

# Race To Zero

Grade 3

Activity 313

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guide*

Book II, 3-6: Exploring Subtraction with the Larger Blocks, pp. 80 - 86

Book III, 2-5: Subtracting with Base Ten Representations, pp. 63-67

## Overview

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Students begin with 3 blocks-of-100. They roll two dice to determine how many blocks-of-10 and singles to remove. They record the problem and repeat the process until no blocks remain.

## Objectives

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**Thinking Skills:** Students recognize when regrouping is necessary as they model subtraction problems.

**Mastery Skills:** Students learn to model and record subtraction with and without regrouping.

## Materials

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Each group of 4 students needs:

- 2 dice, each a different color
- Three-Place Recording Activity Sheet (Erik - We need the Activity and Assessment Sheets for Book II page 9 or Book III page 3)

- 2 place value mats with digit flip cards
- 6 blocks-of-100 (300 for each pair)

### Class Introduction

(10 minutes)

Demonstrate "Race to Zero" by having students model the game before the class. Use the Counter or place value mat with digit flip cards. Explain that the goal of the game is to reach zero, or an empty place mat, in as few rolls of the dice as possible.

- Place 3 blocks-of-100 on a place mat.
- Show the 2 dice. Determine which color (i.e. white) will show how many ones to remove, and which (i.e. red) shows how many tens to remove.
- Roll the dice. Name the number. For example, 2 on the red die and 6 on the white shows 26.
- Record the problem ( $300 - 26$ ) on the Activity Sheet as problem #1.
- Ask, How can I remove 26 from my 3 blocks-of-100? Have volunteers unpack the blocks until the 2 blocks-of-10 and 6 singles can be removed.
- Record how the 300 was renamed on the Activity Sheet.
- Take the 26 away and record the answer (274) on the Activity Sheet.
- Write 274 as the minuend for problem #2 on the Activity Sheet. Roll the dice and subtract.
- Continue until there are no more blocks remaining. It is highly unlikely that a player will roll the exact amount that is left on the place mat. As long as the roll shows more than what is left on the place mat, the game is over.
- The Activity Sheet has spaces for 8 problems, and it is possible that students will take more than 8 rolls to reach zero. If so, they may record the last problem or two on the back of the paper.

### Student Small Group Activity

(15 minutes)

Tell students that they will be playing "Race to Zero" in groups of 4. Within each group, students will work in pairs, racing against one another.

- Designate pairs within each group of 4 and determine who will be the Recorder and Block Manger for each pair. Students may switch roles after every turn, if they desire.

- Roll the two dice and name the 2-digit number to see which pair takes the first turn. The highest number goes first.
- Play the game until the winning pair reaches zero first. Let the second pair continue playing until it also reaches zero.

### Closure

(5-10 minutes)

After students have played at least one game of "Race to Zero," have them refer to their Activity Sheets and discuss their experiences. Ask questions, such as:

- Who was ahead after the first roll? The 3<sup>rd</sup> roll? Was the winning pair always ahead throughout the game?
- How many rolls did it take to reach zero? What kind of numbers did you roll if it took less than 8 turns? More than 8 turns?
- Which die made a bigger impact on the outcome of the game, the ones die or the tens die?
- What was a challenging problem? An easy problem? Why were they challenging/easy?
- Name a problem that you solved that needed regrouping. How did you record what you did?

### Assessment

As students work, observe and note:

Do they -

- Model the problem correctly?
- Identify when renaming (unpacking) is necessary, and do so with accuracy?
- Record the process with understanding?
- Relate the block model to the recorded algorithm?

### Extension

- Play "Race to Zero," having students predict differences before they are modeled. Pairs get a "prediction point" for each accurate prediction. This gives the pair that does not finish first a chance to become the Prediction Point Winners, as they will have more opportunities to predict!