Abington Heights School District
Geometry Accelerated Curriculum

In Geometry Accelerated, students develop their numeracy skills through the following areas of study:

1. Congruence, Similarity, and Proofs
2. Coordinate Geometry and Right Triangles
3. Properties of Polygons and Polyhedra
4. Properties of Circles, Spheres, and Cylinders
5. Measurements of Two-Dimensional Shapes and Figures
6. Measurements of Three-Dimensional Shapes and Figures

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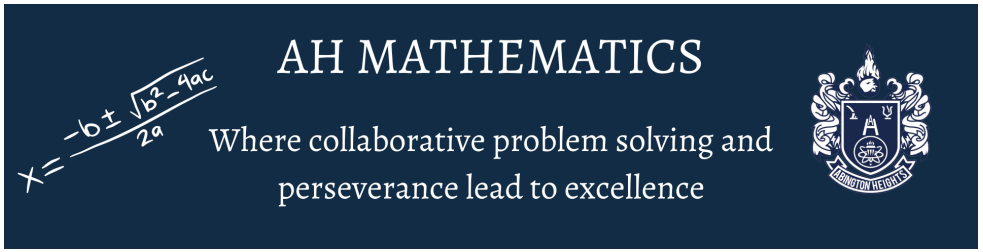

Abington Heights Math Framework

Stakeholders	Actions
Students	★ Engage in mathematical discussions, share their ideas openly, be inquisitive, seek to understand and learn more about mathematical concepts, and try their best daily. ★ Exhibit creativity and curiosity in problem solving individually and collaboratively. ★ Persevere in engaging and challenging daily mathematical practice. ★ Come prepared to learn every day.
Teachers	★ Create a safe and collaborative classroom environment where students feel vested in a shared vision for mathematical excellence. ★ Develop high quality instruction that meets the needs of all learners through differentiation. ★ Use a variety of 21st century methodologies to advance learning. ★ Partner with parents and guardians to support student success. ★ Establish a collaborative community within the building and amongst grade levels to ensure a cohesive level of instruction.
Building Leaders	★ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores ○ Knowledgeable about program and grade level standards ○ Ensure consistent and equal access to high-quality instructional materials and resources, building. ★ Be partners with teachers, students and families: ○ Provide guidance and support to the mathematical community. ○ Understand needs of teachers, students and families. ★ Trust the educators to make professional decisions based on program, student, and district needs.
Central Admin	★ Effectively communicate to the school board and community specific areas of need and how to support teachers and building leaders in a quest for mathematical excellence ★ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores ○ Have a common metric for mathematical excellence. ○ Ensure consistent and equal access to high-quality instructional materials and resources, district. ○ Re-examine best practices/curriculum routinely (6 years). ★ Support a culture of collaboration between the other stakeholder groups to maintain the standard of excellence of the Abington Heights ★ Trust the educators to make professional decisions based on program, student, and district needs.
Parents/ Community	★ Be a strong support system and contribute by building a positive math community for students. ★ Encourage a positive math mindset. ★ Have conversations with their children about school and ask what they are learning about in school. ★ Be open, receptive to the district's ideas about student learning and reach out to teachers/school to learn more about how they can support. ★ Trust the educators to make professional decisions based on program, student, and district needs.
School Board	★ Provide the fiscal resources to support: ○ Highly qualified professionals for mathematics ○ High-quality instructional materials ○ Effective and efficient math interventions for remediation ○ Professional development for math content and instructional practices ★ Trust the educators to make professional decisions based on program, student, and district needs.

Geometry Accelerated Scope and Sequence

Month	Unit	Estimated Number of Weeks
September	Tools of Geometry	4
October	Constructions	1
	Parallel and Perpendicular Lines	3
November	Parallel and Perpendicular Lines	1
	Congruent Triangles	3
December	Congruent Triangles	2
	Proofs	1
January	Proofs	3
February	Relationships in Triangles	3
	Quadrilaterals	1
March	Quadrilaterals	3
	Similarity	1
April	Similarity	2
	Right Triangles and Trigonometry	2
May	Right Triangles and Trigonometry	1
	Circles	2
	Surface Area, Volume, Probability	2
June	Final Exam Review	1

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Tools of Geometry	How do I identify, define, and accurately relay geometric terms? How do I apply algebraic strategies to solve geometric problems involving points, lines, and angles? What are some of the relationships between pairs of angles?	Points, lines, and planes Linear Measure Distance and Midpoint Angle Measure Angle Relationships	Identify and model points, lines, and planes Identify intersecting lines and planes Calculate linear measurement Find union and intersection Find the distance between two points Find the midpoint of a segment Measure and classify angles Identify and use congruent angles and the bisector of an angle Identify and use special pairs of angles	CC.2.3.HS.A.3 CC.2.3.HS.A.11	Google slides Delta Math Desmos activity on midpoint and distance	**Homework** **Formatives of quiz practice** **Quiz:** Naming, segment addition, midpoint & distance formulas. **Quiz:** Angle Measures

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Tools of Geometry (continued)			Identify perpendicular lines Identify and name polygons Find perimeter, circumference, and area of two-dimensional figures			
Constructions	How do I use a straightedge, compass and protractor to draw various lines and angles?	Straightedge, compass, protractor Midpoints Parallel lines Perpendicular lines Angle bisectors Congruent angles	Draw a circle Copy a segment Draw the perpendicular bisector of a segment Draw the line perpendicular to a line through a point on the line and not on the line Draw a line parallel to a given line, through a given point Draw an angle bisector	CC.2.3.HS.A.4	Google slides Mathisfun: constructions videos Hands on activities using straightedge, compass and protractor	Constructions practice worksheets **Quiz**: Constructions **Extra Credit**: Constructions

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Constructions (continued)			Draw congruent angles			
Parallel and Perpendicular Lines	How do I identify and prove angle relationships that occur with parallel lines and a transversal?	Parallel lines and transversals Angles and parallel lines with and without algebra Systems and factoring practice for angles and parallel lines Auxiliary lines (Crook problems) Proving lines parallel with and without algebra	Identify the relationships between two lines or two planes Name angle pairs formed by parallel lines and transversals Use theorems to determine the relationships between specific pairs of angles Use algebra to find angle measurements Recognize angle pairs that occur with parallel lines Prove that two lines are parallel	CC.2.3.HS.A.3 CC.2.3.HS.A.11	Google slides Desmos activity on parallel lines and transversals Desmos activity on the converse of the theorems Delta math	**Homework** **Delta math**: solving systems review **Delta math**: factoring review **Formatives of quiz practice** **Quiz:** Parallel lines and transversal angles **Quiz:** Parallel lines converse and crook problems

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Congruent Triangles	What are the special relationships about the interior and exterior angles of triangles? How do I identify corresponding parts of congruent triangles and prove triangles congruent? What are the special properties of isosceles and equilateral triangles?	Classifying triangles Solving for sides using algebra Angles of triangles Triangle angle-sum corollaries Congruent triangles Proving triangles congruent(SSS, SAS, ASA, AAS, HL) Isosceles and equilateral triangles Congruence transformations (reflection, translation, rotation)	Identify and classify triangles by angle measures Identify and classify triangles by side measures Identify and classify triangles by side measures Apply the triangle angle-sum theorem Apply the exterior angle theorem Name and use corresponding parts of congruent polygons Prove triangles congruent using the definition of congruence Use the SSS, SAS, ASA, AAS Postulates to test for triangle congruence	CC.2.3.HS.A.1 CC.2.3.HS.A.2 CC.2.3.HS.A.3	Google slides Desmos Activity: Investigating Congruent Triangles Delta Math	**Homework** **Formatives of quiz practice** **Quiz:** Angles of triangles **Quiz:** Congruent triangles, SSS, SAS, ASA, AAS, HL **Quiz:** Transformations

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Congruent Triangles (continued)			Use the properties of isosceles and equilateral triangles			
Proofs	How do I use deductive reasoning to reach valid conclusions? How do I write proofs involving algebraic and geometric concepts?	Deductive reasoning Proving algebraic statements true Proving angle and triangle relationships	Identify and use basic postulates, definitions, and theorems in proofs Write 2-column proofs	CC.2.3.HS.A.1 CC.2.3.HS.A.2 CC.2.3.HS.A.3	Google slides Delta math	**Homework** **Formatives of quiz practice** **Quiz**: Algebra and segment proofs **Quiz:** Angle and triangle proofs
Relationships in Triangles	What are the special segments and points related to triangles? What are the relationships between the sides and angles of triangles?	Triangle midsegment Perpendicular bisectors Angle bisectors Radicals: simplifying, adding, subtracting Radicals: multiplying Pythagorean theorem	Identify and use perpendicular bisectors in triangles Identify and use angle bisectors in triangles Identify and use medians in triangles Identify and use altitude in triangles	CC.2.3.HS.A.3	Google slides Delta Math Hands on activity using cardstock to find the centroid of a triangle	Homework **Formatives of quiz practice** **Quiz:** Midsegments, Perpendicular bisectors, Angle bisectors, Radicals, Pythagorean theorem + Bisectors in a triangle

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Relationships in Triangles (continued)		Triangle inequality theorem	Recognize and apply properties of inequalities to the measures of the angles of a triangle Recognize and apply properties of inequalities to the relationships between the angles and sides of a triangle Use the Triangle Inequality Theorem			**Quiz:** Triangle Inequality Theorem, Ordering sides and angles
Quadrilaterals	How do I find and use the sum of the measures of the interior and exterior angles of a polygon? How do I recognize and apply the properties of quadrilaterals? How do quadrilaterals compare to one another?	Interior angles of polygons Exterior angles of polygons Side angles of parallelograms Proving parallelograms in the coordinate plane Rectangles	Find and use the sum of the measures of the interior angles of a polygon Find and use the sum of the measures of the exterior angles of a polygon Recognize and apply properties of the sides and angles of parallelograms	CC.2.3.HS.A.3 CC.2.3.HS.A.11	Google slides Delta math	**Homework** **Formatives of quiz practice** **Quiz:** Angles of polygons and parallelograms **Quiz:** Parallelograms, rectangles, rhombi, squares, trapezoids, and kites

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Quadrilaterals (continued)		Rhombi and squares Trapezoids and kites	Recognize and apply properties of the diagonals of parallelograms Recognize the conditions that ensure a quadrilateral is a parallelogram Prove that a set of points forms a parallelogram in the coordinate plane Recognize and apply the properties of rectangles, rhombi, squares, kites and isosceles trapezoids			
Similarity	How do I identify similar polygons and use proportions to solve problems? How do I use scale models and drawings to solve problems?	Ratio and proportions Similar polygons Similar triangles Parallel lines and proportional parts	Write ratios Write and solve proportions Use proportions to identify similar polygons	CC.2.3.HS.A.1 CC.2.3.HS.A.3 CC.2.3.HS.A.5 CC.2.3.HS.A.6 CC.2.3.HS.A.9	Google slides Delta math	**Homework** **Formatives of quiz practice** **Quiz:** Similar figures, proving triangles similar

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Similarity (continued)		Parts of similar triangles	Solve problems using the properties of similar polygons Identify similar triangles using AA, SSS, SAS Use similar triangles to solve problems Use proportional parts within triangles Use proportional parts with parallel lines			**Quiz:** Proportional parts
Right Triangles and Trigonometry	How do I use the pythagorean theorem? What are the properties of special right triangles? How do I use trigonometry to find missing measures of triangles?	Pythagorean theorem and its converse Pythogorean triples Special right triangles Trigonometry Inverse trigonometric functions	Use the pythagorean theorem and its converse Use the properties of 45°- 45°- 90° and 30°- 60°- 90° triangles Find trigonometric ratios using right triangles	CC.2.2.HS.C.9 CC.2.3.HS.A.3 CC.2.3.HS.A.7	Google slides Delta math Trigonometry Ratios Discovery Activity	**Homework** **Formatives of quiz practice** **Quiz:** Pythagorean triples **Quiz:** Pythagorean theorem and special triangles **Quiz:** Trigonometry

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Right Triangles and Trigonometry (continued)		Angles of elevation and depression	Use trigonometric ratios to find angle measures in right triangles Solve problems involving angles of elevation and depression Use angles of elevation and depression to find the distance between two objects			
Circles	What are the relationships between central angles, arcs, and inscribed angles in a circle? How do I define and use secants and tangents?	Circles and circumference Measuring angles and arcs Arcs and chords Inscribed angles Tangents Secants, tangents, and angle measures Special segments in a circle	Solve problems involving the circumference of a circle Identify central angles, major arcs, minor arcs, and semi circles, and find their measures Find arc lengths	CC.2.3.HS.A.3 CC.2.3.HS.A.8 CC.2.3.HS.A.9	Google slides Delta math Circle Theorems Discovery Activity	**Homework** **Formatives of quiz practice** **Quiz:** Intro to circles, central angles & arcs, arc lengths

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Circles (continued)			Recognize and use the relationships between arcs and chords and diameters Find measures of inscribed angles. Find measures of angles of inscribed polygons Use properties of tangents Solve problems involving circumscribed polygons Find measures of angles formed by lines intersecting on,inside, or outside a circle Find measures of segments that intersect in the interior or exterior of a circle			

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Surface Area, Volume, and Probability	How can I use an object's dimensions to determine its surface area and/or volume? How can I use geometric properties to determine the probability of a point lying in a specific area on a shape?	Area of Plane Figures Area of a Sector Area of Compound Shapes Surface Area of Prisms and Cylinders Volume of Prisms and Cylinders Volumes of Pyramids and Cones Volume and Surface Area of Spheres Venn Diagrams Theoretical and Experimental Probability Geometric Probability	Calculate areas of plane figures (Triangles, Parallelograms, Rectangles, Squares, Trapezoids, and Circles) Calculate surface area and volume of rectangular prisms, cylinders, and spheres Find the volume of pyramids and cones Use Venn Diagrams to determine complements, intersection, and union Calculate the experimental and theoretical probability of an event	CC.2.3.HS.A.12 CC.2.3.HS.A.13 CC.2.3.HS.A.14	Google Slides Delta Math Desmos Activity: Surface Area	**Homework** **Formative of quiz practice** **Quiz:** Surface Area and Volume **Quiz:** Probability

Unit	Essential Questions	Content	Skills	PA Core Standards	Activities	Assessment/ Evidence of Learning
Surface Area, Volume, and Probability (continued)			Find the probability that a randomly chosen point lands in a shaded region			

Portrait of an Abington Heights Mathematician

By the end of Geometry, students will:

Congruence, Similarity, and Proofs	Coordinate Geometry and Right Triangles	Properties of Polygons and Polyhedra	Properties of Circles, Spheres, and Cylinders	Measurements of Two-Dimensional Shapes and Figures	Measurements of Three-Dimensional Shapes and Figures
☐ Identify and use properties of congruent and similar polygons or solids ☐ Identify and use proportional relationships in similar figures ☐ Write, analyze, complete, or identify formal proofs	☐ Use the Pythagorean Theorem to write and/or solve problems involving right triangles ☐ Use trigonometric ratios to write and solve problems involving right triangles ☐ Calculate the distance and midpoint between two points on a number line or on a coordinate plane ☐ Relate slope to perpendicularity and/or parallelism (limited to linear equations) ☐ Use slope, distance, and/or midpoint between two points on a coordinate plane to establish properties of a two-dimensional shape	☐ Identify and use properties of triangles, quadrilaterals, regular polygons, pyramids, and prisms	☐ Identify, determine, and use the radius, diameter, segment, and/or tangent of a circle ☐ Identify, determine, and use the arcs, semicircles, sectors, and/or angles of a circle ☐ Use chords, tangents, and secants to find arc measures or segment measures ☐ Identify and use the properties of a sphere and cylinder	☐ Use properties of angles formed by intersecting lines to find measures of angles ☐ Use properties of angles formed when two parallel lines are cut by a transversal to find measures of angles ☐ Estimate and find area, perimeter, or circumference of regular, irregular , or compound figure ☐ Find the area of a sector of a circle ☐ Determine how a change in a linear dimension of a figure affects its perimeter, circumference, and area ☐ Use area models to find probabilities	☐ Calculate the surface area of prisms, cylinders, cones, pyramids, and spheres ☐ Calculate the volume of prisms, cylinders, cones, pyramids, and spheres ☐ Determine how a change in a linear dimension of a figure affects its surface area or volume