

Category 3 Topics

Ratio and Proportions	Ratio, rates and unit rates, solving proportions, similar figures, dilations
Graphs and Functions	The coordinate plane, interpreting graphs, slopes and rate of change, graph of linear functions
Rational Numbers	Four operations in rational numbers with like, unlike denominators, solving first degree equations with rational numbers and expressions
Trigonometry	Sine, cosine, tangent ratios, sine and cosine rules, area of triangles
Circle Geometry	Arc and chord length, sector and segment areas, angles in circles, tangents to a circle
Mental Math and Brain Teasers	Age/level appropriate analytical and critical thinking questions
Exponents and Roots	Integer exponents, properties of exponents, operating with scientific notations, squares and square roots, estimating square roots, the real numbers and identifying irrational numbers, the Pythagorean theorem and its converse, finding distance on the coordinate plane
Measurement and Geometry	Angles, line and angle relationship in parallel and perpendicular lines, exterior angles in polygons, similarity and congruence transformations, combined transformations, perimeter and area, pi, area and circumference of circles, volume and surface area of prisms and cylinders, volume of pyramids, cones and spheres
Multi-step Equations of First Degree	Simplifying algebraic expressions, solving equations including variables on both sides, fractional expressions, distributive property, linear inequalities, systems of equations and inequalities of first degree
Quadratic Equations	Factorization, quadratic equations



$$V(\bar{x}) = V\left(\frac{x_1 + \dots + x_n}{n}\right) = \frac{1}{n} \sum_{i=1}^n V(x_i) = \frac{\sigma^2}{n}$$

$$V(\bar{x}) = \frac{\sigma^2}{n}$$

$$E(\bar{x}) = \mu$$