SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

7-12 Mathematics

Philosophy and
Proposed Planned Courses
2019-2020

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Mission Statement for K-12 Mathematics

Empowering students to problem solve, innovate, and communicate mathematically to understand the world around them and seize tomorrow's opportunities.

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Guiding Principles for K-12 Mathematics

Students will be able to...

- be flexible mathematical thinkers by generating and connecting various mathematical representations and concepts.
- look for, recognize, and use structure and patterns.
- apply and transfer mathematical knowledge, skills, and strategies to new and real world situations.
- reason abstractly and quantitatively.
- engage in mathematical discourse and communicate thinking using appropriate mathematical language and vocabulary.
- make sense of problems and persevere in solving them.
- reflect and revise thinking to ensure reasonable solutions.
- model with mathematics.
- attend to precision.
- select and use appropriate tools strategically in order to deepen understanding of concepts.
- construct viable arguments and critique the reasoning of others.
- demonstrate both a conceptual understanding of mathematics and procedural fluency.

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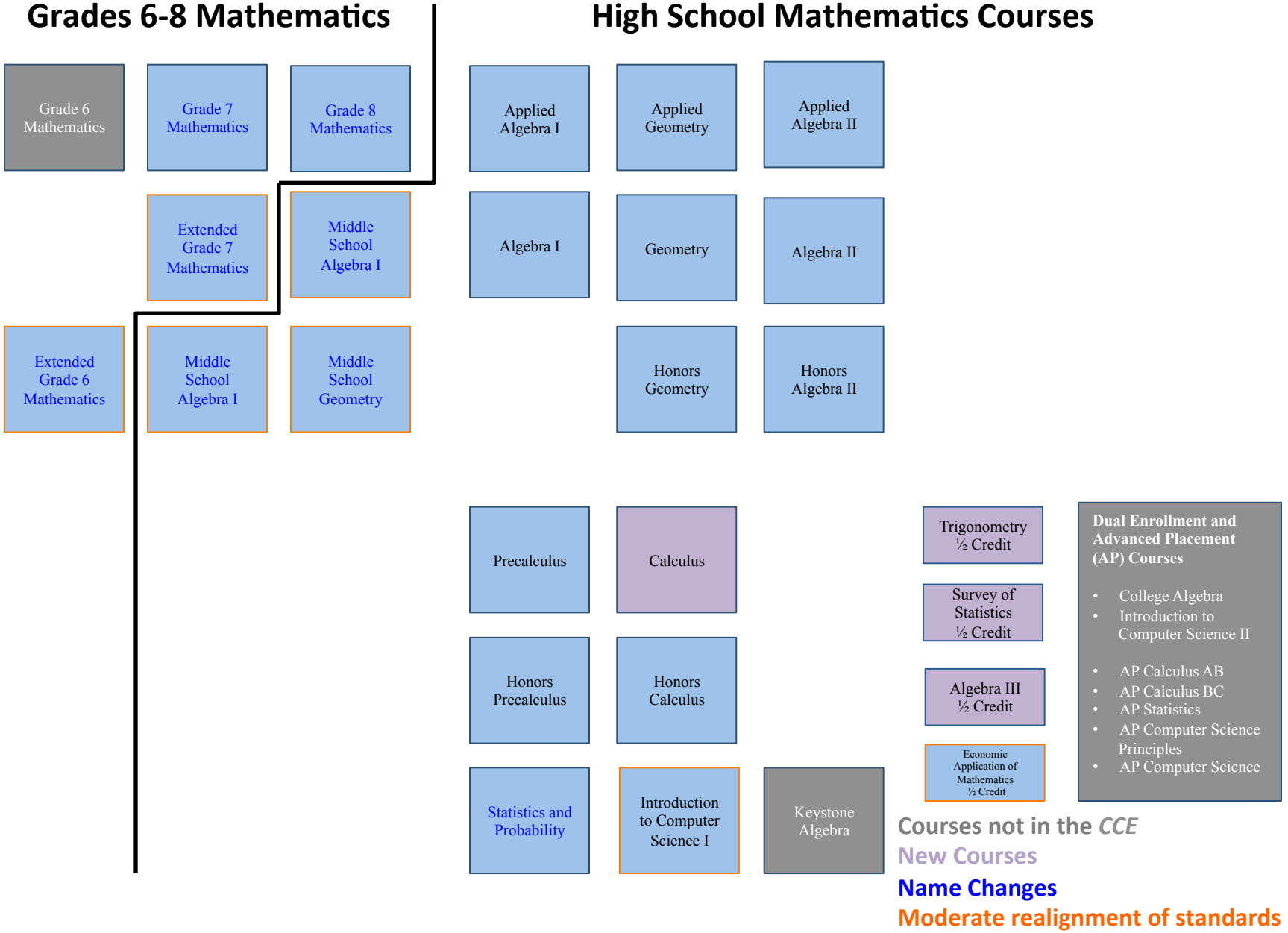
Best Practices for K-12 Mathematics

Teachers will...

- promote the joy, wonder, and beauty of mathematics.
- develop a learning environment that promotes productive struggle, risk taking, self-efficacy, and resilience.
- use and promote the use of a variety of mathematical representations (i.e. concrete, representational, abstract, verbal, and contextual).
- use goals to engage students in discussion about what they are learning and why they are learning it.
- use focused and leveled questioning to engage students in higher order thinking.
- provide opportunities for students to engage with authentic problem solving and challenging tasks.
- provide opportunities for students to acquire conceptual and procedural knowledge.
- provide opportunities for students to construct knowledge through mathematical discourse .
- provide opportunities for students to make sense of problems, analyze their thinking, and revise their work.
- provide opportunities for students to make connections with prior knowledge and build upon current understanding.
- help students develop metacognitive awareness.
- provide students with mathematical tools (including manipulatives), model their use, and encourage students to select appropriate tools strategically.
- provide opportunities for students to develop number sense.
- reinforce the use of precise mathematical language and vocabulary.
- help students embrace and learn from their mistakes.
- provide differentiated classroom instruction driven by assessment to meet the needs of all learners.

Overview of Proposed Courses



SOUTHERN LEHIGH SCHOOL DISTRICT
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7-12 Mathematics
2-Year Implementation Plan

	Year 1 2019-2020	Year 2 2020-2021
Intermediate School	**Implement:** • Extended Grade 6 Mathematics*	
Middle School	**Implement:** • Grade 7 Mathematics • Grade 8 Mathematics • Extended Grade 7 Mathematics* • Middle School Algebra I* • Middle School Geometry **Continue:** • 8th Grade Algebra IB **Phase out:** • 7th Grade Algebra IA	**Phase out:** • 8th Grade Algebra IB
High School	**Implement:** • Applied Algebra I • Algebra I • Applied Geometry • Geometry • Honors Geometry • Applied Algebra II • Algebra II • Honors Algebra II • Precalculus • Honors Precalculus • Statistics and Probability • Calculus • Honors Calculus • Introduction to Computer Science I **Continue:** • Finite Math	**Implement:** • Algebra III • Trigonometry • Economic Applications of Mathematics • Survey of Statistics **Phase out:** • Finite Math

* Upon Board approval, prerequisites that include placement recommendations will be phased in as cohorts of students progress through grade levels.

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Grade 7 Mathematics

Standards:
This course is aligned to standards within the follow Domains of the PA Core Standards:

7.RPA	Ratios and Proportional Relationships
7.NS	The Number System
7.EE	Expressions and Equations
7.G	Geometry
7.SP	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

GRADE 7 MATHEMATICS focuses on five mathematical domains: (1) Ratios and Proportional Relationships, (2) The Number System, (3) Expressions and Equations, (4) Geometry, and (5) Statistics and Probability. Students will extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. They will develop an understanding of operations with rational numbers while working with expressions and linear equations. Students will solve problems involving scale drawings and informal geometric constructions, including working with two- and three-dimensional shape to solve problems involving area, surface area, and volume. Additionally, students will draw inferences about populations based on samples.

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Grade 7 Mathematics.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
Approximately 46 minutes per day for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Universal Screener
- Progress Monitoring
- Diagnostic Assessments
- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 7*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 7*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter
- Rich Math Tasks
- Skills Review Handbook

Technology:
District approved supplemental technology

Other Resources:
Manipulatives
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Grade 8 Mathematics

Standards:
This course is aligned to standards within the follow Domains of the PA Core Standards:

8.NS	The Number System
8.EE	Expressions and Equations
8.F	Functions
8.G	Geometry
8.SP	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

GRADE 8 MATHEMATICS focuses on five mathematical domains: (1) The Number System, (2) Expressions and Equations, (3) Functions, (4) Geometry, and (5) Statistics and Probability. Students will focus on formulating and reasoning about expressions and equations. This will include modeling an association in bivariate data with a linear equation, and solving linear equations, as well as systems of linear equations. Students will build an understanding of a function and work with using functions to describe quantitative relationships. Additionally, two- and three dimensional space and figures using distance, angle, similarity, and congruence will be explored. Students will develop an understanding of and ability to apply the Pythagorean Theorem.

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Grade 8 Mathematics.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
Approximately 46 minutes per day for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Universal Screener
- Progress Monitoring
- Diagnostic Assessments
- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 8*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 8*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter
- Rich Math Tasks
- Skills Review Handbook

Technology:
District approved supplemental technology

Other Resources:
Manipulatives
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
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Planned Course for Mathematics

Course: Extended Grade 6 Mathematics

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

6.RPA	Ratios & Proportional Relationships
6.NS	The Number System
6.EE	Expressions & Equations
6.G	Geometry
6.SPA	Statistics & Probability

7.RPA	Ratios and Proportional Relationships
7.NS	The Number System
7.EE	Expressions and Equations
7.G	Geometry
7.SP	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

EXTENDED GRADE 6 MATHEMATICS is an accelerated course that addresses mathematical content from Grade 6 and Grade 7. Instruction will focus on five critical areas of the Grade 6 and 7 content. (1) Ratio and Proportional Relationships: Students will connect ratio and rate to whole number multiplication and division and use these concepts to solve problems. They will extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. (2) Numbers and Operations: Students will complete an understanding of division of fractions. They will also extend the idea of numbers to the system of rational numbers, which includes negative numbers. (3) Expressions and Equations: Students will learn to write expressions and equations that correspond to given situations, as well as use expressions and formulas to solve problems. They will develop an understanding of operations with rational numbers while working with expressions and linear equations. (4) Geometry: Students will solve problems involving scale drawings and informal geometric constructions, including working with two- and three-dimensional shape to solve problems involving area, surface area, and volume. (5) Statistics and Probability: Students will begin to develop their ability to think

statistically, recognize data distribution, and measures of variability. Additionally, students will draw inferences about populations based on data samples.

Prerequisite(s):

- Placement recommendation based on a holistic review of both student achievement and growth data

Measurable objectives to be attained by students:

Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Extended Grade 6 Mathematics.

Instructional Strategies:

Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:

Approximately 90 minutes per day for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Universal Screener
- Progress Monitoring
- Diagnostic Assessments
- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 6 and Grade 7*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 6 and Grade 7*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter
- Rich Math Tasks
- Skills Review Handbook

Technology:

- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
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Planned Course for Mathematics

Course: Extended Grade 7 Mathematics

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

7.RPA	Ratios and Proportional Relationships
7.NS	The Number System
7.EE	Expressions and Equations
7.G	Geometry
7.SP	Statistics and Probability

8.NS	The Number System
8.EE	Expressions and Equations
8.F	Functions
8.G	Geometry
8.SP	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

EXTENDED GRADE 7 MATHEMATICS is an accelerated course that addresses mathematical content from Grade 7 and Grade 8. Instruction will focus on five mathematical domains of Grade 7 and 8 content. (1) Ratios and Proportional Relationships: Students will extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. (2) The Number System: Students will develop an understanding of operations with rational numbers while working with expressions and linear equations. (3) Expressions and Equations: Students will focus on formulating and reasoning with expressions and equations. This will include modeling an association using a linear equation and solving linear equations. Students will build an understanding of a function and work with using functions to describe quantitative relationships. (4) Geometry: Students will solve problems involving scale drawings and informal geometric constructions, including working with two- and three-dimensional shape to solve problems involving area, surface area, and volume. Additionally, two- and three-dimensional space and figures using distance, angle, similarity, and congruence will be explored.

Student will also develop an understanding of and ability to apply the Pythagorean Theorem. (5) Statistics and Probability: Students will draw inferences about populations based on data samples.

Prerequisite(s):

- Placement recommendation based on a holistic review of both student achievement and growth data

Measurable objectives to be attained by students:

Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Extended Grade 7 Mathematics.

Instructional Strategies:

Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:

Approximately 46 minutes per day for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Universal Screener
- Progress Monitoring
- Diagnostic Assessments
- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 7 Advanced*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: Modeling Real Life Common Core Grade 7 Advanced*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter
- Rich Math Tasks

Technology:

- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
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Planned Course for Mathematics

Course: Middle School Algebra I

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

8.EE	Expressions and Equations
8.F	Functions
8.G	Geometry
8.SP	Statistics and Probability

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.B	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

MIDDLE SCHOOL ALGEBRA I is an accelerated course that addresses mathematical content from Grade 8 and High School Algebra I. Instruction focuses on developing students' skills and accuracy in algebraic techniques and their applications. This course is designed to develop understanding of the real number system. It includes a study of number properties, formulating and reasoning about expressions and linear equations and inequalities, as well as systems of equations and inequalities. Students will use functions to describe quantitative relationships and model an association in bivariate data. In addition, students will explore polynomials and work with quadratics. Additionally, two- and three-dimensional space and figures using distance, angle, similarity, and congruence will be explored. Students will develop an understanding of and ability to apply the Pythagorean Theorem. Emphasis is placed on the development of conceptual understanding, logical reasoning, problem solving, and procedural fluency. Concepts are developed through authentic applications. **This is a Keystone course where students are required to take the Keystone Algebra I exam at the end of the course.**

Prerequisite(s):

- Successful completion of Extended Grade 6 Mathematics or Extended Grade 7 Mathematics; OR
- Successful completion of Grade 7 Mathematics and placement recommendation based on a holistic review of both student achievement and growth data

Measurable objectives to be attained by students:

Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Middle School Algebra I.

Instructional Strategies:

Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:

Approximately 46 minutes per day for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Universal Screener
- Progress Monitoring
- Diagnostic Assessments
- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra I*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra I*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
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Center Valley, PA 18034

Planned Course for Mathematics

Course: Middle School Geometry

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:
HS.A Geometry
HS.C Functions

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

MIDDLE SCHOOL GEOMETRY focuses on developing an understanding of the attributes and relationships of geometric objects. This course is designed for students who have achieved high levels in math. It provides an integrated study of congruence, similarity, geometric transformations, geometric measurement and dimension, right triangles, introductory trigonometry, circles, parallelism, and spatial relationships. Both abstract and practical aspects of geometry are addressed. Throughout this course, inductive and deductive reasoning are emphasized in both mathematical and non-mathematical situations. The major principles of logic are emphasized, while developing the method and meaning of mathematical proof. Students will construct conditional statements, conjectures, and written justifications. Both direct and indirect proofs are used to provide an understanding of two- and three-dimensional relationships. **Summer work is required for this course.**

Prerequisite(s):
- Successful completion of Middle School Algebra I

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Geometry.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
Approximately 46 minutes per day for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Universal Screener
- Progress Monitoring
- Diagnostic Assessments
- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- Scientific calculator
- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Applied Algebra I

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.B	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

APPLIED ALGEBRA I focuses on developing students' skills and accuracy in algebraic techniques and their applications. There is an emphasis on the connection between theory, practical, and technical skills necessary to be successful in life. This course includes a study of number properties, equations, inequalities, polynomials, and linear functions. Concepts are developed in a flexible, application-based mode that provides for hands-on understanding of the relationships of algebraic concepts through authentic applications. Emphasis is placed on the development of conceptual understanding, logical reasoning, problem solving, and procedural fluency. **This is a Keystone course where students are required to take the Keystone Algebra I exam at the end of the course**. Throughout the course, students will be enrolled in a mandatory Spartan Period for Keystone Algebra I exam preparation.

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Algebra I.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra I*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra I*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Algebra I

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.B	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

ALGEBRA I focuses on developing students' skills and accuracy in algebraic techniques and their applications. This course is designed to develop understanding of the real number system. It includes a study of number properties, equations, inequalities, polynomials, and linear functions. Emphasis is placed on the development of conceptual understanding, logical reasoning, problem solving, and procedural fluency. Concepts are developed through authentic applications. **This is a Keystone course where students are required to take the Keystone Algebra I exam at the end of the course.** Throughout the course, students will be enrolled in a mandatory Spartan Period for Keystone Algebra I exam preparation.

Prerequisite(s):
- Earn a minimum grade of a C in Grade 8 Mathematics

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Algebra I.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra I*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra I*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Applied Geometry

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.A	Geometry
HS.C	Functions

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

APPLIED GEOMETRY utilizes an investigative approach to develop an understanding of the attributes and relationships of geometric objects. It provides an integrated study of congruence, similarity, geometric transformations, geometric measurement and dimension, right triangles, introductory trigonometry, circles, parallelism, and spatial relationships. Both abstract and practical aspects of geometry are addressed. Throughout this course, inductive and deductive reasoning are emphasized in both mathematical and non-mathematical situations. Students will construct conditional statements and conjectures.

Prerequisite(s):
- Successful completion of an Algebra I course

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Geometry.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- Scientific calculator
- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Geometry

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.A	Geometry
HS.C	Functions

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

GEOMETRY utilizes an investigative approach to develop an understanding of the attributes and relationships of geometric objects. It provides an integrated study of congruence, similarity, geometric transformations, geometric measurement and dimension, right triangles, introductory trigonometry, circles, parallelism, and spatial relationships. Both abstract and practical aspects of geometry are addressed. Throughout this course, inductive and deductive reasoning are emphasized in both mathematical and non-mathematical situations. Students will construct conditional statements, conjectures, and written justifications. Additionally, students will explore an introduction to geometric proofs.

Prerequisite(s):
- Earn a minimum grade of a B in Applied Algebra I, a C in Algebra I, or successful completion of Middle School Algebra I

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Geometry.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- Scientific calculator
- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Honors Geometry

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:
HS.A Geometry
HS.C Functions

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

HONORS GEOMETRY focuses on developing an understanding of the attributes and relationships of geometric objects. This course is designed for students who have achieved high levels in math. It provides an integrated study of congruence, similarity, geometric transformations, geometric measurement and dimension, right triangles, introductory trigonometry, circles, parallelism, and spatial relationships. Both abstract and practical aspects of geometry are addressed. Throughout this course, inductive and deductive reasoning are emphasized in both mathematical and non-mathematical situations. The major principles of logic are emphasized, while developing the method and meaning of mathematical proof. Students will construct conditional statements, conjectures, and written justifications. Both direct and indirect proofs are used to provide an understanding of two- and three-dimensional relationships. **Summer work is required for this course.**

Prerequisite(s):
- Earn a minimum grade of an A- in Algebra I or an A- in Middle School Algebra I

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Geometry.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Geometry*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- Scientific calculator
- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Applied Algebra II

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.B	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

In APPLIED ALGEBRA II students will apply their prior mathematical knowledge to develop a more extensive understanding of algebraic concepts. There is an emphasis on the connection between theory, practical, and technical skills necessary to be successful in life. Topics will focus on the study of the complex number system, properties of linear and non-linear functions and their graphs, equations and inequalities, as well as statistics and probability. Students will be introduced to matrices and determinants to aid in the solution of systems of equations with multiple variables. Concepts are developed in a flexible, application-based mode that provides for hands-on understanding of the relationships of algebraic concepts through authentic applications.

Prerequisite(s):
- Successful completion of a Geometry course

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Algebra II.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra II*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra II*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- Scientific calculator
- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Algebra II

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.B	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

In ALGEBRA II students will apply their prior mathematical knowledge to develop a more extensive understanding of algebraic concepts. Topics will focus on the study of the complex number system, properties of linear and non-linear functions and their graphs, equations and inequalities, as well as statistics and probability. Students will be introduced to matrices and determinants to aid in the solution of systems of equations with multiple variables.

Prerequisite(s):
- Earn a minimum grade of a B in Applied Geometry, a C in Geometry, or successful completion of Middle School Geometry

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Algebra II.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra II*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:
Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra II*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- Scientific calculator
- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Honors Algebra II

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.B	Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

HONORS ALGEBRA II is designed for students who have earned high levels of achievement in mathematics. Students will apply their prior mathematical knowledge to develop a more extensive understanding of algebraic concepts. Topics will focus on an in-depth study of the complex number system, properties of linear and non-linear functions and their graphs, equations and inequalities, as well as statistics and probability. Students will be introduced to matrices and determinants to aid in the solution of systems of equations with multiple variables. Periodic functions and trigonometry will be studied while utilizing the unit circle in degrees and radians. **Summer work is required for this course.**

Prerequisite(s):
- Earn a minimum grade of an A in Geometry, an A- in Honors Geometry, or a B+ in Middle School Geometry; AND
- Earn a minimum grade of an A in Applied Algebra I, an A- in Algebra I, or successful completion of Middle School Algebra I

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Algebra II.
Instructional Strategies:

Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra II*. Big Ideas Learning, LLC, 2019.

- Student Text Printed Version
- Student Text Online Version
- Student Journal

Teacher Resources:

Larson, Ron, and Laurie Boswell. *Big Ideas Math: A Common Core Curriculum Algebra II*. Big Ideas Learning, LLC, 2019.

- Teacher's Guide Printed Version with Online Access
- Assessment Book
- Resources by Chapter

Technology:

- Graphing calculator
- District approved supplemental technology

Other Resources:

- Manipulatives
- Teacher created resources
- District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Precalculus

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.A	Geometry

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

PRECALCULUS is designed to prepare students for the study of calculus. A more complex understanding of prior mathematical knowledge will be applied to algebraic and geometric concepts. Content will include linear, polynomial, rational, exponential, logarithmic, and trigonometric functions, as well as their graphs. The six trigonometric functions will be investigated. Students will deepen their knowledge of systems, matrices and determinants.

Prerequisite(s):
- Earn a minimum grade of an A in Applied Algebra II, a B in Algebra II, or successful completion of Honors Algebra II

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Precalculus.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Blitzer, Robert. *Precalculus, 6th Edition*. Pearson, 2018.

- Student Text Printed Version
- Student Text Online Version

Teacher Resources:
Blitzer, Robert. *Precalculus, 6th Edition*. Pearson, 2018.

- Teacher's Guide Printed Version
- Solutions Manual

Technology:
Scientific calculator
District approved supplemental technology

Other Resources:
Manipulatives
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Honors Precalculus

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.A	Geometry

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

HONORS PRECALCULUS is designed for students who have earned high levels of achievement in mathematics. This course is designed to prepare students for the study of calculus. A more complex understanding of prior mathematical knowledge will be applied to algebraic and geometric concepts. Content will include linear, polynomial, rational, exponential, logarithmic, and trigonometric functions, as well as their graphs. The six trigonometric functions will be investigated. Students will deepen their knowledge of systems, matrices and determinants. Additional topics in analytic geometry, conics and polar coordinates, sequences and series, limits and continuity will be investigated. **Summer work is required for this course.**

Prerequisite(s):
- Earn a minimum grade of an A- in Algebra II or a B+ in Honors Algebra II

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Precalculus.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Blitzer, Robert. *Precalculus, 6th Edition*. Pearson, 2018.

- Student Text Printed Version
- Student Text Online Version

Teacher Resources:
Blitzer, Robert. *Precalculus, 6th Edition*. Pearson, 2018.

- Teacher's Guide Printed Version
- Solutions Manual

Technology:
Scientific and graphing calculator
District approved supplemental technology

Other Resources:
Manipulatives
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Calculus

Standards:
This course is aligned to a selection of Learning Objectives and Essential Knowledge in the following Big Ideas from the 2016 College Board Framework for AP Calculus AB and AP Calculus BC:

1 Limits
2 Derivatives
3 Integrals and Fundamental Theorem of Calculus

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

CALCULUS is designed for students who are interested in an introduction to basic calculus concepts. Content focuses on functions, limits, methods and applications of differentiation. Students who may want to take calculus in college would benefit from taking this course.

Prerequisite(s):
- Successful completion of a Precalculus course

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to a selection of Learning Objectives and Essential Knowledge from the 2016 College Board Framework for AP Calculus AB and AP Calculus BC as outlined in the Scope and Sequence for Calculus.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Bruce H. Edwards. *Calculus of a Single Variable: Early Transcendental Functions*. Cengage, 2019.

- Student Text Printed Version
- Student Text Online Version
- Solutions Manual

Teacher Resources:
Larson, Ron, and Bruce H. Edwards. *Calculus of a Single Variable: Early Transcendental Functions*. Cengage, 2019.

- Teacher's Guide Printed Version with Online Access
- Solutions Manual
- Resource Guide

Technology:
Graphing calculator
District approved supplemental technology

Other Resources:
Manipulatives
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Honors Calculus

Standards:
This course is aligned to a selection of Learning Objectives and Essential Knowledge in the following Big Ideas from the 2016 College Board Framework for AP Calculus AB and AP Calculus BC:

1 Limits
2 Derivatives
3 Integrals and Fundamental Theorem of Calculus

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

HONORS CALCULUS is designed for students who have earned high levels of achievement in mathematics. Content focuses on functions, limits, methods and applications of differentiation and integration. Students who are interested in pursing careers in business, science, mathematics, engineering, or related areas would benefit from taking a calculus course.

Prerequisite(s):
- Earn a minimum grade of a C+ in Precalculus or a C- in Honors Precalculus

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to a selection of Learning Objectives and Essential Knowledge from the 2016 College Board Framework for AP Calculus AB and AP Calculus BC as outlined in the Scope and Sequence for Calculus.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Larson, Ron, and Bruce H. Edwards. *Calculus of a Single Variable: Early Transcendental Functions*. Cengage, 2019.

- Student Text Printed Version
- Student Text Online Version
- Solutions Manual

Teacher Resources:
Larson, Ron, and Bruce H. Edwards. *Calculus of a Single Variable: Early Transcendental Functions*. Cengage, 2019.

- Teacher's Guide Printed Version with Online Access
- Solutions Manual
- Resource Guide

Technology:
Graphing calculator
District approved supplemental technology

Other Resources:
Manipulatives
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Statistics and Probability

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:
HS.B Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

STATISTICS AND PROBABILITY introduces students to foundational concepts and logic of statistical reasoning. It provides students introductory level practical ability to choose, generate, and properly interpret appropriate descriptive and inferential statistical methods. In addition, the course helps students gain an appreciation for the diverse applications of statistics and its relevance to their lives and future fields of study. Fundamental and advanced topics including the counting principle, permutations, combinations and the Central Limit Theorem will also be covered.

Prerequisite(s):
- Earn a minimum grade of an A- in Applied Algebra II, a C in Algebra II, or successfully complete Honors Algebra II

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Statistics and Probability.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Brase, Charles Henry, and Corrinne Pellillo Brase. *Understanding Basic Statistics*. Cengage, 2019.

- Student Text Printed Version
- Student Text Online Version
- Solutions Manual

Teacher Resources:
Brase, Charles Henry, and Corrinne Pellillo Brase. *Understanding Basic Statistics*. Cengage, 2019.

- Teacher's Guide Printed Version with Online Access

Technology:
Graphing calculator
District approved supplemental technology

Other Resources:
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Algebra III

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions
HS.A	Geometry

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

ALGEBRA III is designed to extend student learning in the areas of algebra. Content will include linear, polynomial, rational, exponential, and logarithmic functions, as well as their graphs. Students will deepen their knowledge of systems, matrices and determinants.

Prerequisite(s):
- Successful completion of an Algebra II course

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Algebra III.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one semester

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Blitzer, Robert. *Algebra and Trigonometry*. Pearson, 2018.

- Student Text Printed Version
- Student Text Online Version

Teacher Resources:
Blitzer, Robert. *Algebra and Trigonometry*. Pearson, 2018.

- Teacher's Guide Printed Version

Technology:
Scientific calculator
District approved supplemental technology

Other Resources:
Manipulatives
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Trigonometry

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.C	Functions
HS.A	Geometry

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

TRIGONOMETRY is a study of the theory and application of periodic functions related to angles and lengths of a triangle. Students will expand their knowledge of the basic trigonometric functions and go beyond what they have previously learned in mathematics courses. Students will explore additional trigonometric functions and their connection to each other, both graphically and algebraically. A variety of trigonometric applications will be explored. The use of fundamental trigonometric identities, double and half angle formulas, graphs of circular functions and problems involving oblique triangles will also be covered.

Prerequisite(s):
- Successful completion of an Algebra II course

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Trigonometry.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one semester

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Blitzer, Robert. *Algebra and Trigonometry*. Pearson, 2018.

- Student Text Printed Version
- Student Text Online Version

Teacher Resources:
Blitzer, Robert. *Algebra and Trigonometry*. Pearson, 2018.

- Teacher's Guide Printed Version

Technology:
Graphing calculator
District approved supplemental technology

Other Resources:
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Economic Applications of Mathematics

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:

HS.F	Number and Quantity
HS.D	Algebra
HS.C	Functions

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

ECONOMIC APPLICATIONS OF MATHEMATICS is designed for students who have successfully completed Algebra II. It stresses the applications of mathematical concepts related to economic principles. Throughout the course topics focus on budgets, investments, savings, loans, and mortgages.

Prerequisite(s):
- Successful completion of an Algebra II course

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Economic Applications of Mathematics.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one semester

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Text Resources:
Kapoor, Jack R., et al. *Personal Finance*. McGraw-Hill Education, 2016.

- Student Text Printed Version
- Student Text Online Version

Teacher Resources:
Kapoor, Jack R., et al. *Personal Finance*. McGraw-Hill Education, 2016.

- Teacher Edition Online Access

Technology:
District approved supplemental technology

Other Resources:
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Introduction to Computer Science I

Standards:
This course is aligned to standards within the following Concepts of the national K-12 Computer Science Standards pursuant to the Pennsylvania Department of Education Resolution adopted January 11, 2018:

CS	Computing Systems
DA	Data and Analysis
AP	Algorithms and Programming
IC	Impacts of Computing

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

INTRODUCTION TO COMPUTER SCIENCE I explores computer science concepts commonly used in software development. This course addresses the basic syntax, logic, and operations of a structured programming language. Students will develop algorithms and applications, as well as write, implement, document, and evaluate possible solutions to problems. Students will be responsible for defining problems using mathematical concepts, logic, and problem solving skills. Throughout the course, students will write pseudo code, analyze data, test, debug, and modify programs in order to solve authentic problems.

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Computer Science Teachers Association (CSTA) K-12 Computer Science Standards as outlined in the Scope and Sequence for Introduction to Computer Science I.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Promote productive struggle
- Promote collaborative discourse around computing
- Use precise language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one semester

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources:

Student Resources:
Python for Everybody. www.PY4E.com

Technology:
District approved supplemental technology

Other Resources:
Teacher created resources
District approved supplemental resources

SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Mathematics

Course: Survey of Statistics

Standards:
This course is aligned to standards within the following Domains of the PA Core Standards:
HS.B Statistics and Probability

Course Description:
The K-12 mathematics program within Southern Lehigh School District will provide opportunities for all students to develop the ability to independently apply mathematical knowledge and skills to real-world situations. A robust and coherent curriculum will prepare students to think and reason mathematically while requiring them to demonstrate a deep understanding of mathematics. Students will develop critical thinking, problem solving, innovation, collaboration, and communication skills. A focus will be placed on using mathematics as a key to understanding the world, in order to meet the challenges of a dynamic society.

SURVEY OF STATISTICS introduces students to data collection and interpretation. Students will explore study design, sampling techniques, data analysis, and inference. The course presents statistics in an investigative approach helping students gain an appreciation for the diverse applications of statistics and its relevance to their lives and future fields of study.

Prerequisite(s):
- Successful completion of an Algebra II course

Measurable objectives to be attained by students:
Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Survey of Statistics.

Instructional Strategies:
Below is a list of suggested strategies for high-quality instruction in mathematics:
- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Use Concrete Representational Abstract (CRA) representations
- Promote productive struggle
- Promote mathematical discourse
- Use precise mathematical language

Estimated Instructional Time:
77 minutes per day on an alternating A/B block schedule for one semester

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments

Resources: