

Name: _____ (Remember: Edit, Preferences, Units, Tenths, Tenths, Check New Sketches)

Geometer's Sketchpad Project #2 (Math EL)

- ✓ **Geometry Activity #2.1 – Triangles**
- ✓ **Geometry Activity #2.2 – Quadrilaterals**
- ✓ **Geometry Activity #2.3 – Polygons & Regular Polygons**

Remember:

- ✓ After logging on and opening Geometer's Sketchpad, you need to click on "Edit," then click on "Preferences," then change to the precision to "Units-Tenths-Tenths," and then make sure you check "New Sketches."
- ✓ After completing a task, you should click on "File" and then "New Sketch."


Score: _____ out of 28 Points


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Geometry Activity #2.1 – Triangles

Task #1

A **triangle** is a figure with three sides and three angles. Using Sketchpad, create a triangle.


What is the sum of the three angles? _____ 


What happens to the sum when you animate a point? _____ 


Task #2

There are three types of angles that can be found in a triangle. They are acute, right, and obtuse angles.


Use Sketchpad to answer the following questions:

Can you create a triangle with two or more right angles? _____ 


Can you create a triangle with two or more obtuse angles? _____ 

How many right angles can a triangle have? _____ 


How many obtuse angles can a triangle

have? _____ 


Every triangle has at least how many acute

angles? _____ 


Task #3

Create a sketch that includes three triangles that are classified by angles. 

Task #4




Create a sketch that includes three triangles that are classified by sides. 




Task #5

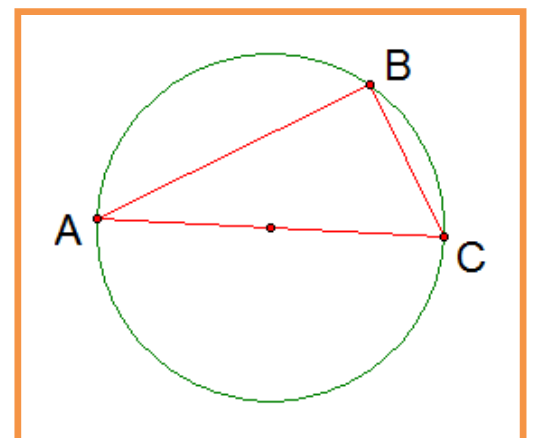
Create a circle and hide the point that is on the circle, not the center point. Create a line that has one point on the circle and the other point is on the center point of the circle. Create a point where the line and circle intersect. Hide the line. Create a third point on the circle. Create segments that connect the three points, creating a triangle. 

Measure the angle so that the last point created is the vertex of the angle. Animate the third point. What is interesting about the measure of this angle? _____



Classifying Triangles by Angles		
An acute triangle has three acute angles.	A right triangle has one right angle.	An obtuse triangle has one obtuse angle.
		

Classifying Triangles by Sides		
An equilateral triangle has three sides of the same length.	An isosceles triangle has at least two sides of the same length.	A scalene triangle has three sides of different lengths.
		





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Geometry Activity #2.2 – Quadrilaterals


Task #1

A **quadrilateral** is a figure with four sides and four angles. Using Sketchpad, create a quadrilateral.

What is the sum of the four angles? _____ 


What happens to the sum when you animate a point? _____ 

Task #2

Parallel lines are lines that do not intersect. Create two lines that are parallel in Sketchpad. To do this, first create a line. Now create a point that is not on the line. Select the line and the point only. Then click on “Construct,” and “Parallel Lines.” 

Task #3

Use Sketchpad to create a parallelogram using the skill that you learned in Tasks #2. Remember, a parallelogram has two pairs of parallel sides. After creating your parallelogram, animate one point. Is it still a parallelogram? If so, you have created it correctly.

Now find the measure of each angle and side. 


Task #4




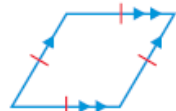
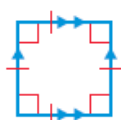
Using the parallelogram that you just created, make a 1) rectangle, 2) rhombus, and 3) square.

Task #5



Visit my website click on Sketchpad Activities, and then click on link called Quadrilaterals. Find the missing angle without using Sketchpad. Then check your answer using Sketchpad.

$x^\circ =$ _____ 

Special Quadrilateral	Diagram
A trapezoid is a quadrilateral with 1 pair of parallel sides.	
A parallelogram is a quadrilateral with 2 pairs of parallel sides.	
A rectangle is a parallelogram with 4 right angles.	
A rhombus is a parallelogram with 4 sides of equal length.	
A square is a parallelogram with 4 right angles and 4 sides of equal length.	


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Geometry Activity #2.3 – Polygons & Regular Polygons

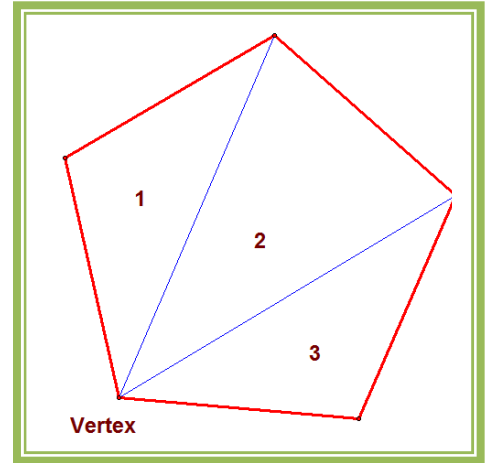
Task #1

A **polygon** is a simple closed figure formed by three or more segments.

It does not have segments that cross, curved sides, or segments that do not connect.


Using Sketchpad, construct three different polygons. 


Now construct three different figures that would not be considered polygons. Construct them so that each one breaks a different rule that is mentioned above. 



Task #2

Go to <http://www.mrhayden.com/>, click on Sketchpad Activities, and then click on Regular Polygons. You should see a regular hexagon.



You will see one point marked vertex. A regular hexagon has six vertices. Construct diagonals that connect this vertex to other vertices. You will only need to create three segments because two vertices already have connecting segments. How many triangles are there inside the hexagon? _____ 

Note: The pentagon figure shows how to correctly draw the diagonals to find the number of triangles. 



Calculate the value of each angle in a regular hexagon using the formula below. _____

$$\text{Angle Measure} = \frac{180^\circ(\# \text{ of Triangles})}{\# \text{ of Sides}} \text{ or } \frac{180(n-2)}{n}, \text{ where } n \text{ is the number of sides}$$

Task #3

Click on the "2" at the lower left of your screen. Using diagonals, find how many triangles there are inside the square. _____  Calculate the value of each angle: 

Task #4

Click on the "3" at the lower left of your screen. Using diagonals, find how many triangles there are inside the octagon. _____  Calculate the value of each angle: 

Task #5

Create and label a triangle, quadrilateral, pentagon, hexagon, and octagon. 