

2014c Geometry
Khan Academy Video Correlations
By SpringBoard Activity

| SB Activity | Video(s) |
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| Unit 1: Proof, Parallel and Perpendicular Lines | |
| Activity 1 <i>Geometric Figures</i> 1-1 Learning Targets: <ul style="list-style-type: none"> Identify, describe, and name points, lines, line segments, rays, and planes using correct notation. Identify and name angles. 1-2 Learning Targets: <ul style="list-style-type: none"> Describe angles and angle pairs. Identify and name parts of circles. | <i>Basic Geometry Figures</i> |
| | Basic geometry: language and labels Intro to lines, line segments, and rays Language and notation of the circle Angle basics Complementary and supplementary angles |
| Activity 2 <i>Logical Reasoning</i> 2-1 Learning Targets: <ul style="list-style-type: none"> Make conjectures by applying inductive reasoning. Recognize the limits of inductive reasoning. 2-2 Learning Targets: <ul style="list-style-type: none"> Use deductive reasoning to prove that a conjecture is true. Develop geometric and algebraic arguments based on deductive reasoning. | <i>Reasoning</i> |
| | Difference between inductive and deductive reasoning |
| | <i>Inductive Reasoning</i> |
| Inductive patterns Patterns in sequences 1 Patterns in sequences 2 Equations of sequence patterns Finding the 100th term in a sequence Sum of consecutive odd integers Challenge example: Sum of integers | |
| Activity 3 <i>The Axiomatic System of Geometry</i> 3-1 Learning Targets: <ul style="list-style-type: none"> Distinguish between undefined and defined terms. Use properties to complete algebraic two-column proofs. 3-2 Learning Targets: <ul style="list-style-type: none"> Identify the hypothesis and conclusion of a conditional statement. Give counterexamples for false conditional statements 3-3 Learning Targets: | N/A |

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| <ul style="list-style-type: none"> Write and determine the truth value of the converse, inverse, and contrapositive of a conditional statement. Write and interpret biconditional statements. | |
| <p>Activity 4 <i>Segment and Angle Measurement</i></p> <p>4-1 Learning Targets:</p> <ul style="list-style-type: none"> Apply the Segment Addition Postulate to find lengths of segments. Use the definition of midpoint to find lengths of segments <p>4-2 Learning Targets:</p> <ul style="list-style-type: none"> Apply the Angle Addition Postulate to find angle measures. Use the definition of angle bisector to find angle measures. | <p style="text-align: center;"><i>Segments and Midpoints</i></p> <p style="text-align: center;">Algebraic midpoint of a segment exercise</p> <hr/> <p style="text-align: center;"><i>Vertical Angles</i></p> <p style="text-align: center;">Introduction to vertical angles</p> <p style="text-align: center;">Find measure of vertical angles</p> |
| <p>Activity 5 <i>The Distance and Midpoint Formulas</i></p> <p>5-1 Learning Targets:</p> <ul style="list-style-type: none"> Derive the Distance Formula. Use the Distance Formula to find the distance between two points on the coordinate plane. <p>5-2 Learning Targets:</p> <ul style="list-style-type: none"> Use inductive reasoning to determine the Midpoint Formula. Use the Midpoint Formula to find the coordinates of the midpoint of a segment on the coordinate plane. | <p style="text-align: center;"><i>Distance on the Coordinate Plane</i></p> <p style="text-align: center;">Distance formula</p> <hr/> <p style="text-align: center;"><i>Midpoint on the Coordinate Plane</i></p> <p style="text-align: center;">Midpoint formula</p> |
| <p>Activity 6 <i>Proofs about Line Segments and Angles</i></p> <p>6-1 Learning Targets:</p> <ul style="list-style-type: none"> Use definitions, properties, and theorems to justify a statement. Write two-column proofs to prove theorems about lines and angles. <p>6-2 Learning Targets:</p> <ul style="list-style-type: none"> Complete two-column proofs to prove theorems about segments. Complete two-column proofs to prove theorems about angles. | <p>N/A</p> |
| <p>Activity 7 <i>Parallel and Perpendicular Lines</i></p> <p>7-1 Learning Targets:</p> | <p style="text-align: center;"><i>Parallel and Perpendicular Lines</i></p> <p style="text-align: center;">Identifying parallel and perpendicular lines</p> |

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| <ul style="list-style-type: none"> • Make conjectures about the angles formed by a pair of parallel lines and a transversal. • Prove theorems about these angles <p>7-2 Learning Targets:</p> <ul style="list-style-type: none"> • Develop theorems to show that lines are parallel. • Determine whether lines are parallel. <p>7-3 Learning Targets:</p> <ul style="list-style-type: none"> • Develop theorems to show that lines are perpendicular. • Determine whether lines are perpendicular. | <p>Two column proof showing segments are perpendicular</p> |
| <p>Activity 8 <i>Equations of Parallel and Perpendicular Lines</i></p> <p>8-1 Learning Targets:</p> <ul style="list-style-type: none"> • Make conjectures about the slopes of parallel and perpendicular lines. • Use slope to determine whether lines are parallel or perpendicular. <p>8-2 Learning Targets:</p> <ul style="list-style-type: none"> • Write the equation of a line that is parallel to a given line. • Write the equation of a line that is perpendicular to a given line. | <p style="text-align: center;"><i>Parallel Lines</i></p> <p>Parallel lines 3</p> <p style="text-align: center;"><i>Perpendicular Lines</i></p> <p>Perpendicular lines</p> <p>Perpendicular lines 2</p> <p style="text-align: center;"><i>Writing Equations of Parallel and Perpendicular Lines</i></p> <p>Equations of parallel and perpendicular lines</p> |
| <p>Unit 2: Transformations, Triangles, and Quadrilaterals</p> | |
| <p>Activity 9 <i>Translations, Reflections, and Rotations</i></p> <p>9-1 Learning Targets:</p> <ul style="list-style-type: none"> • Perform transformations on and off the coordinate plane. • Identify characteristics of transformations that are rigid motions and characteristics of transformations that are non-rigid motions. • Represent a transformation as a function using coordinates, and show how a figure is transformed by a function. <p>9-2 Learning Targets:</p> <ul style="list-style-type: none"> • Perform translations on and off the coordinate plane. • Predict the effect of a translation on a figure. <p>9-3 Learning Targets:</p> <ul style="list-style-type: none"> • Perform reflections on and off the coordinate plane. | <p style="text-align: center;"><i>Translations</i></p> <p>Translations of polygons</p> <p>Determining a translation for a shape</p> <p>Determining a translation between points</p> <p style="text-align: center;"><i>Reflection</i></p> <p>Reflecting line across another line example</p> <p>Reflection and mapping points example</p> <p>Determining the line of reflection</p> <p style="text-align: center;"><i>Rotations</i></p> <p>Performing a rotation to match figures</p> <p>Rotating segment about origin example</p> |

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| <ul style="list-style-type: none"> Identify reflectional symmetry in plane figures. <p>9-4 Learning Targets:</p> <ul style="list-style-type: none"> Perform rotations on and off the coordinate plane. Identify and distinguish between reflectional and rotational symmetry. | |
| <p>Activity 10 <i>Compositions and Congruence</i></p> <p>10-1 Learning Targets:</p> <ul style="list-style-type: none"> Find the image of a figure under a composition of rigid motions. Find the pre-image of a figure under a composition of rigid motions. <p>10-2 Learning Targets:</p> <ul style="list-style-type: none"> Determine whether given figures are congruent. Specify a sequence of rigid motions that will carry a given figure to a congruent figure. | <p style="text-align: center;"><i>Transformations and Congruence</i></p> <p>Example of rigid transformation and congruence</p> <p>Another example of rigid transformations for congruence</p> <p>Testing congruence by transformations example</p> <p>Another congruence by transformation example</p> |
| <p>Activity 11 <i>Congruence Transformations and Triangle Congruence</i></p> <p>11-1 Learning Targets:</p> <ul style="list-style-type: none"> Use the fact that congruent triangles have congruent corresponding parts. Determine unknown angle measures or side lengths in congruent triangles. <p>11-2 Learning Targets:</p> <ul style="list-style-type: none"> Develop criteria for proving triangle congruence. Determine which congruence criteria can be used to show that two triangles are congruent. <p>11-3 Learning Targets:</p> <ul style="list-style-type: none"> Prove that congruence criteria follow from the definition of congruence. Use the congruence criteria in simple proofs. <p>11-4 Learning Targets:</p> <ul style="list-style-type: none"> Apply congruence criteria to figures on the coordinate plane. Prove the AAS criterion and develop the HL criterion. | <p style="text-align: center;"><i>Congruent Triangles</i></p> <p>Congruent triangles and SSS</p> <p>Other triangle congruence postulates</p> <p>Finding congruent triangles</p> <p>Congruent triangle proof example</p> <p>Congruent triangle example 2</p> |
| <p>Activity 12 <i>Flowchart Proofs</i></p> | <p style="text-align: center;">N/A</p> |

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| <p>12-1 Learning Targets:</p> <ul style="list-style-type: none"> Write a simple flowchart proof as a two-column proof. Write a flowchart proof. <p>12-2 Learning Targets:</p> <ul style="list-style-type: none"> Write a proof in three different formats. Write proofs using the fact that corresponding parts of congruent triangles are congruent. | |
| <p>Activity 13 <i>Properties of Triangles</i></p> <p>13-1 Learning Targets:</p> <ul style="list-style-type: none"> Prove theorems about angle measures in triangles. Apply theorems about angle measures in triangles. <p>13-2 Learning Targets:</p> <ul style="list-style-type: none"> Develop theorems about isosceles triangles. Prove theorems about isosceles triangles. | <p style="text-align: center;">Angles Relationships in Triangles</p> <p>Proof: Sum of measures of angles in a triangle are 180</p> <p>Triangle angle example 1</p> <p>Triangle angle example 2</p> <p>Triangle angle example 3</p> <hr/> <p style="text-align: center;">Isosceles Triangles</p> <p>Congruent legs and base angles of isosceles triangles</p> <p>Another isosceles example problem</p> <p>Example involving an isosceles triangle and parallel lines</p> |
| <p>Activity 14 <i>Concurrent Segments in Triangles</i></p> <p>14-1 Learning Targets:</p> <ul style="list-style-type: none"> Determine the point of concurrency of the altitudes of a triangle. Use the point of concurrency of the altitudes of a triangle to solve problems. <p>14-2 Learning Targets:</p> <ul style="list-style-type: none"> Determine the point of concurrency of the medians of a triangle. Use the point of concurrency of the medians of a triangle to solve problems. <p>14-3 Learning Targets:</p> <ul style="list-style-type: none"> Determine the points of concurrency of the perpendicular bisectors and the angle bisectors of a triangle. Use the points of concurrency of the perpendicular bisectors and the angle bisectors of a triangle to solve problems. | <p style="text-align: center;">Altitudes of a Triangle: Orthocenter</p> <p>Proof: Triangle altitudes are concurrent (orthocenter)</p> <p>Common orthocenter and centroid</p> <hr/> <p style="text-align: center;">Medians of a Triangle: Centroids</p> <p>Triangle medians and centroids</p> <p>Proving that the centroid is 2-3rds along the median</p> <hr/> <p style="text-align: center;">Perpendicular Bisector of Sides of a Triangle: Circumcenter</p> <p>Circumcenter of a triangle</p> <p>Circumcenter of a right triangle</p> |
| <p>Activity 15 <i>Quadrilaterals and Their Properties</i></p> <p>15-1 Learning Targets:</p> <ul style="list-style-type: none"> Develop properties of kites. Prove the Triangle Midsegment Theorem. | <p style="text-align: center;">Kites</p> <p>Quadrilaterals: kites as a geometric shape</p> <hr/> <p style="text-align: center;">Parallelograms</p> <p>Proof: Opposite sides of parallelogram congruent</p> <p>Proof: Diagonals of a parallelogram bisect each other</p> |

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| <p>15-2 Learning Targets:</p> <ul style="list-style-type: none"> • Develop properties of trapezoids. • Prove properties of trapezoids. <p>15-3 Learning Targets:</p> <ul style="list-style-type: none"> • Develop properties of parallelograms. • Prove properties of parallelograms. <p>15-4 Learning Targets:</p> <ul style="list-style-type: none"> • Develop properties of rectangles, rhombuses, and squares. • Prove properties of rectangles, rhombuses, and squares. | <p>Proof: Opposite angles of parallelogram congruent</p> <p style="text-align: center;">Rhombus</p> <p>Proof: Rhombus diagonals are perpendicular bisectors</p> <p>Proof: Rhombus area half product of diagonal length</p> |
| <p>Activity 16 <i>More About Quadrilaterals</i></p> <p>16-1 Learning Targets:</p> <ul style="list-style-type: none"> • Develop criteria for showing that a quadrilateral is a parallelogram. • Prove that a quadrilateral is a parallelogram.. <p>16-2 Learning Targets:</p> <ul style="list-style-type: none"> • Develop criteria for showing that a quadrilateral is a rectangle. • Prove that a quadrilateral is a rectangle.. <p>16-3 Learning Targets:</p> <ul style="list-style-type: none"> • Develop criteria for showing that a quadrilateral is a rhombus. • Prove that a quadrilateral is a rhombus.. <p>16-4 Learning Targets:</p> <ul style="list-style-type: none"> • Develop criteria for showing that a quadrilateral is a square. • Prove that a quadrilateral is a square. | <p style="text-align: center;">N/A</p> |
| Unit 3: Similarity and Trigonometry | |
| <p><i>Activity 17</i> <i>Dilations and Similarity Transformations</i></p> <p>17-1 Learning Targets:</p> <ul style="list-style-type: none"> • <i>Perform dilations on and off the coordinate plane.</i> • <i>Describe dilations.</i> <p>17-2 Learning Targets:</p> <ul style="list-style-type: none"> • <i>Understand the meaning of similarity transformations.</i> • <i>Use similarity transformations to determine whether figures are similar.</i> <p>17-3 Learning Targets:</p> <ul style="list-style-type: none"> • <i>Identify properties of similar figures.</i> • <i>Apply properties of similar figures.</i> | <p style="text-align: center;"><i>Dilations</i></p> <p>Thinking about dilations</p> <p>Scaling down a triangle by half</p> <p>Comparing side lengths after dilation</p> <p>Dilating from an arbitrary point example</p> <p style="text-align: center;">Similarity Transformations</p> <p>Testing similarity through transformations</p> |
| Similar Triangles | |

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| <p>Activity 18 <i>Similar Triangles</i></p> <p>18-1 Learning Targets:</p> <ul style="list-style-type: none"> • Develop criteria for triangle similarity. • Prove the AA similarity criterion. <p>18-2 Learning Targets:</p> <ul style="list-style-type: none"> • Show triangles are similar. • Use similar triangles to solve problems. <p>18-3 Learning Targets:</p> <ul style="list-style-type: none"> • Prove the Triangle Proportionality Theorem and its converse. • Apply the Triangle Proportionality Theorem and its converse. | <p>Similar triangle basics</p> <p>Similarity postulates</p> <p>Similarity example problems</p> |
| <p>Activity 19 <i>Geometric Mean</i></p> <p>19-1 Learning Targets:</p> <ul style="list-style-type: none"> • Identify the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle. • Prove the Right Triangle Altitude Theorem. <p>19-2 Learning Targets:</p> <ul style="list-style-type: none"> • Identify the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle. • Apply the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle. | <p>N/A</p> |
| <p>Activity 20 <i>The Pythagorean Theorem and Its Converse</i></p> <p>20-1 Learning Targets:</p> <ul style="list-style-type: none"> • Use similar triangles to prove the Pythagorean Theorem. • Apply the Pythagorean Theorem to solve problems. <p>20-2 Learning Targets:</p> <ul style="list-style-type: none"> • Use the converse of the Pythagorean Theorem to solve problems. • Develop and apply Pythagorean inequalities. | <p><i>Pythagorean Theorem</i></p> <p>Pythagorean theorem</p> <p>Pythagorean theorem 1</p> <p>Pythagorean theorem proof using similarity</p> <p>Another Pythagorean theorem proof</p> |
| <p>Activity 21 <i>Special Right Triangles</i></p> <p>21-1 Learning Targets:</p> <ul style="list-style-type: none"> • Describe the relationships among the side lengths of 45°-45°-90° triangles. | <p><i>45°-45°-90° Triangles</i></p> <p>45-45-90 triangles</p> <p>45-45-90 triangle side ratios</p> <p><i>30°-60°-90° Triangles</i></p> <p>30-60-90 triangle example problem</p> |

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| <ul style="list-style-type: none"> Apply relationships in special right triangles to solve problems. <p>21-2 Learning Targets:</p> <ul style="list-style-type: none"> Describe the relationships among the side lengths of 30°-60°-90° triangles. Apply relationships in special right triangles to solve problems. | 30-60-90 triangle side ratios proof |
| <p>Activity 22 <i>Basic Trigonometric Relationships</i></p> <p>22-1 Learning Targets:</p> <ul style="list-style-type: none"> Find ratios of side lengths in similar right triangles. Given an acute angle of a right triangle, identify the opposite leg and adjacent leg. <p>22-2 Learning Targets:</p> <ul style="list-style-type: none"> Understand the definitions of sine, cosine, and tangent ratios. Calculate the trigonometric ratios in a right triangle. Describe the relationship between the sine and cosine of complementary angles. <p>22-3 Learning Targets:</p> <ul style="list-style-type: none"> Use trigonometric ratios to find unknown side lengths in right triangles. Solve real-world problems using trigonometric ratios. <p>22-4 Learning Targets:</p> <ul style="list-style-type: none"> Calculate angle measures from trigonometric ratios. Solve right triangles. | <p style="text-align: center;">Similarity Right Triangles</p> <p>Similarity to define sine, cosine, and tangent</p> <hr/> <p style="text-align: center;">Trigonometric Ratios</p> <p>Example with trig functions and ratios Example relating trig function to side ratios Basic trigonometry Basic trigonometry II</p> <p style="text-align: center;">Sine and Cosine of Complementary Angles</p> <p>Sine and cosine of complements example Showing relationship between cosine and sine of complements</p> <p style="text-align: center;">Solving Right Triangles</p> <p>Example: Trig to solve the sides and angles of a right triangle Example: Using soh cah toa</p> |
| <p>Activity 23 <i>The Laws of Sines and of Cosines</i></p> <p>23-1 Learning Targets:</p> <ul style="list-style-type: none"> Prove the Law of Sines. Apply the Law of Sines. <p>23-2 Learning Targets:</p> <ul style="list-style-type: none"> Understand when the ambiguous case of the Law of Sines occurs. Solve problems using the Law of Sines. <p>23-3 Learning Targets:</p> <ul style="list-style-type: none"> Prove the Law of Cosines. Solve problems using the Law of Cosines. <p>23-4 Learning Targets:</p> <ul style="list-style-type: none"> Determine when to use the Law of Sines and when to use the Law of Cosines. | <p style="text-align: center;">The Law of Sines</p> <p>Law of sines Law of sines for missing angle Proof: Law of sines</p> <hr/> <p style="text-align: center;">The Law of Cosines</p> <p>Law of cosines Law of cosines to determine grade Law of cosines for star distance Proof of the law of cosines</p> |

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| <ul style="list-style-type: none"> Solve problems using the Law of Cosines and/or the Law of Sines. | |
| Unit 4: Circles, Coordinates, and Constructions | |
| <p>Activity 24 <i>Tangents and Chords</i></p> <p>24-1 Learning Targets:</p> <ul style="list-style-type: none"> Describe relationships among tangents and radii of a circle. Use arcs, chords, and diameters of a circle to solve problems. <p>24-2 Learning Targets:</p> <ul style="list-style-type: none"> Describe relationships among diameters and chords of a circle. Prove and apply theorems about chords of a circle. <p>24-3 Learning Targets:</p> <ul style="list-style-type: none"> Prove that tangent segments to a circle from a point outside the circle are congruent. Use tangent segments to solve problems. | <p style="text-align: center;"><i>Tangents and Chords in Circles</i></p> <p>Language and notation of the circle</p> <p>Circles: radius, diameter, circumference and Pi</p> <p>Example with tangent and radius</p> <p>Perpendicular radius bisects chord</p> |
| <p>Activity 25 <i>Arcs and Angles</i></p> <p>25-1 Learning Targets:</p> <ul style="list-style-type: none"> Understand how to measure an arc of a circle. Use relationships among arcs and central angles to solve problems. <p>25-2 Learning Targets:</p> <ul style="list-style-type: none"> Describe the relationship among inscribed angles, central angles, and arcs. Use inscribed angles to solve problems. <p>25-3 Learning Targets:</p> <ul style="list-style-type: none"> Describe a relationship among the angles formed by intersecting chords in a circle. Use angles formed by chords to solve problems. <p>25-4 Learning Targets:</p> <ul style="list-style-type: none"> Describe relationships among the angles formed by tangents to a circle or secants to a circle. Use angles formed by tangents or secants to solve problems. | <p style="text-align: center;"><i>Angles in Circles</i></p> <p>Inscribed and central angles</p> <p>Measure of circumscribed angle</p> |
| <p>Activity 26 <i>Coordinate Proofs</i></p> <p>26-1 Learning Targets:</p> <ul style="list-style-type: none"> Write coordinate proofs. | <p>N/A</p> |

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| <ul style="list-style-type: none"> • Prove the midpoint formula. <p>26-2 Learning Targets:</p> <ul style="list-style-type: none"> • Write coordinate proofs. • Prove the slope criteria for parallel and perpendicular lines. <p>26-3 Learning Targets:</p> <ul style="list-style-type: none"> • Write coordinate proofs. • Prove that the medians of a triangle are concurrent. <p>25-4 Learning Targets:</p> <ul style="list-style-type: none"> • Find the coordinates of the point that is a given fractional distance along a line segment. • Find the coordinates of the point that partitions a line segment in a given ratio. | |
| <p>Activity 27 <i>Equation of a Circle</i></p> <p>27-1 Learning Targets:</p> <ul style="list-style-type: none"> • Derive the general equation of a circle given the center and radius. • Write the equation of a circle given three points on the circle. <p>27-2 Learning Targets:</p> <ul style="list-style-type: none"> • Find the center and radius of a circle given its equation. • Complete the square to write the equation of a circle in the form $(x - h)^2 + (y - k)^2 = r^2$. | <p style="text-align: center;"><i>Writing the Equation of a Circle</i></p> <p>Equation for a circle using the Pythagorean theorem</p> <hr/> <p style="text-align: center;"><i>Identifying Key Components of a Circle</i></p> <p>Radius and center for a circle equation in standard form</p> <p>Recognizing points on a circle</p> <p>Pythagorean theorem and radii of circles</p> <p>Completing the square to write equation in standard form of a circle</p> |
| <p>Activity 28 <i>Equations of Parabolas</i></p> <p>28-1 Learning Targets:</p> <ul style="list-style-type: none"> • Derive the general equation of a parabola given the focus and directrix. • Write the equation of a parabola given a specific focus and directrix. <p>28-2 Learning Targets:</p> <ul style="list-style-type: none"> • Derive the general equation of a parabola given the vertex and directrix. • Write the equation of a parabola given a specific vertex and directrix. | <p style="text-align: center;"><i>Writing the Equation of a Parabola</i></p> <p>Focus and directrix introduction</p> <p>Using the focus and directrix to find the equation of a parabola</p> <p>Equation for parabola from focus and directrix</p> <p>Finding focus and directrix from vertex</p> |
| <p>Activity 29 <i>Constructions</i></p> <p>29-1 Learning Targets:</p> <ul style="list-style-type: none"> • Use constructions to copy a segment or an angle. | <p style="text-align: center;"><i>Constructions with Segments and Angles</i></p> <p>Constructing an angle bisector using a compass and straightedge</p> <hr/> <p style="text-align: center;"><i>Constructions with Parallel and Perpendicular Lines</i></p> <p>Constructing a perpendicular bisector using a compass and straightedge</p> |

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| <ul style="list-style-type: none"> Use constructions to bisect a segment or an angle. <p>29-2 Learning Targets:</p> <ul style="list-style-type: none"> Construct parallel and perpendicular lines. Use constructions to make conjectures about geometric relationships. <p>29-3 Learning Targets:</p> <ul style="list-style-type: none"> Construct inscribed and circumscribed circles. Construct tangents to a circle. | <p>Constructing a perpendicular line using a compass and straightedge</p> <p>Constructions with Circles</p> <p>Constructing square inscribed in circle</p> <p>Constructing equilateral triangle inscribed in circle</p> <p>Constructing regular hexagon inscribed in circle</p> <p>Constructing circle inscribing triangle</p> <p>Constructing circumscribing circle</p> |
| <p>Unit 5: Extending Two Dimensions to Three Dimensions</p> | |
| <p><i>Activity 30</i> <i>Deriving Area Formulas</i></p> <p>30-1 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems using the areas of rectangles, parallelograms, and composite figures. Use coordinates to compute perimeters and areas of figures. <p>30-2 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems using the areas of triangles and composite figures. Use coordinates to compute perimeters and areas of figures. <p>30-3 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems using the areas of rhombuses, trapezoids, and composite figures. Solve problems involving density. | <p>Areas of Quadrilaterals</p> <p>Area of a parallelogram</p> <p>Perimeter of a parallelogram</p> <p>Area of a trapezoid</p> <p>Areas of Triangles</p> <p>Triangle area proofs</p> <p>Area of diagonal generated triangles of rectangle are equal</p> <p>Area of an equilateral triangle</p> <p>Area of shaded region made from equilateral triangles</p> <p>Composite Figures</p> <p>Perimeter and area of a non-standard polygon</p> |
| <p>Activity 31 <i>Regular Polygons</i></p> <p>31-1 Learning Targets:</p> <ul style="list-style-type: none"> Develop a formula for the sum of the measures of the interior angles of a polygon. Determine the sum of the measures of the interior angles of a polygon. <p>31-2 Learning Targets:</p> <ul style="list-style-type: none"> Develop a formula for the measure of each interior angle of a regular polygon. Determine the measure of the exterior angles of a polygon. <p>31-3 Learning Targets:</p> <ul style="list-style-type: none"> Develop a formula for the area of a regular polygon. Solve problems using the perimeter and area of regular polygons. | <p>Sum of the Measures of the Interior Angles of a Polygon</p> <p>Sum of interior angles of a polygon</p> <p>Sum of the exterior angles of convex polygon</p> <p>Area of Regular Polygons</p> <p>Area of a regular hexagon</p> |
| <p>Area of a Circle</p> | |

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| <p>Activity 32 <i>Length and Area of Circles</i></p> <p>32-1 Learning Targets:</p> <ul style="list-style-type: none"> Develop and apply a formula for the circumference of a circle. Develop and apply a formula for the area of a circle. <p>32-2 Learning Targets:</p> <ul style="list-style-type: none"> Develop and apply a formula for the area of a sector. Develop and apply a formula for arc length. <p>32-3 Learning Targets:</p> <ul style="list-style-type: none"> Prove that all circles are similar. Describe and apply radian measure. | <p>Area of a circle</p> <hr/> <p><i>Area of a Sector</i></p> <p>Area of a sector given a central angle</p> <hr/> <p><i>Arc Length</i></p> <p>Length of an arc that subtends a central angle</p> |
| <p>Activity 33 <i>Three-Dimensional Figures</i></p> <p>33-1 Learning Targets:</p> <ul style="list-style-type: none"> Describe properties and cross sections of prisms and pyramids. Describe the relationship among the faces, edges, and vertices of a polyhedron. <p>33-2 Learning Targets:</p> <ul style="list-style-type: none"> Describe properties and cross sections of a cylinder. Describe properties and cross sections of a cone. <p>33-3 Learning Targets:</p> <ul style="list-style-type: none"> Describe properties and cross sections of a sphere. Identify three-dimensional objects generated by rotations of two-dimensional objects. | <p><i>Cross Sections</i></p> <p>Slice a rectangular pyramid</p> <p>Rotating 2D shapes in 3D</p> |
| <p>Activity 34 <i>Prisms and Cylinders</i></p> <p>34-1 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems by finding the lateral area or total surface area of a prism. Solve problems by finding the lateral area or total surface area of a cylinder. <p>34-2 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems by finding the volume of a prism. Solve problems by finding the volume of a cylinder. | <p><i>Surface Area</i></p> <p>Finding surface area: nets of polyhedra</p> <p>Cylinder volume and surface area</p> <hr/> <p><i>Volume</i></p> <p>Cylinder volume and surface area</p> <p>Find the volume of a triangular prism and cube</p> |

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| <p>Activity 35 <i>Pyramids and Cones</i></p> <p>35-1 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems by finding the lateral area or total surface area of a pyramid. Solve problems by finding the lateral area or total surface area of a cone. <p>35-2 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems by finding the volume of a pyramid. Solve problems by finding the volume of a cone. <p>35-3 Learning Targets:</p> <ul style="list-style-type: none"> Apply concepts of density in modeling situations. Apply surface area and volume to solve design problems. | <p style="text-align: right;">Volume: Cones</p> <p>Volume of a cone</p> |
| <p>Activity 36 <i>Spheres</i></p> <p>36-1 Learning Targets:</p> <ul style="list-style-type: none"> Solve problems using properties of spheres. Solve problems by finding the surface area of a sphere. <p>36-2 Learning Targets:</p> <ul style="list-style-type: none"> Develop the formula for the volume of a sphere. Solve problems by finding the volume of a sphere. <p>36-3 Learning Targets:</p> <ul style="list-style-type: none"> Compare parallelism in Euclidean and spherical geometries. Compare triangles in Euclidean and spherical geometries. | <p style="text-align: right;">Volume: Sphere</p> <p>Volume of a sphere</p> |
| <p>Activity 37 <i>Changing Dimensions</i></p> <p>37-1 Learning Targets:</p> <ul style="list-style-type: none"> Describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume. Use geometric shapes and their measures to model real-world objects. <p>37-2 Learning Targets:</p> <ul style="list-style-type: none"> Describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume. | <p style="text-align: center;">N/A</p> |

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| <ul style="list-style-type: none"> Use geometric shapes and their measures to model real-world objects. | |
| Unit 6: Probability | |
| <p>Activity 38 <i>Sample Spaces</i></p> <p>38-1 Learning Targets:</p> <ul style="list-style-type: none"> Understand probability in real-world situations. Represent sample spaces as lists. Calculate the probability of a single event. <p>38-2 Learning Targets:</p> <ul style="list-style-type: none"> Understand probability in real-world situations. Describe events as subsets of a sample space using the characteristics of the outcomes. Represent sample spaces as tables of outcomes and as two-way frequency tables. Calculate the probability of events involving “and” and “or.” | <i>Calculating Probability</i> |
| | <p>Probability explained</p> <p>Determining probability</p> <p>Finding probability example</p> <p>Finding probability example 2</p> <p>Finding probability example 3</p> |
| | <i>Frequency Tables</i> |
| <p>Filling out frequency table for independent events</p> | |
| <p>Activity 39 <i>Venn Diagrams and Probability Notation</i></p> <p>39-1 Learning Targets:</p> <ul style="list-style-type: none"> Use Venn diagrams to represent events. Translate Venn diagrams of counts into Venn diagrams of probabilities. <p>39-2 Learning Targets:</p> <ul style="list-style-type: none"> Use Venn diagrams to represent “and,” “or,” and “not.” Use set notation to describe events. | <i>Using Venn Diagrams with Probability</i> |
| | <p>Probability with playing cards and Venn diagrams</p> |
| <p>Activity 40 <i>Addition Rule and Mutually Exclusive Events</i></p> <p>40-1 Learning Targets:</p> <ul style="list-style-type: none"> Learn the Addition Rule and understand why it applies. Use the Addition Rule to calculate probabilities. <p>40-2 Learning Targets:</p> <ul style="list-style-type: none"> Learn the meaning of “mutually exclusive” events. Use Venn diagrams to represent mutually exclusive events. Use the Addition Rule to calculate the probability of mutually exclusive events. | <i>Applying the Addition Rule for Probability</i> |
| | <p>Addition rule for probability</p> |
| | <i>Dependent Events</i> |

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| <p>Activity 41 <i>Dependent Events</i></p> <p>41-1 Learning Targets:</p> <ul style="list-style-type: none"> • Understand the conditional probability of A given B. • Determine conditional probabilities using two-way frequency tables and Venn diagrams. • Interpret the answer in terms of the model/ <p>41-2 Learning Targets:</p> <ul style="list-style-type: none"> • Develop the conditional probability formula. • Use conditional probability for everyday situations. <p>41-3 Learning Targets:</p> <ul style="list-style-type: none"> • Use tree diagrams to determine conditional probabilities. • Apply the general Multiplication Rule. | <p>Dependent probability introduction</p> <p>Dependent probability example</p> <p>Dependent probability example 2</p> <p>Analyzing dependent probability</p> <hr/> <p style="text-align: center;"><i>Conditional Probability</i></p> <hr/> <p>Calculating conditional probability</p> <p>Conditional probability warmup</p> <p>Count outcomes using tree diagram</p> <p>Analyzing event probability for independence</p> |
| <p>Activity 42 <i>Independent Events</i></p> <p>42-1 Learning Targets:</p> <ul style="list-style-type: none"> • Understand when two events are independent. • Use the Multiplication Rule to determine if two events are independent. • Understand independent and dependent events in real-world situations. <p>42-2 Learning Targets:</p> <ul style="list-style-type: none"> • Discover ways probability is used in real-life situations. • Determine the probability of an event involving area. • Use a linear model to determine probability involving elapsed time <p>42-3 Learning Targets:</p> <ul style="list-style-type: none"> • Use permutations and combinations to compute probabilities of compound events and solve problems. | <p style="text-align: center;"><i>Independent and Dependent Probabilities</i></p> <hr/> <p>Independent or dependent probability event?</p> <hr/> <p style="text-align: center;"><i>Independent Events</i></p> <hr/> <p>Compound probability of independent events</p> <p>Test taking probability and independent events</p> <p>Die rolling probability with independent events</p> |