Unit Plan Template

Math Unit Focus	Science Integration	Engineering Practices	Technology Component
Unit Name: 3. Similarity **List KY math standards:** **KY.HS.G.9 Understand the properties of dilations** **a. Verify the properties that result from that dilation given by center and scale factor.** **b. Verify that a dilation produces an image that is similar to the pre-image.** **KY.HS.G.10 Apply the properties of similarity transformations to establish the AA criterion for two triangles to be similar.** **KY.HS.G.12a 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 (sine, cosine, and tangent).**	**List NGSS standards** **HS-ESS1-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system**	**List engineering practices from NGSS** **Developing and Using Models** Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed world(s). **Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories. **Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 9–12 builds on K–8 experiences and progresses to evaluating the validity and reliability of the claims, methods, and designs.	**List technology or computer science standards here or describe the technology that will be integrated into this unit.** **The interdependence of Science, Engineering, and Technology** Science and engineering complement each other in the cycle known as research and development (R&D). Many R&D projects may involve scientists, engineers, and others with wide ranges of expertise. (HSESS1-2), (HSESS1-4)

Tim	Unit Goals with Measurable Outcomes + *STEM Integration*	Student Learning Targets	Essential Questions + Assessment	5E Connections + Sample Activities	Intervention Strategies for Target Groups
# da 3	***Goal 1*** **KY.HS.G.9.b** **HS-ESS1-4** Students will use the solar system as a subject to scale down a drawing	I can dilate a figure given a scale factor and center.	Given a figure, scale factor and center students will construc an image. Geometry-3-1-Lesson-curated-practice-problem-set.pdf	Geometry-3-1-Lesson-student-task-statements.pdf modeling and constructing figures with the use of peers and construction tools.	Practice different shapes with the lines pre-drawn and focus allocated.
		I can calculate the length of parts of a scaled drawing. I can determine the accuracy of pictures of the solar system.	Geometry-3-2-Lesson-curated-practice-problem-set.pdf Howw far would the moon have to be from the earth to appear the same size as the sun?	Engagement Video https://www.youtube.com/watch?v=uXWtf6O1A9M Geometry-3-2-Lesson-student-task-statements.pdf Students will collect data from https://nssdc.gsfc.nasa.gov/planetary/factsheet/ and fill in this sheet instead of being given it. Geometry.3.A2.2-optional-shrinking-the-solar-system-data-blm.pdf	For students who struggle with analyzing data, the chart will be provided with some information already given information.

3	**KY.HS.G.12a** **HS-ESS1-4** Students use the size of stars to construct a scaled model comparing it to the sun.	I know that when figures are dilated by a scale factor of k , all lengths in the figure are multiplied by k.	Geometry-3-3-Lesson-curated-practice-problem-set.pdf	Geometry-3-3-Lesson-student-task-statements.pdf Students will use the star data base and choise and star then make a scaled model comparing it to the size of the sun. https://www.nasa.gov/subject/6892/stars/	Extra practice on dialting and object with detailed steps layed out.
		I can write similarity statements. I know the definition of similarity. I know the relationships between corresponding sides and angles in similar triangles.	8.2 .pdf Geometry-3-6-Lesson-cool-down.p Copy of Self assessment lesson 3.6	dialtion practice with grid.pdf Geometry-3-6-Lesson-cool-down.pdf Card sort Geometry.3.B6.2-card-sort-not-so-rigid-transformations-blm.pdf	Different difficulty leveled card sort questions.
2	**KY.HS.G.10**	I can explain why the angle-angle triangle similarity theorem works. I can explain why why the segment connecting the midpoints of two sides of a triangle is parallel to the third side and half the length of the third	8.3.pdf 8.4.pdf Geometry-3-5-Lesson-cool-down.pdf	Geometry-3-5-Lesson-student-task-statements.pdf	Pre laid out proof
1	**KY.HS.G.9a** **HS-ESS1-4** Image scale math uses of nasa images to help students have real world objects to determine scale and sizes.	I can find scale factors and use them to solve problems	Geometry-3-12-Lesson-curated-practice-problem-set.pdf	Geometry-3-12-Lesson-student-task-statements.pdf Geometry.3.B12.2-card-sort-corresponding-parts-blm.pdf Students will be given questions from the image scale math activites to find scale factors. image scale math.pdf	Different level of difficulity questions per group.
1	**KY.HS.G.12a**	I can solve and interpret problems involving similar right triangles.	Geometry-3-16-Lesson-curated-practice-problem-set.pdf	geometry_simPolys.pdf 8.5.pdf 7-Similar Polygons.pdf	
2	**KY.HS.G.12a** Studets will use clinometers to determine the height of trees using the pythagorean theorem.	I can prove the Pythagorean Theorem. I can solve problems involving similar right triangles.	SKM_654e19112508560.pdf	Practice finding the height of objects or buildings using a clinometer(part 4 of kite exploration) https://icesat-2.gsfc.nasa.gov/calling-all-students-and-citizen-scientists-help-measure-tree-height How to Make/Use a Clinometer How to find height with a	Practice pythagorean theorem using notes and puzzle

				clinometer Pythagorean theorem to find the height of a building Pythagorean Theorem and tree height	
1 depending on class	**KY.HS.G.9a** **KY.HS.G.10** **KY.HS.G.12a and b**	I can review for a summative exam		Dilation and Similarity Review.pdf	
1	**KY.HS.G.9a** **KY.HS.G.10** **KY.HS.G.12a and b**	I can master a summative exam.		Test Version A.pdf	