

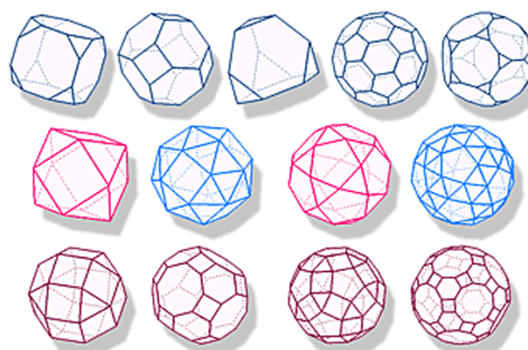
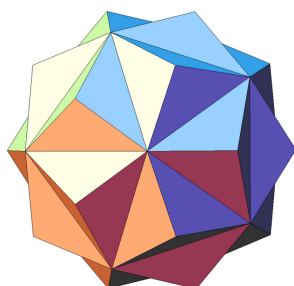
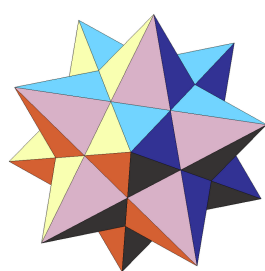
Zome Geometry

1. Construct all regular polygons up to 10 sides and all regular convex polyhedra (Platonic solids) as a group and fill in worksheet with:
 - vertex, edge, and face numbers
 - points of rotational symmetry for polygons & axes of rotational symmetry for polyhedra
 - lines of mirror symmetry for polygons & planes of mirror symmetry for polyhedra
2. Construct one Archimedean solid as a group and calculate the same values as for the Platonic solids. You may add a line at the bottom of your chart, or fill these in on separate paper. State which solid your group constructed by describing the shape of faces and order which they come together at each vertex (e.g. 6-6-3 or 5-3-5-3 or 4-4-4-3 or 5-4-3-4).
3. Stellate the icosahedron and dodecahedron and calculate the number of vertices, edges, and faces, and calculate $v-e+f$. You do not need to determine symmetries for the stellations.

$v-e+f$ is called the Euler characteristic

Tuesday is the last day to work on this part in class. Constructed polygons and polyhedra will be accessible for use in Math Lab.

This part due: Friday, 9/5?



Starting Wednesday: **Classification of Surfaces!** (written component due next Wed 9/10?)

Written component:

Discuss one of the following:

- polyhedra (Platonic, Archimedean, and others), with mathematical properties and artistic use of (keywords: polyhedra, polyhedron, solid)
"polyhedra" in Google Drive
- orientable and non-orientable surfaces, with mathematical properties and artistic use of (keywords: orientable, orientability, manifold, torus, projective plane, klein bottle, mobius band, seifert surface)
see especially: Conway's ZIP proof
"classification of surfaces" in Google Drive

Remember that the bulk of your information should come from scholarly, peer-reviewed journal articles. These are accessible through the Alabama Virtual Library, Bridges Archive, and my Google Drive folder.

You may use Wikipedia math articles and Wolfram MathWorld articles as a reference to help you understand certain concepts and to get a better idea about what the other articles are talking about, but these should not be considered primary source material. Try to pretend like the rest of the internet does not exist.

Grammar matters! Bring your essay to the Writing Lab prior to submission. Let at least two other people read it before submission.

Content should be interesting and relevant. Find a few examples that interest you and expand on them to get the reader interested in them as well!

Feel free to include images to support your examples!

Refer to the sample essay distributed in class for formatting guidelines.

Due: Tues 9/9?

Presentations: Tues 9/9?