

# (F) Bonus: Platonic Solids

## What are platonic solids?

Platonic solids are made of identical **regular polygon** faces.

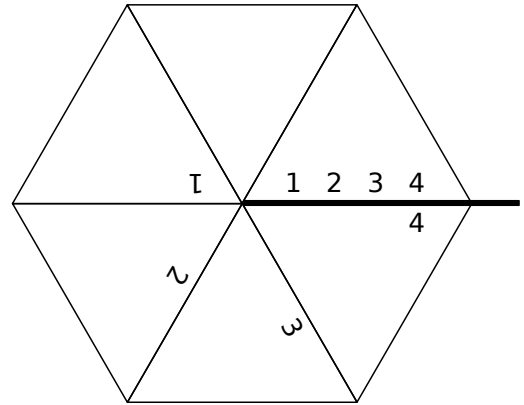
Regular polygons have equal sides and angles. You may be familiar with these regular polygons:

- ▲ Equilateral triangle(3 sides)
- Square(4 sides)
- ◆ Pentagon(5 sides)
- Hexagon (6 sides)

There are an infinite number of regular polygons, but only some can be used to make platonic solids.

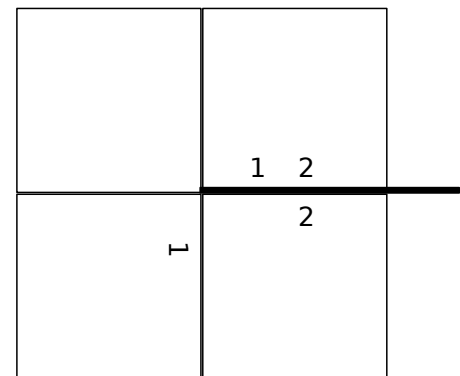
### Equilateral triangle based platonic solids

1. Cut out the shape to the right
2. Cut along the thick line
4. Fold along all the other lines
4. Match the edges numbered 1. This forms 3/4 sides of a tetrahedron (like the cool die)
5. Match the edges numbered 2. This forms 4/8 sides of an octahedron
6. Match the edges numbered 3. This forms 5/20 sides of an icosahedron
7. Match the edges numbered 4. This makes a flat sheet, not a platonic solid



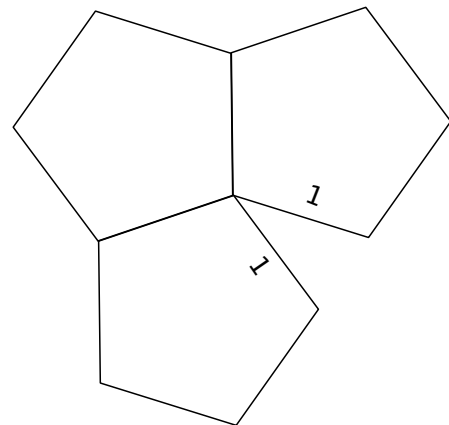
### Square based platonic solids

1. Cut out the shape to the right
2. Cut along the thick line
3. Fold along all the other lines
4. Match the edges numbered 1. This forms 3/6 sides of a cube
5. Match the edges numbered 2. This makes a flat sheet, not a platonic solid



### Pentagon based platonic solids

1. Cut out the shape to the right
2. Fold along all the other lines
3. Match the edges numbered 1. This forms 3/12 sides of a dodecahedron



### Questions:

Can other platonic solids be made with a pentagon?

Can any platonic solids be made with a hexagon (6 sided regular polyhedron)?

Hint: Try drawing hexagons below to find out.

What about regular polyhedrons with more than 6 sides?

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