ones



Hundreds	Tens	Ones

□ □ □

Here's the Fish Story . . .

Told with Numbers!

Use *numbers* to show how you figured out the answer to your fish story.

Here's the Fish Story . . .

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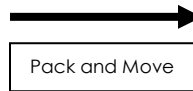
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