

# Lesson 24: Assess the Reasonableness of Solutions

## Standards Alignments

Addressing 4.NBT.B.4, 4.OA.A.2, 4.OA.A.3

### Teacher-facing Learning Goals

- Assess the reasonableness of responses.
- Solve multi-step problems involving the four operations.

### Student-facing Learning Goals

- Let's solve problems and assess the reasonableness of solutions.

## Lesson Purpose

The purpose of this lesson is for students to solve multi-step word problems by analyzing data, estimating, reasoning, and performing multiple operations. It also helps students to build fluency in using the standard algorithm to add and subtract multi-digit numbers up to 1 million. In each activity, students assess the reasonableness of their responses.

In the final lesson of the unit, students apply their knowledge of numbers in base-ten and their estimation and computation skills to solve problems about languages and populations in the United States. The census data used here prompts students to work with large numbers and to interpret them carefully.

This lesson has a Student Section Summary.

### Access for:

#### Students with Disabilities

- Representation (Activity 1)

#### English Learners

- MLR8 (Activity 1)

## Instructional Routines

Notice and Wonder (Warm-up)

### Materials to Gather

- Grid paper: Activity 1

## Lesson Timeline

|                  |        |
|------------------|--------|
| Warm-up          | 10 min |
| Activity 1       | 20 min |
| Activity 2       | 15 min |
| Lesson Synthesis | 10 min |
| Cool-down        | 5 min  |

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

 5 min

### The Children and the Elderly

#### Standards Alignments

Addressing 4.NBT.B.4, 4.OA.A.3

#### Student-facing Task Statement

Here are the data on the numbers of children and senior citizens in Philadelphia as of 2017.

| age               | number of people |
|-------------------|------------------|
| under 5 years     | 107,736          |
| 5-14 years        | 184,323          |
| 15-17 years       | 53,530           |
| 65 years and over | 203,007          |

- As of 2017, what is the number of people under the age of 18 in Philadelphia?
- How do you know your answer to problem 1 is reasonable?

#### Student Responses

- 345,599 children under 18 ( $107,736 + 184,323 + 53,530 = 345,599$ )
- Estimate:  $110,000 + 180,000 + 50,000 = 340,000$ . There are about 340,000 people under 18, which is close to the actual number 345,599 calculated.