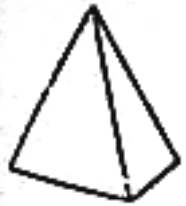# Polyhedra and Their Nets
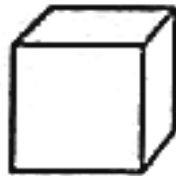
Alexandra Lamtyugina

Problem
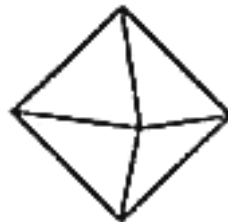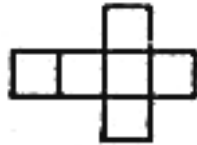
- Polyhedron nets

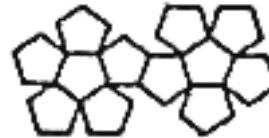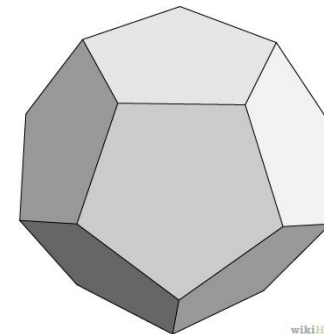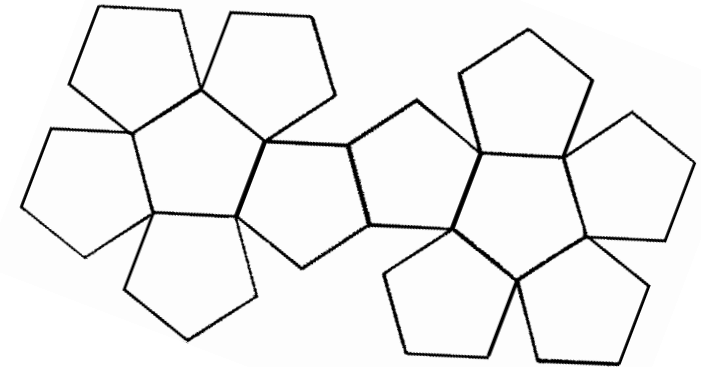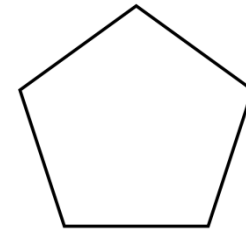- Open problem: Durer's Conjecture

Motivation

- Modular polyhedron origami

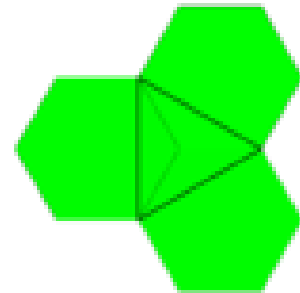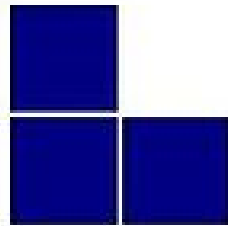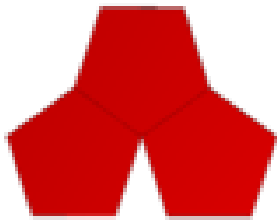MQYKLILNGKTLKGETTTEAVDAATAEKVFKQYA
NDNGVDGEWTYDDATKTFTVTE

Methodology

- Defined dihedral angle

- Define vertices in an array

- Translate vertices of each face along common edge to another face

- Repeat for all faces

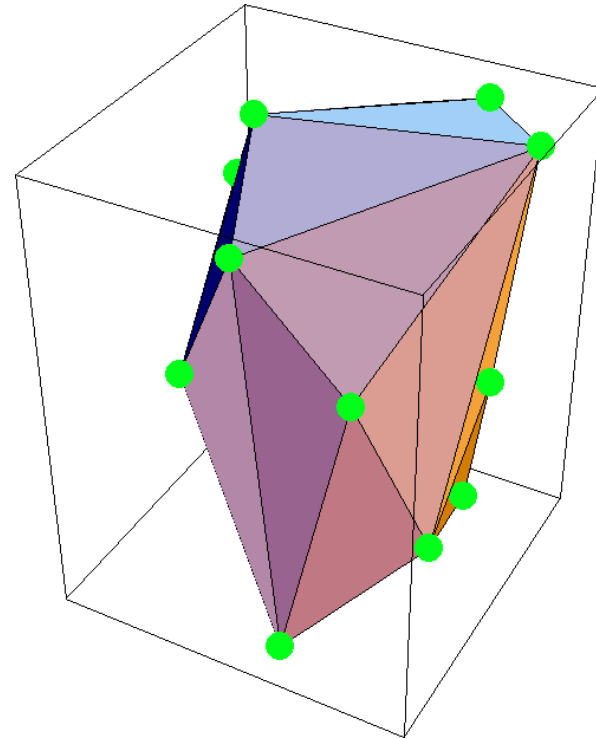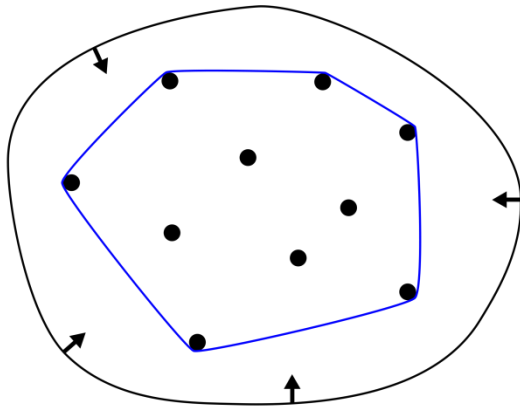# Analysis of Net

- Angular defect

- Euler characteristic

$$V - E + F = 2$$

- Descartes' theorem
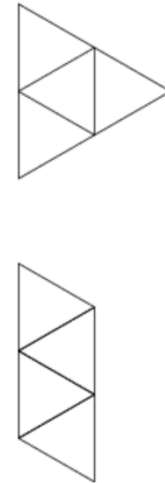
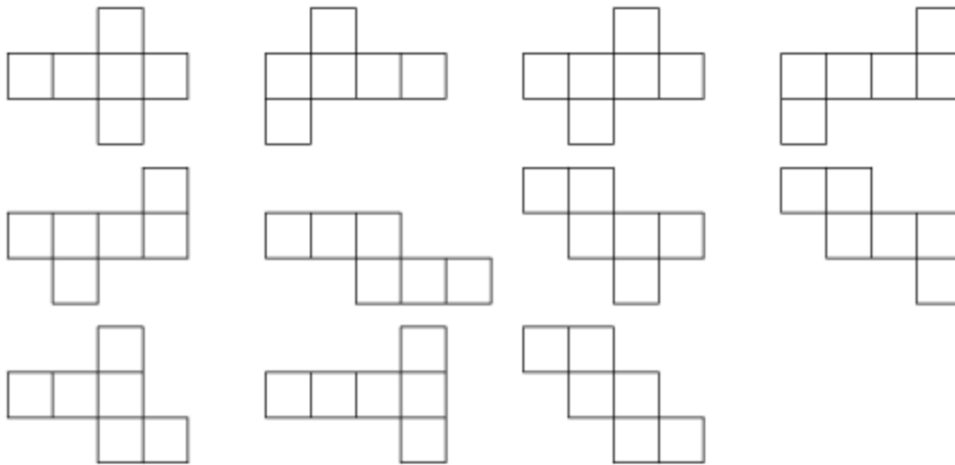$$V = 720°/(\text{angular defect})$$

Restrictions

- Convex – convex hull

Restrictions

- Faces: regular polygons

- Deltahedra