Unit 4, Lesson 22

Solve Problems Involving Large Numbers

Let's solve problems by adding and subtracting.

Warm-up

True or False: Sums and Differences

Decide if each statement is true or false. Explain your reasoning.

- $7{,}000 + 3{,}000 = 10{,}000$

- $7{,}180 + 3{,}920 = 10{,}100$

- $423{,}450 - 42{,}345 = 105$

- $400{,}000 - 99{,}999 = 311{,}111$

Activity 1

The Fundraiser

A school's track teams raised $41,560 from fundraisers and concession sales.

In the fall, the teams paid $3,180 for uniforms, $1,425 in entry fees for track meets, and $18,790 in travel costs.

In the spring, the teams paid $10,475 in equipment replacement, $1,160 for competition expenses, and $912 for awards and trophies.

1. Is the amount collected enough to cover all the payments? Explain how you know.

2. If the amount collected is enough, how much money do the track teams have left after paying all the expenses? If it is not enough, how much money did the track teams overspend? Explain how you know.

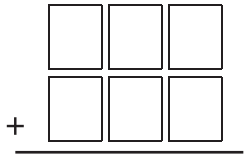
Activity 2

The Least and the Greatest of Them All

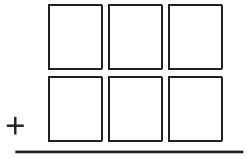
Your teacher will give you and your partner a set of 10 cards, each with a number between 0 and 9. Place the cards facedown in a stack.

1. Draw 3 cards. Use all 3 cards to form 2 different numbers that would give:

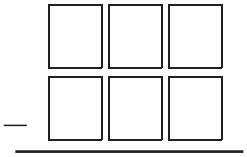
   a. the greatest possible sum

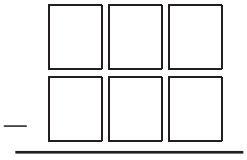
   b. the least possible sum

   c. the greatest possible difference

   d. the least possible difference

2. Shuffle the cards and draw 4 cards. Use them to form 2 different numbers that would give:

   a. the greatest possible sum

   $$\square,\square\square\square$$
   $$+\ \square,\square\square\square$$

   b. the least possible sum

   $$\square,\square\square\square$$
   $$+\ \square,\square\square\square$$

   c. the greatest possible difference

   $$\square,\square\square\square$$
   $$-\ \square,\square\square\square$$

   d. the least possible difference

   $$\square,\square\square\square$$
   $$-\ \square,\square\square\square$$

Section D Summary

We used our understanding of place value and expanded form to add and subtract large numbers using the **standard algorithm.**

We learned how to use the standard algorithm to keep track of addition of digits that result in a number greater than 9.

When there are 10 in a unit, we make a new unit. Then record the new unit at the top of the column of numbers in the next place to the left.

$$\begin{array}{r} {\scriptstyle 1} \\ 26,815 \\ +\ 11,403 \\ \hline 38,218 \end{array}$$

When we subtract numbers, it may be necessary to decompose tens, hundreds, thousands or ten thousands before subtracting.

$$\begin{array}{r} {\scriptstyle 8\ 16} \\ 1,9\cancel{9}\ \cancel{6} \\ -\ 1,947 \\ \hline 49 \end{array}$$

Finally, we learned if the digit we are subtracting is a zero, we may need to decompose one unit of the digit in the next place to the left.

Sometimes it is necessary to look two or more places to the left to find a unit to decompose. For example, here is one way to decompose a ten and a thousand to find $2{,}050 - 1{,}436$.

$$\begin{array}{r} {\scriptstyle 1\ 10\ 4\ 10} \\ \cancel{2},\cancel{0}\cancel{5}\cancel{0} \\ -\ 1,436 \\ \hline 614 \end{array}$$