

### Further investigations:

With your child, make a set of number cards (0-9). Each player draws four number cards and arranges the cards to make two two-digit addends. Players find the sums. The player with the highest sum wins the round. Keep score by using tally marks. The player who has the most tally marks in 10 minutes is the winner.

$$\begin{array}{r} 51 \\ + 27 \\ \hline \end{array} \quad \begin{array}{r} 36 \\ + 44 \\ \hline \end{array}$$

Ask your child to write a story problem that has an answer of "72".

Discuss this problem with your child: You buy two candy bars and pay the clerk \$2.00. How much do you think each candy bar costs if you get 25 cents change?

Hint: There is more than one right answer! Put 100 marbles (or other counters) in a container. Let your child take out a handful (or more) of the marbles and count them. Ask him to subtract to find out how many marbles are left in the container. Use addition to check the answer.

### Terminology:

**Commutative Property:** in addition and multiplication, numbers may be added or multiplied in any order.

Ex.  $98 + 12 = 12 + 98$

**Associative Property:** in addition and multiplication, numbers may be grouped in different ways.

Ex.  $(15 + 7) + 6 = 15 + (7 + 6)$

**Identity Property for Addition:** zero added to a number is the number itself

**Identity Property for Multiplication:** a number multiplied by one is the number itself

**Join:** to put together (add)

**Separate:** to take apart (subtract)

**Difference:** the amount that remains after one quantity is subtracted from another

**Inverse operations:** the inverse operation for addition is subtraction; the inverse operation for subtraction is addition

### Related Files:

[www.ceismc.gatech.edu/csi](http://www.ceismc.gatech.edu/csi)

## Numeration with Computation

### Students will:

- Using regrouping add and subtract two whole numbers containing up to three digits each with regrouping
- Use inverse operations to solve problems
- Solve problems using mental math strategies
- Simplify problems using the commutative, associative, and identity properties of addition

### Second Grade 6 of 7

### Classroom Cases:

- Use addition or subtraction to represent 210 in at least 3 ways.

### Case Closed - Evidence:

$200 + 10$        $100 + 100 + 10$        $300 - 90$

- Tammy sold 267 boxes of cookies. Roxie sold 45 less than Tammy, and Karly sold 16 more than Tammy. How many boxes of cookies did Roxie and Karly sell? Use pictures, words, or numbers to show your strategy. Use inverse operations to check your answers.

### Case Closed - Evidence:

Girl	Boxes of Cookies
Tammy	267
Roxie	$267 - 45 = 222$
Karly	$267 + 16 = 283$

Roxie sold 45 less than Tammy so my problem would be  $267 - 45 = 222$  boxes of cookies. I can check my answer by adding  $222 + 45$ . I should get 267.

Karly sold 16 more than Tammy so my problem would be  $267 + 16 = 283$  boxes of cookies. I can check my answer by subtracting  $283 - 16 = 267$ .

- Ron's brother gave him his sports card collection. Ron counted 389 baseball cards and 154 basketball cards. How many cards does Ron's collection have in all?

### Case Closed - Evidence:

$$\begin{array}{r} 389 \\ +154 \\ \hline 543 \end{array}$$

Ron has 543 sports cards.

- Maria baked cookies yesterday. The recipe said it would produce 12 dozen cookies. Maria's dough only yielded 135 cookies. How many more cookies should Maria's batch have provided according to the recipe's claim?

### Case Closed - Evidence:

Maria should have gotten 144 cookies because 12 dozen is  $12 + 12 + 12 + 12 + 12 + 12 + 12 + 12 + 12 + 12 + 12 + 12$  which is 144. Since  $144 - 135 = 9$ , Maria baked 9 cookies less than the recipe claimed. Maybe her cookies were bigger than usual.

- Replace the squares with numbers that make the number sentences true:

$$7 + 9 = 9 + \square \quad 13 + (7 + 11) = (13 + \square) + \square$$

$$17 + 4 + 2 + 16 = 20 + \square + \square = 20 + \square$$

### Case Closed - Evidence:

$$\begin{array}{l} 7 + 9 = 9 + 7 \\ 13 + (7 + 11) = (13 + 7) + 11 \\ 17 + 4 + 2 + 16 = 20 + 17 + 2 = 20 + 19 \end{array}$$

### Book 'em:

- 12 Ways to Get to 11** by Eve Mirriam  
**Annie's One to Ten** by Annie Owen  
**The Philharmonic Gets Dressed** by Karla Kuskin  
**Pondlarker** by Fred Gwynne  
**Cats Add Up!** by Dianne Ochiltree  
**Mental Math in the Primary Grades** by Jack A. Hope, Larry Leutizinger, Barbara J. Reys, and Robert E. Reys

