















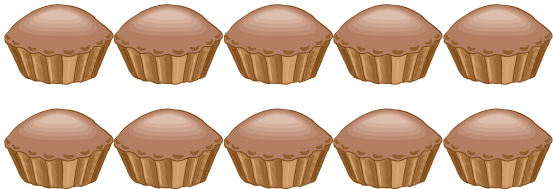










“Comparison Models of Subtraction” Warm-Up

Name _____

| Grade K NS 2.1 | CST/Grade 1 NS 2.2 | | | | | | | | |
|--|--|---|--|---|--|---|--|---|--|
| <p>Pair up as many groups of beans from the left column with the groups of beans from the right column so that each group adds up to 10 beans.</p> <table border="1" data-bbox="95 577 821 968"> <tbody> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </tbody> </table> |  |  |  |  |  |  |  |  | <p>I had 10 cupcakes, but I ate 3 of them. How many cupcakes do I have left?</p>  <p>A 13 B 10 C 7 D 3</p> <p>Show two ways to solve this problem.</p> |
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| CST/Grade 2 NS 2.2 | CST/Grade 3 NS 2.1 | | | | | | | | |
| <p>Toni had seven hundred fifty-nine cucumbers. She sold five hundred sixty-three of them. How many cucumbers does Toni have left?</p> <p>759 563</p> <p>A 116 B 196 C 216 D 296</p> <p>Use the inverse operation to check all the answers.</p> | <p>There were 3409 pieces of candy in a jar. If 145 pieces were red and the rest were blue, how many were blue?</p> <p>A 3244 B 3264 C 3344 D 3364</p> <p>Use decomposition to show your answer.</p> | | | | | | | | |

Comparison Models of Subtraction

Objective: Teachers are given multiple strategies for modeling subtraction.

Standards: 1st Grade: Number Sense 2.1 Know the addition facts (sums to 20) and the corresponding subtraction facts and commit them to memory.

1st Grade: Number Sense 2.5 Show the meaning of addition (putting together, increasing) and subtraction (taking away, comparing, finding the difference).

Types of subtraction

- Taking away, i.e., Joel had 10 oranges. He ate 3 of them. How many oranges does he have now?
- Missing addends, i.e., Frida has 3 oranges. Reggie has some oranges too. Together they have 10 oranges. How many oranges does Reggie have?
- Comparing, i.e., Maria has 10 oranges. Leon has 8 oranges. How many more apples does Maria have?

Strategies for modeling subtraction

- Manipulatives (Concrete)
- Recording by drawing (Semi-concrete)
- Bar Models
- Decomposition
- Number lines

Teacher note: Students often struggle with comparison examples of subtraction. Rather than subtracting and finding the difference, students add the subtrahend and minuend thinking the sum is the correct answer. The following lesson will attempt to address this confusion through a development of understanding moving from concrete modeling to semi-concrete recording to memorizing basic subtraction algorithms.

Building Comparison Models of Subtraction

Objectives: Students will use manipulatives to model subtraction.

Materials: Teddy Bear Counters
Linking Cubes
Paper

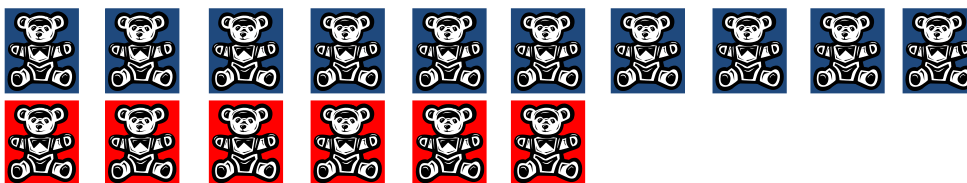
Vocabulary: subtrahend, minuend, difference

Introduction: Today we are going to use teddy bear counters to model subtraction.

I Do: Teacher demonstrates how to model a comparison subtraction problem using teddy bear counters. Students watch as teacher model using think aloud to explain her/his thinking.

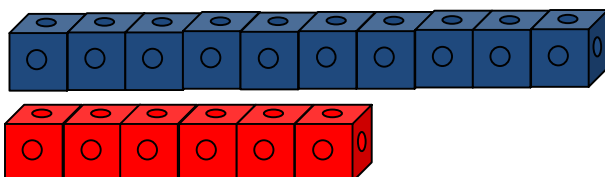
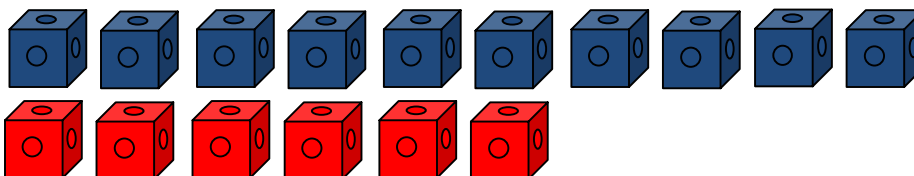
Example: There are ten blue teddy bear counters and six red teddy bear counters. How many more blue teddy bear counters are there than red teddy bear counters?

Build this example.

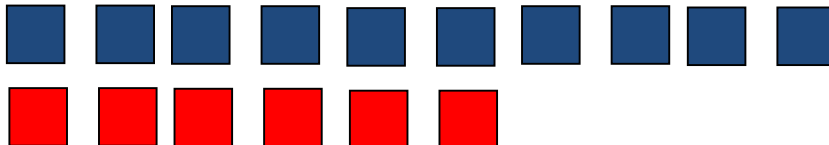


Begin by showing the one to one correspondence between the two sets. Six bears have partners while there are four bears that have no partners. There are four more blue bears than red bears.

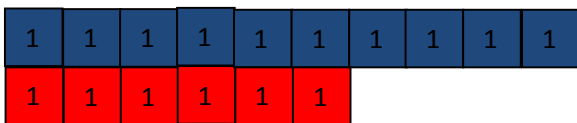
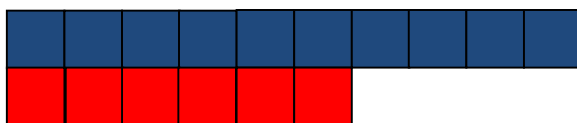
We can show this another way using linking cubes. Build the same problem using blue and red linking cubes. Keep them separated at first then join them together to make two horizontal towers. Point out that there are more blue linking cubes than red linking cubes when they are separate and when they are linked.



We can record what we built on paper. First draw ten blue bears comparing them to six red bears. Next draw ten blue squares comparing them to six red squares. Show the one to one correspondence between the two sets. There are four blue bears/squares that do not have partners. There are four more blue bears than red bears.



Draw the squares together sides touching like when we linked the cubes. Write the number one in each of the squares and count them. Show that all the 1s combined would equal a 10 and a 6. The difference being 4. Model how to check the answer by using the inverse operation of addition.



| | | | | | | | | | |
|----|--|--|--|--|--|---|--|--|--|
| 10 | | | | | | | | | |
| 6 | | | | | | ? | | | |

$$10 - 6 = 4 \longrightarrow 4 + 6 = 10$$

We Do: Teacher guides students through the same process with other examples. Students build and draw the models. She/he facilitates a discussion of the process.

You try: Students are asked to solve an equation on her/his own. Teacher monitors student work noting which students need more help. Teacher debriefs this activity with the students.

You Do: Students are given equations to solve on their own. The teacher uses this time to assist students who need more help in small groups or individually.

Closing: Teacher debriefs activity with students.

Extensions: 1. Teacher uses decomposition to model subtraction.
2. Teacher uses number lines to model subtraction.