

Fifth grade students work with strategies when investigating division. One strategy that assists students is *multiplying up*.

$$\begin{array}{r}
 634 \div 26 \\
 \hline
 26 \times 10 = 260 \\
 26 \times 10 = 260 \\
 \hline
 520 \\
 26 \times 2 = 52 \\
 \hline
 572 \\
 26 \times 2 = 52 \\
 \hline
 624 \\
 \hline
 R 10 \\
 \hline
 \text{Ans: } 24 \text{ R } 10
 \end{array}$$

This student has used the *partial quotient* strategy to divide this problem.

$$634 \div 26 =$$

$$\begin{array}{r}
 24 \\
 26 \overline{) 634} \\
 \underline{- 260} \quad 10 \\
 374 \\
 \underline{- 260} \quad 10 \\
 114 \\
 \underline{- 52} \quad 2 \\
 62 \\
 \underline{- 52} \quad 2 \\
 10 \\
 \hline
 \text{Ans: } 24 \text{ R } 10
 \end{array}$$

**Division of a fraction by a fraction is not a requirement in grade 5.**

A strategy a fifth grader might use for division is *proportional reasoning*.

$$\begin{array}{l}
 768 \div 16 = \\
 \div 2 \div 2 \\
 384 \div 8 \\
 \div 2 \div 2 \\
 192 \div 4 \\
 \div 2 \div 2 \\
 96 \div 2 \\
 \div 2 \div 2 \\
 48 \div 1 = 48
 \end{array}$$

Students in grade 5 will use equivalent fractions in order to add and subtract.

$$\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$$

Fifth graders solve fraction word problems. This example involves multiplication of a whole number and a fraction.

*There are 4 sheets of colored paper, and I need to use  $\frac{5}{6}$  of each sheet to finish my art project. How much paper will I use?*



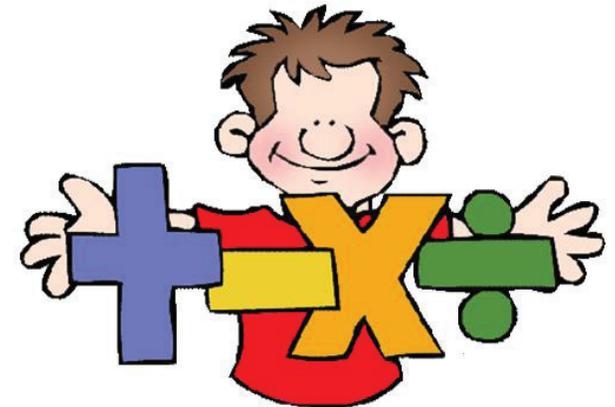
$\frac{5}{6}$  four times means that  $\frac{20}{6}$  of the paper is used which is 3 whole sheets of paper and  $\frac{2}{6}$  of the last sheet.

Fifth graders explore division of fractions.  $\frac{3}{4}$  is the result of  $3 \div 4$  and they should note that  $\frac{3}{4}$  multiplied by 4 is 3.

*If 3 pizzas were shared equally by 4 people each person has a share of size  $\frac{3}{4}$ .*



# Parent Roadmap Grade 5



**Strategies for division,  
Working with decimals  
and fractions**

# Math



Having worked with addition, subtraction, multiplication and division in both third and fourth grade, fifth grade students are expected to continue apply this understanding when working with decimals.

A strategy used in earlier grades is working with *place value*. This is a written example of what students are able to do in grade 5.

$$1.8 + 2.86 =$$

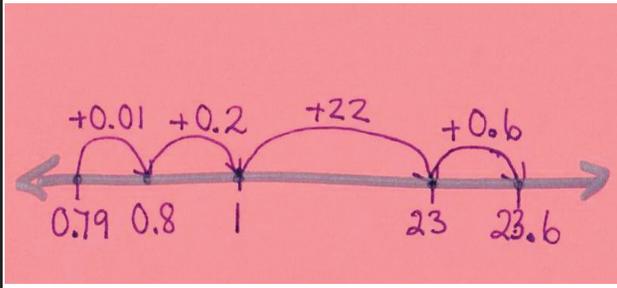
$$\begin{array}{l}
 1.8 + 2.86 = \\
 \text{---} \quad \text{---} \quad \text{---} \\
 1 + 0.8 + 2 + 0.8 + 0.06 \\
 1 + 2 = 3 \\
 0.8 + 0.8 = 1.6 \\
 1.6 + 3 = 4.6 \\
 4.6 + 0.06 = 4.66
 \end{array}$$

Fifth graders also do this with subtraction.

$$\begin{array}{l}
 2.86 - 1.8 \\
 2 - 1 = 1 \\
 1.86 - 0.8 = 1.06
 \end{array}$$

Students may solve a decimal subtraction problem by using an *open number line*. This strategy is still based on place value understanding.

$$23.6 - 0.79 = 22.81$$



The strategy *doubling and halving* is applied to decimal multiplication.

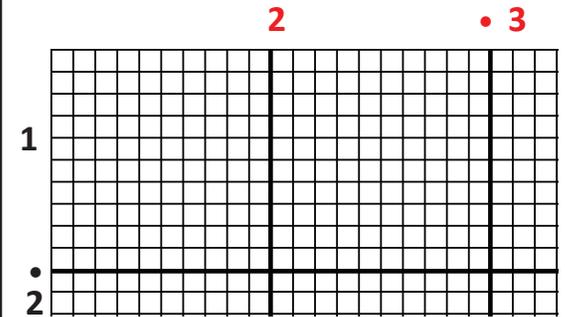
$$8 \times 2.5 =$$

$$\begin{array}{l}
 8 \times 2.5 \\
 \div 2 \quad \times 2 \\
 4 \times 5.0 \\
 \div 2 \quad \times 2 \\
 2 \times 10.0 \\
 = 20.0
 \end{array}$$

Fifth grade students are expected to be able to fluently multiply multi-digit whole numbers using the standard algorithm.

$$\begin{array}{r}
 326 \\
 \times 34 \\
 \hline
 1304 \\
 9780 \\
 \hline
 11,084
 \end{array}$$

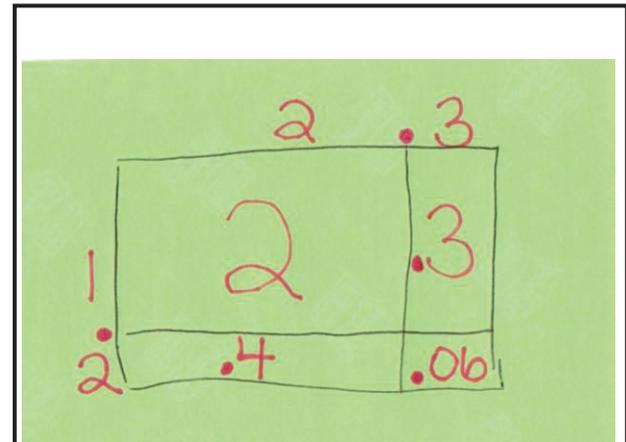
A fifth grader should apply knowledge of multiplication working with decimals.



Student will use a grid to show a model of a problem. The use of models continues as does working with the distributive property.

$$1.2 \times 2.3 = 2.76$$

$$\begin{array}{l}
 (1.0 \times 2.0) + (1.0 \times 0.3) + (0.2 \times 2.0) + \\
 (0.2 \times 0.3) \\
 2.0 + 0.3 + 0.4 + 0.06 = 2.76
 \end{array}$$



A student's model of  $1.2 \times 2.3$  (which means 1 and 2-tenths of 2 and 3-tenths). Each section is labeled to show the product.