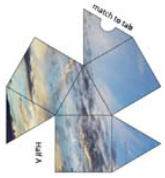



August 27, 1994

Dear Model Builder,

Enjoy these models and the act of building them; as a child, spurred on by curiosity and the fun of making something different. The words may be unfamiliar, but the model building is simple. Scoring the inside lines with a fine-tipped pencil and ruler, cutting on the outside lines, folding on the inside lines and taping adjacent edges, to enclose a volume.

In our study of oct-tet geometry, we are looking at tetrahedra and octahedra in their all-space filling qualities and the whole number relationships of the volumes among the six sets.

Make each model set a different color or design and you will have an easy time keeping parts and boxes separate.

In this book you will find short poems or stories which are meant to be read aloud and discussed. If you are inspired, make the models and write your own story or poem. What did you learn?

Some tips:

Make sure your work area and hands are clean, as the tape will pick up loose dust or dirt.

Use a sharp scissors or knife for cutting and a fine point pencil for scoring the fold lines.

I use 3M Magic Mending tape because it holds the models together, but can be carefully removed, with no damage, if necessary to correct a problem.

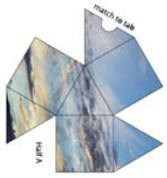
Cut and crease-fold as close to the model as practical. A fingernail clipper works nicely as a tape trimming tool..

All of the models fill their boxes, with no leftovers. You have created a 3-dimensional puzzle!

Once the models are built, play with the Tetra-Blocks and discover the elegance of Nature's own geometry.

Sincerely,

Charles Gronberg



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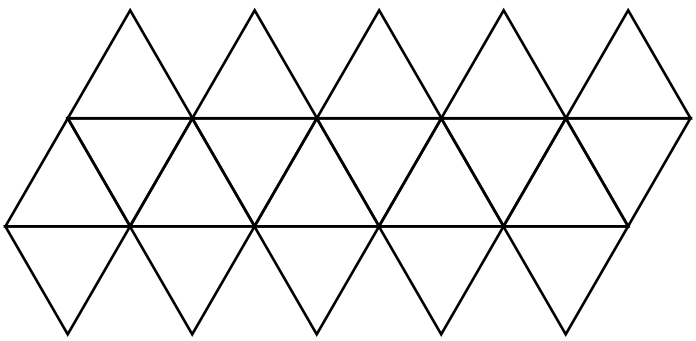
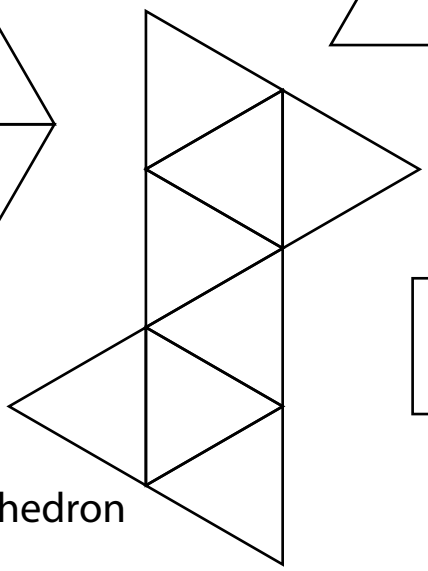
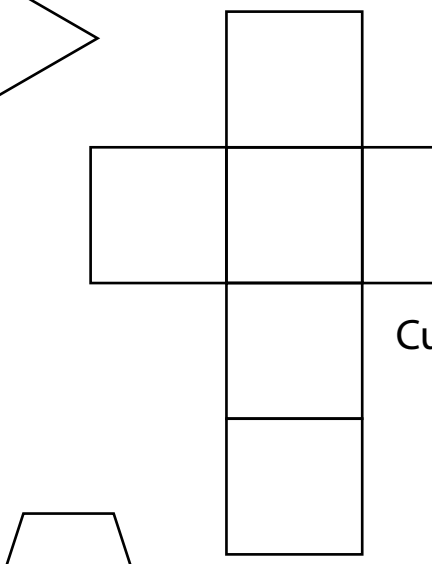
TOPOLOGY



Icosahedron



Octahedron



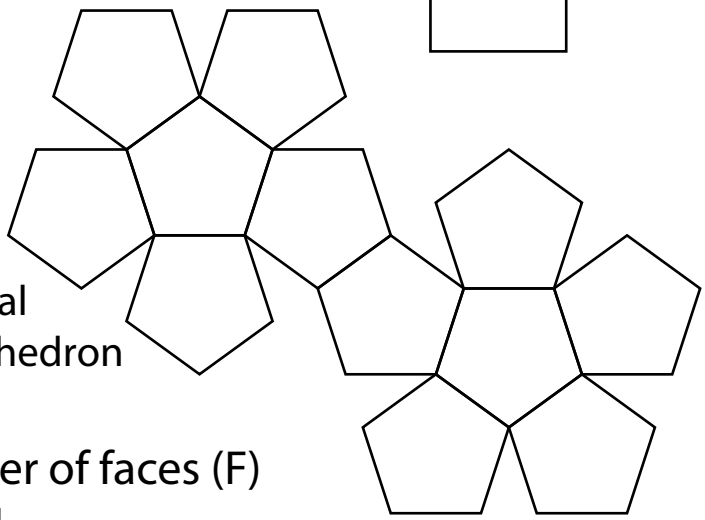
Tetrahedron

Cube

Leonard Euler (1707 - 1783)

All patterns can be broken down into three elements:

- crossings = vertices
- lines = edges
- spaces = faces



Pentagonal dodecahedron

Euler's Law:

- number of vertices (V) plus number of faces (F) (in every system) will always equal number of edges (E) plus 2.

V + F = E + 2

TABLE

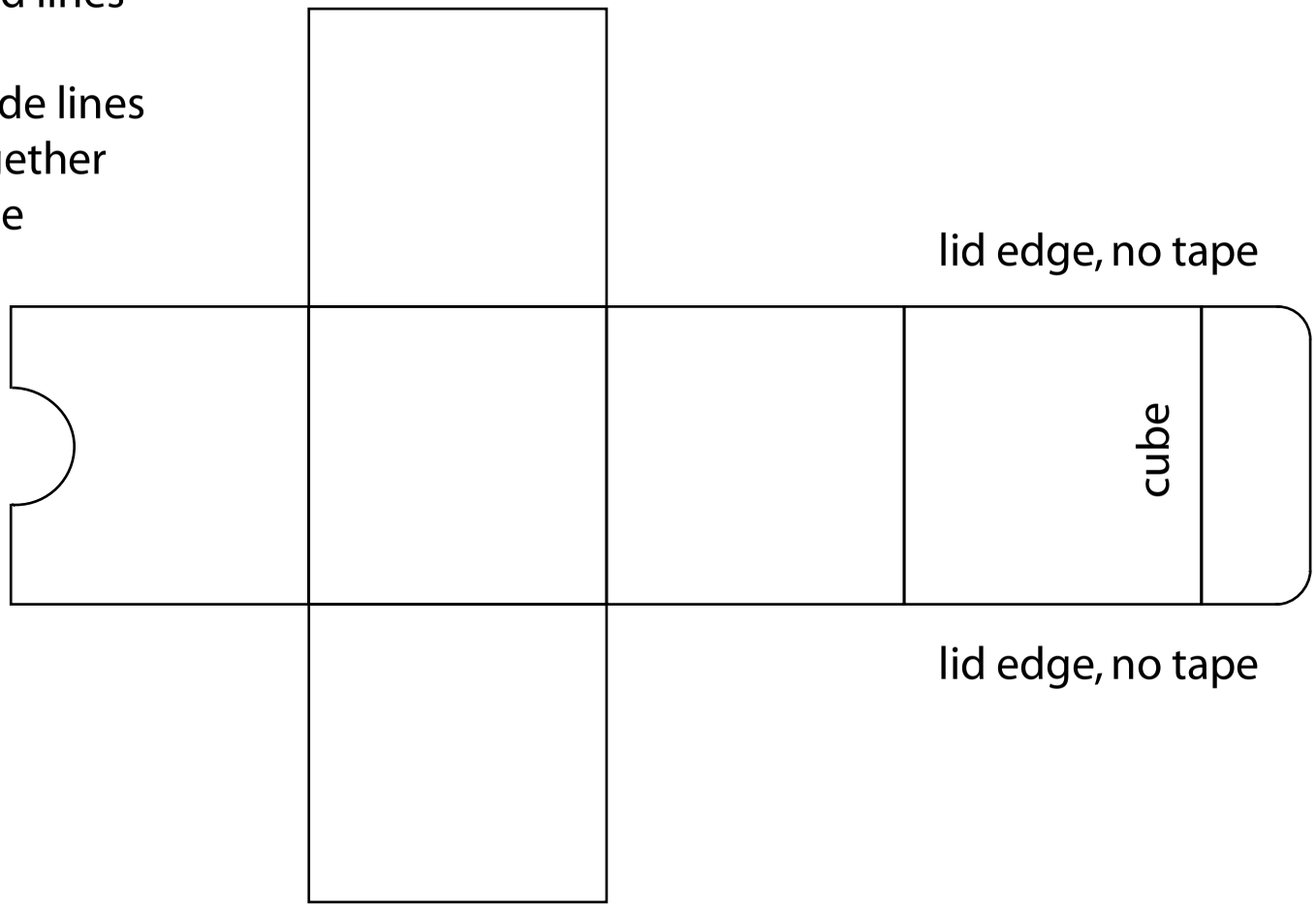
	V + F = E + 2	TOTAL
Tetrahedron	4 + 4 = 6 + 2	8
Octahedron	6 + 8 = 12 + 2	14
Cube	8 + 6 = 12 + 2	14
Icosahedron	12 + 20 = 30 + 2	32
Pentagonal dodecahedron	20 + 12 = 30 + 2	32

*Verify these results by making the polyhedra from the above nets.

Small cube box

instructions for box assembly

score inside fold lines
cut outline
crease fold inside lines
tape edges together
trim excess tape



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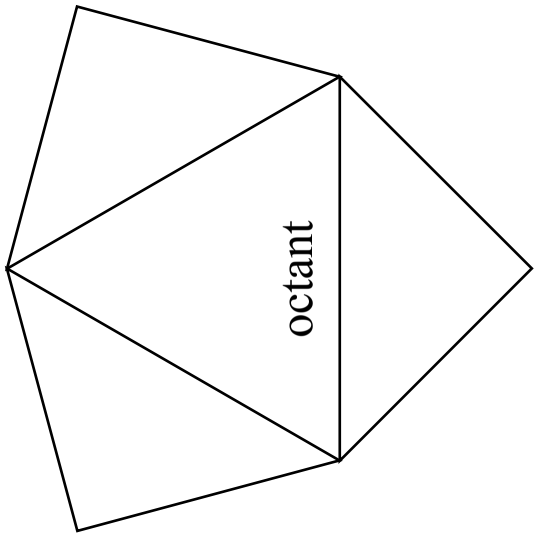
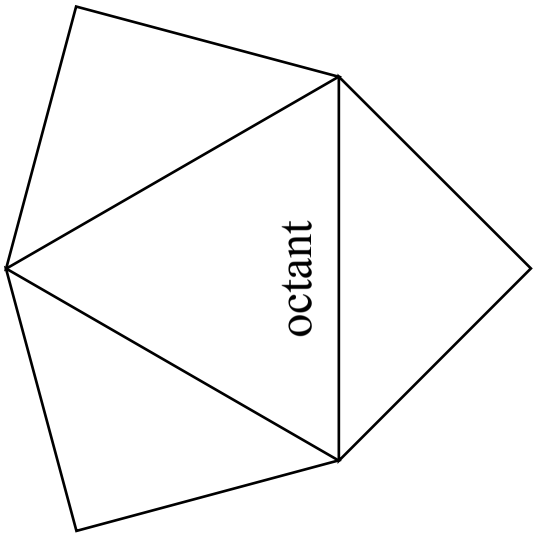
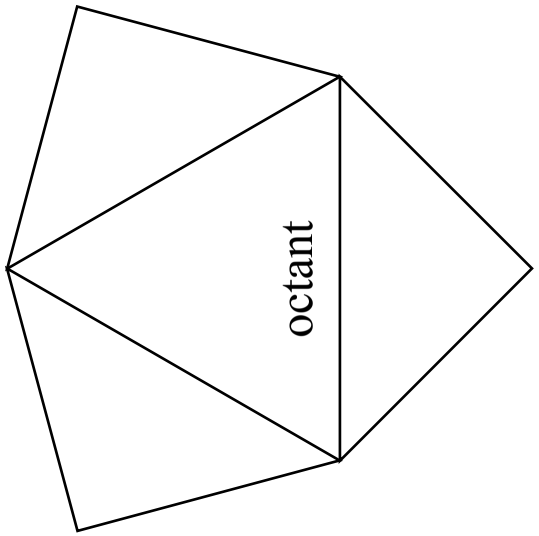
Note: each box has a lid that opens.

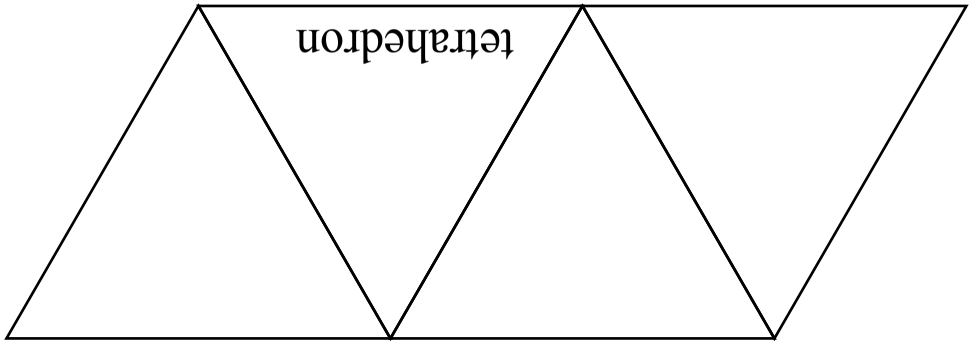
Parts for the one frequency cube.

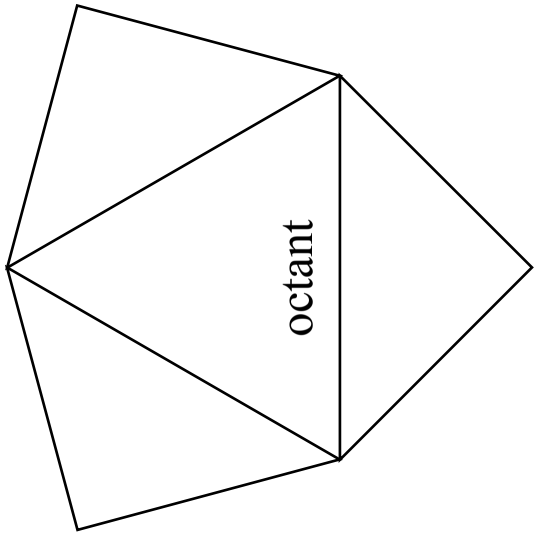






note: a 1/8 octahedron is called an octant.





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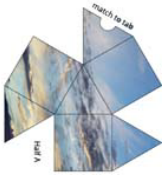

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