

KLSD

Parental Reference Guide Grade 4

A mathematics guide for parents

[Including website references]

2013-2014

Parental Reference Guide: Mathematics Grade 4

[*Please see Vocabulary Guide as appropriate](#)

Educators throughout the country are working to improve teaching and learning to ensure that all students master skills they need to be successful. In mathematics, three significant changes will be reflected in this shift:

- Teachers will concentrate on teaching a more focused set of major math concepts and skills.
- Students will have time to master concepts and skills in a more organized way, building deeper-level understanding from one grade to the next.
- Teachers will use rich and challenging math content and will engage students in problem solving that reflects the real-world.

Grade 4 Mathematics

In fourth grade, students will:

- Use addition, subtraction, multiplication, and division to solve word problems, including measurement of volume, mass, and time.
- Continue to build understanding of fractions - creating equal fractions, comparing size, adding and subtracting, and multiplying fractions by whole numbers.
- Start to understand the relationship between fractions and decimals.

Fourth grade students will engage in activities such as:

- Adding and subtracting whole numbers up to 1 million quickly and accurately
- Solving multi-step word problems, including converting measurements from larger to smaller units
- Multiplying and dividing multi-digit numbers
- Extending understanding of fractions by comparing the size of two fractions with different numerators and denominators
- Creating equal fractions ($3/4 = 3 \times 2 / 4 \times 2 = 6/8$)
- Adding and subtracting fractions with the same denominator
- Building fractions from smaller fractions ($3/8 = 1/8 + 1/8 + 1/8$)
- Connecting addition and subtraction of whole numbers to multiplying fractions by whole numbers
- Connecting addition of fractions to the concept of angle measurement
- Representing and interpreting data
- Converting fractions with denominators of 10 or 100 into decimals
- Locating decimals on a number line
- Comparing decimals and fractions using the symbols $>$, $<$, $=$

Examples of how students will develop their understanding of place value in grade four:

- Use place value understanding to round multi-digit whole numbers to any place
- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right
- Use place value understanding to find the product of two multi-digit numbers
- Compare two multi-digit numbers based on meanings of the digits in each place, using the symbols $<$, $>$, and $=$

Examples of how fourth grade students work with fractions:

- Break down fractions into smaller fractions with same denominator in more than one way ($3/8 = 1/8 + 1/8 + 1/8 = 2/8 + 1/8$)

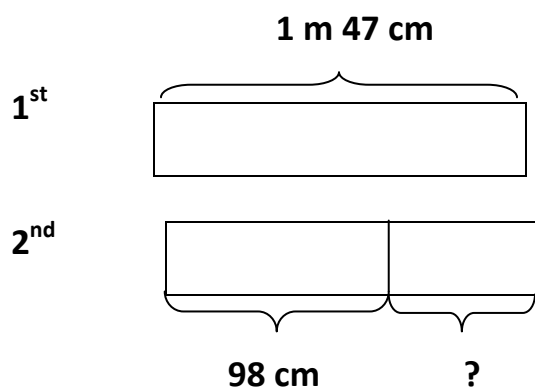
- Explain why a fraction is equal to another fraction
- Add and subtract mixed numbers (whole numbers mixed with fractions, such as $1 \frac{1}{5}$) with the same denominators
- Multiply a fraction by a whole number

Following is a detailed example of an application word problem in grade four:

Students are asked to solve an application problem using mixed units of length using an algorithm or simplifying strategies:

Sam practiced his long jump in P.E. On his first attempt, he jumped 1 meter 47 centimeters. On his second attempt, he jumped 98 centimeters. How much farther did Sam jump on his first attempt than his second?

- Students are asked to spend two minutes with a partner to draw a tape diagram to model this problem.
- The students' diagrams show a comparison between two values.
- Students are asked how they might solve for the unknown.
 - [Subtract 98 cm from 1 m 47 cm]
- Students solve using either the algorithm or a simplifying strategy.



Following are *four* possible solutions to this problem. Solution A shows the algorithm. Solutions B, C, and D show simplifying strategies.

Solution A

$$\begin{array}{r} 1 \text{ m} = 100 \text{ cm} \\ 1 \text{ m } 47 \text{ cm} = 147 \text{ cm} \\ \underline{- 98 \text{ cm}} \\ 49 \text{ cm} \end{array}$$

Solution B

$$\begin{array}{l} 1 \text{ m } 47 \text{ cm} - 98 \text{ cm} \\ 1 \text{ m} \\ \downarrow \\ 100 \text{ cm} - 98 \text{ cm} = 2 \text{ cm} \\ 47 \text{ cm} + 2 \text{ cm} = 49 \text{ cm} \end{array}$$

Solution C

$$\begin{array}{l} 147 \text{ cm} - 98 \text{ cm} = 49 \text{ cm} \\ \downarrow \quad \swarrow \\ 100 + 47 \\ \underline{-98} \\ 2 + 47 = 49 \text{ cm} \end{array}$$

Solution D

The following are
mathematics activities

$$98 \text{ cm} \xrightarrow{+2} 1 \text{ m} \xrightarrow{+47} 1 \text{ m } 47 \text{ cm}$$

*Answer is the same for all
problem-solving strategies A-D.
Students must write an answer
statement:*

*"Sam jumped 49 cm farther on
his first attempt than he did on
his second attempt."*

You can engage in with your fourth grade child outside of school:

- Use everyday objects to allow your child to explore the concept of fractions.
- Invite your child to write or describe fractions in different ways. (For example, $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$, or $3 \times \frac{1}{4}$)
- Ask your child to create and describe equal fractions. (For example, fold a piece of paper in half and talk about ways to show that $\frac{1}{2} = \frac{2}{4}$, folding the paper a second time.)
- Ask your child to explain his or her reasoning and thinking when solving problems; students are required to Read Draw Write (RDW) to show their mathematical thinking for word problems.
- Encourage your child to stick with a challenging problem, allowing your child to see that everyone can learn math.
- Praise your child's effort.

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Mathematics Reference Websites

<http://www.engageny.org/parent-and-family-resources>

<http://www.corestandards.org/math/practice>

<http://www.ixl.com/math/>

<http://illuminations.nctm.org>

http://www.mathplayground.com/common_core_state_standards_for_mathematics.html

*These guides were created with the help of many resources available on EngageNY.org including, but not limited to *Parent Roadmaps to Common Core Standards* from the Council of the Great City Schools."

