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

$$634 \div 26$$

$$26 \times 10 = 260$$
$$26 \times 10 = 260$$
$$520$$
$$26 \times 2 = 52$$
$$572$$
$$26 \times 2 = 52$$
$$24 \qquad 624$$
$$R\ 10$$

Ans: 24 R 10

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

$$634 \div 26 =$$

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

Ans: 24 R 10

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.*

$$768 \div 16 =$$

$$768 \div 16$$
$$\div 2 \quad \div 2$$
$$384 \div 8$$
$$\div 2 \quad \div 2$$
$$192 \div 4$$
$$\div 2 \quad \div 2$$
$$96 \div 2$$
$$\div 2 \quad \div 2$$
$$48 \div 1 = 48$$

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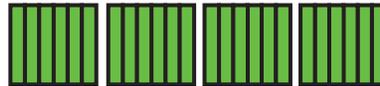
$\frac{5}{6}$ four times means that $\frac{20}{6}$ of the paper is used which is 3 whole sheets of paper and $\frac{2}{6}$ of the last sheet.

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.
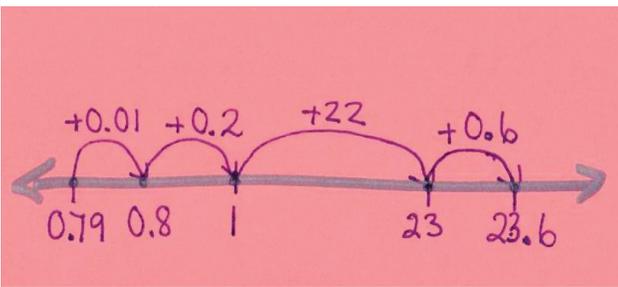
1.8 + 2.86 =

$$1.8 + 2.86 =$$
$$1 + 0.8 + 2 + 0.8 + 0.06$$
$$1 + 2 = 3$$
$$0.8 + 0.8 = 1.6$$
$$1.6 + 3 = 4.6$$
$$4.6 + 0.06 = 4.66$$

Fifth graders also do this with subtraction.

$$2.86 - 1.8$$
$$2 - 1 = 1$$
$$1.86 - 0.8 = 1.06$$

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

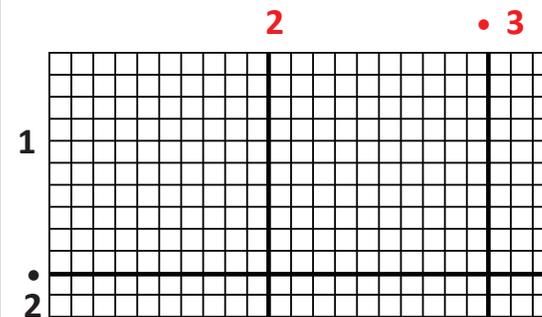The strategy *doubling and halving* is applied to decimal multiplication.

8 x 2.5 =

$$8 \times 2.5$$
$$\div 2 \qquad \times 2$$
$$4 \times 5.0$$
$$\div 2 \qquad \times 2$$
$$2 \times 10.0$$
$$= 20.0$$

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

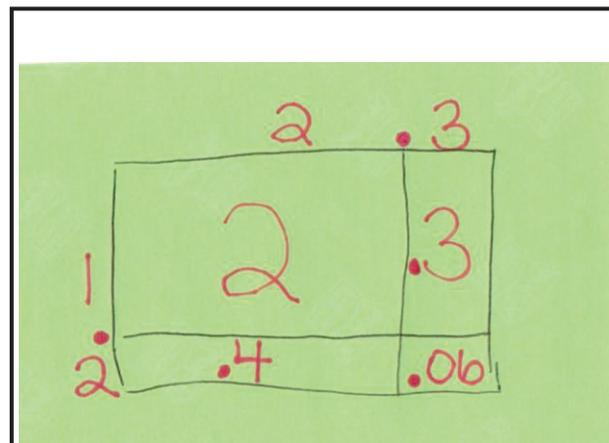$$\begin{array}{r} 326 \\ \times \quad 34 \\ \hline 1304 \\ 9780 \\ \hline 11{,}084 \end{array}$$

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

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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 x 2.3 = 2.76

(1.0 x 2.0) + (1.0 x 0.3) + (0.2 x 2.0) + (0.2 x 0.3)

2.0 + 0.3 + 0.4 + 0.06 = 2.76

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