

5th GRADE MATHEMATICS 2018-2019

Year-at-a-Glance					
Place Value and Decimal Fractions	Multi-digit number and decimal fraction operations	Addition and Subtraction of Fractions	Multiplication and Division of fractions and decimal fractions	Addition and Multiplication with Volume and area	Problem solving With the coordinate plane
Unit 1 Instruction: 25 days	Unit 2 Instruction: 40 days	Unit 3 Instruction: 30 days	Unit 4 Instruction: 45 days *2 days ACT Aspire	Unit 5 Instruction: 30 days	Unit 6 Instruction: ****
Standards <ul style="list-style-type: none"> ● Understanding Place Value ● Decimal Place Value ● Rounding Decimals ● Adding and Subtracting Decimals ● Multiplying and Dividing Decimals 	Standards <ul style="list-style-type: none"> ● Multi-Digit Whole Number Multiplication ● Multi-Digit Decimal Multiplication ● Multi-Digit Whole Number Division ● Multi-Digit Decimal Division 	Standards <ul style="list-style-type: none"> ● Add and Subtract Fractions ● Equivalent Fractions ● Modeling Common Fractions ● Denominators ● Making Common Denominators ● Solving Multi-step Problems 	Standards <ul style="list-style-type: none"> ● Line Plots of Fraction ● Fractions as Division ● Whole Number X Fraction ● Fraction Expressions and Word Problems ● Fraction X Fraction ● Decimals as Scaling and Word Problems ● Fraction Division ● Interpretation of Expressions 	Standards <ul style="list-style-type: none"> ● Volume and the Operations of Multiplication and Addition ● Area of Rectangular Figures with Fractional Side Lengths ● Drawing, Analysis, and Classification of Two-Dimensional Shapes. 	Standards <ul style="list-style-type: none"> ● Coordinate Systems ● Patterns in the Coordinate Plane ● Graphing Number Patterns from Rules ● Drawing Figures in the Coordinate Plane ● Problem Solving in the Coordinate Plane ● Multi-Step Word Problems

Power Standards- Blue
Additional Skills- Black

*Module 6 Note: No power standards present in this module. Teach the lessons from this module only if time permits.

[Unit 1](#)

[Unit 2](#)

[Unit 3](#)

[Unit 4](#)

[Unit 5](#)

[Unit 6](#)

Unit 1	Place value and decimal fractions	Grade Level	5	Approx length	25 days
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CPSD Power Standards with Student Learning Objectives

5.NBT.A.2 Understand why multiplying or dividing by a power of 10 shifts the value of the digits of a whole number or decimal: Explain patterns in the number of zeros of the product when multiplying a whole number by powers of 10; Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10; Use whole-number exponents to denote powers of 10

Student-Friendly Objectives:

- I can explain patterns when multiplying a number by powers of 10.
- I can show multiplication and division by 10s, 100s, and 1,000s on the place value chart.
- I can multiply and divide by 10s, 100s, and 1,000s without using a place value chart.
- I can write 10, 100, 1,000, 10,000, and 100,000 using 10 and exponents.
- I can explain where the decimal goes when I multiply or divide by a power of 10.

5.NBT.B.7 Perform basic operations on decimals to the hundredths place: • Add and subtract decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and the relationship between addition and subtraction • Multiply and divide decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and the relationship between multiplication and division

Student-Friendly Objectives:

- I can add decimals to the hundredths place.
- I can subtract decimals to the hundredths place.
- I can multiply decimals to the hundredths place.
- I can divide decimals to the hundredths place.

5.MD.A.1 Convert among different-sized standard measurement units within the metric system • Convert among different-sized standard measurement units within the customary system • Use these conversions in solving multi-step, real world problems (units to include length, capacity, weight, mass, 2D and 3D measures)

Student-Friendly Objectives:

- I can convert between measurements in the metric system.
- I can convert between measurements in the customary system.

- I can use measurement conversions to solve real world problems.

Learning Indicators of Power Standards

Students will know...

- Place value is a pattern of powers of 10's
 - Names of places - ones, tens, etc. and tenths, hundredths, etc.
- Powers of 10 are unique fractions that define the base 10 system.
- Exponents representing the power to which a given number or expression is repeatedly multiplied.
- Decimals are special fractions with denominators as powers of ten
- Properties of Operations (Distributive, Associative, Commutative, and Identity)
- Relationships between Addition and Subtraction
- Relationships between Multiplication and Division
- The relationship between units and the base unit in the metric system
- The relationship between units in the customary system
- Appropriate tools to measure a given attribute

And be able to...

- Multiply and divide by powers of 10.
- Explain patterns of zeros when multiplying or dividing by powers of 10.
- Explain patterns in placement of the decimal point when multiplying or dividing by powers of 10.
- Write powers of 10 with whole-number exponents.
- Explain how digits shift when multiplying or dividing by powers of 10.
- Use concrete models and/or drawings to interpret an operation and perform an operation.
- Perform strategies based on place value (i.e. partial sums, partial products).
- Use basic operations on decimals to the hundredths place.
- Use relationships between operations to solve for an unknown.
- Convert between metric units using multiplication and division by 10.
- Convert between customary units using multiplication and division by an appropriate factor.
- Recognize a unit's relationship to the base unit. (i.e., centimeters relationship to meter, quart's relationship to gallon)
- Use measurement conversions to solve real world problems.

Additional Arkansas State Standards

- 5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 5.NBT.A.3 Read, write, and compare decimals to thousandths.
 - Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g. $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
 - Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, $<$ symbols to record the results of comparisons.
- 5.NBT.A.4 Use place value understanding to round decimals to any place.

Unit 2	Multi-digit number and decimal fraction operations	Grade Level	5	Approx Length	40 Days
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CPSD Power Standards with Student Learning Objectives

5.NBT.A.2 Understand why multiplying or dividing by a power of 10 shifts the value of the digits of a whole number or decimal: Explain patterns in the number of zeros of the product when multiplying a whole number by powers of 10; Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10; Use whole-number exponents to denote powers of 10

Student-Friendly Objectives:

- I can explain patterns when multiplying a number by powers of 10.
- I can show multiplication and division by 10s, 100s, and 1,000s on the place value chart.
- I can multiply and divide by 10s, 100s, and 1,000s without using a place value chart.
- I can write 10, 100, 1,000, 10,000, and 100,000 using 10 and exponents.
- I can explain where the decimal goes when I multiply or divide by a power of 10.

5.NBT.B.5 Fluently multiply multi-digit whole numbers using a standard algorithm

Student-Friendly Objectives:

- I can multiply by using a standard algorithm and use a clear recording system.
- I can estimate to check my answer.
- I can multiply multi-digit numbers by multiples of ten using the associative and distributive properties.
- I can round factors to estimate the product.
- I can show how the area model and the standard algorithm are related.
- I can use the standard algorithm to solve multi-step story problems.

5.NBT.B.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 • Divisibility rules; and • The relationship between multiplication and division • Illustrate and explain calculations by using equations, rectangular arrays, and area models

Student-Friendly Objectives:

- I can divide numbers with up to 4-digits by 2-digit numbers.
- I can illustrate (draw) and explain calculations (answers/solution) by using equations, rectangular arrays, and/or area models.

5.NBT.B.7 Perform basic operations on decimals to the hundredths place: • Add and subtract decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and the relationship between addition and subtraction • Multiply and divide decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and the relationship between multiplication and division

Student-Friendly Objectives:

- I can add decimals to the hundredths place.
- I can subtract decimals to the hundredths place.
- I can multiply decimals to the hundredths place.
- I can divide decimals to the hundredths place.

Learning Indicators of Power Standards

Students will know...

- Place value is a pattern of powers of 10's
 - Names of places - ones, tens, etc. and tenths, hundredths, etc.
- Powers of 10 are unique fractions that define the base 10 system.
Exponents representing the power to which a given number or expression is repeatedly multiplied.
- The standard algorithm for multiplication
- Properties of Operations (Distributive, Associative, Commutative, and Identity)
- Place Value concepts to decompose
- Properties of Operations (Distributive, Associative, Commutative, and Identity)
- The inverse relationship between multiplication and division
- Decimals are special fractions with denominators as powers of ten
- Properties of Operations (Distributive, Associative, Commutative, and Identity)
- Relationships between Addition and Subtraction
- Relationships between Multiplication and Division

And be able to...

- Multiply and divide by powers of 10.
- Explain patterns of zeros when multiplying or dividing by powers of 10.
- Explain patterns in placement of the decimal point when multiplying or dividing by powers of 10.
- Write powers of 10 with whole-number exponents.
- Explain how digits shift when multiplying or dividing by powers of 10.
- Multiply by powers of 10.
- Use associative and distributive properties.
- Round factors to estimate products.
- Compare the area model and the standard algorithm.
- Utilize an efficient recording system when using a standard algorithm to multiply.
- Use estimation to check the reasonableness of my answers.
- Apply place value understanding when multiplying multi-digit numbers
- Apply multiplication strategies to solve real-world multi-step problems.
- Illustrate and explain division calculations.
- Solve using standard algorithm, rectangular arrays, and other area models.

- Decompose numbers to efficiently divide.
- Use concrete models and/or drawings to interpret an operation and perform an operation.
- Perform strategies based on place value (i.e. partial sums, partial products).
- Use basic operations on decimals to the hundredths place.
- Use relationships between operations to solve for an unknown.

Additional Arkansas State Standards

- 5.OA.A.1 Use parentheses brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8+7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*
- 5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

Unit 3	Addition and subtraction of fractions	Grade Level	5	Approx Length	30 days
CPSD Power Standards with Student Learning Objectives					
<p>5.NF.A.1 Fluently add and subtract fractions with unlike denominators (including mixed numbers) using equivalent fractions and common denominators For example: Understand that $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$</p> <p>Student-Friendly Objectives:</p> <ul style="list-style-type: none"> • I can add and subtract fractions with unlike denominators using equivalent fractions. • I can add and subtract mixed numbers with unlike denominators using equivalent fractions. 					
Learning Indicators of Power Standards					
<p>Students will know...</p> <ul style="list-style-type: none"> • A fraction is a division statement. • Fractions can be decomposed to unit fractions. • Relationships between addition and subtraction. 			<p>And be able to...</p> <ul style="list-style-type: none"> • Add and subtract fractions with unlike denominators using equivalent forms. • Rename a given fraction to an equivalent form. • Decompose fractions additively and relate repeated addition to fractions. 		
Additional Arkansas State Standards					
<ul style="list-style-type: none"> • 5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g. by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. <i>For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.</i> 					

Unit 4	Multiplication and division of fractions and decimal fractions	Grade Level	5	Approx Length	45 days
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CPSD Power Standards with Student Learning Objectives

5.NBT.B.7 Perform basic operations on decimals to the hundredths place: • Add and subtract decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and the relationship between addition and subtraction • Multiply and divide decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and the relationship between multiplication and division

Student-Friendly Objectives:

- I can add decimals to the hundredths place.
- I can subtract decimals to the hundredths place.
- I can multiply decimals to the hundredths place.
- I can divide decimals to the hundredths place.

5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction: • Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ • Find the area of a rectangle with fractional (less than and/or greater than 1) side lengths, by tiling it with unit squares of the appropriate unit fraction side lengths, by multiplying the fractional side lengths, and then show that both procedures yield the same area

Student-Friendly Objectives:

- I can model the area of rectangles with fractional side lengths with unit squares.
- I can multiply fractional side lengths to find the area of a rectangle.
- I can prove multiplying fractional side lengths to find the area is the same as tiling a rectangle with unit squares.
- I can multiply a fraction or whole number by a fraction.

5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions: • Interpret division of a unit fraction by a natural number, and compute such quotients • Interpret division of a whole number by a unit fraction, and compute such quotients • Solve real world problems involving division of unit fractions by natural numbers and division of whole numbers by unit fractions

Student-Friendly Objectives:

- I can model a division problem using fractions.
- I can divide a unit fraction by a whole number.
- I can divide a whole number by a unit fraction.

5.MD.A.1 Convert among different-sized standard measurement units within the metric system • Convert among different-sized standard measurement units within the customary system • Use these conversions in solving multi-step, real world problems (units to include length, capacity, weight, mass, 2D and 3D measures)

Student-Friendly Objectives:

- I can convert between measurements in the metric system.
- I can convert between measurements in the customary system.
- I can use measurement conversions to solve real world problems.

Learning Indicators of Power Standards

Students will know...

- Decimals are special fractions with denominators as powers of ten
- Properties of Operations (Distributive, Associative, Commutative, and Identity)
- Relationships between Addition and Subtraction
- Relationships between Multiplication and Division
- Area of a rectangle is a repeated tiling within its interior
- A fraction is a division statement
- Fractions represent parts compared to a whole
- Fractions can be renamed to perform various operations
- A unit fraction is a fraction with a numerator of 1
- A fraction is a division statement
- Division is both measurement and partitive
- The relationship between units and the base unit in the metric system
- The relationship between units in the customary system
- Appropriate tools to measure a given attribute

And be able to...

- Use concrete models and/or drawings to interpret an operation and perform an operation.
- Perform strategies based on place value (i.e. partial sums, partial products).
- Use basic operations on decimals to the hundredths place.
- Use relationships between operations to solve for an unknown.
- Model the area of a rectangle with fractional side lengths using unit squares.
- Multiply a fraction or a whole number by a fraction.
- Rename improper fractions as whole or mixed numbers when appropriate.
- Find the area of a rectangle that has fractional side lengths.
- Use fractions and operations to represent a real world situation.
- Divide a unit fraction by a whole number.
- Divide a whole number by a unit fraction.
- Rename fractions and mixed numbers to an equivalent form.
- Model division of a fraction and by a fraction.
- Convert between metric units using multiplication and division by 10.
- Convert between customary units using multiplication and division by an appropriate factor.
- Recognize a unit's relationship to the base unit. (i.e., centimeters

relationship to meter, quart's relationship to gallon)

- Use measurement conversions to solve real world problems.

Additional Arkansas State Standards

- 5.OA.A.1 Use parentheses brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as $2 \times (8+7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*
- 5.NF.B.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
- 5.NF.B.5 Interpret multiplication as scaling (resizing), by:
 - Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
 - Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fractions less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all beakers were redistributed equally.*

Unit 5	Addition and multiplication with volume and area	Grade Level	5	Approx Length	30 days
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CPSD Power Standards with Student Learning Objectives

5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction: • Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ • Find the area of a rectangle with fractional (less than and/or greater than 1) side lengths, by tiling it with unit squares of the appropriate unit fraction side lengths, by multiplying the fractional side lengths, and then show that both procedures yield the same area

Student-Friendly Objectives:

- I can model the area of rectangles with fractional side lengths with unit squares.
- I can multiply fractional side lengths to find the area of a rectangle.
- I can prove multiplying fractional side lengths to find the area is the same as tiling a rectangle with unit squares.
- I can multiply a fraction or whole number by a fraction.

5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume: • Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base (B) • Represent threefold whole-number products as volumes (e.g., to represent the associative property of multiplication) • Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems • Recognize volume as additive • Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems

Student-Friendly Objectives:

- I can find volume using $B \times h$.
- I can decompose a figure into prisms to find the volume.
- I can count unit cubes in a right, rectangular prism.
- I can find volume to solve real world and mathematical problems.
- I can solve for a missing edge length given the volume and other attributes.

5.G.B.4 Classify two-dimensional figures in a hierarchy based on properties *Note: Trapezoids will be defined to be a quadrilateral with at least one pair of opposite sides parallel, therefore all parallelograms are trapezoids.*

Student-Friendly Objectives:

- I can classify figures based on properties.
- I can build a hierarchy

Learning Indicators of Power Standards

Students will know...

- Area of a rectangle is a repeated tiling within its interior
- A fraction is a division statement
- Fractions represent parts compared to a whole
- Fractions can be renamed to perform various operations
- $V=B \times h$, where B = area of the base and height, h , is perpendicular to the base
- Count cubes to find the volume
- Associative Property of Multiplication
- Recognize volume as additive
- Polygons are closed, plane figures comprised of at least 3 line segments.
- Characteristics of triangles and quadrilaterals
- Notations: angles, segments, triangles, quadrilaterals, parallel, perpendicular, congruent
- Benchmark angles
- Regular and Irregular Polygons

And be able to...

- Model the area of a rectangle with fractional side lengths using unit squares.
- Multiply a fraction or a whole number by a fraction.
- Rename improper fractions as whole or mixed numbers when appropriate.
- Find the area of a rectangle that has fractional side lengths.
- Find the volume of a right rectangular prism using unit cubes
- Find the volume of a right rectangular prism using a formula
- Given the volume, find a missing dimension
- Find the volume of a solid figure composed of two rectangular right prisms by decomposition.
- Classify two-dimensional figures based on properties.
- Draw and Identify two-dimensional shapes from given attributes.

Additional Arkansas State Standards

- 5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
 - A cube with side length 1 unit, called a “unit cube”, is said to have “one cubic unit” of volume, and can be used to measure volume.
 - A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- 5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- 5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*

Unit 6	Problem solving with the coordinate plane	Grade Level	5	Approx Length	***
CPSD Power Standards with Student Learning Objectives					
None					
Additional Arkansas State Standards					
<ul style="list-style-type: none"> ● 5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8+7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.</i> ● 5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. <i>For example, given the rule “add 3” and the starting number 0, and given the rule “add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i> ● 5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the directions of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). ● 5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. 					