One Is a Snail - Part One

The charming read aloud book *One Is a Snail, Ten Is a Crap* provides inspiration to 1st and 2nd graders. Students expand their number sense when they find possible combinations of numbers to create the given sum of animal feet.

Grade Level: $1^{st} - 2^{nd}$

Topics: de-composing numbers up to 20, addition, subtraction, number patterns, writing numerical equations, using objects to demonstrate numerical relationships, adding up to 100, exploring the relationship between addition and subtraction.

Common Core Math Standards:

1.OA.1	1.NBT.2	2.OA.1	2.NBT.5
1.OA.2	1.NBT.4	2.OA.2	
1.OA.3	1.NBT.5	2.OA.3	
1.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 develop strategies for adding and subtracting whole numbers using a variety of models.
- Students will improve their fluency with adding within 10 and 20.
- Students will generalize methods to add within 100 and work with multiples of ten.
- Students will be able to compare numbers and write numerical equations.
- Students will recognize odd or even numbers.
- Students will understand the meaning of an equal sign.

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 50)
- number cards - one per group of four students with numbers between 60 and 100
- magnets - to use as counters for the class
- large sheets of manila paper or poster board
- glue or scotch tape
- markers or crayons
- large chart paper
- post-it notes

- 3"×5" index cards
- 100 charts
  - one large copy for class
  - one small copy per student
- *50 Feet Are on a Beach* student activity sheet
- *OPTIONAL*:
  - large bowl or hat from which to draw cards
  - chart with rules for a carousel activity

Preparation Time: 30 minutes

Activity Time: 4 lessons (approximately 55 minutes per lesson)

Additional Resources:
Interactive computer games from NCTMs Illuminations are available at:
illuminations.nctm.org/Activities.aspx?grade=1

- *Ten Frame* - practice counting and adding by 10's
- *How Many Under the Shell?* - explore addition and subtraction
- *Grouping and Grazing* - counting, adding, and subtracting by grouping cows
- *Okta's Rescue* - counting and subitizing by playing a game
- *Concentration* - match equivalent expressions
- *Electronic Abacus* - exploring an abacus model with groups of ten

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 explore a variety of ways to de-compose numbers 1 to 20.

<u>Materials:</u>

- bags of 20 counters
- 20 magnets for the board
- chart paper and marker
- *One Is a Snail Ten Is a Crab* book
- small white boards or pencil and paper for each student

<u>Lesson Plan</u>

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.

Hand out the counters to each pair of students.

Ask students to predict what 3 will be. They should use the counters to help them consider the possibilities. After they talk with their partners, have students share their ideas: "three snails," "a snail and a person," and "a person and a snail," etc. As these are being said, write the numerical equations on the chart paper. Emphasize that $1 + 2$ is the same as $2 + 1$.

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

Read aloud from the book that 3 is a person and a snail and 4 is 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.

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

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 for their ideas on the chart paper, as shown above.

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

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.

When the story says, "20 is two crabs," have each team of students find two ways to have 20 feet on the beach. Invite students to show one idea using the magnets on the board to demonstrate how they split the number 20. For example, 5 dogs would be 5 groups of 4 magnets on the board. 8 people and a dog would be 8 groups of 2 and one group of 4.

Have students write the numerical expression for the displays on the board. Students may use small white boards, or pencil and paper.

Discuss the idea of odd or even as the book is being read. Have students make observations about the differences between the odds and evens and help them connect to the idea that even numbers can always be made into groups of two without any leftover. Have them speculate what the even numbers are between 10 and 20 and have them experiment with their counters. On another chart paper, have students help you list the odd and even numbers from 1−20.

Lesson Two: Students use a 100 chart to notice numerical patterns as they count "feet" from 30 to 100, and to help them count and add.

<u>Materials:</u>

- large 100 chart for classroom
- 100 charts for each student
- charts from *Lesson One*
- *One Is a Snail, Ten Is a Crab* book
- paper and pencil for each student
- magnets

<u>Lesson Plan</u>

Have students work with a partner for this lesson.

Invite students to discuss the meaning of the equations on the chart from lesson one. Have students discuss them with their partner and then discuss them as a whole class. Ask students if they can determine the even and odd numbers from 20 to 30. Have students explain their reasoning and add these numbers to the even and odd chart.

Hand out 100 charts to each student, and tell them that there is more to read in the book. Begin the book with "30 is three crabs...or ten people and a crab." Write those numerical equations on the equations chart and have students use the 100 chart to count the ten people and a crab. Have students follow along as you count by 2's to 20 and then add 10 to equal 30. As you count, you may want to say "one person" and point to the number 2, "two people" and point to the number

4, and then have the students join in until you have said "ten people." Invite students to discuss patterns they observe when counting by 2's and 10's.

Continue writing equations and counting with the 100 chart for 40−90. Ask students whether or not these numbers are odd or even and add them to the chart.

Note: When looking at the book illustrations for 20, 40, 60, and 80, encourage students to notice the groupings. 2 groups of 10 is the same as 10 groups of 2; 4 groups of 10 is the same as 10 groups of 4, etc. Demonstrate this with magnetic counters.

At "100 is ten crabs or, if youre really counting slowly...," have students predict the illustration of the last page. Ask them to find out if it could be all dogs, all people, all insects or all spiders using their 100 charts. Have students work with their partners to decide the answer. Discuss the teams conclusions as a whole class and have students explain their reasoning. As a whole group, use the 100 chart to determine that 100 could be 50 people, or 25 dogs, but that it couldnt be all insects or all spiders.

Turn to the last page of the book which shows... ALL snails. Count them with the class.

Lesson Three: Students work with a partner to complete an activity sheet that has them creating addition equations. Students work with multiples of a number.

<u>Materials:</u>

- *50 feet on the beach* student activity sheet

- large chart paper

- charts from *Lessons One and Two*

- 50 counters per pair of students

- *One Is a Snail, Ten Is a Crab* book

<u>Lesson Plan</u>

Read aloud the entire book *One Is a Snail, Ten Is a Crab*. On chart paper, list all the animals in the book and their number of feet.

Have students work with a partner. Each pair should have a bag of 50 counters. Create a chart with the number 50 at the top. Underneath this, write 5 people and 10 dogs. Ask students to work with their partner to determine whether or not this would be 50 feet on the beach. When students are done and agree that this would be 50 feet, ask them, "How many feet do 5 people have?" and when students say, "10," write this under 5 people. Then ask, "How many feet do 10 dogs have?" When students say, "40 feet," write this under 10 dogs. The chart would look like this:

<div align="center">

50

5 people	and	10 dogs	equal	50 feet
10	+	40	=	50

</div>

Explain to students that they are going to work with their partners to find other combinations of animals that can make 50 feet on the beach. They are allowed to use ANY combinations of animals that they want. They may use counters or the 100 charts to help them.

Give each student a copy of the *50 Feet on the Beach* activity sheet. Read through the directions with the students.

Allow time for students to work as you circulate and observe their discussions and make note of their strategies. When students have completed the activity sheet, have them exchange their paper with another team. Each team should verify whether or not each sentence and equation is true.

Bring the class together and have students share sentences and equations they believe are true. Write these on the 50 chart. Ask students to share the strategies they used to help them complete this task. Some students may talk about looking at what was left over after taking away some counters from their pile of 50. This will lead to adding subtraction equations to the chart. For example, in the chart above, write:

50 feet	minus	5 people	equals	10 dogs
50	−	10	=	40

50 feet	minus	10 dogs	leaves	5 people
50	−	10	=	40

Place two pairs of students together and have them write subtraction equations on their activity sheets as you circulate the room and observe their work.

As a final task, refer back to the read-aloud book *One Is a Snail, Ten Is a Crab* and have students help write addition and subtraction equations for 70 and 90. For example:

Ten insects	and	one crab	equal	70 feet
60	+	10	=	70

70 feet	minus	ten insects	leaves	☐
70	−	60	=	☐

70 feet	minus	☐	equals	ten insects
70	−	☐	=	60
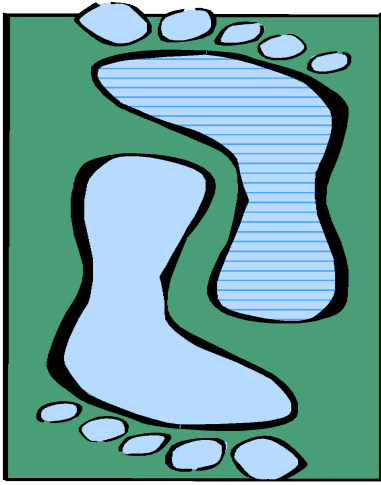
50 Feet Are on the Beach!

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.

$10 + 40 = 50$

Lesson Four: Using various strategies, teams of students find several combinations of numbers that equal a given sum of animal feet between 60 and 100.

Materials:

- 3"×5" index cards with a random number between 60 and 100 one per team (your number choices should depend upon the skill level of students)

- 3"×5" index cards with numbers of animals: 6 people, 3 crabs, 2 insects, 5 dogs, 10 spiders, 11 snails, 4 people, 3 spiders, etc.

- large 100 chart for class

- charts from previous *Lessons*

- large sheets manila paper or poster board

- glue or tape

- large bowl or hat from which to draw cards *(optional)*

Lesson Plan

As a warm up activity, hold up a card with a number of animals. Students shout out the total number of feet. Discuss how they know the answer. Discuss the strategy of using what you know to find unknown amounts. For example, have students use the answers to 2 insects to think about 3 insects or 4 insects and focus on mental math strategies.

Review all the charts from *Lessons One to Three*.

Place students into teams of three or four. Explain that they will be creating a display that should include pictures, words, and numbers. Each team will be given a number of feet on the beach (refer to the activity from *Lesson Three*). Each team will then try to find at least three combinations that will equal that sum. They should use pictures, words, and number sentences for all their ideas. Hand out the number cards or have students draw them from a bowl. Each team should have a large sheet of manila paper or poster board, and markers or crayons. Have each team glue or tape their number in the center of the paper. Circulate the room as teams work and make note of the strategies they use.

A team's poster with two combinations might look like this:

8
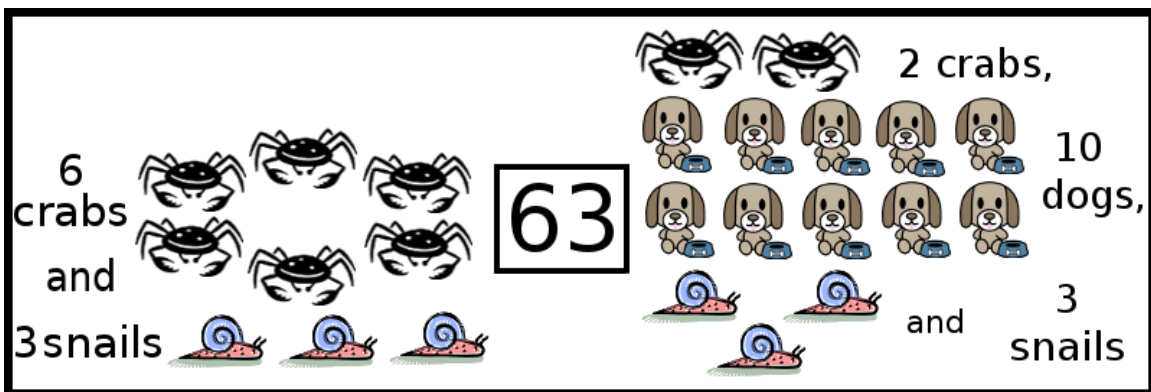
Gather the class and ask them to discuss their strategies for finding correct combinations of numbers. Share your observations of their team work and their process. Explain that in the next lesson, students will be checking each other's work for accuracy.

Lesson Five: Students compare numbers using inequality symbols, evaluate peer work, and write subtraction sentences.

<u>Materials:</u>

- post-it notes (about 10 per team)

- student posters from *Lesson Four* hung around the room

- paper and pencil or small white boards with markers for each student

- chart with rules for a carousel activity (quiet voices, be respectful, stay with your group, etc.) *(optional)*

<u>Lesson Plan</u>

Prior to beginning the carousel activity (see below for explaination), have students compare the numbers on the posters. Ask, "Which team had the largest number?" and "Which team had the smallest number?" Have students write inequalities using the numbers in the center of the posters. For example, $63 < 71$. Make sure that students read this sentence correctly as, "63 **is less than** 71." Have students find numbers around the room and state the inequalities as you write them on chart paper.

Explain that they are now going to walk around the room looking at the work of other teams. Discuss the appropriate behavior for this carousel activity (as indicated by the poster). Each member of the team will have two or three post-it notes to use during this activity. Team members work together to check the accuracy of other team's work. Students should have their 100 charts as well as paper and pencil or small white boards to help them check the work. If the team finds an error, they need to mark it with a post-it note. Students should also write one compliment for each poster and attach it with a note.

Bring the class together and discuss each poster individually. If there are any errors identified, discuss them with the class. Are they incorrect? How did the teams check? What would be correct?

Using the addition sentences that the class created, have students work with their partner to write related subtraction sentences. Have students discuss their equations and write them on chart paper. Ask students if they could write a related addition sentence if they saw a subtraction sentence. On the board write the following subtraction equations:

$$55 - 12 = 43 \qquad 62 - 21 = 41 \qquad 36 - 30 = 6$$

Work with students to elicit the related addition sentences:

$$12 + 43 = 55 \qquad 21 + 41 = 62 \qquad 30 + 6 = 36$$
$$43 + 12 = 55 \qquad 41 + 21 = 62 \qquad 6 + 30 = 36$$

Point out to students that this means that they can also write the following equations:

$$12 + 43 = 43 + 12 \qquad 21 + 41 = 41 + 21 \qquad 30 + 6 = 6 + 30$$

Have students explain why this is true.

For a concluding activity, students will need their 100 charts. They 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. Two riddles are shown below (answers are given in parenthesis):

A – 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. (*final answer is* **49**).

B – Start with the number of feet in 3 dogs. (**12**)

 – Add the number of feet in 5 crabs. (**62**)

 – Subtract the number of feet in 1 person. (**60**)

 – Subtract the number of feet in 11 snails. (**49**)

 – Add the number of feet in 1 insect. (**55**)

 – Add the number of feet in 1 spider. (**63**)

 – Add the number of feet in 2 crabs. (*final answer is* **83**)

Extension: Provide students with 3"×5" cards and have them do a hamburger fold. They need to work independently to write a list of animals on the outside (they are not limited by the animals in the book) and the sum of the feet on the inside. Students will exchange cards and challenge each other to find the correct total. For example:

3 cats and 7 snails and 4 ducks and 5 insects

The correct total number of feet on the inside of the card is:

$$12 + 7 + 8 + 30 = 57$$