# Some terms

Polygon

Polyhedra

Edge, vertex, face

Convex, concave

# Platonic solids

Definition – shape with all same regular polygons (same edges, same angles), same number at each vertex (have triangular dipyramid as counterexample for vertices)

Names

Concept of a “net”

How many sides? Vertices? Edges? (draw chart)

Euler characteristic (V – E + F = 2)

Concept of a dual (draw dual on blocks, tetrahedron is self-dual)

Optional – proof – How many are there? (pattern blocks)

# Archimedean solids

Definition – made up with regular polygons, each vertex has same number and order of polygons

Printout of Archimedean vertices paper

Some examples (with color panels)

Check euler characteristic

Optional – proof – how many are there?

# Archimedean duals

Cuboctahedron / Rhombic Dodecahedron

Small Rhombicuboctahedron / Deltoidal Icositetrahedron

SnubCube / Pentagonal Icositetrahedron

Truncated Octahedron / Tetrakis Hexahedron

Icosidodecahedron / Rhombic Triacontahedron (wolfram spikey is stellation)

Snub Dodecahedron / Pentagonal Hexecontahedron (prettiest)

TruncatedIcosahedron / Pentakis Dodecahedron (6 triangles…)

# Stellations

What is a stellation? Closed polyhedra that is connected, each face is identical, on the plane of the original polyhedra

Stellation of the Octahedron (StellaOctangula)

Stellations of the Dodecahedron (Small stellated, great)

Guess – how many stellations of an icosahedron? (answer, 59)

Stellation diagram for the icosahedron

Stellation of the Rhombic Triacontahedron (Rhombic Hexecontahedron, Wolfram Spikey)