

Policy 705.8.23

Math Curriculum



Rationale based on Scripture

God is the Creator of all things, including math. Our school is committed to providing students with a quality education in math, so they can function effectively as Christians in their church, community, and country. A quality education in math will help students succeed in high school, in the workplace, and help them witness to friends, neighbors, and co-workers about our Savior.

Exit goals for graduation

Students will demonstrate proficiency, understanding, and/or commitment to the following set of exit goals upon graduation. The level of proficiency of these exit goals will be dependent upon the individual gifts and effort of the student and at what grade the student started attending Christ the King.

- Demonstrate a positive attitude toward math.
- Able to do mental multiplication.
- Compute fractions in all four math operations.
- Solve ratios and proportions.
- Evaluate variable expressions and polynomials.
- Evaluate exponents.
- Know basic geometry formulas.
- Solve simple probability and statistics problems.
- Graph and locate points on a coordinate plane.
- Factor prime and composite numbers.
- Solve percent computation problems.
- Perform operations on positive and negative integers.
- Know and practice order of operations.
- Understand points, lines, planes, and geometric figures.

Grade level measurable objectives

At the end of each school year, students will demonstrate proficiency, understanding, and/or commitment to the following set of grade specific measurable objectives in these classifications: knowledge, skills, and attitudes.

The level of proficiency of these measurable objectives will be dependent upon the individual gifts and effort of the student and at what time of year the student started attending Christ the King.

Kindergarten

In chapter 1 students will:

- Sort objects by likeness.
- Identify what makes an object different.
- That's too easy sort objects based on color, shape, and size.
- Solve problems by using logical reasoning.

In chapter 2 students will:

- Identify various 3 -dimensional solid figures.
- Identify various 2- dimensional plane figures.
- Identify and make patterns.
- Solve problems by finding a pattern.

In chapter 3 students will:

- Identify positions such as above, below, top, middle, and bottom.
- Identify positions on, over, under, inside, outside, in front, and behind.
- Identify positions left, right, between, before, and after.
- Solve problems by following directions and acting out a problem.

In chapter 4 students will:

- Identify and make groups with as many as, more, or fewer objects.
- Identify show and draw groups through 10 objects.
- Use original numbers first through 10th to identify position.
- Solve problems using a map.

In chapter 5 students will:

- Identify show and draw groups of 11 to 31.
- Compare and order numbers up to 31.
- Estimate groups using benchmarks of 10, 20 and 30.
- Solve problems using the guess and test strategy.

In chapter 6 students will:

- Survey and record data complete and interpret picture graphs, pictographs, and bar graphs.
- Explore fraction concepts including $\frac{1}{2}$ and $\frac{1}{4}$.
- Explore events more likely, equally likely, or less likely to occur.
- Solve problems by making a list.

In chapter 7 students will:

- Add numbers with sums of 10 or less.
- Complete addition sentences for sums of 10 or less.
- Add numbers in vertical form.
- Solve problems by writing a number sentence.

In chapter 8 students will:

- Subtract from 10 or less.
- Complete subtraction sentences from 10 or less.
- Subtract from 10 or less in vertical form.

- Solve problems by choosing the operation.

In chapter 9 students will:

- Recognize the value of a penny, nickel, dime, and quarter.
- Count on by 1's to find the value of a group of coins.
- Trade and compare money amounts.
- Add and subtract money amounts.
- Solve problems using a model.

In chapter 10 students will:

- Sequence events.
- Read a calendar.
- Tell and write time to the hour.
- Solve problems by using a model.

In chapter 11 students will:

- Compare the length and height of objects.
- Use nonstandard units of length to measure.
- Compare the weight of objects.
- Compare the capacity of objects.
- Solve problems by making a graph.

In chapter 12 students will:

- Identify and count numbers to 100.
- Explore tens and ones.
- Skip count by 2s, 5s, and 10s.
- Solve problems by making a table.

First Grade

In chapter 1 students will:

- Count read and write whole numbers to 12.
- Compare and order whole numbers to 12.
- Read and write ordinal numbers to 10.
- Solve problems by acting them out.

In chapter 2 students will:

- Add numbers in sums of 12 or less.
- Complete and right addition sentences for sums of 12 or less.
- Identify patterns and complete addition patterns, sums to 12.
- Solve problems by writing a number sentence.

In chapter 3 students will:

- Learn subtraction facts to 12.
- Identify pattern rules and subtraction patterns.

- Relate addition and subtraction.
- Solve two-step problems that involve sequence.

In chapter 4 students will:

- Make and interpret charts and graphs.
- Add and subtract to interpret data from charts and graphs.
- Find the range mode and medium for a set of data.
- Solve problems using information on charts and graphs.

In chapter 5 students will:

- Read and write numbers through 100.
- Compare and order numbers.
- Recognize odd and even numbers and, skip count by 5's and 2's.
- Solve problems using logical reasoning.

In chapter 6 students will:

- Add numbers with sums of 20 or less.
- Subtract from 20 or less.
- Solve problems by making a table.

In chapter 7 students will:

- Identify and sort plane figures.
Identify and sort solid figures.
- Recognize different geometric transformations.
- Solve problems by finding and using a pattern.

In chapter 8 students will:

- Recognize the value of a penny, nickel, dime, quarter, and dollar.
- Count on with pennies, nickels, dimes, and quarters to find the value of a group of coins.
- Tell and write time to the half hour and hour.
- Solve problems by reading a schedule or through logical reasoning.

In chapter 9 students will:

- Explore length in customary and metric units of length.
- Explore capacity in customary and metric units of capacity.
- Explore measurement of weight and temperature.

- Solve problems by using the make a model strategy.

In chapter 10 students will:

- Add 2-digit numbers without regrouping.
- Add 2-digit numbers with regrouping.
- Explore rounding and estimating sums.
- Solve problems by using the guess and test strategy.

In chapter 11 students will:

- Subtract ones and 10s without regrouping.
- Subtract ones and 10s with regrouping.
- Explore rounding and estimating differences.
- Solve problems using more than one step.

In chapter 12 students will:

- Explore fractions including $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$.
- Explore basics of probability.
- Make a model or draw to solve a problem.

Second Grade

In chapter 1 students will:

- Use strategies to add numbers with sums of 20 or less.
- Use strategies to subtract from 20 or less.
- Identify write and solve related addition and subtraction facts.
- Choose an operation to solve a problem.

In chapter 2 students will:

- Read and write numbers through 100.
- Compare and order numbers to 100.
- Identify even and odd numbers and skip count to 100 by threes and fours.
- Solve problems using logical reasoning.

In chapter 3 students will:

- Read and interpret various data displays, including pictographs, bar graphs, circle graphs, and line plots.
- Determine the range, mode. and median of a set of data.
- Solve problems by reading a table.
- Solve problems by using a graph.

In chapter 4 students will:

- Add 2-digit numbers without regrouping.

- Add 2-digit numbers with regrouping.
- Build estimation skills.
- Solve problems requiring more than one step.

In chapter 5 students will:

- Subtract 2-digit numbers without regrouping.
- Subtract 2-digit numbers with regrouping.
- Subtract horizontally and vertically.
- Solve problems by making a table.

In chapter 6 students will:

- Identify geometric solids and their properties.
- Identify plain figures and their properties.
- Explore congruence and transformations.
- Solve problems by using a pattern.

In chapter 7 students will:

- Find the value of a group of coins consisting of pennies, nickels, dimes, quarters, and a half dollar.
- Find the value of a group of coins and bills.
- Tell time to the quarter hour and in five-minute intervals.
- Solve problems by guessing and testing.

In chapter 8 students will:

- Read and write numbers and number words for 100 through 999.
- Identify the place value of a designated digit.
- Compare and order 3-digit numbers.
- Solve problems by using a table and making an organized list.

In chapter 9 students will:

- Add 3-digit numbers with and without regrouping.
- Subtract 3-digit numbers with and without regrouping.
- Add and subtract money amounts with and without regrouping.
- Solve problems by finding needed information and using logical reasoning.

In chapter 10 students will:

- Identify unit and non-unit fractions.
- Compare and order fractions.
- Predict outcomes.

- Solve problems by drawing a picture.

In chapter 11 students will:

- Measure length and temperature using customary and metric units.
- Explore customary and metric units of weight and capacity.
- Find the area and perimeter of a figure.
- Solve problems by using a map.

In chapter 12 students will:

- Multiply by twos, threes, fours, and fives.
- Divide by twos, threes, fours, and fives.
- Divide with leftovers.
- Find the value of a symbol in a number sequence.
- Solve problems by choosing an operation.

Third Grade

In chapter 1 students will:

- Read, write, compare, order, and round numbers.
- Count money and make change.
- Explore counting patterns and 1000.
- Solve problems by drawing a picture.

In chapter 2 students will:

- Explore missing addends and regrouping in addition.
- Estimate and write whole numbers and money.
- Solve problems using simpler numbers.

In chapter 3 students will:

- Explore regrouping in subtraction.
- Learn the four meanings of subtraction.
- Estimate and subtract whole numbers and money.
- Solve problems by choosing the operation.

In chapter 4 students will:

- Multiply numbers and cents by 0 through 5.
- Understand order in multiplication.
- Learn about missing factors.
- Solve problems by using more than one step.

In chapter 5 students will:

- Explore both meanings of division.
- Relate multiplication and division.

- Learn about zero and one in division.
- Divide numbers and cents by two through 5.
- Solve problems by using a number sentence.

In chapter 6 students will:

- Explore multiplication of 6 through 9.
- Multiply 3 factors.
- Explore divided by 6 through 9.
- Learn about number patterns and fact families.
- Solve problems by guess and test.

In chapter 7 students will:

- Collect, organize, display, and compare data on graphs.
- Study arrangements and combinations.
- Conduct probability experiments.
- Solve problems by using a graph.

In chapter 8 students will:

- Estimate and measure in customary and metric units.
- Read Fahrenheit and Celsius scales.
- Relate map distances to actual distances.
- Learn about time to the minute, elapsed time, and calendars.
- Solve problems by making tables.

In chapter 9 students will:

- Explore plain and solid figures perimeter area and volume.
- Learn about congruent and similar figures, symmetry, and ordered pairs.
- Study how figures move.
- Solve problems by solving a simpler problem.

In chapter 10 students will:

- Estimate products.
- Explore multiplication with regrouping.
- Solve problems by working backward.

In chapter 11 students will:

- Find one-and two-digit quotients.
- Explore division with remainders.
- Estimate quotients.
- Solve problems by interpreting the remainder.

In chapter 12 students will:

- Explore equivalent fractions.

- Compare, order, add, and subtract fractions with models.
- Explore mixed numbers.
- Solve problems by using a drawing or model.

In chapter 13 students will:

- Relate fractions and decimals.
- Explore tenths and hundredths.
- Compare order add and subtract decimals.
- Solve problems by finding a pattern.

In chapter 14 students will:

- Learn about divisibility rules and the order of operations.
- Explore expressions and variables.
- Find missing operations.
- Find common factors.
- Solve problems by using more than one step.

Fourth Grade

In chapter 1 students will:

- Explore one million.
- Compare, order, and round whole numbers and money.
- Locate numbers on a number line.
- Make change.
- Read and write numbers through one billions place.
- Solve problems by making a table or list.

In chapter 2 students will:

- Use addition properties and strategies.
- Learn about subtraction concepts.
- Estimate sums and differences.
- Check addition and subtraction.
- Add and subtract whole numbers and money.
- Learn about expressions with variables.
- Solve problems using logical reasoning.

In chapter 3 students will:

- Learn about front end estimation.
- Add and subtract larger numbers with regrouping.
- Add three or more addends.
- Choose the operation to solve a problem.

In chapter 4 students will:

- Use multiplication properties.
- Learn about special factors and patterns.
- Explore multiplication models.
- Estimate and multiply whole numbers and money.
- Solve problems by working backward.

In chapter 5 students will:

- Study the meanings and rules of division.
- Investigate patterns, missing numbers, and divisibility.
- Estimate and divide whole numbers and money.
- Explore zeros in division.
- Learn about the order of operations and averages.
- Solve problems by interpreting the remainder.

In chapter 6 students will:

- Estimate and compute with customary and metric units with renaming.
- investigate time and temperature both Fahrenheit and Celsius.
- solve problems using more than one step.

In chapter 7 students will:

- Collect, organize, and interpret data.
- Investigate combinations.
- Predict probability of events.
- Explore tree diagrams.
- Solve problems by using a diagram or graph.

In chapter 8 students will:

- Explore functional fractional parts of regions and sets.
- Learn about equivalent fractions and mixed numbers.
- Identify fractions on a number line.
- Estimate, compare, and order fractions.
- Solve problems using logical reasoning.

In chapter 9 students will:

- Add and subtract fractions and mixed numbers.
- Estimate sums and differences of mixed numbers.
- Explore multiples.
- Relate fractions and probability.

- Find fractional parts of numbers.
- Solve problems by using simpler numbers.

In chapter 10 students will:

- Draw and identify parts of polygons.
- Classify angles, polygons, quadrilaterals, and triangles.
- Investigate similar figures, transformations, and coordinate geometry.
- Solve problems by finding a pattern.

In chapter 11 students will:

- Use models and formulas.
- Relate plain and solid figures.
- Investigate spatial relationships.
- Solve problems using a drawing or model.

In chapter 12 students will:

- Learn about patterns.
- Estimate in division.
- Investigate trial quotients and zeros in division.
- Solve problems with more than one step.

In chapter 13 students will:

- Learn about tenths and hundredths.
- Compare order and round decimals.
- Estimate, add, and subtract decimals.
- Divide money.
- Use more than one step to solve problems.

In chapter 14 students will:

- Use variables in number sentences.
- Find missing numbers and symbols.
- Learn about functional tables and parentheses.
- Graph equations on coordinate grids.
- Solve problems in more than one way.

Fifth Grade

In chapter 1 students will:

- Explore a billion
- Read, write, compare, order, and round numbers.
- Use addition properties and subtraction rules.
- Use rounding and front-end estimation.
- Read and write Roman numerals.
- Solve by guess and test strategy.

In chapter 2 students will:

- Use properties, special factors, and patterns.
- Estimate and multiply up to three-digit numbers and money.
- Solve problems in hidden information by using more than one step.

In chapter 3 students will:

- Use the meanings of division and patterns.
- Explore divisibility rules and short division.
- Estimate using compatible numbers.
- Learn about the order of operations.
- Make a table and find a pattern to solve problems.

In chapter 4 students will:

- Explore factors, primes, composites. and multiples.
- Rename equivalent fractions, improper fractions, and mixed numbers.
- Find whether a fraction is closer to 0, $\frac{1}{2}$, or one.
- Compare and order fractions.
- Solve problems using organized lists.

In chapter 5 students will:

- Learn to add or subtract with renaming.
- Estimate sums and differences of mixed numbers.
- Use the work backward strategy.

In chapter 6 students will:

- Multiply fractions and mixed numbers using the GCF.
- Explore division with models.
- Learn about reciprocals and dividing fractions and mixed numbers.
- Estimate mixed-number products and quotients.
- Solve problems using simpler numbers.

In chapter 7 students will:

- Learn about tree diagrams and independent and dependent events.
- Collect, organize, report, and interpret data.
- Interpret and make line plots, histograms, and line graphs.
- Use a model or diagram to solve problems.

In chapter 8 students will:

- Estimate, add, and subtract decimals.
- Solve problems with extra information by using more than one step.

In chapter 9 students will:

- Multiply and divide by powers of 10.
- Estimate decimal products and quotients.
- Multiply and divide decimals and money.
- Write a number sentence to solve problems.

In chapter 10 students will:

- Classify angles in polygons.
- Explore congruence, similarity, symmetry, transformations, and tessellations.
- Use perimeter and circumference formulas.
- Solve problems using formulas.

In chapter 11 students will:

- Investigate customary units of length capacity and weight.
- Read Fahrenheit and Celsius temperature scales.
- Learn about time zones.
- Compute customary units with regrouping.
- Solve problems by using more than one step.

In chapter 12 students will:

- Investigate metric units of length, capacity, and mass.
- Use area formulas.
- Classify solid figures.
- Learn about cubic measure and volume.
- Solve problems by drawing a picture.

In chapter 13 students will:

- Relate ratios to fractions.
- Use proportion in scale drawings and maps.
- Relate fractions and decimals to percents.
- Find the percent of a number.
- Solve problems by combining strategies.

In chapter 14 students will:

- Write and evaluate expressions.
- Write and solve equations.
- Learn about integers, function tables, coordinate graphs, and linear functions.

- Solve problems by writing an equation.

Sixth Grade

In chapter 1 students will:

- Explore 1 trillion.
- Use exponents to understand place value.
- Compare and order decimals.
- Compute with whole numbers and decimals.
- Write and evaluate expressions.
- Solve problems by writing and solving an equation.

In chapter 2 students will:

- Discover patterns in multiplication.
- Estimate products.
- Learn about exponents, scientific notation, and square roots.
- Solve problems by using simpler numbers.

In chapter 3 students will:

- Learn about short division.
- Discover patterns in division.
- Estimate and find quotients.
- Evaluate multiplication and division expressions.
- Solve problems by interpreting the remainder.

In chapter 4 students will:

- Learn about expressions, equations, inequalities, and formulas.
- Solve addition, subtraction, multiplication, and division equations.
- Explore order of operations with a calculator.
- Solve problems by using more than one step.

In chapter 5 students will:

- Learn about opposites and absolute value of integers.
- Compare, order, and compute with integers.
- Evaluate expressions and solve equations with integers.
- Solve problems by making a table.

In chapter 6 students will:

- Investigate fractions, primes, and composites.
- Compare, order, and estimate fractions.

- Explore greatest common factor and least common multiples.
- Relate fractions, mixed numbers, and decimals.
- Identify terminating and repeating decimals.
- Solve problems by finding a pattern.

In chapter 7 students will:

- Explore addition properties.
- Estimate. add. and subtract fractions.
- Evaluate expressions and solve equations with fractions.
- Solve problems by working backward.

In chapter 8 students will:

- Estimate and find products and quotients of fractions and mixed numbers.
- Learn about multiplication and division expressions and equations with fractions.
- Find probability of simple and compound events.
- Make predictions based on probability.
- Solve problems by using a diagram.

In chapter 9 students will:

- Survey, collect, organize, report, and interpret data.
- Learn about bias in surveys.
- Apply measures of central tendency and range.
- Investigate stem and leaf plots, box and whisker plots, double bar and line graphs, histograms, and circle graphs.
- Recognizing misleading statistics.
- Solve problems by making an organized list.

In chapter 10 students will:

- Measure draw and classify angles.
- Learn geometric constructions.
- Classify polygons and solid figures.
- Explore circles, transformations, symmetry, and tessellations.
- Identify congruent and similar polygons.
- Solve problems by logical reasoning.

In chapter 11 students will:

- Simplify ratios and rates.
- Write and solve proportions.

- Learn about scale drawings maps and similar figures.
- Relate percents fractions and decimals solve problems by combining strategies.

In chapter 12 students will:

- Use patterns to compute mentally.
- Find percentage, interest, and rate.
- Investigate discount, sales tax, commission, and better buy.
- Make circle graphs.
- Solve problems by writing an equation.

In chapter 13 students will:

- Really decimal and metric units.
- Rename and compute metric and customary units.
- Investigate perimeter, circumference, and area formulas.
- Compute surface area and volume.
- Rename and compute customary units and time.
- Decompose figures to solve problems.
- Solve problems using drawings and formulas.

In chapter 14 students will:

- Solve two step equations and graph transformations.
- Learn about functions and algebraic patterns.
- Solve problems using more than one method.

Seventh Grade

In chapter 1 students will:

- Compare and order integers.
- Model operations with integers.
- Identify and use properties involving operations on integers.
- use the order of operations to simplify expressions.
- Relate integers to the four quadrants of the coordinate plane.
- Apply this strategy: *Guess and Test*.
- Look for new vocabulary words highlighted in each lesson.

In chapter 2 students will:

- Write and simplify numerical and algebraic expressions.
- Solve addition, subtraction, multiplication, and division equations.
- Model and solve two-step equations.
- Use a calculator to key in and solve formulas.
- Apply the strategy: *Organized Data*.
- Look for new vocabulary words highlighted in each lesson.

In chapter 3 students will:

- Use math symbols to express word sentences as inequalities.
Graph inequalities on number lines.
- Write inequalities for graphs on number lines.
- Solve inequalities using the Addition, Subtraction, Multiplication and Division Properties of Inequality.
- Apply the strategy: Find a Pattern.
- Look for new vocabulary words highlighted in each lesson.

In chapter 4 students will:

- Compare and order decimals.
- Estimate solutions of decimal operations using rounding front-end estimation and compatible numbers.
- Solve equations by adding, subtracting, multiplying, and dividing decimals.
- Express decimal numbers in scientific notation.
- Multiply and divide numbers with positive and negative exponents.
- Rename metric units of measure.
- Review problem solving strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 5 students will:

- Find the prime factorization of a number.
Find the greatest common factor (GCF) and the least common multiple (LCM).
- Compare and order rational numbers.
- Add, subtract, multiply, and divide positive and negative fractions and mixed numbers.

- Use properties of rational numbers.
- Solve equations and inequalities containing rational numbers.
- Rename customary units of measure.
- Apply the strategy: Make a Drawing.
- Look for new vocabulary words highlighted in each lesson.

In chapter 6 students will:

- Identify and compare ratios.
- Find and compare unit rates, unit costs.
- Write proportions and find the missing term in a proportion.
- Solve direct and inverse proportions.
- Use dimensional analysis.
- Solve problems involving similar figures.
- Solve indirect measurement problems.
- Apply the strategy: Solve a Simpler Problem.
- Look for new vocabulary words highlighted in each lesson.

In chapter 7 students will:

- Write fractions, decimals, and ratios as percents.
- Find a percentage, a percent, and an original number or base.
- Write fractions and decimals greater than one or less than 0.01 as percents.
- Find a percent increase, or percent decrease.
- Calculate sales tax, tips, discounts, markups, profit, loss, sale prices, and commissions.
- Use a formula to find simple interest.
- Use a table to find compound interest.
- Play the strategy: Reason Logically.
- Look for new vocabulary words highlighted in each lesson.

In chapter 8 students will:

- Use sampling to conduct a survey.
- Find the range and measures of central tendency of a data set.
- Make and interpret graphs--including bar graphs, line graphs, histograms, stem and leaf plots, box and whisker plots, Venn diagrams, and scatter plots.

- Find the line of best fit for a scatter plot.
- Identify what type of correlation is shown by the data in a scatter plot.
- Recognize misleading graphs and statistics.
- Use spreadsheets to make graphs.
- Review problem solving strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 9 students will:

- Identify complementary, supplementary, adjacent, and vertical angles.
- Identify congruent angles formed by pairs of parallel lines cut by a transversal.
- Identify and classify polygons.
- Identify congruent triangles.
- Construct perpendicular and parallel lines and congruent triangles.
- Identify central angles and inscribed angles.
- Make a circle graph to display a set of data.
- Apply the strategy: Adopt A Different Point of View.
- Look for new vocabulary words highlighted in each lesson.

In chapter 10 students will:

- Distinguish between precision and accuracy in measurements.
- Use formulas to find the perimeter and area of polygons, complex figures, and circles.
- Find the positive and negative square roots of perfect and non-perfect squares.
- Distinguish between rational and irrational numbers.
- Use the Pythagorean theorem.
- Explore the effect of changes in dimensions on the areas of polygons.
- Identify line, rotational, and point of symmetry.
- Apply the strategy: Account for All Possibilities.
- Look for new vocabulary words highlighted in each lesson.

In chapter 11 students will:

- Classify 3 dimensional figures.
- Make isometric and orthographic drawings.

- Draw and use Nets to find surface area.
- Estimate the surface area of prisms and cylinders.
- Use formulas to find surface area and volume of prisms, pyramids, cylinders, and cones.
- Find unknown dimensions given the volumes of three-dimensional figures.
- Find the surface area and volume of a complex 3 dimensional figures.
- Relate changes in scale and dimension to changes in volume and surface area.
- Apply the strategy: Work Backward.
- Look for new vocabulary words highlighted in each lesson.

In chapter 12 students will:

- Use a tree diagram to find the number of possible outcomes in a sample space.
- Use the Fundamental Counting Principle to find the size of a sample space.
- Use factorials to find the size of a sample space.
- Find the theoretical probability of an event.
- Find the experimental probability of an event.
- Compare odds in favor and odds against an event.
- Compute the probability of independent and dependent events.
- Determine the number of permutations.
- Determine the number of combinations.
- Review problem solving strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 13 students will:

- Recognize, describe, and extend patterns in sequences.
- Form a conjecture and prove that it is false or demonstrate its truth.
- Graph a linear function from a table of values and identify solutions to the related linear equation.
- Identify different forms of slope and find the slope of a line from two given points.

- Identify linear functions and nonlinear functions using equations and graphs.
- Identify a graphical representation of a real world situation.
- Identify and graph transformations of figures on the coordinate plane.
- Apply the strategy: Consider Extreme Cases.
- Look for new vocabulary words highlighted in each lesson.

In chapter 14 students will:

- Classify and evaluate polynomials.
- Model polynomials.
- Add and subtract polynomials.
- Multiply and divide polynomials.
- Multiply a polynomial by a monomial.
- Divide a polynomial by a monomial.
- Solve multi step linear equations with the variable on both sides of the equation.
- Solve and graph inequalities involving rational numbers.
- Review problem solving strategies.
- Look for new vocabulary words highlighted in each lesson.

Eighth Grade

In chapter 1 students will:

- Graph rational numbers on a number line.
- Compare and order rational numbers.
- Find the GCF and LCM of rational numbers.
- Identify and use properties to compute with rational numbers.
- Simplify numerical expressions with rational numbers using the rules for order of operations.
- Apply the laws of exponents.
- Apply the strategy: Make a Drawing.
- Look for new vocabulary words highlighted in each lesson.

In chapter 2 students will:

- Write, compare, and order numbers in scientific notation.
- Multiply and divide in scientific notation.
- Find perfect squares and square roots.
- Identify rational and irrational numbers.

- Estimate compare and order irrational numbers.
- Identify and use properties to compute with real numbers.
- Use the Pythagorean theorem.
- Apply the strategy: Organize Data.
- Look for new vocabulary words highlighted in each lesson.

In chapter 3 students will:

- Write and evaluate algebraic or variable expressions.
- Solve addition subtraction multiplication and division equations.
- Model and solve two step equations.
- Solve multistep equations.
- Solve absolute value equations.
- Use equations to express repeating decimals as fractions.
- Apply the strategy: Guess and Test.
- Look for new vocabulary words highlighted in each lesson.

In chapter 4 students will:

- Write the mathematical sentences that use the symbols $<$, not $<$, $>$, not $>$, $=$, or not $=$ to compare two expressions.
- Graph inequalities on a number line.
- Model properties of inequalities.
- Solve addition, subtraction, multiplication, and division inequalities.
- Solve multi step inequalities and graph compound inequalities on a number line.
- Look for new vocabulary words highlighted in each lesson.

In chapter 5 students will:

- Classify, evaluate, and write polynomials in standard form.
- Model polynomials.
- Add and subtract polynomials.
- Multiply and divide by monomials.
- Factor polynomials using the GCF.
- Factor trinomials.
- Apply the strategy: Find a Pattern.

- Look for new vocabulary words highlighted in each lesson.

In chapter 6 students will:

- Identify relations and functions.
- Identify the domain and range of a function.
- Find and graph the solutions of a function.
- Find the slope of a linear function.
- Apply the concept of direct variation.
- Graph linear inequalities.
- Make and read scatter plots from relations.
- Recognize trends in correlated data.
- Apply the strategy: Reason Logically.
- Look for new vocabulary words highlighted in each lesson.

In chapter 7 students will:

- Identify and compare ratios and rates.
- Identify and solve proportions.
- Rename metric and customary units of measure using conversion factors.
- Solve problems using dimensional or unit analysis.
- Identify and work with direct inverse and partitive proportions.
- Solve problems involving scale drawings, models, trigonometric ratios, and direct measurement.
- Apply the strategy: Solve a Simpler Problem.
- Look for new vocabulary words highlighted in each lesson.

In chapter 8 students will:

- Write fractions and decimals as percents and vice versa order fractions, decimals, and percents.
- Use patterns to relate fractions, decimals, and percents, estimate with percents.
- Find the percentage of a number, rate and base (original number) by using a formula and a percent proportion.
- Solve percentage rate and base problems involving consumer applications.
- Find the percent of change, increase or decrease.

- Solve problems using a variety of strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 9 students will:

- Solve problems involving angle pairs, parallel lines, and polygons algebraically.
- Identify and classify polygons.
- Identify tangents, secants, cords, arcs, and sectors of a circle.
- Interpret and make circle graphs.
- Construct congruent line segments, angles and triangles, and perpendicular and parallel lines.
- Recognize and make tessellations using regular and non-regular polygons.
- Apply the concepts of angle of elevation and angle of depression to geometric measurement problems.
- Apply the strategy Adopt A Different Point of View.
- Look for new vocabulary words highlighted in each lesson.

In chapter 10 students will:

- Determine precision in measurement.
- Find perimeters areas and missing dimensions of polygons.
- Derive and apply formulas for the areas of triangles, parallelograms, and trapezoids.
- find the circumference and arc lengths of a circle as well as the areas of a circle and its sectors.
Find the areas of complex figures involving polygons and circles.
- Find the perimeters and areas of polygons on a coordinate plane.
- Understand reflections, translations, rotations, and dilations of a point.
- Relate reflections and rotations to symmetry.
- Determine what combination of transformations produce a given image.
- Apply the strategy: Work Backward.
- Look for new vocabulary words highlighted in each lesson.

In chapter 11 students will:

- Describe and extend patterns in visual and numeric sequences.
- Write recursive and explicit formulas for arithmetic and geometric sequences.
- Interpret graphs that represent real world situations, create graphs that represent possible situations.
Evaluate functions given in function notation for various values of the variable.
- Be familiar with the graphs of nonlinear functions such as quadratic step, absolute value, and exponential functions.
- Learn about inverse variation.
- Apply the strategy: Account For All Possibilities.
- Look for new vocabulary words highlighted in each lesson.

In chapter 12 students will:

- Classify 3 dimensional figures as polyhedrons and non-polyhedrons.
- Apply Euler's formula.
- Construct and deconstruct complex 3-dimensional figures.
- Distinguish between isometric and orthographic drawings of three-dimensional figures.
- Find volumes and lateral and surface areas of three-dimensional figures.
- Identify types of symmetry in three-dimensional figures.
- Solve the problems using a variety of strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 13 students will:

- Collect, organize, and interpret data in frequency tables, line plots, stem and leaf plots, box and whisker plots, bar graphs, histograms, and line graphs.
- Use surveys to sample populations.
- Distinguish biased and unbiased samples.
- Interpret and compare data presented in graphs.
- Recognize misleading statistics and graphs.

- Apply the strategy: Consider Extreme Cases.
- Look for new vocabulary words highlighted in each lesson.

In chapter 14 students will:

- Make a tree diagram and use the Fundamental Counting Principle to find the possible outcomes of an experiment.
- Find probabilities of simple events, combined events, and compound events.
- Find experimental probabilities and use them to make predictions.
- Understand the relationship between probabilities and odds.
- Find permutations and combinations of sets of objects.
- Use connectives to form compound logic statements.
- State the converse, inverse, and contrapositive of a conditional statement.
- Distinguish between inductive and deductive reasoning.
- Solve problems using a variety of strategies.

Advanced Eighth Grade

In chapter 1 students will:

- Types of rational numbers and recognize irrational numbers.
Find square roots of perfect squares and approximate square roots of non-perfect squares.
- Add, subtract, multiply, and divide signed numbers.
- Classify and graph real numbers.
- Simplify numerical expressions using the order of operations.
- Perform operations on numbers in a scientific notation.
- Apply set operations of intersection and union.
- Use matrices to organize data and perform operations on matrices.
- Apply the strategy: Make a Drawing.
- Look for new vocabulary words highlighted in each lesson.

In Chapter 2 students will:

- Distinguish between algebraic expressions and equations.
- Solve equations by substitution given replacement sets.
- Write, model, solve, and check addition, subtraction, multiplication, and division equations.
- Justify the steps of the solution process for addition, subtraction, multiplication, and division equalities, solve equations that contain variable terms on both sides.
- Recognize identities and contradictions.
- Write and solve absolute value equations.
- Solve formulas and literal equations for particular variables.
- Apply this strategy: Solve a Simpler Problem.
- Look for new vocabulary words highlighted in each lesson.

In chapter 3 students will:

- Translate mathematical sentences that use the symbols; less than, less than or equal, greater than, greater than or equal, or not equal to, compare 2 expressions.
- Graph inequalities on a number line.
- Write the solution set of an equality in both set builder and interval notation.
- Connect verbal, numeric, symbolic, and graphic representations of inequalities.
- Solve addition, subtraction, multiplication, and division inequalities.
- Solve one step, multi-step, compound, and absolute value inequalities.
- Graph the solution sets of inequalities.
- Apply the strategy: Reason Logically.
- Look for new vocabulary words highlighted in each lesson.

In chapter 4 Students will:

- Recognize and define the domain and range of relations given different representations.
- Identify and define functions.
- Apply the vertical line test to graphs.

- Write function rules and make function tables.
- Identify dependent and independent variables in problem situations.
- Recognize and extend arithmetic and geometric sequences.
- Write a function rule for an arithmetic sequence.
- Write the recursive formula for a geometric sequence.
- Solve problems using a variety of strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 5 students will:

- Identify linear functions and graphs.
- Relate a constant rate of change to the slope of a line.
- Find slopes of lines and identify possible values for slopes.
- Identify, interpret, write, and graph direct variation.
- Write a linear equation and graph a line in slope intercept form.
- Write and graph linear equations using point slope form.
- Understand the relationship of the slopes of parallel and perpendicular lines.
- Write equations of lines given their relationship to other lines.
- Graph a linear inequality in two variables.
- Apply the strategy: Consider Extreme Cases.
- Look for new vocabulary words highlighted in each lesson.

In chapter 6 students will:

- Solve systems of linear equations in two variables graphically.
- Solve systems of linear equations in two variables algebraically by substitution.
- Solve systems of linear equations in two variables algebraically by using addition or subtraction to eliminate one variable.
- Solve systems of linear equations in two variables using equivalent systems.

- Solve a variety of verbal problems using systems of equations in two variables.
- Graph and solve systems of linear equations in two variables using equivalent systems.
- Apply the strategy: Work Backward.
- Look for new vocabulary words highlighted in each lesson.

In chapter 7 students will:

- Identify like monomials.
- Right and classify polynomials in standard form.
- Model the addition and subtraction of polynomials.
- Add and subtract polynomials algebraically.
- Multiply and divide monomials.
- Raise a power or a product to a power and raise a quotient to a power.
- Model binomial multiplication using area models.
- Multiplied by binomials using the distributive property and using the FOIL method.
- Multiply a polynomial by a monomial and by a binomial.
- Apply the strategy: Find a Pattern.
- Look for new vocabulary words highlighted in each lesson.

In chapter 8 students will:

- Find the greatest common monomial factor of two or more monomials.
- Factor polynomials using the greatest common monomial factor.
- Factor quadratic trinomials when the leading coefficient is 1.
- Factor quadratic trinomials when the leading coefficient is other than one.
- Square a binomial.
- Factor a perfect square trinomial.
- Identify and factor binomials that are differences of two perfect squares.
- Find products using mental math.
- Factor polynomials by grouping.
- Combine factoring techniques to factor a polynomial completely.

- Solve problems using a variety of strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 9 students will:

- Write square root expressions in simplest form.
- Add and subtract radical expressions.
- Multiply radical expressions and express results in simplest form.
- Multiply with sums and differences of radicals.
- Divide radical expressions and express results with rational denominators.
- Solve radical equations.
- Understand and apply the Pythagorean theorem.
- Find the lengths of vertical horizontal and oblique segments.
- Apply the strategy: Account For All Possibilities.
- Look for new vocabulary words highlighted in each lesson.

In chapter 10 students will:

- Determine the direction of the opening of the graph of a quadratic function and find its maximum and minimum value.
- Graph a parabola and determine its vertex and axis of symmetry.
- Solve quadratic equations by factoring, completing the square or with the quadratic formula.
- Determine solutions of a quadratic equation by using the discriminant.
- Solve linear quadratic systems of equations.
- Apply the strategy: Adopt A Different Point of View.
- Look for new vocabulary words highlighted in each lesson.

In chapter 11 students will:

- Write and apply ratios, proportions, rates. and unit rates.
- Convert rates from one unit of measure to another.

- Solve problems using scale drawings.
- Calculate the relative error in measuring square and cubic units.
- Solve problems involving percentage and percent of change.
- Write the trigonometric ratios given the lengths of sides of a right triangle.
- Use a handheld to find values of trigonometric ratios and angle measures.
- Solve verbal problems using trigonometric ratios.
- Apply the strategy: Guess and Test.
- Look for new vocabulary words highlighted in each lesson.

In chapter 12 students will:

- Identify values excluded from the domain of a rational expression.
- Simplify rational expressions mixed expressions and complex fractions.
- Identify the LCM of polynomial expressions.
- Add, subtract, multiply, and divide rational expressions.
- Solve a rational equation using the Cross Products Rule, resulting in a linear or quadratic equation.
- Solve a rational equation using the LCD resulting in a linear or quadratic equation.
- Solve problems using a variety of strategies.
- Look for new vocabulary words highlighted in each lesson.

In chapter 13 students will:

- Recognize, interpret, Write, and graph inverse variation.
- Solve problems using inverse variation.
- Graph rational radical and exponential functions.
- Identify vertical and horizontal asymptotes.
- Graph square root functions and translate square root functions.
- Simplify rational exponents.
- Recognize how changing the coefficients affects the graph of an exponential function.

- Solve problems involving exponential growth and decay.
- Apply the strategy: Organize Data.
- Look for new vocabulary words highlighted in each lesson.

In chapter 14 students will:

- Identify populations and samples for surveys.
- Recognize different sampling techniques, identify biases in a sample question or display.
- Find measures of central tendency and the range of a data set.
- Organize and display data in stem and leaf, box and whisker, and scatter plots.
- Find the experimental or theoretical probability of an event.
- Compute probabilities of independent and dependent events.
- Compute probabilities of mutually exclusive or overlapping events.
- Find the number of permutations or combinations in a set of objects.
- Solve problems using a variety of strategies.
- Look for new vocabulary words highlighted in each lesson.

Evidence of continuity from grade to grade

The curriculum is constructed using skill-based measurable objectives so that the knowledge, attitudes, and skills learned in each grade form building blocks for what is taught in the succeeding grades.

Christ the King uses Sadlier Math. Following are the titles of the books that are taught in our Kindergarten – Eighth.

- Progress in Mathematics
 - Grade K
 - Grade 1
 - Grade 2
 - Grade 3
 - Grade 4
 - Grade 5
 - Grade 6
- Fundamentals of Algebra
 - Grade 7
- Foundations of Algebra
 - Grade 8
- Algebra 1
 - Advanced Grade 8

Following are the scopes and sequences of the Sadlier math curriculum:

SCOPE & SEQUENCE K-2

Scope and Sequence for Progress in Mathematics

PRE NUMBER	GRADE K	GRADE 1	GRADE 2
ACTIVITIES			
Sort			
by kind (alike/same)	3-4	B	
by difference	5-6	B	
by color	7-8	B	
by size	13-4	B	
by shape	9-10	B	
by two attributes	15-8	B	
by three attributes	18		
in two ways	19		
Position			
above / below	77-8		
before/after/between	93-4		
over / on / under	81-2		
in front / behind	87-8	E	
top / middle / bottom	79-80		
on / outside / inside	83-4	D	
left / right / between	89-92	F	
Compare (objects) one-to-one correspondence			
as many as	111		
less / least / fewest / most	111-2		
equalizing sets	111, 117-8	A	
more / fewer	119-20	A	
one more / one fewer	113-6		
one less / one more	217-8		

Key

E: Enrichment **R:** Readiness

PRE NUMBER	GRADE K	GRADE 1	GRADE 2
PATTERNS			
Type			
color	55–6, 65	G	
growing	60	I	
shape	57–8, 62, 64	H	
size	59		
transfer	61–2	J	
make	63–4, 71		
Rules	55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 71, E72	G, H, I, J	
Predict	55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 71, E72	G, H, I, J	

NUMERATION AND NUMBER THEORY	GRADE K	GRADE 1	GRADE 2
WHOLE NUMBER CONCEPTS			
Meaning / Identity			
read and write / number words	123, 125, 127, 133, 135, 137, 159, 165, 167, 169, 171	3–10, 197–208	C, 69–72
numbers through 31	123–8, 133–8, 159–60, 165–72, 175–8	3–10, 199–202	C, D
numbers to 100	405	197–208	67–9, 71
numbers beyond 100		E248	349–52
numbers to 1000			349–52
numbers beyond 1000			E378
even / odd	419–20	233–4	93–4

NUMERATION AND NUMBER THEORY	GRADE K	GRADE 1	GRADE 2
WHOLE NUMBER CONCEPTS			
Count			
on / back by 1s to 31	139–42, E182	19–20, 21–2	9–10, 29–30
on / back by 1s to 100	405–6, E406	217–8	9–10, 29–30
on by 1s / 10s to 100	417–8, E418	225–6	97–8, 385–6
beyond 100		E248	357–8
on / back by 100's			357–8, 385–6, 409–10
on by 1s / 25s / 50s / 100s to 1000			357–8
Skip Count			
count by 2s / 5s / 10s to 100	413–18	197–8, 235–8	93–4, 97–8
by 3s / 4s / 25s / 50s / 100s to 1000			95–6
beyond 1000			E378
Place Value			
tens / tens and extras	159–60, 165–72, E188 , 407–8	197–8	C
tens / ones	409–10	195–6, 199–208	65–8
hundreds / tens / ones		E248	349–52
thousands / hundreds / tens / ones			E378
hundreds chart	405–6	225–6, 235, 237, E248	12, 94, 95, 97–8
expanded form through tens / ones		215–6	77–8
through hundreds			355–6
through thousands			E378
vocabulary: value / digit		213–4	75–6
Compare			
to 31 (is less than / is equal to / is greater than)	161–2, 179–80	25–6	D
three numbers to 31 (least / greatest)	E192		
two 2-digit numbers to 99 (<, =, >)		221–2	81–2
two 3-digit numbers to 1000 (<, =, >)			361–2
Order			
just before / between / just after to 31	E150 , 163–4, 181–2	17–8, 23–4	
on a number line	R141–2 , R163 , R181–2	19–20, 219–20, 223–4	83–4
to three 2-digit numbers to 100		219–20	85–6

NUMERATION AND NUMBER THEORY	GRADE K	GRADE 1	GRADE 2
WHOLE NUMBER CONCEPTS			
to four 3-digit numbers to 1000			363-4
greatest to least			363-4
Ordinals to thirty-first	129-30, 143-4, 339-42	29-32, 387-8	99-100
Round			
to the nearest 10		475-6	89-90
to the nearest 100			367-8
FRACTIONS CONCEPTS			
Meaning / Identify	R215-216, R228	551-2	445-6, 447-8
1/2 through 1/4	219-20, 221-2	553-4, 555-6, 557-8	445-6
1/2 through 1/12			445-6, 447-8
Read / write	R219-20, 221-2	553-4, 555-6, 557-8	445-6, 447-8
Equal parts of a whole	R215-6, R219-20, R221-2	551-2	K, 461-2, 482
Model / draw	E220	552-8, 576	445-6, 447-8
Part of a set		559-60	463-4
Fractions equal to 1		553, 555, 557	457-8
Non-unit fractions		E560, E576, E580	453-4
Compare (unit fractions using <, =, >)		E558	449-50
Order		E558	451-2
Equivalent fractions			461-2, 465-6
Estimate (fractional part of a whole)			459-60
OTHER NUMBER SYSTEMS			
Roman Numerals			52

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE K	GRADE 1	GRADE 2
ADDITION OF WHOLE NUMBERS			
Concepts			
joining	237-8	51-2	3-4
part / part / whole	241-2	59-60	3-4

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE K	GRADE 1	GRADE 2
ADDITION OF WHOLE NUMBERS			
Vocabulary			
plus, equals, in all	237–8, 239–40	51–2, 53–4	3–4
add, addend, sum, addition sentence	239–40	53–4, 55–6	9–10, 11–2
Computation (with / without money)			
basic facts to 10 (horizontal / vertical)	239–46, 249–52, 283–4, 317–8	53–62, 67–8	A, 3–4, 7–10, 17–20
extended facts to 20 (horizontal / vertical)		63–4, 67–8, 71–2, 257–62, 279–80	11–2, 15–20
no regrouping (horizontal / vertical)			
tens and dimes		465–6	F
ones and tens / pennies and dimes		467–74	155–6, 397–8
two 3-digit addends		E542	383–4
regroup once			
ones as tens / pennies as dimes		R483–4 , 485–8	R159–60 , 163–6, 171–2, 305–6, 387–8, 401–2
tens as hundreds / dimes as dollars			R389–90 , 391–2, 401–2
regroup twice: through hundreds / dollars			393–4, 403–4
column (horizontal / vertical)			
to three 1-digit addends		83–6, 277–8	21–2
to four 1-digit addends			23–4
to three 3-digit addends			E110 , 173–4, 177–8, E436–7
Check		59–60, 469–70	7–8
Estimate sums		477–8	169–70, 425–6
Strategies			
count on / make 10	251–2, E318	63–4, 85–6, 473–4	9–10, 15–6, 21–2, 23–4, 385–6, 552
add on a number line	E244	71–2	9–10
doubles / doubles + 1		75–6, 77–8, 85–6	17–24
related addition facts		57–8	7–8
patterns	283–4	73–4	45–6

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE K	GRADE 1	GRADE 2
ADDITION OF WHOLE NUMBERS			
Related to			
subtraction / multiplication		123–4	33–4, 549–50, 552
fact family		127–8	41–2
Properties (see Algebra)			
DIVISION OF WHOLE NUMBERS			
Concepts			
as repeated subtraction			565–6
separating			567–76
number: in all, in each group, of groups			567, 569, 571, 573
sharing	E328		577–8
leftovers			575–8
Vocabulary			
quotient			567
divide, division sign, division sentence			565–6
Computation			
separate into equal groups of 2 to 5			567–74
separate with leftovers			575–6
sharing with / without leftovers			577–8
Relate to subtraction / multiplication			565–6, 579–80
Rules (see Algebra)			
MULTIPLICATION OF WHOLE NUMBERS			
Concepts			
equal groups			549–50
as repeated addition / patterns			549–50
number of groups / number in each group			551–2
Vocabulary			
factor, product			553–4
multiplication sign / sentence			549–50

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE K	GRADE 1	GRADE 2
MULTIPLICATION OF WHOLE NUMBERS			
Computation			
readiness: count by 2s, 5s, 10s	413–4, 415–6, 417–8	225–6, 235–6, 237–8	93–4, 97–8, 357–8
count by 3s, 4s, 25s, 50s, 100s			95–6, 98, 357–8
multiply groups of 2 through 5 by up to 9			551–60
related to money			E560
Relate to addition / division			549–50, 579–80
Properties (see Algebra)			
SUBTRACTION OF WHOLE NUMBERS			
Concepts			
take away / whole, part, part	269–70	101–2, 109–10	27–8
comparison / how many more needed		133–4	39–40, 43–4
Vocabulary			
minus sign, in all, take away, left	269–70, 271–2	101, 103	27–8
difference, subtract, equals, subtraction sentence		103, 105	29, 31
Computation (with / without money)			
basic facts to 10 (horizontal / vertical)	271–8, 281–6, 319–20	101–12	B, 27–30
extended facts to 20 (horizontal / vertical)		113–4, 117–8, 267–72, 279–80	27–32
no regrouping (horizontal / vertical)			
tens and dimes		503–4	G, 195–6, 305
ones and tens / pennies and dimes		505–12	195–6, 305
two 3-digit numbers		E542	407–8
regroup once			
tens as ones / dimes as pennies		R519–20 , 521–2, 523–4	R201–2 , 203–6, 411–2, 421–2
hundreds as tens / dollars as dimes			R413–4 , 415–6, 421–2
regroup twice: through hundreds / dollars			417–8, 423–4
Check		125–6	35–6, 213–4
Estimate differences		517–8	209–10, 425–6
Strategies			
count back	E294	117–8, 511–2	29–30, 409–10

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE K	GRADE 1	GRADE 2
SUBTRACTION OF WHOLE NUMBERS			
count up		281-2	39-40, 43-4
cross out	271-8, 281-6, 290		
subtract on a number line	E294	117-8	29-30, 39-40
related subtraction facts		121-2	31-2
patterns	283-4	119-20	45-6
Related to			
addition / division		127-8	33-4, 565-6
fact families		127-8	41-2
Rules (see Algebra)			

PROBLEM SOLVING	GRADE K	GRADE 1	GRADE 2
STRATEGIES			
Act It Out (Follow Directions)	95-6	33-4	
Choose the Operation	287-8	139-40	47-8, 587-8
Draw a Picture		571-2	477-8
Find / Use a Pattern	65-6	335-6	277-8
Guess and Test / Check	185-6	489-90	331-2
Logical Reasoning	21-2	239-40, 393-4	101-2, 427-8
Make an Organized List	225-6	R569-70	369-70
Make a Table	421-2	283-4	229-30
More Than One Step		533-4	181-2
Use a Map	147-8	263-4	531-2
Use / Make a Model	321-2, 353-4	447-8	
Use / Make a Graph	389-90	181-2	137-8
Write a Number Sentence	253-4	87-8	
TOPICS (Connection to Reading)			
Ask a Question		513-4	221-2
Find Extra Information		11-2	5-6

PROBLEM SOLVING	GRADE K	GRADE 1	GRADE 2
TOPICS (Connection to Reading)			
Data from a Picture	1, 35, 75, 109, 157, 199, 235, 267, 297, 335, 363, 403	1, 49, 99, 155, 193, 255, 295, 351, 405, 463, 501, 549	1, 63, 113, 153, 193, 245, 289, 347, 381, 443, 489, 547
Find Hidden Information	43–4	55	161–2, 503–4
Identify Needed Information			73–4, 399–400
Read a Map		263–4	
Read a Schedule	E360	391–2	325–6
Read / Use a Table		229–30	115–6, 365–6
Understand Directions	421–2	327–8	
Understand Math Words	95–6	179–80	273–4, 475–6
Use a Table			365–6
Use More Than One Step		135–6, 479–80	
Visualize Information			555–6

REPRESENTATIONS	GRADE K	GRADE 1	GRADE 2
PRE NUMBER			
Pattern blocks	19, 51–2, E72	303–4, 319, 321	
Connecting cubes (concrete / pictorial)	79, E80 , 111		
Draw / color	80, 82, 84, 90, E92 , 95–6, E98 , E102 , 114, 116, E124	322, E324	
Patterns (models / figures)	61–2, 63–4	G, H, I, J	
COUNTING			
Connecting cubes (concrete / pictorial)	E130 , 161, 164, 209–10, 413, 419	15–6, 25, 33, E42 , 233	93
Place Value			
models / concrete / pictorial / chart	175, 177, 179–80, 192, 407–8, 409–10, 417, E424	195–6, 197, 199, 201, 203, 205, 207, 215–6, 217, 221, 227, E248	66–7, 68, 75, 77, 85, 93, 349–50, 351, 353, 355, E378
frames	409–10, E424		
Charts			
hundreds	405–6, 410, 414, 418	225–6, 235, 237	94, 95, 97–8
beyond 100		E248	357
Number line	R141–2 , E150	19–20, 21–2, 219–20, 223–4, 236	
Ten frames	159, 161–2, 166, 168, 170, 172, 417	3, 5, 7, 9, 17	C, D, 83

REPRESENTATIONS	GRADE K	GRADE 1	GRADE 2
NUMERATION			
Place Value			
models / concrete / pictorial		195, 199–200, 201, 203, 205, 207, 213, 215–6, 217, 221, 227	65–6, 67–8, E70 , 75, 77, 85, 349–50, 353, 355
OPERATIONS WITH WHOLE NUMBERS			
Arrays			559, 561
Connecting cubes (concrete / pictorial)	239, 241, 243, 245, 246, 271, 273, 275, 277, 281	51, 57, 67–8, 75, 77, 81, 83, 101–2, 106, 107, 110, 121, 123–4, 161–2, 195, 281–2	3, 11, 27, 549–50, 552, 554, 558, 560, 565, 568, 570, 572, 574, 576
Ten Frames (with counters)	R138 , 251, 285–6, 288	61, 63, 81, 111, 113–4, 257, 259, 261, 267, 269, 271	7, 15–6, 31, 41
Charts / Tables		73–4, 81, 119–20, E292	12, 562
Place Value			
models		279, 465, 467–8, 483–4, 485–6, 503, 505–6, 507, 519–20, 521–2	F, G, 155, 159, 163–4, 195, 387, 389, 391, 393, 407, 411, 413, 415, 417
frames		467–8, 471–2, 485–6, 505–6, 521–2	F, G, 155, 159, 163–4, 165, 171, 173, 195, 201, 203–4, 206, 211, 387, 391, 393, 407, 411, 415, 417
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Standard Units			
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capacity		425–6, 427–8, 437–8, 445–6	501–2, 505–6, 521–2, 530, E536
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Time			
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ALGEBRA	GRADE K	GRADE 1	GRADE 2
EXPRESSIONS			
Numerical			
other names for a sum	E154, E240	57–8, 67–8, 127–8, 273–4	F, 3–4, 7–8, 10, 16, 21–2, 23–4, E110 , 199–200
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ALGEBRA	GRADE K	GRADE 1	GRADE 2
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ALGEBRA	GRADE K	GRADE 1	GRADE 2
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MEASUREMENT	GRADE K	GRADE 1	GRADE 2
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Customary units			
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to the nearest 1/2 inch			495–6
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MEASUREMENT	GRADE K	GRADE 1	GRADE 2
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Metric units			
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Metric units			
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liter		437–8	521–2
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MEASUREMENT	GRADE K	GRADE 1	GRADE 2
CAPACITY			
equivalence of units			E536
abbreviations (L, mL)			E536
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GEOMETRY	GRADE K	GRADE 1	GRADE 2
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GEOMETRY	GRADE K	GRADE 1	GRADE 2
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STATISTICS AND DATA	GRADE K	GRADE 1	GRADE 2
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PROBABILITY	GRADE K	GRADE 1	GRADE 2
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TIME	GRADE K	GRADE 1	GRADE 2
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To the half hour / half past		375–6	313–4
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TIME	GRADE K	GRADE 1	GRADE 2
RELATED TO TIME			
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Day / night	351–2		
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Units of time			
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minute			327–8
year		389	329
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Elapsed time			
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MONEY	GRADE K	GRADE 1	GRADE 2
IDENTIFY AND RECOGNIZE VALUE			
Coins and bills			
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on from dimes / quarters / half-dollar with nickels, dimes, quarters, and pennies		359–60	291–2, 293–4
to determine if there is enough to buy	321–2	367–8	301–2
to show an amount more than one way	E302 , 316, 327	E354 , 366, E402	299–300, E310
to show fewest coins that make a given amount		E402	E300
pennies / nickels / dimes / quarters to \$1.00		369–70, E402	307–8, 309–10
coin combinations to make up to \$1		361–2, 369–70, E402	E294 , 301–2, 307–8
on to find more than \$1 (coins and bills)			309–10
up to make change			303–4
on with a \$5 bill, \$1 bill(s), and coins			E340

MONEY	GRADE K	GRADE 1	GRADE 2
IDENTIFY AND RECOGNIZE VALUE			
Trade			
identify a fair trade	309–10, 311–2	E358, E370	
pennies for nickels	309–10		
pennies / nickels for dimes / quarters	311–2	E358	
for coins through half dollar/dollar		E370	
Compare / Order			
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three sets of coins		365–6	
equal amounts		365–6	299–300
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ESTIMATION	GRADE K	GRADE 1	GRADE 2
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Round (rules for)			
to the nearest 10 (on a number line)		475–6	89–90
to the nearest 100			367–8
to the nearest dollar			E374, E426
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Rounding			
to find sums		477–8	169–70, 425–6
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ESTIMATION	GRADE K	GRADE 1	GRADE 2
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nonstandard units of weight / mass	379–80, 392	429–30	
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about a half inch			496
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about a foot or yard			498
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about a meter			513–4
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SCOPE & SEQUENCE 3-6

Scope and Sequence for Progress in Mathematics

NUMERATION AND NUMBER THEORY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
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Place value				
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millions period	E59	38-43	32-3	1, 34-5, 36-7
billions period		E63	32-3	34-5, 36-7
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Compare (<, =, >)				
two 6-digit numbers (ragged)	32-3	2, 46-7	2	1
two 7-digit numbers (ragged)		46-7	40-1	69
two 9-digit numbers (ragged)			40-1	69
Order				
to three 6-digit numbers	34-5, 44-5	46-7	2	1
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Round				
to the nearest 10, 100, 1000	46-7	54-5	3	2
to the nearest hundred thousand		54-5	42-3	49
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Key**E:** Enrichment **R:** Readiness

NUMERATION AND NUMBER THEORY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
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Compare (<, =, >)				
3-digit numbers (ones – hundredths)	422-3	418	41	40-1
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NUMERATION AND NUMBER THEORY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
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to the nearest tenth / whole number		422-3	43	44-5, 48, 68
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to the nearest thousandth			309	42-3, 110-1
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Equivalent decimals		412-3	36-7	48, 50-1
Equivalent decimals and fractions	E435	412-5	36-7	200-1, 202-3, 204-5
Decimals greater than / equal to 1	420-1	414-5	38-9	34-8
Rename decimals as fractions		412-5, 417	271	204-5
Terminating / repeating decimals			E319	206-7
Scientific notation (of decimals)				95
FRACTION CONCEPTS				
Meaning / Read / Write	8, 9, 386-7	13, 266-7	8	188, 190-1
Equal parts of a whole / parts of a set	386-9	13, 266-7	9	190
Model / draw	388, 392, 394	267, 272-3, 274, 280-1, 300	8	184
Identify a point on a number line	393, 398, 399	268-9, 270-1, 280-1, 282	8, 140, 148, 149, 150, 152, 159	192, 196, 198, 200, 204
Fractions that equal to / renamed as 1	388-9	272, 281	150-1	184, 232-3
Mixed numbers / Improper fractions		280-1, 300-1	148-9, 150-1	190-1
Compare (<, =, >)				
like / unlike denominators	392-5	282-3	152-3	196-7
mixed numbers	398-9	282-3	152-3	199
mixed numbers with decimals			269, 283	210-1
Order				
three fractions	394-5	284-5	152-3	198-9
fractions with decimals				210-1
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to 0 / $\frac{1}{2}$ / 1	390-1	270-1	140-1	192-3, 224
mixed numbers			149	225, 262-3
Zero as a numerator	393	268	174	193, 196
Equivalent fractions				
compare models / write	388-9	272-3, 274-5	9, 141	184-5
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Equivalent fractions and decimals	E435	412-3, 414-5, 417	36-7	200-1, 202-3, 204-5, 206-7
Simplest form	401	278-9, 300-1	142-3	188-9

NUMERATION AND NUMBER THEORY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
Fractions greater than / equal to 1		273, 280-1	150-1	190-1
Least common denominator		E321	146-7	196-7, 226-7, 228, 230, 232
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Reciprocal			214-5	225, 260
Rename mixed numbers as improper fractions			206-7	190-1
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Meaning / Read / Write	R284-5	R224-5, R459	450-1	150-1
Opposites / additive inverse			450-1	150-1
Compare (on a number line)			452-3	152-3
Order (three negative and/or positive)			452-3	152-3
REAL NUMBER CONCEPTS				
Rational numbers				
meaning / read / write			E475	208-9
compare / order			E475	210-1
square root				E83, E409
Irrational numbers				
meaning				470-1
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Roman numerals.	E127	E121	54-5	E61

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
ADDITION OF WHOLE NUMBERS				
Concepts: join / part-part-whole	4	4, 5	44-45	8
Vocabulary	4	4, 68	45	8
Computation				
basic facts and no regrouping	4, 68-9	5, 6, 82-3, 84-5	44-5	8
regrouping readiness	74, 76-7, 84-5			
regroup once	72-3, 75, 78-9	98-9	4	

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
regroup twice				
2-, 3-, or 4-digit addends	76-7, 80-1, 88-9	100-1	4	5
multi-digit addends		102-3, 114-5	52-3	46-7
more than two regroupings		102-3, 114-5	52-3	46-7
column				
up to four 3-digit addends	64-5	68-9, 70-1		
up to four multi-digit addends		104-5	48-9, 52-3	46-7
Relate to fact family and other operations	6, 132	5, 7	44-5	7, 47
Check	79	84-5	26	5
Estimate sums	70-1	80-1	46-7	44-5
Strategies				
count on / make, break apart 10	4, 64, 65	70-1	44-5	
doubles/ doubles plus one / plus a number	6	70-1		
using properties	65, 82-3	68, 69	44-5	7
DIVISION OF WHOLE NUMBERS				
Concepts	162-3, 174-5, 201, 364-5, 366-7	10, 164-5, 166	96-7	88-9, 92-3
Vocabulary: dividend, divisor, quotient	165, 166, 168	11, 164	6	90
Computation				
basic facts	162-73, 200-9	10-2, 164-7	96	
1-digit divisors (with/without remainders)				
1- and 2-digit quotients	364-5, 368-73	174-5, 178-81, 184-5	6, 7	
3- and 4- digit quotients		182-3, 186-9	100-1, 102-3	88-9
dollars and/or cents by a whole number		190-1	120-1	88-9
short division			106-7	88-9
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divisors of 10, 100, 1000		382-5	98-9	94
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2- and 3-digit dividends		388-91, 394-5	116-7	10, 11
4-digit dividends		396-7	118-9	92-3
with up to 6-digit dividends		400-1	118-9	92-3
teens as divisors		394-5	114-5	92-3

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
3-digit divisors up to 5-digit dividends				90-1, 92-3
Interpret the remainder	366-7, 372-3	196-7	25	112-3
Relate to fact family and other operations	162-3, 174-5, 212-3	10, 12, 166-7	96-7	7, 100-1, 134
Check	180, 368	166, 182-3	6, 7, 100	10, 11, 92
Estimate quotients	374-5	172-5	100, 112-3, E119	90-1
Strategy: compatible numbers / rules	164-5, 201, 375	386-7	112-3	90-1
MULTIPLICATION OF WHOLE NUMBERS				
Concepts				
number of groups / number in each group	132-3, 134-5, 148	7	66	
Vocabulary: factor, product	135	7	66	3, 9
Computation				
basic facts	132-43, 191-7	8	66-7	
1-digit multipliers without regrouping				
2- and 3-digit multiplicands	340-1, 348-9	132-5	5	
1-digit multipliers with regrouping				
2- and 3-digit multiplicands	344-5, 350-3, 426-7	136-9	5	9
4-digit multiplicands	352-3	142-3	76-7	
5-digit multiplicands			76-7	
three factors	198-9	370-1	67	8
multiply multiples of 10	336-7	144-5	70-1, 72-3	66-7
multipliers of positive powers of 10			72, E289	76-7
2-digit multipliers				
2- and 3-digit multiplicands		148-53	78-9	66-7
dollars and/or cents by a whole number		140-1	84-5	69, 73
zeros in the multiplicand / multiplier		139-41	77-8	66-7, 70-1
3-digit multipliers				
with up to 4-digit multiplicands			80-1	68-9, 70-1
with up to 6-digit multiplicands				70-1
Relate to fact family and other operations	132-3, 174-5, 212-3	7, 12, 166-7	6, 7, 66, 96	70-1, 106-7
Check	212-3	166	86	
Estimate products	338-9	134-5	74-5	68-9
Strategies: using properties / double factor	134-5, 148-9, 198-9	126-7	68-9	70-1

OPERATIONS: WHOLE NUMBERS AND MONEY	GRADE 3	GRADE 4	GRADE 5	GRADE 6
SUBTRACTION OF WHOLE NUMBERS				
Concepts				
take away	100-1	72-3	45	48-9
find part of a whole set	100-1	72-3	45	49, 55
compare	100-1	72-3	45	48-9
how many more are needed	100-1	72-3	45	59
Vocabulary	5	4, 76	45	6
Computation				
basic facts and no regrouping	5, 102-3	5, 6, 82-3	44	
regrouping readiness	108-9, 114-5, 116-7			
regroup once	106-7, 110-1	106-7	4	6
regroup twice				
2- or 4- digits	112-3, 118-9	108-9	4, 52-3	6
multi-digits		110-1, 114-5	52-3	48-9
regroup across zeros	114-5	112-3	50-1	
more than two regroupings		110-1, 114-5	52-3	
Related fact family and other operations	112-3	5	44-5	7
Check	112	84-5	50-1	6, 48
Estimate differences	104-5	80-1	46-7	
Strategies: counting back	5			
Choose a computation method	120-1	179	49, 75, 119, 121, 281	458

OPERATIONS: DECIMALS	GRADE 3	GRADE 4	GRADE 5	GRADE 6
ADDITION OF DECIMALS				
Meaning	416-7	426-7	11	5
Computation				
tenths, hundredths	416-7, 418-9	426-7	272-3	5, 46-7
through thousandths			276-7	46-7
through hundred thousandths				46-7, 50-1
column				
whole numbers, tenths, and beyond	422-3, 424-5	426-7	272-3, 274-5, 276-7	5, 47, 50-1
Check			284	5, 50
Estimate sums		424-5	274-5	44-5

OPERATIONS: DECIMALS	GRADE 3	GRADE 4	GRADE 5	GRADE 6
DIVISION OF DECIMALS				
Meaning	162-3	430-1	304-5	94, 96, 98
Computation				
dollars and cents by a whole number	R428-9	R430-1	120-1	89, 96-7
quotients up to thousandths			306-7	104-5
through thousandths by a whole number			309	96-7
divisors of multiples of 10			304-5	94-5
decimal by decimal divisors of tenths, hundreths . . .			307	102-3
zeros in division			308-9	98-9, 104-5
Check			306-7	96, 102
Estimate quotients			310-1	100-1
MULTIPLICATION OF DECIMALS				
Meaning			294-5	
Computation				
dollars and cents by a whole number	R426-7	R140-1	84-5	
hundredths by a whole number and tenths			298-9	72-3
through thousandths by a whole number			298-9	72-3
multipliers of multiples of 10			294-5	66-7
decimal by decimal			300-1	72-3
zeros in the product			302-3	66-7, 72-3
Check			284	70
Estimate products		172-3	296-7	68-9
SUBTRACTION OF DECIMALS				
Meaning	424-5	428-9	278-9	6
Computation				
tenths, hundredths	424-5	428-9	278-9	6, 48-9
through thousandths			282-3	48-9, 50-1
through hundred thousandths				48-9, 50-1
Check				48
Estimate differences		424-5	280-1	44-5

OPERATIONS: FRACTIONS	GRADE 3	GRADE 4	GRADE 5	GRADE 6
ADDITION OF FRACTIONS				
Meaning	400-1	296-7	10	12
Computation				
model on a number line	400-1	296	164	12, 222, 224
fractions like denominators	400-1	296-7	10, 164-5	12
fractions unlike denominators		308-9	166-7	226-7
mixed numbers like denominators		304-5	170-1	228-9
mixed numbers unlike denominators			170-1	228-9
column				
fractions		303	168-9	226-7
mixed numbers (and fractions)			170-1	229
Simplest form	401	296-7	164-5, 170-1, 172-3	226-7, 228-9
Strategy: compensation				234-5
Justify		302-3	166-7	222-3
Estimate sums	390-1	302-3	186-7	224-5
DIVISION OF FRACTIONS				
Meaning (and the reciprocal)			212-5	258-9, 260
Computation				
fraction by fraction			218-9	260-1
whole number by a fraction			216-7	264-5
fraction by a whole number			220-1	264-5
mixed number by fraction			222-3	264-5
mixed numbers by mixed or whole numbers			224-5	264-5
Simplest form			220-1	264-5
Justify			214-5	262-3
Estimate quotients			226-7	262-3
MULTIPLICATION OF FRACTIONS				
Meaning (and the meaning of “of”)	R404	R314	198-9	250-1
Computation				
model on a number line			202	250, 252
fractional part of a whole number	R396-7, R404-5	R314-5	202-3	252-3
fraction by a fraction			200-1	250-1
fraction and a whole number			202-3	250-1, 252-3

OPERATIONS: FRACTIONS	GRADE 3	GRADE 4	GRADE 5	GRADE 6
fraction and a mixed number			208-9	256-7
mixed number by mixed or a whole number			210-1	256-7
three factors			205	251, 257
Simplest form			200-1	250, 252, 256
Cancellation (using the GCF)			204-5, 208-9	250, 252, 256
Justify			200-1	254-5
Estimate products			226-7	256-7
SUBTRACTION OF FRACTIONS				
Meaning	402-3	298-9	10, 174-5	12, 231
Computation				
model on a number line	402-3		174	12
fractions like denominators	402-3	298-9	10, 174-5	12
fractions unlike denominators		310-1	176-7, 178-9	230-1
mixed numbers like denominators		304-5	180-1	232-3
renaming mixed / whole numbers			182-3	232-3
mixed numbers unlike denominators			184-5	232-3
Strategy: compensation				234-5
Simplest form	402-3	298-9, 304-5	174-5, 180-1, 182-3	230, 232
Justify		302-3	174-5	234-5
Estimate differences	390-1	302-3	186-7	224-5

OPERATIONS: INTEGERS	GRADE 3	GRADE 4	GRADE 5	GRADE 6
ADDITION OF INTEGERS				
Meaning			454-5	154-5
Computation		R225	454-5, 456-7	154-5
DIVISION OF INTEGERS				
Meaning			462-3	160-1
Computation			462-3	160-1
MULTIPLICATION OF INTEGERS				
Meaning			460-1	158-9
Computation			460-1	158-9
SUBTRACTION OF INTEGERS				
Meaning			458-9	156-7
Computation		R225	458-9	156-7

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RATIO, PROPORTION, AND PERCENT	GRADE 3	GRADE 4	GRADE 5	GRADE 6
RATIO				
Concepts / Read and Write (three ways)		E291	416-7	376-7
A fraction: denominator with a factor of 100		E291	422-3	394-5
Write a ratio as a percent		E291	422-3	394-5
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Rate				
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PROPORTION				
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PERCENT				
Concepts / Read and Write		E291	422-3	394-5, 396-7
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RATIO, PROPORTION, AND PERCENT	GRADE 3	GRADE 4	GRADE 5	GRADE 6
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REPRESENTATIONS	GRADE 3	GRADE 4	GRADE 5	GRADE 6
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ALGEBRA	GRADE 3	GRADE 4	GRADE 5	GRADE 6
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decimals			297	
Compatible numbers				
whole numbers and money	375	173, 386-7	112-3	90-1
decimals			311-3	101
fractions			226-7	262-3
mixed numbers			226-7	262-3
quotient		386-7	112-3	262-3
ESTIMATION SENSE / VISUAL ESTIMATES (SEE MEASUREMENT AND GEOMETRY)				
Estimate or exact answer				
choose and justify	47, 121	206-7	75	460-1

Grades 7, 8, and Algebra 1

Fundamentals of Algebra, *Foundations of Algebra*, and *Algebra 1* comprise a three-book series that is part of a comprehensive program aimed at preparing students for mastery in the study of Algebra and future success in the study of Geometry. As you will see in the detailed analysis that follows, algebraic concepts are introduced, developed, and maintained throughout the three books. Applications of the geometric concepts that are developed in the first two books are then integrated throughout the third book. In addition, the third book goes on to develop trigonometry of the right triangle.

Offering maximum flexibility in presentation, the program may be used consecutively in Grades 7, 8, and 9. Alternatively, an accelerated, two-year program may begin in Grade 7 with *Fundamentals of Algebra* and then follow directly with *Algebra 1* in Grade 8.

As deemed appropriate, *Algebra 1* may be offered in 1 year, $1\frac{1}{2}$ years, or 2 years.

The chart below shows the chapter titles for the three source books. The pages that follow detail the topics included in these source books and show the lessons in which particular topics may be found. Citations are also given for corresponding enrichment, technology, and skills-update resources that are included in these source books. Separate practice books and a variety of other support materials accompany the source books.

Chapter	Fundamentals of Algebra	Foundations of Algebra	Algebra 1
1	Integers	Rational Numbers	Basic Concepts of Algebra
2	Expressions and Equations	Real Numbers	Linear Equations
3	Inequalities	Expressions and Equations	Linear Inequalities
4	Rational Numbers: Decimals	Inequalities	Relations and Functions
5	Rational Numbers: Fractions	Polynomials and Factoring	Linear Functions
6	Ratio and Proportion	Linear Functions and Inequalities	Systems of Linear Equations and Inequalities
7	Percent and Consumer Applications	Ratio and Proportion	Operations with Polynomials
8	Data Analysis and Statistics	Percent Applications	Factoring Polynomials
9	Two-Dimensional Geometry	Two-Dimensional Geometry	Radical Expressions and Equations
10	Two-Dimensional Geometry and Measurement Applications	Geometric Measures and Coordinate Geometry	Quadratic Functions and Equations
11	Three-Dimensional Geometry	Patterns and Nonlinear Functions	Ratio, Proportion, and Trigonometry
12	Probability	Three-Dimensional Geometry	Rational Expressions and Equations
13	Patterns, Relations, and Functions	Data Analysis and Statistics	Exponential and Other Nonlinear Functions
14	Polynomials, Equations, and Inequalities	Probability and Logic	Data Analysis and Probability

Key For Citations

Basic citations are given as chapter number-lesson number (e.g., 5-18).

Enrichment citations are given as page numbers (e.g., E-p.144), and are placed in context.

Skills updates are given with Roman numerals (e.g., SU-VI), and are placed in context.

Technology citations are given as chapter number-lesson number with T in front of each lesson number (e.g., T8-8) and are also cited as a group at the end.

PROBLEM-SOLVING STRATEGIES

	Grade 7	Grade 8	Algebra 1
Guess and test	1-12	3-14	11-9
Organize data	2-10	2-12	13-9
Find a pattern	3-7	5-14	7-9
Make a drawing	5-18	1-15	1-15
Solve a simpler problem	6-11	7-12	2-9
Reason logically	7-15	6-14	3-8
Adopt a different point of view	9-14	9-13	10-11
Account for all possibilities	10-13	11-10	9-7
Work backward	11-12	10-12	4-9
Consider extreme cases	13-13	13-12	5-11
Review of strategies	4-16, 8-14, 12-9, 14-11	4-12, 8-8, 12-11, 14-14	4-6, 8-9 12-10, 14-17

NUMBERS

Operations and Theory

	Grade 7	Grade 8	Algebra 1
Whole Numbers			
Place value	SU-I	SU-I	SU-I
Compare and order whole numbers	SU-II		
Round whole numbers	SU-III		
Estimate whole-number sums and differences	SU-V		
Add and subtract whole numbers	SU-VI		
Estimate whole-number products	SU-IX		
Multiply whole numbers	SU-XI		
Estimate whole-number quotients	SU-X		
Divide whole numbers	SU-XII		
Zeros in a product or quotient		SU-X	
Common factors and GCF	5-2, E-p.144	1-3	SU-V
Multiples and LCM	5-3	1-4	SU-V
Primes/composites; prime factorization	5-1	1-3, SU-VII	SU-IV
Divisibility rules	5-1	SU-VI	SU-III
Factorials	12-2, 7	14-8	14-13
Perfect squares and roots	10-3	2-3	1-1
Numbers in different bases	E-p.104	E-p.92	E-p.36

Operations and Theory (continued)**Grade 7****Grade 8****Algebra 1**

Integers			
Absolute value	1-1	1-2	1-2
Compare and order integers	1-2		
Add integers	1-3		
Subtract integers	1-4		
Multiply integers	1-5		
Divide integers	1-6		
Order of Operations	1-10	SU-V	
Rational Numbers			
Rational numbers	4-1, 2	1-1, 2, 3-11	1-1
Compare and order rational numbers	4-3, 5-5	1-5	1-2
Density of Rational; Numbers	5-5	1-11	
Add and subtract signed numbers	4-5, 5-6, 7	1-7, 8	1-3
Multiply and divide signed numbers	4-6, 8, 5-8, 9, 10, 11	1-9, 10	1-4
Order of operations	1-10, 5-13	1-14	1-6
Fractions and Mixed Numbers			
Improper fractions \leftrightarrow Mixed numbers	SU-XV	SU-XI	SU-VII
Compare and order fractions and mixed numbers	5-5	1-5	
Estimate with fractions	5-4	1-6	
Add and subtract fractions	5-6, 7, SU-XVI	SU-XII	SU-VIII
Add and subtract mixed numbers	5-7	1-7, 8	SU-VII
Multiply fractions	5-8, SU-XVII	SU-XIII	SU-IX
Multiply mixed numbers	5-9	1-9	SU-VII
Divide fractions	5-10, SU-XVIII	SU-XIII	SU-IX
Divide mixed numbers	5-11	1-10	SU-VII
Decimals			
Compare and order decimals	4-3, SU-IV	1-5, SU-II	
Estimate decimal sums and differences	4-4, SU-V	1-7, 1-8, SU-III	
Add and subtract decimals	4-5, SU-VI		
Estimate decimal products and quotients	4-7, SU-IX, X	1-7, 1-8	
Multiply decimals	4-6, SU-XIII	SU-VIII, IX	SU-VI
Divide decimals	4-8, SU-XIV	SU-VIII, IX	SU-VI
Terminating and repeating decimals	4-1	1-1, 3-11	1-1
Irrational Numbers			
Irrational numbers	10-4	2-5, 7	1-1
Square roots as irrational numbers	10-4	2-6	1-1
Estimate square roots	10-4	2-4	1-1
Real Numbers			
Real Numbers	10-4	2-7	1-2
Real-number line		2-7	1-2

Operations and Theory (continued)

	Grade 7	Grade 8	Algebra 1
Exponents			
Powers of 10	4-7	SU-1	SU-1
Positive integer exponents	1-9	1-12	1-5
Zero exponent	1-9	1-12	1-5
Negative integer exponents	4-9	1-12, T2-11	1-5
Laws of exponents	1-9	1-13	1-5
Scientific Notation			
Standard \leftrightarrow Scientific	4-10	2-1	1-7
Operations with scientific notation	4-11	2-2	1-7
Matrices			
Add and subtract matrices		E-p.32	1-11
Multiplication with matrices			1-12

Properties of Operations

Closure	1-8	2-8	1-2
Associative, Commutative, Distributive	1-7, 5-12	1-9, 2-8, SU-IV	1-9
Inverses and Identities	1-7	2-8, SU-IV	1-3, 4

Estimation

Estimation strategies		SU-III	SU-II
Estimate with whole numbers	SU-V, IX, X		
Estimate with decimals	4-4, 7, SU-V, IX, X	1-8	
Estimate with fractions	5-4	1-6	
Estimate with percents	7-7	8-2	
Estimate square roots	10-4	2-4	1-1

Ratio, Proportion, and Percent

Ratios			
Ratio forms	6-1	7-1	11-1
Rates and unit rates	6-2	7-1	11-1
Golden ratio		E-p.212	
Proportions			
Solve proportions	6-3	7-2	11-2
Direct proportions and variation	6-4	6-9, 7-5	5-2
Partitive proportions	6-5	7-6	
Inverse proportions and variation	6-9	7-7, 11-8	13-1
Scale drawings and models	6-6	7-8	11-2
Convert units of measure	6-10	7-3, SU-IV, V	11-1, SU-XIII
Dimensional analysis	6-10	7-4	11-1
Percents			
Model percent	7-1		
Percent and ratio	7-1	8-1	11-4

Ratio, Proportion, and Percent (continued)

	Grade 7	Grade 8	Algebra 1
Percents (continued)			
Fractions, decimals, and percents	7-2	8-1	SU-X
Estimate with percents	7-7	8-2	
Find percents and percentages	7-3, 4, 5, 6	8-3, 4, 5	11-4
Problems involving percent, including: sales tax, gratuities, commissions, discounts and markups, simple and compound interests	7-10, 11, 12, 13, 14, E-p.204	8-3, 4, 5, 6, 7	11-4
Percent of change: increase/decrease	7-8, 9	8-6	11-4

SETS, RELATIONS, AND FUNCTIONS**Set Theory**

	Grade 7	Grade 8	Algebra 1
Set notation			1-10
Intersection, Union, Complement			1-10
Venn diagrams	8-9	2-12, 13-2	1-10

Sequences and Patterns

Multiplication and division patterns	SU-VII, VIII		
Visual and algebraic sequences	13-2	11-1	
Fibonacci sequences		11-1, E-p.314	
Arithmetic sequences	13-1	11-2	4-4
Geometric sequences	13-1	11-3	4-5
Sequence sums	E-p.26		
Infinite geometric series			E-p.354
Infinite continued fractions			E-p.326

Relations and Functions

Relation, domain, range, representations	13-4, 5	6-1	4-1
Relationships and graphs	13-9	11-4	
Identify functions; vertical-line test	13-4	6-1	4-2
Function notation		11-5	4-2
Write function rules	13-4, 5	6-2	4-3

ALGEBRA**Expressions and Polynomials**

	Grade 7	Grade 8	Algebra 1
Words \leftrightarrow Symbols	2-1	3-1	1-8
Simplify/evaluate algebraic expressions	2-2	3-2	1-8
Polynomials: form, degree, classify	14-1	5-1, 2	7-1
Model polynomials	14-2	5-3	
Add polynomials	14-3	5-4	7-2
Subtract polynomials	14-4	5-5	7-2
Multiply monomials	14-5	5-6	7-3
Multiply a polynomial by a monomial	14-6	5-6	7-3

Expressions and Polynomials (continued)

	Grade 7	Grade 8	Algebra 1
Divide monomials	14-5	5-9	7-7
Divide a polynomial by a monomial	14-7	5-9	7-7
Model binomial multiplication		5-7	7-4
Multiply binomials		5-7, 8	7-5
Multiply polynomials			7-6
Cube binomial expressions			E-p.222
Divide polynomials using long division			7-8

Factoring

Common monomial factors		5-10	8-1
Factor trinomials		5-11, 13	8-2, 3
Special products and factoring		5-8, 12	8-4, 5
Factor by grouping			8-6
Factor completely		5-13	8-7
Factor polynomials using a graph			T8-8
Factor sums and differences of cubes			E-p.222

Linear Equations

Open sentences and solution sets	2-3	3-3	2-1
Properties of Equality: addition/subtraction	2-4, 5	3-4	2-2
Properties of Equality: multiplication/division	2-6	3-5	2-3
Addition and subtraction equations	2-4, 5, 4-12, 5-14	3-4	2-2
Multiplication and division equations	2-6, 7, 4-13, 5-15	3-5	2-3
Two-step and multi-step equations	2-8, 4-14, 5-16, 14-8	3-6, 7, 10	2-4, 5
Equations with variables on both sides	14-8	3-9	2-5
Equations with grouping symbols		3-8	2-5
Equations with absolute value		3-12	2-6
Formulas and literal equations	2-9	3-13	2-7, T2-8
Equations and repeating decimals		3-11	
Diophantine equations			E-p.66

Linear Inequalities

Words \leftrightarrow Symbols	3-1	4-1	3-1
Graph inequalities on number lines	3-2	4-1, 2	3-1
Domain, replacement and solution sets	3-2	4-2	3-1
Properties of inequality: addition/subtraction	3-3, 4	4-3, 4	3-2
Properties of inequality: multiplication/division	3-3, 5, 6	4-5, 6	3-3
Addition and subtraction inequalities	3-4, 14-9	4-3, 4	3-2
Multiplication and division inequalities	3-5, 6, 14-10	4-5, 6	3-3
Two-step and multi-step inequalities		4-7, 8, 9, 10	3-4
Compound inequalities		4-11	3-5
Absolute-value inequalities			3-6

Linear Functions

	Grade 7	Grade 8	Algebra 1
Linear function	13-6	6-2	5-1
Graphs of linear functions from tables	13-6	6-2	5-1
Slope of a line	13-7	6-4	5-1, E-p.146
Intercepts of a line		6-5	5-3
Slope-intercept form: equations / graphs		6-6	5-3
Point-slope form: equations / graphs		6-7	5-4
Standard form and changing forms		6-6	5-5
Slopes of parallel and perpendicular lines; write equations of lines		6-8	5-6
Families of lines			T5-10
Linear inequalities in coordinate plane		6-12	5-7, T5-9

Quadratic Functions and Equations

Quadratic function	13-8	11-6	10-1
Graph of a quadratic function — Parabola	13-8	11-6, T11-9	10-1, 2
Solve quadratic equations by factoring			10-3, 4
Write quadratic equations			10-4
Completing the square			10-5
Quadratic formula and discriminant			10-6
Solve quadratic equations by formula			10-7
Families of quadratic functions			T10-10

Solve Systems of Equations and Inequalities

Solve systems of linear equations graphically		6-10	6-1, E-p.146
Solve systems of linear equations algebraically by substitution		6-11	6-2
Solve systems of linear equations algebraically by elimination		6-11	6-3, 4
Solve systems of linear equations using matrices			E-p.172
Apply systems of linear equations			6-5
Solve systems of linear inequalities graphically		6-13	6-6, T6-8
Solve systems of linear and quadratic equations algebraically and graphically			10-8

Rational Expressions and Equations

Rational expressions		E-p.152	12-1
Simplify rational expressions		E-p.152	12-1, 2
Multiply rational expressions		E-p.152	12-3
Divide rational expressions		E-p.152	12-4
Add and subtract rational expressions			12-5, 6
Mixed expressions and complex fractions			12-7
Rational equations \leftrightarrow linear equations			12-8
Rational equations \leftrightarrow quadratic equations			12-9
Graph rational functions			13-2, T13-6

Radical Expressions and Equations

	Grade 7	Grade 8	Algebra 1
Radical expressions		2-3, 6	1-1, 9-1
Simplify radical expressions		2-6	9-1
Add and subtract radical expressions			9-2
Multiply and divide radical expressions			9-3
Solve radical equations			9-4
Graph radical functions			13-3, T13-7

Exponential and Other Nonlinear Functions

Graphs of exponential functions		11-7	13-4
Exponential growth and decay		11-7	13-5, T13-8
Absolute-value functions	13-8, E-p.404	11-7	5-8
Hyperbola		11-7, 8, T11-9	13-3
Step function		11-7	
Greatest-Integer function			E-p.112
Zeros of polynomial functions			T10-9

GEOMETRY**Basic Terms and Angles**

	Grade 7	Grade 8	Algebra 1
Points, Lines, Planes, Angles	9-1	SU-XVI	SU-XIV
Classify and measure angles	9-2	SU-XVII	SU-XIV
Angle pairs	9-3	9-1	
Angles of parallel lines	9-4	9-2	
Angles of polygons		9-4	

Polygons and Circles

Polygons	9-7	9-3	SU-XV
Triangles	9-8	9-3, E-p.120	SU-XVII
Quadrilaterals	9-11, E-p.268	9-3	SU-XVIII
Circles	9-12	9-6	SU-XV
Symmetry	10-10	10-8, 9	
Tesselations	10-11	9-12	
Optical illusions		E-p.262	

Similarity and Congruence

Similar polygons	6-7	7-9	SU-XVI
Indirect measure	6-8	7-11	
Congruent angles and line segments	9-5	7-9, 9-5	
Congruent polygons	9-9	9-5	SU-XVI
Fractals		E-p.232	4-5

Geometric Inequalities

Triangle inequality Theorem	9-8		E-p.90
Inequalities in a triangle		E-p.232	

Right Triangles and Trigonometry

	Grade 7	Grade 8	Algebra 1
Similar right triangles, indirect measure	6-8		
Pythagorean Theorem	10-5	2-9, E-p.60	9-5
Trigonometric ratios: define, write, find values and angle measures		7-10	11-5
Special right triangles		2-10	
Applications of trigonometric ratios			11-6, E-p.302
Angles of elevation and depression		9-11	11-7, E-p.302
Graph sine and cosine functions			T11-8

Constructions

Angle constructions	9-3	9-8	
Line constructions	9-6	9-9	
Triangle constructions	9-10	9-10	

Three-Dimensional Figures

Polyhedrons and other 3-D figures	11-1	12-1	
Views/cross sections of 3-D figures	11-2	12-2	
Nets of 3-D figures	11-3, 4	12-3, 4, E-p.340	
Similar 3-D figures	E-p.326	12-8	
Effects of changing dimensions	11-11	12-9	
Explore properties of 3-D figures		12-10	
Platonic solids		E-p.340	
Conic sections			E-p.276

Coordinate Geometry and Transformations

Coordinate Geometry			
The coordinate plane	1-11	SU-XX	SU-XI
Distance in the coordinate plane		10-7	9-6
Distance in three dimensions			E-p.242
Perimeter and area in coordinate plane		10-7	
Midpoint of a line segment		2-7	
Use slope in coordinate geometry			E-p.146
Transformations in the Coordinate Plane			
Reflections and translations	13-10	10-8	SU-XII
Rotations	13-11	10-9	SU-XII
Dilations	13-12	10-10	SU-XII
Combine transformations	E-p.378	10-11, T10-13	

MEASUREMENT**Precision**

	Grade 7	Grade 8	Algebra 1
Significant digits	10-1	10-1	
Greatest possible and relative errors	10-1	10-1	11-3

Systems of Measure

	Grade 7	Grade 8	Algebra 1
Metric system	4-15	7-3, SU-XIV	SU-XIII
Customary system	5-17, SU-XXI	7-3, SU-XV	SU-XIII

Geometric Measures

Perimeter, Circumference, and Area			
Perimeter	10-2	10-2	SU-XVIII
Area of triangles	10-7	10-3, 6, E-p.290	SU-XVIII
Area of quadrilaterals	10-6, 7	10-3, 6	SU-XVIII
Circumference and area of circles	10-8	10-4	
Area of complex figures	10-9, E-p.298	10-5	
Area of regular polygons		10-3	
Perimeter and area of similar polygons	E-p.326	10-2, 6	
Relate perimeter and area	T10-12		
Surface Area			
Prisms	11-3	12-3	SU-XIX
Pyramids	11-4	12-4	SU-XIX
Cylinders	11-5	12-3	
Cones	11-5	12-4	
Estimate surface area	11-6		
Complex three-dimensional figures	11-10		
Volume			
Prisms	11-7	12-5	SU-XIX
Pyramids	11-8	12-6	
Cylinders	11-9	12-5	
Cones	11-9	12-6	
Spheres		12-7	
Complex three-dimensional figures	11-10		
Volume of similar polygons	E-p.326		

STATISTICS AND PROBABILITY**Data Collection and Analysis**

	Grade 7	Grade 8	Algebra 1
Sampling techniques	8-1	13-2	14-1
Range and measures of central tendency	8-2, 3	13-1, 3	14-2
Frequency tables	8-1, 6	13-1	14-4
Outliers, clusters, gaps	8-8	13-1, 4	14-5
Quartiles, interquartile range	8-8	13-4	14-5
Organize data in spreadsheets	T8-3, E-p.236		
Percentiles			14-6

Constructing and Interpreting Statistical Graphs

	Grade 7	Grade 8	Algebra 1
Bar graphs: single, multiple, stacked, sliding, compressed scale	SU-XIX, 8-5, T8-13	13-5, 6, SU-XXI	SU-XX
Line graphs: single and multiple	SU-XX, 8-10, T8-13	13-8, SU-XXI	SU-XX
Line plots		13-1	SU-XXI
Circle graphs	T8-13, 9-13	9-7	SU-XXI
Stem-and-leaf plots: single and back-to-back	8-7	13-3	14-3
Histograms	8-6	13-7, T13-11	14-4
Box-and-whisker plots	8-8	13-4, T13-11	14-5, 6
Scatter plots	8-11	6-3	14-7
Choose an appropriate graph	8-4	13-9	
Misleading statistics and graphs	8-12	13-10	14-1

Probability

Sample space: Counting Principle, tree diagram	12-1, 2	14-1	14-10
Experimental probability	12-4	14-3	14-8
Theoretical probability	12-3	14-2, E-p.400	14-9
Odds of an event	12-5	14-4	SU-XXII
Complementary events		14-4	14-9
Compound events (mutually exclusive, independent/dependent; and/or)	12-6	14-5, 6	14-10, 11
Conditional probability			14-12
Pascal's Triangle and probability	E-p.348	14-7	
Simulate events			T14-15
Geometric probability			E-p.400
Permutations	12-7	14-8	14-13
Combinations	12-8	14-9	14-14
Pascal's Triangle and combinations		14-9	

REASONING**Logic**

	Grade 7	Grade 8	Algebra 1
Connectives; truth tables		14-10	
Converse, Inverse, and Contrapositive		14-11	
Inductive and Deductive Reasoning		14-12	
Conjectures and counterexamples	13-3	14-13	1-2
Algebraic fallacies		E-p.184	

TECHNOLOGY

Calculator or Handheld Device

	Grade 7	Grade 8	Algebra 1
Numbers and Algebra			
Evaluate powers and roots		T2-11	
Evaluate numerical and algebraic expressions			T1-13
Operations with matrices			T1-14
Solve linear and literal equations			T2-8
Solve linear inequalities			T3-7
Factor polynomials using a graph			T8-8
Graphs			
Bar, line, circle graphs	T8-13		
Box-and-whisker plots and histograms		T13-11	
Linear functions and inequalities			T5-9
Solve linear and literal equations		T3-7	T2-8
Families of lines			T5-10
Families of quadratic functions			T10-10
Graphs of nonlinear functions	T13-8	T11-9	
Systems of equations			T6-7
Systems of inequalities			T6-8
Sine and cosine functions			T11-8
Compare exponential growth and decay			T13-8
Geometry			
Relate perimeter and area	T10-12		
Use slope in coordinate geometry			T5-10

Geometry Software

Transformations using geometry software		T10-11	
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Spreadsheet

Organize data in spreadsheets	T8-3, E-p.236		
Scaling Solids using a spreadsheet		T12-9	

Assessment of the academic growth and achievement of each student

Each individual teacher will assess the academic growth of their students on a regular basis. Teachers assess students in a variety of ways (e.g. worksheets, class discussions, projects, quizzes, and tests). The length and level of the assessment is dependent on the grade level being taught.

Students in grades 3-8 take the MAP Standardized Test twice a year. This test is another form of assessment the teachers can use to gauge the progress of the students.

Evidence of fundamental principles of student growth

Consideration is given to different student abilities, each student is challenged, and differentiated instruction is being used. At Christ the King, students are put in a math class based on their ability. Students that struggle with math take a lower level math class. This provides more time for students to review and understand key concepts and build their confidence. Students that have received extra gifts in math are advanced to the next math class. This provides more challenging work for these students and allows them to take Algebra I as an eighth grader. Upon graduation from Christ the King, these students may take a test to pass out of Algebra I and take Geometry in high school.