

# Abington Heights School District Technical Mathematics Curriculum



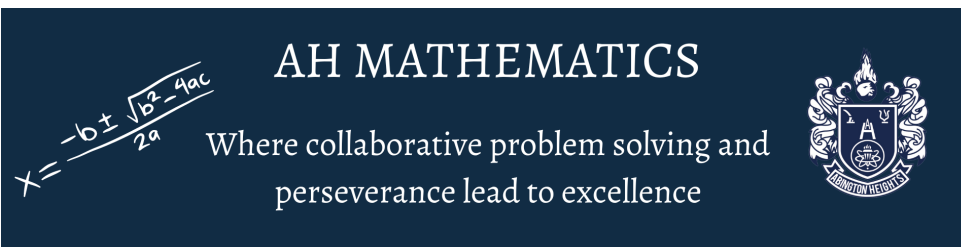
In Technical Mathematics, students develop their numeracy skills through the following areas of study:

1. Numbers, Fractions, and Decimals
2. Measurements and Conversions
3. Using Formulas
4. Working with Quantities
5. Financial Literacy
6. Structural Mathematics
7. Electricity

**Board Approval Date:** June 7, 2023

**Adoption:** 2023 - 2024 SY

**Review Date:**



# Abington Heights Math Framework

Stakeholders	Actions
<b>Students</b>	<ul style="list-style-type: none"> <li>★ Engage in mathematical discussions, share their ideas openly, be inquisitive, seek to understand and learn more about mathematical concepts, and try their best daily.</li> <li>★ Exhibit creativity and curiosity in problem solving individually and collaboratively.</li> <li>★ Persevere in engaging and challenging daily mathematical practice.</li> <li>★ Come prepared to learn every day.</li> </ul>
<b>Teachers</b>	<ul style="list-style-type: none"> <li>★ Create a safe and collaborative classroom environment where students feel vested in a shared vision for mathematical excellence.</li> <li>★ Develop high quality instruction that meets the needs of all learners through differentiation.</li> <li>★ Use a variety of 21st century methodologies to advance learning.</li> <li>★ Partner with parents and guardians to support student success.</li> <li>★ Establish a collaborative community within the building and amongst grade levels to ensure a cohesive level of instruction.</li> </ul>
<b>Building Leaders</b>	<ul style="list-style-type: none"> <li>★ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores <ul style="list-style-type: none"> <li>○ Knowledgeable about program and grade level standards</li> <li>○ Ensure consistent and equal access to high-quality instructional materials and resources, building.</li> </ul> </li> <li>★ Be partners with teachers, students and families: <ul style="list-style-type: none"> <li>○ Provide guidance and support to the mathematical community.</li> <li>○ Understand needs of teachers, students and families.</li> </ul> </li> <li>★ Trust the educators to make professional decisions based on program, student, and district needs.</li> </ul>
<b>Central Admin</b>	<ul style="list-style-type: none"> <li>★ 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</li> <li>★ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores <ul style="list-style-type: none"> <li>○ Have a common metric for mathematical excellence.</li> <li>○ Ensure consistent and equal access to high-quality instructional materials and resources, district.</li> <li>○ Re-examine best practices/curriculum routinely (6 years).</li> </ul> </li> <li>★ Support a culture of collaboration between the other stakeholder groups to maintain the standard of excellence of the Abington Heights</li> <li>★ Trust the educators to make professional decisions based on program, student, and district needs.</li> </ul>
<b>Parents/Community</b>	<ul style="list-style-type: none"> <li>★ Be a strong support system and contribute by building a positive math community for students.</li> <li>★ Encourage a positive math mindset.</li> <li>★ Have conversations with their children about school and ask what they are learning about in school.</li> <li>★ 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.</li> <li>★ Trust the educators to make professional decisions based on program, student, and district needs.</li> </ul>
<b>School Board</b>	<ul style="list-style-type: none"> <li>★ Provide the fiscal resources to support: <ul style="list-style-type: none"> <li>○ Highly qualified professionals for mathematics</li> <li>○ High-quality instructional materials</li> <li>○ Effective and efficient math interventions for remediation</li> <li>○ Professional development for math content and instructional practices</li> </ul> </li> <li>★ Trust the educators to make professional decisions based on program, student, and district needs.</li> </ul>

### Technical Mathematics Scope and Sequence

Month	Unit	Estimated Number of Weeks
September	Numbers, Fractions and Decimals	3
October	Numbers, Fractions and Decimals	2
	Measurements and Conversions	2
November	Measurements and Conversions	1
	Using Formulas	2
December	Using Formulas	2
January	Working with Quantities	3
	Financial Literacy	1
February	Financial Literacy	4
March	Financial Literacy	1
	Structural Mathematics	3
April	Structural Mathematics	3
	Electricity	1
May	Electricity	4
June	Electricity	1

	Essential Questions	Content	Skills	Activities	Assessment/Evidence of Learning
<b>Unit 1: Numbers, Fractions and Decimals</b>	<p>Can students complete basic operations of addition, subtraction, multiplication and division with fractions and decimals?</p> <p>Can students convert mixed numbers to improper fractions?</p> <p>Establish common denominators?</p>	<p>Conversions</p> <p>Simple Calculations</p>	<p>Add, subtract, multiply and divide fractions/decimals</p> <p>Convert mixed numbers into improper fractions</p>	Section Flipcharts	<p>Fractions and Decimals WebWork</p> <p>Class Worksheets</p>
<b>Unit 2: Measurements and Conversions</b>	<p>Can students read a tape measure, ruler, etc.?</p> <p>Can students use dimensional analysis to convert units?</p>	<p>Measurement</p> <p>Units</p> <p>Metric vs Imperial System</p>	<p>Use a ruler, measuring tape, etc. to measure distance</p> <p>Compare and contrast values in different units</p>	<p>Section Flipcharts</p> <p>Conversion Worksheets</p>	<p>Measuring Quiz</p> <p>Conversion Practice</p>

	Essential Questions	Content	Skills	Activities	Assessment/Evidence of Learning
<b>Unit 3: Using Formulas</b>	<p>Can students isolate a given variable in a formula?</p> <p>Can students solve real world problems using formulas?</p>	<p>Variables vs Constants</p> <p>Inverse order of operations</p>	<p>Isolate a variable</p> <p>Apply solving a formula to a real life problem</p>	<p>Section Flipcharts</p> <p>Application Problems Packet</p> <p>"Formulas in everyday life" practice</p>	<p>Isolating a Variable WebWork</p> <p>Real World Formulas Class Practices</p>
<b>Unit 4: Working with Quantities</b>	<p>Can students complete operations using units?</p> <p>Can students solve real world problems using units to guide calculations?</p>	<p>Unit Analysis</p> <p>Unit Conversion</p> <p>Dimensional Analysis</p>	<p>Convert Units</p> <p>Work through multi-step calculations to arrive at the desired unit</p>	<p>WebWork</p>	<p>Dimensional Analysis Packet</p>
<b>Unit 5: Financial Literacy</b>	<p>Can students construct a budget?</p> <p>Can students define interest rate?</p> <p>Do students understand the outcome of borrowing/investing money?</p>	<p>Budgeting</p> <p>Calculating Interest</p> <p>Simple vs Compound Interest</p> <p>Building Credit</p> <p>Borrowing</p>	<p>Calculate interest</p> <p>Organize a budget</p> <p>Work within reasonable constraints</p> <p>Analyze potential borrowing options</p> <p>Compare/Contrast borrowing terms</p>	<p>Interest Flipcharts</p> <p>WebWorks</p> <p>Presentation Budget Project</p>	<p>Monthly Budget Presentation</p> <p>Simple Interest WebWork</p> <p>Compound Interest WebWork</p>

	Essential Questions	Content	Skills	Activities	Assessment/Evidence of Learning
<b>Unit 5: Financial Literacy (continued)</b>	How does length of term affect the overall amount?  How does compounding frequency affect the overall amount?				
<b>Unit 6: Structural Mathematics</b>	Do students understand/visualize how structures are formed?  Can students calculate structural integrity of joints?  Do students know what an anchor, fastener, beam, brace are? Do they know the purpose of each?	Physical Structures  Framing  Cross Bracing  Foundations  Fastening  Structural Integrity	Construct a series of bridges  Reading blueprints	Toothpick and marshmallow builds  Bridge Set Labs  Home design blueprint	Toothpick and Marshmallow Structure Build  Bridge Build Lab Series  Home Constructions Blueprint
<b>Unit 7: Electricity</b>	Can students complete simple calculations with imaginary units?  Can students construct a simple circuit?	Imaginary Numbers  Simple Circuits  Series & Parallel  Resistance	Construct circuits  Solve equations using $V=IR$	Electricity Packets  Virtual Labs on PLTW site  Electric Series Kit Labs in class	Electricity Calculations Packet  Electric Circuits Lab Series

	Essential Questions	Content	Skills	Activities	Assessment/Evidence of Learning
<b>Unit 7: Electricity (continued)</b>	Do students understand each component and role within the circuit?				