



## Content Connectors aligned to the Indiana Academic Standards Mathematics Grade 5

**Content Connectors** (CCs) identify the most salient grade-level, core academic content in math found in the Indiana Academic Standards. CCs focus on the core content, knowledge and skills needed at each grade to promote success at the next, and identify priorities in each content area to guide the instruction for students in this population and for the alternate assessment.

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<b>Number Sense</b>	
MA.5.NS.1: Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using $>$ , $=$ , and $<$ symbols.	MA.5.NS.1.a.1: Read, write, or select a decimal to the hundredths place. MA.5.NS.1.a.2: Compare two decimals to the hundredths place with a value of less than 1 using symbols ( $>$ , $<$ , or $=$ ) and words (greater than, less than, or equal to). Make relation to money and model with coins.
MA.5.NS.2: Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.	MA.5.NS.2.a.1: Determine number of parts in the given whole (real-life situations). Use real life word problems to "divide" into equal groups.
MA.5.NS.3: Recognize the relationship that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right, and inversely, a digit in one place represents $1/10$ of what it represents in the place to its left.	MA.5.NS.3.a.1: Compare the value of a digit when it is represented in different place values of two 3 digit numbers.
MA.5.NS.4: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	MA.5.NS.4.a.1: Model whole numbers to the powers of 10 by writing a multiplication sentence.
MA.5.NS.5: Use place value understanding to round decimal numbers up to thousandths to any given place value.	MA.5.NS.5.a.1: Round decimals to the next whole number. Use next dollar up strategy.
MA.5.NS.6: Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).	MA.5.NS.6.a.1: Use a model (box with 100 squares inside) to shade in a percent less than 20.
<b>Computation</b>	
MA.5.C.1: Multiply multi-digit whole numbers fluently using a standard algorithmic approach.	MA.5.C.1.a.1: Multiply a whole number of up to 2 digits by any one-digit factor using fact families to multiply.
MA.5.C.2: Find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning used.	MA.5.C.2.a.1: Solve real-world problems that require division. [Limit to no remainders.]
	MA.5.C.2.a.2: Solve word problems that require multiplication.
MA.5.C.3: Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	MA.5.C.3.a.1: Determine whether the product will increase or decrease based on the multiplier.
MA.5.C.4: Add and subtract fractions with unlike denominators, including mixed numbers.	MA.5.C.4.a.1: Using a model, represent the concept of adding and subtracting mixed numbers with common denominators.
MA.5.C.5: Use visual fraction models and numbers to multiply a fraction by a	MA.5.C.5.a.1: Multiply a fraction by a whole or mixed number.



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fraction or a whole number.	
MA.5.C.6: Explain why multiplying a positive number by a fraction greater than 1 results in a product greater than the given number. Explain why multiplying a positive number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence, $a/b = (n \times a)/(n \times b)$ , to the effect of multiplying $a/b$ by 1.	MA.5.C.6.a.1: Determine whether the product will increase or decrease based on the multiplier.
MA.5.C.7: Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.	MA.5.C.7.a.1: Physically divide whole numbers by half to solve for total number of parts.
MA.5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.	MA.5.C.8.a.1: Solve one-step real-world problems involving addition, subtraction, or multiplication using decimals.
MA.5.C.9: Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.	MA.5.C.9.a.1: Given a real world problem, identify/choose an equation using 1 set of parentheses.
<b>Algebraic Thinking</b>	
MA.5.AT.1: Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.	MA.5.AT.1.a.1: Solve real-world problems involving multiplication (up to 3-digit by 1-digit) and division (up to 3-digit by 1-digit with no remainder).
MA.5.AT.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.	MA.5.AT.2.a.1: Solve word problems involving the addition and subtraction of like-fractions.
MA.5.AT.3: Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).	MA.5.AT.3.a.1: Use an equation and a completed model representing the equation of a unit fraction multiplied by a whole number.
MA.5.AT.4: Solve real-world problems involving division of unit fractions by non-zero whole numbers, and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem).	MA.5.AT.4.a.1: Divide a whole number by a unit fraction to find the total parts.
MA.5.AT.5: Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations to represent	MA.5.AT.5.a.1: Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation.



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the problem).	
MA.5.AT.6: Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	MA.5.AT.6.a.1: Locate points on a graph and identify x and y axis.
MA.5.AT.7: Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	MA.5.AT.7.a.1: Physically model the graphing of ordered pairs in the first quadrant of coordinate plane.
MA.5.AT.8: Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.	MA.5.AT.8.a.1: Given a real world problem evaluate the expressions for the specific values of up to two variables.
<b>Geometry</b>	
MA.5.G.1: Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass and technology). Understand the relationship between radius and diameter.	MA.5.G.1.a.1: Categorize angles as right, acute, or obtuse.
	MA.5.G.1.a.2: Identify the diameter & radius of a circle.
MA.5.G.2: Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.	MA.5.G.2.a.1: Recognize properties of simple plane figures by counting the number of sides.
	MA.5.G.2.a.2: Distinguish plane figures by the name of the shape and number of sides.
<b>Measurement</b>	
MA.5.M.1: Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.	MA.5.M.1.a.1: Convert measurements of time. (day in a week, hours in a day, months in a year, minutes in an hour, seconds in a minute).
	MA.5.M.1.a.2: Solve time lapse problems involving time to the quarter hour.
MA.5.M.2: Find the area of a rectangle with fractional side lengths by modeling with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	MA.5.M.2.a.1: Multiply fractions to find the area of a rectangle.
MA.5.M.3: Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.	MA.5.M.3.a.1: Provided the formula, students will insert the correct numbers into the correct location of the formula.
MA.5.M.4: Find the volume of a right rectangular prism with whole-number	MA.5.M.4.a.1: Model volume by counting the number of cubic units that fits fit



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side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths or multiplying the height by the area of the base.	into a rectangular prism.
MA.5.M.5: Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems involving shapes.	MA.5.M.5.a.1: Provided the formula, students will insert the correct numbers into the correct location of the formula.
MA.5.M.6: Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems and other mathematical problems.	MA.5.M.6.a.1: Solve completed volume formula.
Data Analysis	
MA.5.DS.1: Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.	MA.5.DS.1.a.1: Determine questions that could be answered from a graph. Answer questions using data from a graph, including simple average questions (e.g., the average height among 3 classrooms) and representation questions (e.g., the number of items represented in the graph). [Limit graph types to bar graphs and picture graphs.]
MA.5.DS.2: Understand and use measures of center (mean and median) and frequency (mode) to describe a data set.	MA.5.DS.2.a.1: Use a completed line plot to find mode and median.