

# Dimensions Math

## Grade 2 Letter Home #3

Chapter 3 Addition and Subtraction — Part 2

Dimensions Math  
Letters Home

### Home Connection

In this chapter, your child puts together their knowledge of place value and single-digit arithmetic to learn vertical addition and subtraction algorithms. The addition and subtraction algorithms are step-by-step procedures that begin with adding (or subtracting) the digits in the ones place, and then repeating the calculations with consecutively larger places. This process may look very familiar to adults, however the language used may differ from what you learned in school. The emphasis is on regrouping (which you may know as “carrying” or “borrowing”).

In the classroom, students use place-value discs as they first encounter the algorithms, then they will learn how to record the algorithm with numbers. If your student needs a tool at home, try using three colors of poker chips to represent ones, tens, and hundreds.

## Addition

When adding, students regroup quantities greater than 10.

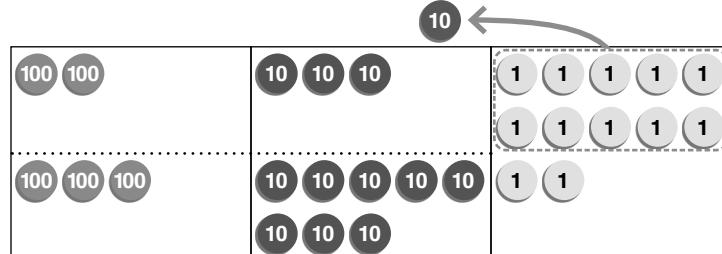
For example:

There are 237 adults and 385 children at the art show. How many people are at the art show altogether?

$$237 + 385$$

$$7 \text{ ones} + 5 \text{ ones} = 12 \text{ ones}$$

$$12 \text{ ones} = 1 \text{ ten } 2 \text{ ones}$$



Regroup 12 ones as 1 ten and 2 ones. We record the 2 as the sum in the ones place and the 10 in the problem above the tens place:

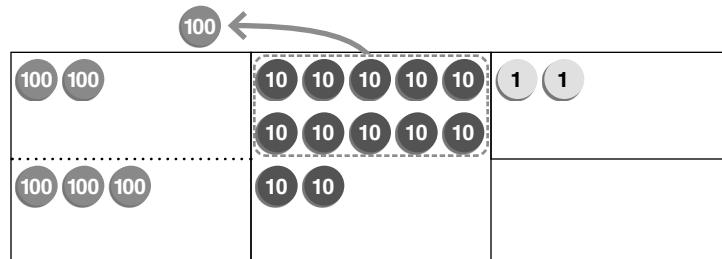
H	T	O
		1

$$\begin{array}{r}
 & 2 & 3 & 7 \\
 + & 3 & 8 & 5 \\
 \hline
 & & & 2
 \end{array}$$

The process repeats:

$$1 \text{ ten} + 3 \text{ tens} + 8 \text{ tens} = 12 \text{ tens}$$

$$12 \text{ tens} = 1 \text{ hundred } 2 \text{ tens}$$



Regroup 12 tens as 1 hundred and 2 tens. We record this regrouped hundred in the written algorithm above the hundreds place:

H	T	O
1	1	

$$\begin{array}{r}
 & 2 & 3 & 7 \\
 + & 3 & 8 & 5 \\
 \hline
 & 2 & 2
 \end{array}$$

1 hundred + 2 hundred + 3 hundred = 6 hundreds. Since there are less than 10 hundreds, we don't have anything to regroup and can simply record the 6 in the hundreds place.

H	T	O
1	1	

$$\begin{array}{r}
 & 2 & 3 & 7 \\
 + & 3 & 8 & 5 \\
 \hline
 & 2 & 2
 \end{array}$$

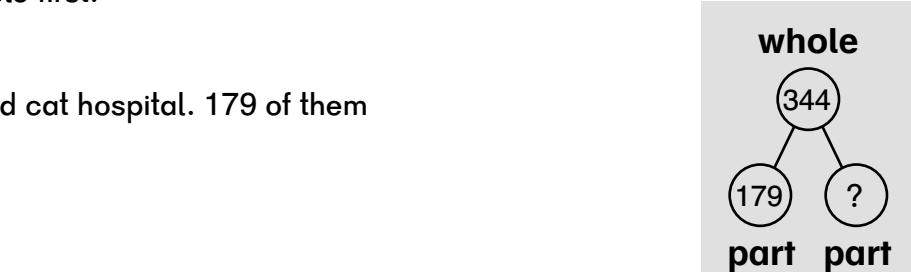
## Subtraction

The subtraction algorithm uses similar language. When we write the numbers stacked vertically by place value, we always write the whole first.

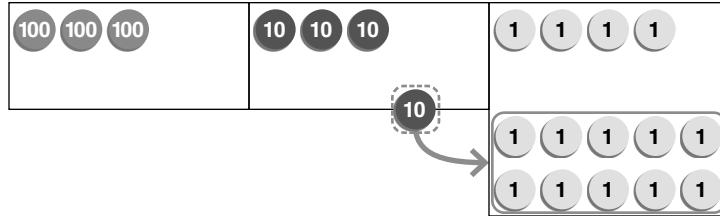
There are 344 animals at the dog and cat hospital. 179 of them are dogs. How many cats are there?

$$344 - 179$$

There are not enough ones in the ones column. Regroup one ten as 10 ones.



$$4 \text{ tens } 4 \text{ ones} = 3 \text{ tens } 14 \text{ ones}$$

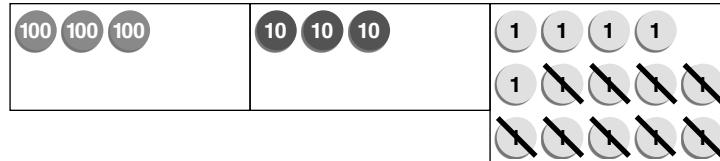


We record this process in the written algorithm by crossing off the 4 in the tens place and changing it to a “3”, then crossing off the 4 in the ones place and changing that to a “14”.

H	T	O
3	4	4
-	1	7
14		

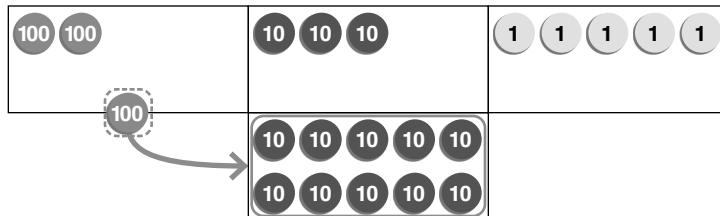
The diagram shows the subtraction process in a vertical algorithm. The top row has '3' in the hundreds place, '4' in the tens place, and '4' in the ones place. The bottom row has '-' in the hundreds place, '1' in the tens place, and '7' in the ones place. A horizontal line separates the two rows. The tens column is crossed out with a diagonal line, and '3' is written above it. The ones column is crossed out with a diagonal line, and '14' is written above it.

Now that there are enough ones in the ones place, we can subtract.



$$14 \text{ ones} - 9 \text{ ones} = 5 \text{ ones}$$

The process repeats in the tens place. There are not enough tens in our whole to subtract 7 tens from. Regroup 1 hundred as 10 tens.



$$3 \text{ hundreds } 3 \text{ tens} = 2 \text{ hundreds } 13 \text{ tens}$$

Record the regrouping in the written algorithm.

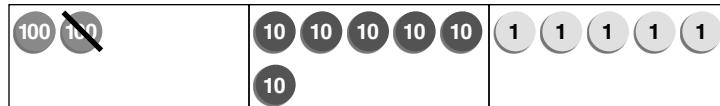
Now that there are enough tens in the tens place, we can subtract.

$$13 \text{ tens} - 7 \text{ tens} = 6 \text{ tens}$$

H	T	O
2	13	14
-	1	7
	6	5

Finally, subtract the hundreds.

$$2 \text{ hundred} - 1 \text{ hundred} = 1 \text{ hundred}$$



H	T	O
2	13	14
-	1	7
	1	6
	6	5

## What can we do at home?

Continue to practice adding and subtracting within 20 with games like Rock, Paper, Scissors, Math! or by using fact cards.

Students who know from memory that  $7 + 8 = 15$  or  $13 - 7 = 6$  will have an easier time recalling the steps in the vertical algorithms.