

NUMBERS

ADDITION

	KINDERGARTEN	FIRST GRADE	SECOND GRADE	THIRD GRADE
	<p>Building blocks: object counting</p> <p>Number recognition: 1–100</p> <p>Concept recognition: 1–100</p> <p>Counting: by ones, tens, fives, and twos to 100</p> <p>Writing numbers: by ones, tens, fives, and twos to 100</p> <p>Comparing Larger/smaller than Before/after: 1–100, more/less Largest/smallest: 1–100</p> <p>Number words: use of one-ten and first-tenth</p>	<p>Number recognition: 1–100, 101–1,000</p> <p>Concept recognition: 1–100, 101–1,000</p> <p>Counting Forward and backward by ones, twos, fives, and tens Forward by twenty-fives By threes from 3 to 36 Tally marks Roman numerals 1–10 Money Ordinal numbers 1–10, 11–20 By even and odd numbers</p> <p>Writing numbers By ones to 100; to 1,000 By tens to 100; to 1,000 By fives to 100; to 1,000 By twos to 100; to 1,000 By threes to 36 Words one–twelve</p> <p>Comparing Greater/less, greatest/least Before/after: by ones, tens, twos, and fives Using the symbols > and < to show greater than and less than</p> <p>Place value Understanding hundreds, tens, and ones Ordering four numbers Addition with carrying</p>	<p>Number recognition: 1–1,000, 1,001–10,000</p> <p>Concept recognition: 1–1,000, 1,001–10,000</p> <p>Counting By ones By tens, fives, and twos to 100 By threes to 36 By fours to 48 By twenty-fives to 300 Continue counting patterns</p> <p>Writing numbers By ones By tens, fives, and twos to 1,000 By threes to 36 By fours to 48</p> <p>Comparing Before/after: by ones, twos, fives, tens, threes, fours</p> <p>Number words: use of one–twelve; thirteen, twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety, one hundred</p> <p>Place value Ones, tens, hundreds, thousands, ten thousands, hundred thousands, money Round to the nearest dollar Round to the nearest ten</p> <p>Roman numerals 1–12, 13–30: counting and value</p>	<p>Place value: ones, tens, hundreds, thousands, money</p> <p>Writing numbers From dictation to the thousands' place From number words</p> <p>Roman numerals Value of I, V, X, L, C, D, M Counting: 1–30</p> <p>Number sentences With unknowns Greater/less than Order of operations (parentheses)</p>
	<p>Symbols: +, =</p> <p>Number families: 1–10</p> <p>Ordered and mixed order</p> <p>Horizontal/vertical form</p> <p>Word problems: oral</p> <p>Money: adding pennies, dimes and pennies, nickels and pennies</p> <p>Principles: concept of commutative principle</p>	<p>Number families: 1–10, 11–18</p> <p>Horizontal/vertical form Oral or written</p> <p>Addition “twins” (concept of commutative principle)</p> <p>Timed mastery</p> <p>Missing terms</p> <p>Word problems: oral, written</p> <p>Money Adding coins: oral and written</p> <p>Doubles</p> <p>Writing addition number sentences</p> <p>Addends Column addition with up to five single-digit addends Two-/three-digit problems without carrying</p> <p>Carrying: two- and three-digit numbers with carrying to the tens' and hundreds' places</p> <p>Mental arithmetic Problems with up to five single-digit numbers Problems combining single-digit addition and subtraction up to three numbers</p>	<p>Number families: 1–18</p> <p>Horizontal/vertical form Add on 0, 1, and 2 Add doubles and doubles plus one</p> <p>Addition terminology</p> <p>Timed mastery</p> <p>Word problems: oral, written</p> <p>Mental arithmetic Problems with up to 5 single-digit numbers Problems with double-digit addend with carrying</p> <p>Estimate sums</p> <p>Carrying To tens'/hundreds' places in 2-digit problems To tens'/hundreds' places in 3-digit problems To thousands' place in 3- and 4-digit problems</p> <p>Horizontal problems with carrying</p> <p>Money: add dollars and cents</p>	<p>Symbols: ≠</p> <p>Number families 1–18: mixed order</p> <p>Timed mastery</p> <p>Terms: addend, sum</p> <p>Missing number</p> <p>Missing sign</p> <p>Word problems Clue words: in all, altogether, how many, how much, both, total, more (in a statement)</p> <p>Money: adding Dimes and pennies Nickels and pennies Dimes, nickels, and pennies Any combination of half dollars, quarters, dimes, nickels, and/or pennies by converting to cents</p> <p>Principles: concept of commutative principle, associative principle</p> <p>Mental arithmetic: problems combining addition, subtraction, multiplication, and division up to five numbers</p> <p>Carrying: to any place value</p> <p>Checking: by addition</p> <p>Addends: column addition</p> <p>Averaging</p> <p>Fractions</p> <p>Measures</p>

FOURTH GRADE	FIFTH GRADE	SIXTH GRADE	SEVENTH GRADE	EIGHTH GRADE
<p>Place value Whole numbers to the 100 millions' place Decimals to the thousandths' place</p> <p>Writing numbers: from dictation to the 100 millions' place</p> <p>Roman numerals Value of I, V, X, L, C, D, M Rules for forming Roman numerals</p> <p>Number sentences With unknowns Order of operations (parentheses)</p> <p>Even/odd numbers Estimating: product, quotient, divisor</p>	<p>Place value Whole numbers to the 100 millions' place Whole numbers to the 100 billions' place</p> <p>Decimals to the thousandths' place Counting sequences</p> <p>Writing numbers: from dictation to the 100 billions' place</p> <p>Roman numerals Value of I, V, X, L, C, D, M Rules for forming Roman numerals</p> <p>Terms: notation, numeration</p> <p>Comparing Symbols for greater than, less than, and unequal</p> <p>Rounding: whole numbers, money, decimals, timed mastery</p> <p>Number sentences: greater/less than Estimating: sum, difference, product, quotient</p>	<p>Place value Whole numbers to the 100 billions' place Decimals to the thousandths' place Decimals to the millionths' place</p> <p>Writing numbers: to the 100 billions' place</p> <p>Roman numerals Value of I, V, X, L, C, D, M Rules for forming Roman numerals Use of dash to increase value one thousand times</p> <p>Terms: notation, numeration, prime number, composite number</p> <p>Comparing Rounding</p> <p>Prime numbers: Eratosthenes sieve Composite numbers</p> <p>Estimating: divisor, quotient Rounding: whole numbers, money, decimals, timed mastery</p> <p>Irrational numbers</p>	<p>Place value Whole numbers to the 100 billions' place Decimals to the millionths' place Writing numbers: up to 100 billions</p> <p>Roman numerals Value of I, V, X, L, C, D, M Rules for forming Roman numerals</p> <p>Number words Number line Rounding whole numbers Comparing/adding/subtracting signed numbers</p> <p>Terms: notation, numeration, prime numbers, composite number</p> <p>Rounding Signed numbers Reading/writing Zero as a reference point Absolute value Comparing, adding, subtracting, multiplying, dividing</p> <p>Prime numbers: Eratosthenes sieve, prime pair, reciprocal</p> <p>Composite numbers Rounding: whole numbers, money, decimals Estimating: quotients Using number sense</p>	<p>Place value Roman numerals Value of I, V, X, L, C, D, M Rules for forming Roman numerals</p> <p>Terms Notation, numeration, whole numbers, natural (counting) numbers, integers, rational numbers Irrational numbers: pi, prime numbers, composite numbers, fractions, decimals</p> <p>Rounding: whole numbers, decimals</p> <p>Signed numbers Reading/writing Zero as a reference point Absolute value Comparing, adding, subtracting, multiplying, dividing, adding monomials</p> <p>Number line: comparing/adding/subtracting/multiplying signed number</p> <p>Number sentences Greater/less than Order of operations (with/without parentheses)</p> <p>Rounding: whole numbers, decimals</p>
<p>Number families 1–18: mixed order</p> <p>Timed mastery Terms: addend, sum Missing sign Word problems Money</p> <p>Mental arithmetic: problems combining addition, subtraction, multiplication, and division up to 7 numbers</p> <p>Carrying: to any position Checking: by addition Addends: column addition Averaging</p> <p>Fractions: with common/uncommon denominators</p> <p>Measures Decimals</p>	<p>Number families 1–18: mixed order</p> <p>Timed mastery Terms: addend, sum Missing sign Word problems Money</p> <p>Mental arithmetic: problems combining addition, subtraction, multiplication, and division up to 13 numbers</p> <p>Carrying: to any position Checking By addition By casting out 9s</p> <p>Addends: column addition Averaging</p> <p>Fractions: with common/uncommon denominators</p> <p>Measures Decimals: with annexing zeros</p>	<p>Number families 1–18: mixed order</p> <p>Timed mastery Terms: addend, sum Word problems Money</p> <p>Mental arithmetic: problems combining addition, subtraction, multiplication, and division up to 16 numbers</p> <p>Checking By addition By casting out 9s Addends: column addition Averaging</p> <p>Fractions: with common/uncommon denominators</p> <p>Measures Decimals: with annexing zeros Compound measures</p>	<p>Timed mastery Terms: addend, sum Word problems Mental arithmetic Checking By addition By casting out 9s</p> <p>Whole numbers Principle: distributive Arithmetic progression</p> <p>Fractions Compound measures Decimals Signed numbers: with/without a number line</p>	<p>Timed mastery Terms: addend, sum Word problems Mental arithmetic: problems combining addition, subtraction, multiplication, and division with up to 18 numbers</p> <p>Principles: commutative, associative, identity, distributive</p> <p>Whole numbers Fractions Compound measures Decimals Signed numbers: with/without a number line</p>

SUBTRACTION

MULTIPLICATION

DIVISION

	K	FIRST GRADE	SECOND GRADE	THIRD GRADE		
SUBTRACTION	<p>Symbol: –</p> <p>Subtracting: one, all of a number</p> <p>Writing subtraction sentences</p>	<p>Symbol: –</p> <p>Number families: 1–18</p> <p>Vertical/horizontal form</p> <p>Written and oral</p> <p>Timed mastery</p> <p>Missing terms</p> <p>Mental arithmetic: problems combining single-digit addition and subtraction up to 3 numbers</p> <p>Subtracting: one-digit problems, two- and three-digit problems without borrowing</p> <p>Word problems: oral, written</p>	<p>Number families: 1–18</p> <p>Vertical/horizontal form</p> <p>Subtract 0, 1, 2, all of a number, and half of a number</p> <p>Subtraction terminology</p> <p>Timed mastery</p> <p>Word problem: oral, written</p> <p>Mental arithmetic: problems combining single- and double-digit subtraction and addition</p> <p>Subtraction</p> <p>No borrowing: two, three, four digits</p>	<p>Borrowing</p> <p>From the tens' place in 2-, 3-, and 4-digit problems</p> <p>From the hundreds' place in 3- and 4-digit problems</p> <p>From the thousands' place in 3- and 4-digit problems</p> <p>With zeros in the minuend</p> <p>Money: subtract dollars and cents</p>	<p>Number families</p> <p>1–18: mixed order</p> <p>Timed mastery</p> <p>Missing number</p> <p>Missing sign</p> <p>Mental arithmetic: problems combining subtraction, addition, multiplication, and division up to 5 numbers</p> <p>Subtracting: with any number of digits, money</p> <p>Word problems</p> <p>Clue words: how many (much) more, have left, less, fewer, how much change</p>	<p>Terms: minuend, subtrahend, difference</p> <p>Borrowing</p> <p>From any whole number in any position,</p> <p>With any number of zeros in the minuend</p> <p>Checking: by addition</p> <p>Fractions</p> <p>Measures</p> <p>Number sentences</p> <p>With unknowns</p> <p>With greater/less than</p> <p>Order of operations</p>
MULTIPLICATION	<p>Building blocks: counting by tens, fives, twos</p>	<p>Building blocks</p> <p>Repeated addition</p> <p>Objects to multiply</p> <p>Counting by tens, fives, twos, threes</p> <p>Concept of multiplication</p> <p>Writing a multiplication fact</p>	<p>Building blocks: counting by tens, fives, twos, threes, fours</p> <p>Word problems: oral, written</p> <p>Terms: factor, product</p> <p>Multiply</p> <p>By 1</p> <p>By 0</p> <p>Tables, 0, 1, 2, 3, 4, 5</p> <p>Find missing factor</p> <p>Multiple combinations</p> <p>Multiplication “twins” (concept of commutative principle)</p>	<p>Multiplication tables: 0–5, 6–12</p> <p>Word problems</p> <p>Clue words: twice, times as many, per</p> <p>Principles: concept of commutative/associative principle</p> <p>Timed mastery</p> <p>Terms: factor, product, partial product</p> <p>Missing number</p> <p>Missing sign</p> <p>Mental arithmetic: problems combining multiplication, division, addition, and subtraction up to 5 numbers</p>	<p>Multiplying</p> <p>With any number of digits in first factor</p> <p>With up to 2 digits in a second factor</p> <p>Carrying</p> <p>To the tens', hundreds', and thousands' places</p> <p>In problems with a 2-digit multiplier</p> <p>Checking: by reversing factors</p> <p>Number sentences</p> <p>With unknowns</p> <p>With greater/less than, order of operations (parentheses)</p>	
DIVISION			<p>Building blocks: dividing groups of objects</p> <p>Symbols: ÷, $\overline{\hspace{1cm}}$</p> <p>Word problems: oral, written</p> <p>Term: quotient</p> <p>Divide</p> <p>By 1</p> <p>Tables 1, 2, 3, 4, 5</p> <p>Multiple combinations</p>	<p>Symbols: ÷, $\overline{\hspace{1cm}}$</p> <p>Division tables: 1–5, 6–12</p> <p>Word problems</p> <p>Clue words: divided equally, shared equally</p> <p>Steps of division</p> <p>Terms: dividend, divisor, quotient</p> <p>Missing number</p> <p>Missing sign</p> <p>Timed mastery</p> <p>Mental arithmetic: problems combining division, multiplication, subtraction, and addition up to 5 digits</p>	<p>Divisors: 1 and 2 digits</p> <p>Dividends: any number of digits, money</p> <p>Remainders: writing the remainder as a fraction</p> <p>Checking: by multiplication</p> <p>Money</p> <p>Averaging</p> <p>Number sentences</p> <p>With unknowns</p> <p>With greater/less than, order of operations (parentheses)</p>	

Bold type represents new material  Represents major topic for the grade.

FOURTH GRADE	FIFTH GRADE	SIXTH GRADE	SEVENTH GRADE	EIGHTH GRADE
<p>Number families 1–18: mixed order</p> <p>Timed mastery</p> <p>Missing sign</p> <p>Mental arithmetic: problems combining subtraction, addition, multiplication, and division up to 7 numbers</p> <p>Word problems</p> <p>Terms: minuend, subtrahend, difference</p> <p>Borrowing: from a whole number or zero in any position</p> <p>Money and measures</p> <p>Number sentences With unknowns Order of operations</p> <p>Checking: by addition</p> <p>Fractions: with common/uncommon denominator</p> <p>Decimals</p>	<p>Number families 1–18: mixed order</p> <p>Timed mastery</p> <p>Missing sign</p> <p>Mental arithmetic: problems combining subtraction, addition, multiplication, and division up to 13 numbers</p> <p>Word problems</p> <p>Terms: minuend, subtrahend, difference</p> <p>Borrowing: from any position</p>	<p>Money</p> <p>Checking: by addition</p> <p>Fractions: with common/uncommon denominator</p> <p>Measures</p> <p>Decimals: with annexing zeros</p> <p>Number sentences: greater/less than</p>	<p>Number families 1–18: mixed order</p> <p>Timed mastery</p> <p>Mental arithmetic: problems combining subtraction, addition, multiplication, and division up to 16 numbers</p> <p>Word problems</p> <p>Terms: minuend, subtrahend, difference</p> <p>Money</p> <p>Checking: by addition</p> <p>Fractions: with common/uncommon denominator</p> <p>Measures</p> <p>Decimals: with annexing zeros</p> <p>Compound measures</p>	<p>Timed mastery</p> <p>Mental arithmetic</p> <p>Word problems</p> <p>Terms: minuend, subtrahend, difference</p> <p>Checking: by addition</p> <p>Whole numbers</p> <p>Fractions</p> <p>Compound measures</p> <p>Decimals</p> <p>Signed numbers</p> <p>Timed mastery</p> <p>Mental arithmetic: problems combining subtraction, addition, multiplication, and division with up to 18 numbers</p> <p>Word problems</p> <p>Terms: minuend, subtrahend, difference</p> <p>Whole numbers</p> <p>Fractions</p> <p>Compound measures</p> <p>Decimals</p> <p>Signed numbers: with/without a number line</p> <p>Number sentences Greater/less than Order of operations (with/without parentheses)</p>
<p>Facts: 0–12 tables</p> <p>Word problems</p> <p>Timed mastery</p> <p>Terms: factor, product, partial product</p> <p>Missing sign</p> <p>Mental arithmetic: problems combining multiplication, division, addition and subtraction up to 7 numbers</p> <p>Multiplying: with 1, 2, or 3 digits</p> <p>Carrying</p> <p>Checking: by reversing factors</p> <p>Number sentences With unknowns Order of operations (parentheses)</p> <p>Money</p> <p>Factors Factoring Finding common factors, greatest common factor</p> <p>Fractions Using cancellation Multiplying fractions with whole/mixed numbers</p> <p>Estimation of product</p>	<p>Facts: 0–12 tables</p> <p>Word problems</p> <p>Timed mastery</p> <p>Terms: factors, product, partial product</p> <p>Missing sign</p> <p>Mental arithmetic: problems combining multiplication, addition, subtraction, and division up to 13 numbers</p> <p>Multiplying: with up to 3-digit multiplier (factor)</p> <p>Carrying</p> <p>Checking By reversing factors By casting out 9s</p>	<p>Money</p> <p>Factors</p> <p>Factoring</p> <p>Finding common/greatest common factor</p> <p>Fractions</p> <p>Using cancellation</p> <p>Multiplying: fractions with whole/mixed numbers, 2 mixed numbers</p> <p>Decimals: multiplied by whole numbers, by another decimal, annexing zeros in multiplication</p> <p>Number sentences: greater/less than</p> <p>By powers of ten</p>	<p>Facts: 0–12 tables</p> <p>Word problems</p> <p>Timed mastery</p> <p>Terms: factors, product, partial product</p> <p>Mental arithmetic: problems combining multiplication, addition, subtraction, and division with up to 16 numbers</p> <p>Multiplying: with up to a 3-digit multiplier</p> <p>Checking By reversing factors By casting out 9s</p> <p>Money</p> <p>Symbols: • raised dot</p> <p>Factors</p> <p>Factoring</p> <p>Finding common factor, greatest common factor</p> <p>Prime factors: division by primes, factoring tree</p> <p>Least common multiple</p> <p>Compound measures</p> <p>Fractions</p> <p>Using cancellation</p> <p>Multiplied by fractions, mixed or whole numbers</p> <p>Decimals: multiplied by decimals or whole numbers</p> <p>By powers of ten</p>	<p>Word problems</p> <p>Timed mastery</p> <p>Terms: factors, partial product, product</p> <p>Symbols: • raised dot</p> <p>Mental arithmetic</p> <p>Checking By reversing factors By casting out 9s</p> <p>Fractions</p> <p>Factoring</p> <p>Finding common/greatest common factor</p> <p>Prime factors: division by primes, factoring tree</p> <p>Least common multiple</p> <p>Factorial</p> <p>Whole numbers</p> <p>Fractions, decimals</p> <p>Signed numbers</p> <p>Compound measures</p> <p>By powers of ten</p> <p>Word problems</p> <p>Timed mastery</p> <p>Terms: factors, product</p> <p>Symbols: x, \bullet (raised dot)</p> <p>Mental arithmetic: combining multiplication, addition, subtraction, and division with up to 18 numbers</p> <p>Principles: commutative, associative, identity, distributive</p> <p>Factors: common/greatest factor, prime factoring</p> <p>Multiples: common/least common multiple</p> <p>Whole numbers</p> <p>Fraction, decimals</p> <p>Signed numbers: with two or more factors</p> <p>By powers of ten</p> <p>Number sentences Greater/less than Order of operations (with/without parentheses)</p> <p>Compound measures</p>
<p>Division facts: 1–12 tables</p> <p>Word problems</p> <p>Steps of division</p> <p>Terms: dividend, divisor, quotient</p> <p>Missing sign</p> <p>Timed mastery</p> <p>Mental arithmetic: problems combining division, multiplication, addition, and subtraction up to 7 numbers</p> <p>Divisor: 1 and 2 digits</p> <p>Dividends: 1, 2, 3 digits or more</p> <p>Remainders: written as a fraction</p> <p>Checking: by multiplication</p> <p>Money</p> <p>Averaging</p> <p>Number sentences With unknowns Order of operations (parentheses)</p> <p>Estimating: quotients, divisors</p> <p>Divisibility rules for dividing by 2, 3, 4, 5, 9, 10</p>	<p>Division facts: 1–12 tables</p> <p>Word problems</p> <p>Steps of division</p> <p>Terms: dividend, divisor, quotient</p> <p>Missing sign</p> <p>Timed mastery</p> <p>Mental arithmetic: problems combining division, multiplication, addition, and subtraction up to 13 numbers</p> <p>Divisor 1 or 2 digits 3 digits</p> <p>Dividends: up to 6 digits</p> <p>Remainders: written as a fraction</p> <p>Checking By multiplication By casting out 9s</p> <p>Money</p>	<p>Averaging</p> <p>Estimating: quotients</p> <p>Divisibility rules for dividing by 2, 3, 4, 5, 6, 9, 10</p> <p>Fractions Dividing: whole/mixed numbers by a fraction, a fraction by a fraction, a fraction or mixed number by a whole number, by a mixed number</p> <p>Decimals Dividing a decimal by a whole number Eliminating the decimal point in the divisor Annexing zeros to avoid remainders</p> <p>Number sentences: greater/less than</p> <p>By powers of ten</p>	<p>Division facts: 1–12 tables</p> <p>Word problems</p> <p>Timed mastery</p> <p>Steps of division</p> <p>Terms: dividend, divisor, quotient</p> <p>Mental arithmetic: problems combining division, addition, subtraction, and multiplication with up to 16 numbers</p> <p>Divisor: 1, 2, or 3 digits, 4 digits</p> <p>Dividends: up to 7 digits</p> <p>Remainders: written as a fraction</p> <p>Checking By multiplication By casting out 9s</p> <p>Averaging</p> <p>Estimating: quotients</p> <p>Divisibility rules for dividing by 2, 3, 4, 5, 6, 9, 10</p> <p>Fractions</p> <p>Dividing a whole number, mixed number, or fraction by a fraction or mixed number</p> <p>Dividing a fraction or mixed number by a whole number</p> <p>Decimals</p> <p>Dividing a decimal by a whole number</p> <p>Eliminating the decimal point in the divisor</p> <p>Annexing zeros to avoid remainders</p> <p>Including zeros immediately to the right of the decimal point in the quotient</p> <p>By powers of ten</p>	<p>Word problems</p> <p>Terms: dividend, divisor, quotient, remainder</p> <p>Timed mastery</p> <p>Mental arithmetic</p> <p>Divisors: 4 digits</p> <p>Division: with end zeros</p> <p>Divisibility rules</p> <p>Whole numbers</p> <p>Decimals</p> <p>Fractions</p> <p>Compound measures</p> <p>Signed numbers</p> <p>By powers of ten</p> <p>Word problems</p> <p>Steps of division</p> <p>Timed mastery</p> <p>Terms: dividend, divisor, quotient</p> <p>Mental arithmetic: problems combining division, addition, subtraction, and multiplication with up to 18 numbers</p> <p>Whole numbers</p> <p>Fractions</p> <p>Decimals</p> <p>Signed numbers</p> <p>Compound measures</p> <p>Number sentences Greater/less than Order of operations with/without parentheses</p> <p>By powers of ten</p>

FRACTIONS

DECIMALS

PROBLEM SOLVING AND APPLICATIONS

	K	FIRST GRADE	SECOND GRADE	THIRD GRADE	FOURTH GRADE	
FRACTIONS	<p>Parts of a whole: one half</p>	<p>Building blocks: equal parts</p> <p>Parts of a whole: one half, one fourth, one third</p> <p>Parts of a group: one half, one fourth, one third</p> <p>Comparing: one half, one fourth, one third</p>	<p>Parts of a whole: one half, one fourth, one third</p> <p>Parts of a group: one half, one fourth, one third</p> <p>Finding the fractional part of a whole number</p> <p>Word problems: oral, written</p> <p>Mixed numbers</p>	<p>Parts of a whole: halves, thirds, fourths, fifths, sixths, sevenths, eighths, ninths, tenths, any fractional part</p> <p>Parts of a group: any fractional part</p> <p>Finding the fractional part of a whole number: with a mixed number as the answer</p> <p>Word problems</p> <p>Timed mastery</p> <p>Terms: numerator, denominator</p> <p>Reading / writing fractions</p> <p>Number line</p>	<p>Types: equivalent, mixed, for a whole number</p> <p>Reducing to lowest terms</p> <p>Adding</p> <p>With a common denominator</p> <p>Mixed numbers with a common denominator</p> <p>Subtracting</p> <p>With a common denominator</p> <p>Mixed numbers with a common denominator</p> <p>Comparing fractions</p>	<p>Parts of a whole/group</p> <p>Word problems</p> <p>Timed mastery</p> <p>Terms: numerator, denominator</p> <p>Number words</p> <p>Reading/writing fractions</p> <p>Number line</p> <p>Types</p> <p>Proper, mixed, improper</p> <p>Write as a whole or mixed number</p> <p>Reducing</p> <p>Finding least common denominator</p> <p>Answers to lowest terms</p> <p>Addition: with common/uncommon denominators</p> <p>Subtraction: with common/uncommon denominators, with borrowing</p> <p>Multiplication: using cancellation, with whole/mixed number</p> <p>Equivalent fractions</p>
DECIMALS			<p>Money: use of dollar sign and decimal point in addition</p> <p>Align decimal points when adding and subtracting dollars and cents</p>	<p>Money: use of dollar sign and decimal point in addition, subtraction, multiplication, and division</p>	<p>Money</p> <p>Decimal point</p> <p>Reading/writing: writing a decimal as a fraction</p> <p>Place value to the tenths', hundredths', thousandths' places</p> <p>Addition/subtraction</p>	
PROBLEM SOLVING AND APPLICATIONS	<p>Building blocks: oral story problems</p>	<p>Building blocks: oral word problems</p> <p>Word problems</p> <p>Addition, subtraction, money</p> <p>Illustrating story problems</p> <p>Creating story problems</p> <p>Extra facts</p> <p>Missing facts</p> <p>Applications: Temperature, time, weight, length, money, number puzzles, graphs, calendars, maps</p>	<p>Building blocks: oral word problems</p> <p>Word problems</p> <p>Addition, subtraction, multiplication, division, money, fractions, carrying, borrowing</p> <p>Steps of problem-solving process</p> <p>Applications: time, length, temperature, graphs, weight, fractions, money, recipes</p>	<p>Word problems</p> <p>Steps of problem-solving process</p> <p>Addition, subtraction, multiplication, division, fractions, money, measures, clue words, one step, two and three steps, mixed operations</p> <p>Applications: puzzles, multiple combinations, time, length, money, weight, fractions</p>	<p>Word Problems</p> <p>Steps of problem-solving process</p> <p>Addition, subtraction, multiplication, division, fractions, money, measures, averages, decimals</p> <p>Geometry: area, perimeter</p> <p>Graphs, clue words</p> <p>One, two, and three steps</p> <p>Mixed operations</p> <p>Estimating answers</p> <p>Applications: fractions, length, weight, graphs, geometry</p>	

Bold type represents new material  Represents major topic for the grade.

FIFTH GRADE

Parts of a whole/group
 Word problems
 Timed mastery
 Terms: numerator, denominator
 Number words
 Types
 Proper, mixed, improper
 Change to mixed or whole number
 Reducing
 Finding least common denominator
 Answers reduced to lowest terms
 Number line
 Addition: with common/uncommon denominators

Subtraction: with common/uncommon denominators, with borrowing
 Multiplication
 Using cancellation
 Multiplying a fraction with a whole/mixed number
 Multiplying two mixed numbers
 Equivalent fractions
Division: dividing a whole/mixed number by a fraction, a fraction by a fraction, a fraction or a mixed number by a whole number, by a mixed number
Changing fractions to decimals/decimals to fractions

SIXTH GRADE

Parts of a whole/group
 Word problems
 Timed mastery
 Terms: numerator, denominator
 Types
 Proper, mixed, improper
 Change to mixed number or whole number
 Change mixed number to an improper fraction
 Simplifying: reducing and making proper
 Addition: with common/uncommon denominators
 Subtraction: with common/uncommon denominators, with borrowing

Multiplication
 Using cancellation
 Multiplying a fraction with a whole number or mixed number
 Multiplying two mixed numbers
 Equivalent fractions
 Division
 Dividing a whole number, mixed number, or fraction by a fraction or mixed number
 Dividing a fraction or a mixed number by a whole number
 Changing fractions to decimals/decimals to fractions
Finding a fractional part of a whole

SEVENTH GRADE

Word problems
 Timed mastery
 Terms: denominator, numerator
 Types: proper, improper, mixed, **complex**
 Reducing
 Addition
 Subtraction
 Multiplication
 Equivalent Fractions
 Division
Simplifying complex fractions
 Changing fractions to decimals/decimals to fractions

EIGHTH GRADE

Word problems
 Terms: numerator, denominator
 Types: proper, improper, mixed, complex
 Reducing
 Addition
 Subtraction
 Multiplication
 Equivalent
 Division
 Simplifying complex fractions
 Changing fractions to decimals/decimals to fractions

Money
 Reading/writing: **writing fraction as a decimal**, writing decimal as a fraction
 Place value to the thousandths' place
 Addition/subtraction: **annexing zeros**
Multiplication: by a whole number, by another decimal, when zeros are annexed

Division
Of a decimal by a whole number
Eliminating the decimal point in the divisor
Annexing zeros to avoid remainders
Comparing/repeating decimals
Rounding
Timed mastery
Changing decimals to fractions/fractions to decimals

Money
 Reading/writing: writing a fraction as a decimal, writing a decimal as a fraction
 Place value to the thousandths' and **millionths' place**
 Addition/subtraction: annexing zeros
 Multiplication: by a whole number, by another decimal, when zeros are annexed

Division
 By a whole number
 Eliminating decimal point in divisor
 Annexing zeros to avoid remainders
 Comparing/repeating decimals
Terminating decimals
 Rounding
 Timed mastery
 Changing decimals to fractions/fractions to decimals

Money
 Reading/writing
 Place value to the millionths' place
 Addition/subtraction
 Multiplication/division
 Comparing/repeating decimals
 Rounding
 Timed mastery
 Changing fractions to decimals
Terminating decimals
Nonterminating/nonrepeating decimals
Converting repeating decimals to fractions

Reading/writing
 Place value to ten millionths' place
 Addition/subtraction
 Multiplication/division
 Comparing/repeating decimals
 Rounding
 Timed mastery
 Changing fractions to decimals
 Terminating
 Nonterminating/nonrepeating decimals
 Word problems
Scientific notation

Word problems
 Steps of problem-solving process
 Addition, subtraction, multiplication, division, fractions, money, measures, averages, decimals, geometry: area, perimeter, graphs, **scale drawings, temperature**
 One, two, and three steps; **four steps**
 Mixed operations
 Estimating answers
 Eliminating unnecessary facts
Writing a number sentence
Drawing a model of a problem
Using a schedule
 Estimating money amounts
Guessing and checking
Making an organized list
Reading a chart
Educated trial and error

Applications: measures, Roman numerals, fractions, money, decimals, graphs, scale drawings, temperature, geometry, place value

Word problems
 Steps of problem-solving process
 Addition, subtraction, multiplication, division, fractions, money, measures, time, averages, decimals, geometry, graphs, **equations, ratio, percent, proportion**
 One, two, three, and four steps
 Mixed operations
 Eliminating unnecessary information
Making a table
Conversion factors
Using logic charts
Finding a pattern
Testing a hunch
Making a sensible guess
Drawing a geometric model
Using proportions

Applications:
 Measures, Roman numerals, money, graphs, scale drawings, geometry, **charts, time, banking, ratio, proportion, reading meters (electric and gas), discount, interest, sales tax, profit, commission, installment buying, planning budgets, amount of profit**

Word problems
 Addition, subtraction, multiplication, division, fractions, money, measures, time, averages, decimals, graphs, geometry, equations, ratio, proportion, percent, trigonometry, mixed operations, one- to four-step problems
Choosing the better method
Simplifying the problem
Reading a chart
Using algebra, formulas, and percents
Writing a ratio
 Applications
 Percent: discount, simple interest, commission, profit, **loss**
 Measures
 Adjusting recipes
 Banking: **checking account, savings account**, budgeting, borrowing money, installment buying
Income: straight salary, piecework, commission, tip
 Insurance: life, health, fire, auto
 Taxes: income, sales
 Scale drawings: maps
 Comparative shopping: unit pricing
 Purchasing electricity: current, kilowatt, reading electric meter
 Purchasing natural gas: cubic feet, reading a gas meter
 Geometry
 Time: **time zones**

Word problems
 Addition, subtraction, multiplication, division, rounding, fractions, decimals, ratios, proportions, measures, percent, time, graphs
Statistics: mean, median, mode
 Maps, probability, commission, net pay, gross pay
Taxes: sales, income, property
Budget, interest
Buying: bonds, stocks
Insurance
 Geometry, trigonometry, scientific notation
 One, two, and three steps
 Applications
 Making change, unit pricing
 Percent: discount, commission, profit, loss
 Measures
 Time: time zones
 Temperature: **wind-chill factor**
 Banking
 Writing checks
 Filling out deposit slips
 Balancing a checkbook
Reconciling monthly statements
 Buying: bonds, stocks
 Insurance: life, health, fire, auto
 Taxes: sales, income, **property**

TIME, MONEY, MEASURES

GRAPHING, STATISTICS, PROBABILITY

	KINDERGARTEN	FIRST GRADE	SECOND GRADE	THIRD GRADE
	<p>Time Clock: face, hour hand, minute hand Reading and writing time O'clock (:00) Half past (:30) Quarter past Intervals of time: counting minutes by fives Calendar: place for month, days of week, date, year</p> <p>Money Recognition of penny, dime, nickel, quarter, half dollar Value of penny, dime, nickel, half dollar, quarter, dollar Counting: pennies, dimes, nickels Adding: pennies, dimes and pennies, nickels and pennies, quarters and pennies, dimes and nickels Symbols: ¢ Measures: inch</p>	<p>Time Clock: face, hour hand, minute hand Reading and writing time O'clock (:00) Half past (:30) Quarter past Quarter till Five-minute intervals A.M. and P.M. Calendar: months, days, date, rhyme Measures of time</p> <p>Money Recognition and value of penny, dime, nickel, quarter, half dollar Counting: pennies, dimes, nickels, quarters, half dollars Adding: pennies, dimes and pennies, nickels and pennies, quarters and pennies, dimes and nickels Counting combinations of coins Counting coins in mixed order Adding and subtracting money Symbols: ¢ Word problems</p> <p>Measures Temperature Reading/writing degrees Determining suitable clothing for a given temperature Length: inch, foot, yard, centimeter Weight Ounce, pound Comparing weights Capacity: cup, pint, quart, gallon Dozen, half-dozen Perimeter of a rectangular object</p>	<p>Time Clock: hour hand, minute hand, o'clock (:00), half past (:30), quarter past, quarter till, three quarters past, five-minute intervals, one-minute intervals Table of time: second, minute, hour, days, months, year Calendar: months of the year, days of the week, date, dates as digits Time zones Time lapse</p> <p>Money Recognition of penny, dime, nickel, quarter, half dollar Value of penny, dime, nickel, quarter, half dollar Counting: pennies, dimes, nickels, quarters, half dollars Combining coins for any amount Converting to cents Word problems Symbols: ¢, \$, • Adding money using \$, • Making change</p> <p>Measures Temperature: reading/writing degrees Length: inch, foot, yard, centimeter, meter, abbreviations Weight: ounce, pound, kilogram, applications Dozen, half dozen Capacity: cup, pint, quart, gallon Perimeter of a rectangle and square</p>	<p>Time Clock: face, hour hand, minute hand A.M. and P.M. Reading and writing time Table of time: seconds, minutes, hours, days, months, calendar, year, leap year</p> <p>Money Recognition and value of all coins Counting and combining all coins Symbols: \$, • Word problems, making change Addition, subtraction, multiplication, division</p> <p>Measures Temperature Reading/writing Terms: degrees Celsius and Fahrenheit Freezing/boiling points of water Normal body temperature</p> <p>Length English system: inch, foot, yard, mile Metric system: centimeter, meter</p> <p>Weight English system: ounce, pound, ton Metric system: gram, kilogram</p> <p>Capacity English liquid measures: cup, pint, quart, gallon English dry measures: pint, quart, peck, gallon Metric system: liter</p> <p>Ordering measures: least to greatest</p> <p>Converting measures from one measure to another within the same system</p> <p>Adding unlike measures within the same system Subtracting unlike measures within the same system</p>
		<p>Graphs Horizontal bar graphs: scales by 2s, 10s, 5s, and 3s Pictograph Graphing tally marks</p>	<p>Graphs Horizontal/vertical bar graphs Pictographs Line graphs Read a grid Read a map</p>	<p>Statistics: averaging</p>

Bold type represents new material  Represents major topic for the grade.

FOURTH GRADE	FIFTH GRADE	SIXTH GRADE	SEVENTH GRADE	EIGHTH GRADE
<p>Time Table of time: second, minute, hour, day, week, year, leap year, decade, score, century, millennium</p> <p>Money Values of all coins Symbols: \$, . Money problems with mixed operations Making change Counting back change</p> <p>Measures Temperature Reading/writing Terms: degrees Celsius and Fahrenheit Freezing/boiling points of water Normal body temperature</p> <p>Length English: inch, foot, yard, mile Metric: millimeter, centimeter, decimeter, meter, decameter, hectometer, kilometer</p> <p>Weight English: ounce, pound, ton Metric: milligram, centigram, decigram, gram, decagram, hectogram, kilogram</p> <p>Capacity English: fluid ounce, cup, pint, quart, gallon, peck, bushel, teaspoon, tablespoon Metric: milliliter, centiliter, deciliter, liter, decaliter, hectoliter, kiloliter</p> <p>Ordering measures: least to greatest Converting measures from one measure to another within the same system Adding unlike measures within the same system Subtracting unlike measures within the same system Square measures: square inches, square feet, square yards</p> <p>Metric prefixes: milli-, centi-, deci-, deca-, hecto-, kilo-</p> <p>Timed mastery</p>	<p>Time Table of time: second, minute, hour, day, week, year, leap year, decade, score, century, millennium</p> <p>Money: addition, subtraction, multiplication, and division with \$, estimation</p> <p>Measures Temperature Reading/writing Terms: degrees Celsius and Fahrenheit Freezing/boiling points of water Normal body temperature Conversions Celsius to Fahrenheit Fahrenheit to Celsius Negative temperatures</p> <p>Length English: inch, foot, yard, mile Metric: millimeter, centimeter, decimeter, meter, decameter, hectometer, kilometer</p> <p>Weight English: ounce, pound, ton Metric: milligram, centigram, decigram, gram, decagram, hectogram, kilogram</p> <p>Capacity English: fluid ounce, cup, pint, quart, gallon, peck, bushel, teaspoon, tablespoon Metric: milliliter, centiliter, deciliter, liter, decaliter, hectoliter, kiloliter</p> <p>Ordering measures: least to greatest Converting measures from one measure to another within the same system Adding unlike measures within the same system Subtracting unlike measures within the same system Square measures: square inches, square feet, square yards, acres, square miles</p> <p>Timed mastery Metric prefixes</p>	<p>Time Table of time: second, minute, hour, day, week, year, leap year, decade, score, century, millennium</p> <p>Time zones Prime meridian International Date Line Coordinated Universal Time Daylight Savings Time Latitude Degrees</p> <p>Money: addition, subtraction, multiplication with \$, .</p> <p>Measures Temperature Reading/writing Terms: degrees Celsius and Fahrenheit Freezing/boiling points of water Normal body temperature</p> <p>Conversions Celsius to Fahrenheit Fahrenheit to Celsius</p> <p>Length English: inch, foot, yard, mile Metric: millimeter, centimeter, decimeter, meter, decameter, hectometer, kilometer</p> <p>Weight English: ounce, pound, ton Metric: milligram, centigram, decigram, gram, decagram, hectogram, kilogram, metric ton</p> <p>Capacity English: fluid ounces, cup, pint, quart, gallon, peck, bushels Metric: milliliter, centiliter, deciliter, liter, decaliter, hectoliter, kiloliter</p> <p>Ordering measures: least to greatest Converting measures within the same system Adding and subtracting unlike measures within the same system</p> <p>Square measures English: square inches, square feet, square yards, acres, square miles Metric: cm², m², k², hectares</p> <p>Timed mastery Metric prefixes Compound measures: adding, subtracting, multiplying</p>	<p>Time Table of time: second, minute, hour, day, week, year, leap year, decade, score, century, millennium</p> <p>Time zones Prime meridian International Date Line Daylight Savings Time Latitude Degrees</p> <p>Money Biblical: shekel, mite, dram, pence, farthing, talent, gerah</p> <p>Measures Temperature Converting Celsius to Fahrenheit Converting Fahrenheit to Celsius Temperature zones: frigid, temperate, torrid Temperature and altitude: finding the drop in temperature</p> <p>Length English: inch, foot, yard, mile Metric: millimeter, centimeter, decimeter, meter, decameter, hectometer, kilometer Biblical: cubit, span, finger, fathom</p> <p>Weight English: ounce, pound, ton Metric: milligram, centigram, decigram, gram, decagram, hectogram, kilogram, metric ton Biblical: shekel, dram, maneh, gerah, talent, pound</p> <p>Capacity English: fluid ounces, cup, pint, quart, gallon, peck, bushel Metric: milliliter, centiliter, deciliter, liter, decaliter, hectoliter, kiloliter Biblical: log, hin, bath, ephah, homer, cor</p> <p>Converting measures within the same system: between metric and English</p> <p>Square measures English: square inches, square feet, square yards, acres, square miles Metric: square centimeters, square meters, hectares, square kilometers</p> <p>Timed mastery Metric prefixes Metric-English approximate relationships</p> <p>Compound measures: adding, subtracting, multiplying, dividing</p>	<p>Time Table of time: seconds, minutes, hours, days, weeks, months, year, leap year, decade, century, millennium</p> <p>Time zones</p> <p>Money Biblical: talent of gold, talent, mina, shekel, pence, farthing, mite</p> <p>Measures Temperature Degree Fahrenheit and Celsius Freezing/boiling points of water Normal body temperature Conversions Fahrenheit to Celsius Celsius to Fahrenheit Temperature zones</p> <p>Length English: inch, foot, yard, mile Metric: millimeter, centimeter, decimeter, meter, decameter, hectometer, kilometer Biblical: reed, cubit, span, finger</p> <p>Weight English: ounce, pound, ton Metric: milligram, centigram, decigram, gram, decagram, hectogram, kilogram Biblical: talent, mina, shekel, dram</p> <p>Capacity English: cup, pint, quart, gallon, peck, bushel Metric: milliliter, centiliter, deciliter, liter, decaliter, hectoliter, kiloliter Biblical: homer, ephah, cor, bath, hin, log</p> <p>Converting measures within the same system From metric to English From English to metric</p> <p>Square measures English: square inch, square foot, square yard, square mile, acre Metric: square centimeters, square meters, hectare, square kilometer</p> <p>Timed mastery Metric prefixes Metric-English approximate relationships Compound measures: adding, subtracting, multiplying, dividing Speed: formula to compute speed, distance, time</p>
<p>Statistics: averaging</p> <p>Graphs Pictographs Bar graphs Scale drawing Line graphs Finding distance on maps</p>	<p>Statistics: averaging</p> <p>Graphs Pictograph Bar, line, circle, rectangle graphs Ordered pairs Probability ratio Scale drawing Finding distance on maps</p>	<p>Graphs Pictographs Bar, line, circle, rectangle graphs Histograms Scale drawing Finding distance on maps Statistics: range, mean, median, mode Finding probability Statistics and basketball</p>	<p>Graphs Pictographs Bar, line, circle, rectangle graphs Histograms Scale drawing Finding distance on maps Statistics: range, mean, median, mode Finding probability Statistics and basketball</p>	<p>Graphs Pictographs Bar, line, circle graphs Rectangle graphs (divided bar graphs), histograms Scale drawing Finding distance on maps Statistics: finding the mean, median, mode Probability Formula Multiplying to find probability of independent data</p>

GEOMETRY

PERCENT, RATIO, PROPORTION

PRE-ALGEBRA

TRIGONOMETRY

	KINDERGARTEN	FIRST GRADE	SECOND GRADE	THIRD GRADE	FOURTH GRADE	FIFTH GRADE
GEOMETRY	<p>Recognize shapes: circle, square, rectangle, triangle</p>	<p>Plane figures: circle, square, rectangle, triangle</p> <p>Symmetry</p> <p>Shapes in a grid</p> <p>Perimeter of a rectangle</p>	<p>Plane figures: circle, square, rectangle, triangle</p> <p>Solid figures: introduce concept</p> <p>Vertex</p> <p>Measure and draw lines</p> <p>Scale drawings</p> <p>Symmetry</p> <p>Locations on a coordinate plane</p> <p>Perimeter of a rectangle and square</p>	<p>Plane figures</p> <p>Recognize shapes: circle, rectangle, square, parallelogram, rhombus, triangle, trapezoid</p> <p>Draw shapes: circle, rectangle, square, parallelogram, rhombus, triangle, trapezoid</p> <p>Angles: right angle</p> <p>Lines: parallel lines</p>	<p>Plane figures</p> <p>Simple closed curve, polygon</p> <p>Quadrilateral: parallelogram, rectangle, square, rhombus, trapezoid</p> <p>Triangle</p> <p>Angles: right angle, congruent angles</p> <p>Lines: line segment, line, ray, intersecting lines</p> <p>Terms: point, perpendicular, parallel</p> <p>Perimeter of a polygon</p> <p>Formulas: rectangle, square</p> <p>Area</p> <p>Formulas: rectangle, square</p>	<p>Plane figures</p> <p>Simple closed figure, polygon</p> <p>Quadrilateral: parallelogram, rectangle, square, rhombus, trapezoid, pentagon, hexagon, heptagon, octagon</p> <p>Triangle: right, isosceles, equilateral</p> <p>Angles: right, congruent, acute, obtuse, straight</p> <p>Lines: line segment, line, ray, intersecting lines, parallel and perpendicular lines</p> <p>Terms: point, plane, congruent, similar, diagonal</p> <p>Perimeter of a polygon</p> <p>Formulas: rectangle, square</p> <p>Area</p> <p>Formulas: rectangle, square</p> <p>Models and symbols:</p> <ul style="list-style-type: none"> • point, — line segment, line, ray, angle
PERCENT, RATIO, PROPORTION						<p>Introduction to concept</p> <p>Symbol: %</p>
PRE-ALGEBRA				<p>Finding the unknown number in an equation</p>	<p>Finding the unknown number in an equation</p>	<p>Solving equations</p> <p>Negative numbers</p> <p>Squares and square roots</p> <p>Exponents, bases, radical signs</p> <p>Order of operations</p>
TRIGONOMETRY						

SIXTH GRADE

Plane figures
Simple closed figure, polygon
Quadrilateral: parallelogram, rectangle, square, rhombus, trapezoid, pentagon, hexagon, heptagon, octagon, circle
Triangle: right, isosceles, equilateral
Angles: right, acute, obtuse, straight, **in a circle**
Lines: line segment, line, ray, intersection lines, parallel and perpendicular lines
Terms: point, plane, **vertex**, similar, congruent, diagonal, **base, radius, diameter, arc, degree, semicircle**

Perimeter of a polygon
Formulas: rectangle, square, **parallelogram, triangle, irregular shapes**
Converting measures to find perimeter

Area
Formulas: rectangle, square, **parallelogram, triangle, circle, complex shapes**
Circumference: formula
Using a compass/protractor
Constructions: circles, angles
Bisecting angles
Sliding, rotating, and flipping shapes
Models and symbols: • point, — line segment, line, ray, angle, || **parallel lines**, Δ **triangle, congruent, arc, π**

SEVENTH GRADE

Plane figures
Simple closed figures, polygon
Quadrilateral: parallelogram, rectangle, square, rhombus, trapezoid, pentagon, hexagon, heptagon, octagon, circle
Triangles: right, isosceles, equilateral
Angles: right, acute, obtuse, straight, in a circle
Lines: line segment, line, ray, intersecting lines, perpendicular and parallel lines
Terms: point, plane, vertex, congruent, degree, center, radius, diameter, arc, semicircle

Perimeter of a polygon
Formulas: rectangle, square, parallelogram, triangle
Area of plane figures
Formulas: rectangle, square, parallelogram, **trapezoid, circle**

Using algebra in geometric problems
Circumference: formulas using radius/diameter

Using a compass/protractor
Constructions: angles, **perpendicular lines**
Bisecting angles
Formulas and percents
Solid figures
Prisms: rectangular solid, cube, triangular
Pyramid, cylinder, cone, sphere
Surface area of solid figures
Formulas: rectangular solid, cube, square pyramid, cylinder
Volume of solid figures
Formulas: rectangular solid, cube, cylinder, square pyramid, cone
Models and symbols: • point, — line segment, line, ray, angle, \perp **right angle, perpendicular lines**, || parallel lines, Δ triangle

EIGHTH GRADE

Plane figures
Curve, closed curve, simple closed curve, polygon
Quadrilateral: parallelogram, rectangle, rhombus, square, trapezoid, pentagon, hexagon, heptagon, octagon, circle
Triangle: **acute, obtuse**, right, **equiangular**, equilateral, isosceles, **scalene**
Angles: right, acute, obtuse, straight, **reflex, adjacent, vertical, congruent, complementary, supplementary**, in a circle
Lines: line segment, line, ray, intersecting lines, parallel and perpendicular lines, **skew lines**
Terms: point, plane, vertex, similar, congruent, degree, hypotenuse, center, radius, diameter, arc, semicircle, **chord**

Perimeter of a polygon
Formulas: rectangle, square, parallelogram, triangle
Area of plane figures
Formulas: rectangle, square, parallelogram, triangle, circle, trapezoid

Circumference: formulas using radius/diameter
Using a compass/protractor
Constructions
A line perpendicular to a given line segment; congruent angles, parallel lines
Triangle: given three sides, given two angles and the included side, given two sides and the included angle
Bisecting angles/line segments
Solid figures
Prism: rectangular prism, cube, triangular prism
Pyramid: square pyramid
Cylinder, cone, sphere
Surface area of solid figures
Formulas: rectangular prism, cube, square pyramid, cylinder
Volume of solid figures
Formulas: rectangular prism, cube, square pyramid, cylinder, cone
Models and symbols: point, \square line, line segment, ray, angle, || parallel lines, perpendicular, \perp right angle, \sim **similar to**, is congruent to, arc, Δ triangle

Symbols: %
Reading / writing
Percent as a fraction, decimal, ratio
Fraction as a percent
Decimal as a percent
Subtracting from 100%
Word problems
Timed mastery
Finding percentage
Of a whole number
When the percent ends in a fraction
When the percent is over 100%
By comparison when the percent is given as more/less than
Less than 1%
Estimating Answers

Finding percent by comparison
Finding percent of increase or decrease
Finding the rate of discount
Finding percent for circle graphs
Finding discounts
Finding simple interest
Finding the base
Ratio
Reading / writing
Terms: antecedent, consequent
Equivalent, word problems
Proportion
Reading / writing
Terms: means, extremes
Cross products, word problems

Ratio
Reading / writing
Terms: antecedent, consequent
Equivalents, word problems
Proportions
Reading / writing
Terms: means, extremes
Finding missing terms
Word problems

Percent
Symbols: %
Reading / writing
Percent as a fraction, decimal, ratio
Decimals as a percent
Fraction as a percent
Subtracting from 100%
Word problems

Finding percentage
Of a whole number, **money**, fraction: when percent is given as more/less than, when percent ends with a fraction, when percent is over 100%, **when percent is less than 1%** by comparison
Finding percent of increase or decrease
Finding a number when a percent of it is given
Finding discount
Finding commission: rate of commission
Finding amount of sales
Formulas and percents
Finding compound interest

Percent
Symbol: %
Subtracting from 100%
Writing a decimal as a percent
Finding percentage of a number: decimal method, **ratio method**
Finding percents of less than 1%: decimal method, **ratio method**
Finding percents of over 100%: decimal method, **ratio method**
Finding more or less in percent: decimal method, **ratio method**
Finding what percent one number is of another: decimal method, **ratio method**
Finding the percent of increase or decrease: decimal method, **ratio method**

Finding a number when a percent is given: decimal method, **ratio method**
Finding discount: decimal method, **ratio method**
Finding commission: decimal method, **ratio method**
Finding percent of profit or loss: based on cost/selling price
Ratio
Reading/writing
Terms: antecedent, consequent
Equivalents
Word problems
Proportion
Terms: means, extremes
Finding missing terms: by equal ratios/cross multiplication
Word problems

Powers of ten
Order of operations
Algebraic multiplication
Solving equations
Two-step equations
Squares and square roots
Exponents, bases, radical signs
Negative numbers

Terms: **variable**, base, exponent
Algebraic expressions: terms, reading/writing, operational order, **monomial, binomial, trinomial, polynomial**
One- and two-step equations
Using algebra to solve word problems
Formulas: expressed on a graph
Tables: expressed on a graph
Square roots: radical sign, extracting the square root

Signed numbers: **comparing, adding, subtracting, multiplying, and dividing**
Absolute value
Evaluating an algebraic expression
Distributive principle
Combining like terms
Solving equations after simplifying
Eliminating fractions in equations

Terms
Variable
Coefficient: numerical coefficient, literal coefficient
Base, exponent, **surd**
Algebraic expressions: term, monomial, binomial, trinomial, polynomial, reading / writing, operational order, adding / **subtracting like terms, evaluating signed numbers, multiplying/dividing powers, multiplying/dividing monomials, multiplying/dividing polynomials by monomials, multiplying polynomials**

Equations: four rules in solving, eliminating fractions / **decimals**
Word problems
Formulas and tables expressed on a graph
Square roots: radical sign, extracting the square root, **simplifying irrationals**
Signed numbers

Terms: **hypotenuse, legs, tangent, sine, cosine**
Pythagorean rule: finding the length of the hypotenuse/legs
Finding the sine, cosine, and tangent: using the formula/trigonometric ratios chart

Terms: **hypotenuse, legs, tangent, sine, cosine**
Pythagorean rule: finding the length of the hypotenuse/legs
Finding the sine, cosine, tangent: using the formula/table of trigonometric ratios