

COURSE: Algebra I – 15:1
GRADE LEVEL: 9th & 10th

MAIN/GENERAL TOPIC:	SUB-TOPIC:	ESSENTIAL QUESTIONS:	WHAT THE STUDENTS WILL KNOW OR BE ABLE TO DO:	MATERIALS	WHEN STUDENT DOES IT:	ASSESSMENTS:
NUMBER THEORY	Real Numbers	<ul style="list-style-type: none"> Are all #'s the same? How many #'s are there? 	<ul style="list-style-type: none"> Explain Real Numbers Identify Rational vs. Irrational #'s Identify Integer vs. Whole vs. Counting Numbers Set Builder Notation 	<ul style="list-style-type: none"> Amsco Math Ch. 1 	September	<ul style="list-style-type: none"> Homework Quizzes Tests
	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"> Amsco Math Ch. 1 	September	<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"> Correctly use scientific numbers for both large and small numbers Multiply/divide numbers written in scientific notation 	<ul style="list-style-type: none"> Amsco Math Ch. 1 	September	<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"> Amsco Math Ch. 2 	September	<ul style="list-style-type: none"> Homework Quizzes Tests
OPERATIONS AND PROPERTIES	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"> Amsco Math Ch. 1 and 2 	October	<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 Ch. 2 	October	<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 Ch.2 	October	<ul style="list-style-type: none"> Homework Quizzes Tests
	Order of Operations	<ul style="list-style-type: none"> Does order matter in math? 	<ul style="list-style-type: none"> Follow PEMDAS 	<ul style="list-style-type: none"> Amsco Math Ch.2 	November	<ul style="list-style-type: none">
	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"> Amsco Math Ch. 2 	November	<ul style="list-style-type: none"> Homework Quizzes Tests
	Expressing (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"> Amsco Math Ch. 2 	November	<ul style="list-style-type: none"> Homework Quizzes Tests
RADICALS	Square Roots	<ul style="list-style-type: none"> What operations are similar between radicals and variables? 	<ul style="list-style-type: none"> Simplify radicals Find square roots in simplest form Add, subtract, multiply, and divide radicals 	<ul style="list-style-type: none"> Amsco Math Ch. 2 	December	<ul style="list-style-type: none">
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 Ch. 3 	December	<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 Ch. 3 	December	<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 Ch. 3 	January	<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 Ch. 3 	January	<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 Ch. 3 	February	<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 Ch. 3 	February	<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 Ch. 3, 5 	March	<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 Ch. 3, 5 	March	<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 Ch. 3, 5 	March	<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 Ch. 3, 5 	March	<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 Ch. 3, 5 	April	<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 Ch. 3, 5 	April	<ul style="list-style-type: none"> • Homework • Quizzes • Tests

	Solving Sets of Linear Equations	<ul style="list-style-type: none"> Is graphing an algebraic means for solving problems? 	<ul style="list-style-type: none"> Solve systems of equations using addition / subtraction / graphing Understand trial and error is a valid process to solve equations 	<ul style="list-style-type: none"> Amsco Math Ch. 3, 5 	April	<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 Ch. 3 	May	<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 Ch. 3, 5 	May	<ul style="list-style-type: none"> Homework Quizzes Tests
	Graphing	<ul style="list-style-type: none"> How do you graph an inequality? 	<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 Ch. 3,5 	May	<ul style="list-style-type: none"> Homework Quizzes Test
	Solving Sets of Inequalities	<ul style="list-style-type: none"> How do you show sets of 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 Ch. 3, 5 	June	<ul style="list-style-type: none"> Homework Quizzes Tests

End of 9th Grade

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 Ch. 4 		<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 Ch. 4 	September	<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 Ch. 4 	October	<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 Ch. 4 	October	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Quadratic and Linear System of Equations	<ul style="list-style-type: none"> • How many possible solutions are there? 	<ul style="list-style-type: none"> • Solve Algebraically • Solve Graphically 	<ul style="list-style-type: none"> • Amsco Math Ch. 4 	October	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
ALGEBRAIC FRACTION	Lowest Terms	<ul style="list-style-type: none"> • How do we simplify rational expressions? 	<ul style="list-style-type: none"> • Reduce algebraic fractions to lowest terms 	<ul style="list-style-type: none"> • Amsco Math Ch. 4 	November	<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 algebraic fractions • Add and subtract algebraic fractions with and without common denominator 	<ul style="list-style-type: none"> • Amsco Math Ch. 4 	November	<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 fraction) • Factor, Clear, Combine 	<ul style="list-style-type: none"> • Amsco Math Ch. 4 	November	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
EUCLIDEAN GEOMETRY	Polygons and Circles	<ul style="list-style-type: none"> • Is a circle a polygon? 	<ul style="list-style-type: none"> • Identify types of polygons • Identify characteristics of polygons • Identify characteristics of circles 	<ul style="list-style-type: none"> • Amsco Math Ch. 6 	December	<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 • Rounding and error measurements 	<ul style="list-style-type: none"> • Amsco Math Ch. 8 	December	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Right Triangle	<ul style="list-style-type: none"> • Why is trigonometry considered a ration? 	<ul style="list-style-type: none"> • Identify an angle with opposite side • Utilize sign, cosine, tangent ratios • Use calculator to enter and retrieve trig functions • Apply Pythagorean Theorem 	<ul style="list-style-type: none"> • Amsco Math Ch. 8 	January	<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 Ch. 2 	January	<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 rations 	<ul style="list-style-type: none"> • Amsco Math Ch. 2 	February	<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 Ch. 2 	February	<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 Ch. 6 	March	<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 Ch. 11 	March	<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 Ch. 11 	March	<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 Ch. 10 	April	<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 Ch. 10 	April	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Central Tendency	<ul style="list-style-type: none"> • How can you use data to support your argument? 	<ul style="list-style-type: none"> • Identify and explain central tendency • Calculate mean, median, mode, and range 	<ul style="list-style-type: none"> • Amsco Math Ch. 10 	April	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Statistical Plots	<ul style="list-style-type: none"> • How can we predict future data? 	<ul style="list-style-type: none"> • Compare quartiles and percentiles • Develop box and whisker plots • Develop scatter plots and determine line of best fit 	<ul style="list-style-type: none"> • Amsco Math Ch. 10 	May	<ul style="list-style-type: none"> • Homework • Quizzes • Tests
	Interpreting Data	<ul style="list-style-type: none"> • What can we obtain from data charts? 	<ul style="list-style-type: none"> • Determine which measure of central tendency is appropriate for use • Evaluate published reports and graphs • Identify independent and dependent variables 	<ul style="list-style-type: none"> • Amsco Math Ch. 10 	May	<ul style="list-style-type: none"> • Homework • Quizzes • Tests

NEW YORK STATE ALGEBRA I REGENTS EXAM
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