IAA Curriculum

Content Area	Mathematics	**Grade**	7
Course Name	Math 7		

Unit Number	Unit Topic	Instruction	Review/Reteach/Extension	Assessing	Buffer	Total
1	The Number System - Rational Numbers	25	1	3	3	32
2	Ratios and Proportional Relationships	15	1	2	2	20
3	Expressions	15	1	2	2	20
4	Equations	18	2	2	3	25
5	Geometry	15	1	2	2	20
6	Statistics	8	1	1	1	11
7	Probability	8	1	1	1	11
Extra Assessment Days/Days After Testing						35
Total Time		104	8	13	14	174
School Days	174					
Free Days	0					

Unit	Unit 1. The Number System
Concept	Solve real world and mathematical problems involving the four operations with rational numbers.
Big Idea	The sum, difference, product or quotient of rational numbers can be represented on a number line.
Essential Understandings	• What types of numbers exist on a number line? • How do I solve real world and mathematical problems involving rational numbers? • How do the rules and properties of addition, subtraction, multiplication and division help us compute rational numbers?
Competencies	• Understand the relationship between fractions, decimals and integers. • Model addition and subtraction of integers on the number line. • Add, subtract, multiply and divide decimals, fractions, and integers to compute and/or solve word problems. • Convert a fraction to decimal to determine if it is terminating or repeating.

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone or PSSA Anchors	Keystone / PSSA Eligible Content	Vocabulary
(30 days)	Represent addition and subtraction on a horizontal or vertical number line.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: • Absolute value - Millionaire • Add integers - Orbit Integers • Add Integers - Speed Racing • Add / sub. integers - X-Ray Math • Compare integers - Math Boxing • Multiply Integers - Integer Warp • Integer operations - Jeopardy • Integer Operations - Quia • Integer Operations - timed tests • Integer Operations - FlashCards or Playing Cards (manipulative)	MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.2	Integer Absolute value Terminating decimal Repeating decimal Natural numbers Whole numbers Counting number Positive integer Negative integer Opposite Additive inverse Commutative Property
	Apply properties of operations to add and subtract rational numbers, including real-world contexts.		MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.1	
	Apply properties of operations to multiply and divide rational numbers, including real-world contexts (incl. Order of Operations).		MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.3	
	Demonstrate that the decimal form of a rational number terminates or eventually repeats.		MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.3	

Resources	Materials, texts, videos, internet sites, software, human to support instruction • McGraw Hill / Glencoe Math Course 2, Volumes 1 & 2 (student workbooks) (Lessons 3.1-3.5, 4.1) • McGraw Hill / Glencoe Math Course 2 Teacher Guide, Assessment Masters, 21st Century Assessments, and Practice Masters & Perform. Tasks • PSSA Performance Coach 7 • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here

	• Vocabulary flashcards - Quizlet • Math Notes - Math Notes •
Formative Assessments	• Various do-nows, classwork, homework, and exit tickets
Summative Assessments	• Quiz on absolute value, adding and subtracting integers • Quiz on multiplying and dividing integers • Chapter 3 test to include all 4 operations and terminating/repeating decimals • Quarter 1 Exam, part 1
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean-copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	Unit 2. Ratios and Proportional Relationships
Concept	Analyze, recognize, and represent proportional relationships and use them to model and solve real-world and mathematical problems.
Big Idea	Rates and proportions describe real world problems as a linear mathematical relationship.
Essential Understandings	● How do rates and proportions help you describe and solve real-life problems? ● What are proportional relationships? ● What are slope and rate of change?
Competencies	● Compute and compare unit rates. ● Determine whether two quantities are proportionally related. ● Given a table, graph, equation, diagram, or verbal description, identify the rate. ● Represent proportional relationships using equations. ● Use a point (x, y) on the graph to describe the relationship between two quantities in a real-life situation.

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone or PSSA Anchors	Keystone / PSSA Eligible Content	Vocabulary
(20 days)	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities	MA.CC.2.1.7.D.1	M07.A-R.1.1	M07.A-R.1.1.1	Ratio Rate Unit rate Unit price Proportional Rate of change Linear Direct variation Complex fraction Cross products Coordinate plane Ordered pair X-axis Y-axis Quadrant Slope Origin
	Determine whether two quantities are proportionally related (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.CC.2.1.7.D.1	M07.A-R.1.1	M07.A-R.1.1.2	
	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.		MA.CC.2.1.7.D.1	M07.A-R.1.1	M07.A-R.1.1.3	
	Represent proportional relationships by equations.		MA.CC.2.1.7.D.1	M07.A-R.1.1	M07.A-R.1.1.4	

	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation.		MA.CC.2.1.7.D.1	M07.A-R.1.1	M07.A-R.1.1.5	

Resources	Materials, texts, videos, internet sites, software, human to support instruction ● McGraw Hill / Glencoe Math Course 2, Volumes 1 & 2 (student workbooks) (Lessons 1.1-1.8) ● McGraw Hill / Glencoe Math Course 2 Teacher Guide, Assessment Masters, 21st Century Assessments, and Practice Masters & Perform. Tasks ● PSSA Performance Coach 7 ● MathGames.com and IXL.com - practice activities ● Virtual math manipulatives here ● Vocabulary flashcards - Quizlet ● Math Notes (Quizlet flashcards in .pdf format) - Math Notes ● Helpful videos: ○ Math Antics: Ratios and Proportions - video ○ Math Shorts: Proportional Relationships - video ○ Complex Fractions and Unit Rates - video ○
Formative Assessments	● Various do-nows, classwork, homework, and exit tickets
Summative Assessments	● Quarter 1 Exam, part 2 ● Chapter 1 Test
Strategies for ELL and IEP Support	● Textbook has vocabulary available in Spanish ● Clean-copy notes ● Online flashcards ● Use of calculator ● Simplified directions ● Translation tools available

Unit	Unit 3. Expressions					
Concept	Use properties of operations to generate equivalent expressions (include Order of Operations).					
Big Idea	• How can relationships be modeled symbolically? • Why is mathematical language important?					
Essential Understandings	• What is the most appropriate way of communicating a mathematical idea in a particular situation?					
Competencies	• Use the distributive property, combining like terms, and factoring to generate equivalent expressions. • Simplify and expand linear expressions.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(20 days)	Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: • Order of Operations with Mr. Nussbaum: Royal Rescue	MA.CC.2.2.7.B.1	M07.B-E.1.1	M07.B-E.1.1.1	Algebra Variable Expression Equation Algebraic expression Coefficient Term Like term Constant Commutative Property Associative Property Distributive Property Identity Property Linear Monomial Factor (verb)
Resources	Materials, texts, videos, internet sites, software, human to support instruction • McGraw Hill / Glencoe Math Course 2, Volumes 1 & 2 (student workbooks) (Lessons 5.3-5.8) • McGraw Hill / Glencoe Math Course 2 Teacher Guide, Assessment Masters, 21st Century Assessments, and Practice Masters & Perform. Tasks • PSSA Performance Coach 7					

	• MathGames.com and IXL.com - practice activities
	• Virtual math manipulatives here
	• Quizlet - vocabulary flash cards
	• Math Notes (Quizlet flashcards in .pdf format) - Math Notes
	• Helpful videos:
	  ○ Algebraic Expressions (Vocabulary and evaluating expressions)
	  ■ Icon Math: Variable and Coefficients video (good intro)
	  ■ Algebra Lab: Terms, Coefficients, & Constants video
	  ■ Mr. J.: Evaluate Expressions video (I like this guy - short and sweet)
	  ■ Evaluate Expressions in Spanish video (a bit beyond, but Spanish)
	  ○ Properties
	  ■ Mr. J.: Properties of Multiplication video
	  ■ McCarthy Math: Properties of Multiplication video (popular)
	  ■ Properties of Real Numbers in Spanish video
	  ○ Distributive Property
	  ■ MashUp Math: Distributive Property video (good intro)
	  ■ Distributive Property in Spanish video
	  ○ Like Terms
	  ■ Combining Like Terms video (I did this one as an EdPuzzle)
	  ■ MathsRap: Simplifying Expressions song video (combine like terms)
	  ■ Simplifying Expressions in Spanish video (combine like terms)
	  ○ Add Linear Expressions
	  ■
	  ○ Subtract Linear Expressions
	  ■ Mrs. Senger: Subtract Linear Expressions video
	  ■ Mrs. V.: Subtracting Linear Expressions video (I did an EdPuzzle)
	  ○ Factor Linear Expressions
	  ■ Factor Linear Expressions video
	  ○ Others
	  ■ Simplify Expressions in Spanish video (summary/review)
	  ■ Divide Fractions in Spanish - video
	  ■ Silly School Songs: Order of Operations Song
	  ■ Order of Operations - Spanish (5th grade, no exponents)
	  ■ Order of Operations - Spanish (very good! includes exponents)

Formative Assessments	• Various do-nows, classwork, homework, and exit tickets
Summative Assessments	• Midpoint Quiz - order of operations • Midpoint Quiz - add expressions • Midpoint Quiz - factor and distribute • Chapter Test

Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean-copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available • Various videos in Spanish

Unit	Unit 4. Equations					
Concept	Solve two-step real-life and mathematical problems posed with positive and negative rational numbers. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems. Determine the reasonableness of the answer(s) in problem solving situations.					
Big Idea	Mathematical language models relationships symbolically..					
Essential Understandings	• How do I create, solve, and interpret one-variable equations or inequalities in real-world and mathematical problems? • How can real-world problems be solved algebraically? • How can I write and evaluate an expression that represents a real-life problem?					
Competencies	• Convert between forms of numbers and decide when it is appropriate to use each. • Apply properties of operations to calculate with numbers. • Write and solve algebraic equations or inequalities to represent real-life problems. • Use estimation to determine if an answer is reasonable.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(25 days)	Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: • MathIsFun Interactive Activity: Balancing Equations • SoftSchools.com: Balance Equations (just addition, but good warm-up to get in the "balancing" mind-set) • Battleship Game: Solve One-Step Equations • Basketball Game: One-Step Equations / Two-Step Equations (challenging) • Soccer Game: One-Step Equations (challenging)	MA.CC.2.2.7.B.3	M07. B-E.2.1	M07. B-E.2.1.1	Equation Solution Equivalent Properties of Equality (4) Coefficient Constant Inequality Properties of Inequality (4)
	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.		MA.CC.2.2.7.B.3	M07.B-E.2.2	M07.B-E.2.2.1	
	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, and graph the solution set of the inequality.		MA.CC.2.2.7.B.3	M07.B-E.2.2	M07.B-E.2.2.2	
	Determine the reasonableness of an answer(s), or interpret the solution(s) in the context of the problem.		MA.CC.2.2.7.B.3	M07.B-E.2.3	M07.B-E.2.3.1	
Resources	Materials, texts, videos, internet sites, software, human to support instruction					

	• McGraw Hill / Glencoe Math Course 2, Volumes 1 & 2 (student workbooks) (Lessons 6.1-6.8, 10.1)
	• McGraw Hill / Glencoe Math Course 2 Teacher Guide, Assessment Masters, 21st Century Assessments, and Practice Masters & Perform. Tasks
	• PSSA Performance Coach 7
	• MathGames.com and IXL.com - practice activities
	• Virtual math manipulatives here
	• Math Notes (Quizlet flashcards in .pdf format) - Math Notes
	• Vocabulary flashcards - Quizlet
	• Helpful videos:
	  ○ Math Antics: Algebra Basics Part 1 - One-Step Equations with Add./Subt.
	  ○ Math Antics: Algebra Basics Part 2 - One-Step Equations with Mult./Div.
	  ○ One-Step Equations - Spanish
	  ○ One-Step Equations - Spanish
	  ○ Math Antics: Solving Two-Step Equations
	  ○ Math with Mr. J.: Solve Two-Step Equations
	  ○ Solving Multi-Step Equations - Spanish

Formative Assessments	• Various do-nows, classwork, homework, and exit tickets
Summative Assessments	• Midpoint Quiz - solve 1-step equations with addition and subtraction • Midpoint Quiz - solve 1-step equations • Test - Equations • Midpoint Quiz - solve inequalities with addition and subtraction • Test - Inequalities
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean-copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available • Various videos in Spanish

Unit	Unit 5. Geometry					
Concept	• Describe and apply properties of geometric figures. • Determine circumference, area, surface area, and volume.					
Big Idea	Models and formulas measure 2D and 3D geometric figures in the real world.					
Essential Understandings	• How can we use models and/or formulas to find specific measures of selected 2D and 3D figures?					
Competencies	• Use scale drawings to solve geometric figure problems. • Determine what 2-dimensional figures are used to form solids. • Find the area and circumference of a circle. • Find the area, volume, and surface area of two- and three-dimensional objects using formulas.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(20 days)	Solve problems involving scale drawings of geometric figures, including finding length and area.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities	MA.CC.2.3.7.A.2	M07.C-G .1.1	M07.C-G .1.1.1	Vertex Congruent Adjacent Acute / Obtuse Right triangle Scale drawing Scale model Scale factor Prism / Pyramid Base Plane Parallel Face Edge Diagonal Circle Center Circumference Radius Diameter Area Perimeter Volume
	Describe the two-dimensional figures that result from slicing three-dimensional figures.		MA.CC.2.3.7.A.2	M07.C-G .1.1	M07.C-G .1.1.4	
	Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s) (formulas provided).		MA.CC.2.3.7.A.1	M07.C-G .2.2	M07.C-G .2.2.1	
	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 (formulas provided).		MA.CC.2.3.7.A.1	M07.C-G .2.2	M07.C-G .2.2.2	

Resources	Materials, texts, videos, internet sites, software, human to support instruction ● McGraw Hill / Glencoe Math Course 2, Volumes 1 & 2 (student workbooks) (Lessons 7.1-7.6, 8.1-8.8) ● McGraw Hill / Glencoe Math Course 2 Teacher Guide, Assessment Masters, 21st Century Assessments, and Practice Masters & Perform. Tasks ● PSSA Performance Coach 7 ● MathGames.com and IXL.com - practice activities ● Virtual math manipulatives here ● Quizlet - vocabulary flash cards ● Helpful videos: ○ Circles vocabulary - The Circle Song ○ Circles, terminology and pi - Math Antics: Circles and Pi ○ Circles, pi - Sir Cumference and the Dragon of Pi ○ Circles, circumference and area - Math Antics: Circles, Circumference, and Area ○ Circles, circumference - Math with Mr. J.: Circumference of a Circle ○ Circles, circumference (Spanish) - Circunferencia de Círculos ○ Circles, arc length - Khan Acad.: Partial Circles (1:00+), Partial Circles Arc Length, Organic Chemistry Tutor: Perimeter of a Semicircle ○ Circles, area - Math with Mr. J.: Area of a Circle ○ Circles, area (Spanish) - Área de Círculos ○ Circles, partial area - Khan Acad.: Partial Circles (to 1:00), CorbettMaths: Area of a Semicircle, Area of Partial Circles ○ Area of rectangles - Let's Do Math: Area of a Rectangle, Math Antics: Area (up to 4:40) ○ Area of parallelograms - Let's Do Math: Area of a Parallelogram, Math with Mr. J.: Area of Parallelograms ○ Area of triangles - Let's Do Math: Area of a (Right) Triangle, Let's Do Math: Area of Any Triangle, Math Antics: Area (4:40 to end) ○ Area of trapezoids - Let's Do Math: Area of a Trapezoid, Math Meeting: Area of a Trapezoid ○ Area of comp. fig.s - Mr. J.: Area of Comp. Rect.s, Mr. J.: Area of Comp. Fig.s, MathsCasts: Area of Comp. Fig.s, Ms. Doria: Area of Comp. Fig.s
Formative Assessments	● Various do-nows, classwork, homework, and exit tickets
Summative Assessments	● Midpoint Quiz - scale figures (and converting units) ● Midpoint Quiz - Circles ● Chapter Test
Strategies for ELL and IEP Support	● Clean-copy notes ● Online flashcards ● Use of calculator ● Simplified directions ● Translation tools available ● Variety of videos in Spanish

Unit	Unit 6. Statistics					
Concept	• Draw inferences about populations based on random sampling concepts. • Use statistical measures to compare two numerical data distributions.					
Big Idea	Statistical measures make sense of the world through analyzing, displaying, and summarizing numerical data.					
Essential Understandings	• How do I display, analyze, and summarize numerical data? • How do I determine measures of central tendency and variability?					
Competencies	• Determine if a sample of a population is a random sample. • Use data gathered from a random sample to draw inferences about a population. • Use measures of central tendency and variability to compare numerical data.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(10 days)	Determine whether a sample is a random sample given a real-world situation.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities	MA.CC.2.4.7.B.1	M07.D-S.1.1	M07.D-S.1.1.1	Statistics Survey Population Sample Bias Unbiased Random Systematic Box plot Dot plot Mean Median Mode Quartile Range
	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.		MA.CC.2.4.7.B.2	M07.D-S.1.1	M07.D-S.1.1.2	
	Compare two numerical data distributions using measures of center and variability.		MA.CC.2.4.7.B.2	M07.D-S.2.1.1	M07.D-S.2.1.1	
Resources	Materials, texts, videos, internet sites, software, human to support instruction • McGraw Hill / Glencoe Math Course 2, Volumes 1 & 2 (student workbooks) (Lessons 10.2, 10.1, 10.4, 9.1, 9.2) • McGraw Hill / Glencoe Math Course 2 Teacher Guide, Assessment Masters, 21st Century Assessments, and Practice Masters & Perform. Tasks • PSSA Performance Coach 7 • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here • Quizlet - vocabulary flash cards					

Formative Assessments	• Various do-nows, classwork, homework, and exit tickets
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean-copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	Unit 7. Probability					
Concept	• Predict or determine the likelihood of outcomes. • Use probability to predict outcomes.					
Big Idea	Mathematical predictions based on data determine the chance of an event occurring.					
Essential Understandings	• How do I determine the chance of something occurring? • How can I use probability to help me make wise decisions in real-life? • How can predictions be made based on data?					
Competencies	• Predict or determine the likelihood of an outcome. • Determine the probability of a chance event given the relative frequency, or predict the approximate relative frequency given the probability. • Find the probability of a simple event?					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(10 days)	Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities	MA.CC.2.4.7.B.3	M07.D-S.3.1	M07.D-S.3.1.1	Probability Event Simple event Outcome Probability Frequency Experimental probability Theoretical probability
	Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability.		MA.CC.2.4.7.B.3	M07.D-S.3.2	M07.D-S.3.2.1	
	Find the probability of a simple event, including the probability of a simple event not occurring.		MA.CC.2.4.7.B.3	M07.D-S.3.2	M07.D-S.3.2.2	
Resources	Materials, texts, videos, internet sites, software, human to support instruction • McGraw Hill / Glencoe Math Course 2, Volumes 1 & 2 (student workbooks) (Lessons 10.2, 10.1, 10.4, 9.1, 9.2) • McGraw Hill / Glencoe Math Course 2 Teacher Guide, Assessment Masters, 21st Century Assessments, and Practice Masters & Perform. Tasks • PSSA Performance Coach 7 • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here • Quizlet - vocabulary flash cards					

Formative Assessments	• Various do-nows, classwork, homework, and exit tickets
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean-copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available