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Indiana Academic Standards for Mathematics – Seventh Grade
Adopted April 2014 – Standards Correlation Guide Document 10/02/2017

	Indiana Academic Standard for Seventh Grade Mathematics – Adopted April 2014	Indiana Academic Mathematics Standard Adopted 2000	Common Core State Standard for Mathematics	Differences From Previous Standards
		Process Standards		
MA.7.PS.1: Make sense of problems and persevere in solving them.	Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway, rather than simply jumping into a solution attempt. They consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" and "Is my answer reasonable?" They understand the approaches of others to solving complex problems and identify correspondences between different approaches. Mathematically proficient students understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	7.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns. 7.7.3 Decide when and how to break a problem into simpler parts. 7.7.4 Apply strategies and results from simpler problems to solve more complex problems. 7.7.8 Select and apply appropriate methods for estimating results of rational-number computations. 7.7.11 Decide whether a solution is reasonable in the context of the original situation. 7.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.	**MP1 Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	IAS 2014 removes criteria involving a graphing calculator and does not distinguish between younger and older students.
MA.7.PS.2: Reason abstractly and quantitatively.	Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	7.7.11 Decide whether a solution is reasonable in the context of the original situation.	**MP2 Reason abstractly and quantitatively.** Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	IAS 2014 is similar to common core, both expand upon IAS 2000 by having the student decontextualize problems and develop quantitative reasoning.

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MA.7.PS.3: Construct viable arguments and critique the reasoning of others.	Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They analyze situations by breaking them into cases and recognize and use counterexamples. They organize their mathematical thinking, justify their conclusions and communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. They justify whether a given statement is true always, sometimes, or never. Mathematically proficient students participate and collaborate in a mathematics community. They listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	7.7.2 Make and justify mathematical conjectures based on a general description of a mathematical question or problem. 7.7.6 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work. 7.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.	**MP3 Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	IAS 2014 is similar to common core, both expand upon IAS 2000 by having students construct arguments , use counterexamples, and critique others arguments. IAS 2014 does not distinguish between younger and older students.
MA.7.PS.4: Model with mathematics.	Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace using a variety of appropriate strategies. They create and use a variety of representations to solve problems and to organize and communicate mathematical ideas. Mathematically proficient students apply what they know and are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	7.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns. 7.7.3 Decide when and how to break a problem into simpler parts. 7.7.4 Apply strategies and results from simpler problems to solve more complex problems. 7.7.8 Select and apply appropriate methods for estimating results of rational-number computations. 7.7.11 Decide whether a solution is reasonable in the context of the original situation. 7.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.	**MP4 Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	IAS 2014 does not distinguish between younger and older students.

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MA.7.PS.5: Use appropriate tools strategically.	Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Mathematically proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. Mathematically proficient students identify relevant external mathematical resources, such as digital content, and use them to pose or solve problems. They use technological tools to explore and deepen their understanding of concepts and to support the development of learning mathematics. They use technology to contribute to concept development, simulation, representation, reasoning, communication and problem solving.	7.7.9 Use graphing to estimate solutions and check the estimates with analytic approaches.	**MP5 Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	IAS 2014 does not distinguish between younger and older students. Both IAS 2014 and CCSS expand upon IAS 2000 by having students consider more than just graphing.
MA.7.PS.6: Attend to precision.	Mathematically proficient students communicate precisely to others. They use clear definitions, including correct mathematical language, in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They express solutions clearly and logically by using the appropriate mathematical terms and notation. They specify units of measure and label axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently and check the validity of their results in the context of the problem. They express numerical answers with a degree of precision appropriate for the problem context.	7.7.6 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work. 7.7.7 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy. 7.7.10 Make precise calculations and check the validity of the results in the context of the problem.	**MP6 Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	IAS 2014 does not distinguish between younger and older students.

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MA.7.PS.7: Look for and make use of structure.	Mathematically proficient students look closely to discern a pattern or structure. They step back for an overview and shift perspective. They recognize and use properties of operations and equality. They organize and classify geometric shapes based on their attributes. They see expressions, equations, and geometric figures as single objects or as being composed of several objects.	7.7.3 Decide when and how to break a problem into simpler parts.	**MP7 Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.	IAS 2014 has removed examples and does not distinguish between younger and older students. Both IAS 2014 and CCSS expand upon IAS 2000 by having students discern patterns, structure, geometric figures, and composition of objects.
MA.7.PS.8: Look for and express regularity in repeated reasoning.	Mathematically proficient students notice if calculations are repeated and look for general methods and shortcuts. They notice regularity in mathematical problems and their work to create a rule or formula. Mathematically proficient students maintain oversight of the process, while attending to the details as they solve a problem. They continually evaluate the reasonableness of their intermediate results.		**MP8 Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through $(1, 2)$ with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	IAS 2014 has removed examples and does not distinguish between younger and older students.
Number Sense				
MA.7.NS.1:	Find the prime factorization of whole numbers and write the results using exponents.	7.1.5 Find the prime factorization of whole numbers and write the results using exponents.		
MA.7.NS.2:	Understand the inverse relationship between squaring and finding the square root of a perfect square integer. Find square roots of perfect square integers.	7.1.6 Understand and apply the concept of square root. 8.1.6 Use the inverse relationship between squaring and finding the square root of a perfect square integer.		
MA.7.NS.3:	Know there are rational and irrational numbers. Identify, compare, and order rational and common irrational numbers ($\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, $\prod$) and plot them on a number line.	7.1.2 Compare and order rational and common irrational numbers and place them on a number line. 7.1.3 Identify rational and common irrational numbers from a list.		
Computation				

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MA.7.C.1:	Understand p + q as the number located a distance |q| from p, in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	6.2.1 Add and subtract positive and negative integers.	7.NS.A.1.A Describe situations in which opposite quantities combine to make 0. 7.NS.A.1.B Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	IAS 2014 and CCSS expand upon IAS 2000 by using p+q notations, absolute value and additive inverses in the real world context.
MA.7.C.2:	Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	6.2.1 Add and subtract positive and negative integers.	7.NS.A.1.C Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	IAS 2014 and CCSS expand upon IAS 2000 by using p+q notations, absolute value and additive inverses in the real world context.
MA.7.C.3:	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(–1)(–1) = 1$ and the rules for multiplying signed numbers.	6.2.2 Multiply and divide positive and negative integers.	7.NS.A.2.A Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	IAS 2014 and CCSS expand upon IAS 2000 by requiring students to apply the distributive property.
MA.7.C.4:	Understand that integers can be divided, provided that the divisor is not zero, and that every quotient of integers (with non-zero divisor) is a rational number. Understand that if p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$.	6.2.2 Multiply and divide positive and negative integers.	7.NS.A.2.B Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	IAS 2014 and CCSS provide more information for students to know than IAS 2000, such as dividing by non-zeros and use p and q notation.
MA.7.C.5:	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	6.2.4 Explain how to multiply and divide positive fractions and perform the calculations.	7.RP. A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	IAS 2014 and CCSS define when to compute unit rates.
MA.7.C.6:	Use proportional relationships to solve ratio and percent problems with multiple operations, such as the following: simple interest, tax, markups, markdowns, gratuities, commissions, fees, conversions within and across measurement systems, percent increase and decrease, and percent error.	6.2.7 Understand proportions and use them to solve problems. 6.2.8 Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips. 7.2.2 Calculate the percentage increase and decrease of a quantity. 7.2.3 Solve problems that involve discounts, markups, and commissions. 8.2.2 Solve problems by computing simple and compound interest.	6.RP.A.3C Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	IAS 2014 and CCSS defines when to solve ratio and percent problems.

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MA.7.C.7:	Compute with rational numbers fluently using a standard algorithmic approach.	6.2.1 Add and subtract positive and negative integers. 6.2.2 Multiply and divide positive and negative integers. 6.2.3 Multiply and divide decimals. 6.2.4 Explain how to multiply and divide positive fractions and perform the calculations.	7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. 7.NS.A.1.D Apply properties of operations as strategies to add and subtract rational numbers. 7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 7.NS.A.2.C Apply properties of operations as strategies to multiply and divide rational numbers.	IAS 2014 is a packed standard consisting of the information from IAS 2000 and CCSS
MA.7.C.8:	Solve real-world problems with rational numbers by using one or two operations.	7.2.1 Solve addition, subtraction, multiplication, and division problems that use integers, fractions, decimals, and combinations of the four operations.	7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers. 7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	IAS 2014 is a packed standard consisting of the information from IAS 2000 and CCSS
		Algebra and Functions		
MA.7.AF.1:	Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions, including situations that involve factoring (e.g., given 2x - 10, create an equivalent expression 2(x - 5)). Justify each step in the process.	7.3.4 Evaluate numerical expressions and simplify algebraic expressions by applying the correct order of operations and the properties of rational numbers (e.g., identity, inverse, commutative, associative, distributive properties). Justify each step in the process.	7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	IAS 2014 does not identify the concept of order of operations and goes further by asking students to justify each step.
MA.7.AF.2:	Solve equations of the form px + q= r and p(x + q) = r fluently, where p, q, and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems.	7.3.1 Use variables and appropriate operations to write an expression, a formula, an equation, or an inequality that represents a verbal description. 7.3.2 Write and solve two-step linear equations and inequalities in one variable and check the answers.	7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. 7.EE.B.4.A Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	IAS 2014 and CCSS identify p,q, and r notation and ask students to solve real world problems.
MA.7.AF.3:	Solve inequalities of the form px +q (> or ≥) r or px + q (< or ≤) r, where p, q, and r are specific rational numbers. Represent real-world problems using inequalities of these forms and solve such problems. Graph the solution set of the inequality and interpret it in the context of the problem.	7.3.1 Use variables and appropriate operations to write an expression, a formula, an equation, or an inequality that represents a verbal description. 7.3.2 Write and solve two-step linear equations and inequalities in one variable and check the answers.	7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. 7.EE.B.4.B Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	IAS 2014 and CCSS ask students to graph the solutions and do not specify inequalities that represent a verbal description.

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MA.7.AF.4:	Define slope as vertical change for each unit of horizontal change and recognize that a constant rate of change or constant slope describes a linear function. Identify and describe situations with constant or varying rates of change.	7.3.6 Define slope as vertical change per unit of horizontal change and recognize that a straight line has constant slope or rate of change. 8.3.7 Demonstrate an understanding of rate as a measure of one quantity with respect to another quantity.		
MA.7.AF.5:	Graph a line given its slope and a point on the line. Find the slope of a line given its graph.	7.3.7 Find the slope of a line from its graph. 7.3.8 Draw the graph of a line given the slope and one point on the line, or two points on the line.		
MA.7.AF.6:	Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).		7.RP.A.2 Recognize and represent proportional relationships between quantities. 7.RP.A.2.A Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	
MA.7.AF.7:	Identify the unit rate or constant of proportionality in tables, graphs, equations, and verbal descriptions of proportional relationships.		7.RP.A.2.B Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	
MA.7.AF.8:	Explain what the coordinates of a point on the graph of a proportional relationship mean in terms of the situation, with special attention to the points (0, 0) and (1,r), where r is the unit rate.		7.RP.A.2.D Explain what a point (*x* , *y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where r is the unit rate.	
MA.7.AF.9:	Identify real-world and other mathematical situations that involve proportional relationships. Write equations and draw graphs to represent proportional relationships and recognize that these situations are described by a linear function in the form y = mx, where the unit rate, m, is the slope of the line.	7.3.10 Identify and describe situations with constant or varying rates of change and know that a constant rate of change describes a linear function.	7.RP.A.2 Recognize and represent proportional relationships between quantities. 7.RP.A.2.C Represent proportional relationships by equations. 8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	IAS 2014 expands on IAS 2000 by asking students to write equations and draw graphs.
		Geometry and Measurement		
MA.7.GM.1:	Draw triangles (freehand, with ruler and protractor, and using technology) with given conditions from three measures of angles or sides, and notice when the conditions determine a unique triangle, more than one triangle, or no triangle.	6.4.3 Draw quadrilaterals and triangles from given information about them.	7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	IAS 2014 and CCSS define conditions in which to draw triangles.
MA.7.GM.2:	Identify and describe similarity relationships of polygons including the angle-angle criterion for similar triangles, and solve problems involving similarity.	6.4.5 Identify and draw two-dimensional shapes that are similar. 7.5.2 Use experimentation and modeling to visualize similarity problems. Solve problems using similarity.	8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	IAS 2014 asks students to identify and describe.
MA.7.GM.3:	Solve real-world and other mathematical problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing. Create a scale drawing by using proportional reasoning.	7.5.3 Read and create drawings made to scale, construct scale models, and solve problems related to scale. 8.5.3 Solve problems involving scale factors, area, and volume using ratio and proportion.	7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	

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MA.7.GM.4:	Solve real-world and other mathematical problems that involve vertical, adjacent, complementary, and supplementary angles.	6.4.1 Identify and draw vertical, adjacent, complementary, and supplementary angles and describe these angle relationships. 6.4.2 Use the properties of complementary, supplementary, and vertical angles to solve problems involving an unknown angle. Justify solutions.	7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. 4.MD.7: Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	IAS 2014 expects students to use their knowledge of angles to solve real world problems.
MA.7.GM.5:	Understand the formulas for area and circumference of a circle and use them to solve real-world and other mathematical problems; give an informal derivation of the relationship between circumference and area of a circle.	6.5.4 Understand the concept of the constant π as the ratio of the circumference to the diameter of a circle. Develop and use the formulas for the circumference and area of a circle. 6.5.5 Know common estimates of π (3.14,) and use these values to estimate and calculate the circumference and the area of circles. Compare with actual measurements. 7.5.4 Use formulas for finding the perimeter and area of basic two-dimensional shapes and the surface area and volume of basic three-dimensional shapes, including rectangles, parallelograms, trapezoids, triangles, circles, right prisms, and cylinders.	7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	IAS 2014 asks students to understand the formulas for area and circumference and apply them in real world problems.
MA.7.GM.6:	Solve real-world and other mathematical problems involving volume of cylinders and three-dimensional objects composed of right rectangular prisms.	6.5.8 Use strategies to find the surface area and volume of right prisms* and cylinders using appropriate units. 7.5.4 Use formulas for finding the perimeter and area of basic two-dimensional shapes and the surface area and volume of basic three-dimensional shapes, including rectangles, parallelograms, trapezoids, triangles, circles, right prisms, and cylinders. 8.5.5 Estimate and compute the area of irregular two-dimensional shapes and the volume of irregular three-dimensional objects by breaking them down into more basic geometric objects.	7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	
MA.7.GM.7:	Construct nets for right rectangular prisms and cylinders and use the nets to compute the surface area; apply this technique to solve real-world and other mathematical problems.	6.5.8 Use strategies to find the surface area and volume of right prisms* and cylinders using appropriate units. 7.4.4 Construct two-dimensional patterns (nets) for three-dimensional objects, such as right prisms*, pyramids, cylinders, and cones. 4.4.6: Construct cubes and prisms and describe their attributes.		
		Data Analysis, Statistics, and Probability		

	Indiana Academic Standard for Seventh Grade Mathematics – Adopted April 2014	Indiana Academic Mathematics Standard Adopted 2000	Common Core State Standard for Mathematics	Differences From Previous Standards
MA.7.DSP.1:	Understand that statistics can be used to gain information about a population by examining a sample of the population and generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	8.6.1 Identify claims based on statistical data and, in simple cases, evaluate the reasonableness of the claims. Design a study to investigate the claim. 8.6.2 Identify different methods of selecting samples, analyzing the strengths and weaknesses of each method, and the possible bias in a sample or display.	7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	
MA.7.DSP.2:	Use data from a random sample to draw inferences about a population. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.		7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	
MA.7.DSP.3:	Find, use, and interpret measures of center (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw comparative inferences about two populations.	8.6.3 Understand the meaning of, and be able to identify or compute the minimum value, the lower quartile, the median, the upper quartile, the interquartile range, and the maximum value of a data set.	7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	IAS 2014 uses the term spread for variability and defines measures of spread. Both IAS 2014 and CCSS ask students to make comparative inferences.
MA.7.DSP.4:	Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. Describe how data, particularly outliers, added to a data set may affect the mean and/or median.	7.6.3 Describe how additional data, particularly outliers, added to a data set may affect the mean, median, and mode.	7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	IAS 2014 and CCSS address the degree of visual overlap and IAS 2000 only pertains to outliers.
MA.7.DSP.5:	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Understand that a probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. Understand that a probability of 1 indicates an event certain to occur and a probability of 0 indicates an event impossible to occur.	6.6.6 Understand and represent probabilities as ratios, measures of relative frequency, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable. 7.6.5 Know that if P is the probability of an event occurring, then 1 – P is the probability of that event not occurring. 5.6.3: Understand that probability can take any value between 0 and 1, events that are not going to occur have probability 0, events certain to occur have probability 1, and more likely events have a higher probability than less likely events. 3.1.14: Identify whether everyday events are certain, likely, unlikely, or impossible.	7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	
MA.7.DSP.6:	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its relative frequency from a large sample.	6.6.5 Use data to estimate the probability of future events. 5.6.4: Express outcomes of experimental probability situations verbally and numerically (e.g., 3 out of 4, 3⁄4).	7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.	
MA.7.DSP.7:	Develop probability models that include the sample space and probabilities of outcomes to represent simple events with equally likely outcomes. Predict the approximate relative frequency of the event based on the model. Compare probabilities from the model to observed frequencies; evaluate the level of agreement and explain possible sources of discrepancy.	7.6.7 Find the number of possible arrangements of several objects using a tree diagram. 8.6.6 Understand and recognize equally likely events. 3.1.15: Record the possible outcomes for a simple probability experiment.	7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. 7.SP.C.7.A Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.	IAS 2000 includes tree diagrams while IAS 2014 and CCSS do not explicitly define the use of tree diagrams.

	Indiana Academic Standard for Seventh Grade Mathematics – Adopted April 2014	Indiana Academic Mathematics Standard Adopted 2000	Common Core State Standard for Mathematics	Differences From Previous Standards
		Unaligned **Indiana Academic Mathematics Standard** **Adopted 2000**	**Unaligned** **Common Core State Standard** **for Mathematics**	
		7.2.4 Use estimation to decide whether answers are reasonable in problems involving fractions and decimals.	7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	
		7.2.5 Use mental arithmetic to compute with simple fractions, decimals, and powers.	7.SP.C.7.B Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	
		7.3.3 Use correct algebraic terminology, such as variable, equation, term, coefficient*, inequality, expression, and constant.	7.SP.C.8.C Design and use a simulation to generate frequencies for compound events.	
		7.3.5 Solve an equation or formula with two variables for a particular variable. [This is in the Algebra I Standards 2014-15.]		
		7.5.6 Use objects and geometry modeling tools to compute the surface area of the faces and the volume of a three-dimensional object built from rectangular solids.		
		7.6.4 Analyze data displays, including ways that they can be misleading. Analyze ways in which the wording of questions can influence survey results.		