GCPS Fifth Grade 2021-2022

Curriculum Guide

1st Quarter at a Glance

44 days

Standard	Number of Days	Notes
Review/Establish Routines/STAR	**4 days**	
5.4 – Single/Multi-step word problems and Distributive Property	**4 days (ongoing; also tested in 3rd quarter)**	**Ongoing (quarterly word problems)**
5.1 – Rounding Decimals	**6 days**	
5.5a*,b – Decimal Computation	**10 days (ongoing; also tested in 3rd quarter)**	**Ongoing (quarterly word problems)**
5.2a,b* – Fractions/Decimals	**20 days**	
Quarter 1 Problem Solving (calculator allowed) - Use Teacher Rubric and Student Rubric to score		
Quarter 1 Daily Reviews		

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

*Items measuring these SOLs will be assessed **without** the use of a calculator. All other standards will have **DESMOS VA Calculator** availability. Students should be proficient in using the Desmos Calculator.

SOL Strand: Computation and Estimation

Focus: Whole Number Computation

VA Sol: 5.4 The student will create and solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of whole numbers. **(calculator allowed)**

DESMOS VA Calculator

Anticipated Pacing: 4 days (ongoing; also tested in 3rd quarter)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:

Assessments
Formative and Summative

Inform Instruction:

- SOL 5.4 JIT Quick Check
- SOL 5.4 JIT Virtual Quick Check-Desmos Activity

Assess Learning:

- This test is given in Performance Matters.

Vertical Content:

- **4.4** The student will b) estimate and determine sums, differences, and products of whole numbers; c) estimate and determine quotients of whole numbers, with and without remainders d) create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication, and single-step practical problems involving division with whole numbers
- **6.6** The student will a) add, subtract, multiply, and divide integers; b) solve practical problems involving operations with integers; and c) simplify numerical expressions involving integers.

Resources for bridging the content:

- SOL 4.4a JIT Quick Check
- SOL 4.4b JIT Quick Check
- SOL 4.4c JIT Quick Check
- SOL 4.4d JIT Quick Check
- SOL 6.6a JIT Quick Check
- SOL 6.6b JIT Quick Check
- SOL 6.6c JIT Quick Check
- GCPS 4th grade 4.4bd Addition/Subtraction Resources folder

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

	● GCPS 4th grade 4.4abd Multiplication Resources folder ● GCPS 4th grade 4.4cd Division Resources folder

Content and Instruction

Essential Knowledge and Skills (what students should know and do)	Instructional Resources	Instructional Strategies, Manipulatives, and Materials
● Create single-step and multistep practical problems involving addition, subtraction, multiplication, and division of whole numbers, with and without remainders. ● Estimate the sum, difference, product, and quotient of whole numbers. ● Apply strategies, including place value and application of the properties of addition and multiplication, to solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of whole numbers, with and without remainders, in which: ○ sums, differences, & products do not exceed	**SOL 5.4 Notes Study Guide** **VDOE Lesson Plans:** ● **5.4 Take a Trip: Computation and Estimation with Whole Numbers** **Rich Mathematical Tasks:** ● **5.4 Saving for a Bicycle Task** **Hands-On Standards, Grades 3-4:** ● p. 22 (Estimating the Sum or Difference) ● p. 40 (Dividing with Two-digit Divisors) **Hands-On Standards, Grades 5-6:** page 48 (Meaning of Division) Voc ● 4 –Step Problem Solving Process: Problem Solving Poster	● Review estimation from previous grades, including rounding numbers first. Emphasize the use of compatible/friendly numbers for estimating quotients ● Use real-world problems/concepts to illustrate the need to interpret the remainder. Example: There are 87 fifth graders going on a field trip. Each bus can hold 38 students. How many buses do they need for the field trip? ● Base 10 blocks ● Unifix cubes to model problems

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five digits; ○ factors do not exceed two digits by three digits; ○ divisors do not exceed two digits; or ○ dividends do not exceed four digits. ● Use the context of a practical problem to interpret the quotient and remainder.	● Thinking Blocks (online or app) ● Field Trip Task (Group Activity) ● Number of Pages (Group Activity) ● Estimating Quotients (Independent Practice) ● Culminating Division Word Problems to Interpret Remainders (Independent Practice) ● **Exemplars**: The Twelve Days of Christmas; Fish Dilemma	● Free Virtual Manipulatives ● Didax Virtual Manipulativ+es

Understanding the Standard (what teachers should know)

- The problem-solving process is enhanced when students create and solve their own practical problems and model problems using manipulatives and drawings.
- In problem solving, emphasis should be placed on thinking and reasoning rather than on key words. Focusing on key words such as *in all, altogether, difference,* etc., encourages students to perform a particular operation rather than make sense of the context of the problem. A key-word focus prepares students to solve a limited set of problems and often leads to incorrect solutions as well as challenges in upcoming grades and courses.
- Estimation can be used to determine a reasonable range for the answer to computation and to verify the reasonableness of sums, differences, products, and quotients of whole numbers.
- The least number of steps necessary to solve a single-step problem is one.
- A multistep problem incorporates two or more operational steps (operations can be the same or different).
- Extensive research has been undertaken over the last several decades regarding different problem types. Many of these studies have been published in professional mathematics education publications using different labels

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and terminology to describe the varied problem types.

- Students should experience a variety of problem types related to multiplication and division. Some examples are included in the following chart:

GRADE 5: COMMON MULTIPLICATION AND DIVISION PROBLEM TYPES		
Equal Group Problems		
Whole Unknown (Multiplication)	Size of Groups Unknown (Partitive Division)	Number of Groups Unknown (Measurement Division)
There are 25 boxes of crayons. Each box contains 96 crayons. How many crayons are there in all?	If 2,400 crayons are divided equally among 25 tubs, how many crayons will go into each tub?	If 2,400 crayons are placed into tubs with each tub containing 96 crayons, how many tubs can be filled?
Multiplicative Comparison Problems		
Result Unknown	Start Unknown	Comparison Factor Unknown
Tyrone traveled 125 miles last month. Jasmine traveled 15 times as many miles as Tyrone during the same month. How many miles did Jasmine travel?	Jasmine traveled 1,956 miles last summer. She traveled 12 times as many miles as Tyrone during the same summer. How many miles did Tyrone travel?	Jasmine traveled 1,275 miles in December. Tyrone traveled 85 miles in December. Jasmine travelled how many times more miles than Tyrone?
Array or Area Problems		
Whole Unknown	One Dimension Unknown	
There are 28 sections of parking lot at the stadium. There are 115 cars parked in each section of the parking lot at the stadium. How many cars are parked at the stadium all together? Mr. Myers's barn measures 35 feet by 110 feet. How many square feet are in the barn?	There are 3,220 cars parked at the stadium. The cars are divided evenly among each of the 28 sections of parking lot. How many cars are parked in each section? There are 3,220 cars parked at the stadium. There are exactly 115 cars parked in each section. How many sections are filled with cars? Mr. Myers' barn covers 3,850 square feet. The width of the barn is 35 feet. What is the length of the barn?	
COMBINATION PROBLEMS		
Outcomes Unknown	Factor Unknown	
An experiment involves tossing a coin and rolling a die. How many different outcomes are possible? Kelly has 2 pairs of pants and 3 shirts that can all be worn together. How many different outfits consisting of a pair of pants and a shirt does she have?	Mike bought some new shorts and shirts that can all be worn together. He has a total of 12 different outfits. If he bought 3 pairs of pants, how many shirts did he buy?	

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- Students also need exposure to various types of practical problems in which they must interpret the quotient and remainder based on the context. The chart below includes one example of each type of problem.

MAKING SENSE OF THE REMAINDER IN DIVISION	
TYPE OF PROBLEM	EXAMPLE
Remainder is not needed and can be left over (or discarded).	Bill has 29 pencils to share fairly with 6 friends. How many pencils will each friend receive? 4 pencils with 5 pencils left over
Remainder is partitioned and represented as a fraction or decimal.	Six friends will share 29 ounces of juice. How many ounces will each person get if all of the juice is shared equally? $4\frac{5}{6}$ ounces
Remainder forces the answer to be increased to the next whole number.	There are 29 people going to the party by car. How many cars will be needed if each car holds 6 people? 5 cars
Remainder forces the answer to be rounded (giving an approximate answer).	Six children will share a bag of candy containing 29 pieces. About how many pieces of candy will each child get? about 5 pieces of candy

- Investigating arithmetic operations with whole numbers helps students learn about several different properties of arithmetic relationships. These relationships remain true regardless of the numbers.
- Grade five students should explore and apply the properties of addition and multiplication as strategies for solving addition, subtraction, multiplication, and division problems using a variety of representations (e.g., manipulatives, diagrams, and symbols).
- The properties of the operations are “rules” about how numbers work and how they relate to one another. Students at this level do not need to use the formal terms for these properties but should utilize these properties to further develop flexibility and fluency in solving problems. The following properties are most appropriate for exploration at this level:
    - The commutative property of addition states that changing the order of the addends does not affect the sum (e.g., 4 + 3 = 3 + 4). Similarly, the commutative property of multiplication states that changing the order of the factors does not affect the product (e.g., 2 x 3 = 3 x 2).

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- The identity property of addition states that if zero is added to a given number, the sum is the same as the given number. The identity property of multiplication states that if a given number is multiplied by one, the product is the same as the given number.
- The associative property of addition states that the sum stays the same when the grouping of addends is changed (e.g., 15 + (35 + 16) = (15 + 35) + 16).
- The associative property of multiplication states that the product stays the same when the grouping of factors is changed (e.g., 6 x (3 x 5) = (6 x 3) x 5).
- The distributive property states that multiplying a sum by a number gives the same result as multiplying each addend by the number and then adding the products.
- Examples of the distributive property include:
  - 3(9) = 3(5 + 4)
  - 3(54 + 4) = 3 × 54 + 3 × 4
  - 5 × (3 + 7) = (5 × 3) + (5 × 7)
  - (2 × 3) + (2 × 5) = 2 × (3 + 5)
  - 9 × 23= 9(20 + 3)= 180 + 27= 207
  - 34 × 8

	30	4
8	8 × 30 = 240	8 × 4 = 32

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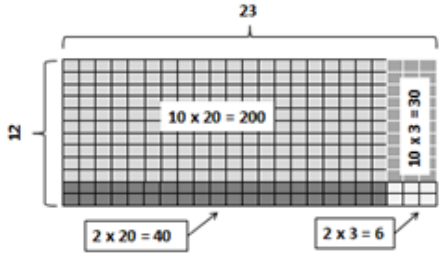
- 23 × 12

  (20 + 3) × (10 + 2)

  (20 × 10) + (20 × 2) + (3 × 10) + (3 × 2)200 + 40 + 30 + 6

  276



Key Vocabulary

VDOE Word Wall Cards

- single-step
- multistep
- addition
- subtraction
- multiplication
- division
- mathematical operations
- whole numbers
- estimation
- mental computation
- calculators
- computation
- operations
- operational steps
- estimate
- sum
- difference
- product
- quotient
- multiplier
- factor
- divisor
- dividends
- reasonable(ness)

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Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Instructional Support For ALL Learners

Differentiation	Essential Questions
Above level learners- ● Students can create multi-step word problems for classmates to solve using the types of word problems found on page 4 of this guide. **Below level learners-** ● Students need practice solving single step word problems. After practicing single step word problems, have the students practice multi-step word problems. ● Students should always draw a representation of the word problem. This helps them identify which computation to use to solve the problem. ● Use Problem Types chart above to help students progress through the different types of word problems.	● When should you use mental computation? ● How are the four basic operations related to one another? ● How do I recognize what strategy to use for a specific problem? ● How can I estimate the answers for operations involving two and three digit numbers? ● How can I use what I know about repeated subtraction, equal sharing, and forming equal groups to solve division problems? ● How does the context of a problem situation determine how to represent a remainder in division?

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Standard	**Essential Knowledge and Skills and Key Instructional Information**	

- Chunk the problem into smaller parts and solve one step at a time.

SWD Resources-

- Evidence-Based Specially Designed Instruction in Mathematics Resource Guide
- VDOE Co-Teaching Lesson 5.4- Multi-step Practical Problems

Common Student Misconceptions:

- Students need additional practice solving multistep practical problems involving more than one operation with whole numbers.
- Students may need additional practice using the calculator to solve whole number problems.
- Desmos Calculator: **Virginia Desmos Calculator**

Teacher Notes and Elaborations:

- Students will be able to **USE A CALCULATOR** for whole number computation in **practical problems**.
- Students should be familiar with the Desmos Calculator: **Virginia Desmos Calculator**
- Do NOT teach key words. Instead focus on the use of the 4-Step Problem Solving Process: Read, Think, Solve, Check

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Standard	**Essential Knowledge and Skills and Key Instructional Information**	

SOL Strand: Number and Number Sense

Focus: Rounding Decimals

VA SOL: 5.1 The student, given a decimal through thousandths, will round to the nearest whole number, tenth, or hundredth.

Anticipated Pacing: 6 days

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:

Assessments
Formative and Summative

Inform Instruction:

- SOL 5.1 JIT Quick Check
- SOL 5.1 JIT Virtual Quick Check-Desmos Activity

Assess Learning:

- Post-Assessment (link here)

Vertical Content:

- 4.1c The student will round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand.
- 4.3 The student will
  - a) read, write, represent, and identify decimals expressed through thousandths
  - b) round decimals to the nearest whole number;
- **No matching vertical alignment for sixth grade**

Resources for bridging the content:

- SOL 4.1c JIT Quick Check
- SOL 4.3a JIT Quick Check
- SOL 4.3b JIT Quick Check
- GCPS 4th grade 4.1 Place Value Resources folder
- GCPS 4th grade 4.3 Decimals Resources folder

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Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Content and Instruction

Essential Knowledge and Skills (what students should know and do)	Instructional Resources	Instructional Strategies, Manipulatives, and Materials
• Given a decimal through thousandths, round to the nearest whole number, tenth, or hundredth.	SOL 5.1 Notes Study Guide **VDOE Lesson Plan:** • 5.1 Decimal Rounding **Rich Mathematical Tasks: No VDOE tasks for this SOL** **Math in Practice; Teaching 5th-Grade Math**: • Module 1 Understanding Place Value: p. 9 • Number Rock Decimal Place Value Video • MathAntics Rounding Video • Lunch Money and Other Poems about School by Carol Shields: Use the poem *Lunch Money* and have students come up with their own amounts and practice rounding • Sir Cumference and the Roundabout Battle by Cindy Neuschwander: Helps students round numbers.	• Begin teaching rounding using conceptual strategies, such as a number line and/or modeling decimals with base 10 blocks. Use these representations to demonstrate why rounding rules work. • Base 10 blocks • Place value flip charts • Place value chips • Place value pockets (Kim Sutton) • Free Virtual Manipulatives • Didax Virtual Manipulatives

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

	• Decimal Rounding Cards (Group Activity) • Decimal Rounding (Independent Practice) • Decimal Rounding TEI's (Teacher Directed)	

Understanding the Standard
(what teachers should know)

- The structure of the base-ten number system is based upon a simple pattern of tens in which each place is ten times the value of the place to its right. This is known as a ten-to-one place value relationship. To investigate this relationship, use base-ten proportional manipulatives, such as place value mats/charts, decimal squares, base-ten blocks, meter sticks, as well as the ten-to-one non-proportional model, and money.
- A decimal point separates the whole number places from the places less than one. Place values extend infinitely in two directions from a decimal point. A number containing a decimal point is called a *decimal number* or simply a *decimal*.
- To read decimals:
  - read the whole number to the left of the decimal point;
  - read the decimal point as “and”;
  - read the digits to the right of the decimal point just as you would read a whole number; and
  - say the name of the place value of the digit in the smallest place.
- Any decimal less than one will include a leading zero (e.g., 0.125). This number may be read as “zero and one hundred twenty-five thousandths” or as “one hundred twenty-five thousandths.”

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

- Decimals can be rounded in situations when exact numbers are not needed. Strategies for rounding whole numbers can be applied to rounding decimals.
- Number lines are tools that can be used in developing a conceptual understanding of rounding decimals. One strategy includes creating a number line that shows the decimal that is to be rounded. Locate it on the number line. Next, determine the closest multiples of whole numbers, tenths, or hundredth, it is between. Then, identify to which it is closer.

Key Vocabulary

VDOE Word Wall Cards

• decimal(s) • tenths • hundredths • thousandths • nearest • whole number	• round • decimal numbers • estimate • exact number • leading zero • decimal point	• whole number place • less than one • ten-to-one place value • standard • number line

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Instructional Support For ALL Learners

Differentiation

Above level learners-

- Students can use newspaper ads to make a list of items to buy for an event such as a party. They can fill out a ledger showing items bought and the cost of each item. Each item and total can be rounded to the nearest dollar. The teacher can choose whether to give students a budget.

Below level learners-

- Students need daily practice making a place value chart. The students can place the number in the chart when rounding.
- Try not to rely on sayings such as “Five or above, give it a shove. Four or less, let it rest.” Instead, focus on teaching rounding conceptually using number lines.

SWD Resources-

- Evidence-Based Specially Designed Instruction in Mathematics Resource Guide
- VDOE Co-Teaching Lesson 5.1- Decimal Rounding

Essential Questions

- How does understanding place value help you solve double digit addition and subtraction problems?
- How are place value patterns repeated in large numbers?
- When is it useful to round decimal numbers?

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Common Student Misconceptions:

- Students want to say that 0.54 is larger than 0.8 (students may compare these as if they are whole numbers).
- Students have difficulty differentiating between the place value hundred vs. hundred**th** (reading and writing).
- Teachers and students tend to say "**and**" when orally representing whole numbers when switching periods rather than reserving **"and"** to signify the change between whole numbers and decimals.
- When rounding to the nearest whole/nearest dollar students often/tend to round to the largest place value instead of the ones place.

Teacher Notes and Elaborations:

- Begin teaching rounding using conceptual strategies, such as a number line. If students are struggling and require a different instructional strategy, use a strategy such as boxing in the place you are rounding to and the place behind it to connect to rounding to the nearest ten. **Example:** Round 0.92 to the nearest tenth. *Draw a box around 92 and round to the nearest 10= 90. Then, place the decimal point back in front of the 9 and drop the zero in the hundredths place so the answer stops in the tenths place.*
- Another strategy is to draw a line behind the place that is being rounded and think of the number as a whole number. Write what the number would be if it stayed the same underneath the number and write what the number would be rounded up above the number. Then, use the number directly behind the line to determine whether the number should stay the same or round up and place the decimal point appropriately. Example: Round 2.984 to the nearest hundredth. *Draw a line behind the 8 and think of the number before the line as a whole number- 298. If the number stays the same, it would stay 298- write below the number. If the number rounds up, it would round up to 299- write above the number. Then use the 4 behind the line to determine that the number remains the same. Place the decimal point back between the 2 and 9 to get the rounded answer of 2.98.*

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Standard	**Essential Knowledge and Skills and Key Instructional Information**	

SOL Strand: Computation and Estimation

Focus: Decimal Computation

VA SOL: 5.5 The student will

a) estimate and determine the product and quotient of two numbers involving decimals* **(calculator NOT allowed)**

b) create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication of decimals, and create and solve single-step practical problems involving division of decimals. **(calculator allowed)**
DESMOS VA Calculator

Anticipated Pacing: 10 days (ongoing; also tested in 3rd quarter)

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:

Assessments
Formative and Summative

Inform Instruction:
- SOL 5.5a JIT Quick Check
- SOL 5.5a JIT Virtual Quick Check-Desmos Activity
- SOL 5.5b JIT Quick Check
- SOL 5.5b JIT Virtual Quick Check-Desmos Activity

Assess Learning:
- Post-Assessment (link here)

Vertical Content:

- SOL 4.6 The student will
  - a) add and subtract with decimals (NO calculator allowed)
  - b) solve single-step and multistep practical problems involving addition and subtraction with decimals.

- 6.5 The student will
  - c) solve multistep practical problems involving addition, subtraction, multiplication, and division of decimals.

Resources for bridging the content:
- SOL 4.6a JIT Quick Check
- SOL 4.6b JIT Quick Check
- SOL 6.5c JIT Quick Check
- GCPS 4.6 Decimal Computation Resources folder

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Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Content and Instruction

Essential Knowledge and Skills (what students should know and do)	Instructional Resources	Instructional Strategies, Manipulatives, and Materials
• Estimate and determine the product of two numbers in which: ○ the factors do not exceed two digits by two digits (e.g., 2.3 × 4.5, 0.08 × 0.9, 0.85 × 2.3, 1.8 × 5); and ○ the products do not exceed the thousandths place. (Leading zeroes will not be considered when counting digits.) • Estimate and determine the quotient of two numbers in which: ○ quotients do not exceed four digits with or without a decimal point; ○ quotients may include whole numbers, tenths,	• SOL 5.5 Notes Study Guide • **Math in Practice; Teaching 5th-Grade Math**: ○ Module 3 Multiplying with Multidigit Whole Numbers: p. 66 ○ Module 4 Dividing with Multidigit Whole Numbers: p. 84 ○ Module 5 Adding and Subtracting Decimals: p. 99 ○ Module 6 Multiplying and Dividing Decimals: p. 120 • **Hands-On Standards, Grades 5-6**: page 52 (Multiply and Divide Decimals) • **Why Before How**: page 96 (partial quotient division) • MathAntics Decimal Arithmetic Video • Decimal Multiplication Example (Teacher Directed): Use the area model to multiply two decimal	• Use a hundredths grid to multiply two decimals less than 1 (see model below in *Below Level Learners* section). Can use dry erase markers and transparencies to create overlapping grids. • Use base 10 blocks to model dividing decimals into a whole number of groups. This can also be done to divide decimals or whole numbers into groups of a decimal number expressed as tenths. • Determine cost of meal for a family of 4 with a sample menu or grocery advertisement. • Determine cost of meal for a family of 4 with a sample menu or grocery

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	hundredths, or thousandths; ○ divisors are limited to a single digit whole number or a decimal expressed as tenths; and ○ no more than one additional zero will need to be annexed. ● Use multiple representations to model multiplication and division of decimals and whole numbers.	numbers. This can be done using base 10 blocks and hundredth grids. ● Estimating Decimal Division Sort (Group Activity) ● Decimal Division Annex Zero (Independent Practice) ● Represent multiplication and division of decimals in a variety of ways. This could include representations using base 10 blocks, decimal/hundredth grids, area models, etc.	advertisement. Determine the price per person using division. ● Place value pockets ● Place value dice ● Place value discs ● Base-10 blocks ● Hundredth grids ● Free Virtual Manipulatives ● Didax Virtual Manipulatives
	● Create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication of decimals. ● Create and solve single-step practical problems involving division of decimals.	● **VDOE Lesson Plans:** SOL 6.5 Practical Problems Involving Decimals ● **Rich Mathematical Tasks: 5.5b Room for Shoes** ○ **Task template** ○ **Student version of task** ○ **Anchor papers** ○ **Scoring rationales** ● 4 –Step Problem Solving Process ● Thinking Blocks (online or app)	● Give students the opportunity to experience creating word problems given an equation. Students particularly need practice creating word problems involving multiplication and division.

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Standard	**Essential Knowledge and Skills and Key Instructional Information**	

	• Decimal Computation Expressions (Independent Practice) • Multiplication and Division Decimal Word Problems	

Understanding the Standard
(what teachers should know)

- Addition and subtraction of decimals may be investigated using a variety of models (e.g., 10-by-10 grids, number lines, money).
- The base-ten relationships and procedures developed for whole number computation apply to decimal computation, giving careful attention to the placement of the decimal point in the solution.
- In cases where an exact product is not required, the product of decimals can be estimated using strategies for multiplying whole numbers, such as front-end and compatible numbers, or rounding. In each case, the student needs to determine where to place the decimal point to ensure that the product is reasonable.
- Estimation keeps the focus on the meaning of the numbers and operations, encourages reflective thinking, and helps build informal number sense with decimals. Students can reason with benchmarks to get an estimate without using an algorithm.
- Estimation can be used to determine a reasonable range for the answer to computation and to verify the reasonableness of sums, differences, products, and quotients of decimals.
- Division is the operation of making equal groups or shares. When the original amount and the number of shares are known, divide to determine the size of each share. When the original amount and the size of each

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
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share are known, divide to determine the number of shares. Both situations may be modeled with base-ten manipulatives.

- The fair-share concept of decimal division can be modeled, using manipulatives (e.g., base-ten blocks). Multiplication and division of decimals can be represented with arrays, paper folding, repeated addition, repeated subtraction, base-ten models, and area models.
- Students in grade four studied decimals through thousandths and solved practical problems that involved addition and subtraction of decimals. Consideration should be given to creating division problems with decimals that do not exceed quotients in the thousandths. Teachers may desire to work backwards in creating appropriate decimal division problems meeting the parameters for grade five students.
- Examples of appropriate decimal division problems for grade five students include, but are not limited to:
  - 2.38 ÷ 4; 6 ÷ 0.2; 1.78 ÷ 0.5; etc.
  - A scientist collected three water samples from local streams. Each sample was the same size, and she collected 1.35 liters of water in all. What was the volume of each water sample?
  - There are exactly 12 liters of sports drink available to the tennis team. If each tennis player will be served 0.5 liters, how many players can be served?
  - The relay team race is exactly 4.8 miles long. Each person on the team is expected to run 0.8 miles. How many team members will be needed to cover the total distance?
- Division with decimals is performed the same way as division of whole numbers. The only difference is the placement of the decimal point in the quotient.
- When solving division problems, numbers may need to be expressed as equivalent decimals by annexing zeros. This occurs when a zero must be added in the dividend as a placeholder.
- The quotient can be estimated, given a dividend expressed as a decimal through thousandths (and no adding of zeros to the dividend during the division process) and a single-digit divisor.
- Estimation can be used to check the reasonableness of a quotient.

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

- Division is the inverse of multiplication; therefore, multiplication and division are inverse operations.

- Terms used in division are *dividend, divisor*, and *quotient.*

$dividend \div divisor = quotient$ $\qquad$ $divisor\overline{)\,dividend}^{\,quotient}$ $\qquad$ $\frac{dividend}{divisor} = quotient$

- There are a variety of algorithms for division such as repeated multiplication and subtraction. Experience with these algorithms may enhance understanding of the traditional long division algorithm.

Key Vocabulary

VDOE Word Wall Cards

- sum
- difference
- product
- quotient
- decimal
- tenths
- hundredths
- thousandths
- divisor
- nonzero
- express(ed)
- estimation
- mental computation
- estimate
- closest to
- dividend
- reasonable(ness)
- operational step
- digit
- single-step
- multistep
- calculation
- decimal place value
- decimal point
- division
- factors
- strategy(ies)
- front-end
- compatible numbers
- rounding
- equal groups
- equal shares

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Instructional Support For ALL Learners

Differentiation	Essential Questions
Above level learners- ● Students can use newspaper ads to make a list of items to buy for an event/party. They can fill out a chart showing items bought and the cost of each item. They can use the chart to create word problems for classmates to solve. **Below level learners-** ● Students need practice setting up decimal problems vertically when the problems are given horizontally. Place value charts help this process to line up the place values (not the last digit of each number) when adding and subtracting. ● When multiplying decimals, students can color in a hundredths grid to represent the decimals using two different colors. The area where the colors overlap is the product.	● What information and strategies would you use to solve a multi-step word problem? ● Is estimation more appropriate than finding an exact answer? ● How can I estimate the answers for operations involving two and three digit numbers? ● How are operations with decimals similar to or different from operations used with whole numbers? ● How can we use models and pictures to demonstrate why multiplication of two numbers does not always result in a larger product?

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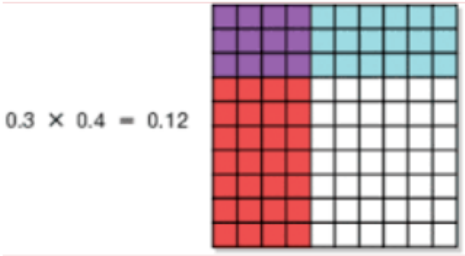
Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	



- **Why Before How:** page 96 (partial quotient division)

SWD Resources-

- Evidence-Based Specially Designed Instruction in Mathematics Resource Guide

Common Student Misconceptions:

- Students need practice finding the product of two decimals, and solving multi-step problems with decimals.
- When students divide with a decimal divisor, they have difficulty moving the decimal point in the dividend.
- Students may forget to put decimal points behind whole numbers.
- Students have difficulty knowing when to/when not to line up decimals.

Teacher Notes and Elaborations:

- On the state assessment, *Part A* of the standard is assessed **without the use of a calculator** and *Part B* (practical problems) **is assessed with the use of a calculator.** Use the **DESMOS VA Calculator**.
- Money is represented as a decimal to the hundredths place. Students should be able to convert decimal answers to a monetary value (i.e. when computing students may get 2.4, but must recognize as money it is written as $2.40.)

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

SOL Strand: Number and Number Sense

Focus: Fraction and Decimals

VA SOL: 5.2 The student will

a) represent and identify equivalencies among fractions and decimals, with and without models*
(calculator NOT allowed)

b) compare and order fractions, mixed numbers, and/or decimals, in a given set, from least to greatest and greatest to least*
(calculator NOT allowed)

Anticipated Pacing: 20 days

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to:

Assessments
Formative and Summative

Inform Instruction:

- SOL 5.2a JIT Quick Check
- SOL 5.2a JIT Virtual Quick Check-Desmos Activity
- SOL 5.2b JIT Quick Check
- SOL 5.2b JIT Virtual Quick Check-Desmos Activity

Assess Learning:

- Post-Assessment (link here)

Vertical Content:

- SOL 4.2 The student will
  - a) compare and order fractions and mixed numbers, with and without models
  - b) represent equivalent fractions
- SOL 6.1 The student will represent relationships between quantities using ratios, and will use appropriate notations, such as a/b, *a* to *b*, and *a*:*b*.
- SOL 6.2 The student will
  - a) represent and determine equivalencies among fractions, mixed numbers, decimals, and percents; and
  - b) compare and order positive rational numbers.

Resources for bridging the content:

- SOL 4.2a JIT Quick Check
- SOL 4.2b JIT Quick Check
- SOL 6.1 JIT Quick Check
- SOL 6.2a JIT Quick Check
- SOL 6.2b JIT Quick Check
- GCPS 4th grade 4.2 Fraction Resources folder
- GCPS 4th grade 4.3 and 4.6 Decimal Resources folder

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Content and Instruction

Essential Knowledge and Skills (what students should know and do)	Instructional Resources	Instructional Strategies, Manipulatives, and Materials
• Represent fractions with denominators that are thirds, eighths, and factors of 100 in their equivalent decimal form with concrete or pictorial models. • Represent decimals in their equivalent fraction form (thirds, eighths, and factors of 100) with concrete or pictorial models. • Identify equivalent relationships between decimals and fractions with denominators that are thirds, eighths, and factors of 100 in their equivalent decimal form without models.	• SOL 5.2 Notes Study Guide • Converting Fractions to Decimals Study Guide • **VDOE Lesson Plans:** 5.2ab Order Up! Equivalencies and Ordering Fractions and Decimals • **Rich Mathematical Tasks: No VDOE tasks for this SOL** • **Math in Practice; Teaching 5th-Grade Math:** Module 8 Exploring Fractions as Division: p. 166 • **Hands-On Standards, Grades 3-4:** page 56 (Fractions and Decimals) • **Hands-On Standards, Grades 5-6:** page 26 (Decimals) • **Hands-On Standards, Grades 5-6:** page 24 (Equivalent	• Represent fractions and decimals using concrete manipulatives such as fraction bars and base 10 blocks. Relate to equivalent fractions to show equivalence. • Use strips of paper segmented into tenths to find equivalent fractions and decimals. For example, fold the strip in half to see that 0.5 is the equivalent decimal. • Hundredths grids • Base-10 blocks • Number lines • Fraction towers, fraction squares, other fraction manipulatives

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

		Fractions) • **Hands-On Standards, Grades 5-6:** page 28 (Equivalent Fractions and Decimals) • **Math Antics Video- Decimal Place Value** • **Math Antics Video- Fractions & Decimal Numbers** • **Math Antics Video- Converting Base-10 Fractions** • **Math Antics Video- Converting Any Fraction** • **Math Antics Video- Mixed Numbers** • Decimal-Fraction Match (Group Activity) • Decimal-Fraction Grids 1 (Independent Practice) • Decimal-Fraction Grids 2 (Independent Practice)	• Free Virtual Manipulatives • Didax Virtual Manipulatives
	• Compare and order from least to greatest and greatest to least a given set of no more than four decimals, fractions (proper or improper), and/or mixed numbers with denominators of 12 or less.	• **Strategies for Comparing and Ordering Fractions Study Guide** • **Hands-On Standards, Grades 3-4:** page 58 (Compare Fractions and Decimals) • **Hands-On Standards, Grades 5-6:** page 30 (Compare and Order Fractions and Decimals) • **Math Antics Video- Comparing**	• Use manipulatives to model fractions/decimals to compare and order. • Shade hundredth grids to represent fractions and decimals to order. • Hundredths grids • Base-10 blocks • Number lines

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

• Use the symbols >, <, =, and ≠ to compare decimals through thousandths, fractions (proper or improper fractions), and/or mixed numbers, having denominators of 12 or less.	**Fractions** • Ordering Fractions and Decimals (Teacher Directed)	• Fraction towers, fraction squares, other fraction manipulatives • Free Virtual Manipulatives • Didax Virtual Manipulatives

Understanding the Standard (what teachers should know)

- Students should focus on determining equivalent decimals of familiar fractions with denominators that are factors of 100 making connections to tenths and hundredths. (e.g.,
- $\frac{2}{5} = \frac{4}{10}$ or 0.4) and (e.g., $\frac{7}{20} = \frac{35}{100}$ or 0.35).
- Students should have experience with fractions such as $\frac{1}{8}$, whose decimal representation is a terminating decimal (e. g., $\frac{1}{8}$ = 0.125) and with fractions such as $\frac{2}{3}$, whose decimal representation does not end but continues to repeat (e. g., $\frac{2}{3}$ = 0.666…). The repeating decimal can be written with an ellipsis (three dots) as in 0.666… or denoted with a bar above the digits that repeat as in $0.\underline{6}$.
- To help students compare the value of two decimals through thousandths, use manipulatives, such as place value mats/charts, 10-by-10 grids, decimal squares, base-ten blocks, meter sticks, number lines, and money.
- Proper fractions, improper fractions, and mixed numbers are terms often used to describe fractions. A proper fraction is a fraction whose numerator is less than the denominator. An improper fraction is a fraction whose numerator is equal to or greater than the denominator. An improper fraction may be expressed as a mixed

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

number. A mixed number is written with two parts: a whole number and a proper fraction (e.g., $3\frac{5}{8}$).

- An amount less than one whole can be represented by a fraction or by an equivalent decimal.
- Base-ten models (e.g., 10-by-10 grids, meter sticks, number lines, decimal squares, money) demonstrate the relationship between fractions and decimals.

Key Vocabulary

VDOE Word Wall Cards

• recognize • name fractions • equivalent decimal form • compare • order • fractions • name • equivalent relationships • decimals • given set	• least to greatest • greatest to least • represent • halves • fourths • fifths • eighths • tenths • twelfths • denominators	• numerators • mixed numbers • equivalent decimals • familiar fractions • terminating decimal • repeating decimal • greater than • less than • equal to (=) • relationship

GCPS Fifth Grade Curriculum Guide 2021-2022

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

Instructional Support For ALL Learners

Differentiation	Essential Questions
Above level learners- ● Begin introducing SOL 6.2a by introducing the concept of percentages. ● Make sure to include fractions and decimals greater than one whole. Include improper fractions and mixed numbers in the series to order. ● Give two values greater than one. Have students identify three numbers that could be placed in the middle. 3.54, _____, _____, _____, $\frac{27}{7}$ **Below level learners-** ● Students need experience building fractions with manipulatives such as fraction towers to order the fractions. ● Students should use benchmark fractions to help order such as one-half and a whole. ● Practice dividing fractions to change fractions to decimals. ● Make connections between fractions and decimals	● How can I use fractions and decimals in real life? ● When is it appropriate to use fractions? …decimals? ● What models and relationships help us name commonly-used fractions and mixed numbers in their equivalent decimal forms and vice versa? ● How can we use benchmarks, known fraction-decimal equivalents, and the number line to help us order a set of fractions and decimals? ● How many ways can we use models to determine and compare equivalent fractions?

Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	

(fourths connect to quarters/money; tenths connect to decimal place value)

SWD Resources-

- Evidence-Based Specially Designed Instruction in Mathematics Resource Guide

Common Student Misconceptions:

- Students incorrectly write fractions such as 3/5 as 3.5.
- Students will also list the set in the wrong order.
- Students will divide the numerator into the denominator when converting fractions to decimals.

Teacher Notes and Elaborations:

- On the state assessment, items measuring this objective are assessed **without** the use of a calculator.
- Understanding the relationship between fractions and their decimal form and vice versa is essential.
- Understand that fractions and decimals can be compared and ordered from least to greatest and greatest to least.
- A procedure/strategies for comparing two decimals by examining may include the following:
  - Line up the decimal numbers at their decimal points.
  - Beginning at the left, find the first place value where the digits are different.
  - Compare the digits in this place value to determine which number is greater (or which is less).
  - Use the appropriate symbol > or < or the words *greater than* or *less than* to compare the numbers in the order in which they are presented.
  - If both numbers are the same, use the symbol = or words *equal to*.
- At this time, students should recognize fractions as a division statement.
- **Do NOT teach cross-multiplication.**
  - Instead, teach understanding of fraction concepts to compare:

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Quarter 1	SOL 5.4, 5.1, 5.5ab, 5.2ab	44 days
Standard	**Essential Knowledge and Skills and Key Instructional Information**	
	■ Compare distance from 0 or 1 ■ Compare to benchmark (with and without a number line) ■ Compare decimal forms ● Help students understand (and begin to memorize) the decimal equivalents of certain fraction benchmarks (including ½, ¼, ¾). Students can also learn to write fractions with a denominator of 10 (tenths) as decimals. Additionally, fractions with a denominator of 5 (fifths) can be turned into tenths using equivalent fractions. Then they can be easily turned into decimals. These strategies will help minimize the amount of division a student must complete when comparing a set of fractions, decimals, and mixed numbers.	