Tiling With Pentagons

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August 11 - http://www.theguardian.com/science/alexs-adventures-in-numberland/2015/aug/10/attack-on-the-pentagon-results-in-discovery-of-new-mathematical-tile

Attack on the pentagon results in discovery of new mathematical tile

Joy as mathematicians discover a new type of pentagon that can cover the plane leaving no gaps and with no overlaps. It becomes only the 15th type of pentagon known that can do this, and the first discovered in 30 years

August 12 http://www.hopesandfears.com/hopes/culture/design/216223-new-pentagon-pattern

DESIGN Ana Bezanilla AUGUST 12, 12:40 PM

New tessellating pentagonal shape discovered

Mathematicians and designers are rejoicing as the 15th pentagonal tile pattern has just been discovered.

Triangles and four-sided shapes can always tile a plane, meaning that they don't overlap or leave gaps in between each individual shape. Only 14 pentagonal tile patterns existed until this recent discovery, and the basic pentagon with all sides measuring the same length does not tile.

August 19 - http://www.huffingtonpost.com/entry/historic-tile-discovery-gives-math-world-a-big-jolt_55d3e39ce4b07addcb4495ba

Historic 'Tile' Discovery Gives Math World A Big Jolt

It's the first such find in 30 years.

David Freeman
Senior Science Editor, The Huffington Post

Posted: 08/19/2015 12:05 PM EDT | Edited: 08/20/2015 07:09 AM EDT

August 26 -http://www.heraldnet.com/article/20150826/NEWS01/150829407

Genna Martin / The Herald

University of Washington Bothell campus associate professors of mathematics Jennifer McCloud-Mann and Casey Mann discovered a new geometrical pattern of irregular pentagons that could have applications in crystallography, self-assembly machines ... or bathroom tiles.

Tesselations

North Louisiana Math Teachers Circle
Tuesday, November 3, 2015

Tessellation

A tessellation is created when a shape is repeated over and over again covering a plane without any gaps or overlaps.

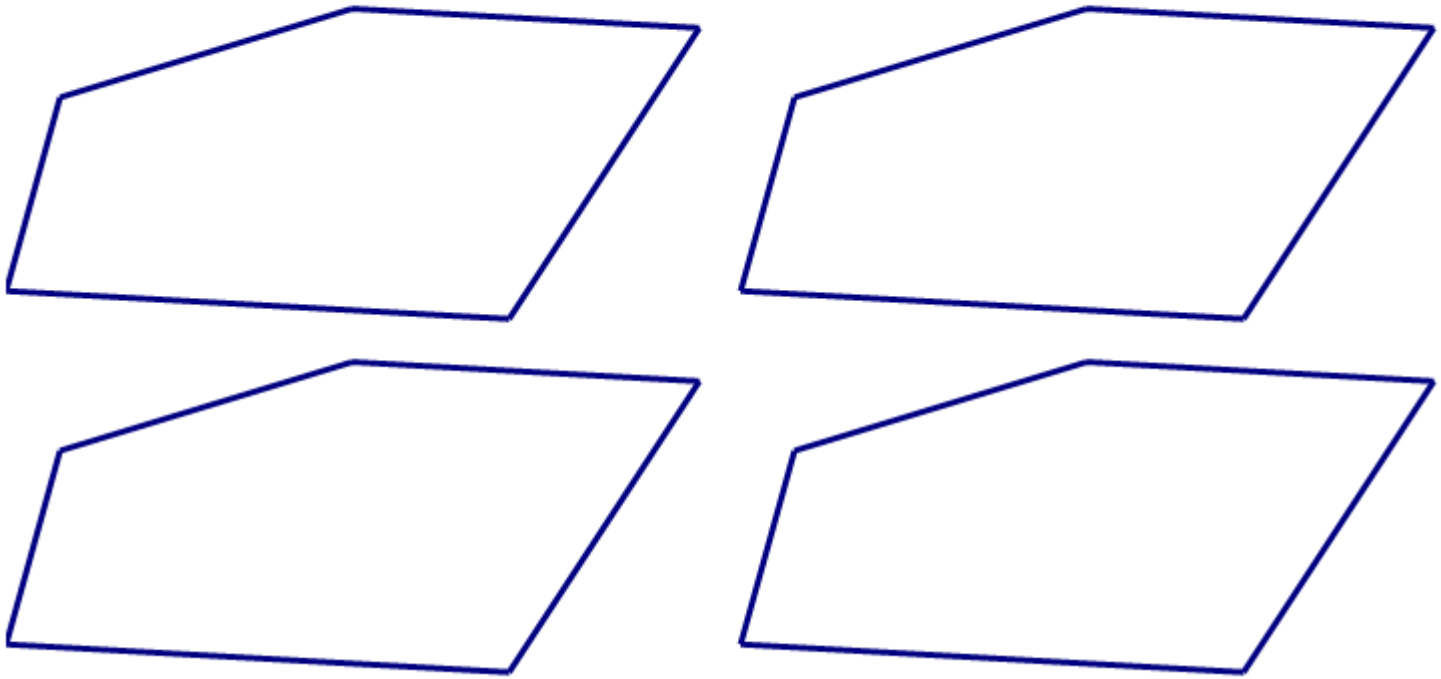
A **tessellation** of a flat surface is the tiling of a plane using one or more geometric shapes, called tiles, with no overlaps and no gaps.

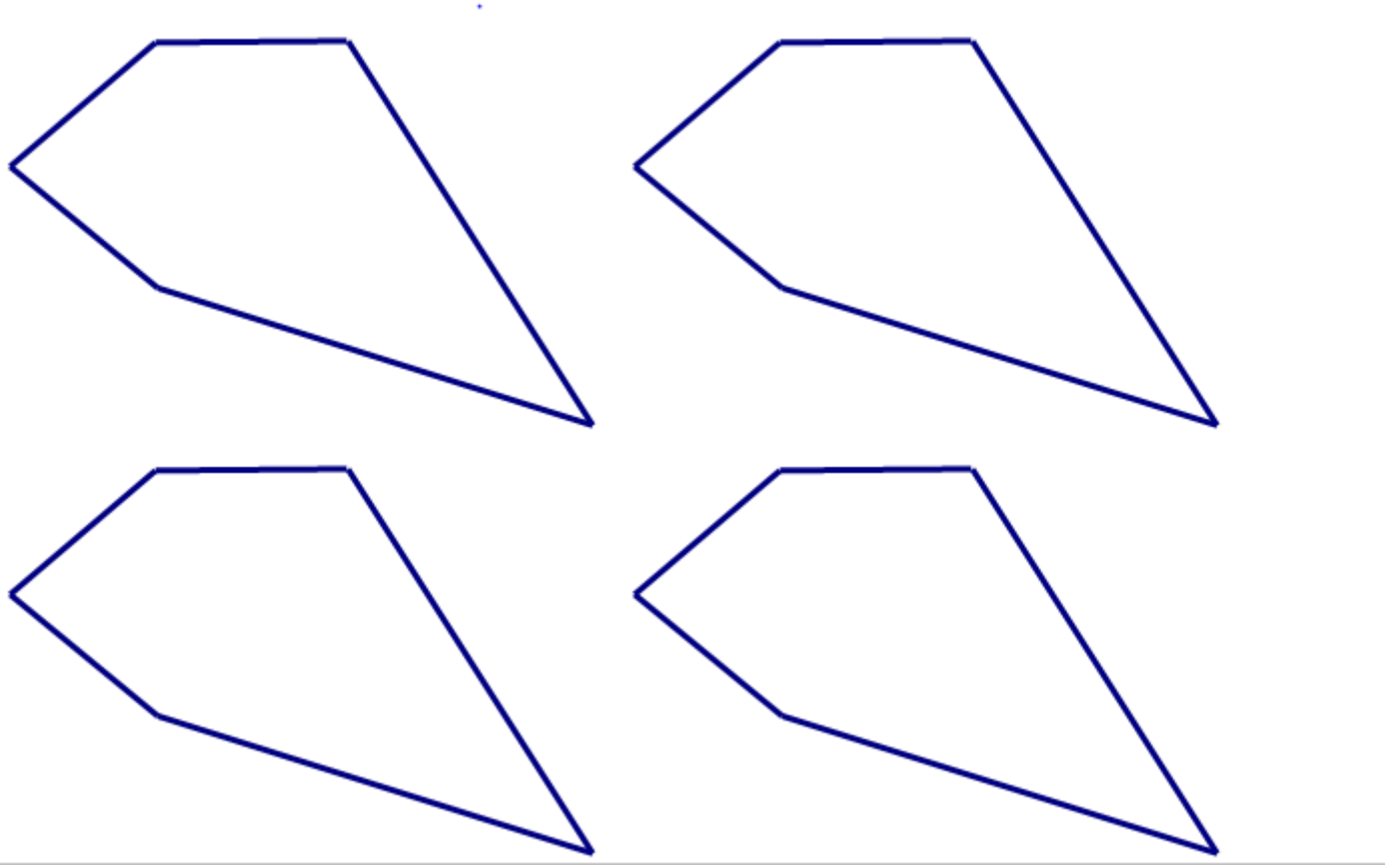
Angles in Regular Polygon

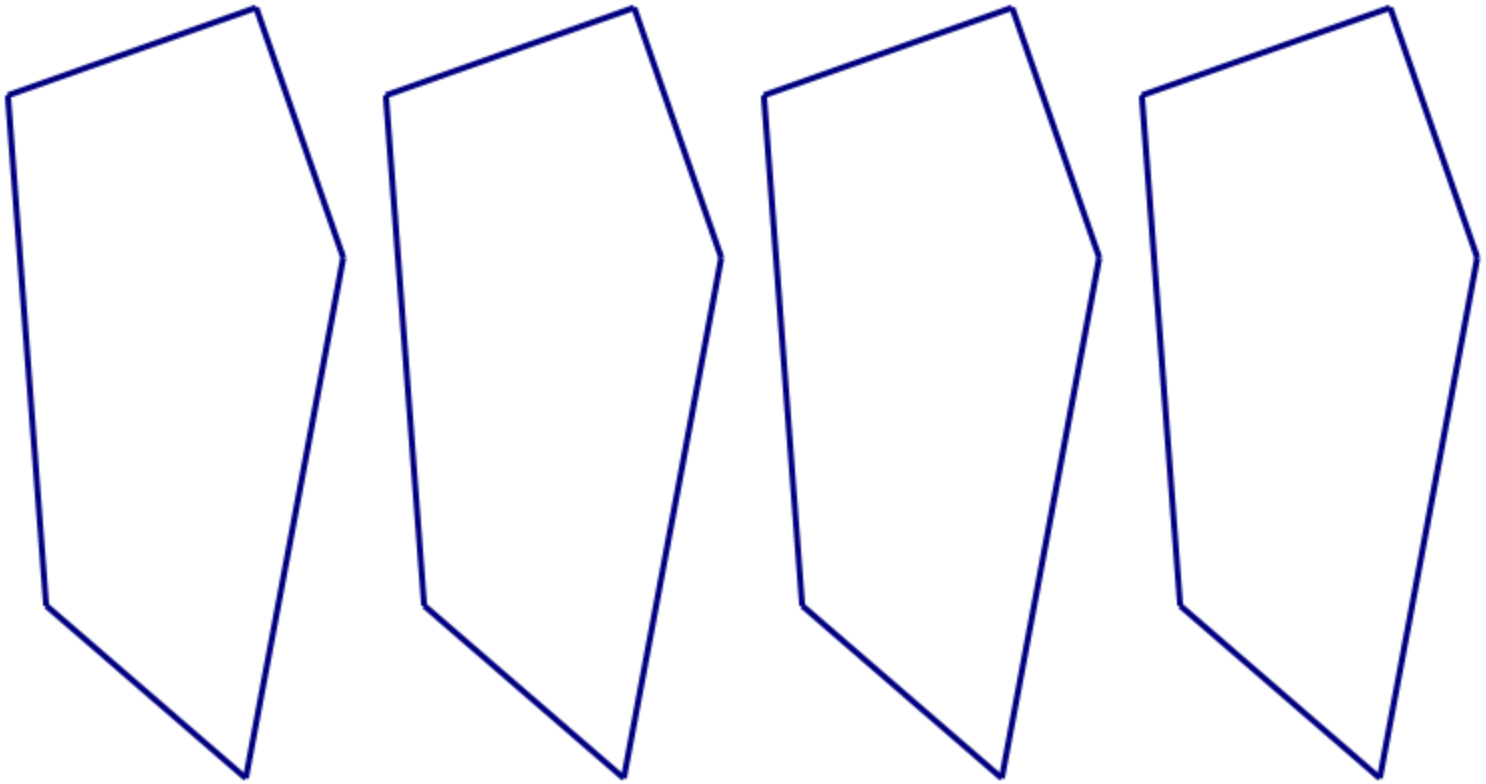
Number of Sides	Name	Sum of all angles	Each angle in regular polygon
3	Triangle	180°	60°
4	Quadrilateral	360°	90°
5	Pentagon	540°	108°
6	Hexagon	720°	120°
7	Heptagon	900°	128.5714…°
8	Octagon	1080°	135°
9	Nonagon	1260°	140°
10	Decagon	1440°	144°
11	Nonagon	1620°	147.2727…°
12	Decagon	1800°	150°

Will they tessellate?

Your group has been given sheets with a pentagon on it. Your job is to determine if your shape will tessellate or not.

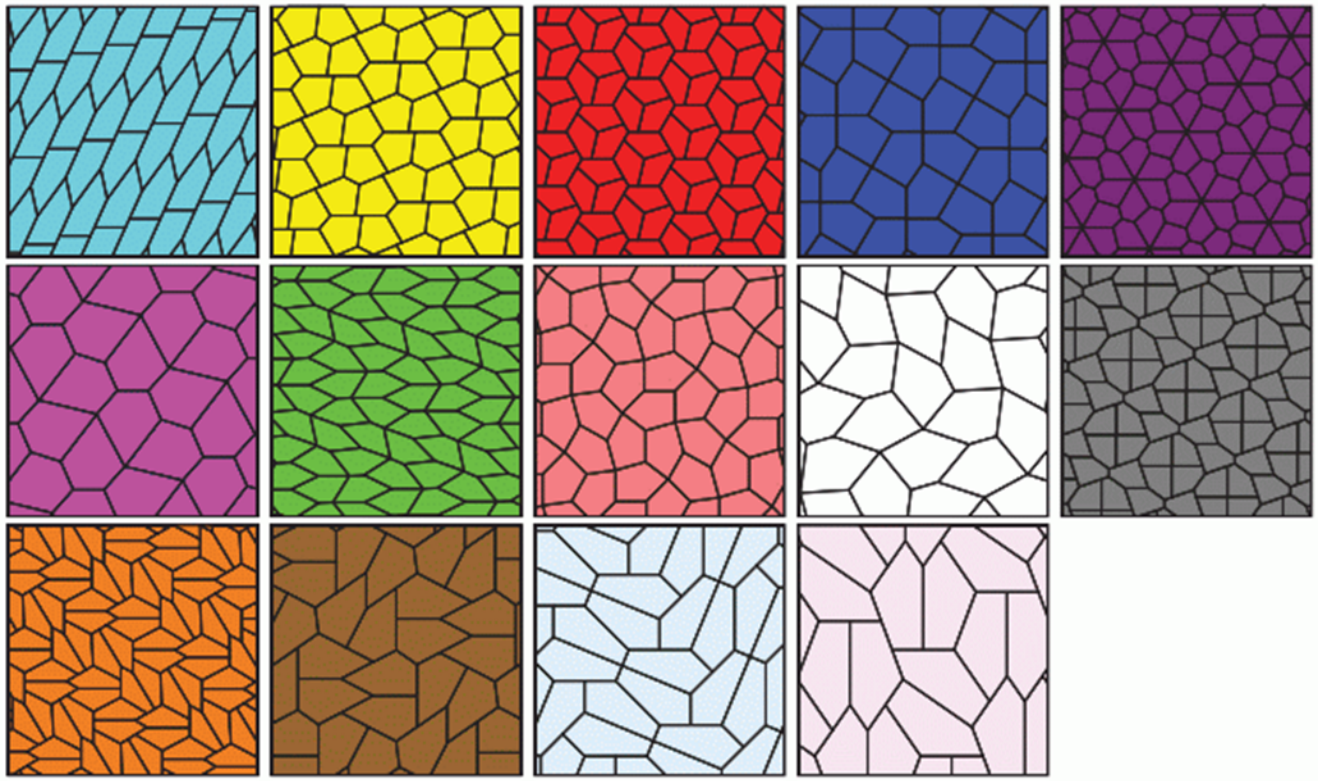






14 Pentagons that will tessellate

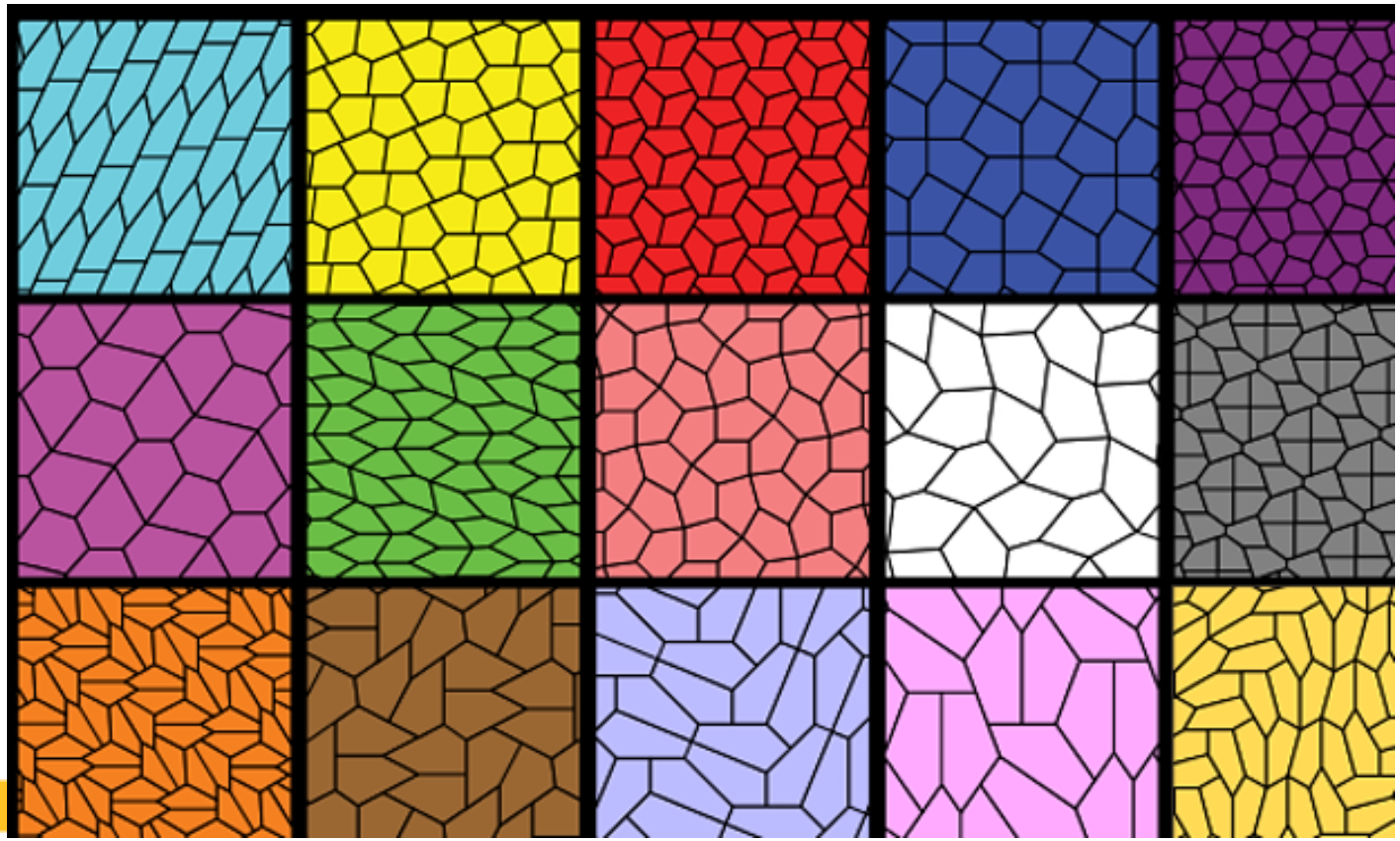
http://www.mathpuzzle.com/tilepent.html



Oops!

15 Pentagons that will tessellate

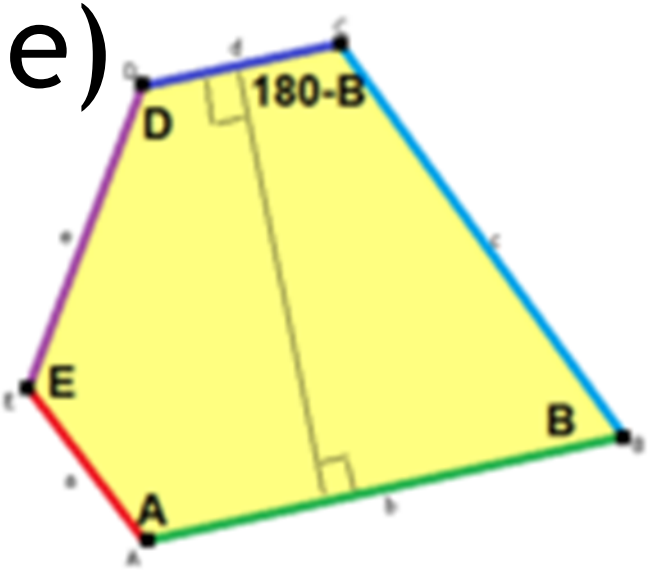
http://www.hopesandfears.com/hopes/culture/design/216223-new-pentagon-pattern

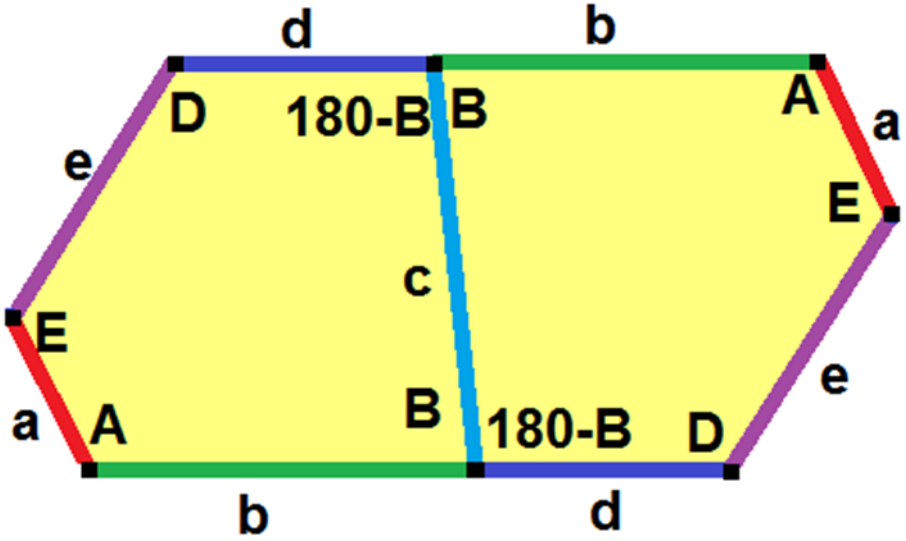


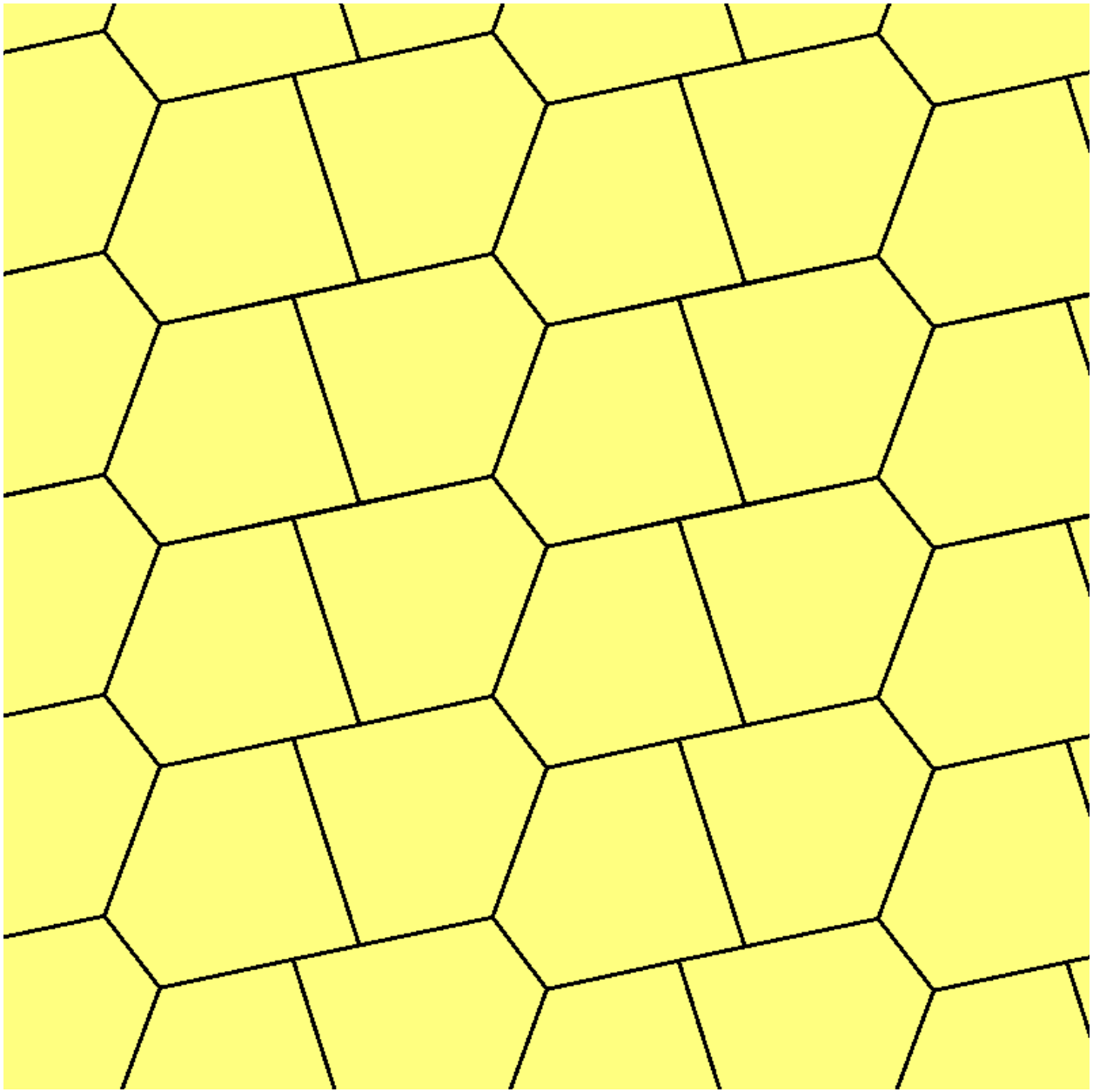
Pentagon A (One)

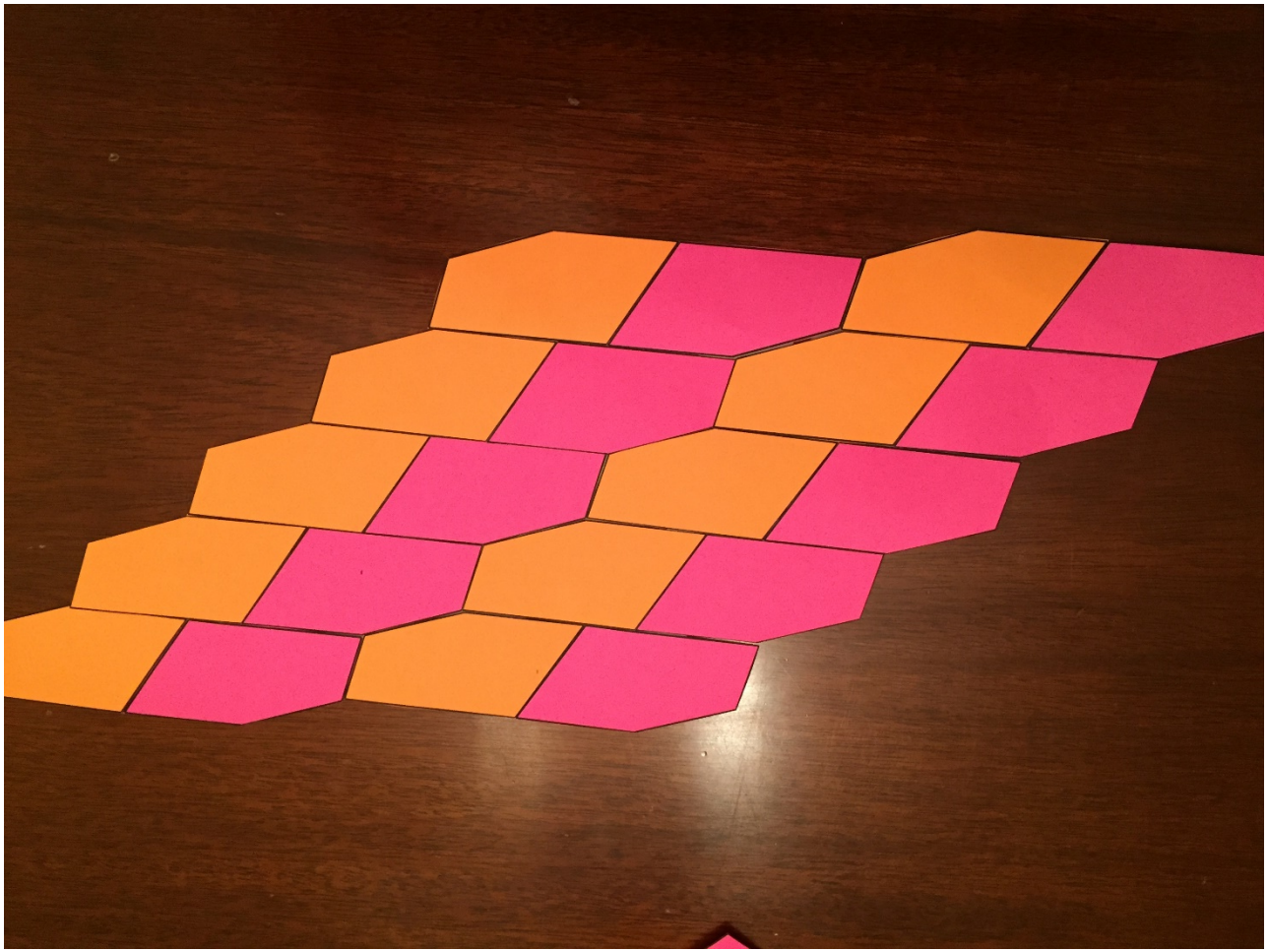
B+C=180°

A+D+E=360°



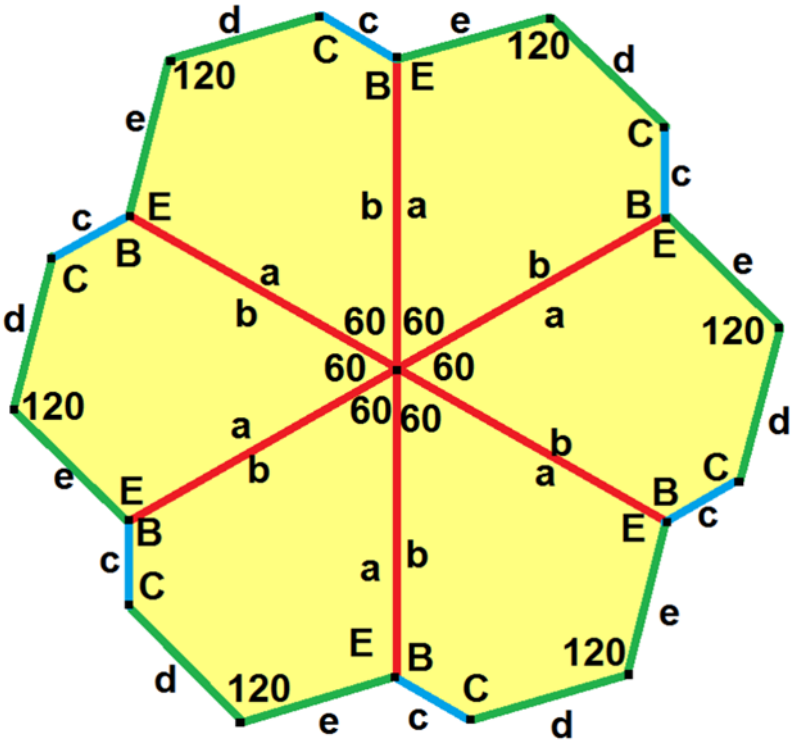


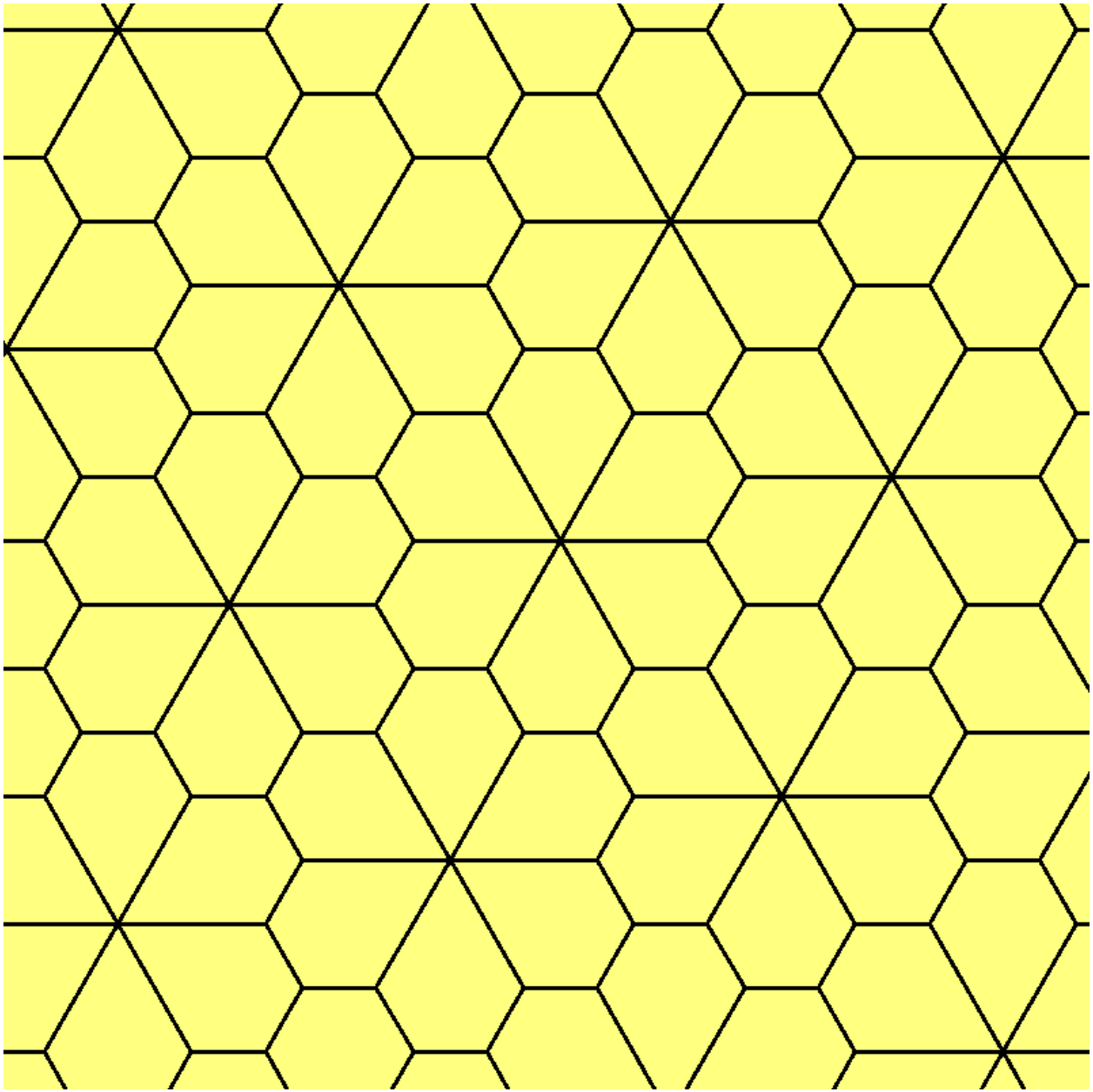


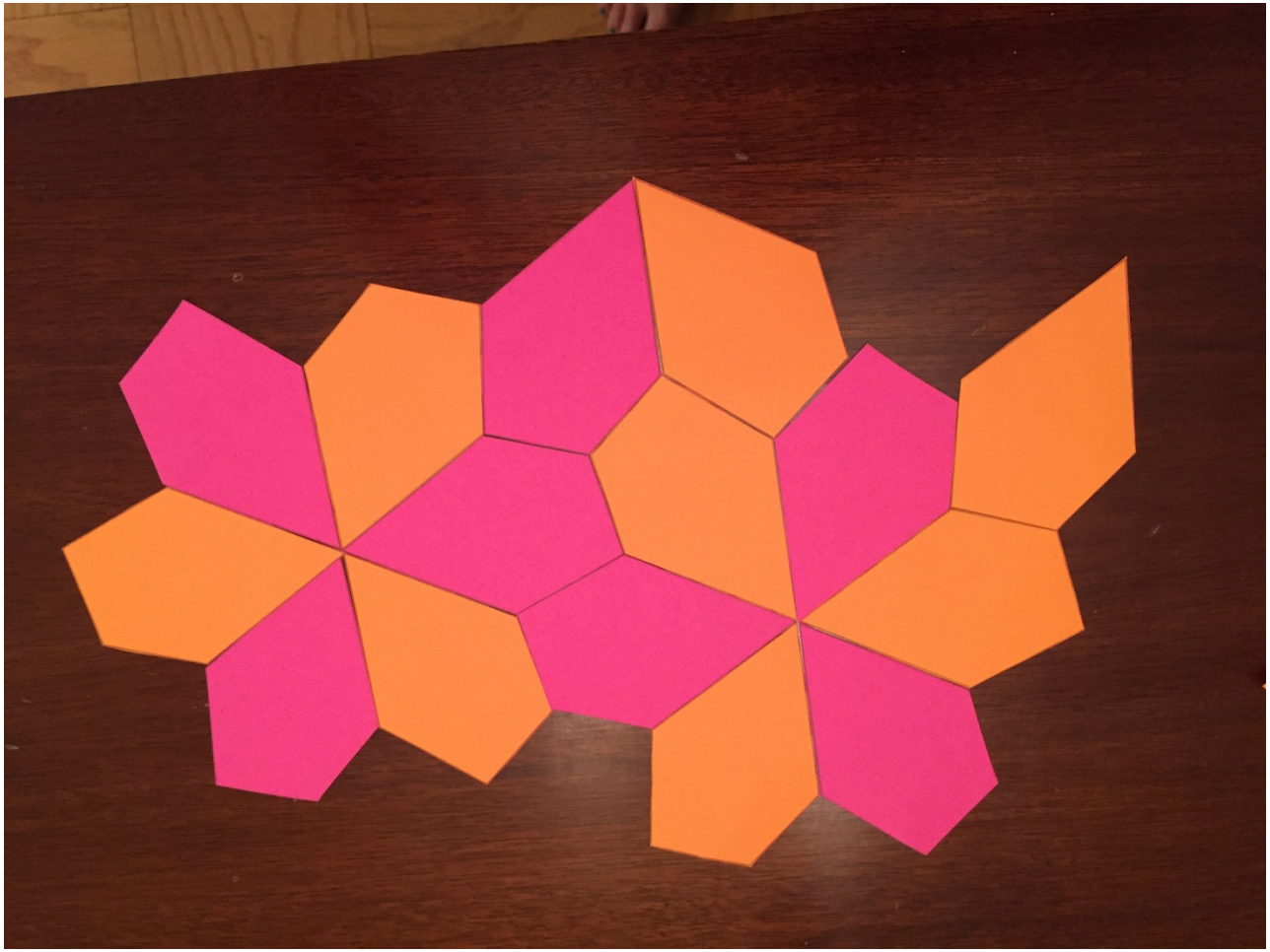


Pentagon B (Five)

a=b, d=e
A=60°, D=120°

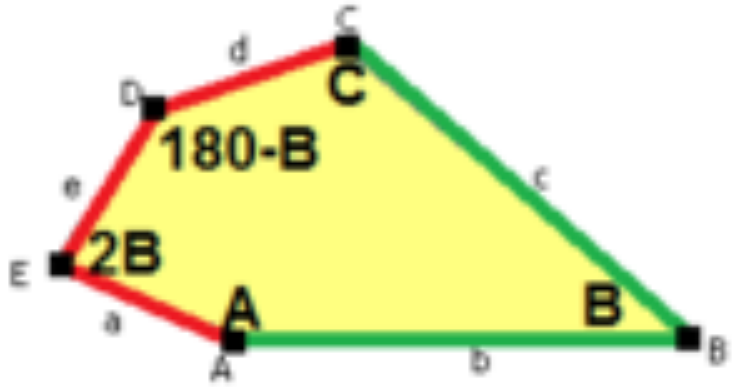


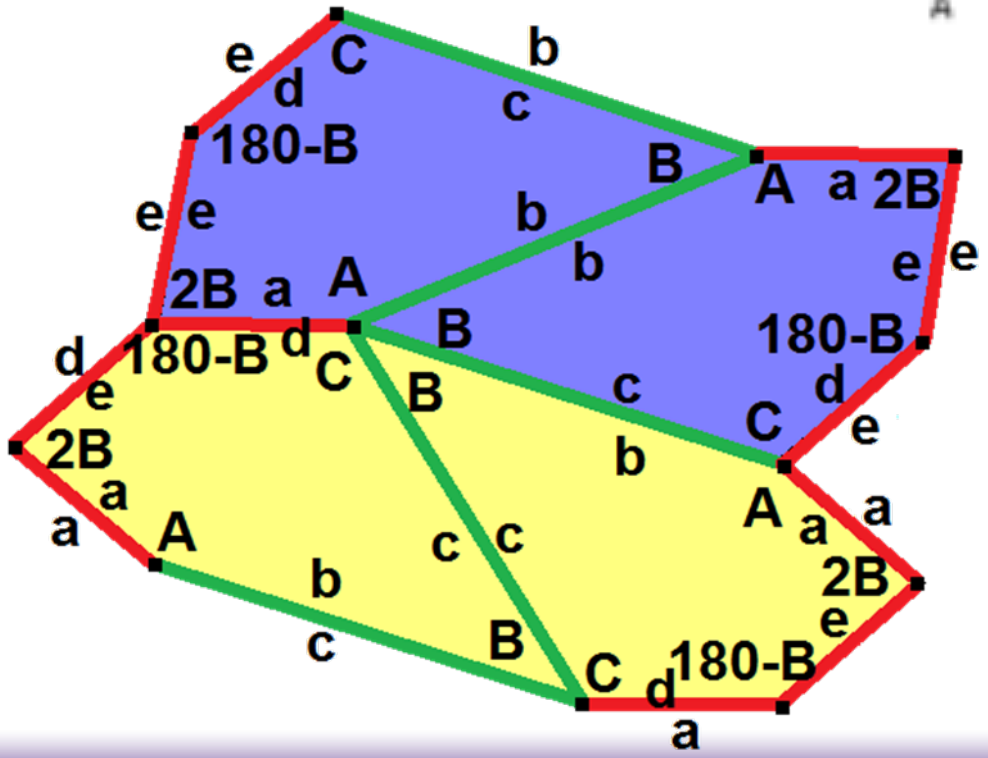


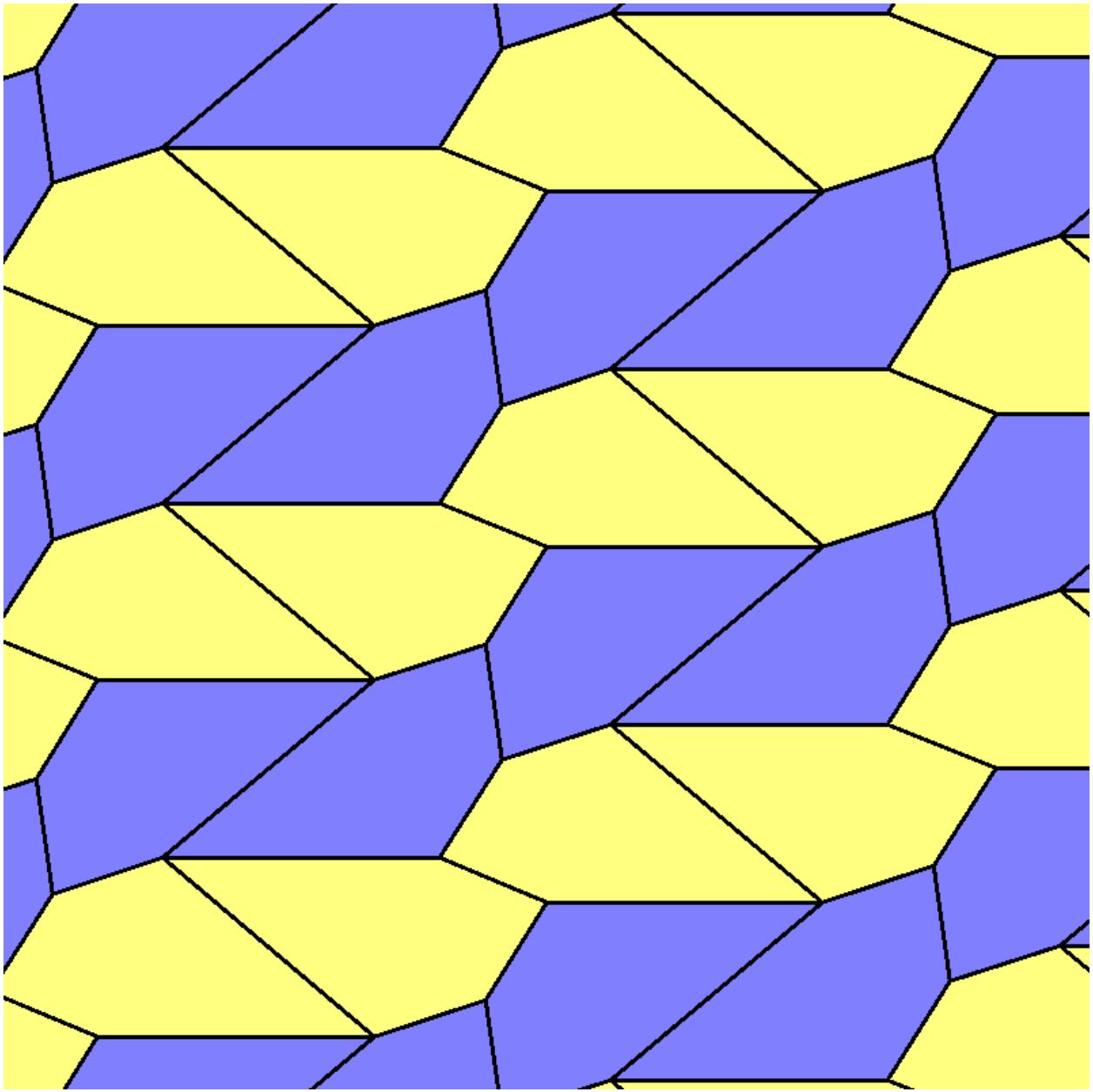


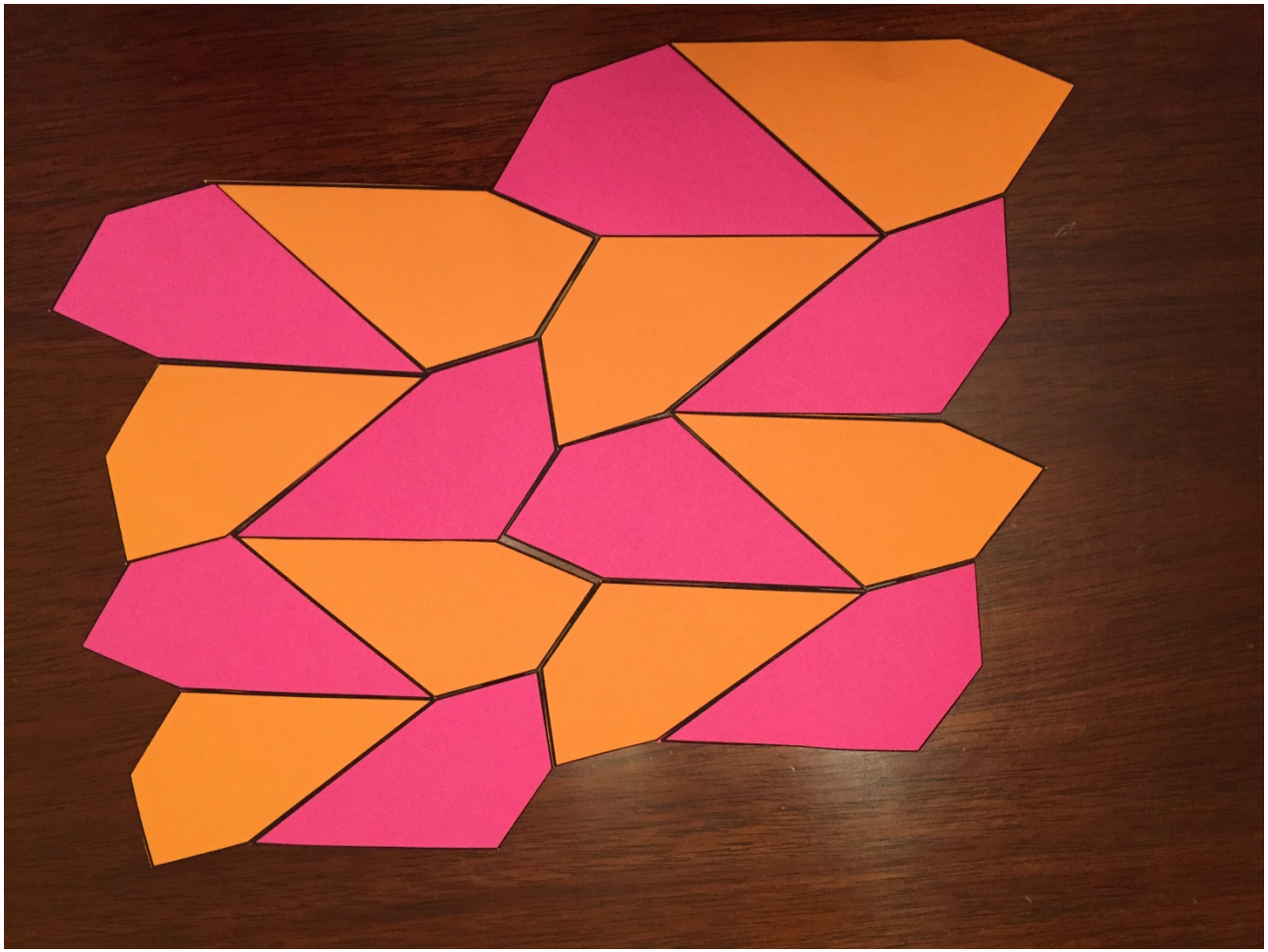
Pentagon C (Six)

a=d=e, b=c
B+D=180°, 2B=E





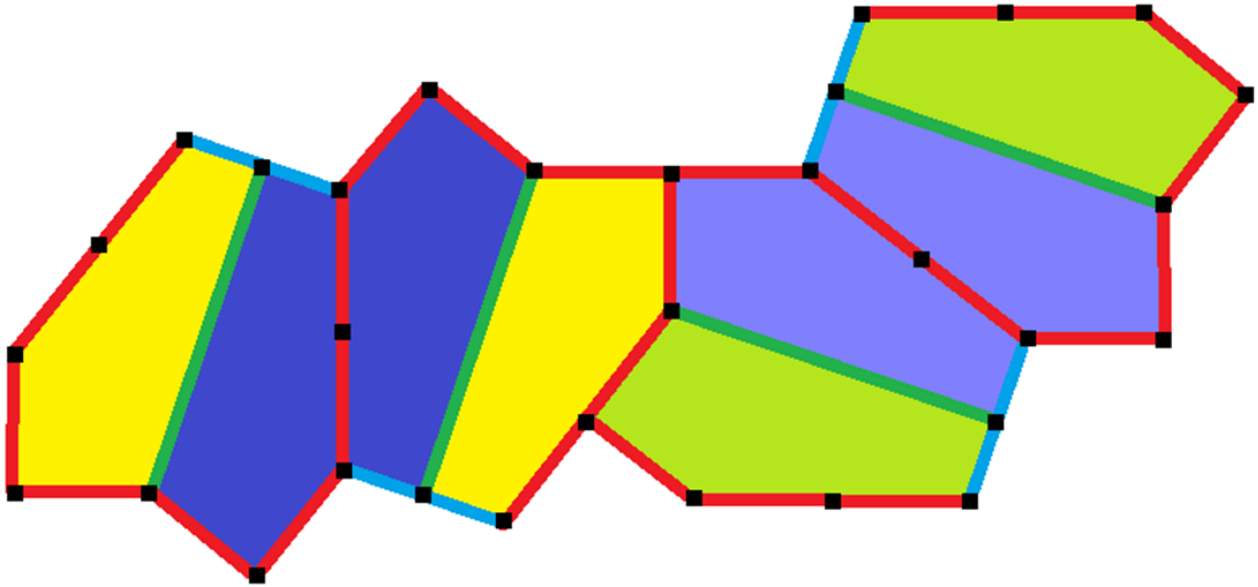


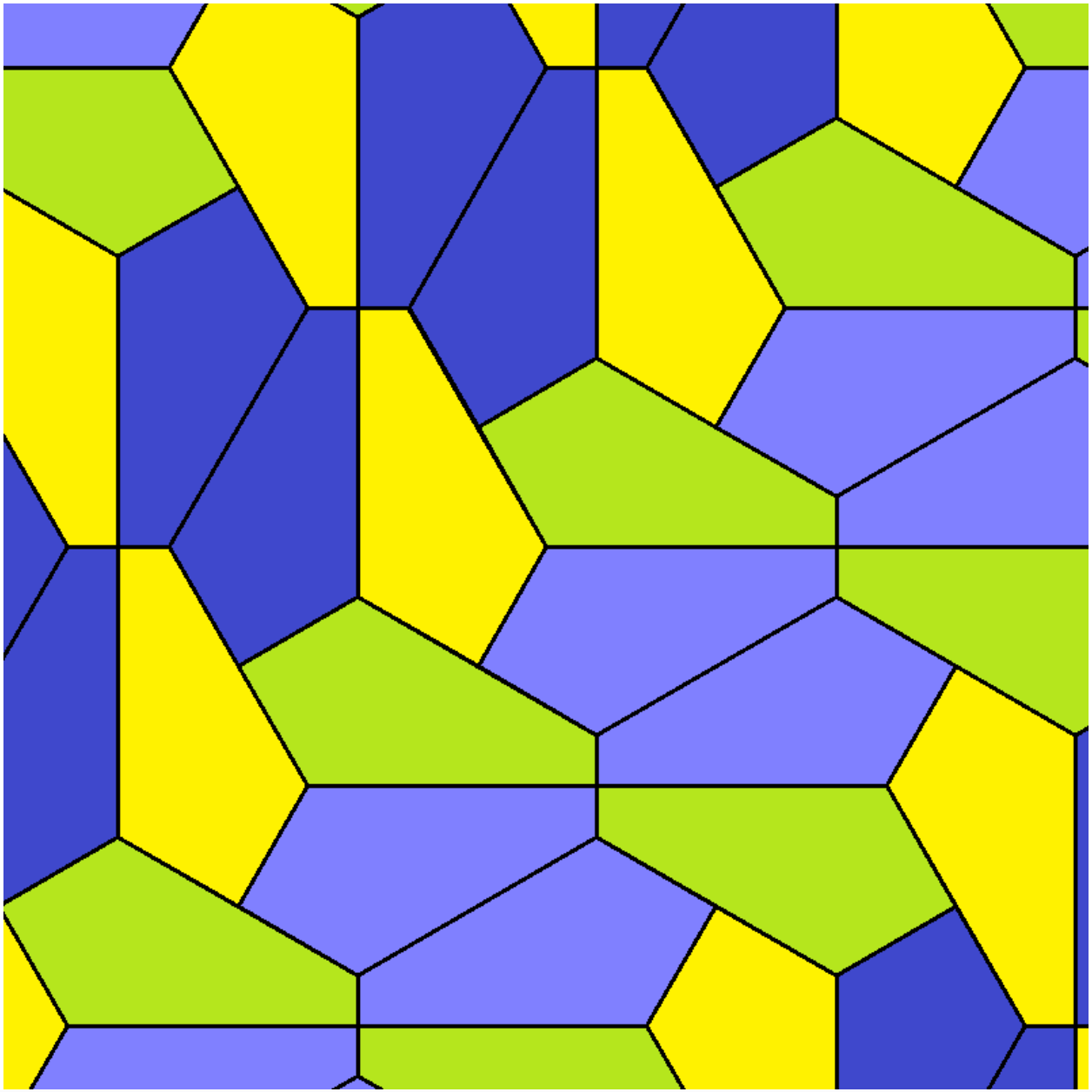


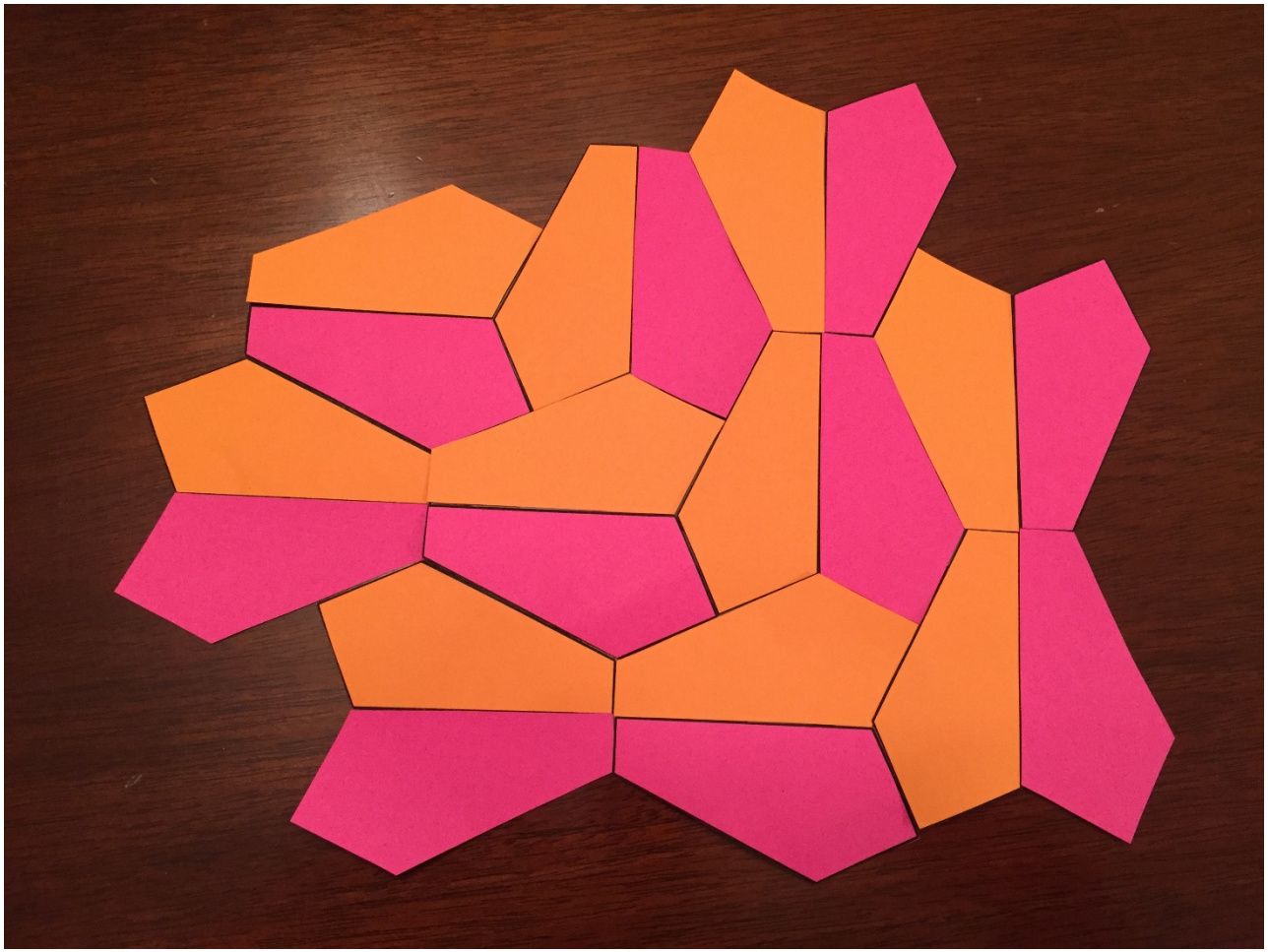
Pentagon D (Thirteen)

d=2a=2e

B=E=90°, 2A+D=360°







Pentagon E (Fifteen)

a=c=e, b=2a, A=150°
B=60°, C=135°,
D=105°, E=90°