



Overview

Students will use estimation, place-value materials, and the calculator. They will place each of seven randomly generated digits on a place-value chart in either the ones or tens column to make a sum as close to 100 as possible, without going over 100.

Grade Levels: 1–2




Concepts

- Whole numbers
- Estimation
- Place value
- Addition
- Comparing numbers
- Subtraction



Materials

-  TI-10 or TI-15 Explorer™ calculators
- Place-value materials
- Student activity sheet
- Pencils or markers
- Number cubes (or dice)



Assessment

Throughout the activity, questions are included for formative assessment. Student work should be used as a check for understanding. Have the students use number cubes along with the TI-10 or TI-15 Explorer™ to complete the activity.



Introduction

1. Set up the activity by telling students: *Seven people have a total of exactly \$100. Each person has either all \$1 bills or all \$10 bills. How much money could each person have?*

Note: There are several possible answers.

2. Have students work in groups of three. While playing the game, the group will roll the number cube seven times. The result of each roll will represent either how many \$1 bills or \$10 bills someone in the group of seven people has.
3. Display and model playing the game several times by rolling the number cube, demonstrating the three procedures/responsibilities, and explaining the rules.

Procedures/Responsibilities

- a. The first student rolls the number cube. Based on the whole group's decision, he or she then records each of the resulting digits in the proper column on the place-value chart on the activity sheet.
- b. The second student uses place-value materials to represent the amounts on the hundred grid as they are written on the chart.
- c. The third student uses the calculator to keep a total by adding the amount of each roll of the number cube.

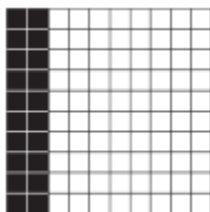
Rules

- Roll exactly seven times.
- Place (write) each digit rolled in either the ones or tens place (column) to make a sum ≤ 100 .

Example:

The first student rolls a 2. The group decides to put the 2 in the "Tens" column. The first student writes 2 in the "Tens" column and 0 in the "Ones" column. The second student uses place-value materials to represent 20 on the hundred chart. The third student enters 20 in the calculator.

Tens	Ones
2	0





4. Have students play the game at least three times, rotating the responsibilities each time, so that each student gets to work with each representation. Each time they play, students should look for strategies to play a better game

Collecting and Organizing Data

While students play the game, ask questions such as:

Questions for Students:

- ❖ *How did you decide to place this digit in the ones place? The tens place?*
- ❖ *How does your sum affect your strategy as you play?*
- ❖ *What if we changed the rules so that you could go over 100, or so that you could choose to either add or subtract the number that comes up on the number cube? Could you get closer to 100?*



Using the Calculator

- *What does the activity sheet keep track of for you that the calculator doesn't?*
- *What do the place-value materials show that the calculator and activity sheet do not?*
- *What does the calculator help you do?*

Analyzing Data and Drawing Conclusions

After students have played the game three times and recorded their data, have them work as a group to analyze the games. Ask questions such as:

Questions for Students:

- ❖ *How did your strategies change within a game? How did your strategies change as you played more games?*
- ❖ *What if you did not have to roll exactly seven times? What if you could roll fewer times? What if you could roll more than seven times? How would your strategies change?*
- ❖ *Is there any game that you played that could have made a sum of 100 if you rearranged the digits? Use your activity sheet and calculator to find out.*



Using the Calculator

- *How did you use the calculator to help you decide what to do next in the game?*

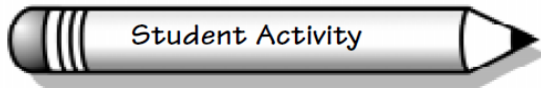
Continuing the Investigation

Have students:

- Play the game with polyhedral dice other than cubes and see whether their strategies need to change.
- Find a set of seven rolls that would equal exactly 100.
- Investigate how many sets of seven rolls they can find.
- Revise the game to include the 100s place and try to make a sum of 1,000.



SOLUTIONS



Name _____

Date _____



Focus: Find addends to make a sum of 100.

100 or Bust

Collecting and Organizing Data

Game 1	
Tens	Ones

Game 2	
Tens	Ones

Game 3	
Tens	Ones

Hundred Grid

Strategies we used while we were doing this activity:

Answers will vary. Possible answer: We agreed that the first set of numbers rolled would be placed in the tens place until we reached the number 60. Then all numbers rolled would be in the ones place 100 is reached.