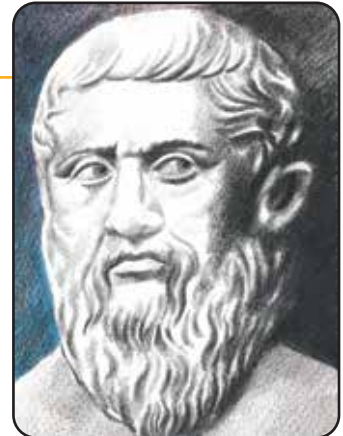


# Tricky Truncations

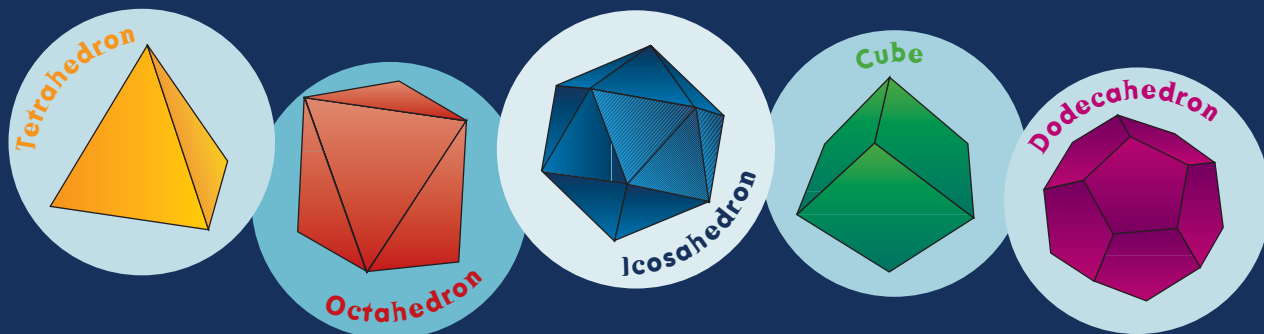
You need: polydrons or geoshapes



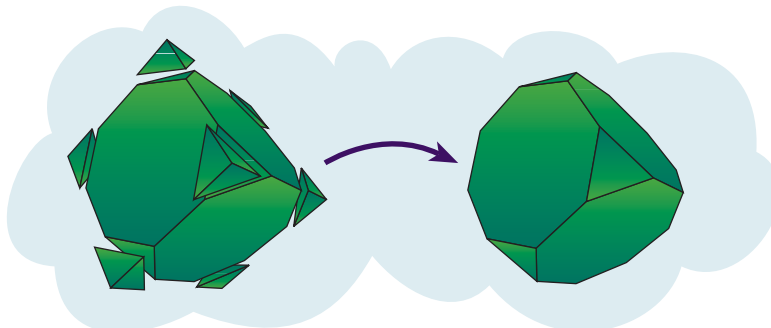
ACTIVITY

The Greek mathematician Plato was born in Athens in 427 BC, over 2 400 years ago. He set up an academy for philosophers, mathematicians, and scientists that continued for 900 years. His name is given to the five regular solids known as the Platonic solids. (They are called regular because all of their faces are identical.)

1. Jose makes these models of the Platonic solids:



He imagines the cube with its corners truncated (cut off).



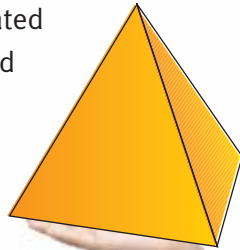
He then uses geoshapes to make this model of a truncated cube:

The corners become triangles, and the square faces become octagons.

- a. How many octagons and triangles does he use to build the model?
- b. Draw a net of the model.

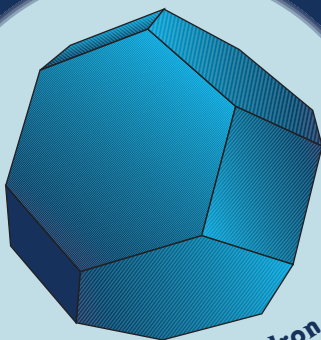


2. Jose wonders what the model of a truncated tetrahedron would look like.

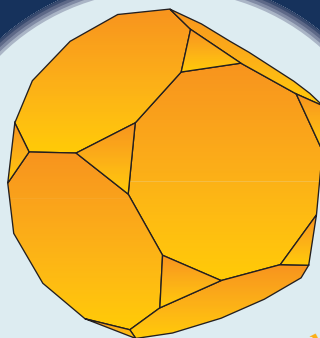


If I cut off the corners of the triangles, I'll get hexagons.

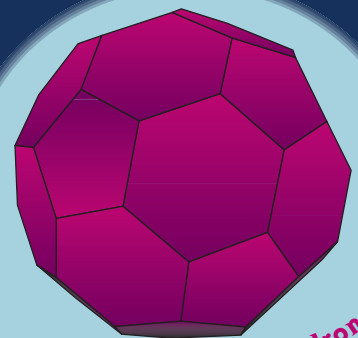
- Use geoshapes or polydrons to make this solid.
  - Draw the net of the model. Cut it out and fold it to check that it works.
3. How many triangles, hexagons, and decagons would you need in order to make models of:
- a truncated octahedron (8-sided solid)?
  - a truncated dodecahedron (12-sided solid)?
  - a truncated icosahedron (20-sided solid)?



Truncated octahedron



Truncated dodecahedron



Truncated icosahedron

4. Here is the net for an octahedron. Copy it and show how it could be changed to become the net for a truncated octahedron.

