Geometry Challenge Exam Topics
Jesuit High School

- Points, lines, planes, pairs of angles
- Midpoint, distance and slope
- Inductive and deductive reasoning
- Algebraic and geometric proof
- Angles formed by parallel lines and a transversal
- Proving lines are parallel
- Parallel and perpendicular lines
- Classifying triangles and angles in a triangle
- Triangle congruence: SSS, SAS, ASA, AAS, HL
- CPCTC
- Bisectors of triangles, medians and altitudes of triangles
- Mid-segment Theorem
- Inequalities in triangles
- Pythagorean Theorem
- Special right triangles (45^o-45^o-90^o and 30^o-60^o-90^o)
- Properties and conditions of parallelograms
- Polygons and angles in polygons
- Special parallelograms: rectangle, square, rhombus
- Trapezoids and kites
- Ratio and proportion
- Dilations
- Similar triangles
- Solving right triangles
- Trigonometric ratios
- Sine and cosine rule
- Vectors
- Reflections
- Translations
- Rotations
- Area and perimeter (including circles, regular polygons and composite figures)
- Surface area
- Volume of prisms, cylinders, pyramids, cones and spheres
- Circles – lines that intersect, arcs and chords, inscribed angles, segment relationships
- Sector area and arc length
- Equations of circles
- Permutations and combinations
- Probability
- Independent and dependent events
- Compound events
- System of equations