One Is a Snail - Part Two

3^{rd} and 4^{th} grade students work with all four operations as they complete activities based upon the read-aloud book *One Is a Snail, Ten Is a Crab*

Grade Level: $3^{rd} - 4^{th}$

Topics: de-composing numbers up to 100, properties of numbers, double-digit addition and subtraction, multiplication, writing numerical equations using addition and multiplication, exploring the relationship between multiplication and division, understanding the meaning of remainders in division, factors and multiples, number patterns

Common Core Math Standards:

3.OA.1	3.OA.6	4.OA.1
3.OA.2	3.OA.8	4.NBT.2
3.OA.4	3.OA.9	4.NBT.4
3.OA.5		

Standards for Math Practice:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
4. Model with mathematics.
5. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Goals:

- Students will use a variety of strategies for adding and subtracting double digit numbers.
- Students will understand the relationship between multiple addition and multiplication.
- Students will be able to use the commutative and associative properties of addition and multiplication.
- Students will be able to write division equations given multiplication equations.
- Students will be able to find missing factors, addends, sums, or products given an equation with a variable.
- Students will be able to compare numbers using inequality symbols.
- Students will be able to divide a number by a single digit divisor.
- Students will be able to write numerical equations that use more than one operation.

Materials:

- *One Is a Snail, Ten is a Crab* by April Pulley Sayre and Jeff Sayre - one or more copies
- counters for each pair of students (pennies, buttons, blocks, etc. - up to 100)
- number cards - one per group of four students with numbers between 80 and 100 (or higher)
- 100 charts
  - one large copy for class
  - one small copy per student

- multiplication charts
- student activity sheets:
  - *How Many Feet Are on the Beach?*
  - *50 Feet Are on the Beach*
  - *Mystery of the Missing Number*
  - *What Did Diego Count?*
- large sheets of manila paper or poster board
- markers, crayons, or colored pencils
- large chart paper
- scotch tape
- sticky notes
- 3" $\times$ 5" index cards
- *OPTIONAL*:
  - clipboards
  - magnets (to use as counters for the board)

Preparation Time: 30 minutes

Activity Time: 7 lessons (approximately 55 minutes per lesson)

Additional Resources:
Interactive computer games from NCTMs Illuminations are available at:
illuminations.nctm.org/Activities.aspx?grade=2

- *Deep Sea Duel* - a strategy game that requires you to select cards with a specified sum
- *Factorize* - dividing numbers into 2 factors and building arrays
- *Factor Game* - identify factors and challenge an opponent
- *Product Game* - exercise factor and multiples skills
- *Quotient Caf* - divide using the method of partial quotient
- *Times Table* - an interactive times table

Reference:

Van de Walle, Karp and Bay-Williams, Elementary and Middle School Mathematics: Teaching Developmentally, Allyn & Bacon, 2010, chapters 9 and 10.

Lesson Plans

NOTE: Be sure to keep charts and student posters from each lesson, as you will be using them in following lessons.

Lesson One: Students will de-compose numbers and re-write multiple addition using multiplication. Students will explore the commutative property of addition and multiplication.

Materials:

- *One Is a Snail, Ten Is a Crab* book
- *How Many Feet Are on the Beach?* activity sheet
- counters (20 per pair of students)
- chart paper
- pencil and paper for each student
- counters, such as magnets, for the overhead or the board (*optional*)

Lesson Plan

Have students work with a partner for this activity.

Show students the cover of the book *One Is a Snail, Ten Is a Crab* and invite students to discuss what they notice about the picture and what the title might mean.

Read the first page that explains that 1 is the number of feet that a snail has. Have students predict what 2 might be. Show the page that explains that 2 is a person. Put two counters on the overhead or the board using magnets. Say, "two groups of one is the same as one group of two."

Ask students to predict what 3 will be. After they talk with their partners, have students share their ideas. Some ideas may be "three snails," "a snail and a person," or "a person and a snail." As these are being said, write the numerical equations on the chart paper. Emphasize that $1 + 2$ is the same as $2 + 1$. The equation could be:

$$1 + 1 + 1 = 1 + 2 = 2 + 1 = 3$$

Read aloud from the book that 3 is (the number of feet of) a person and a snail and 4 is (the number of feet of) a dog. Ask students to consider what else 4 could be. Write their ideas as an equation again. Once again emphasize that the order of the terms will not change the sum.

$$1 + 1 + 1 + 1 = 2 + 2 = 2 + 1 + 1 = 1 + 2 + 1 = 4$$

Have students predict what 5 might be. Once again, have students discuss ideas with their partners using counters to decompose the number 5. Students might say "5 snails," "2 people and a snail," "a dog and a snail," etc. Write the numerical equations on the chart paper as shown above.

Also state that "five groups of one is the same as one group of five."

$$1+1+1+1+1=1+2+2=2+2+1=4+1=5$$

After reading that "6 is an insect," ask students what else 6 could be. Write equations as shown above for this number. Continue challenging students to de-compose numbers 7−10.

Go back to the first equations, and introduce (or for 4th graders, review) the use of multiplication. Below the equation, write $3 \times 1 = 1 + 2 = 2 + 1 = 1 \times 3$.

Work with the class to re-write the equation for 4 using multiplication. Have students work with their partners to re-write the equations for 5−10 using multiplication. Have students compare their work with other teams.

Hand out 20 counters to each pair of students.

When the story says, "20 is two crabs," write, "two groups of ten; $20 = 2 \times 10$" on the chart. Have each team of students find two ways to have 20 feet on the beach. Invite students to show one idea using counters to demonstrate how they split the number 20. For example, 5 dogs would be 5 groups of 4 counters. 8 people and a dog would be 8 groups of 2 and one group of 4. With pencil and paper, students should use words, draw pictures, and write numerical equations to show the 20 feet on the beach.

Hand out the activity sheet *How Many Feet Are On The Beach?* Have students work independently for several minutes and then compare their work with a partner and complete the task.

Gather the class together and have students explain their strategies. Accept all reasonable ideas. If students have not discussed expanded notation, demonstrate an example. In problem E, for instance, $28 + 26 + 40 = 94$ could be written as $20 + 8 + 20 + 6 + 40 = 80 + 14 = 94$.

How Many Feet Are on the Beach?

Write an equation for each description listed below. Find the total number of feet that are on the beach. Show your work and be ready to explain your thinking!

A. There are 3 dogs, 15 people, and 1 crab on the beach. How many feet are on the beach?

B. You counted 2 insects, 5 snails, and 10 dogs on the beach. How many feet did you count on the beach?

C. There are 3 dogs, 3 people, and 2 spiders on the beach. How many feet are on the beach?

D. You counted 6 snails, 3 insects, 4 crabs, and 5 dogs on the beach. With you and your sister included, how many feet did you count on the beach?

E. There are 7 dogs, 13 people, and 4 crabs on the beach. How many feet?

How Many Feet Are on the Beach?

Write an equation for each description listed below. Find the total number of feet that are on the beach. Show your work and be ready to explain your thinking!

A. There are 3 dogs, 15 people, and 1 crab on the beach. How many feet are on the beach?

$$\mathbf{3 \times 4 + 15 \times 2 + 1 \times 10 = 12 + 30 + 10 = 52}$$

B. You counted 2 insects, 5 snails, and 10 dogs on the beach. How many feet did you count on the beach?

$$\mathbf{2 \times 6 + 5 \times 1 + 10 \times 4 = 12 + 5 + 40 = 57}$$

C. There are 3 dogs, 3 people, and 2 spiders on the beach. How many feet are on the beach?

$$\mathbf{3 \times 4 + 3 \times 2 + 2 \times 8 = 12 + 6 + 16 = 34}$$

D. You counted 6 snails, 3 insects, 4 crabs, and 5 dogs on the beach. With you and your sister included, how many feet did you count on the beach?

$$\mathbf{6 \times 1 + 3 \times 6 + 4 \times 10 + 5 \times 4 + 2 \times 2 = 6 + 18 + 40 + 20 + 4 = 88}$$

E. There are 7 dogs, 13 people, and 4 crabs on the beach. How many feet?

$$\mathbf{7 \times 4 + 13 \times 2 + 4 \times 10 = 28 + 26 + 40 = 94}$$

Lesson Two: Students explore number patterns with multiples of 2, 4, 6, 8, and 10. Students work with the relationship between multiplication and division and are introduced to the vocabulary word *multiple*.

Materials:

- *One Is a Snail, Ten Is a Crab* book (one or more copies)
- counters (40 per team of students)
- charts from *Lesson One* chart paper
- small 100 chart for each student
- large 100 chart for the classroom
- paper and pencil
- 3"$\times$ 5" index cards
- colored pencils or crayons (*optional*)

Lesson Plan

Hand out 100 charts to each student and hang the large 100 chart in front of the class. Each student should have a pencil. Invite students to count aloud by 2s using the 100 charts as a guide. Have students circle all the multiples of two (in red, if you have colored pencils) and share their observations about these numbers. For example, students may notice that all of the multiples of two are even. Make a chart that lists the multiplication facts for 2 up to 2×10: $1 \times 2 = 2$, $2 \times 2 = 4$, $3 \times 2 = 6$, etc.

Have students count the multiples of four and put an "X" through each number on the 100 chart (or circle using blue). Ask students to observe any patterns for these numbers and make note of common multiples of 2 and 4. Make a multiplication fact chart for 4's. Repeat this with multiples of 6, 8, and 10 (each time making a different shaped mark or using a different color).

Continue *One Is a Snail, Ten Is a Crab* from "30 is three crab... or ten people and a crab." Have students write an equation for 30 feet. One idea may be: $3 \times 10 = 10 \times 2 + 10$.

Put students in teams of 3 or 4. Ask the following questions, "Could there be 30 feet if all youre counting is dogs? Could 30 feet be all people? Could it be all spiders or insects?" Invite teams to use counters, the 100 charts and/or the multiplication facts to help them. Have students share their conclusions. Discuss the idea that 30 is a multiple of 2 and 10, but it is not a multiple of 4, 6, or 8.

Hand out 40 counters to each team. Read aloud, "40 is four crabs... or ten dogs." Have students divide the counters to show the crabs. Discuss their strategies. Write the following on a chart:

$$40 = 4 \times 10 \quad 40 \div 10 = \square \quad 40 \div 4 = \square$$

Ask students what numbers should be written in each blank space after they discuss it with their teams. Have students talk about what the numbers in each equation mean. In the first division problem, students have 40 feet to divide. They know that each crab needs 10 feet, so

they "take away" 10 feet for each crab until they see that they have 4 groups of 10. In the second problem, students have 40 feet to divide among 4 crabs which means that each crab must have 10 feet. This is a partitioning view of division (or fair sharing). Have each team use the 40 counters to determine whether or not 40 feet could be counted if there are only people, only insects, or only spiders. When teams discover that 40 feet is not a multiple of 6 , but is a multiple of 2 and 8, have the class describe the correct division equations and what they mean. Write the multiplication and corresponding division equations on the 40 chart.

Have teams work together to think of combinations of animals that would have a total of 40 feet. Each team should write the ideas in words and then write an equation on a 3"$\times$ 5" card. Have teams exchange their cards and verify each others work. After two exchanges, collect the cards and have students use their 100 charts to "add up" the total number of feet. For example, if one card says 3 crabs and 5 people, have students count: "10, 20, 30, 32, 34, 36, 38, 40." Also, verify the equation. If the students wrote $3 \times 10 + 5 \times 2 = 40$, write $30 + 10 = 40$.

Lesson Three: Students build arrays with counters, learn the term factor, and explore the relationship between division and multiplication.

Materials:

- counters (50 per pair of students)
- overhead counters or magnets or chart paper (to demonstrate arrays)
- charts from *Lessons One and Two*
- chart paper
- 3" × 5" cards prepared with various numbers of animals (5 dogs, 12 people, 6 insects, 10 crabs, etc.)
- paper and pencil for each student
- 100 chart for each student
- multiplication chart for each student

Lesson Plan

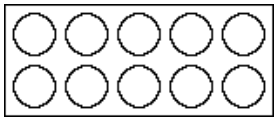
As a warm up, tell the class that you are going to hold up a card with a number of animals and that they should shout out the number of feet that there would be walking on the beach. Allow students to reference the multiplication charts as well as their 100 charts for this task.

Have students work with a partner for the next activity. Each pair should be given a bag of 50 counters. Students should take 10 counters from the bag to represent 10 feet. Ask them how many snails would make 10 feet. When they answer "10," have the teams arrange the counters to show the 10 snails. Demonstrate an array by using magnets, an overhead with counters, or by drawing a picture as shown below:

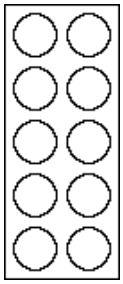
1 row of 10 counters represents an array that shows $1 \times 10 = 10$ and that means that $10 \div 1 =$ $\square$ and $10 \div 10 =$ $\square$.

Have students work with a partner to build an array that shows the number of people that would have 10 feet. Students may build arrays that have 5 rows of 2, or 2 rows of 5. Draw the pictures (or use counters) and write $5 \times 2 = 10$ and $2 \times 5 = 10$ for each array.

$5 \times 2 = 10$



$2 \times 5 = 10$



Have students write the division equations that relate to each array.

Ask students if they can arrange the 10 counters in any other arrays. After students try and find that it cannot be done, explain that the only factors of 10 are 1, 2, 5, and 10. Have students discuss a meaning for the word factor with their partners.

Have students take out two more counters and build as many different arrays as they can with the counters. Encourage teams to find more than one way to build an array. Create a 12 chart with all the multiplication sentences demonstrated by the arrays and ask students to list the factors of 12.

Have each partner take out 24 counters from the bag. Partners should work together to find as many different arrays as they can with the counters. Each student should then draw the arrays and write the multiplication and division equations for each picture and list the factors of 24. Listed below are all possible arrays:

$$1 \times 24,\ 24 \times 1,\ 2 \times 12,\ 12 \times 2,\ 3 \times 8,\ 8 \times 3,\ 4 \times 6, \text{ and } 6 \times 4.$$

Lesson Four: Students continue to explore arrays and factors and write equations using addition and multiplication.

Materials:

- *One Is a Snail, Ten Is a Crab* book (at least one)
- counters (50 per pair of students)
- charts from *Lessons One* through *Three*
- chart paper
- 100 charts (for students)
- multiplication charts
- 3" × 5" index cards with various numbers between 80 and 100 (or higher depending on skill level of students)
- *50 Feet on the Beach* activity sheets
- poster board or large sheets of manila paper
- markers, crayons, or colored pencils

Lesson Plan

Read aloud from *One Is a Snail, Ten Is a Crab* beginning with "50 is five crabs..." and continuing until the book is completed. Discuss factors as you are reading the story. For example, "if 60 is six crabs, then six is a factor of 60 and 10 is a factor of 60." Write the equations for the books ideas as you are reading aloud.

After completing the story, have students work with their partner and use their 50 counters to find all the factors of 50 and build arrays.

Students will discover that 50 has the factors 1, 2, 25, and 50. Ask students, "Could you count 50 feet on the beach if there are only dogs? Only spiders? Only insects?" Have students explain why not and accept all reasonable explanations.

Tell students that they will be trying to find combinations of animals to have a total of 50 feet on the beach. Hand out the activity sheet *50 Feet Are on the Beach* and have students work independently for five to ten minutes before discussing their ideas with their partner. After partners have completed the activity, have teams exchange their work and challenge them to verify that each equation written is correct.

Bring the class together and have students explain their strategies for writing their equations. List these strategies on chart paper. Have each team share one equation that they wrote, how they know it is correct, and write it on the board.

For the next task, place the class into teams of 3 or 4. Each team should have poster board or a large sheet of manila paper, markers (or crayons/colored pencils), an 3" × 5" index card with a number between 80 and 100 written on it, and a copy of *One Is a Snail, Ten Is a Crab* (optional), as well as access to 100 charts, counters, and multiplication charts. Each team should write the

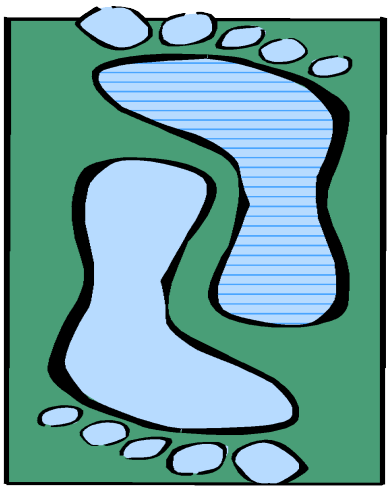
number in the center of the paper. Their task is to find as many combinations of animals as possible for the number of feet written in the center of the paper. Teams should include pictures and words for this task as well as numbers. Each team should write at least four equations. For example, if a teams number is 87, they could have 4 crabs, 10 dogs, 1 insect, and 1 snail and the equation:

$$4 \times 10 + 10 \times 4 + 6 + 1 = 40 + 40 + 6 + 1 = 80 + 7 = 87$$

Circulate the room to listen for strategies. After this task is complete, hang each poster on the wall.

For a concluding activity, students will need their 100 charts. You will read clues to a number riddle and students will try to find the total number of feet after you read each clue. After each riddle, discuss strategies and demonstrate them on the large classroom 100 chart. One riddle is shown below:

- start with the number of feet of 10 people **(20)**
- add the number of feet of 2 dogs **(28)**
- subtract the number of feet in one crab **(18)**
- add the number of feet in one insect **(24)**
- add the number of feet in 3 crabs **(54)**
- subtract the number of feet in 5 snails **(*the final answer is* 49)**



50 Feet Are on the Beach!

What animals do you see?

Find different groups of animals that could put 50 feet on the beach. Write the number of animals and the equation next to each beach towel below. The first one is doen for you as an example. You may use your counters and your 100 chart to help you. Have fun!

Large 5 people and 10 dogs have 50 feet on the beach.

$5 \times 2 + 10 \times 4 = 10 + 40 = 50$

Lesson Five: Students participate in a carousel activity to write more equations, write inequalities and create a problem to challenge classmates.

Materials:

- posters from *Lesson Four* hung around the room
- 3" × 5" index cards hung under each poster (3 or 4 per poster)
- sticky notes (5 or 6 per team of students)
- pencil and paper
- markers, crayons, or colored pencils
- blank chart paper
- charts from all *Previous Lessons*
- clipboards (*optional*)

Lesson Plan

Note: Prior to this lesson, review the accuracy of each equation and make note of any errors or concerns.

Place students in the same groups as *Lesson Four*. Each team should have a set of sticky notes, and each student should have paper and pencil. Explain that teams will be rotating around the room in a carousel activity. Each team must add one more equation for the number of feet on the poster using the 3" × 5" index cards as well checking the accuracy of the equations written on the poster. If any errors are discovered, a note should be written on the sticky note and attached to the poster. Discuss the expectations of behavior for this task and have students begin.

After 30 minutes, or after each team has worked on at least 3 other posters, bring the class together and walk from poster to poster discussing a) additional equations and b) any sticky notes of concern.

Give each student a 3" × 5" index card and tell them that they will be challenging classmates in the next activity. Each student should make a hamburger fold of the card. On the outside of the card, students should list numbers and types of animals. On the inside of the card, students should write the total number of feet. For 4th graders, the teacher may stipulate that the number must be no less than 90. An example is shown below:

12 people
11 dogs
41 snails
1 crab

The total number of feet is 119.

Students will exchange cards and see if they can correctly determine the total number of feet. The teacher will collect the challenge cards and review them as students work independently later in the lesson.

List several of the numbers used on posters and in the challenge on chart paper. Ask students to select two of them and write an inequality using the symbols. Help students read the sentences

correctly. If the inequality is $119 > 85$, students should say, "One hundred nineteen is greater than eighty five." Have students look at several of the equations written on previous charts. Help students to compare two multiplication expressions with each other. As an example, students could write that $4 \times 10 < 5 \times 10$. Discuss how students know that each inequality is true. Encourage students to think about the meaning of multiplication and place value as they explain their thinking.

Have students work with a partner to write as many inequalities as they can in ten minutes. After ten minutes, each team will take turns reading aloud one inequality as the teacher writes it. If the class agrees that the inequality is true, they shout, "We agree!." Continue until no inequalities remain.

After reviewing the challenge cards, select five to read aloud to the class. Have students help you write the equation for the problem. In the example above, the equation might be:

$$12 \times 2 + 11 \times 4 + 41 + 10 = 24 + 44 + 41 + 10 = 68 + 51$$

Discuss strategies to make the addition easier such as expanded form, i.e. $68 + 51$ is the same as $60 + 50 + 8 + 1$ which equals 119.

Lesson Six: Students demonstrate an understanding of the equal sign as they find missing numbers for equations using multiple operations. Students also solve an open-ended problem using a variety of strategies.

Materials:

- *One Is a Snail, Ten Is a Crab* book
- student activity sheets:
  - *Mystery of the Missing Number*
  - *What Did Diego Count?*
- charts from all *Previous Lessons*
- counters (*optional*)
- 100 charts (*optional*)

Lesson Plan

Re-read the entire book *One Is a Snail, Ten Is a Crab.*

Write the following equation on the board:

$$4 + 8 \times 10 = 88 - \triangle$$

Have students think about the number that should replace the triangle to make the equation true. Have them share their idea with a nearby neighbor and then discuss the solution with the class. Write all the ideas that students give and determine which, if any, are correct after asking students to verify that each side of the equal side has the same value. It may be helpful to circle each side of the equal sign and find the value. The correct solution is 4, because $4 + 8 \times 10$ is 84 and $88 - 4$ is also 84 and $84 = 84$.

Each student will work independently on *Mystery of the Missing Number* for 5 to 10 minutes and then share their ideas with a partner. Bring the class together and discuss the results.

Form teams of 3 or 4 for to complete *What Did Diego Count?*. Students will solve an open-ended problem and show their solutions with pictures, sentences, and numbers. Teams will present their results to the class and explain their strategies for finding a solution. Each member of the team must be ready to explain their work. Make a chart of the correct student answers.

By the end of the class, the chart will contain all possible correct answers. It is best if you can anticipate where each student answer will end up when the chart is complete and alot the appropriate amount of space between answers. After you've posted all student answers, help students complete the chart. For example, if you had three groups of students and they had the following three answers: (1) 13 crabs and 1 dog, (2) 9 crabs and 11 dogs, (3) 1 crab and 31 dogs; your chart should look like this:

13	**crabs**	**and**	**1**	**dog**
11	crabs	and	6	dogs
9	**crabs**	**and**	**11**	**dogs**
7	crabs	and	16	dogs
5	crabs	and	21	dogs
3	crabs	and	26	dogs
1	**crabs**	**and**	**31**	**dogs**

where the bold faced rows are answers given by students and written first. The other rows are answers found with the help of the teacher and are written after all the student answers.

As answers are being posted, students may notice that if there are 2 fewer crabs, there are 5 more dogs. Ask students to explain why this is true. Also, ask students to explain why there could not have been 10 crabs that Diego counted.

The Mystery of the Missing Number!

Can you find the number to place in the box that will correctly complete each equation?

A) $20 - \square = 3 \times 6 - 2$

B) $5 \times 10 + 4 \times 11 = 70 + \square$

C) $65 + \square = 8 \times 5 + 40$

D) $20 + 30 + 80 - 30 = 71 + 35 - \square$

The Mystery of the Missing Number!

Can you find the number to place in the box that will correctly complete each equation?

A) $20 - \square = 3 \times 6 - 2$

$\square = \mathbf{4}$

B) $5 \times 10 + 4 \times 11 = 70 + \square$

$\square = \mathbf{24}$

C) $65 + \square = 8 \times 5 + 40$

$\square = \mathbf{15}$

D) $20 + 30 + 80 - 30 = 71 + 35 - \square$

$\square = \mathbf{6}$

What Did Diego Count?

Diego was swimming at the beach and saw dogs and crabs on the sand. He counted 134 feet. How many dogs and crabs did he see on the beach? Show all your work in the space below. Draw pictures, explain your answer in sentences and write an equation too.

What Did Diego Count?

Diego was swimming at the beach and saw dogs and crabs on the sand. He counted 134 feet. How many dogs and crabs did he see on the beach? Show all your work in the space below. Draw pictures, explain your answer in sentences and write an equation too.

All of the following are acceptable answers:

13 crabs and 1 dog

11 crabs and 6 dogs

9 crabs and 11 dogs

7 crabs and 16 dogs

5 crabs and 21 dogs

3 crabs and 26 dogs

1 crabs and 31 dogs

Lesson Seven: Students work with division and explore the meaning of remainders and the relationship between division and multiplication.

Materials:

- counters (50 per pair of students)
- chart paper
- paper and pencil for students
- multiplication charts from *Lesson Two*
- 3"$\times$ 5" index cards
- large 100 chart for the class
- small 100 charts with multiples from *Lesson Two*
- poster board or large manila paper
- markers, crayons, or colored pencils

Lesson Plan

Each pair of students should have a bag of 50 counters. For the first task, have students remove 31 counters and place them in a pile. Tell students that these counters represent the number of feet that were counted. Ask students, "Could there have been 10 dogs that someone counted?" Students should quickly answer, "NO," because they know that $4 \times 10 = 40$. Ask students to use the counters to find out if someone could have counted the feet of 8 dogs and found the number 31. Observe how students approach the task. Students should notice that they cant make 8 full groups of 4 out of 31 markers. Instead, they can form 7 equal groups of 4 and one group of 3. On chart paper, write all three styles of division:

$$31 \div 4 = 7 \text{ r3} \qquad \begin{array}{r} 7 \text{ r3} \\ 4 \overline{)\ 31} \\ \underline{28} \\ 3 \end{array} \qquad \frac{31}{4} = 7 \text{ r3}$$

Have students explain the division problem to their partner. Students should be able to identify that 31 is the total number of feet, 4 is the number of feet on one dog and 7 is the total number of dogs. Write the equation $31 = 7 \times 4 + 3$ and have students describe what the equation means. Refer to the multiplication chart for 4 and have students observe that a multiple of 4 that is close to 31 but not over is 28.

Continue this with insects, spiders, and crabs. Each time, write all three types of division notation, read them with the students and write related multiplication equations. Have students use the multiplication charts to find multiples that will help them determine the amount of equal groups that they can make.

Each pair of students should write a number between 20 and 50 on a 3"$\times$ 5" index card. Collect the numbers and randomly select one at a time. Students should place that many counters on the desk and find the quotient when the number is divided by 4, 6, 8 and 10.

Partners should help each other write the division and multiplication sentences. After several numbers, share results as a class. For example, if the number is 43, students could have written:

$$43 \div 4 = 10 \text{ r}3 \qquad 43 = 4 \times 10 + 3$$

Invite students to share their observations about the divisibility of certain numbers. Some observations might be: a) only numbers that end in zero can be divided by ten and have no remainder; b) if a number is odd, and you divide it by 4, it will have a remainder; or c) all numbers that can be divided by 8 without remainder can also be divided by 4 without a remainder.

Using the large 100 chart, have students help find multiples of 3, 5, 7, and 9 and have students mark them on their 100 charts (students may need a new 100 chart depending on how messy the first one is). Make multiplication fact charts for those numbers.

Continue with the numbers students wrote on 3"$\times$ 5" index cards and have students try division by 3, 5, 7 and 9 as done above.

Extension: Have students work independently to draw a picture to represent one division problem. Their work should include sentences to explain the picture as well as numerical equations.

Suggested problems: A) $55 \div 7$ B) $53 \div 9$ C) $50 \div 8$ D) $47 \div 10$ E) $52 \div 3$