

# Stereometry

## Transformation

### Worksheet

**Directions:** Describe the result of each transformation by stating the number of each kind of face it has.

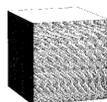
**Example:** Give the result of the first stage of pushing in the points of a cube.

**Solution:** 8 regular equilateral triangles and 6 regular octagons.

1. Give the results of both stages of pushing in the points of...
  - a. An icosahedron
  - b. A tetrahedron
  
2. Give the results of both stages of growing pyramids off...
  - a. An octahedron
  - b. A dodecahedron
  - c. An icosahedron
  - d. A tetrahedron

3. Give the results of stretching...
  - a. An octahedron
  - b. A dodecahedron
  - c. An icosahedron
  - d. A tetrahedron
  - e. A truncated tetrahedron where the triangles are holes.
  - f. A truncated octahedron where the squares are holes.

### Pushing in the Points of a cube



Cube

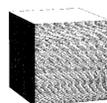


**Stage 1**  
Truncated Cube

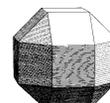


**Stage 2**  
Cuboctahedron

### Stretching a cube

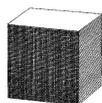


Cube

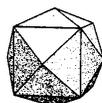


Rhombicuboctahedron

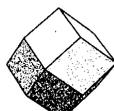
### Growing Pyramids off a cube



Cube



**Stage 1**  
Tetrakisshexahedron



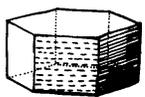
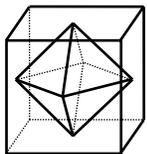
**Stage 2**  
Rhombic Dodecahedron

4. Give the dual of each:

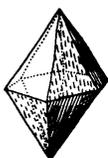
- a. An icosahedron
- b. A hexagonal prism
- c. A pentagonal trapezohedron
- d. An octagonal bipyramid
- e. A triangular anti-prism
- f. A cuboctahedron
- g. A rhombic dodecahedron

- h. A truncated cube
- i. A tetrakisshexahedron
- j. An icosidodecahedron
- k. A truncated icosahedron (soccer ball)
- l. A snub cube

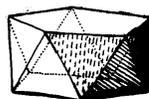
**Dual** of a cube



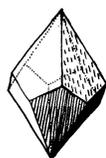
Prism



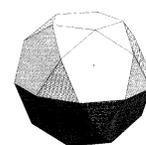
Bipyramid



Anti-prism



Trapezohedron



Icosidodecahedron



Truncated icosahedron  
(soccer ball)