Dimensions Math Grade 4 Letter Home Chapter 2 Addition and Subtraction

Home Connection

Students have learned to add and subtract four-digit numbers using the standard algorithm. In 4th grade they will extend this knowledge to adding and subtracting 5-digit numbers. Students will use rounding and estimating to find sums and differences. These skills will all be applied to multi-step word problems.

Addition and Subtraction Algorithms

The algorithm is important because of its simplicity. It requires only calculations involving addition and subtraction of one-digit numbers. Students will use place-value discs in class to model the algorithms. If your student needs extra practice at home with place value discs, there are printable discs on the parent resource page on tcatitans.org: Click Here.

Other Methods of Addition and Subtraction

Number sense is foundational for using mental math strategies. In 4th grade, students build on previous knowledge to make computation easier. This does NOT mean that students can't write the equation; it simply means that a part or portion of the equation can be computed mentally to help them solve. If they are unsure of their calculations, they may choose to check their answer using the vertical algorithm.

For example:

Subtracting from 10,000 using 10,000

Find the difference between 5,672 and 10,000.

	5 thousands	6 hundreds	7 tens	2 ones
+	? thousands	? hundreds	? tens	? ones
	9 thousands	9 hundreds	9 tens	10 ones

Subtracting from 1,000 or a multiple of 100

7,536 – 998

6,536 1,000

1,000 – 998 = 2

6,536 + 2 = 6,538

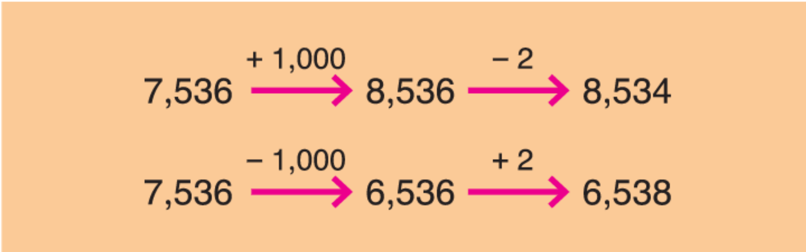
623 – 298

323 300

300 – 298 = 2

323 + 2 = 325

Over-adding and over-subtracting



Bar Models

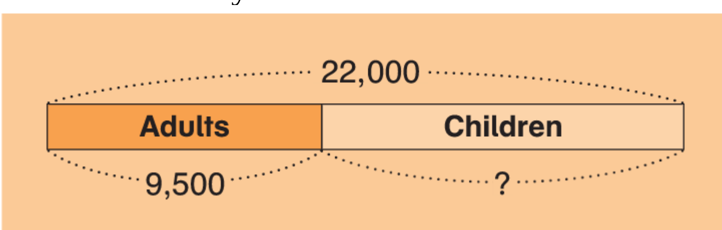
In 3rd grade students learned how to draw a bar model to interpret and solve a two-step word problem. In 4th grade, they interpret and apply their knowledge of bar model drawing to more complex word problems. Here are two examples of bar model problems students will encounter.

Part-whole Models

From 1st grade until now, students have learned that numbers relate to each other in a part-part-whole number bond. 2 parts and 3 parts make 5 parts. A part-whole bar model is another way to pictorially represent parts and the whole.

For example:

There are 22,000 people at the concert.
There are 9,500 adults at the concert.
How many children are at the concert?



22,000-9,500= _______

Or

9,500 + ______ = 22,000

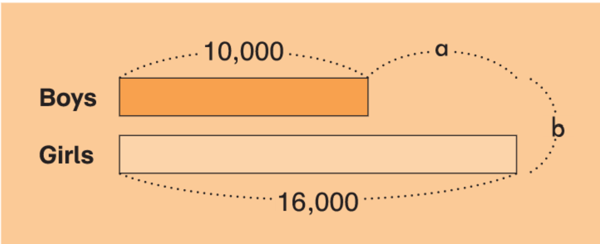
There are 12,500 children at the concert.

Comparison Models
This type of bar model allows students to compare quantities. They are particularly useful in representing multi-step problems.

For example:

There are 10,000 boys and 16,000 girls at the soccer match.

(a) How many fewer boys than girls are at the soccer match?
(b) How many children were at the soccer match in all?



These models are helpful in visually comparing amounts. We can see at a glance that there are more girls than boys. Therefore, students can easily see they need to subtract girls minus boys to find the difference for answer (a).

Although (b) is actually a part-whole type question, the same model can be used to indicate the whole by placing a question mark at the end of the two bars.

To find the difference, students can write the equation:
a = 16,000 – 10,000 or 10,000 + a = 16,000

To find the total number of children, students can write the equation:
b = 16,000 + 10,000

*****At this point, we are not asking students to use algebraic methods to solve problems, however using corresponding letters to the problems slowly introduces students to algebraic-type thinking*.

Multi-Step Models
Students will draw models for multi-step problems. As problems become more challenging, students should find this method of model drawing extremely useful.

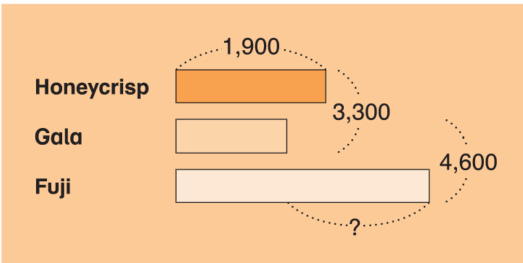
For example, read the following problem to yourself.

"An orchard harvested 3,300 pounds of Honeycrisp and Gala apples altogether, and 4,600 pounds of Gala and Fuji apples altogether. It harvested 1,900 pounds of Honeycrisp apples. How many more pound of Fuji apples than Gala apples were harvested?"

It sounds complicated, doesn't it? Especially if we were to ask students to solve this using only numbers with no visual representation. However, once a bar model is drawn, students can easily see the steps to solve the problem.

Students will utilize the information given in the problem to draw these bar models.
Here are some helpful questions, you as the parent can ask if your child is struggling to represent these bar models.

What information is given? What information must still be found?
How many bar models do you think you'll need to draw to represent this information?
Where would that information be placed on your bar models?
Which bar(s) is longer? How do you know?



Now that there is a visual representation of this information, students can discern how to solve it.

They will see that to find how many more pounds of Fuji apples were harvested than Gala apples, we must first know how many pounds of Gala apples were harvested.
3,300 total pounds of Honeycrisp and Gala -1,900 pounds of Honeycrisp = 1,400 pounds of Gala apples.

Then we can figure out how many pounds of Fuji apples were harvested.
4,600 total pounds of Gala and Fuji - 1,400 pounds of Gala = 3,200 pounds of Fuji apples

Then to figure out how many more pounds of Fuji apples than Gala apples were harvested, we can subtract those two numbers.
3,200 pounds of Fuji- 1,400 pounds of Gala = 1,800 pounds more Fuji than Gala apples

Students will be required to write a complete sentence when sharing their answers. "There were 1,800 more pounds of Fuji apples than Gala apples." This encourages students to no merely solve the problem correctly, but to solve the correct problem.

What Can We Do At Home?

<u>10,000 Memory</u>

Materials: Index Cards

Provide your child with a set of index cards and have him/her write 5 pairs of numbers that when paired together, the sum equals 10,000. You will do the same with your index cards.

Then flip cards face down into a rectangular array. Player 1 will flip two cards. If those two cards add up to 10,000 then they are able to keep their match. If they do not add up to 10,000 then they must flip them face down. Then Player 2 takes a turn following the same rules.