

Diocesan K-8 Standards Crosswalk- Mathematics

Changes between 2012 Course of Study and 2018 Course of Study

Standard	Changes
Kindergarten	
K.CC.4	Count to tell the number of objects. K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality using a variety of objects including pennies.
K.CC.6	Orally identify (without using inequality symbols) whether the number of objects in one group is greater/more than, less/fewer than, or the same as the number of objects in another group, not to exceed 10 objects in each group.
K.CC.7	Compare (without using inequality symbols) two numbers between 0 and 10 when presented as written numerals.
K.MD.1	Identify and describe measurable attributes (length, weight, and height) of a single object using vocabulary terms such as long/short, heavy/light, or tall/short.
K.MD.3	Counting and sorting coins should be limited to pennies.
First Grade	
1.MD.3	Work with time and money. Work with time and money. a. Tell and write time in hours and half-hours using analog and digital clocks. b. Identify pennies and dimes by name and value.
Second Grade	
2.NBT.2	Understand place value. Count forward and backward within 1,000 by ones, tens, and hundreds starting at any number; skip-count by 5s starting at any multiple of 5.
2.MD.8	Work with time and money. Solve problems with money. a. Identify nickels and quarters by name and value. b. Find the value of a collection of quarters, dimes, nickels, and pennies. c. Solve word problems by adding and subtracting within 100, dollars with dollars and cents with cents (not using dollars and cents simultaneously) using the \$ and ¢ symbols appropriately (not including decimal notation).
2.MD.10	Organize, represent, and interpret data with up to four categories; complete picture graphs when single unit scales are provided; complete bar graphs when single-unit scales are provided; solve simple put-together, take-apart, and compare problems in a graph
2.G.1	Recognize and identify triangles, quadrilaterals, pentagons, and hexagons based on the number of sides or vertices. Recognize and identify cubes, rectangular prisms, cones, and cylinders.
2.G.3	Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words halves, thirds, or fourths and quarters , and use the phrases half of, third of, or fourth of and quarter of. Describe the whole as two halves, three thirds, or four fourths in real-world contexts. Recognize that equal shares of identical wholes need not have the same shape.

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Diocesan K-8 Standards Crosswalk- Mathematics

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Third Grade	
3.OA.1	Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. (Note: These standards are written with the convention that $a \times b$ means a groups of b objects each; however, because of the commutative property, students may also interpret 5×7 as the total number of objects in 7 groups of 5 objects each).
3.OA.5	Apply properties of operations as strategies to multiply and divide. For example, if $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known (Commutative Property of Multiplication); $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$ (Associative Property of Multiplication); knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ (Distributive Property). Students need not use formal terms for these properties.
3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. b. Represent a fraction a/b (which may be greater than 1) on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.
3.MD.1	Work with time and money. a. Tell and write time to the nearest minute. Measure time intervals in minutes (within 90 minutes). Solve real world problems involving addition and subtraction of time intervals (elapsed time) in minutes, e.g., by representing the problem on a number line diagram or clock. b. Solve word problems by adding and subtracting within 1,000, dollars with dollars and cents with cents (not using dollars and cents simultaneously) using the \$ and ¢ symbol appropriately (not including decimal notation)
3.MD.3	Create scaled picture graphs to represent a data set with several categories. Create scaled bar graphs to represent a data set with several categories. Solve two step (took out one step) “how many more” and “how many less” problems using information presented in the scaled graphs. For example, create a bar graph in which each square in the bar graph might represent 5 pets, then determine how many more/less in two given categories.
3.G.1	Draw and describe triangles, quadrilaterals (rhombuses, rectangles, and squares), and polygons (up to 8 sides) based on the number of sides and the presence or absence of square corners (right angles).

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Diocesan K-8 Standards Crosswalk- Mathematics

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Fourth Grade	
4.NBT	Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.
4.NF	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. (Fractions need not be simplified at this grade level.)
4.MD.2	Solve real-world problems involving money, time, and metric measurement. a. Using models, add and subtract money and express the answer in decimal notation. b. Using number line diagrams, clocks, or other models, add and subtract intervals of time in hours and minutes. c. Add, subtract, and multiply whole numbers to solve metric measurement problems involving distances, liquid volumes, and masses of objects.
4.MD.4	Display and interpret data in graphs (picture graphs, bar graphs, and line plots) to solve problems using numbers and operations for this grade.
4.G.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Deleted- Recognize right triangles as a category and identify right triangles.
4.G.3	Deleted- Recognize a line of symmetry for a two dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
Fifth Grade	
5.OA.1	Use parentheses in numerical expressions, and evaluate expressions with this symbol. Formal use of algebraic order of operations is not necessary.
5.NBT.4	Use place value understanding to round decimals to any place, millions through hundredths
5.NBT.7	Solve real-world problems by adding, subtracting, multiplying, and dividing decimals using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, or multiplication and division ; relate the strategy to a written method and explain the reasoning used. a. Add and subtract decimals, including decimals with whole numbers, (whole numbers through the hundreds place and decimals through the hundredths place). b. Multiply whole numbers by decimals (whole numbers through the hundreds place and decimals through the hundredths place). c. Divide whole numbers by decimals and decimals by whole numbers (whole numbers through the tens place and decimals less than one through the hundredths place using numbers whose division can be readily modeled). For example, 0.75 divided by 5, 18 divided by 0.6, or 0.9 divided by 3.
5.NF	(Simplification of fractions should be introduced at this grade level.)
5.MD.1	Know relative sizes of these U.S. customary measurement units: pounds, ounces, miles, yards, feet, inches, gallons, quarts, pints, cups, fluid ounces, hours, minutes, and seconds. Convert between pounds and ounces; miles and feet; yards, feet, and inches; gallons, quarts, pints, cups, and fluid ounces; hours, minutes, and seconds in solving multi-step, real-world problems.
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Diocesan K-8 Standards Crosswalk- Mathematics

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Fifth Grade (Con't)	
5.MD.2	Display and interpret data in graphs (picture graphs, bar graphs, and line plots) to solve problems using numbers and operations for this grade, e.g., including U.S. customary units in fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, or decimals.
5.G.3	Identify and describe commonalities and differences between types of triangles based on angle measures (equiangular, right, acute, and obtuse triangles) and side lengths (isosceles, equilateral, and scalene triangles).
5.G.4	Identify and describe commonalities and differences between types of quadrilaterals based on angle measures, side lengths, and the presence or absence of parallel and perpendicular lines, e.g., squares, rectangles, parallelograms, trapezoids, and rhombuses.
Sixth Grade	
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using a (instead of the) standard algorithm for each operation. This allows students to use any method to get the correct answer.
6.SP.1	<p>Develop understanding of statistical problem solving.</p> <p>6.SP.1 Develop statistical reasoning by using the GAISE model:</p> <p>a. Formulate Questions: Recognize and formulate a statistical question as one that anticipates variability and can be answered with quantitative data. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because of the variability in students’ ages. (GAISE Model, step 1)</p> <p>b. Collect Data: Design and use a plan to collect appropriate data to answer a statistical question. (GAISE Model, step 2)</p> <p>c. Analyze Data: Select appropriate graphical methods and numerical measures to analyze data by displaying variability within a group, comparing individual to individual, and comparing individual to group. (GAISE Model, step 3)</p> <p>d. Interpret Results: Draw logical conclusions from the data based on the original question. (GAISE Model, step 4)</p>
<p>NOTE: The purpose of this standard is to show the GAISE model as a cohesive whole. This standard is read differently than others standards in this document. This standard is a framework, where each letter indicates a step in the GAISE process of statistical problem solving. The GAISE model should be referred to whenever statistics is being used. In 2018-2019, students in sixth and seventh grades will be introduced to the GAISE model for the first time. Starting in 2019-2020, students will be introduced to the model in sixth grade and broaden their understanding in seventh grade.</p>	
6.SP.5	<p>6.SP.5 Summarize numerical data sets in relation to their context.</p> <p>a. Report the number of observations.</p> <p>b. Describe the nature of the attribute under investigation, including how it was measured and its units of measurement.</p> <p>c. Find the quantitative measures of center (median and/or mean) for a numerical data set and recognize that this value summarizes the data set with a single number. Interpret mean as an equal or fair share. Find measures of variability (range and interquartile range) as well as informally describe the shape and the presence of clusters, gaps, peaks, and outliers in a distribution.</p> <p>d. Choose the measures of center and variability, based on the shape of the data distribution and the context in which the data were gathered.</p>

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Diocesan K-8 Standards Crosswalk- Mathematics

Changes between 2012 Course of Study and 2018 Course of Study

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Seventh Grade	
7.NS.1 and 7.NS.2	Clarification that both of these standards include operations with fractions, including complex fractions.
7.G.1	Solve problems involving similar figures with right triangles, other triangles, and special quadrilaterals. a. Compute actual lengths and areas from a scale drawing and reproduce a scale drawing at a different scale. b. Represent proportional relationships within and between similar figures.
7.G.4	Work with circles. a. Explore and understand the relationships among the circumference, diameter, area, and radius of a circle. b. Know and use the formulas for the area and circumference of a circle and use them to solve real-world and mathematical problems.
7.SP.1	Use sampling to draw conclusions about a population. Understand that statistics can be used to gain information about a population by examining a sample of the population. a. Differentiate between a sample and a population. b. Understand that conclusions and generalizations about a population are valid only if the sample is representative of that population. Develop an informal understanding of bias.
7.SP.2	Broaden understanding of statistical problem solving. Broaden statistical reasoning by using the GAISE model. a. Formulate Questions: Recognize and formulate a statistical question as one that anticipates variability and can be answered with quantitative data. For example, "How do the heights of seventh graders compare to the heights of eighth graders?" (GAISE Model, step 1) b. Collect Data: Design and use a plan to collect appropriate data to answer a statistical question. (GAISE Model, step 2) c. Analyze Data: Select appropriate graphical methods and numerical measures to analyze data by displaying variability within a group, comparing individual to individual, and comparing individual to group. (GAISE Model, step 3) d. Interpret Results: Draw logical conclusions and make generalizations from the data based on the original question. (GAISE Model, step 4)
<p>NOTE: The purpose of this standard is to show the GAISE model as a cohesive whole. This standard is read differently than others standards in this document. This standard is a framework, where each letter indicates a step in the GAISE process of statistical problem solving. The GAISE model should be referred to whenever statistics is being used. In 2018-2019 students in sixth and seventh grades will be introduced to the GAISE model for the first time. Starting in 2019-2020, students will be introduced to the model in sixth grade and broaden their understanding in seventh grade. The original standard will be deleted for the 2018-2019 school year and beyond as the content is covered in high school.</p>	

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Seventh Grade (con't)	
7.SP.3	<p>Summarize and describe distributions representing one population and draw informal comparisons between two populations. Describe and analyze distributions.</p> <p>a. Summarize quantitative data sets in relation to their context by using mean absolute deviation (MAD), interpreting mean as a balance point.</p> <p>b. Informally assess the degree of visual overlap of two numerical data distributions with roughly equal variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot (line plot), the separation between the two distributions of heights is noticeable.</p>
7.SP.4	<p>Deleted- Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book. In 2018-2019, this has been moved to high school.</p>
Eighth Grade	
8.NS.1	<p>Know that real numbers are either rational or irrational. Understand informally that every number has a decimal expansion which is repeating, terminating, or is non-repeating and non-terminating. In 2018-2019 students will no longer need to convert a decimal expansion into a rational number.</p>
8.EE.8	<p>Analyze and solve pairs of simultaneous linear equations graphically.</p> <p>a. Understand that the solution to a pair of linear equations in two variables corresponds to the point(s) of intersection of their graphs, because the point(s) of intersection satisfy both equations simultaneously.</p> <p>b. Use graphs to find or estimate the solution to a pair of two simultaneous linear equations in two variables. Equations should include all three solution types: one solution, no solution, and infinitely many solutions. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.</p> <p>c. Solve real-world and mathematical problems leading to pairs of linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair. (Limit solutions to those that can be addressed by graphing.) In 2018-2019 students will not need to solve systems algebraically, but the focus will be solving systems graphically and with simple inspection. The includes approximating the solution when the intersection point does not fall cleanly on the intersecting lines on a grid.</p>
8.F.1	Clarification: Function notation is not required in Grade 8.
8.G.1	Clarification: Include examples both with and without coordinates.
8.G.4	Clarification: Include examples both with and without coordinates.

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Eighth Grade (Con't)	
8.G.6	Analyze and justify an informal proof of the Pythagorean Theorem and its converse.
8.G.9	Solve real-world and mathematical problems involving volumes of cones, cylinders, and spheres.
8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering; outliers; positive, negative, or no association; and linear association and nonlinear association. (GAISE Model, steps 3 and 4). In 2019-2020, students should come to eighth grade with an understanding of the GAISE model.
8.SP.2	Understand that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. (GAISE Model, steps 3 and 4)
8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. (GAISE Model, steps 3 and 4)

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