# Baldwin Union Free Schools District

# Advanced Algebra Scope and Sequence (Common Core)

# July, 2019

## Curriculum Writers

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# Module 1: Congruence, Proof, and Constructions Review

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Unknown Angles** | ❏ Solve for Unknown Angles—Angles and Lines at a Point<br>❏ Solve for Unknown Angles—Transversals<br>❏ Solve for Unknown Angles—Angles in a Triangle<br>❏ Base Angles of Isosceles Triangles | G-CO.C.9 | Module 1 Lessons 6 - 8<br>Module 1 Lesson 23<br>Identifying Angles Video<br>Parallel Lines Activity<br>Geogebra Angle Pairs<br>khan academy angles practice | 5 |
| **Basic Constructions** | ❏ Construct an Equilateral Triangle<br>❏ Copy and Bisect an Angle<br>❏ Construct a Perpendicular Bisector<br>❏ Inscribed figures with constructions<br>❏ | G-CO.A.1,<br>G-CO.D.12,<br>G-CO.D.13 | www.mathopenref.com<br><br>Module 1 Lessons 1 - 4 | 5 |
| **Transformations/ Rigid Motions** | ❏ Rotations<br>❏ Reflections<br>❏ Rotations, Reflections, and Symmetry<br>❏ Translations<br>❏ Applications of Congruence in Terms of Rigid Motions<br>❏ Correspondence and Transformations | G-CO.A.2,<br>G-CO.A.3,<br>G-CO.A.4,<br>G-CO.A.5,<br>G-CO.B.6,<br>G-CO.B.7,<br>G-CO.D.12 | Module 1 Lessons 12 - 21<br>Geogebra Translations Demo<br>Geogebra Reflection Trends<br>Geogebra Rotation Trends<br>Video of Composition of Rigid Motion | 5 |
| **Congruence** | ❏ Congruence Criteria for Triangles—SAS<br>❏ Congruence Criteria for | G-CO.B.7,<br>G-CO.B.8 | Module 1 Lessons 22, 24 - 27<br>Methods Of Congruence | 3 |

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| | Triangles—ASA and SSS<br>❏ Congruence Criteria for<br>Triangles—AAS and HL | | | |
| **Proving Properties of Geometric Figures** | ❏ Properties of Parallelograms | G-CO.C.9,<br>G-CO.C.10,<br>G-CO.C.11 | Module 1 Lesson 28<br>Module 1 Lesson 29 - 30<br>Discovering Properties of Parallelograms | 3 |

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<tr><td colspan="5" align="center"><b>Review and Test - 3</b><br><b>Total Number of Days - 24</b></td></tr>
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## Module 2: Similarity, Proof, and Trigonometry Review

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Scale Drawings** | ❏ Making Scale Drawings Using the Ratio Method<br>❏ Making Scale Drawings Using the Parallel Method<br>❏ (Side Splitter) | G-SRT.A.1,<br>G-SRT.B.4,<br>G-MG.A.3 | Module 2 Lesson 1 - 5<br>Scale Drawings and Football Activity | 2 |
| **Dilations** | ❏ Dilations as Transformations of the Plane<br>❏ Dilations from Different Centers | G-SRT.A.1,<br>G-SRT.B.4 | Module 2 Lesson 6 - 11<br>Finding Scale Factor How To Video | 2 |
| **Similarity and Dilations** | ❏ Properties of Similarity Transformations<br>❏ Similarity<br>❏ The Angle-Angle (AA) Criterion for Two Triangles to Be Similar<br>❏ The Side-Angle-Side (SAS) and Side-Side-Side (SSS) Criteria for | G-SRT.A.2,<br>G-SRT.A.3,<br>G-SRT.B.5,<br>G-MG.A.1 | Module 2 Lessons 12 - 20<br><br>Similarity Postulates | 2 |

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| | Two Triangles to Be Similar | | | |
| **Applying Similarity to Right Triangles** | ❏ Special Relationships Within Right Triangles—Dividing into Two Similar Sub-Triangles (HLLS and SAAS) | G-SRT.B.4 | Module 2 Lesson 21 - 24 (Review Factoring, Simplifying Radicals) [Reducing Radicals on Calculator](#) [Review Factoring Activity](#) | 2 |
| **Trigonometry** | ❏ Incredibly Useful Ratios <br> ❏ Sine and Cosine of Complementary Angles and Special Angles <br> ❏ Trigonometry and the Pythagorean Theorem <br> ❏ Using Trigonometry to Find Side Lengths of an Acute Triangle <br> ❏ Applying the Laws of Sines <br> ❏ Unknown Angles | G-SRT.C.6, G-SRT.C.7, G-SRT.C.8 | Module 2 Lessons 25 - 34 [Intro to Trig Project (Discovery)](#) [Law of Sines and Cosines How to determine which formula to use](#) | 5 |

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**Review and Test - 2**
**Total Number of Days - 15**

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# Module 4: Connecting Algebra and Geometry Through Coordinates Review

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Perpendicular and Parallel Lines in the Cartesian Plane** | ❏ Criterion for Perpendicularity <br> ❏ Segments That Meet at Right Angles <br> ❏ Slope of a Line <br> ❏ Parallel and Perpendicular Lines <br> ❏ Dilating a Line (From the Origin or a Point on the Line) | G-GPE.B.4, G-GPE.B.5 | Module 4 Lessons 5 - 8 [Slopes of Parallel and Perpendicular Lines: Inquiry Activity](#) | 4 |
| **Partitioning and Extending** | ❏ Distance and Midpoint Formula <br> ❏ Dividing Segments Proportionately <br> ❏ | G-GPE.B.4, G-GPE.B.6 | Module 4 Lessons 12 - 15 [Distance and Midpoint Mini-Project](#) | 3 |

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|---|---|---|---|---|
| **Segments and Parameterization of Lines** | | | | |

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<tr><td colspan="5" align="center"><b>Review and Test - 2</b><br><b>Total Number of Days - 9</b></td></tr>
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## Module 5: Circles With and Without Coordinates Review

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Equations for Circles and Their Tangents** | ❏  Writing the Equation for a Circle<br>❏  Recognizing Equations of Circles | G-GPE.A.1, G-GPE.B.4 | Module 5 Lessons 17 - 19<br>Student-Teacher Interactive (Desmos) | 3 |
| **Central and Inscribed Angles** | ❏  Circles, Chords, Diameters, and Their Relationships<br>❏  Central Angles<br>❏  Inscribed Angle Theorem and Its Applications | G-C.A.2, G-C.A.3 | Module 5 Lessons 1 - 6<br>Geogebra Circle Unit (Various Videos)<br><br>Intro to Circle Vocab | 2 |
| **Arcs and Sectors** | ❏  Arc Length and Areas of Sectors<br>❏ | G-C.A.1, G-C.A.2, G-C.B.5 | Module 5 Lessons 7 - 10<br>Sector Area and Arc Length Foldable | 2 |
| **Secants and Tangents** | ❏  Secant Lines; Secant Lines That Meet Inside a Circle<br>❏  Secant Angle Theorem, Exterior Case<br>❏  Tangent Segments | G-C.A.2, G-C.A.3 | Module 5 Lessons 11 - 16<br><br>Angles of Circles Graphic Organizer | 4 |

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<tr><td colspan="5" align="center"><b>Review and Test - 2</b><br><b>Total Number of Days - 13</b></td></tr>
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## Module 3: Extending to Three Dimensions Review

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Volume** | ❏ General Prisms and Cylinders and Their Cross-Sections<br>❏ General Pyramids and Cones and Their Cross-Sections<br>❏ The Volume of Prisms and Cylinders and Cavalieri's Principle<br>❏ The Volume Formula of a Pyramid and Cone<br>❏ The Volume Formula of a Sphere | G-GMD.A.1, G-GMD.A.3, G-GMD.B.4, G-MG.A.1, G-MG.A.2, G-MG.A.3 | Module 3 Lesson 5 - 13<br>Discover Cross Sections Activity<br><br>Volume and Density of 3D Geometric Shapes (Video)<br><br>Practice with Cavalieri's Principle | 5 |
| **Review and Test - 2**<br>**Total Number of Days - 7** | | | |

# Midterm and Regents Review

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Regents Review** | ❏ All | Module 1 - 5 | Past Regents Exams | 14 |
| **Review and Test -**<br>**Total Number of Days - 14** | | | |

# Algebra 2 Module 1: Topic A

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Polynomials - From Base Ten to Base X** | ❏ Review Operations with Monomials and Polynomials<br>❏ The Multiplication of Polynomials<br>❏ The Division of Polynomials<br>❏ The Remainder Theorem<br>❏ Comparing Methods—Long | A-SSE.A.2, A-APR.C.4 | https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/long-division-of-polynomials/v/polynomial-division | 22 |

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|---|---|---|---|---|
| | Division, Again?<br>❏ Putting It All Together<br>❏ Dividing by x-a and by x+a | | https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/long-division-of-polynomials/v/dividing-polynomials-1<br><br>https://www.kutasoftware.com/freeia2.html<br><br>https://www.emathinstruction.com/wp-content/uploads/2015/08/CCAlgII-U1L5-Multiplying-Polynomials.pdf<br><br>https://www.emathinstruction.com/wp-content/uploads/2015/08/CCAlgII-U10L10-Polynomial-Long-Division.pdf<br><br>http://www.jmap.org/JMAP_RESOURCES_BY_TOPIC.htm#AII | |

**Review and Test - 4**
**Total Number of Days - 26**

## Algebra 2 Module 1: Topic B

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|
| **Factoring - Its Use and Its Obstacles** | ❏ Overcoming Obstacles in Factoring<br>❏  Mastering Factoring<br>❏ GCF | N-Q.A.2,<br>A-SSE.A.2,<br>A-APR.B.2, | http://www.jmap.org/JMAP_RESOURCES_BY_TOPIC.htm#AII | 25 |

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|---|---|---|---|---|
| | ❏ Difference of Perfect Squares<br>❏ Difference of Perfect Cubes<br>❏ Trinomials and Grouping<br>❏ Factoring Completely<br>❏ Factor to Solve<br>❏ Simplifying Radicals<br>❏ Quadratic Formula and Completing the Square (Non Imaginary Solutions) | A-APR.B.3,<br>A-APR.D.6,<br>F-IF.C.7c | https://www.kutasoftware.com/freeia2.html<br><br>https://www.emathinstruction.com/wp-content/uploads/2015/08/CCAlgII-U8L6-The-Quadratic-Formula.pdf<br><br>https://www.emathinstruction.com/common-core-algebra-ii/unit-10-polynomial-and-rational-functions/<br><br>https://www.khanacademy.org/math/algebra2/polynomial-functions/graphs-of-polynomials/a/graphs-of-polynomials<br><br>http://www.sps186.org/downloads/basic/12397/SSAlg2Week4Day4.pdf<br><br>https://www.mgccc.edu/learning_lab/math/alg/synthdiv.pdf | |

**Review and Test - 4**
**Total Number of Days - 29**

# Algebra 2 Module 1: Topic C

| Sub-Topics | Specific Topics | Common Core Standards | Resources | Days |
|---|---|---|---|---|

| Solving and Applying Equations - Polynomial, Rational, and Radical | ❏ Equivalent Rational Expressions<br>❏ Undefined Rational Expressions<br>❏ Multiplying and Dividing Rational Expressions | A-APR.D.6,<br>A-REI.A.1,<br>A-REI.A.2,<br>A-REI.B.4b,<br>A-REI.C.6,<br>A-REI.C.7,<br>G-GPE.A.2 | https://www.emathinstruction.com/common-core-algebra-ii/unit-10-polynomial-and-rational-functions/ | 6 |
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| **Review and Test - 2**<br>**Total Number of Days - 8** | | | | |

**\*This leaves approximately 16 days to review for the final and take the final over two class periods. \***