

Division

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

Handwritten work for $634 \div 26$ using the 'multiplying up' strategy:

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

Partial Quotients

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

Handwritten work for $634 \div 26 =$ using the partial quotient strategy:

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

Proportional Reasoning

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

Handwritten work for $768 \div 16 =$ using proportional reasoning:

$$\begin{array}{r}
 768 \div 16 = \\
 \div 2 \div 2 \\
 384 \div 8 \\
 \div 2 \div 2 \\
 192 \div 4 \\
 \div 2 \div 2 \\
 96 \div 2 \\
 \div 2 \div 2 \\
 46 \div 1 = 46
 \end{array}$$

Operations with Fractions

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

Handwritten work for $\frac{2}{3} + \frac{5}{4} = \frac{23}{12}$:

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

Fifth graders solve word problems with fractions. 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. This is 3 whole sheets of paper and $\frac{2}{6}$ of another sheet.

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



If 3 pizzas are shared equally by 4 people, each person will have a share of size $\frac{3}{4}$.

Parent Roadmap



Grade 5 Math

Key Concepts

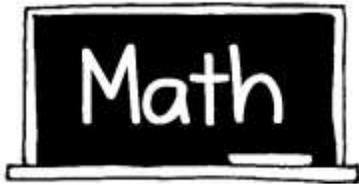
- Division Strategies
- Working with Decimals and Fractions



COWETA COUNTY
SCHOOL SYSTEM

Division of a fraction by a fraction is not a requirement in Grade 5.

Adapted from Cobb County Schools



Decimals

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

This example illustrates how a fifth grader uses understanding of addition to find the sum of these two decimals.

$$1.8 + 2.86$$

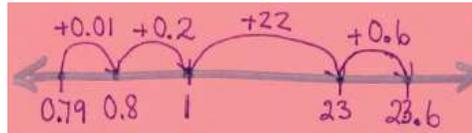
$$\begin{array}{l}
 1.8 + 2.86 = \\
 1 + 0.8 + 2 + 0.8 + 0.06 \\
 1 + 2 = 3 \\
 0.8 + 0.8 = 1.6 \\
 1.6 + 3 = 4.6 \\
 4.6 + 0.06 = 4.66
 \end{array}$$

Fifth graders also apply this understanding with decimal subtraction.

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

Open Number Line

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



Doubling and Halving

The strategy of doubling and halving can be applied to decimal multiplication.

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

Multiplication Algorithm

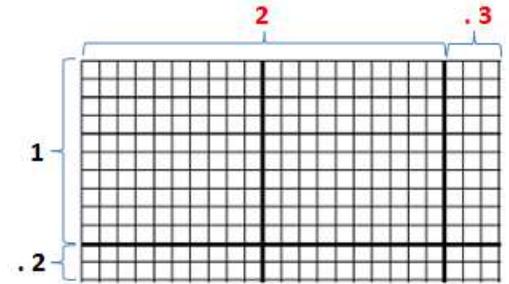
Fifth grade students are expected to be able to fluently multiply multi-digit whole numbers using the standard algorithm.

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

Models and Distributive Property

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

The diagram below shows how a fifth grade student used a grid to model the product of 1.2×2.3 .

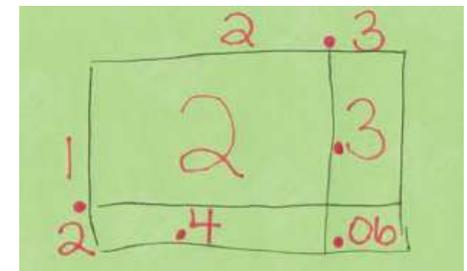


The work below shows how the student used the distributive property, based on the grid model, to find the same product.

$$1.2 \times 2.3 = 2.76$$

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

Area Model



This picture shows a student's area model for finding the product of 1.2×2.3 , which means 1 and 2-tenths *of* 2 and 3-tenths. Each section is labeled to show the product for that area. Adding these amounts together results in the final product.