

Zome System

Builds Genius!

Attention!...Angles

Mathematics Basic Concept

Lesson Objective:

Students will increase their understanding of various types of angles. They will be able to build and manipulate angles using Zome System, and relate them to angles in their surroundings.

Prerequisite Skills:

Knowledge of what an angle is, ability to recall the three different types of angles

Time Needed:

One class period of 45-60 minutes.

Materials Needed:

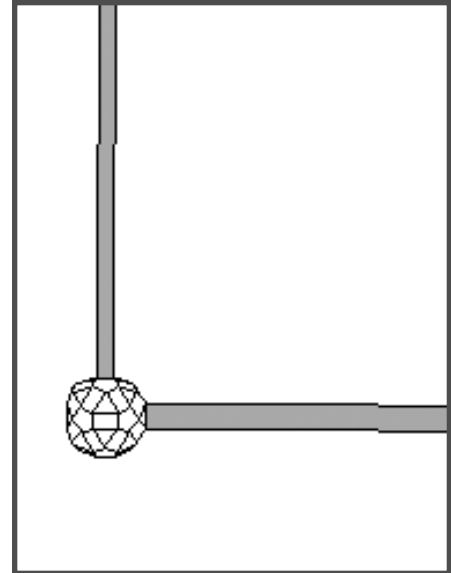
- One Zome System Creator Kit for 25-30 students.

Procedure:

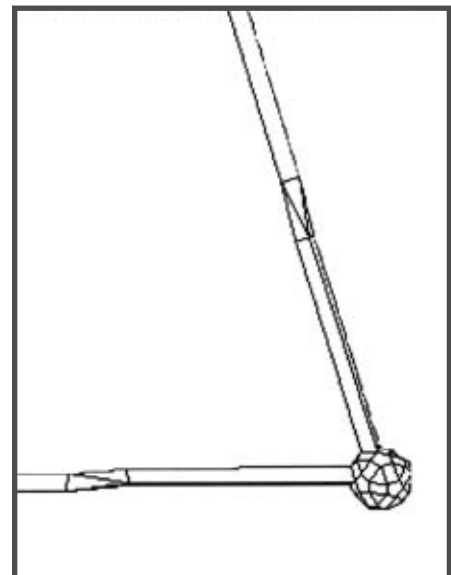
Divide the class into teams of 3-4 students, and distribute the Zome System pieces evenly. Their first project is to build any structure for 7-10 minutes. When they are finished they should study their model, with special attention to the struts. *What do you notice about the size of the struts? What do you notice about the directions they are pointing?* Compile a list of students' reactions.

From the brainstormed list, review the concepts of **parallel** and **perpendicular** lines. *How many parallel and perpendicular lines do you have in your structures?* The student teams should try to determine how many sets of parallel and perpendicular lines they have in their structure, and write them into their math journals. Have students notice example of these lines around the room.

Direct the students' attention to their structures and where the lines meet. Review the concept of **angles**. Have students recall what they know about angles and measurement.



right angle (90 degrees)



acute angle (<90 degrees)

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What kinds of angles can you build with Zome System? What do parallel and perpendicular lines have to do with angles? Have students pick up a node and predict which struts will form an **acute**, **right** and **obtuse** angle. Record predictions in math logs. Then, have students build the three types of angles and draw them in their math journals. Ask them to compare observations with the members of their team. The drawings should be complemented with a definition for each angle type.

What angles do you see in the classroom? Can you identify a right angle in the room? Are there any obtuse angles? Any acute angles?

Assessment:

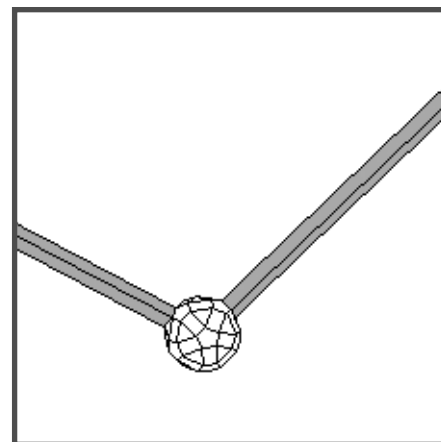
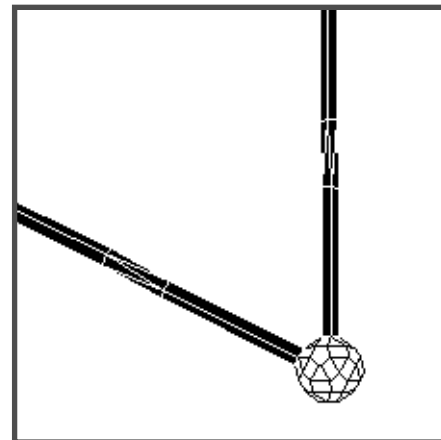
Observe students while they build angles. Review written work in math journals. To meet the standard, students must build, manipulate, and identify all three types of angles.

Standards Addressed:

* Mathematics standards addressing **geometry and spatial sense** (NCTM Standard 9).

Transfer Possibilities:

All future work involving angles in both mathematics and art.



obtuse angle (>90 degrees)

