# Common Core Math in 3rd Grade

Back in the old days, third grade math was all about multiplication and beginning to learn fractions. In the Common Core, that's what it is still about!

A key change is that now we want students to apply their multiplication skills to more story problems, as well as connect the multiplication facts to one another. For example, if a child knows their "times fours," that can be used to help recall or figure out their "times eights": Since $3 \times 4 = 12$, then $3 \times 8$ must be twice that or 24. Some but not all children have used these kinds of strategies in the past. Now these strategies will be taught so that all children will have the opportunity to use them.

Children will see pictures explaining connections between multiplication facts (see example below). Students will also connect multiplication and division rather than seeing them separately. So for example, students learn that $4 \times 6 = 24$ then connect that to $24 \div 4 = 6$ and $24 \div 6 = 4$. Children will also be mastering addition and subtraction in the hundreds. This will mean not only learning the standard way, but figuring out short cuts and alternate approaches and talking about why they work. We want for children see an addition such as $398 + 15$ and have the option of the traditional method of "lining it up" to add or instead think "Well, if we give two of the 15 to the 398 that makes 400 so the answer is 413," or, "If we look on the number line, only two steps are needed to get to 400, and then 13 steps more would be 413." In different circumstances different methods are most efficient.

Topics such as measurement and geometry will often reinforce the story of multiplication. Picture graphs where each car represents five cars leads to multiplication. Concrete area problems with rectangles also apply multiplication, and can also be used to explain properties of multiplication.

## Examples:

Eureka Math: Demonstrating the Commutativity of Multiplication (see reverse).

In this example third graders use pictures of neatly organized objects called rectangular arrays (or just arrays). In the Common Core, students will begin to use arrays in second grade, so they will already be familiar with this representation.

In the worksheet, students use these arrays to see why we get the same product when we calculate $2 \times 6$, (that is, two sixes) and $6 \times 2$ (that is, six twos). Later they fill in $2 \times 9 = 9 \times \_\_\_$. Instead of evaluating in two separate problems, students see these as directly related. These rules of arithmetic become the rules of algebra.

## Tips for parents:

- If you practice multiplication facts, try to highlight related facts especially when your child cannot recall one. For example, if they don't remember $6 \times 6$ right away, you can ask, "Do you remember $5 \times 6$?" If they do, then remind them (if needed) that $6 \times 6$ is just six more.

- Be patient with the rectangular arrays, number lines and other unfamiliar approaches. No method is perfect, but for many students and teachers their use has already proven to be more effective than what we were doing in the past.

- It should be fine to show your child the standard "line them up" ways to add and subtract (and they will see them in class too!) but realize that they may also be using an alternate approach, especially when the standard way isn't as efficient a different method.

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For further information see:
ime.math.arizona.edu/progressions
and illustrativemathematics.org

# Example: Demonstrating the Commutativity of Multiplication, Eureka Math Module 1 Lesson 7 (excerpt)

https://www.engageny.org/resource/grade-3-mathematics-module-1

1. a. Count by 2 six times.

_____, _____, _____, _____, _____, _____

b. Draw an array that matches your count-by.

c. Write a multiplication sentence that represents the total number of objects in your array.

_____ × _____ = _____

2. a. Count by 6 two times.

_____, _____

b. Draw an array that matches your count-by.

c. Write a multiplication sentence that represents the total number of objects in your array.

_____ × _____ = _____

3. a. Compare your work in Problems 1 and 2. Turn your paper as you study the arrays to look at them in different ways.

b. Why are the factors in your multiplication sentences in a different order?

Write and solve a different multiplication sentence to describe each array.

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