



# THIRD GRADE MATHEMATICS – Unit 2

Dear Parents,

During Unit 2, your children will add and subtract within 1000 by applying their understanding of models for addition and subtraction. They will develop, discuss, and use efficient, accurate, and generalizable methods to compute the sums and differences of whole numbers in base ten notations, using their understanding of place value and the properties of the operations (they will need not use formal terms for these properties). Your children will work to develop written methods for recording sums and differences. They will be introduced to the concept of rounding, which provides them with another strategy to judge the reasonableness of their answers in addition and subtraction situations. Perimeter provides a context in which students can practice both rounding and addition and subtraction (e.g. estimating the perimeter of a polygon). They will also develop a conceptual understanding of measuring mass, liquid volume and intervals of time. Measurement word problems will be used as a context for the development of fluency in addition and subtraction.

## ADDITION, SUBTRACTION AND MEASUREMENT

### Students need to:

- Add and subtract within 1000 using strategies and algorithms based on the following: place value, properties of operations and the relationship between addition and subtraction
- Use place value understanding to round whole numbers to the nearest 10 or 100
- Solve two-step word problems. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length.
- Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
- Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).
- Add or subtract to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with measurement scale) to represent the problem.

## WAYS PARENTS CAN HELP

- Help your child use addition or subtraction to solve real world problems (e.g. adding a bill, calculating change from a purchase...)
- Practice reading an analog clock.
- Help your child determine an end time given the start time and the duration of the event (e.g. you put something in the oven at 5:15 p.m. and it needs 32 minutes to cook, what time should you take it out of the oven).
- Look at real world examples showing liquid volumes and masses (e.g. packaged food such as a cereal box). Play a game to see how close your child can get to estimating these measurements.

## BACKGROUND INFORMATION/EXAMPLES FOR PARENTS

### Addition:

<http://video.carrollk12.org/view/GRANGEROPENNUMBERLI NEADDITION>

<http://video.carrollk12.org/view/GRANGERADDITIONWITH3 DIGITSREGROUPING>

### Subtraction:

<http://video.carrollk12.org/view/GRANGERSUBT3DIGITSWIT HREGROUPINGT>

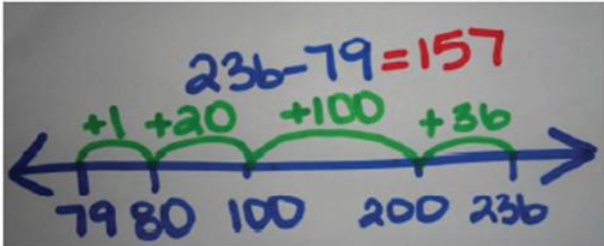
<http://video.carrollk12.org/view/GRANGERSUBT3DIGITSAC ROSSZERO>

<http://video.carrollk12.org/view/GRANGEROPENNUMBERLI NESUBT>

## KEY VOCABULARY

Add	Identity Property	Standard algorithm	Height
Addend	Invented strategies	Subtract	Kilogram
Addition	Inverse operation	Subtraction	Liter
Associative Property	Minuend	Subtrahend	Mass
Commutative Property	Missing Addend	Sum	Measure
Difference	More	Tens	Milliliter
Digit	Multiples of 10 and 100	Thousands	Minutes
Estimate	Number line	Minuend	Perimeter
Equal	Ones	Capacity	Scale
Flexible methods of computation	Operation	Gram	Standard unit
Hundreds	Place value	Elapsed time	

## Addition and Subtraction Strategies

<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <math display="block">248 + 345 =</math> <math display="block">500 + 80 + 13</math> <math display="block">500 + 80 = 580</math> <math display="block">580 + 13 = 593</math> </div> <div style="width: 35%; text-align: right;"> <math display="block">\begin{array}{r} 248 \\ + 345 \\ \hline 500 \\ 80 \\ 13 \\ \hline 593 \end{array}</math> </div> </div> <p style="margin-top: 10px;">Here, two students used the <i>partial sums</i> strategy, and recorded their thinking in two different ways. Breaking apart the numbers helps make it easier to compute.</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Third graders can also use the strategy <i>adding up in chunks</i>.</p> <p>One number is kept whole and the second number is broken into easy-to-use chunks.</p> </div> <div style="width: 35%; text-align: right;"> <math display="block">216 + 149 =</math> <math display="block">216 + (100 + 40 + 4 + 5)</math> <math display="block">216 + 100 = 316</math> <math display="block">316 + 40 = 356</math> <math display="block">356 + 4 = 360</math> <math display="block">360 + 5 = 365</math> </div> </div>				
<p>Students choose to use friendly numbers to make it easier when doing mental computation.</p> <p>Students may solve a subtraction problem by <i>keeping a constant difference</i>.</p> $236 - 79 =$ $(236 + 1) - (79 + 1) =$ $237 - 80 = 157$ <p style="margin-top: 10px;">By adding 1 to 236 and making 237, as well as adding 1 to 79 to make 80 (<i>keeping the difference constant</i>) this student makes it easier to subtract.</p>	$236 - 79 =$  $1 + 20 + 100 + 36 = 157$ <p style="margin-top: 10px;">This third grader used an <i>open number line</i> and added up in chunks starting at 79 and counting up to 236 in order to subtract. Students are encouraged to use this strategy in a way that makes sense to them.</p>				
$\begin{array}{r} -3 \quad +3 \\ 326 + 247 = \\ 323 + 250 = 573 \end{array}$ <p style="margin-top: 10px;">This example shows how a student could use <i>compensation</i> to solve an addition problem.</p>	<p style="text-align: center;"><u>Bar Models</u></p> <p>Sam has 5 more cupcakes than Kara. Kara has 12 cupcakes. How many cupcakes does Sam have?</p> <table style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Kara's cupcakes</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">12</td> </tr> <tr> <td style="padding: 5px;">Sam's cupcakes</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">5 ?</td> </tr> </table> <p style="margin-top: 10px;">This example shows how a student might use a bar model to represent a word problem.</p>	Kara's cupcakes	12	Sam's cupcakes	5 ?
Kara's cupcakes	12				
Sam's cupcakes	5 ?				