# Lesson 22: Solve Problems Involving Large Numbers

## Standards Alignments

Building On      4.NBT.A.1, 4.NBT.A.2

Addressing      4.NBT.B.4

## Teacher-facing Learning Goals

- Interpret and solve problems that involve finding sums and differences of multi-digit whole numbers.

## Student-facing Learning Goals

- Let's solve problems by adding and subtracting.

## Lesson Purpose

The purpose of this lesson is for students to solve problems that involve adding and subtracting multi-digit numbers.

In this lesson, students apply their skills and understandings for adding and subtracting large numbers to solve problems and participate in a game.

This lesson has a Student Section Summary.

## Access for:

### ⊕ Students with Disabilities

- Action and Expression (Activity 2)

## Instructional Routines

MLR6 Three Reads (Activity 1), True or False (Warm-up)

## Materials to Gather

- Grid paper: Activity 1, Activity 2

## Materials to Copy

- 0-9 Digit Cards (groups of 2): Activity 2

## Lesson Timeline

| | |
|---|---|
| Warm-up | 10 min |
| Activity 1 | 15 min |

## Teacher Reflection Question

What question do you wish you had asked today? What kept you from asking the question?

| Activity 2 | 20 min |
| Lesson Synthesis | 10 min |
| Cool-down | 5 min |

# Cool-down (to be completed at the end of the lesson)   🕐 5 min

Populations of Three Cities

## Standards Alignments

Addressing     4.NBT.B.4

## Student-facing Task Statement

The populations, in 2017, of the three largest cities in Wisconsin are shown.

| city | population |
| --- | --- |
| Milwaukee | 595,351 |
| Madison | 255,214 |
| Green Bay | 105,116 |

1. Was the total population of the three cities more than one million people? Explain or show your reasoning.

2. How much over or under one million is the total? Explain or show your reasoning.

## Student Responses

1. No. Sample response: Milwaukee had about 600,000 people. Madison had about 255,000 people. Green Bay had about 105,000 people. The sum of the three estimates is 960,000 people.

2. 44,319 people below one million. Sample response:

   ○ The sum of populations of Milwaukee and Madison is $595,351 + 255,214$, which is 850,565 people. Adding the population of Green Bay, $850,565 + 105,116$, gives 955,681 people. Subtracting 955,681 people from 1,000,000 people gives 44,319 people.

   ○ The total population of the three cities is 955,681 people. I kept adding numbers to

that total until reaching 1,000,000 people. I first added 40,000 people and then 4,000 people, which gives 999,681 people. Adding 319 people more gives 1,000,000 people. Then I added these numbers: $40{,}000 + 4{,}000 + 319 = 44{,}319.$

- Subtracting the population of Milwaukee from one million, $1{,}000{,}000 - 595{,}351$, gives 404,649 people. Subtracting the population of Madison from 404,649 people gives 149,435 people. Subtracting the population of Green Bay from 149,435 people gives 44,319 people.