#### **Curriculum Map: Integrated Mathematics**

Course: INTEGRATED MATH Sub-topic: General

Grade(s): 11 to 12

Course Description: Integrated Math is designed to develop skills needed to be successful on the SAT mathematics exam. Topics covered will build strengths in geometry, while also developing skills in radicals, complex numbers, exponents, right triangle trigonometry, linear, quadratic, and polynomial functions. Business-related mathematics will also be explored to include topics such as sales, discounts, interest, budgeting, and investments. Students should be better prepared for future educational or employment pursuits. Graphing calculators will be used extensively, and therefore it is strongly recommended that each student have a TI-84 calculator for the course.

#### **Unit: Unit 1 - Operations and Factoring Polynomials**

## STANDARDS: STANDARDS

STATE: Pennsylvania	SAS Keystone Anchors (2010-2014)	
A2.1.2.2 (Advanced)	Simplify expressions involving polynomials.	
A2.1.2.2.1	Factor algebraic expressions, including difference of squares	
(Advanced)	and trinomials. Note: Trinomials limited to the form $ax^2+bx+c$ where a is not equal to 0.	

## Topic: 1.1 - Simplify Polynomials by Multiplying

Minutes for Topic: 258

# Topic: 1.2 - Find GCF/LCM of Polynomials

Minutes for Topic: 172

Topic: 1.3 - Factoring Polynomials (All Methods) Minutes for Topic: 516

#### Topic: 1.4 - Unit 1 Review and Test

Minutes for Topic: 172

#### Unit: Unit 2 - Solving Quadratic Equations and Radicals

#### STANDARDS: STANDARDS

STATE: Pennsylvania	<u>I SAS Keystone Anchors (2010-2014)</u>	
A2.1.2.1 (Advanced)	Use exponents, roots, and/or absolute values to represent	
	equivalent forms or to solve problems.	
A2.1.2.1.2	Simplify/evaluate expressions involving positive and negative	
(Advanced)	exponents and/or roots (may contain all types of real	
	numbers—exponents should not exceed power of 10).	
A2.1.3.1.2	Solve equations involving rational and/or radical expressions	
(Advanced)	(e.g., $10/(x + 3) + 12/(x - 2) = 1$ or $\sqrt{x^2 + 21x} = 14$ ).	
A2.1.3.2.2	Use algebraic processes to solve a formula for a given variable	
(Advanced)	(e.g., solve $d = rt$ for r).	

#### Topic: 2.1 - Solve Quadratic Equations by Factoring Minutes for Topic: 86

**Topic: 2.2 - Simplify Radicals and Extract Roots** 

Minutes for Topic: 430

- **Topic: 2.3 Solve by Completing the Square, Quadratic Formula, and Square Roots** Minutes for Topic: 258
- **Topic: 2.4 Solving Applications with Quadratic Formula and Square Roots** Minutes for Topic: 344

#### Topic: 2.5 - Unit 2 Review and Test Minutes for Topic: 172

## Unit: Unit 3 - Quadratics Functions STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

A2.1.2.1 (Advanced)	Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems.	
A2.1.2.1.1 (Advanced)	Use exponential expressions to represent rational numbers.	
A2.1.3.2.2 (Advanced)	Use algebraic processes to solve a formula for a given variable (e.g., solve $d = rt$ for r).	

#### **Topic: 3.1 - Vertex and Standard Forms (Graphically and Algebraically)** Minutes for Topic: 516

## Topic: 3.2 - Applications of Quadratics

Minutes for Topic: 258

#### Topic: 3.3 - Unit 3 Test and Review

Minutes for Topic: 172

## Unit: Unit 4 - Right Triangles

## STANDARDS: STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)		
M06.C-G.1.1.4	Given coordinates for the vertices of a polygon in the plane,	
(Auvanceu)	polygon (limited to triangles and special quadrilaterals). Formulas will be provided.	
M07.C-G.1.1.1	Solve problems involving scale drawings of geometric figures,	
(Advanced)	including finding length and area.	
	Alternate Eligible Content Code M07CG1.1.1a: Solve a 1-step real-world problem related to scaling	
M07.C-G.1.1.2 (Advanced)	Identify or describe the properties of all types of triangles based on angle and side measures	
(navancea)	based on angle and side measures.	
	Alternate Eligible Content Code M07CG1.1.2a: Identify the properties of a right triangle	
M07.C-G.1.1.3 (Advanced)	Use and apply the triangle inequality theorem.	
STATE: Pennsylvania SAS Academic Standards (2009-2013)		
2.10.A1.A (Advanced)	Solve problems involving from the Pythagorean Theorem.	

## Topic: 4.1 - Classifying Triangles

Minutes for Topic: 86

## Topic: 4.2 - Pythagorean Theorem and Its Converse

Minutes for Topic: 344

#### **Topic: 4.3 - Special Right Triangle Applications**

Minutes for Topic: 430

## Topic: 4.4 - Unit 4 Review and Test

Minutes for Topic: 172

## Unit: Unit 5 - Right Triangle Trigonometry

## STANDARDS: STANDARDS

a SAS Academic Standards (2009-2013)	
Identify and compare parts of right triangles, including right angles, acute angles, hypotenuses, and legs.	
Compute measures of sides and angles using proportions, the Pythagorean Theorem, and right triangle relationships.	
Identify, create, and solve practical problems involving right	
triangles using the trigonometric functions and the	
Pythagorean Theorem.	
Solve problems involving from the Pythagorean Theorem.	
	<ul> <li><u>a SAS Academic Standards (2009-2013)</u></li> <li>Identify and compare parts of right triangles, including right angles, acute angles, hypotenuses, and legs.</li> <li>Compute measures of sides and angles using proportions, the Pythagorean Theorem, and right triangle relationships.</li> <li>Identify, create, and solve practical problems involving right triangles using the trigonometric functions and the Pythagorean Theorem.</li> <li>Solve problems involving from the Pythagorean Theorem.</li> </ul>

#### **Topic: 5.2 - Inverse Trig Functions** Minutes for Topic: 344

Topic: 5.3 - Trigonometric Applications Minutes for Topic: 258

## Topic: 5.4 - Unit 5 Review and Test

Minutes for Topic: 172

#### **Unit: Unit 6 - Exponent Properties**

## STANDARDS: STANDARDS

<u>STATE: Pennsylvania</u>	SAS Keystone Anchors (2010-2014)	
A2.1.2.1 (Advanced)	Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems.	
A2.1.2.1.2 (Advanced)	Simplify/evaluate expressions involving positive and negative exponents and/or roots (may contain all types of real numbers—exponents should not exceed power of 10).	
A2.1.2.1.3 (Advanced)	Simplify/evaluate expressions involving multiplying with exponents (e.g., $x6 \cdot x7 = x13$ ), powers of powers (e.g., $(x6)7 = x42$ ), and powers of products (e.g., $(2x2)3 = 8x6$ ). Note: Limit to rational exponents.	

#### Topic: 6.1 - Applying Laws of Exponents (Properties) Minutes for Topic: 258

**Topic: 6.2 - Rational Exponents** Minutes for Topic: 344

**Topic: 6.3 - Problem-solving, Domain, and Applications** Minutes for Topic: 172

#### Topic: 6.4 - Unit 6 Review and Test

Minutes for Topic: 172

#### **Unit: Unit 7 - Rational Expressions and Proportions**

## STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)		
A2.1.2.1.1 (Advanced)	Use exponential expressions to represent rational numbers.	
A2.1.2.2.2 (Advanced)	Simplify rational algebraic expressions.	
A2.1.3.1.2 (Advanced)	Solve equations involving rational and/or radical expressions (e.g., $10/(x + 3) + 12/(x - 2) = 1$ or $\sqrt{x^2 + 21x} = 14$ ).	

## **Topic: 7.1 - Domain Restrictions**

Minutes for Topic: 172

- **Topic: 7.2 Operations and Simplifying Rational Expressions** Minutes for Topic: 430
- Topic: 7.3 Solving Rational Equations and Proportions Minutes for Topic: 258

## **Topic: 7.4 - Applications**

Minutes for Topic: 86

## Topic: 7.5 - Unit 7 Review and Test

Minutes for Topic: 172