

## WAMC Lab Template

### **Math Concept(s): Geodesic Domes**

Source / Text: Geodesic Math and How to Use It, hiloroad.com, other internet sources

Developed by: WAMC Trainers E-Mail: [www.wa-appliedmath.org](http://www.wa-appliedmath.org)

Date: Summer Conference 2018

#### **Attach the following documents:**

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

#### **Short Description (Be sure to include where in your instruction this lab takes place):**

#### **Lab Plan**

Lab Title: **How to Build a Geodesic Dome**

Prerequisite skills: understand shapes in a single plane  
Measurement skills  
Use of compass, ruler

Lab objective: Construct a model of a geodesic dome. Lab can be used from kindergarten through high school, scaffolding the standards addressed.

#### **Standards: (Note SPECIFIC relationship to Science, Technology, and/or Engineering)**

Mathematics K–12 Learning Standards:

- K.G 1-6, 1.G 1-3, 2.G 1, 3.G 2, 4.G 1-3, 5.G 2-3, 6.G 1-4
- 7.G 1-6, 8.G 1B, 4
- A-SSE 1A, A-CED 1-2, A-REI 1
- F-TF 3, 5, 7, 8, 9
- G-CO 9, 10,12, 13
- G-GMB 1, 4
- G-MG 1, 3
- S-IC 2

Standards for Mathematical Practice:

- 1-8

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

- RI.6 1-3
- SL.8 1A-D
- SL 9-10.1 A-D
- SL9-10.4-5

K-12 Science Standards/Engineering

- K-2-ETSI 1,2,3

- K3-5-ETSI-1,2,3
- MS-ETSI-1,2,3,4
- HS-ETSI 1,2,3

Technology

- HS-ETSI 4

Leadership/21st Century Skills:

<u>21st Century Interdisciplinary themes</u> (Check those that apply to the above activity.)			
<input checked="" type="checkbox"/> Global Awareness	<input type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy	<input type="checkbox"/> Civic Literacy	
<input type="checkbox"/> Health/Safety Literacy	<input checked="" type="checkbox"/> Environmental Literacy		
<u>21st Century Skills</u> (Check those that students will demonstrate in the above activity.)			
<b>LEARNING AND INNOVATION</b>	<b>INFORMATION, MEDIA &amp; TECHNOLOGY SKILLS</b>	<b>LIFE &amp; CAREER SKILLS</b>	<b>Productivity and Accountability</b>
<u>Creativity and Innovation</u>	<u>Information Literacy</u>	<u>Flexibility and Adaptability</u>	<u>Productivity and Accountability</u>
<input checked="" type="checkbox"/> Think Creatively	<input checked="" type="checkbox"/> Access and Evaluate Information	<input type="checkbox"/> Adapt to Change	<input type="checkbox"/> Manage Projects
<input checked="" type="checkbox"/> Work Creatively with Others	<input checked="" type="checkbox"/> Use and manage Information	<input type="checkbox"/> Be Flexible	<input type="checkbox"/> Produce Results
<input checked="" type="checkbox"/> Implement Innovations	<u>Media Literacy</u>	<u>Initiative and Self-Direction</u>	<u>Leadership and Responsibility</u>
<u>Critical Thinking and Problem Solving</u>	<input type="checkbox"/> Analyze Media	<input type="checkbox"/> Manage Goals and Time	<input type="checkbox"/> Guide and Lead Others
<input checked="" type="checkbox"/> Reason Effectively	<input type="checkbox"/> Create Media Products	<input checked="" type="checkbox"/> Work Independently	<input type="checkbox"/> Be Responsible to Others
<input type="checkbox"/> Use Systems Thinking	<u>Information, Communications and Technology (ICT Literacy)</u>	<input checked="" type="checkbox"/> Be Self-Directed Learners	
<input type="checkbox"/> Make Judgments and Decisions	<input checked="" type="checkbox"/> Apply Technology Effectively	<u>Social and Cross-Cultural</u>	
<input checked="" type="checkbox"/> Solve Problems		<input checked="" type="checkbox"/> Interact Effectively with Others	
<u>Communication and Collaboration</u>		<input checked="" type="checkbox"/> Work Effectively in Diverse Teams	
<input checked="" type="checkbox"/> Communicate Clearly			
<input checked="" type="checkbox"/> Collaborate with Others			

# Math Council

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## **Teacher Preparation: (What materials and set-up are required for this lab?)**

### Materials

- Access to video
- Rulers
- Compasses
- Scissors
- Glue sticks
- Push pins, binder clips
- Pencil
- Poster board, card stock
- Corrugated cardboard

### Set-Up Required:

- Video

### **Lab Organization Strategies:**

Leadership (Connect to 21<sup>st</sup> Century Skills selected):

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### Cooperative Learning:

- Working in groups of three

### Expectations:

Students in groups of three will construct a geodesic dome

### Timeline:

- 2-3 class periods depending on length of class

### **Post Lab Follow-Up/Conclusions:**

Discuss real world application of learning from lab

- Geodesic domes in existence today

### Career Applications

- Engineering, construction trades, housing development

### Optional or Extension Activities

- Can be scaffolded kindergarten through college

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