

# Third Grade Family Letter

## Unit 12: Word Problem With Unknowns

Students have spent much of 1<sup>st</sup> through 3<sup>rd</sup> grade building their understanding of the operations of addition, subtraction, and now multiplication and division. In this unit, students will make sense of real world problems the solution of which involves two steps by modeling them with diagrams and equations using a letter for the unknown value. As students learn to model and solve these problems, they ask themselves, *what is this problem about? What is the part I am trying to find out? With every kind of situation, they ask, does my answer make sense? How do I know?*

Third graders have been using the formal algebraic convention of representing unknown parts of an equation with a letter, such as  $120 - n = 65$ . In this unit, students write equations with more than one operation, such as  $4 \times 5 + n = 26$ .

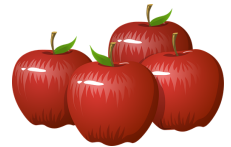
### Two Step Problems With Unknowns

Students have worked with two-step problems in the past. In this unit, 3<sup>rd</sup> graders will see different operations and units in the same problem, so they must read closely to understand the context.

### Add To / Take From, Put Together / Take Apart, and Compare Situations

Students continue to work with different types of problems as they have done in 1<sup>st</sup> and 2<sup>nd</sup> grade, now using larger numbers, all four operations, and a combination of problem types.

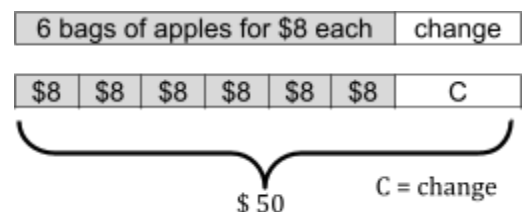
**Maria and her friends are making a fruit salad for an after school party celebrating healthy food, and Maria is bringing the apples. She is buying 6 bags of apples that cost \$8 a bag. She has a \$50 bill to buy the apples. How much change will she get back?**



In solving this problem a student might start by thinking through the problem and what the numbers and units mean. Part of this sense making process will be to first make a diagram and then to write an equation, both of which model the math in the problem.

- **Before I even start:** When I read this problem, what are the important numbers and units I need to think about? This is a story about friends making a fruit salad, but the math is about how much the apples cost, and how much change Maria will get back when she spends her \$50. My answer should be expressed as money.

- **Step 1:** I need to figure out how all the numbers are related to each other. I know that Maria has \$50, and that some of the money will be used for apples and some will be change. I can draw a diagram model to this.



- **Step 2:** I can write an equation to help me solve the problem.

Since \$50 is the total amount of money, and it is made up of 6 groups of \$8 and some change, I can write  $6 \times 8 + c = 50$ . That's  $48 + c = 50$ , so  $c$  is \$2.

Or, since Maria will subtract the money she is spending on apples from her \$50, I can write  $50 - 6 \times 8 = c$ . That's  $50 - 48$ , so her change will be \$2.

- **When I think I have the answer, I ask, Does my answer make sense?** The question asks me how much change Maria will get back. She started with \$50 and spent a lot on apples, so my answer has to be money that is a lot less than 50 dollars. My answer is \$2. Yes, my answer makes sense for this problem.

## What Is Fluency<sup>1</sup> In Math?

3<sup>rd</sup> grade students continue to build fluency with single-digit multiplication, and adding and subtracting within 1000. **Fluency** means skill in carrying out procedures flexibly, accurately, efficiently and appropriately. Fluency does not mean memorizing  $4 \times 7 = 28$ . It means accurately calculating. It means having efficient procedures to carry out calculations and it means being flexible in the ways the procedures are carried out.

Along with fluency, students need conceptual understanding. That is, they need to know *when* and *how* to use multiplication. In this unit, students develop three aspects of fluency in the context of solving problems:

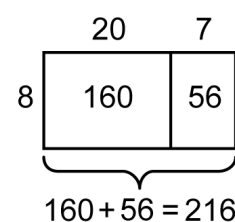
- Flexibility, or being able to use strategies and models from earlier grades and units
- Efficiency, or being able apply some of the simple 1-step multiplication facts quickly
- Accuracy, or being able get the right answer

## What is coming next year in Fourth Grade math?

This is the last unit in SFUSD's Math Core Curriculum for third grade. Fourth grade math will build on many of the most important concepts of third grade math. Fourth Grade focuses on three critical areas:

1. Developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends
  - Using the four operations with whole numbers to solve problems
  - Using place value understanding and properties of operations to perform multi-digit arithmetic
  - Gaining familiarity with factors and multiples

Model for  $27 \times 8$



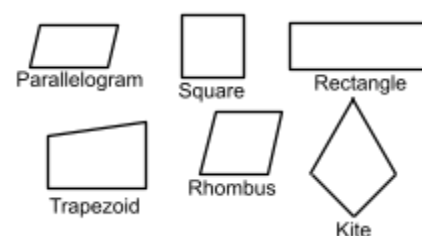
Using an area model to show that

$$\frac{2}{3} = \frac{4 \times 2}{4 \times 3}$$

Two area models are shown. The first is a rectangle divided into 3 equal horizontal sections, with the bottom 2 sections shaded green, representing the fraction 2/3. The second is a rectangle divided into a 4x3 grid of 12 equal squares, with 8 squares shaded green, representing the fraction 8/12, which is equivalent to 2/3.

2. Furthering understanding of fraction equivalence, adding and subtracting fractions with like denominators, and multiplication of fractions by whole numbers, using visual models
  - Extending understanding of fraction equivalence and ordering
  - Building fractions from unit fractions by applying and extending previous understandings of operations on whole numbers

3. Understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.
  - Drawing and identifying lines and angles, and classifying shapes by properties of their lines and angles



## Activities You Can Do to Support Math at Home

To consolidate some of the most important learning from 3<sup>rd</sup> grade, these are great activities to do at home through the end of the summer:

- Estimate and round using everyday situations
- Pay attention to real life situations with money and calculations, especially situations where you might multiply
- Keep a math notebook that shows your thinking with pictures, words, and numbers
- Notice time in everyday life, especially elapsed time and time shown on clock faces
- Notice fractions in the world all around you, including as you measure for recipes



<sup>1</sup> For more information, see the National Council of Teachers of Mathematics (NCTM) July 2014 statement "Procedural Fluency in Mathematics."