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GSP to Contruct a Polygon

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GSP Lesson Plan

Name: Megan Bonacci
Grade level(s)/Subject taught: Grade 10 / Geometry
Objectives: Students will correctly identify various polygons and angle measurements. Students will use GSP to construct a polygon. Students will demonstrate appropriate behavior in computer lab.

Please provide a rich **one-page, single-spaced**, description or a *vision* of your best thinking on a way or ways you might teach the planned lesson. (approximately ½ page for the teacher role, ½ page for the student role). Also, construct a tentative rubric that you might use with your students (see example)

Items to include in your lesson plan: (Choose your discipline/concepts from your own area).

1. *Write* the Mathematical Concept or "key idea" that modeling will be used to teach: (e.g. Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships)

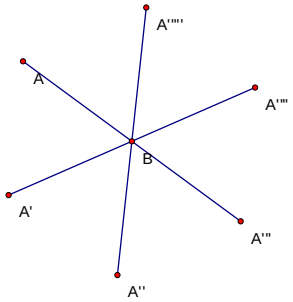
Students will use a computer model of a polygon to practice the construction of a polygon. Students will also use computer modeling to determine interior angle measures of various polygons.

Materials:
Pen/paper
Worksheet
Interactive whiteboard / LCD setup
Computer lab access with GSP for each student
Calculators

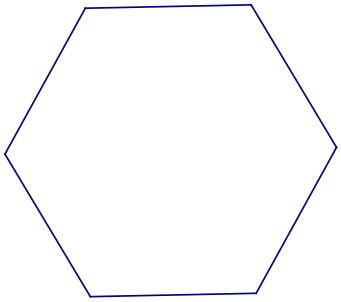
This will be a two day lesson. The first day will be in the classroom and will be an introduction to polygons. I will start by giving the students the definitions of: segment, angle, and various polygons (such as octagon, pentagon, etc.). Students will take notes on the definitions and draw a picture of each object. I will then introduce the angle measure of an n-gon. (Angle = 180 – 360 / n, with n being the number of sides in the n-gon). The next step of the lesson will be guided practice with all of these concepts. Students will work in pairs to answer questions about various polygons, their definitions, and the measure of the angles. I will be using the Interactive whiteboard to pose the questions the students will be answering during this time. As the majority of the students begin to answer these questions independently (without teacher support), I will have them work on a few questions independently (without their partners). I have a self-contained 12:1:1, so I will continue to present the problems on the Interactive whiteboard. My para and I will walk around the room to make sure the students are on-task and are able to successfully answer the questions.

The second day of the lesson will take place in the computer lab. Students will review rules of computer lab usage with me. I will post a 5 minute bellwork on Interactive whiteboard that reviews vocabulary terms from day before. Students will then begin to go through worksheet (see following). They will follow specific directions that tell them how to construct a polygon and answer questions as they proceed.

An example of what the students will have constructed after step 4:



An example of construction after final step:



Students will be handing in a copy of the polygon they created for credit. An extension for this lesson, if there is time left in class, students should try to make their polygon rotate or translate.

GSP Worksheet

Name:_____

Begin by finding and opening Geometers Sketch Pad on your computer. Create a new sketch and begin by constructing 2 points.

1) Select both points and from the **Construct** menu select **Segment**.

2) Now pick one of the points and from the **Transform** menu, select **Mark as Center**.

3) Select the segment and the point that you did not select in step 2. From the **Transform** menu, choose **Rotate**. Rotate the line by 60 degrees.

4) Repeat step 3 until you have gone all the way around in a circle.

   How many times did you have to rotate the line for it to go all the way around?

   _____

   Draw a sketch of what your window looks like:

5) Connect the endpoints to the one next to it on either side by selecting the two points and choosing the **Construct** menu and then selecting **Segment**. Do this until you have enclosed the figure.
6) Holding shift, select all of the segments and points that were in your sketch from step 4. Go to the **Display** menu and select **Hide Objects**.

   What shape have you created:_____

   What is the measure of each angle:_____

   What is the angle sum of the whole shape:_____

7) Save your sketch by selecting **Save** from the **File** menu. Drag the file to the hand in folder and quit out of all of the programs. Hand this worksheet to the teacher.

Math - Problem Solving : Polygons and GSP

Teacher Name: **Megan Bonacci**

Student Name: _____

CATEGORY	4	3	2	1
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Mathematical Reasoning	Uses complex and refined mathematical reasoning.	Uses effective mathematical reasoning	Some evidence of mathematical reasoning.	Little evidence of mathematical reasoning.
Use of Manipulatives	Student always listens and follows directions and only uses manipulatives as instructed.	Student typically listens and follows directions and uses manipulatives as instructed most of the time.	Student sometimes listens and follows directions and uses manipulatives appropirately when reminded.	Student rarely listens and often "plays" with the manipulatives instead of using them as instructed.
Mathematical Terminology and Notation	Correct terminology and notation are always used, making it easy to understand what was done.	Correct terminology and notation are usually used, making it fairly easy to understand what was done.	Correct terminology and notation are used, but it is sometimes not easy to understand what was done.	There is little use, or a lot of inappropriate use, of terminology and notation.

Date Created: **Aug 09, 2006 06:15 pm (CDT)**