

COURSE: Math A – 15:1
GRADE LEVEL: 9th, 10th & 11th

MAIN/GENERAL TOPIC:	SUB-TOPIC:	ESSENTIAL QUESTIONS:	WHAT THE STUDENTS WILL KNOW OR BE ABLE TO DO:	MATERIALS	WHEN STUDENT DOES IT:	ASSESSMENTS:
PROBLEM SOLVING STRATEGIES	Make a chart Tree Diagram Venn Diagram Guess and check Find the pattern	<ul style="list-style-type: none"> What is the best way to solve this problem? 	<ul style="list-style-type: none"> Follow the problem solving steps Identify and use the best method for solving a word problem 	<ul style="list-style-type: none"> Integrated Math – Chapter 2 	September/October	<ul style="list-style-type: none"> Homework Quizzes Tests
NUMBER THEORY	Whole Numbers and Sets	<ul style="list-style-type: none"> Are all #'s the same? What is a set? 	<ul style="list-style-type: none"> Explain Whole Numbers and Sets 	<ul style="list-style-type: none"> Integrated Math – Chapter 3 	November	<ul style="list-style-type: none"> Homework Quizzes Tests
	Properties and Systems	<ul style="list-style-type: none"> What are the properties of operation? 	<ul style="list-style-type: none"> Correctly identify properties of operations (commutative, associative, distributive, identity, inverse, etc) 	<ul style="list-style-type: none"> Integrated Math – Chapter 3 	November	<ul style="list-style-type: none"> Homework Quizzes Tests
OPERATIONS AND PROPERTIES	Operations (Order of Ops)	<ul style="list-style-type: none"> Can you do operations in any order? 	<ul style="list-style-type: none"> Follow correct Order of Operations (PEMDAS) 	<ul style="list-style-type: none"> Integrated Math – Chapter 3 	December	<ul style="list-style-type: none"> Homework Quizzes Tests
FRACTIONS, DECIMALS, AND PERCENTS	Conversions, Equivalencies and Reduction	<ul style="list-style-type: none"> How can you find equivalent numbers? How and why do you reduce fractions? 	<ul style="list-style-type: none"> Convert fractions, decimals, and percents Reduce fractions 	<ul style="list-style-type: none"> Integrated Math – Chapter 3 	January	<ul style="list-style-type: none"> Homework Quizzes Tests
	Operations with Fractions	<ul style="list-style-type: none"> How do I solve fractions problems with a calculator? 	<ul style="list-style-type: none"> Addition, subtraction, multiplication, and division of fractions with a calculator 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 2 	January	<ul style="list-style-type: none"> Homework Quizzes Tests

NUMBER THEORY	Number Lines	<ul style="list-style-type: none"> Does every # have a place on the number line? 	<ul style="list-style-type: none"> Locate points on number line Compare values on number line 	<ul style="list-style-type: none"> Integrated Math – Chapter 4 Amsco Math A Review Book – Chapter 2 	February	<ul style="list-style-type: none"> Homework Quizzes Tests
	Absolute Value and Signed Numbers	<ul style="list-style-type: none"> What is the absolute value of -5 Is +2 smaller or larger than -10 	<ul style="list-style-type: none"> Add/subtract Multiply/divide Understand order 	<ul style="list-style-type: none"> Integrated Math – Chapter 4 Amsco Math A Review Book – Chapter 2 	February/ March	<ul style="list-style-type: none"> Homework Quizzes Tests
	Exponents	<ul style="list-style-type: none"> What does an exponent tell us to do? 	<ul style="list-style-type: none"> Identify base, power, exponent Evaluate expressions that include exponents 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 2 	April	<ul style="list-style-type: none"> Homework Quizzes Tests
	Expressions (Evaluating)	<ul style="list-style-type: none"> Is it important to follow order of operations? 	<ul style="list-style-type: none"> Use signed numbers and order of operations to evaluate expressions 	<ul style="list-style-type: none"> Section(s) 5-7 	April	<ul style="list-style-type: none"> Homework Quizzes Tests
RADICALS	Square Roots Simplifying Operations	<ul style="list-style-type: none"> Are operations of radicals similar to the operations of fractions? 	<ul style="list-style-type: none"> Simplify radicals Find square roots in simplest form Add, subtract, multiply, divide radicals 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 2 	May/June	<ul style="list-style-type: none"> Homework Quizzes Tests

End of 9th Grade

ALGEBRA – MONOMIALS	Variables	<ul style="list-style-type: none"> What is a variable? 	<ul style="list-style-type: none"> Use variables in equations Explain algebraic terminology 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	September	<ul style="list-style-type: none"> Homework Quizzes Tests
	Verbal Phrases	<ul style="list-style-type: none"> Twice a number means what? 	<ul style="list-style-type: none"> Translate verbal phrase into algebraic language 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	September	<ul style="list-style-type: none"> Homework Quizzes Tests
	One and Two Step Equations	<ul style="list-style-type: none"> How do you solve equations? 	<ul style="list-style-type: none"> Follow steps to solve one and two step equations 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	September	<ul style="list-style-type: none"> Homework Quizzes Tests

	Solving Equations (Strategies)	<ul style="list-style-type: none"> Is there more than one way to solve most problems? 	<ul style="list-style-type: none"> Employ different strategies Choose appropriate strategies Combine strategies (i.e.; clear fractions, set to zero, etc) 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	October	<ul style="list-style-type: none"> Homework Quizzes Tests
ALGEBRA – POLYNOMIALS	Algebraic Expressions (Operations)	<ul style="list-style-type: none"> What is a like term? 	<ul style="list-style-type: none"> Add/Subtract/multiply/divide monomials and polynomials 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	October	<ul style="list-style-type: none"> Homework Quizzes Tests
	Scientific Notation	<ul style="list-style-type: none"> Why do we use scientific notation? 	<ul style="list-style-type: none"> Rewrite large and/or small numbers using scientific notation Multiply/divide numbers written in scientific notation 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	October	<ul style="list-style-type: none"> Homework Quizzes Tests
	Word Problems	<ul style="list-style-type: none"> How does using variables help us solve problems? 	<ul style="list-style-type: none"> Translate verbal phrases into algebraic equations Use equations to solve problems Use “let” statements 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	October	<ul style="list-style-type: none"> Homework Quizzes Tests
COORDINATE GEOMETRY (LINEAR FUNCTIONS)	Open Sentences	<ul style="list-style-type: none"> Can we solve equations with two variables? 	<ul style="list-style-type: none"> Understand equations with two variables have many solutions Determine solution set of two-variable problems 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	November	<ul style="list-style-type: none"> Homework Quizzes Tests
	Coordinate Plane	<ul style="list-style-type: none"> Are coordinate planes used in real-life? 	<ul style="list-style-type: none"> Graph using x- and y- axis Understand meaning of input variable and output variable 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	November	<ul style="list-style-type: none"> Homework Quizzes Tests
	Slope and Y-Intercept	<ul style="list-style-type: none"> What does the slope tell us? The y- intercept tells us what? 	<ul style="list-style-type: none"> Identify lines having positive/ negative/ zero / undefined slopes Identify parts of the linear equation $y = mx + b$ 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	November	<ul style="list-style-type: none"> Homework Quizzes Tests
	Equations of Lines	<ul style="list-style-type: none"> Can every line be shown by an equation? 	<ul style="list-style-type: none"> Calculate equation of a line given 2 points or given 1 point and the slope Manipulate equations to get them into the form $y = mx + b$ 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	December	<ul style="list-style-type: none"> Homework Quizzes Tests

	Graphing	<ul style="list-style-type: none"> How do we use the equation of a line to graph that line? 	<ul style="list-style-type: none"> Graph lines with positive / negative/ zero / undefined slope Identify slopes from visual representations of a line 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	December	<ul style="list-style-type: none"> Homework Quizzes Tests
	Linear Relationships	<ul style="list-style-type: none"> Can we tell things about lines knowing their slopes? 	<ul style="list-style-type: none"> Identify lines that are parallel/ perpendicular / vertical / horizontal by their slope 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	January	<ul style="list-style-type: none"> Homework Quizzes Tests
	Solving Sets of Linear Equations	<ul style="list-style-type: none"> Is graphing an algebraic mean for solving problems? 	<ul style="list-style-type: none"> Solve system of equations using addition / substitution / graphing Understand trial and error is a valid process to solve equations 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	January	<ul style="list-style-type: none"> Homework Quizzes Tests
INEQUALITIES	Properties	<ul style="list-style-type: none"> What is an inequality? How is it different? 	<ul style="list-style-type: none"> Identify inequalities in problems Use addition / subtraction / multiplication / division with equalities 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3 	February	<ul style="list-style-type: none"> Homework Quizzes Tests
	Solution Sets	<ul style="list-style-type: none"> How many points satisfy inequalities? 	<ul style="list-style-type: none"> Determine solution sets of inequalities using properties 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	February	<ul style="list-style-type: none"> Homework Quizzes Tests
	Graphing	<ul style="list-style-type: none"> How do you show an inequality when graphing? 	<ul style="list-style-type: none"> Use coordinate plane to show solution set of an inequality Understand meaning of a graph of an inequality 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	March	<ul style="list-style-type: none"> Homework Quizzes Tests
	Solving Sets of Inequalities	<ul style="list-style-type: none"> How do you show inequalities when graphing? 	<ul style="list-style-type: none"> Graph solution sets Solve compound inequalities Solve inequality word problems by addition & multiplication 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 3, 5 	March	<ul style="list-style-type: none"> Homework Quizzes Tests
FACTORING AND QUADRATICS	Factoring (Polynomials)	<ul style="list-style-type: none"> How are FOIL and factoring related? 	<ul style="list-style-type: none"> Find Greatest Common Factor (GCF) Identify difference of two perfect squares Employ FOIL backwards 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 4 	April	<ul style="list-style-type: none"> Homework Quizzes Tests
	Quadratic Equations	<ul style="list-style-type: none"> How does factoring help us solve equations? 	<ul style="list-style-type: none"> Identify quadratic equations Identify quadratics in Standard Form Factor quadratic equations 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 4 	April	<ul style="list-style-type: none"> Homework Quizzes Tests

	Solving Quadratics	<ul style="list-style-type: none"> Why do we set quadratic equal to zero? 	<ul style="list-style-type: none"> Manipulate equations to get into standard form Utilize factoring to solve equations 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 4 	May	<ul style="list-style-type: none"> Homework Quizzes Tests
	Graphing Quadratics	<ul style="list-style-type: none"> What does the graph show us? 	<ul style="list-style-type: none"> Input equations into graphing calculator Identify points of interest 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 4 	June	<ul style="list-style-type: none"> Homework Quizzes Tests

End of 10th Grade

ALGEBRAIC FRACTION	Lowest Terms	<ul style="list-style-type: none"> How do we simplify rational expressions? 	<ul style="list-style-type: none"> Reduce Fractions to lowest terms 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 4 	September	<ul style="list-style-type: none"> Homework Quizzes Tests
	Operations	<ul style="list-style-type: none"> How do we find common denominators? 	<ul style="list-style-type: none"> Multiply and divide fractions Add and subtract fractions with and without common denominator 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 4 	September	<ul style="list-style-type: none"> Homework Quizzes Tests
	Solving Fractional Equations	<ul style="list-style-type: none"> How do we solve fractional equations? 	<ul style="list-style-type: none"> Utilize steps and patterns to solve fractional equations (i.e., CLEAR THE FRACTIONS) Factor, Clear, Combine 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 4 	October	<ul style="list-style-type: none"> Homework Quizzes Tests
EUCLIDEAN GEOMETRY	Points, Lines and Planes	<ul style="list-style-type: none"> How can we define a point, a line and a plane? 	<ul style="list-style-type: none"> Use proper symbolic notation 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 6 	October	<ul style="list-style-type: none"> Homework Quizzes Tests
	Angles and Triangles	<ul style="list-style-type: none"> How do we measure angles? How do we identify triangles 	<ul style="list-style-type: none"> Identify angle measurements Identify types of angles/triangles Explain complementary and supplementary angles Identify adjacent and vertical angles Identify properties of triangles (sum of their angles, $S+S>L$) Identify exterior angles of a triangle 	<ul style="list-style-type: none"> Amsco Math A Review Book – Chapter 6 	October	<ul style="list-style-type: none"> Homework Quizzes Tests

	Polygons (Quadrilaterals)	<ul style="list-style-type: none"> • What is common to all polygons? • Can polygons be congruent? 	<ul style="list-style-type: none"> • Identify types of polygons • Identify characteristics of polygons as per their sides and angles • Define congruency of polygons 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 6 	November	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Perimeter Area Volume	<ul style="list-style-type: none"> • When do we use perimeter vs. area vs. volume? 	<ul style="list-style-type: none"> • Identify when finding perimeter, area or volume is required • Determine perimeter, area and/or volume of specific objects 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 8 	November	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Right Triangle	<ul style="list-style-type: none"> • Why is trigonometry considered a ratio? 	<ul style="list-style-type: none"> • Identify an angle with opposite side • Utilize sine, cosine, tangent ratios • Use calculator to enter and retrieve trig functions 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 8 	December	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
RATIOS AND PROPORTIONS	Properties	<ul style="list-style-type: none"> • What does a proportion or ratio show? 	<ul style="list-style-type: none"> • Identify ratios and proportions • Compare unlike ratios • Explain ratios and proportions 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 2 	December	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Direct Variation	<ul style="list-style-type: none"> • How does one part of a ration affect another? 	<ul style="list-style-type: none"> • Set up ration/proportion equations • Manipulate ratios and proportions • Solve problems dealing with ratios 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 2 	December	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Percents	<ul style="list-style-type: none"> • Where do we use percents? 	<ul style="list-style-type: none"> • Set up percents as ratios • Solve percent problems (taxes, interest, grades, etc.) 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 2 	January	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Similar Polygons	<ul style="list-style-type: none"> • What makes a polygon similar vice congruent? 	<ul style="list-style-type: none"> • Use ratios to show relationship of similar objects • Determine size of objects given a specific ratio 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 6 	January	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
PROBABILITY	Simple	<ul style="list-style-type: none"> • How can you evaluate simple probability 	<ul style="list-style-type: none"> • Explain empirical vs. theoretical • Define sample space, event, outcome, fair and biased objects • Use Complements/Venn Diagram 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 11 	January	<ul style="list-style-type: none"> • Homework • Quizzes • Tests

	Compound	<ul style="list-style-type: none"> • How can you tell if the event is independent or dependent? • When should you use a combination or permutation? 	<ul style="list-style-type: none"> • Differentiate between “simple” and “compound” probability; dependent and independent events; permutations and combinations • Explain where and how to use tree diagrams and the counting principle • Calculate probability of events using with or without replacement 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 11 	February	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
STATISTICS	Collecting Data	<ul style="list-style-type: none"> • How do people mislead others using stats? 	<ul style="list-style-type: none"> • Collect appropriate data • Explain different sampling techniques • Utilize random selection 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 10 	February	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Organizing Data	<ul style="list-style-type: none"> • How can data be represented? 	<ul style="list-style-type: none"> • Develop frequency tables, stem and leaf diagrams, and histograms 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 10 	March	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Analyzing Data	<ul style="list-style-type: none"> • What is a more precise term than average? 	<ul style="list-style-type: none"> • Identify and explain central tendency • Calculate mean, median, mode • Compare quartiles and percentiles • Develop box and whisker plots, scatter plots and circle graphs 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 10 	March	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
TRANSFORMATION GEOMETRY	Reflections Translations Rotations	<ul style="list-style-type: none"> • Can you perform line/point reflection, translations and rotations 	<ul style="list-style-type: none"> • Identify line and point reflections • Explain affect transformations have on initial object • Understand composition of two or more transformations 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 9 	March	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Dilations	<ul style="list-style-type: none"> • What measure will change? • What properties are preserved? 	<ul style="list-style-type: none"> • Explain center of dilation • Explain constant of dilation • Understand composition of dilation with other transformations 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 9 	March	<ul style="list-style-type: none"> • Homework • Quizzes • Test

CONSTRUCTION	Rules and Definitions	<ul style="list-style-type: none"> • Can we construct geometric figures? • How is it done? 	<ul style="list-style-type: none"> • Demonstrate knowledge of basic constructions (angles, triangles, perpendiculars, bisectors, etc) 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 9 	April	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Hands-on	<ul style="list-style-type: none"> • Can you construct more difficult figures? 	<ul style="list-style-type: none"> • Construct various geometric figures 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 9 	April	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
LOCUS	Fundamentals (Properties)	<ul style="list-style-type: none"> • What is a locus of points? • How do we combine loci? 	<ul style="list-style-type: none"> • Explain five basic loci • Find equations for loci • Graph and describe loci 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 9 	May	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
GEOMETRY OF THE CIRCLE	Distance Formula Midpoint Formula	<ul style="list-style-type: none"> • How do we use distance and midpoint formulas? 	<ul style="list-style-type: none"> • Find distance between points using the distance formula • Find midpoint of a line segment using the midpoint formula • Graph a system of equations involving a circle and a straight line 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 8 	May	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
LOGIC	Laws of Inference	<ul style="list-style-type: none"> • Can we use laws of inference to make logic conclusions? 	<ul style="list-style-type: none"> • Demonstrate understanding of statements, their negations, and subsequent truth values • Construct truth tables • Explain Laws of Inference 	<ul style="list-style-type: none"> • Amsco Math A Review Book – Chapter 7 	June	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
MATH SYSTEMS	Binary Systems	<ul style="list-style-type: none"> • What is a binary system? 	<ul style="list-style-type: none"> • Explain properties in binary systems 	<ul style="list-style-type: none"> • Amsco Math A Review Book 	June	<ul style="list-style-type: none"> • Homework • Quizzes • Tests

NEW YORK STATE MATH A REGENTS EXAM
Updated 6/30/06