

# Mathematics A

## Standard

The student will have a thorough understanding of mathematic and algebraic processes and be able to apply these to solve a range of mathematical problems.

## Objectives

- ◆ Manipulate fractions, decimals, and percentages.
- ◆ Define the terms prime number and prime factor.
- ◆ Add, subtract, multiply, and divide signed numbers.
- ◆ Understand the term reciprocal and find the reciprocal of a number.
- ◆ Appreciate that division by zero is undefined and that zero divided by zero is indeterminate.
- ◆ Understand the absolute value of a number.
- ◆ Make conversions of length, area, and volume using unit multipliers.
- ◆ Explain the expressions set and subset.
- ◆ Calculate roots of numbers and simplify roots of large numbers.
- ◆ Recall and apply the product of square roots rule.
- ◆ Simplify, add, and multiply radical expressions.
- ◆ Use exponential notation and recall that zero exponents are equal to one for any real number other than zero.
- ◆ Understand exponential growth and compound interest.
- ◆ Recall and apply the product, quotient, and power rule for exponents.
- ◆ Express numbers in scientific notation.
- ◆ Multiply and divide numbers written in scientific notation.
- ◆ Define the terms regular, equiangular, and equilateral when applied to polygons.
- ◆ Recall that the sum of the interior angles in any triangle is 180.
- ◆ Recall and apply Pythagoras' theorem.
- ◆ Use formulae to determine area and circumference of circles and semi-circles, and calculate diameter or radius from a given area or circumference.
- ◆ Recognize and label a range of geometric solids.
- ◆ Recall formulae and calculate the surface areas and volumes of right solids, spheres, cones, and pyramids.
- ◆ Graph inequalities and domains on a real number line.
- ◆ Graph rectangular co-ordinates using the Cartesian system.
- ◆ Determine slopes and intercepts of linear functions, and recognize non-linear functions.
- ◆ Find the equation of a line parallel to another line, or from a given slope.
- ◆ Recognize shifts and reflections in graphs.
- ◆ Generate algebraic expressions from verbal phrases.
- ◆ Solve word problems containing one or two variables.

- ◆ Solve ratio problems containing two variables.
- ◆ Solve percent, fraction, and decimal word problems.
- ◆ Solve coin and value problems.
- ◆ Find a series of consecutive integers.
- ◆ Solve problems on uniform motion.
- ◆ Explain the terms mean, mode, median and range.
- ◆ Calculate mean, mode, median and range from statistical data.
- ◆ Explain the difference between the terms average and weighted average. Understand and calculate probability with and without replacement.
- ◆ Construct stem and leaf plots, and histograms from supplied data.
- ◆ Construct tree diagrams, and box and whisker plots.
- ◆ Recognize and add like terms.
- ◆ Rearrange algebraic expressions and solve multivariable equations for a designated variable.
- ◆ Evaluate simple algebraic expressions.
- ◆ Simplify products and quotients of rational expressions.
- ◆ Solve rational equations and add rational expressions with unequal denominators.
- ◆ Simplify complex fractions.
- ◆ Solve and multiply radical equations.
- ◆ Use and understand functional notation.
- ◆ Recognize functions and relations, and understand the terms domain and range.
- ◆ Evaluate functions.
- ◆ Explain the terms polynomial and degree of a polynomial.
- ◆ Add, multiply, and divide polynomials.
- ◆ Factor trinomials.
- ◆ Solve simultaneous equations by elimination or substitution.
- ◆ Factorize algebraic expressions and denominators.
- ◆ Solve quadratic equations by factoring, completing the square, and using the quadratic formula.

## Resources

- ◆ Algebra 1: An Incremental Approach, 3rd Edition, Saxon Publishers, (2009) ISBN 978-1-6027-7302-8
- ◆ Test Masters for Algebra 1: An Incremental Approach, 3rd Edition, Saxon Publishers, (2009), ISBN 978-1-6027-7424-1

Additional materials and problems supplied by the teacher to reinforce concepts studied.

## Assessment

Students will use lined mathematic workbooks to be available for inspection at each class.

- ◆ Student Edition Practice Workbook
- ◆ Lesson Practice followed by the solutions to Problem set under study

Each marking period assessment will, normally, be based on the student's performance as recorded in their Mathematics Problems Workbook. The Quarter Assessment Grade will, normally, be calculated using the following weightings:

Projects	Lesson Pre-Reading Test	Problem Sets Answers	Class Test(s)
10%	10%	30%	60%