

Division

In grade 5, students begin to divide with 2 digit divisors. They are not expected to be fluent with long division until 6th grade.

To help students understand the use of place value, begin with simpler problems such as $120 \div 30$ or

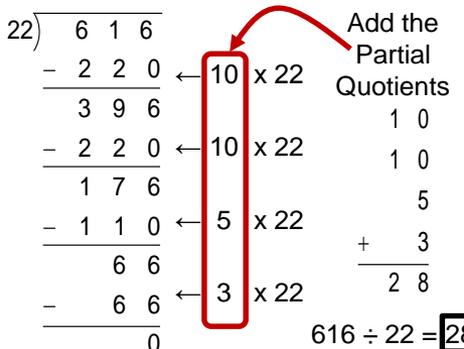
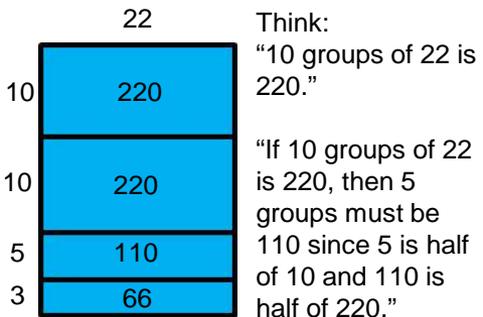
$$1200 \div 30$$

Think:
 "120 tens divided by 3 tens is 40."
 This shows why 4 would be written in the tens place of the quotient when you use the standard algorithm.

Area Model and Partial Quotients

$$616 \div 22$$

As you use the area model to divide, keep track of how much of 616 is left to divide by subtracting multiples of 22. It is helpful to start with multiples of 10.



Grade 5 Mathematics



Long Beach Unified School District
 K-5 Math Curriculum Office
 Teacher Resource Center
 1299 E. 32nd St., Room D
 Signal Hill, CA 90755

What's In?

What's Out?

Building conceptual understanding with manipulatives

~~Learning the steps, algorithm, without conceptual understanding~~

Explaining why the answer is correct and how they arrived at the answer

~~Giving the "number" as the correct answer and moving on without explanations~~

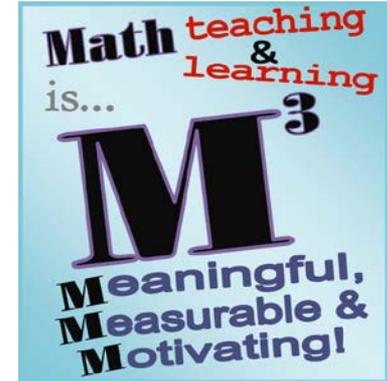
Understanding there are multiple strategies to arrive at a solution and attempting to solve a problem in more than one way

~~Thinking there is only one method to finding a solution to a problem~~

Applying mathematical understandings to new situations in order to solve a problem

~~Applying their understanding of mathematical concepts to only similar problems to find a solution~~

Math Tools and Strategies Your Child Will Use in Grade 5



This brochure illustrates mathematical strategies students will be learning throughout the school year. Additional Parent Resources can be found at www.lbschools.net under Mathematics and Family Resources.

Pamela Seki
 Assistant Superintendent of Curriculum, Instruction and Professional Development

Lisa Dougan
 K - 5 Mathematics Curriculum Leader

Multi-Digit Multiplication

Grade 5 students are expected to fluently multiply multi-digit whole numbers using the standard algorithm. The partial products method is a valid recording method for the standard algorithm.

Partial Products Method

Break apart numbers by place value to find parts of the product. Add them back together to get the final product.

Beginning with the **tens** place.

63 (2 represents 2 tens, or 20)

$$\begin{array}{r} 63 \\ \times 29 \\ \hline 1200 \leftarrow (20 \times 60) \\ 60 \leftarrow (20 \times 3) \\ 540 \leftarrow (9 \times 60) \\ + 27 \leftarrow (9 \times 3) \\ \hline 1827 \end{array}$$

final product

Beginning with the **ones** place.

63 (9 represents 9 ones)

$$\begin{array}{r} 63 \\ \times 29 \\ \hline 27 \leftarrow (9 \times 3) \\ 540 \leftarrow (9 \times 60) \\ 60 \leftarrow (20 \times 3) \\ + 1200 \leftarrow (20 \times 60) \\ \hline 1827 \end{array}$$

Standard Algorithm

This is a digit-based algorithm. After multiplying each digit, combine products of each place value.

$$\begin{array}{r} 63 \\ \times 29 \\ \hline 567 \leftarrow (9 \times 3) + (9 \times 60) \\ + 1260 \leftarrow (20 \times 3) + (20 \times 60) \\ \hline 1827 \end{array}$$

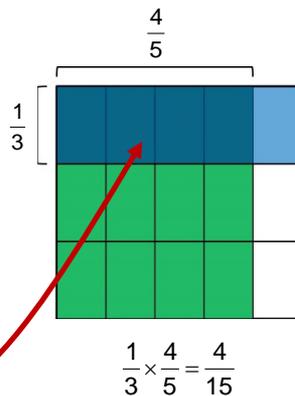
Multiplying Fractions

Grade 5 students apply and extend previous understanding of multiplication of whole numbers to multiply fractions.

Area Model with a Unit Square

Multiply $\frac{1}{3} \times \frac{4}{5}$ or think "What is $\frac{1}{3}$ of $\frac{4}{5}$?"

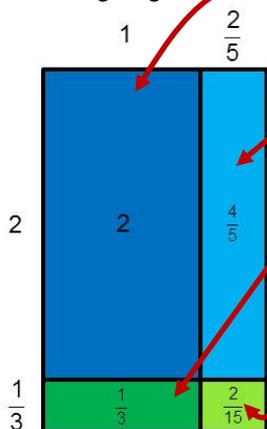
Create a unit square and divide it into fifths vertically. Shade $\frac{4}{5}$. Find $\frac{1}{3}$ of this area by dividing the square into thirds horizontally and shade in one section. The unit square is now divided into fifteenths and 4 are in the overlapping shaded area. Together they represent $\frac{4}{15}$.



Area Model with Mixed Numbers

When using the area model with whole number multi-digit multiplication, break apart the factors by place value. With mixed number factors, break apart the factors as a whole number and fraction.

$$2\frac{1}{3} \times 1\frac{2}{5} \quad \text{Think: } 2 \times 1 = 2$$



$$2 \times \frac{2}{5} = \frac{2}{5} + \frac{2}{5} = \frac{4}{5}$$

$$\frac{1}{3} \times 1 = \frac{1}{3}$$

$$\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$$

Add the smaller areas (partial products):

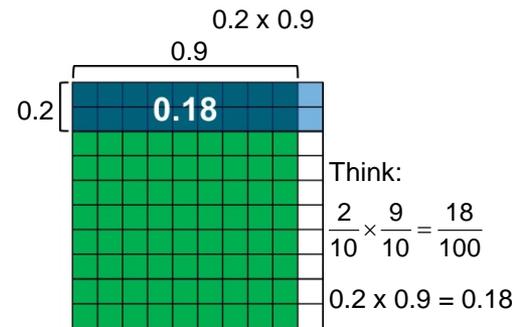
$$2 + \frac{4}{5} + \frac{1}{3} + \frac{2}{15} = 2 + \frac{12}{15} + \frac{5}{15} + \frac{2}{15} =$$

$$2\frac{19}{15} = 2 + \frac{15}{15} + \frac{4}{15} = 3\frac{4}{15}$$

Multiplying Decimals

Grade 5 students perform operations with decimals to hundredths using strategies based on place value. Students are able to relate the strategy to a written method and explain the reasoning used.

Decimal Square



The 10x10 grid represents 1 whole. Create a smaller rectangle with the dimensions of 9 tenths by 2 tenths. Each small square represents one hundredth. The product is 18 hundredths which is shown in the overlapping shaded area.

Area Model with Decimals

Break apart the decimal factors by place value (use base ten blocks before drawing the model).

