

Grade 5 Unit 2 - Numbers in Base Ten Division

UNIT OVERVIEW

Grade 5 instruction time centers around 3 Critical Areas of Focus. This unit is connected to **Focus Area #2, Extending division to 2-digit divisors**, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations.

(See Connections for explanation)

This unit addresses work in the cluster, Perform operations with multi-digit whole numbers and with decimals to hundredths.

STANDARDS

CC_Common Core State Standards - Mathematics (2010) - Grade 5

Domain 5.NBT Number and Operations in Base Ten

Cluster Statement: *Perform operations with multi-digit whole numbers and with decimals to hundredths.*

Standard 5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

CONTENT ELABORATIONS

5.NBT.6

This standard references various strategies for division. Division problems can include remainders. Even though this standard leads more towards computation, the connection to story contexts is critical. Make sure students are exposed to problems where the divisor is the number of groups and where the divisor is the size of the groups. In fourth grade, students' experiences with division were limited to dividing by one-digit divisors. This standard extends students' prior experiences with strategies, illustrations and explanations. When the two-digit divisor is a "familiar" number, a student might decompose the dividend using place value.

MP.2, MP.3, MP.4, MP.5, MP.7 should be emphasized.

UNIT VOCABULARY

fact family
unknown

varibale
dividend

divisor
quotient
remainder

BIG IDEAS

ENDURING UNDERSTANDINGS

ESSENTIALS QUESTIONS

Choose a few questions based on the needs of your students

- There are two common situations where division may be used: fair sharing (given the total amount and the number of equal groups, determine how many/much in each group) and measurement (given the total amount and the amount in a group, determine how many groups of the same size can be created).

- What strategies can be used to divide whole numbers?

- What strategies can I use to divide by a two-digit number?

- Some division situations will produce a remainder, but the remainder will always be less than the divisor. If the remainder is greater than the divisor, that means at least one more can be given to each group (fair sharing) or at least one more group of the given size (the dividend) may be created.

- The dividend, divisor, quotient, and remainder are related in the following manner:
 $\text{dividend} = \text{divisor} \times \text{quotient} + \text{remainder}$.

- The quotient remains unchanged when both the dividend and the divisor are multiplied or divided by the same number.

- The properties of multiplication and division help us solve computation problems easily and provide reasoning for choices we make in problem solving.

CONNECTIONS

In **Critical Focus Area #2**, students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number) to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

The work in this unit is connected to, Use place value understanding and properties of operations to perform multi-digit arithmetic, **4.NBT.5-6**.

Standards for Mathematical Practice (SMP)

MP.1 Make sense of problems and persevere in solving them

MP.2 Reason abstractly and quantitatively

MP.3 Construct viable arguments and critique the reasoning of others

MP.4 Model with mathematics

MP.5 Use appropriate tools strategically

MP.6 Attend to precision

MP.7 Look for and make use of structure (Deductive reasoning)

MP.8 Look for and express regularity in repeated reasoning (Inductive Reasoning)

Perform operations with multi-digit whole numbers and with decimals to hundredths

CONTENT

SKILLS

5.NBT.6

Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.

Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.

1. Divide using numerous strategies (e.g., base ten models and arrays, area model, estimation, distributive property, etc.)
2. Solve contextual problems in which division is used in fair sharing (compute the number in each group) and measurement (compute the number of same sized groups) situations.

UNIT RESOURCES

Common Core Math Curriculum

McGraw-Hill, **My Math** Chapter3-4

Number Talks by Sherry Parrish

Georgia Math frameworks, Grade 5 Units 1

Manipulatives: Decimal place-value chart

Hands on Standards - Number & Operations, Grade 3/4 lessons 5, 12, 13, 24 Grade 5/6 lessons 13, 14, 17

Math Playground/Common Core http://www.mathplayground.com/common_core_state_standards_for_mathematics_grade_5.html

Games connected to CCS

Base Blocks Decimals http://nlvm.usu.edu/en/nav/frames_asid_264_g_2_t_1.html?from=category_g_2_t_1.html

IXL <http://www.ixl.com/math/standards/common-core/grade-5>