

Foundations of Mathematics & Pre-Calculus - Grade 10

Foundations of Mathematics 11

Foundations of Mathematics 12

Measurement

- using SI and imperial units, solve problems that involve linear measurement
 - apply proportional reasoning to problems that involve conversions between SI and imperial units of measure
 - solve problems, using SI and imperial units, that involve the surface area and volume of 3-D objects
 - develop and apply the primary trigonometric ratios (sine, cosine and tangent) to solve problems that involve right triangles
- solve problems that involve the application of rates
 - solve problems that involve scale diagrams, using proportional reasoning
 - demonstrate an understanding of the relationships among scale factors, areas, surface areas and volumes of similar 2-D and 3-d objects

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Relations and Functions

- interpret and explain the relationships among data, graphs and situations
- demonstrate and understanding of relations and functions
- demonstrate an understanding of slope
- describe and represent linear relations
- determine the characteristics of the graphs of linear relations
- relate linear relations to their graphs
- determine equations of linear relations
- represent a linear function, using function notation
- solve problems that involve systems of linear equations in two variables, graphically and algebraically

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- model and solve problems that involve systems of linear inequalities in two variables
- demonstrate an understanding of the characteristics of quadratic functions

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- represent data, using polynomial functions (of degree ≤ 3) to solve problems
- represent data, using exponential and logarithmic functions, to solve problems
- represent data, using sinusoidal functions, to solve problems

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Algebra and Number

- demonstrate an understanding of factors of whole numbers
- demonstrate an understanding of irrational numbers
- demonstrate an understanding of powers with integral and rational exponents
- demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials and trinomials) concretely, pictorially and symbolically
- demonstrate an understanding of common factors and trinomial factoring concretely, pictorially and symbolically

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Geometry

- derive proofs that involve the properties of angles and triangles
- solve problems that involve the properties of angles and triangles
- solve problems involving cosine and sine law, including the ambiguous case

Logical Reasoning

- analyze and prove conjectures, using inductive and deductive reasoning, to solve problems
 - analyze puzzles and games that involve spatial reasoning, using problem-solving strategies
- analyze puzzles and games that involve numerical and logical reasoning, using problem-solving strategies
 - solve problems that involve the application of set theory
 - solve problems that involve conditional statements

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Statistics

- demonstrate an understanding of normal distribution
- interpret statistical data

Probability

- interpret and assess the validity of odds and probability statements
- solve problems that involve the probability of mutually exclusive and non-exclusive events
- solve problems that involve the probability of two events
- solve problems that involve the fundamental counting principle
- solve problems that involve permutations
- solve problems that involve combinations

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Financial Mathematics

- solve problems that involve compound interest in financial decision making
- analyze costs and benefits of renting, leasing and buying
- analyze an investment portfolio

**Mathematics Research
Project**

- research and give a presentation on a historical event or an area of interest that involves mathematics
- research and give a presentation on a current event or an area of interest that involves mathematics