Indiana Academic Standards for Mathematics – Geometry
Adopted April 2014 – Standards Resource Guide Document

This Teacher Resource Guide has been developed to provide supporting materials to help educators successfully implement the Indiana Academic Standards for Geometry Mathematics – Adopted April 2014. These resources are provided to help you in your work to ensure all students meet the rigorous learning expectations set by the Academic Standards. Use of these resources is optional – teachers should decide which resource will work best in their school for their

This resource document is a living document and will be frequently updated.
Please send any suggested links and report broken links to:
Bill Reed
Secondary Math Specialist - Indiana Department of Education
wreed@doe.in.gov - 317-232-9114

The Indiana Department of Education would like to thank Leah Simon for her contributions to this document.

The examples in this document are for illustrative purposes only, to promote a base of clarity and common understanding. Each example illustrates a standard but please note that examples are not intended to limit interpretation or classroom applications of the standards.

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GOOD WEBSITES FOR MATHEMATICS:
http://nlvm.usu.edu/en/nav/vlibrary.html
http://www.math.hope.edu/swanson/methods/applets.html
http://learnzillion.com
http://illuminations.nctm.org
https://teacher.desmos.com
http://illustrativemathematics.org
http://www.insidemathematics.org
https://www.khanacademy.org/
https://www.teachingchannel.org/
http://map.mathshell.org/materials/index.php
https://www.istemnetwork.org/index.cfm
http://www.azed.gov/azccrs/mathstandards/

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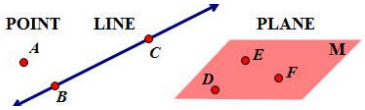
	Indiana Academic Standard for Mathematics Geometry – Adopted April 2014	Highlighted Vocabulary Words from the Standard Defined	Specific Geometry Example for the Standard	Specific Geometry Electronic Resource for the Standard
		Logic and Proofs		
MA.G.LP.1:	G.LP.1: Understand and describe the structure of and relationships within an axiomatic system (undefined terms, definitions, axioms and postulates, methods of reasoning, and theorems). Understand the differences among supporting evidence, counterexamples, and actual proofs.	**Axiomatic system**: a set of statements consisting of postulates and truths that can be derived from the postulates		http://www.math.uiuc.edu/~gfrancis/M302/handouts/postulates.pdf
MA.G.LP.2:	G.LP.2: Know precise definitions for angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, and plane. Use standard geometric notation.	**Angle**: the intersection of 2 non-collinear rays at a common endpoint. **Circle**: the locus of all points in a plane equidistant from a given point at the center. **Perpendicular Line**: lines that form right angles. Parallel Line: lines that do not intersect. **Line Segment**: a measurable part of a line that consists of 2 points and all the points between them. **Point:** a location. Line: is made up of points, it has no thickness or width. **Plane:** flat surface made up of points that has no depth and extends indefinitely	Undefined Terms 	http://www.geometrycommoncore.com/content/unit1/gco1/gco1.html
MA.G.LP.3:	G.LP.3: State, use, and examine the validity of the converse, inverse, and contrapositive of conditional ("if – then") and bi-conditional ("if and only if") statements.	**Converse**: the statement formed by exchanging the hypothesis and conclusion of a conditional statement. **Inverse:** the statement formed by negating both the hypothesis and conclusion of a conditional statement. **Contrapositive:** the statement formed by negating both the hypothesis and conclusion of the converse of a conditional statement. **Conditional Statement**: a statement that can be written in the if-then form. **Biconditional Statement:** the conjunction of a conditional statement and its converse.	Let p and q be statement variables which apply to the following definitions. Conditional: The conditional of q by p is "If p then q" or "p implies q" and is denoted by p q. It is false when p is true and q is false; otherwise it is true. Contrapositive: The contrapositive of a conditional statement of the form "If p then q" is "If ~q then ~p". Symbolically, the contrapositive of p q is ~q~p. A conditional statement is logically equivalent to its contrapositive. Converse: Suppose a conditional statement of the form "If p then q" is given. The converse is "If q then p." Symbolically, the converse of p q is q p. A conditional statement is not logically equivalent to its converse. Inverse: Suppose a conditional statement of the form "If p then q" is given. The inverse is "If ~p then ~q." Symbolically, the inverse of p q is ~p ~q. A conditional statement is not logically equivalent to its inverse. Biconditional (iff): The biconditional of p and q is "p if, and only if, q" and is denoted p q. It is true if both p and q have the same truth values and is false if p and q have opposite truth values.	http://www.cpm.org/pdfs/state_supplements/Logical_Statements.pdf

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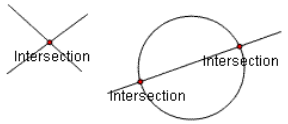
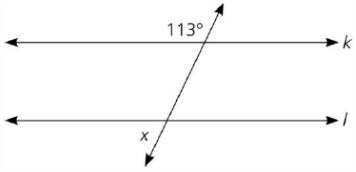
MA.G.LP.4:	G.LP.4: Develop geometric proofs, including direct proofs, indirect proofs, proofs by contradiction and proofs involving coordinate geometry, using two-column, paragraphs, and flow charts formats.	**Proof:** a logical argument in which each statement you make is supported by a statement that is accepted as true. **Indirect Proof:** assumption that what you are trying to prove is false and this assumption leads to a contradiction. **Coordinate Proof:** involves a figure in the coordinate plane		http://www.sparknotes.com/math/geometry3/geometricproofs/summary.html
Points, Lines, Angles, and Planes				
MA.G.PL.1:	G.PL.1: Identify, justify, and apply properties of planes.	**Plane:** flat surface made up of points that has no depth and extends indefinitely		http://www.cliffsnotes.com/math/geometry/fundamental-ideas/points-lines-and-planes
MA.G.PL.2:	G.PL.2: Describe the intersection of two or more geometric figures in the same plane.	**Intersection:** the place or point where two or more things come together		http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCUQFjAB&url=http%3A%2F%2Fwww.wsfcs.k12.nc.us%2Fcms%2Flib%2FNC01001395%2FCentricity%2FDomain%2F2144%2FIntersecting%2520Geometric%2520Figures%2520in%2520a%2520Plane.ppt&ei=nMybVfzDJ8_hoASB67HYBQ&usg=AFQjCNE2VSB9_vFPZHxuXBYpcX2gXpps_g&bvm=bv.96952980,d.cGU
MA.G.PL.3:	G.PL.3: Prove and apply theorems about lines and angles, including the following: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and corresponding angles are congruent; when a transversal crosses parallel lines, same side interior angles are supplementary; and points on a perpendicular bisector of a line segment are exactly those equidistant from the endpoints of the segment.	**Vertical Angles:** 2 nonadjacent angles formed by 2 intersecting lines. **Transversal**: a line that intersects 2 or more lines in a plane at different points. **Alternate Interior Angles:** angles that are on opposite sides of the transversal and on the inside of the given lines. **Alternate Exterior Angles:** angles on opposite sides of the transversal and on the outside of the given lines. **Corresponding Angles:** when a transversal intersects 2 lines the angles formed on the same side of the transversal and on the same side of the given lines. **Supplementary Angles:** two angles with measures whose sum is 180 degrees	*Use a transversal diagram to find all the various type of angles when 1 is marked (can be done multiple ways and with using algebraic expressions) 	https://www.khanacademy.org/math/basic-geo/basic-geo-angles/basic-geo-angle-relationships/v/angles-formed-by-parallel-lines-and-transversals
MA.G.PL.4:	G.PL.4: Know that parallel lines have the same slope and perpendicular lines have opposite reciprocal slopes. Determine if a pair of lines are parallel, perpendicular, or neither by comparing the slopes in coordinate graphs and in equations. Find the equation of a line, passing through a given point, that is parallel or perpendicular to a given line.	**Slope:** ratio of the rate of change in y with respect to a change in x (steepness) **Parallel:** always the same distance apart. **Perpendicular**: intersecting to form right angles. **Equation of a Line:** The equation of a line can be in Slope-intercept form $y=mx+b$ or Point-slope form $(y-y_1)=m(x-x_1)$ or Standard form $Ax+By=C$	*Find an equation of a line perpendicular to y=4x-2; parallel to 2x-3y=6; determine slope between (3,-3) and (3,2); write an equation of a line through (4,12) with a slope of 2/3.	http://www.purplemath.com/modules/slope2.htm

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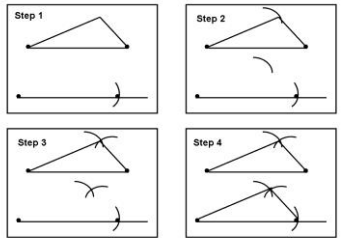
MA.G.PL.5:	G.PL.5: Explain and justify the process used to construct, with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.), congruent segments and angles, angle bisectors, perpendicular bisectors, altitudes, medians, and parallel and perpendicular lines.	**Congruent Segments**: having exactly the same measure of length. **Congruent Angles:** having exactly the same measure in degrees. **Angle Bisectors:** a ray in the interior of an angle that divides the angle into 2 congruent angles. **Perpendicular Bisector:** a line, line segment, ray, or plane that is perpendicular to a segment at its midpoint. **Altitude:** is the perpendicular segment from a vertex to its opposite side. **Medians:** Parallel Lines: lines that are always the same distance apart. **Perpendicular Lines**: lines that intersect to form a Right angle	*Construct the perpendicular bisector of a given line segment, justify each step (could be done for each type of construction)	http://www.regentsprep.org/Regents/math/geometry/GC1/indexGC1.htm
		Triangles		
MA.G.T.1:	G.T.1: Prove and apply theorems about triangles, including the following: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point; a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem, using triangle similarity; and the isosceles triangle theorem and its converse.	**Triangle Theorems:** Triangle Sum Theorem (the sum of the measures of the interior angles of a triangle is 180 degrees) **Midsegment Theorem** (the segment connecting the midpoints of 2 sides of a triangle is parallel to the 3rd side and half its length) **Third Angles Theorem** (if 2 angles of 1 triangle are congruent to 2 angles of a 2nd triangle then the 3rd angles are also congruent) **Exterior Angle Theorem** (the measure of an exterior angle of a triangle is equal to the sum of the measures of the 2 nonadjacent interior angles) **Base Angles Theorem** (if 2 sides of a triangle are congruent, then the angles opposite them are congruent)	*Identify and describe all type s of triangles. *Construct angle bisectors of triangles. *Find area and perimeter of triangles in real world context and not. *Prove similarity exists between 2 triangles. *Use the Triangle Theorems	http://www.virtualnerd.com/common-core/hsf-geometry/HSG-CO-congruence/C/10/
MA.G.T.2:	G.T.2: Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	**ASA**: Angle Side Angle Triangle Congruence **SAS:** Side Angle Side Triangle Congruence **SSS:** Side Side Side Triangle Congruence		http://www.regentsprep.org/Regents/math/geometry/GP4/Ltriangles.htm
MA.G.T.3:	G.T.3: Explain and justify the process used to construct congruent triangles with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).			http://www.virtualnerd.com/common-core/hsf-geometry/HSG-CO-congruence/C/10/

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MA.G.T.4:	G.T.4: Given two triangles, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides, and to establish the AA criterion for two triangles to be similar.	**Similarity**: the ratio of the lengths of corresponding sides. **Proportionality:** having equivalent ratios **AA:** Angle Angle Triangle Congruence		http://www.mathsisfun.com/geometry/triangles-similar-finding.html
MA.G.T.5:	G.T.5: Use properties of congruent and similar triangles to solve real-world and mathematical problems involving sides, perimeters, and areas of triangles.	**Congruent Triangles:** having exactly the same side and angle measures **Similar Triangles:** have proportional corresponding and angles	*Use concepts of CPCTC	http://www.youtube.com/watch?v=lyB4J9FC1ck
MA.G.T.6:	G.T.6: Prove and apply the inequality theorems, including the following: triangle inequality, inequality in one triangle, and the hinge theorem and its converse.	**Triangle Inequality Theorem:** the sum of the lengths of any 2 sides of a triangle is greater than the length of the 3rd side **Inequality in One Triangle Theorem:** states that any side of a triangle is always shorter than the sum of the other two sides **Hinge Theorem:** if 2 sides of 1 triangle are congruent to 2 sides of another triangle and the included angle of the 1st triangle is larger than the included angle of the 2nd then the 3rd side of the 1st is longer than the 3rd side of the second	*Can you draw a triangle with side lengths of (give side lengths), Explain.	http://www.regentsprep.org/Regents/math/geometry/GP7/LTrilneq.htm
MA.G.T.7:	G.T.7: State and apply the relationships that exist when the altitude is drawn to the hypotenuse of a right triangle. Understand and use the geometric mean to solve for missing parts of triangles.	**Altitude:** is the perpendicular segment from a vertex to its opposite side. **Hypotenuse:** the side opposite the right angle. **Geometric Mean:** in the proportion a/m = m/b; m is the positive number		http://www.regentsprep.org/Regents/math/geometry/GP12/LMeanP.htm
MA.G.T.8:	G.T.8: Develop the distance formula using the Pythagorean Theorem. Find the lengths and midpoints of line segments in one- or two-dimensional coordinate systems. Find measures of the sides of polygons in the coordinate plane; apply this technique to compute the perimeters and areas of polygons in real-world and mathematical problems.	**Pythagorean Theorem:** in a right triangle the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the legs **Midpoint:** the point on a line segment that divides it into 2 congruent segments **Perimeter:** the distance around a figure **Distance Formula:** the length of the perpendicular segment from a point to a line **Area:** the number of square units that a plane figure covers	*Find the perimeter and area of polygons using integer values, word problems, and algebraic expressions	http://www.purplemath.com/modules/distform.htm
MA.G.T.9:	G.T.9: Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	**Trig Ratios:** ratios that compare the lengths of 2 sides of a right triangle	*Find sin, cos, and tan based from multiple triangle pictures	http://www.regentsprep.org/regents/math/algebra/at2/ltrig.htm
MA.G.T.10:	G.T.10: Use trigonometric ratios (sine, cosine and tangent) and the Pythagorean Theorem to solve real-world and mathematical problems involving right triangles.	**Trig Ratios:** ratios that compare the lengths of 2 sides of a right triangle **SOHCAHTOA:** Sine Opposite/Hypotenuse; Cosine Adjacent/Hypotenuse; Tangent opposite/adjacent **Pythagorean Theorem:** in a right triangle the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the legs	*Use the Pythagorean Theorem to solve real world application problems. *Find sin, cos, and tan based from multiple triangle pictures *Use SOHCAHTOA. *Use elevation of depression word problems	http://www.regentsprep.org/regents/math/algebra/at2/ltrig.htm

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MA.G.T.11:	G.T.11: Use special right triangles (30° - 60° and 45° - 45°) to solve real-world and mathematical problems.	**Special Right Triangle (30-60-90)**:the hypotenuse is twice as long as the shorter leg and the longer leg is radical 3 times as long at the shorter leg **Special Right Triangle (45-45-90)**:the hypotenuse is radical 2 times as long as each leg	*Use multiple diagrams of special right triangles to find missing side lengths	https://www.khanacademy.org/math/geometry/right_triangles_topic/special_right_triangles/e/pythagorean_theorem_2
Quadrilaterals and Other Polygons				
MA.G.QP.1:	G.QP.1: Prove and apply theorems about parallelograms, including the following: opposite sides are congruent; opposite angles are congruent; the diagonals of a parallelogram bisect each other; and rectangles are parallelograms with congruent diagonals.	**Parallelogram**: a quadrilateral in which both pairs of opposite sides are parallel	*Describe, classify and determine the relationships that exist between all parallelograms. *Solve problems of real world nature and not for area and perimeter. *Use coordinate geometry to find lengths.	http://www.sonoma.edu/users/w/wilsonst/courses/math_150/theorems/Parallelograms/default.html
MA.G.QP.2:	G.QP.2: Prove that given quadrilaterals are parallelograms, rhombuses, rectangles, squares or trapezoids. Include coordinate proofs of quadrilaterals in the coordinate plane.	**Quadrilaterals:** a polygon with 4 sides parallelogram: a quadrilateral in which both pairs of opposite sides are parallel **Rhombus** : a parallelogram with 4 congruent sides **Rectangle**: a parallelogram with 4 right angles S**quare:** a parallelogram with 4 congruent sides and 4 right angles T**rapezoid :**a quadrilateral with exactly 1 pair of parallel sides.	*Describe, classify and determine the relationships that exist between all parallelograms. *Solve problems of real world nature and not for area and perimeter. *Use coordinate geometry to find lengths.	http://www.lavcmath.com/shin/quadrilaterals.pdf
MA.G.QP.3:	G.QP.3: Find measures of interior and exterior angles of polygons. Explain and justify the method used.	**Interior Angle:** on the inside of a polygon, formed by the sides of the polygon **Exterior Angle:** formed at the side of a polygon and an extension of an adjacent side **Polygon:** a closed, plane figure formed by line segments that meet only at their endpoints	*Calculate the measure of 1 interior angle and the sum of the angles and an exterior angle of a Regular polygon (can switch the number of sides)	http://www.mathwarehouse.com/geometry/polygon/
MA.G.QP.4:	G.QP.4: Identify types of symmetry of polygons, including line, point, rotational, and self-congruencies.	**Symmetry:** a figure has symmetry if a reflection or rotation maps it onto itself	*Divide a regular hexagon into triangles. Find the sizes of the interior angles.	http://www.uen.org/core/math/downloads/sec1_symmetries_of_regular_polygons_tn.pdf
MA.G.QP.5:	G.QP.5: Deduce formulas relating lengths and sides, perimeters, and areas of regular polygons. Understand how limiting cases of such formulas lead to expressions for the circumference and the area of a circle.		*Find the length and midpoint of the line joining (3,2) and (7,0)	http://www.mathgoodies.com/lessons/toc_vol1.html

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		Circles		
MA.G.CI.1:	G.CI.1: Define, identify and use relationships among the following: radius, diameter, arc, measure of an arc, chord, secant, tangent, and congruent concentric circles.	**Radius:** a segment or distance from the center of a circle to a point on the circle **Diameter:** a chord that contains the center of a circle **Arc:** a continuous part of a circle **Measure of an Arc:** the measure of the angle formed by 2 radii with endpoints at the endpoints of the arc **Chord:** a segment whose endpoints are on a circle Secant: a line that intersects a circle in 2 points **Tangent:** a line in the plane of a circle that intersects the circle in exactly 1 point **Congruent Concentric Circles**: 2 or more coplanar circles that share the same center	*Given a circle, label every part. *Find the angle between a tangent to a circle and the radius at the point where the tangent meets the circle. *Find the measure s of angles, arcs, and arc lengths in given circle diagrams. *	https://www.khanacademy.org/math/geometry/cc-geometry-circles/circles/v/circles--radius--diameter-and-circumference
MA.G.CI.2:	G.CI.2: Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius; derive the formula for the area of a sector.	**Area of a Sector:** the region bounded by 2 radii of the circle and that arc they intercept **Arc Length:** the length of an arc or a portion of the circle	Find the measures of angles, arcs, and arc lengths in given circle diagrams.	http://www.cliffsnotes.com/math/geometry/circles/arc-length-and-sectors
MA.G.CI.3:	G.CI.3: Identify and describe relationships among inscribed angles, radii, and chords, including the following: the relationship that exists between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; and the radius of a circle is perpendicular to a tangent where the radius intersects the circle.	**Inscribed Angles:** vertex is on circle whose sides are chords of the circle **Radii:** a segment or distance from the center of a circle to a point on the circle **Chord:** a segment whose endpoints are on a circle **Central Angle:** vertex is the center of a circle and whose sides are the radii of the circle **Circumscribed Angles:** is an angle whose rays are tangent to the circle	*Use problems showing inscribed angles (and others) to find the angle measures.	http://www.regentsprep.org/Regents/math/geometry/GP15/CircleAngles.htm
MA.G.CI.4:	G.CI.4: Solve real-world and other mathematical problems that involve finding measures of circumference, areas of circles and sectors, and arc lengths and related angles (central, inscribed, and intersections of secants and tangents).	**Circumference:** the distance around a circle **Area of a circle:** is the square units inside the circle. Area of a circle can be found using the formula A = Π * r^2 **Area of a Sector:** the region bounded by 2 radii of the circle and the arc they intercept **Arc Lengths:** the length of an arc or a portion of the circle **Central Angle:** vertex is the center of a circle and whose sides are the radii of the circle **Inscribed Angle:** vertex is on circle whose sides are chords of the circle **Secant:** a line that intersects a circle in 2 points **Tangent:** a line in the plane of a circle that intersects the circle in exactly 1 point	*Given a circle, label every part. *Find the angle between a tangent to a circle and the radius at the point where the tangent meets the circle. *Find the measure s of angles, arcs, and arc lengths in given circle diagrams. **Use problems showing inscribed angles (and others) to find the angle measures. *Find circumference and area.	http://mathforum.org/pow/teacher/samples/MathForumSampleGeometryPacket.pdf

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MA.G.CI.5:	G.CI.5: Construct a circle that passes through three given points not on a line and justify the process used.	**Circle:** all points in a plane equidistant from a given point (the center) **Equation of a Circle:** $(x-h)^2 + (y-k)^2 = r^2$	*Graph and write the equation for a circle	http://www.mathopenref.com/const3pointcircle.html
MA.G.CI.6:	G.CI.6: Construct a tangent line to a circle through a point on the circle, and construct a tangent line from a point outside a given circle to the circle; justify the process used for each construction.	**Tangent:** a line in the plane of a circle that intersects the circle in exactly 1 point	*Construct tangents and secants for circle theorems.	http://www.mathopenref.com/consttangent.html
MA.G.CI.7:	G.CI.7: Construct the inscribed and circumscribed circles of a triangle with or without technology, and prove properties of angles for a quadrilateral inscribed in a circle.	**Inscribed:** a figure whose vertices are part of another figure. **Circle inscribed in a triangle:** the circle touches each side of the triangle at exactly 1 point **Quadrilateral inscribed in a circle:** each vertex of the quadrilateral lies on the circle	*Construct inscribed angles and other vocabulary terms for circle theorems.	http://www.math.nmsu.edu/~pmorandi/CourseMaterials/InscribedTriangles.html
		Transformations		
MA.G.TR.1:	G.TR.1: Use geometric descriptions of rigid motions to transform figures and to predict and describe the results of translations, reflections and rotations on a given figure. Describe a motion or series of motions that will show two shapes are congruent.	**Transformations:** an operation that creates an image from an original figure or preimage **Rigid Motion:** a transformation that creates an image that is congruent to the original figure	*Create various polygons that can be transformed using the properties of transformations with explanation	https://www.math.ku.edu/~jmartin/courses/math105-F11/Lectures/chapter11-part3.pdf
MA.G.TR.2:	G.TR.2: Understand a dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. Verify experimentally the properties of dilations given by a center and a scale factor. Understand the dilation of a line segment is longer or shorter in the ratio given by the scale factor.	**Dilation:** a transformation in which a similar image is formed by enlarging or reducing its preimage **Scale Factor:** the ratio of the length of a segment in the preimage to the length of the corresponding segment in the image		http://www.mathwarehouse.com/transformations/dilations/dilations-in-math.php
		Three-Dimensional Solids		
MA.G.TS.1:	G.TS.1: Describe relationships between the faces, edges, and vertices of three-dimensional solids. Create a net for a given three-dimensional solid. Describe the three-dimensional solid that can be made from a given net (or pattern).	**Face:** a plane figure that serves as 1 side of a solid figure **Edge:** a line segment where 2 faces of a polyhedron meet **Net:** a 2-D pattern that can be folded to form a solid **Three-dimensional solid:** 3-dimensional figures that have width,depth and height. They take up space or volume.	*Describe each solid, create each solid form a net, describe the relationships that exist.	https://learnzillion.com/lessons/1218-identify-the-parts-of-threedimensional-solids

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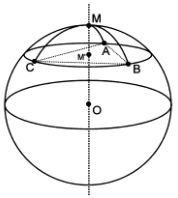
MA.G.TS.2:	G.TS.2: Describe symmetries of three-dimensional solids.			http://www-history.mcs.st-and.ac.uk/~john/geometry/Lectures/L10.html
MA.G.TS.3:	G.TS.3: Know properties of congruent and similar solids, including prisms, regular pyramids, cylinders, cones, and spheres; solve problems involving congruent and similar solids.	**Prism:** a polyhedron that has 2 congruent and parallel faces called bases joined by faces rgar are parallelograms **Pyramid:** a polyhedron with 3 or more triangular faces that meet are a point and one other face that is the base. **Cylinder:** a solid bounded by 2 congruent and parallel circular regions joined by a curved surface whose cross section perpendicular to the axis is always a circle congruent to the bases **Cone:** a solid bound by a circular base and a curved surface with 1 vertex **Sphere:** all points in space equidistant from a given point	*Create each solid from a net. *	
MA.G.TS.4:	G.TS.4: Describe sets of points on spheres, including chords, tangents, and great circles.	**Chords in a Sphere:** a segment whose endpoints are on a sphere **Tangents in a Sphere:** a line in space that intersects the sphere in exactly 1 point **Great Circles:** formed by the intersection of a sphere and a plane that includes the center of a the sphere		http://mathworld.wolfram.com/GreatCircle.html
MA.G.TS.5:	G.TS.5: Solve real-world and other mathematical problems involving volume and surface area of prisms, cylinders, cones, spheres, and pyramids, including problems that involve algebraic expressions.	**Volume:** the amount of space occupied by a solid, measured in cubic units **Surface Area:** the sum of the areas of the faces and any curved surfaces of a solid	*Perform operations in basic and word problems for all type of solids to find volume and surface area.	https://learnzillion.com/lessonsets/452-find-the-area-volume-and-surface-area-of-two-and-three-dimensional-objects
MA.G.TS.6:	G.TS.6: Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).			http://www.insidemathematics.org/problems-of-the-month/pom-theshapeofthings.pdf

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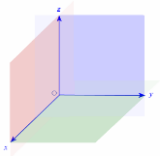
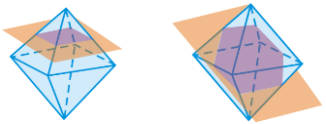
MA.G.TS.7:	G.TS.7: Graph points on a three-dimensional coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each of the three axes.	**Graphing points in three dimensions:** a system of locating a point in space by its distance from the origin along 3 mutually perpendicular lines (x, y, and z axes) P1(x1,y1,z1) **Distance Formula 3-D:** for points p1: (x1,y1,z1) and P2: (x2,y2,z2) distance (p1,P2) = sqrt((x2−x1)^2+(y2−y1)^2+(z2−z1)^2)		http://www.intmath.com/vectors/6-3-dimensional-space.php
MA.G.TS.8:	G.TS.8: Determine the distance of a point to the origin on the three-dimensional coordinate plane using the distance formula.	**Distance Formula 3-D: for points** p1: (x1,y1,z1) and P2: (x2,y2,z2) distance (p1,P2) = sqrt((x2−x1)^2+(y2−y1)^2+(z2−z1)^2)		http://www.youtube.com/watch?v=HASYgn1Q6Fc
MA.G.TS.9:	G.TS.9: Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	**Rotation:** a transformation when the image is formed by turning its preimage about a point **Cross Section:** the intersection of a plane and solid		http://www.glencoe.com/sites/pdfs/impact_math/ls1_c2_cross_sections.pdf