

What's the Difference?

Reporting Category Computation and Estimation

Topic Estimating and finding the difference of whole numbers

Primary SOL 2.7 The student, given two whole numbers, each of which is 99 or less, will

- a) estimate the difference; and
- b) find the difference, using various methods of calculation.

Materials

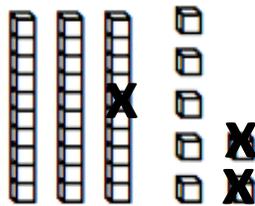
- Digit Cards (attached)
- Base-10 blocks (10 longs and 20 cubes per student)

Vocabulary

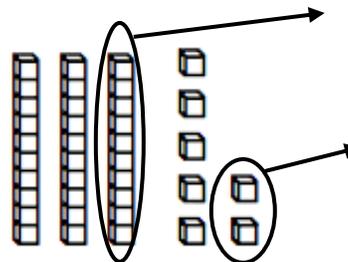
difference, minuend, subtract, subtrahend, estimate

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Ask for a volunteer to demonstrate to the class what 37 looks like, using base-10 blocks. Then, ask the class to estimate the difference after subtracting 12 blocks. Have several volunteers share their thinking.
2. Distribute base-10 blocks to students, and have them show 37 and then subtract 12 from 37. Have them record the problem in numerical form ($37 - 12 = \underline{\quad}$). Have students state and record the difference ($37 - 12 = 25$).
3. Ask the students to brainstorm ways to record the problem in pictorial form. Two possible pictorial ways are shown below:



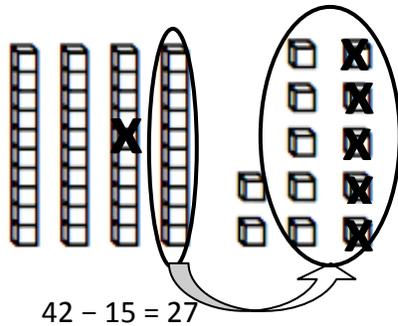
$37 - 12 = 25$



$37 - 12 = 25$

4. Instruct students to show the number 42 with their blocks. This time, ask the class to *estimate* the difference after subtracting 15 blocks. Have several volunteers share their thinking. Have students subtract 15 from 42, using the blocks, and again record the problem in numerical form ($42 - 15 = \underline{\quad}$). Have students state and record the difference. ($42 - 15 = 27$) Ask the class how this subtraction problem is the same as or different from the first one. (It's the same because they are both subtraction problems. It's different because you need to regroup to subtract).

5. Demonstrate how to regroup by taking one ten (one long) out of the tens place and regrouping it as 10 ones cubes. Now, students should be able to subtract 15 from 42. Again, have students record the problem in pictorial and numerical forms. One possible pictorial way is shown below:



6. Demonstrate several more examples of problems with and without regrouping.
7. Group students into pairs, and give each student a set of digit cards and a blank sheet of paper to use to record his/her work. Have each student create a two-digit number by turning over the top two digit cards. Instruct students to create a subtraction problem by comparing the two two-digit numbers and subtracting the smaller number from the larger number, using their base-10 blocks, as modeled in the beginning of the activity. Have students record in pictorial and numerical forms the subtraction problem and its solution.
8. Review and summarize with the class what students did and learned in the activity.

Assessment

- **Questions**
 - How is subtraction with regrouping similar to regrouping in addition?
 - Were you able to predict any of the differences? If so, which ones?
 - Can you think of any other strategies that can be used for subtraction that were not shared in this activity? If so, what are they?
 - Why do you subtract the smaller number from the larger number instead of the other way around?
- **Journal/Writing Prompts**
 - Delman is working with a partner to create two-digit numbers. Delman's number is 42, and his partner's number is 67. Draw a picture of what each number would look like in base-10 blocks. Show how Delman and his partner could subtract their numbers.
 - Katie is working with a partner to create two-digit numbers. Katie's number is 56, and her partner's number is 39. Draw a picture of what each number would look like in base-10 blocks. Show how Katie and her partner could subtract their numbers.
- **Other**
 - Circulate as students are creating and recording their own problems. Observe the strategies and rationales the students use. Ask questions to determine whether students are absorbing the key points noted above. Note who is having difficulty, and give help, as needed. Collect the papers as an assessment.

- During the activity, occasionally stop and have students answer the question, “How well do I understand what I am doing?” Have students respond to the question by showing thumbs up (I get it), a sideways thumb (I kind of understand), or a thumbs down (I’m still confused). Give help, as needed.

Extensions and Connections (for all students)

- Have each student write a subtraction word problem and exchange it with a partner. Allow students to use base-10 blocks or other manipulatives to solve the problems. Encourage students to use strategies for subtracting, such as hundred charts, number lines, or other invented strategies.
- Have students explore the relationship between subtraction and addition with two-digit numbers.
- Explore practical situations when exact answers to subtraction problems might be needed as opposed to estimated answers.

Strategies for Differentiation

- Allow students to use calculators to check their solutions for each subtraction problem. A large calculator may be displayed for the whole class to see.
- Have students use place value mats to keep tens and ones organized.
- Allow students who find regrouping with base-10 blocks difficult to use connecting cubes instead to help them see the grouping and regrouping process.
- Allow students who have difficulty drawing to use base-10 stamps, stickers, or cutouts when creating pictorial representations.

Digit Cards

Reproduce cards on card stock, and cut them apart on the dotted line.

