Geometry Unit Plan 2020-21

Dates	Unit	Topics	Project	Days
9/5 - 9/13	1. Tools of Geometry	Definitions, measuring segments and angles, segment addition, area, compass use	Classical construction	7
9/16 - 9/27	2. Midpoint and length	Bisectors; perimeter, triangle, square ($\surd$), supplementary, complementary, solving for a parameter	Geometry software	10
10/2 - 10/17	3. Volume, angle bisectors	Parallelogram, prisms; angles: bisect, vertical, triangle sum	$\angle$ bisector constr.	9
10/18 - 11/1	4. Transversals, angle situations	Parallel and perpendicular situations, $\triangle$ external angles, polygon angle sum, solids' volume, *proof*	Polygon internal angles	8
11/4 - 11/22	5. Dilation, scale; tranformations	Triangle standard position, k coefficient, ratios; coordinate plane	Geogebra measures (scale)	12
11/25 - 12/13 Trimester	6. Analytic Geometry	Linear equations, slope: parallel, perpendicular; distance formula, midpoint calculation; $\tan\theta$, (segment partition, point-slope)	Skateboard ramp	13
1/2 - 1/17 Regents Prep	7. Similarity	$\triangle$ dilation situations, $\triangle$ similarity theorems, ratios; compositions, symmetry	Triangle dilation situations	12
1/28 - 2/14	8. Circle measures; volume, solids	Area, circumference, sectors, arc length, unit conversions (circle equations, completing the square)	3-D modeling	10
2/24 - 2/28 Break	9. Congruence	Transformations, $\triangle$ congruence theorems, transformations, overlapping $\triangle$s	2-column proof	5
3/2 - 3/13	11. Transformations	Similarity applications, symmetry, composition, properties (Trig)	$\triangle$ centers	10
3/16 - 3/27	12. Quadrilaterals	Angle sums, parallelograms, properties, polygons, complex situations		10
3/30 - 4/8 (Mock?)	13. Circle angles and segments	Tangents, chords, inscribed angles, angle measures, lengths		8
4/20 - 5/1	14. Area and volume	Multi-step situations, polygon formulas, perimeter, arcs, sectors	Capstone: Lamp design	10
5/4 - 6/14	15. Review			27

Mastery-based Assessment

Common Core Mathematical Practices are the target competencies, which are assessed in the context of content standards and Regents problems.

Practice Standard	Unit, Content Standard	Assessment
MP1 Make sense of problems and persevere in solving them		
MP2 Reason abstractly and quantitatively		
MP3 Construct viable arguments and critique the reasoning of others		
MP4 Model with mathematics		Projects involving design or problem solving
MP5 Use appropriate tools strategically		Measuring length and angles with a ruler and protractor
MP6 Attend to precision		Rounding, significant figures, estimating; Estimating length in a scale drawing (e.g. Regents dilation problems)
MP7 Look for and make use of structure		
MP8 Look for and express regularity in repeated reasoning		

Student Projects 2020-21

Date	Progression	Unit	Project	Description	Format
9/10	Classical construction	1. Tools of Geometry	Euclid's 1st Construction	Equilateral triangle, introduction to the use of compass and straightedge	paper and pencil, with heading
9/17	Computer geometry	2. Midpoint and distance	Geogebra Construction	Equilateral triangle, use of geometry software, MLA and email	laptops, png file
9/24, 10/8	Computer geometry	2. Midpoint and distance	Construction comparison	importing geometry software graphics into MS Word	laptops, docx file
10/15	Computer geometry	3. Volume and angles	Angle bisector	Geogebra construction with text commentary	laptops, docx file

Geometry Concepts & Skills Progression

Topic	6	7	8 Common Core	9 Algebra	10 Geometry	11+12 IB Math
Length		Segment addition, perimeter, area, volume			Distance formula	$A_{triangle} = \frac{1}{2}ab\sin\theta$, Area as integration
Angles		Vertical, supplementary, complementary		Axes scales		
Graphing		4-quadrant (x, y) plane				
Objects	Triangle, square, rectangle	Triangle internal sum				
Transformations		Ratios, scale factor	Dilation on graph			
Algebraic equations		Find x situations				
Proof						

Archive: Geometry Unit Plan 2019-20

Dates	Unit	Topics	Project	Days
9/5 - 9/13	1. Tools of Geometry	Definitions, measuring segments and angles, segment addition, area, compass use	Classical construction	7
9/16 - 9/27	2. Midpoint and length	Bisectors; perimeter, triangle, square ($\surd$), supplementary, complementary, solving for a parameter	Geometry software	10
10/2 - 10/17	3. Volume, angle bisectors	Parallelogram, prisms; angles: bisect, vertical, triangle sum	$\angle$ bisector constr.	9
10/18 - 11/1	4. Transversals, angle situations	Parallel and perpendicular situations, $\triangle$ external angles, polygon angle sum, solids' volume, *proof*	Polygon internal angles	8
11/4 - 11/22	5. Dilation, scale; tranformations	Triangle standard position, k coefficient, ratios; coordinate plane	Geogebra measures (scale)	12
11/25 - 12/13 Trimester	6. Analytic Geometry	Linear equations, slope: parallel, perpendicular; distance formula, midpoint calculation; $\tan\theta$, (segment partition, point-slope)	Skateboard ramp	13
1/2 - 1/17 Regents Prep	7. Similarity	$\triangle$ dilation situations, $\triangle$ similarity theorems, ratios; compositions, symmetry	Triangle dilation situations	12
1/28 - 2/14	8. Circle measures; volume, solids	Area, circumference, sectors, arc length, unit conversions (circle equations, completing the square)	3-D modeling	10
2/24 - 2/28 Break	9. Congruence	Transformations, $\triangle$ congruence theorems, transformations, overlapping $\triangle$s	2-column proof	5
3/2 - 3/13	11. Transformations	Similarity applications, symmetry, composition, properties (Trig)	$\triangle$ centers	10
3/16 - 3/27	12. Quadrilaterals	Angle sums, parallelograms, properties, polygons, complex situations		10
3/30 - 4/8 (Mock?)	13. Circle angles and segments	Tangents, chords, inscribed angles, angle measures, lengths		8
4/20 - 5/1	14. Area and volume	Multi-step situations, polygon formulas, perimeter, arcs, sectors	Capstone: Lamp design	10
5/4 - 6/14	15. Review			27

159 instructional days

Archive: Student Projects 2019-20

Date	Progression	Unit	Project	Description	Format
9/10	Classical construction	1. Tools of Geometry	Euclid's 1st Construction	Equilateral triangle, introduction to the use of compass and straightedge	paper and pencil, with heading
9/17	Computer geometry	2. Midpoint and distance	Geogebra Construction	Equilateral triangle, use of geometry software, MLA and email	laptops, png file
9/24, 10/8	Computer geometry	2. Midpoint and distance	Construction comparison	importing geometry software graphics into MS Word	laptops, docx file
10/15	Computer geometry	3. Volume and angles	Angle bisector	Geogebra construction with text commentary	laptops, docx file

Archive: Geometry Unit Plan 2018-19

Dates	Unit	Topics	Project	Days
9/5 - 9/21	1a. Tools of Geometry	Definitions, measuring segments and angles, addition postulates, compass use	Euclid's 1st Construction	10
9/24 - 10/5	1b. Angle Pairs	Supplementary, complementary, vertical, bisectors, constructions	Further constructions	10
10/9 - 10/26	2. Geometric calculations	Midpoint, distance; Area, perimeter; Proof: Induction, logic	Bisector constructions	9
10/29 - 11/8 Trimester	2b. Transversals	Transversals, parallel, perpendiculars, constructions	Triangle centers, binder	9
11/11 - 11/30	3. Analytic Geometry	Triangle internal, external angles; Line equations, slope, parallel, perpendiculars; translations		11
11/26 - 12/13	4. Congruent Triangles	Congruence theorems, transformations, overlapping triangles, trig	Geometry software	10
12/17 - 12/21	5. Intensives week	Transformation, medians, analytic geometry, volume, angle sums		11
1/2 - 1/18 Regents	6. Similarity	Dilation, triangle similarity theorems, ratios, trigonometry; constructions	Mock Regents	12
1/28 - 2/7	7. Algebra Review	Point-slope, linear equations, radicals, algebra practice	Geogebra transformation, centroid	15
2/8 - 3/1	7. Circles	Circle equations, completing the square, radicals, algebra practice	Geogebra transformation, centroid	15
3/4 - 3/22	8. Transformations	Similarity applications, symmetry, composition, properties	Triangle dilation situations	13
3/25 - 4/18 Mock Apr2	9. Circles	Tangents, chords, inscribed angles, angle measures, lengths; dilation review	Power laws	10
4/29 - 5/10	10. Area and volume	Multi-step situations, unit conversions, polygon formulas, perimeter, arcs, sectors	Capstone: Lamp design	12
5/13 - 5/24	11. Quadrilaterals	Angle sums, parallelograms, properties, proof	Word fluency	9
5/28 - 6/14	13. Review			10

165 instructional days