**Geometry Units Outline**

**2024-2025**

|  |  |
| --- | --- |
| **Unit 0** | Geometric Constructions |
| **Learning Targets:** | **Learning Target 0A: Make Geometric Constructions (G-CO.D)**  ¨ I can construct perpendicular bisectors and angle bisectors. (Lessons 3, 5)  ¨ I can construct a parallel and perpendicular line through a given point and line. (Lesson 6)  ¨ I can construct equilateral triangles or squares. (Lessons 4, 7)  ¨ I can follow instructions to create a construction. (Lessons 1-8)    **Learning Target 0B: Explain Geometric Constructions (G-CO.D)**  ¨ I can use precise mathematical language to describe a construction. (Lessons 1-9)  ¨ I can identify and explain why parts in a construction are congruent. (Lessons 3-9)  ¨ I can identify and explain why a point is equidistant from two other points. (Lessons 1, 3, 4 5) |
| **Assessment(s) for Evidence** | Unit Quizzes  Unit Tests  Cool Downs  Activities/Teacher Observation |
| **Resources/Links** | Illustrative Mathematics online textbook @ [im.kendallhunt.com](https://im.kendallhunt.com/HS/students/2/index.html)  Teacher Canvas Page  Student Companion Guide linked [here](https://livedmpsk12ia-my.sharepoint.com/:w:/g/personal/kimberly_wermerskirchen_dmschools_org/EX9ydB7VXHFJpQZsX2FJ1xYBpolKxIM32tAf4rJjSfM73Q?e=PGlv65)  How to use a [compass video](https://www.youtube.com/watch?v=G8r3qacVdKw)  How to construct a [perpendicular bisector video](https://www.youtube.com/watch?v=hhjujo8XFkA&list=PLHRatQsym1_gRLx7yYs5-64jBvH238jKj&index=12)  How to construct an [angle bisector video](https://www.youtube.com/watch?v=VYbRcqXQ_W4&list=PLHRatQsym1_gRLx7yYs5-64jBvH238jKj&index=1)  Online video source [Unit 1 Geometry](https://www.youtube.com/watch?v=Rupj6TuOeAY&list=PLxIInkhOzP8FaMP6qzRjcKbaMIMYekA-t)  Online video [review Unit 1](https://youtu.be/A5QxrHkWUt4?si=3J4xXIM1G9pTBHXp) |

|  |  |
| --- | --- |
| **Unit 1** | Rigid Transformations |
| **Learning Targets:** | **Learning Target 1A: Describe Rigid Transformations**  **Given a figure and the description of a transformation**,   * I can determine the figure's image after the transformation. (Lessons 10, 13) * I can describe the sequence of transformations necessary to take a figure onto another figure. (Lessons 10, 13, 17) * I can describe a reflection by specifying the line of reflection and noticing reflection symmetry. (Lesson 11, 15) * I can describe a translation by stating the directed line segment. (Lesson 12) * I can describe a rotation by stating the center, direction, and angle of rotation and notice rotational symmetry. (Lesson 14, 15, 16)   **Learning Target 1B: Prove theorems about lines, angles, and triangles.**   * I can label and make conjectures from diagrams. (Lesson 19) * I can use transformations or angle measurements to prove why vertical angles are always congruent and, when lines are parallel, corresponding angles and alternate interior angles are congruent. (Lesson 19, 20) * I can prove the angles in a triangle sum to 180 degrees. (Lesson 21) |
| **Assessment(s) for Evidence** | Unit Quizzes  Unit Tests  Cool Downs  Activities/Teacher Observation |
| **Resources/Links** | Illustrative Mathematics online textbook @ [im.kendallhunt.com](https://im.kendallhunt.com/HS/students/2/index.html)  [Illustrative Mathematics family materials](https://im.kendallhunt.com/HS/families/2/1/index.html)  Teacher Canvas Page  Student Companion Guide linked [here](https://livedmpsk12ia-my.sharepoint.com/:w:/g/personal/kimberly_wermerskirchen_dmschools_org/EX9ydB7VXHFJpQZsX2FJ1xYBpolKxIM32tAf4rJjSfM73Q?e=PGlv65)  [Transformation Overview PowerPoint](https://livedmpsk12ia-my.sharepoint.com/:p:/g/personal/kimberly_wermerskirchen_dmschools_org/EQh960_M1EVGp5uYCvAsCLABhXvPC42-HVnDzbeHPCwi2g?e=Sd89S5)  [What are Vertical Angles Video](https://youtu.be/QjwbvNdUSTk)  [Vertical Angles are congruent Khan Video](https://youtu.be/wRBMmiNHQaE)  [Triangle Sum Explanation](https://youtu.be/_PnPM8VVHBA) |

|  |  |
| --- | --- |
| **Unit 2** | Congruence |
| **Learning Targets:** | **Learning Target 2A: Use rigid motion to prove figures are congruent (not using measurements such as distances and angle measures, or the coordinate plane). (G.CO.B)**   * I can identify parts that correspond in congruent figures from a visual and from a congruence statement (Lessons 1, 2, 3, 5) * I can write congruence statements (Lessons 1, 2, 3, 5) * I can determine if a series of rigid transformations will map one figure to another. (Lessons 1, 3, 5, 6, 7, 9) * I can explain that if all corresponding sides and angles are congruent, then two triangles are congruent. (Lesson 3)   **Learning Target 2B: Prove Geometric Theorems about triangles and quadrilaterals (not using measurements such as distances and angle measures, or the coordinate plane). (G.CO.B, G.CO.C)**   * I can prove triangles are congruent using Triangle Congruence Theorems (Lessons 4,6,7,9,10) * I can justify the statements I make in a proof using math vocabulary. (All lessons) * I can critique and correct the reasoning in a proof. (Lesson 10, 11, 12, 14, 15)   **Learning Target 2C: Apply Geometric Theorems and Definitions to find missing measurements in figures. (G.CO.B, G.CO.C)**   * I can identify congruent angles and justify my reasoning using mathematical theorems. (for example: vertical angles, parallel lines and a transversal, corresponding parts of congruent triangles, the definition of bisect, and properties of isosceles triangles and parallelograms) (Lesson 2, 6, 7, 8, 9, 12, 13, 14) * I can identify congruent segments and justify my reasoning using mathematical theorems. (for example: corresponding parts of congruent triangles, the definition of bisect, properties of isosceles triangles and parallelograms) (lesson 2, 6, 7, 8, 9, 12, 13, 14) * I can determine the measurement of angles and justify my reasoning using mathematical theorems. (for example: parallel lines and a transversal, the definition of a linear pair, properties of parallelograms, and the triangle-angle sum theorem) (Lessons 2, 6, 7, 8, 9, 12, 13, 14) |
| **Assessment(s) for Evidence** | Unit Quizzes  Unit Tests  Cool Downs  Activities/Teacher Observation |
| **Resources/Links** | Illustrative Mathematics online textbook @ [im.kendallhunt.com](https://im.kendallhunt.com/HS/students/2/index.html)  [Illustrative Mathematics family materials](https://im.kendallhunt.com/HS/families/2/2/index.html)  Teacher Canvas Page  Student Companion Guide linked [here](https://livedmpsk12ia-my.sharepoint.com/:w:/g/personal/kimberly_wermerskirchen_dmschools_org/EX9ydB7VXHFJpQZsX2FJ1xYBpolKxIM32tAf4rJjSfM73Q?e=PGlv65)  [Unit Two Review Video Link](https://www.youtube.com/watch?v=aRXOtaLudzk&list=PLxIInkhOzP8FNs2WdVSsyyhi0nMi5Orgp&index=14)  [Khan Academy Triangle Congruence Review Link](https://www.khanacademy.org/math/geometry/hs-geo-congruence/xff63fac4:hs-geo-congruent-triangles/a/triangle-congruence-review?modal=1) |

|  |  |
| --- | --- |
| **Unit 3** | Similarity |
| **Learning Targets:** | **Learning Target 3A: Describe dilations and use properties of dilations. (G.SRT.A)**   * **I can use the scale factor (k) and center to describe and sketch a dilation. (Lessons 1, 3)** * **I can recognize that when a figure is dilated, the corresponding segments are proportional. (Lesson 3, 5)** * **I can recognize that when a figure is dilated, the corresponding lines are parallel. (Lesson 4, 5)** * **I can recognize that when a figure is dilated, the corresponding angles are congruent. (Lesson 4, 5)**     **Learning Target 3B: Determine and prove figures are similar. (G.SRT.A)**   * **I can write similarity statements. (Lesson 6)** * **I understand the relationship between corresponding sides and angles in similar figures. (Lesson 7)** * **I can write proportions to describe the relationship of sides in similar figures. (Lesson 7, 8)** * **I can critique and write proofs that use similarity. (Lesson 8)** * **I can use similarity theorems to show triangles are similar such as: AA, SAS, and SSS (Lessons 9, 10, 11)**   **Learning Target 3C: Use properties of similar figures to solve problems. (G.SRT.B.5)**   * **I can use proportions and scale factors to find lengths in similar figures. (Lesson 12- 16)** * **I can find similar triangles formed by the altitude to the hypotenuse of a right triangle. (Lesson 13)**      * **I can find unknown values in right triangles using similarity. (Lesson 15)** |
| **Assessment(s) for Evidence** | Unit Quizzes  Unit Tests  Cool Downs  Activities/Teacher Observation |
| **Resources/Links** | Illustrative Mathematics online textbook @ [im.kendallhunt.com](https://im.kendallhunt.com/HS/students/2/index.html)  [Illustrative Mathematics Family Materials](https://im.kendallhunt.com/HS/families/2/3/index.html)  Teacher Canvas Page  Student Companion Guide linked [here](https://livedmpsk12ia-my.sharepoint.com/:w:/g/personal/kimberly_wermerskirchen_dmschools_org/EX9ydB7VXHFJpQZsX2FJ1xYBpolKxIM32tAf4rJjSfM73Q?e=PGlv65)  [Video link for scale factor lesson](https://youtu.be/P1f3sJpIYGI)  [Video link on dilation scale factor 1/3](https://youtu.be/Be8FfwMVCjo?si=HCYtOkf3zEeG2eGb)  [How to solve a proportion](https://youtu.be/D5U14KjLB5I?si=v4vfw3-QGEe8k5Ji)  [How to use a proportion to find a missing side](https://youtu.be/hZpDqDypj-Q?si=7nBX-M9hi-nCAKdS)  [Khan Academy solving similar triangles](https://youtu.be/R-6CAr_zEEk?si=MtOpxfnVONAcUiXz)  [Khan Academy similarity in right triangles](https://youtu.be/Tal_fgREll0?si=ja8pcdrs-vjbmLlV) |

|  |  |
| --- | --- |
| **Unit 4** | Right Triangle Trigonometry |
| **Learning Targets:** | **LT4A: I can work with steepness and ratios in right triangles. (G-SRT.C.6)**   * 1. I can understand how the ratio of two sides defines a specific acute angle in a right triangle (Lessons 1, 4) * 2. I can determine side-lengths in special right triangles (45-45-90 and 30-60-90) (Lessons 2, 3) * 3. I can use a table of ratios of side lengths of right triangles to estimate unknown angles and side lengths. (Lesson 5)   **LT4B: I can solve problems involving right triangles using trigonometry (G-SRT.C.7; G-SRT.C.8)**   * 4. I can use cosine, sine, and tangent to find lengths. (Lessons 6-8, 10, 11) * 5. I can explain the relationship between sine and cosine of complimentary angles. (Lesson 8) * 6. I can use arccosine, arcsine, and arctangent to find angle measures. (Lessons 9-11) * 7. I can use the Pythagorean Theorem to find distances and determine if a triangle is a right triangle. (all) |
| **Assessment(s) for Evidence** | Unit Quizzes  Unit Tests  Cool Downs  Activities/Teacher Observation |
| **Resources/Links** | Illustrative Mathematics online textbook @ [im.kendallhunt.com](https://im.kendallhunt.com/HS/students/2/index.html)  [Illustrative Mathematics family materials](https://im.kendallhunt.com/HS/families/2/4/index.html)  Teacher Canvas Page  Student Companion Guide linked [here](https://livedmpsk12ia-my.sharepoint.com/:w:/g/personal/kimberly_wermerskirchen_dmschools_org/EX9ydB7VXHFJpQZsX2FJ1xYBpolKxIM32tAf4rJjSfM73Q?e=PGlv65)  [Scientific Calculator link](https://www.desmos.com/scientific)  [45-45-90 special right triangles](https://youtu.be/nQEqpVK7ZPA)  [45-45-90 special right triangles](https://youtu.be/YbO9gOy0Np8)  [30-60-90 special right triangles](https://youtu.be/8N9U8ELNILE)  [Sin Cos Tan Ratios](https://youtu.be/5tp74g4N8EY?si=b32UXvuB3ook1i7k)  [How to solve for a missing angle](https://www.khanacademy.org/math/trigonometry/trigonometry-right-triangles/trig-solve-for-an-angle/a/inverse-trig-functions-intro?modal=1)  [Khan academy solve for missing angles](https://www.khanacademy.org/math/trigonometry/trigonometry-right-triangles/trig-solve-for-an-angle/e/solve-for-an-angle-in-a-right-triangle?modal=1) |