

Lesson Topic	US Pavilion (EPCOT/Architecture)								
Common Core Standards	7th Grade CCSS.Math.Content: 7.G.A.1 and 7.G.B.6								
Scope & Sequence Unit	Unit 12 (3D Figures)								
Objectives	This lesson will focus on the use of geometric concepts in architecture, with a specific focus on geodesic domes. Students will develop a plan for finding the surface area of three-dimensional figures by applying their knowledge of congruent faces and area formulas of the polygons that make up a polyhedron. Students will first find the surface area of a triangular prism using a net, and will then use the same process to find the surface area of a geodesic dome.								
Literacy Component	Students will read, write, and learn about the history and advantages of the geodesic dome as a popular architectural structure. Students will compare and contrast different geodesic structures around the world.								
Teaching Point 1	Essential Questions: What is architecture and why is it important? What do architects need to keep in mind when designing buildings/structures? Lead students to understand that the design of a building should be based on its purpose (i.e. "form follows function")	NB Activity	Discuss students' prior knowledge about architecture by completing a K-W-L activity to list students' ideas and questions. Use spotlight tool to read nonfiction article about architecture. Students will use highlighting tool to cite textual evidence during discussion. Pull tabs will reveal key ideas from the article.	Easiteach Activity	Discuss students' prior knowledge about architecture by completing a K-W-L activity to list students' ideas and questions. Use spotlight tool to read nonfiction article about architecture. Students will use highlighting tool to cite textual evidence during discussion. Use large filled rectangle locked in allow vertical movement to act as a screen shade--cover and reveal key ideas from the article.	Activ Activity	Discuss students' prior knowledge about architecture by completing a K-W-L activity to list students' ideas and questions. Use spotlight tool to read nonfiction article about architecture. Students will use highlighting tool to cite textual evidence during discussion. Use the revealer to cover and reveal key ideas from the article.	Hitachi Activity	Discuss students' prior knowledge about architecture by completing a K-W-L activity to list students' ideas and questions. Use highlighting and spotlight tool to analyze and discuss nonfiction article about architecture. Use spotlight tool to read nonfiction article about architecture. Students will use highlighting tool to cite textual evidence during discussion. Pull tabs will reveal key ideas from the article.
Teaching Point 2	Provide students with architecture examples of geodesic domes built around the world, starting with the US Pavilion at the '67 World Fair. Essential Question: What is a geodesic dome?	NB Activity	Students will take a virtual fieldtrip in Google Earth by clicking on linked .kmz files to view geodesic domes around the world (including US Pavilion and EPCOT). Students will view short video with real footage from the World Fair and commentary on Buckminster Fuller's design process for the US Pavilion. Use LATA Note Reveal to reveal discussion questions following the tour and video.	Easiteach Activity	Students will take a virtual fieldtrip in Google Earth by clicking on linked .kmz files to view geodesic domes around the world (including US Pavilion and EPCOT). Students will view short video with real footage from the World Fair and commentary on Buckminster Fuller's design process for the US Pavilion. Use LATA Note Reveal to reveal discussion questions following the tour and video.	Activ Activity	Students will take a virtual fieldtrip in Google Earth by clicking on linked .kmz files to view geodesic domes around the world (including US Pavilion and EPCOT). Students will view short video with real footage from the World Fair and commentary on Buckminster Fuller's design process for the US Pavilion. Use LATA Note Reveal to reveal discussion questions following the tour and video.	Hitachi Activity	Students will take a virtual fieldtrip in Google Earth by clicking on linked .kmz files to view geodesic domes around the world (including US Pavilion and EPCOT). Students will view short video with real footage from the World Fair and commentary on Buckminster Fuller's design process for the US Pavilion. Use LATA Note Reveal to reveal discussion questions following the tour and video..
Teaching Point 3	Architecture/Geometry Connection: Discuss the wide range of shapes and sizes of buildings and ask the students to consider the advantages or disadvantages of different shapes in architectural designs. Essential Question: What polygons do you notice in all of the domes we have looked at? Why do you think these polygons were used? (Triangles are stable shapes that hold their shape with force acted upon them).	NB Activity	View/rotate 3D Model of geodesic sphere (from Google 3D Warehouse). Navigate the 3D scene using navigation controls or SMART Document camera and mixed reality cube. Use Magic Pen to magnify a small area of a geodesic dome image and shape pen to help students identify the polygons that make up the geodesic dome.	Easiteach Activity	Link to model of geodesic sphere in Google SketchUp. Have students identify the polygons that make up the geodesic dome.	Activ Activity	View 3D Model of geodesic sphere (from Google 3D Warehouse). Use pen to magnify a small area of geodesic dome image to help students identify the polygons that make up the geodesic dome.	Hitachi Activity	Link to model of geodesic sphere in Google SketchUp. Have students identify the polygons that make up the geodesic dome.

Assessment	Students solve real-world mathematical problem involving finding surface area of geodesic dome. Essential Question: How do you find the surface area of a three-dimensional object composed of polygons?	NB Assessment	Display image of a net for a basic 3D figure (triangular prism). Model how to find the surface area of the prism using the net. Students will record steps and formulas in a table and self-check by tapping cell shades to reveal answer. Students will follow same steps to find surface area of geodesic dome. Set to Dual Page to display net on one page and table on second page.	Easiteach Assessment	Display image of a net for a basic 3D figure (triangular prism). Model how to find the surface area of the prism using the net. Students will record steps and formulas in a table and self-check by tapping cell shades to reveal answer. Students will follow same steps to find surface area of geodesic dome. Split screen to display net on one page and table on second page.	ActivAssessment	Display image of a net for a basic 3D figure (triangular prism). Model how to find the surface area of the prism using the net. Students will record steps and formulas in a table and self-check by tapping cell shades to reveal answer. Students will follow same steps to find surface area of geodesic dome.	Hitachi Assessment	Display image of a net for a basic 3D figure (triangular prism). Model how to find the surface area of the prism using the net. Students will record steps and formulas in a table and self-check by tapping cell shades to reveal answer. Students will follow same steps to find surface area of geodesic dome. Set to Dual Page to display net on one page and table on second page.	
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