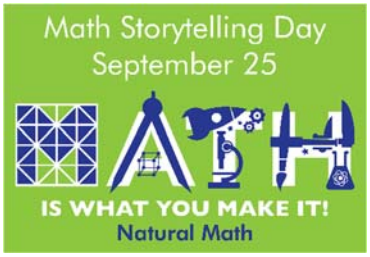
Chapel Hill Math Circle
Session 2 – October 7, 2023
Beginners' Group (grades 1-3), 10:30-11:30a
Mr. Barman – dilip@trianglemathinstitute.com
Supplies needed: rulers, spaghetti, paper, colored pencils, optional rope



Welcome to Chapel Hill Math Circle! We're glad that you are here to have some fun! If you were here last time, we talked about stories. Do any of you have a story about math that you would like to share?

We also mentioned that soon we would play with measuring. We will! But first let's explore some shapes.

Shapes

What is a shape? Take a minute to draw some examples of shapes. Be sure to draw some where you can fence in a house and others where people can come and go. One is called a **closed shape** and the other an **open shape**.

Polygons

Have you heard the word "polygon"? It means many-sides – sides being straight lines. Can you draw some examples of polygons? These are closed shapes made just with straight lines. Draw in the red part of the rectangle a few "counterexamples" of shapes that are not polygons and then in the green part some that are.

Can you draw some polygons where the edges cross over each other at least once? These are called **complex polygons**. We usually work with **simple polygons** where edges don't cross.

Simple	Complex

Can you have polygons where all the sides are the same length? Those are called regular polygons. Can you make some regular polygons? Can you make some polygons that aren't regular?

Regular	Not regular

Let's check out the sides of a polygon

In your tables, please have a discussion about the sides of a polygon. Explore. You have spaghetti pieces that you can break off and play with. Can you make a polygon

with 1 side? 2? 3? Any number? What can you guess about sizes of the sides? Take some time – we will get back together and discuss your explorations.

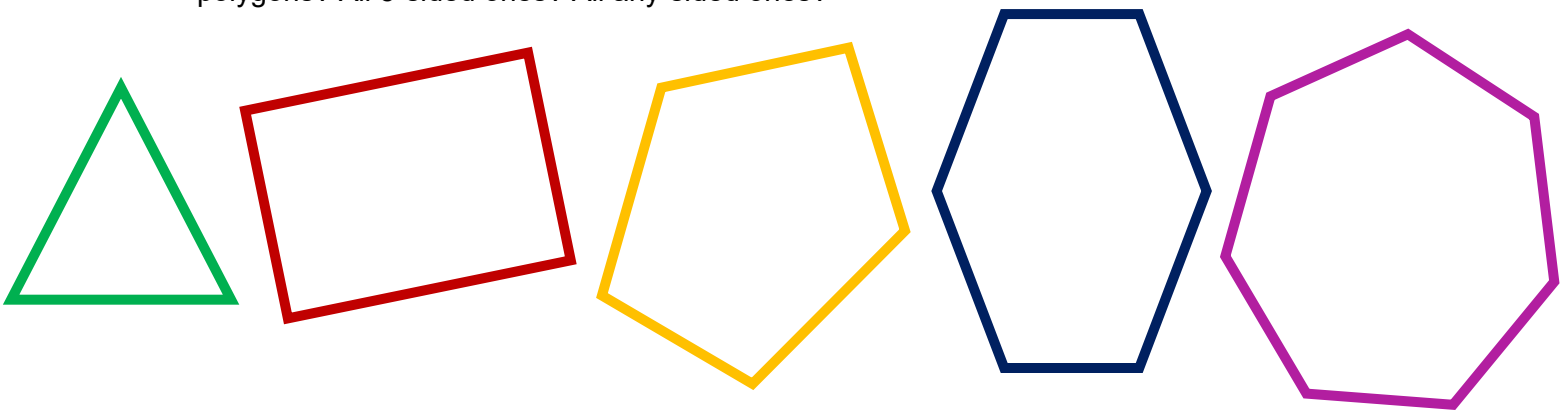
What did you discuss? Can any 3 lengths form a triangle? Can any four lengths form a 4-sided closed polygon?

Search!

Let's take some time to get up and look around the classroom and maybe outside if we have time and the weather is cooperating. Note a few polygons that you can find. Take a few minutes and when we get together I'll call on some of you to share some of what you have found. You can even use rope and make your own concave and convex polygons.

Diagonals

What do you think a diagonal is? Can you use different colors to draw all the diagonals in these polygons? Do all triangles have the same number of diagonals? All 4-sided polygons? All 5-sided ones? All any-sided ones?



(Don't peek till I tell you: A diagonal is defined as a line segment between two "vertices" of a polygon that aren't directly connected. How many diagonals do triangles have? Rectangles? 5-sided polygons? 6- and 7-sided ones? Can you predict how many an 8-, 9-, and 10-sided polygon would have?)

Keep on playing at home!

At home keep playing with your spaghetti pieces and see if you can figure out what kinds of pieces can make triangles and other shapes. Can you think of interesting ways to describe shapes like 3-, 4-, and 5- sided figures? Keep your eyes open – where do you see polygons?

I hope you had fun! See you next time!

P.S. For your parents: you may enjoy looking over the website splashlearn.com/math-vocabulary/geometry/polygon about polygons.

Have Fun!
Mr. Barman