

Mathematics 9
Yearly Plan
2016–2017

Mathematics 9 Yearly Plan 2016–2017

Mathematics 9 Yearly Plan 2016–2017

The following is the yearly plan for Mathematics 9 and is divided into nine units. Use the Mathematics 9 Curriculum Document and Yearly Plan to develop your Mathematics 9 program.

Page numbers referenced in this Document refer to the Student Text (print) and ProGuide (print) of the Math Makes Sense 9 program.

Ongoing mental mathematics is an expectation of Mathematics 9. Students need to develop both mental mathematics and estimation strategies through contexts. These strategies need to be applied and reinforced in ongoing learning opportunities.

Ongoing assessment is essential to effective teaching and learning. Student involvement in this process promotes learning. Timely and effective teacher feedback and student self-assessment allow students to reflect on and articulate their understanding of mathematical concepts and ideas.

This plan has allotted time for various assessment opportunities to take place in each unit throughout the year.

| The Year at a Glance | | |
|--|------------|------------------------|
| Unit # and Title | Time Frame | Unit Outcomes |
| Unit 1 Powers and Exponent Laws | (21 hours) | N01, N04, N02 |
| Unit 2 Rational Numbers | (21 hours) | N03, N04 |
| Unit 3 Square Roots and Surface Area | (19 hours) | N05, N06, G01 |
| Unit 4 Linear Relations | (21 hours) | PR01, PR02 |
| Unit 5 Polynomials | (22 hours) | PR05, PR06, PR07 |
| Unit 6 Linear Equations and Inequalities | (23 hours) | PR03, PR04 |
| Unit 7 Similarity and Transformations | (24 hours) | G03, G02, GO4 |
| Unit 8 Circle Geometry | (16 hours) | M01 |
| Unit 9 Probability and Statistics | (18 hours) | SP04, SP01, SP02, SP03 |

Mathematics 9 Yearly Plan 2016–2017

Unit 1 Powers and Exponent Laws (21 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|---------------------|---|---------------------------|--|--|
| | Introductory Lesson | 2 hours | Course Outline/Formalizing Norms etc. Textbook walk through | Develop classroom norms <ul style="list-style-type: none">Set tone for problem solving Develop various strategies/approaches for critical thinking and problem solving |
| September - October | Unit 1: Powers and Exponent Laws Number: Students will be expected to develop number sense N01 Students will be expected to demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents. [C, CN, PS, R] N02 Students will be expected to demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents. [C, CN, PS, R, T] N04 Students will be expected to explain and apply the order of operations, including exponents, with and without technology. [PS, T] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document N01, N02, N04 ProGuide: Launch |
| | | 2 hours | What is a Power? | Curriculum Document: N01 ProGuide/Student Text: section 2.1 |
| | | 2 hours | Powers of Ten and the Zero Exponent | Curriculum Document: N01 ProGuide/Student Text: section 2.2 |
| | | 3 hours | Order of Operations with Powers | Curriculum Document: N04 ProGuide/Student Text: section 2.3 Student Text: Start Where You Are: What Strategy Could I try? pp.70 Student Text: Game Operation Target Practice p.72 |
| | | 1 hour | Review and Assessment | Curriculum Document Mid-Unit Review: Student Text: p. 69 |
| | | 3 hours | Exponent Laws 1 | Curriculum Document: N02 ProGuide/Student Text: section 2.4 |
| | | 3 hours | Exponent Laws 2 | Curriculum Document: N02 Student Text: section 2.5 |
| | | 4hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review p. 86–89 Student Text: Practice Test p.90 ProGuide: Unit Test CD: Extra Practice & Test Generator Student Text: Unit Problem: How Thick is a Pile of Paper p. 91 |
| | | | | |

Mathematics 9 Yearly Plan 2016–2017

Unit 2 Rational Numbers (21 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|--------------------|--|---------------------------|---|--|
| October – November | Unit 2: Rational Numbers Number: Students will be expected to develop number sense N03 Students will be expected to demonstrate an understanding of rational numbers by comparing and ordering rational numbers and solving problems that involve arithmetic operations on rational numbers. [C, CN, PS, R, T, V] N04 Students will be expected to explain and apply the order of operations, including exponents, with and without technology. [PS, T] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: N03, N04 ProGuide: Launch Student Text: Start Where You Are: How Can I Learn From Others? pp. 104–105 |
| | | 2 hours | What Is a Rational Number? | Curriculum Document: N03 ProGuide/Student Text: section 3.1 |
| | | 2 hours | Adding Rational Numbers | Curriculum Document: N03 ProGuide/Student Text: section 3.2 |
| | | 2 hours | Subtracting Rational Numbers | Curriculum Document: N03 ProGuide/Student Text: section 3.3 |
| | | 1 hour | Review and Assessment | Curriculum Document Student Text: Game: Closest to Zero p. 122 Mid-Unit Review: Student Text: p. 121 |
| | | 2 hour | Multiplying Rational Numbers | Curriculum Document: N03 ProGuide/Student Text: section 3.4 |
| | | 2 hours | Dividing Rational Numbers | Curriculum Document: N03 ProGuide/Student Text: section 3.5 |
| | | 3 hours | Order of Operations with Rational Numbers | Curriculum Document: N04 ProGuide/Student Text: section 3.6 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review p.1443–145 Student Text: Practice Test p.146 ProGuide: Unit Test CD: Extra Practice & Test Generator ProGuide/Student Text: Unit Problem: Investigating Temperature Data – Student Text: p. 147; ProGuide: p. 57 |
| | | 2 hours | Cumulative Review | |

Mathematics 9 Yearly Plan 2016–2017

Unit 3: Square Roots and Surface Area (19 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|---------------------|--|---------------------------|---|---|
| November - December | Unit 3: Square Roots and Surface Area Number: Students will be expected to develop number sense Geometry: 3-D Objects and 2-D Shapes: Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them. N05 Students will be expected to determine the exact square root of positive rational numbers. [C, CN, PS, R, T] N06 Students will be expected to determine an approximate square root of positive rational numbers. [C, CN, PS, R, T] G01 Students will be expected to determine the surface area of composite 3-D objects to solve problems. [C, CN, PS, R, V] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: N05, N06, G01 ProGuide: Launch Student Text: Start Where You Are: How Can I Begin? pp. 22–23 Student Text: Project: Making Squares into Cubes p.2 |
| | | 3 hours | Square Roots of Perfect Squares | Curriculum Document: N05 ProGuide/Student Text: section 1.1 |
| | | 3 hours | Squares Roots of Non-Perfect Squares | Curriculum Document: N06 ProGuide/Student Text: section 1.2 |
| | | 1 hour | Review and Assessment | Curriculum Document Mid-Unit Review: Student Text: p. 21 |
| | | 3 hours | Surface Areas of Objects Made from Right Rectangular Prisms | Curriculum Document: G01 ProGuide/Student Text: section 1.3 |
| | | 4 hours | Surface Areas of Other Composite Objects | ProGuide/Student Text: section1.4 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review p. 44–47 Student Text: Practice Test p.48 Student Text: Unit Test CD: Extra Practice & Test Generator ProGuide/Student Text: Unit Problem: Design a Play Structure – Student Text: p. 49; ProGuide: p. 47 |

Mathematics 9 Yearly Plan 2016–2017

Unit 4: Linear Relations (21 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|------------------|--|---------------------------|---|--|
| December—January | Unit 4: Linear Relations Patterns: Students will be expected to use patterns to describe the world and solve problems. Variables and Equations: Students will be expected to represent algebraic expressions in multiple ways. PR01 Students will be expected to generalize a pattern arising from a problem-solving context using a linear equation and verify by substitution. [C, CN, PS, R, V] PR02 Students will be expected to graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems. [C, CN, PS, R, T, V] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: PR01, PR02 ProGuide: Launch ProGuide DVD: Master 4.28 Student Text: Start Where You Are: How Can I Explain My Thinking? pp. 152–153 |
| | | 3 hours | Writing Equations to Describe Patterns | Curriculum Document: PR01 ProGuide/Student Text: section 4.1 Student Text: Technology: Table of Values and Graphing p. 163 |
| | | 3 hours | Linear Relations | Curriculum Document: PR02 ProGuide/Student Text: section 4.2 Student Text: Game: What's My Point? p. 182 |
| | | 3 hours | Another Form of the Equation for a Linear Relation | Curriculum Document: PR02 ProGuide/Student Text: section 4.3 |
| | | 1 hours | Review and Assessment | Curriculum Document Mid-Unit Review: Student Text: p. 181 |
| | | 3 hours | Matching Equations and Graphs | Curriculum Document: PR02 ProGuide/Student Text: section 4.4 |
| | | 3 hours | Using Graphs to Estimate Values | Curriculum Document: PR02 ProGuide/Student Text: section 4.5 Student Text: Technology: Interpolating and Extrapolating p. 199 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review pp. 200–203 Student Text: Practice Test pg. 204 ProGuide: Unit Test CD: Extra Practice & Test Generator ProGuide/Student Text: Unit Problem: Predicting Music Trends – Student Text: p. 205; ProGuide: p. 57 |

Mathematics 9 Yearly Plan 2016–2017

Unit 5: Polynomials (22 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|------------------|---|---------------------------|---|--|
| January—February | Unit 5: Polynomials Patterns: Students will be expected to use patterns to describe the world and solve problems. Variables and Equations: Students will be expected to represent algebraic expressions in multiple ways. PR05 Students will be expected to demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to two). [C, CN, R, V] PR06 Students will be expected to model, record, and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to two). [C, CN, PS, R, V] PR07 Students will be expected to model, record, and explain the operations of multiplication and division of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to two). [C, CN, R, V] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: PR05, PR06, PR07 ProGuide: Launch |
| | | 2 hours | Modelling Polynomials | Curriculum Document: PR05 ProGuide/Student Text: section 5.1 |
| | | 2 hours | Like Terms and Unlike Terms | Curriculum Document: PR06 ProGuide/Student Text: section 5.2 |
| | | 3 hours | Adding Polynomials | Curriculum Document: PR05, PR06 ProGuide/Student Text: section 5.3 |
| | | 3 hours | Subtracting Polynomials | Curriculum Document: PR05, PR06 ProGuide/Student Text: section 5.4 |
| | | 1 hour | Review and Assessment | Curriculum Document Student Text: Start Where You Are: How Can I Summarize What I have Learned? pp. 238–239 Mid-Unit Review: Student Text: p. 237 Student Text: Game Investigating Polynomials that Generate Prime Numbers p. 240 |
| | | 3 hours | Multiplying and Dividing a Polynomial by a Constant | Curriculum Document: PR07 ProGuide/Student Text: section 5.5 |
| | | 3 hours | Multiplying and Dividing a Polynomial by a Monomial | Curriculum Document: PR07 ProGuide/Student Text: section 5.6 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review pp. 258–261 Student Text: Practice Test p.262 ProGuide: Unit Test CD: Extra Practice & Test Generator Student Text: Unit Problem: Algebra Patterns on a 100-Chart p. 263 |

Mathematics 9 Yearly Plan 2016–2017

Unit 6: Linear Equations and Inequalities (23 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|----------------|---|---------------------------|--|--|
| February—March | Unit 6: Linear Equations and Inequalities Patterns: Students will be expected to use patterns to describe the world and solve problems. Variables and Equations: Students will be expected to represent algebraic expressions in multiple ways. PR03 Students will be expected to model and solve problems, where a, b, c, d, e , and f are rational numbers, using linear equations. [C, CN, PS, V] PR04 Students will be expected to explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context. [C, CN, PS, R, V] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: PR03, PR04 ProGuide: Launch |
| | | 3 hours | Modelling Solving Equations by Using Inverse Operations | Curriculum Document: PR03 ProGuide/Student Text: section 6.1 |
| | | 3 hours | Solving Equations by Using Balance Strategies | Curriculum Document: PR03 ProGuide/Student Text: section 6.2 |
| | | 1 hour | Review and Assessment | Curriculum Document Student Text: Game: Equation Persuasion p.287 Mid-Unit Review: Student Text: p.286 |
| | | 3 hours | Introduction to Linear Inequalities | Curriculum Document: PR04 ProGuide/Student Text: section 6.3 |
| | | 3 hours | Solving Linear Inequalities by Using Addition and Subtraction | Curriculum Document: PR04 ProGuide/Student Text: section 6.4 |
| | | 3 hours | Solving Linear Inequalities by Using Multiplication and Division | Curriculum Document: PR04 ProGuide/Student Text: section 6.5 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review pp. 307–309 Student Text: Practice Test p. 310 ProGuide: Unit Test CD: Extra Practice & Test Generator Student Text: Unit Problem: Raising Money for the Pep Club p. 311 |
| | | 2 hours | Cumulative Review | |

Mathematics 9 Yearly Plan 2016–2017

Unit 7 Similarity and Transformations (24 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|-----------|---|---------------------------|---|---|
| April–May | Unit 7: Similarity and Transformations 3-D Objects and 2-D Shapes: Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them. Transformations: Students will be expected to describe and analyze position and motion of objects and shapes G02 Students will be expected to demonstrate an understanding of similarity of polygons. [C, CN, PS, R, V] G03 Students will be expected to draw and interpret scale diagrams of 2-D shapes. [CN, R, T, V] G04 Students will be expected to demonstrate an understanding of line and rotation symmetry. [C,CN, PS, V] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: G02, G03, G04 ProGuide: Launch Student Text: Start Where You Are: What Should I Recall? pp. 316–317 |
| | | 2 hours | Scale Diagrams and Enlargements | Curriculum Document: G03 ProGuide/Student Text: section 7.1 |
| | | 3 hours | Scale Diagrams and Reductions | Curriculum Document: G03 ProGuide/Student Text: section 7.2 Student Text: Technology: Drawing Scale Diagrams pp. 332–333 |
| | | 2 hours | Similar Polygons | Curriculum Document: G02 ProGuide/Student Text: section 7.3 |
| | | 3 hours | Similar Triangles | Curriculum Document: G02 ProGuide/Student Text: section 7.4 |
| | | 1 hour | Review and Assessment | Curriculum Document Mid-Unit Review: Student Text: p.352 |
| | | 3 hours | Reflections and Line Symmetry | Curriculum Document: G04 Student Text: section 7.5 |
| | | 3 hours | Rotations and Rotational Symmetry | Curriculum Document: G04 Student Text: section 7.6 |
| | | 2 hours | Identifying Types of Symmetry on the Cartesian Plane | Curriculum Document: G04 Student Text: section 7.7 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review pp. 376–379 Student Text: Practice Test p.380 ProGuide: Unit Test CD: Extra Practice & Test Generator Student Text: Unit Problem: Designing a Flag p. 381 |

Mathematics 9 Yearly Plan 2016–2017

Unit 8 Circle Geometry (15 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|----------|--|---------------------------|---|--|
| May | Unit 8: Circle Geometry Measurement: Students will be expected to use direct and indirect measurement to solve problems. M01 Students will be expected to solve problems and justify the solution strategy, using the following circle properties: <ul style="list-style-type: none">– The perpendicular from the centre of a circle to a chord bisects the chord.– The measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc.– The inscribed angles subtended by the same arc are congruent.– A tangent to a circle is perpendicular to the radius at the point of tangency. [C, CN, PS, R, T, V] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: M01 ProGuide: Launch |
| | | 3 hours | Properties of Tangents to a Circle | Curriculum Document: M01 ProGuide/Student Text: section 8.1 |
| | | 4 hours | Properties of Chords in a Circle | Curriculum Document: M01 ProGuide/Student Text: section 8.2 Student Text: Technology: Verifying the Tangent and Chord Properties pp. 400–401 |
| | | 1 hour | Review and Assessment | Curriculum Document Mid-Unit Review: Student Text: p. 403 |
| | | 3 hours | Properties of Angles in a Circle | Curriculum Document: M01 ProGuide/Student Text: section 8.3 Student Text: Technology: Verifying the Angle Properties pp. 413–414 Student Text: Game Seven Counters p.402 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Chapter Review pp. 417–419 Student Text: Practice Test p.420 ProGuide: Unit Test CD: Extra Practice & Test Generator Student Text: Start Where You Are: How Do I Best Learn Math? pp. 415–416 Student Text: Unit Problem: Designing a Flag p. 421 |
| | | | | |

Mathematics 9 Yearly Plan 2016–2017

Unit 9 Statistics and Probability (18 hours)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|----------|---|---------------------------|---|---|
| June | Unit 9 Statistics and Probability Data Analysis: Students will be expected to collect, display, and analyze data to solve problems. Uncertainty: Students will be expected to use experimental or theoretical probabilities to represent and solve problems involving uncertainty. SP01 Students will be expected to describe the effect on the collection of data of bias, use of language, ethics, cost, time and timing, privacy, and cultural sensitivity. [C,CN, R,T] SP02 Students will be expected to select and defend the choice of using either a population or a sample of a population to answer a question. [C,CN, PS, R] SP03 Students will be expected to develop and implement a project plan for the collection, display, and analysis of data by formulating a question for investigation choosing a data collection method that includes social considerations selecting a population or a sample collecting the data displaying the collected data in an appropriate manner drawing conclusions to answer the question [C, PS, R, T, V] | 1 hour | Assessing Prior Knowledge (ongoing throughout the unit) | Curriculum Document: SP01, SP02, SP03, SP04 ProGuide: Launch |
| | | 2 hours | Probability in Society | Curriculum Document: SP04 ProGuide/Student Text: section 9.1 Student Text: Game: Cube Master p.430 |
| | | 2 hours | Potential Problems with Collecting Data | Curriculum Document: SP01 ProGuide/Student Text: section 9.2 |
| | | 2 hours | Using Samples and Populations to Collect Data: | Curriculum Document: SP02 ProGuide/Student Text: section 9.3 |
| | | 1 hour | Review and Assessment | Curriculum Document Student Text: Technology: Using Census at School pp. 442–443 Mid-Unit Review: Student Text: p. 444 |
| | | 2 hours | Selecting a Sample | Curriculum Document: SP02 ProGuide/Student Text: section 9.4 |
| | | 1 hour | Displaying Data | Student Text: Technology: Using Spreadsheets and Graphs to Display Data p. 450–451 |
| | | 1 hour | Designing a Project Plan | Curriculum Document: SP03 ProGuide/Student Text: section 9.5 |
| | | 4 hours | Reinforcement, Consolidation and Assessment | Curriculum Document Student Text: Study Guide and Review pp. 457–459 Student Text: Practice Test p. 460 CD: Extra Practice & Test Generator Student Text: Unit Problem: What Can You Discover about the World around You? p. 461 |
| | | 2 hours | Cumulative Review | |

Mathematics 9 Yearly Plan 2016–2017

Unit 9 Statistics and Probability (continued)

| Timeline | GCO/SCOs | Suggested Time Allocation | Content / Assessment | Curriculum Document/ Supporting Resources |
|----------|--|---------------------------|----------------------|---|
| June | SP04 Students will be expected to demonstrate an understanding of the role of probability in society. [C, CN, R, T] | | | |
| | | | | |
| | | | | |