Alignment Between the Indiana REPA Educator Standards for Middle School Mathematics and state and national student and teacher standards for Middle School Mathematics

The alignment notations below indicate the content included in state and national standards that is addressed, in whole or in part, by each of the REPA Educator Standards for Middle School Mathematics.

Standard 1: Number and Quantity **Middle school mathematics teachers have a broad and comprehensive understanding of number operations and algebraic thinking, ratios and proportional relationships, and the number system.**	
Indiana Academic Standards for Mathematics (2014)	PS.1: Make sense of problems and persevere in solving them PS.2: Reason abstractly and quantitatively PS.4: Model with mathematics PS.6: Attend to precision PS.7: Look for and make use of structure PS.8: Look for and express regularity in repeated reasoning Number Sense: 5.NS.1-6, 6.NS.1-10, 7.NS.1-3, 8.NS.1-4 Computation: 5.C.1-9, 6.C.1-6, 7.C.1-8, 8.C.1-2 Algebraic Thinking: 5.AT.1-5
Indiana Academic Standards Content Area Literacy: Science/Technical Subjects (2014)	LST.2: Key Ideas and Textual Support (Reading): 6-8.LST.2.3 LST.3: Structural Elements and Organization (Reading): 6-8.LST.3.1
NCTM Standards for School Mathematics (2000)	Grades 6-8: Number and Operations Understand numbers, ways of representing numbers, relationships among numbers, and number systems Understand meanings of operations and how they relate to one another Compute fluently and make reasonable estimates Grades 6-8: Problem Solving Solve problems that arise in mathematics and in other contexts Grades 6-8: Communication Organize and consolidate their mathematical thinking through communication Communicate their mathematical thinking coherently and clearly to peers, teachers, and others Use the language of mathematics to express mathematical ideas precisely Grades 6-8: Connections Recognize and apply mathematics in contexts outside of mathematics Grades 6-8: Representation Create and use representations to organize, record, and communicate mathematical ideas Select, apply, and translate among mathematical representations to solve problems Use representations to model and interpret physical, social, and mathematical phenomena
NCTM CAEP Standards – Middle (Initial Preparation) (2012)	Standard 1: Content Knowledge: Number Standard 2: Mathematical Practices: 2a-2f

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Standard 2: Algebra **Middle school mathematics teachers have a broad and comprehensive understanding of the extension of arithmetic to one- and two-variable expressions, equations, and inequalities, the relationship between dependent and independent variables, and the modeling and solving of problems with algebraic expressions and equations.**	
Indiana Academic Standards for Mathematics (2014)	PS.1: Make sense of problems and persevere in solving them PS.2: Reason abstractly and quantitatively PS.4: Model with mathematics PS.5: Use appropriate tools strategically PS.6: Attend to precision PS.7: Look for and make use of structure PS.8: Look for and express regularity in repeated reasoning Algebraic Thinking: 5.AT.1-8 Algebra and Functions: 6.AF.1-10, 7.AF.1-9, 8.AF.1-8
Indiana Academic Standards Content Area Literacy: Science/Technical Subjects (2014)	LST.2: Key Ideas and Textual Support (Reading): 6-8.LST.2.3 LST.3: Structural Elements and Organization (Reading): 6-8.LST.3.1 LST.4: Synthesis and Connection of Ideas (Reading): 6-8.LST.4.1
NCTM Standards for School Mathematics (2000)	Grades 6-8: Algebra Understand patterns, relations, and functions Represent and analyze mathematical situations and structures using algebraic symbols Use mathematical models to represent and understand quantitative relationships Analyze change in various contexts Grades 6-8: Problem Solving Solve problems that arise in mathematics and in other contexts Apply and adapt a variety of appropriate strategies to solve problems Grades 6-8: Communication Organize and consolidate their mathematical thinking through communication Communicate their mathematical thinking coherently and clearly to peers, teachers, and others Use the language of mathematics to express mathematical ideas precisely Grades 6-8: Connections Recognize and apply connections among mathematical ideas Recognize and apply mathematics in contexts outside of mathematics Grades 6-8: Representation Create and use representations to organize, record, and communicate mathematical ideas Select, apply, and translate among mathematical representations to solve problems Use representations to model and interpret physical, social, and mathematical phenomena

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NCTM CAEP Standards – Middle (Initial Preparation) (2012)	Standard 1: Content Knowledge: Algebra Standard 2: Mathematical Practices: 2a-2f
Standard 3: Functions **Middle school mathematics teachers have a broad and comprehensive understanding of the characteristics of functions, the evaluation and comparison of functions, and the use of functions to model relationships between quantities.**	
Indiana Academic Standards for Mathematics (2014)	PS.1: Make sense of problems and persevere in solving them PS.2: Reason abstractly and quantitatively PS.4: Model with mathematics PS.5: Use appropriate tools strategically PS.6: Attend to precision PS.7: Look for and make use of structure PS.8: Look for and express regularity in repeated reasoning Algebra and Functions: 5.AT.8, 6.AF.10, 7.AF.4, 7.AF.5-9, 8.AF.3-8
Indiana Academic Standards Content Area Literacy: Science/Technical Subjects (2014)	LST.2: Key Ideas and Textual Support (Reading): 6-8.LST.2.3 LST.3: Structural Elements and Organization (Reading): 6-8.LST.3.1 LST.4: Synthesis and Connection of Ideas (Reading): 6-8.LST.4.1
NCTM Standards for School Mathematics (2000)	Grades 6-8: Algebra Understand patterns, relations, and functions Represent and analyze mathematical situations and structures using algebraic symbols Use mathematical models to represent and understand quantitative relationships Analyze change in various contexts Grades 6-8: Problem Solving Solve problems that arise in mathematics and in other contexts Apply and adapt a variety of appropriate strategies to solve problems Grades 6-8: Communication Organize and consolidate their mathematical thinking through communication Communicate their mathematical thinking coherently and clearly to peers, teachers, and others Use the language of mathematics to express mathematical ideas precisely Grades 6-8: Connections Recognize and apply connections among mathematical ideas Recognize and apply mathematics in contexts outside of mathematics Grades 6-8: Representation Create and use representations to organize, record, and communicate mathematical ideas Select, apply, and translate among mathematical representations to solve problems Use representations to model and interpret physical, social, and mathematical phenomena

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NCTM CAEP Standards – Middle (Initial Preparation) (2012)	Standard 1: Content Knowledge: Algebra Standard 2: Mathematical Practices: 2a-2f
Standard 4: Measurement and Geometry **Middle school mathematics teachers have a broad and comprehensive understanding of the principles and procedures of measurement, the characteristics of two- and three-dimensional figures and the relationships between them, and the representation of figures and the proof of theorems using coordinate geometry.**	
Indiana Academic Standards for Mathematics (2014)	PS.1: Make sense of problems and persevere in solving them PS.2: Reason abstractly and quantitatively PS.3: Construct viable arguments and critique the reasoning of others PS.4: Model with mathematics PS.5: Use appropriate tools strategically PS.6: Attend to precision PS.7: Look for and make use of structure PS.8: Look for and express regularity in repeated reasoning Geometry: 5.G.1-2 Measurement: 5.M.1-6 Geometry and Measurement: 6.GM.1-6, 7.GM.1-7, 8.GM.1-9
Indiana Academic Standards Content Area Literacy: Science/Technical Subjects (2014)	LST.2: Key Ideas and Textual Support (Reading): 6-8.LST.2.3 LST.3: Structural Elements and Organization (Reading): 6-8.LST.3.1 LST.4: Synthesis and Connection of Ideas (Reading): 6-8.LST.4.1 LST.5: Writing Genres (Writing): 6-8.LST.5.1
NCTM Standards for School Mathematics (2000)	Grades 6-8: Geometry Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships Specify locations and describe spatial relationships using coordinate geometry and other representational systems Apply transformations and use symmetry to analyze mathematical situations Use visualization, spatial reasoning, and geometric modeling to solve problems Grades 6-8: Measurement Understand measurable attributes of objects and the units, systems, and processes of measurement Apply appropriate techniques, tools, and formulas to determine measurements Grades 6-8: Problem Solving Solve problems that arise in mathematics and in other contexts Apply and adapt a variety of appropriate strategies to solve problems Grades 6-8: Reasoning and Proof Recognize reasoning and proof as fundamental aspects of mathematics Make and investigate mathematical conjectures Develop and evaluate mathematical arguments and proofs Select and use various types of reasoning and methods of proof Grades 6-8: Communication Organize and consolidate their mathematical thinking through communication

	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others Use the language of mathematics to express mathematical ideas precisely Grades 6-8: Connections Recognize and apply connections among mathematical ideas Recognize and apply mathematics in contexts outside of mathematics Grades 6-8: Representation Create and use representations to organize, record, and communicate mathematical ideas Select, apply, and translate among mathematical representations to solve problems Use representations to model and interpret physical, social, and mathematical phenomena
NCTM CAEP Standards – Middle (Initial Preparation) (2012)	Standard 1: Content Knowledge: Geometry, Trigonometry Standard 2: Mathematical Practices: 2a-2f
Standard 5: Statistics and Probability **Middle school mathematics teachers have a broad and comprehensive understanding of the concept of variability and the shape of data distributions, random sampling and drawing inferences about populations, the collection, presentation, and interpretation of data, and the fundamental principles of probability.**	
Indiana Academic Standards for Mathematics (2014)	PS.1: Make sense of problems and persevere in solving them PS.2: Reason abstractly and quantitatively PS.3: Construct viable arguments and critique the reasoning of others PS.4: Model with mathematics PS.5: Use appropriate tools strategically PS.6: Attend to precision PS.7: Look for and make use of structure PS.8: Look for and express regularity in repeated reasoning Data Analysis and Statistics: 5.DS.1-2, 6.DS.1-4 Data Analysis, Statistics, and Probability: 7.DSP.1-7, 8.DSP.1-6
Indiana Academic Standards Content Area Literacy: Science/Technical Subjects (2014)	LST.2: Key Ideas and Textual Support (Reading): 6-8.LST.2.3 LST.3: Structural Elements and Organization (Reading): 6-8.LST.3.1 LST.4: Synthesis and Connection of Ideas (Reading): 6-8.LST.4.1 LST.7: The Research Process (Writing): 6-8.LST.7.1
NCTM Standards for School Mathematics (2000)	Grades 6-8: Algebra Use mathematical models to represent and understand quantitative relationships Grades 6-8: Data Analysis and Probability Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them Select and use appropriate statistical methods to analyze data Develop and evaluate inferences and predictions that are based on data Understand and apply basic concepts of probability Grades 6-8: Problem Solving

	Solve problems that arise in mathematics and in other contexts Apply and adapt a variety of appropriate strategies to solve problems Grades 6-8: Communication Organize and consolidate their mathematical thinking through communication Communicate their mathematical thinking coherently and clearly to peers, teachers, and others Use the language of mathematics to express mathematical ideas precisely Grades 6-8: Connections Recognize and apply connections among mathematical ideas Recognize and apply mathematics in contexts outside of mathematics Grades 6-8: Representation Create and use representations to organize, record, and communicate mathematical ideas Select, apply, and translate among mathematical representations to solve problems Use representations to model and interpret physical, social, and mathematical phenomena
NCTM CAEP Standards – Middle (Initial Preparation) (2012)	Standard 1: Content Knowledge: Statistics, Probability Standard 2: Mathematical Practices: 2a-2f
<u>Standard 6: Middle School Mathematics Instruction and Assessment</u> **Middle school mathematics teachers have a broad and comprehensive understanding of content-specific instruction and assessment in mathematics education.**	
Indiana Academic Standards for Mathematics (2014)	PS.5: Use appropriate tools strategically
Indiana Academic Standards Content Area Literacy: Science/Technical Subjects (2014)	
NCTM Standards for School Mathematics (2000)	
NCTM CAEP Standards – Middle (Initial Preparation) (2012)	Standard 3: Content Pedagogy: 3a-3g Standard 4: Mathematical Learning Environment: 4a-4e Standard 5: Impact on Student Learning: 5a-5c