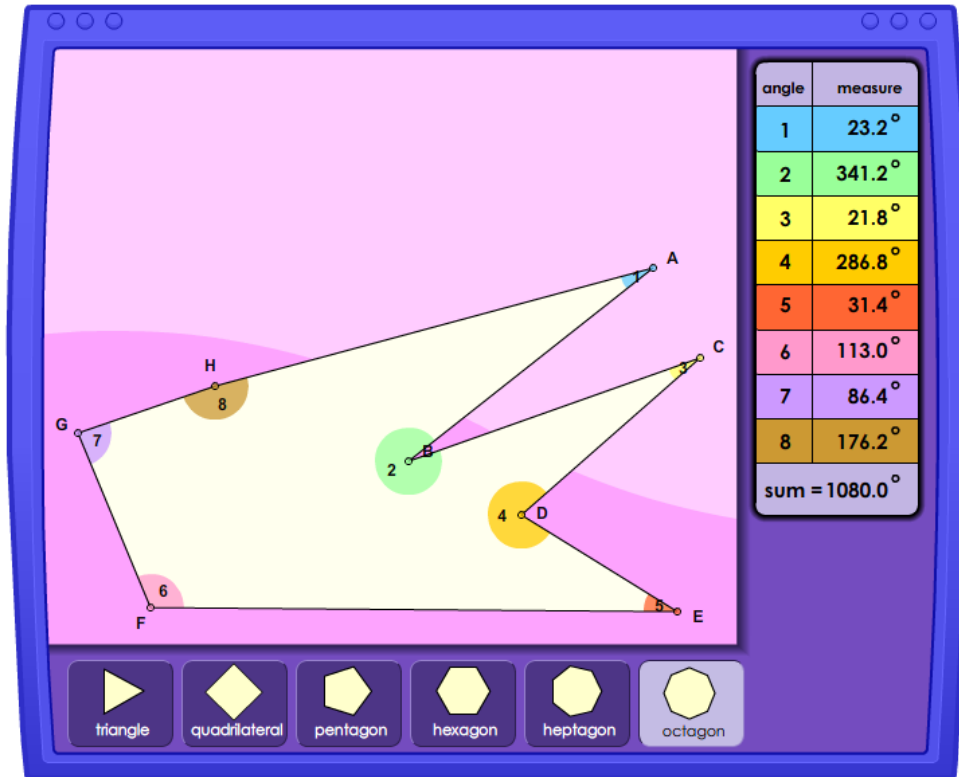# Angle Sums

Curator: Kirk Sheren

This applet allows the student to explore the sum of angles property for different polygons. Students can choose a polygon from a triangle to an octagon, and are then able to drag vertices, changing the shape of the polygon. The applet automatically changes each angle measurement as well as updates the sum of the angles. Students should be able to see that as the angles change in the polygon, the sum of the angles remains the same.

Grade Level: 8-12
PSSM Content Standard: Geometry - analyze properties and determine attributes of two- and three-dimensional objects
CCSSM Content Standard: CCSS.Math.Content.8.G.A.5
Math Content: Sum of Interior Angles Property in Polygons

Evaluation

What is being learned? What mathematics is the focus of the activity/technology? Is relational or instrumental understanding emphasized?

This applet is designed to investigate the angle sum property for triangles, quadrilaterals, pentagons, hexagons, heptagons, and octagons. The focus of this applet is to provide a deeper understanding of the sum of angles property in several different polygons. By seeing how changing angles affects the sum of the angle students will be able to discover that the sum of angles does not change. By allowing the students to discover this pattern the applet is geared toward relational understanding.

How does learning take place? What are the underlying assumptions (explicit or implicit) about the nature of learning?

The students will be learning through discovery unless a teacher gives explicit instructions on what to do. They should be able to discover that the sum of all angles does not change in the same polygon, and they should also discover the pattern that for every vertex you add to the shape you add 180 degrees to the sum of interior angle.

What role does technology play? What advantages or disadvantages does the technology hold for this role? What unique contribution does the technology make in facilitating learning?

Technology allows students to explore several different polygons that can be changed into infinitely many different shapes by changing the location of the vertices. There is a distinct advantage to using this applet because it allows for students to see how angles change and affect the sum because it measures each angle as you change it and calculates the sum at the ame time.

How does it fit within existing school curriculum? (e.g., is it intended to supplement or supplant existing curriculum? Is it intended to enhance the learning of something already central to the curriculum or some new set of understandings or competencies?)

This applet could be used as an introductory activity to the angle sum property of polygons. From there the teacher could pose problems that students could then simulate on the applet like finding the missing angle.

How does the technology fit or interact with the social context of learning? (e.g., Are computers used by individuals or groups? Does the technology/activity support collaboration or individual work? What sorts of interaction does the technology facilitate or hinder?)

This applet is can be utilized several ways, however only one person can manipulate the figures at a time. I think that you could partner up students to engage in mathematical conversations about the patterns that they have identified but the technology itself offers no social aspect of learning.

How are important differences among learners taken into account?

The applet demonstrates mathematics both visually and dynamically, which is a benefit for multiple learners.

What do teachers and learners need to know? What demands are placed on teachers and other "users"? What knowledge is needed? What knowledge supports does the innovation provide (e.g., skills in using particular kinds of technology)?

The teacher and the students need to have a basic understanding of how to operate the applet and from there they can utilize their powers of observation to find patterns in the data.