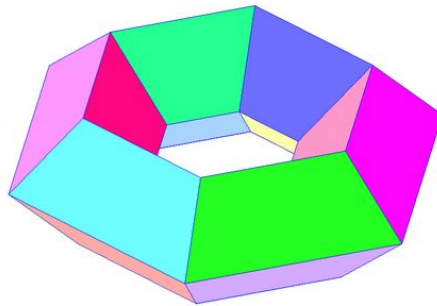


# Polyhedra and doodles

## Boise math circle

It is a new year, and the polyhedra are out in force! In today's activity you will once again be playing with polyhedra. But this time there is a new twist! Our polyhedra will be **toriodal**, which just means bagel-shaped.



## Task 1: Building the polyhedra

1. We have several nets for toriodal polyhedra. Your job is to cut, fold, and tape them all together!
2. There isn't really a second step here :)

## Task 2: Inspecting the polyhedra

Take a look at the polyhedra you have built. What do you see?

1. The boundary (or outermost surface) of a polyhedron is made up of flat sides called **faces**.
2. The boundary of each face is made up of straight line segments called **edges**.
3. The bounday of each edge is made up of single points called **vertices**. (The singular of vertices is **vertex**.)
4. The bounday of each vertex is... well a vertex has no boundary!

That's it, the inspection is over!

### Task 3: Counting the parts

How many faces, edges, and vertices does each object have? Record your answers in the table below.

Toroidal polyhedron name	Number of faces	Number of edges	Number of vertices

Question: What do you observe about the data that you collected?

### Task 4: Return to ordinary polyhedra

Do you think your observations would be different if you looked at ordinary polyhedra (ones that are not toroidal)? Well we have those too!

Ordinary polyhedron name	Number of faces	Number of edges	Number of vertices

Question: What do you observe about the new data? Can you think of an explanation for the relationship between the toroidal data and the non-toroidal data?