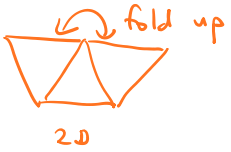
REGULAR POLYHEDRA

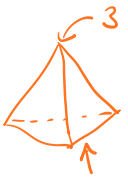
Faces that are congruent regular polygons, and the same number of polygons meet at each vertex (at the same angles).

What types of regular polyhedra are possible?

Triangular faces:

- 3 triangles per vertex





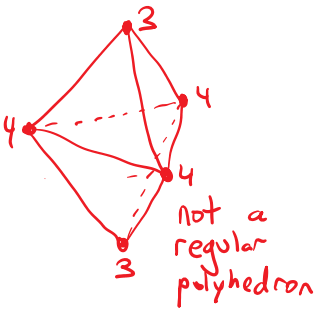
TETRAHEDRON

triangles, 3 per vertex

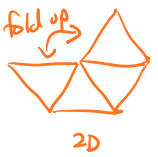
$\{3,3\}$

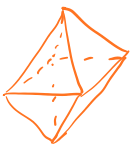
Schläfi symbol

4 equilateral triangles total



- 4 triangles per vertex





8 triangular faces

OCTAHEDRON $\{3,4\}$

- 5 triangles per vertex

ICOSAHEDRON $\{3,5\}$

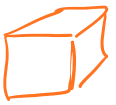
regular polyhedron with 20 triangular faces

- 6 triangles per vertex?

No room to fold!

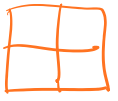
Square Faces:

- 3 squares per vertex



CUBE $\{4,3\}$

- 4 squares per vertex?



no room to fold!

Pentagonal Faces: 3 pentagons per vertex

12 pentagonal faces

DODECAHEDRON

{5,3}

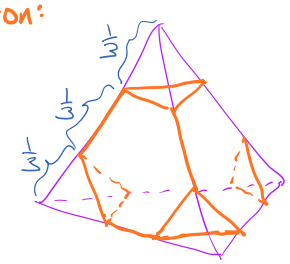
Hexagonal faces:

No room to fold!

SEMI-REGULAR POLYHEDRA

More than one type of regular polygon face, but all edges and vertices still identical.

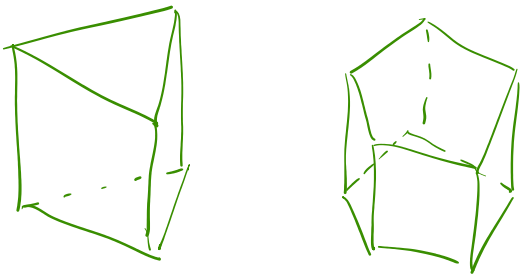
Truncate a tetrahedron:



TRUNCATED TETRAHEDRON

t{3,3}

PRISMS



What is the definition of polyhedron?

Are these polyhedra?