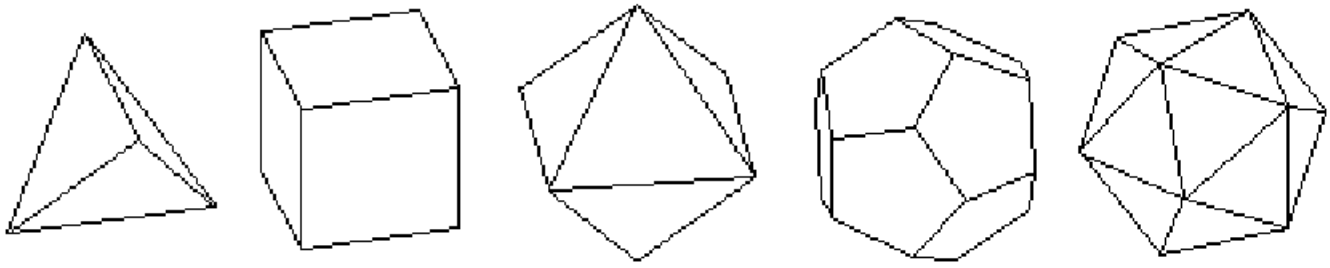
Paper Models of Polyhedra

Gijs Korthals Altes



Polyhedra are beautiful 3-D geometrical figures that have fascinated philosophers, mathematicians and artists for millennia

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Paper Models of Polyhedra

Platonic Solids
Dodecahedron
Cube and Tetrahedron
Octahedron
Icosahedron

Archimedean Solids
Cuboctahedron
Icosidodecahedron
Truncated Tetrahedron
Truncated Octahedron
Truncated Cube
Truncated Icosahedron (soccer ball)
Truncated dodecahedron
Rhombicuboctahedron
Truncated Cuboctahedron
Rhombicosidodecahedron
Truncated Icosidodecahedron
Snub Cube
Snub Dodecahedron

Kepler-Poinsot Polyhedra
Great Stellated Dodecahedron
Small Stellated Dodecahedron
Great Icosahedron
Great Dodecahedron

Other Uniform Polyhedra
Tetrahemihexahedron
Octahemioctahedron
Cubohemioctahedron
Small Rhombihexahedron
Small Rhombidodecahedron
S mall Dodecahemiododecahedron
Small Ditrigonal Icosidodecahedron
Great Dodecahedron

Compounds
Stella Octangula
Compound of Cube and Octahedron
Compound of Dodecahedron and Icosahedron
Compound of Two Cubes
Compound of Three Cubes
Compound of Five Cubes
Compound of Five Octahedra
Compound of Five Tetrahedra
Compound of Truncated Icosahedron and Pentakisdodecahedron

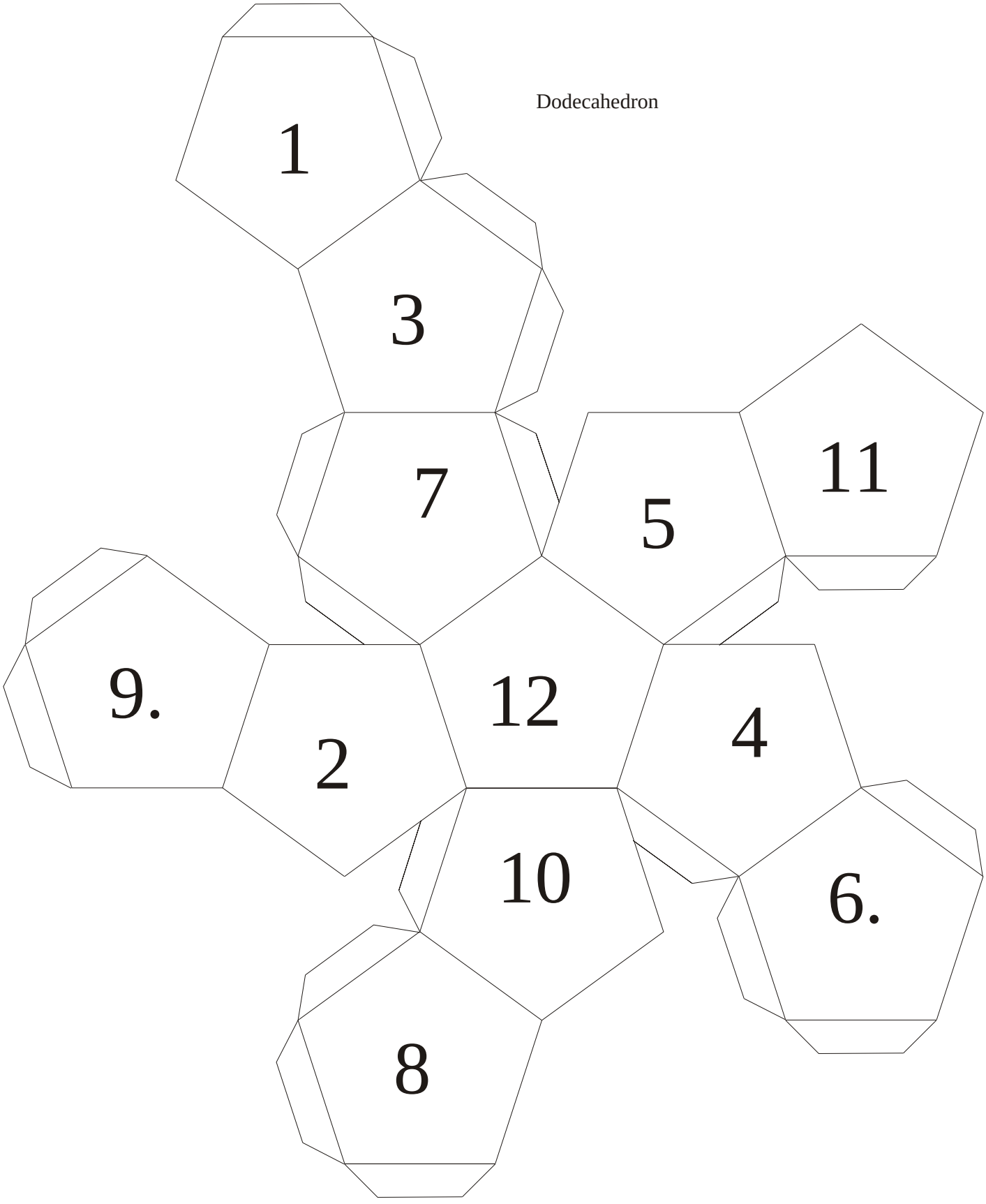
Other Polyhedra
Pentagonal Hexecontahedron
Pentagonalconsitetrahedron
Pyramid
Pentagonal Pyramid
Decahedron
Rhombic Dodecahedron
Great Rhombihexacron
Pentagonal Dipyramid
Pentakisdodecahedron
Small Triakisoctahedron
Small Triambic Icosahedron
Polyhedra Made of Isosceles Triangles
Third Stellation of the Icosahedron
Sixth Stellation of the Icosahedron
Seventh Stellation of the Icosahedron
Eighth Stellation of the Icosahedron
Ninth Stellation of the Icosahedron
Final Stellation of the Icosahedron

Prism and Antiprism
Triangular Prism
Pentagonal Prism
Pe ntagonal Antiprism
Triangular Prism
Octagonal Prism
Octagonal Antiprism
Pentagrammic Prism
Pentagrammic Antiprism
Hexagrammic Prism
Hexagrammic Antiprism
Twisted Rectangular Prism

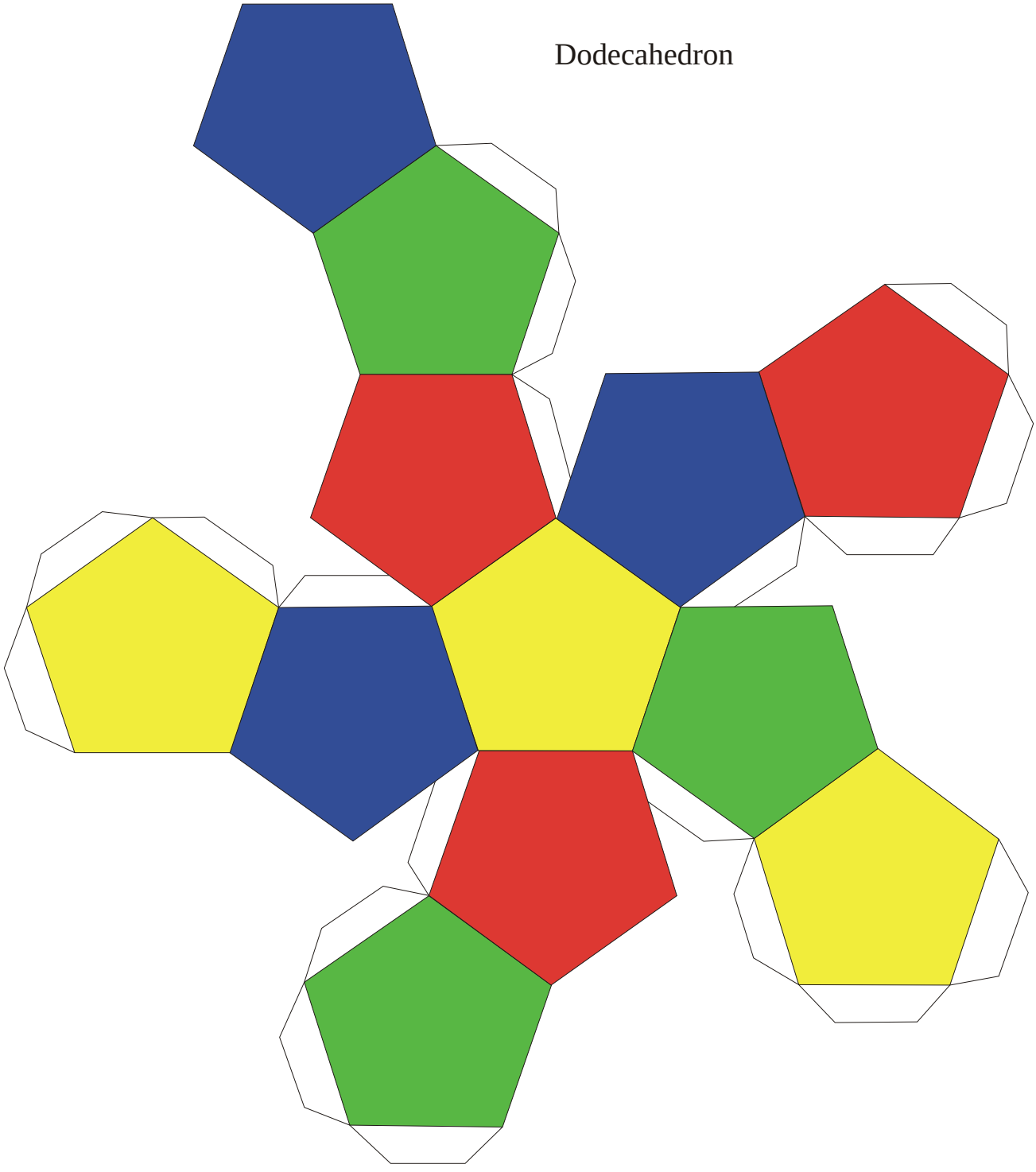
Kaleidocycles
Hexagonal Kaleidocycle
Octagonal Kaleidocycle
Decagonal Kaleidocycle

Other Paper Models
Cylinder
Tapered Cylinder
Cone
Special Cones
"Matryoska house"
"Matryoska house" 50%
Globe
Chevaux-de-frise

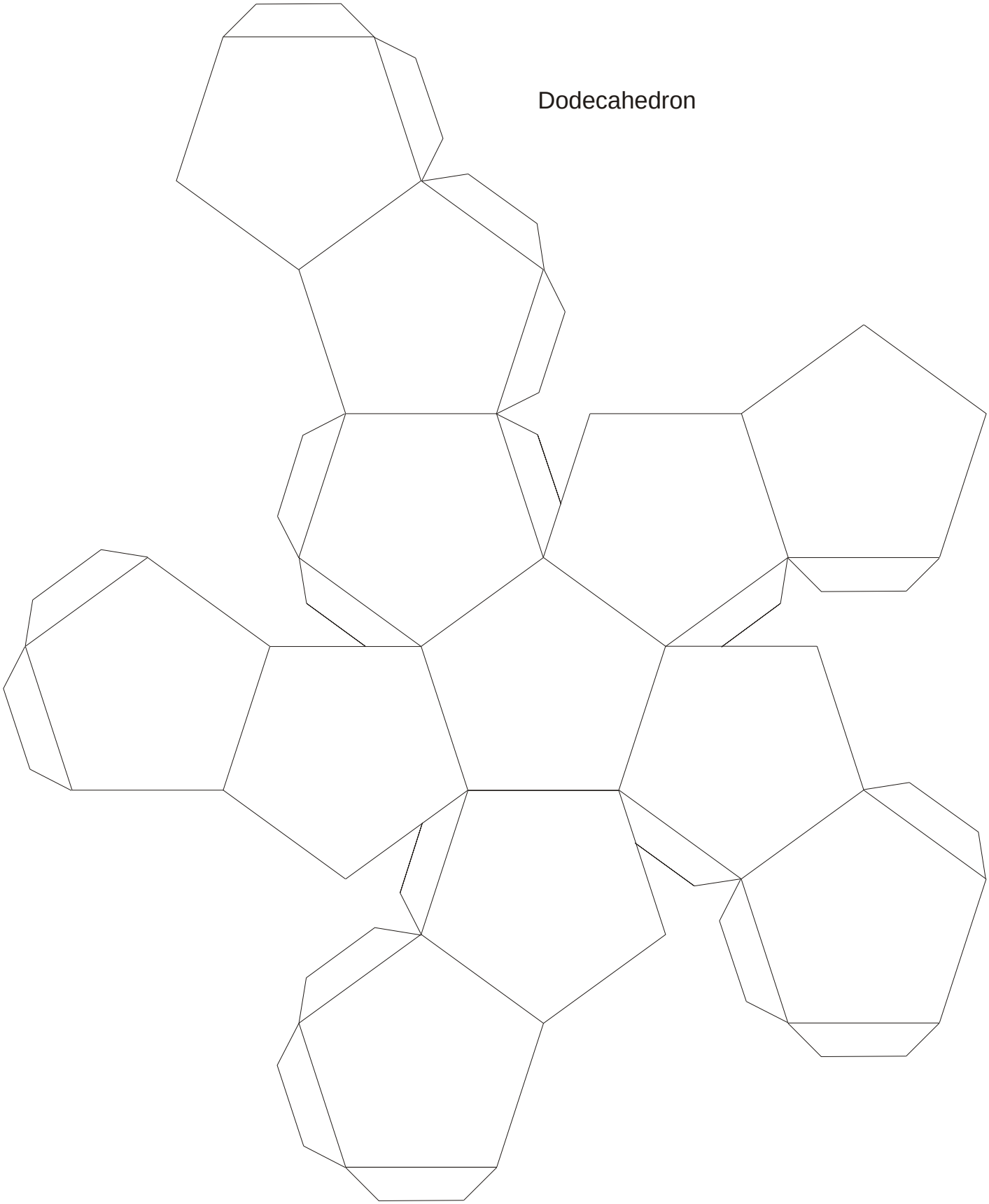
Dodecahedron



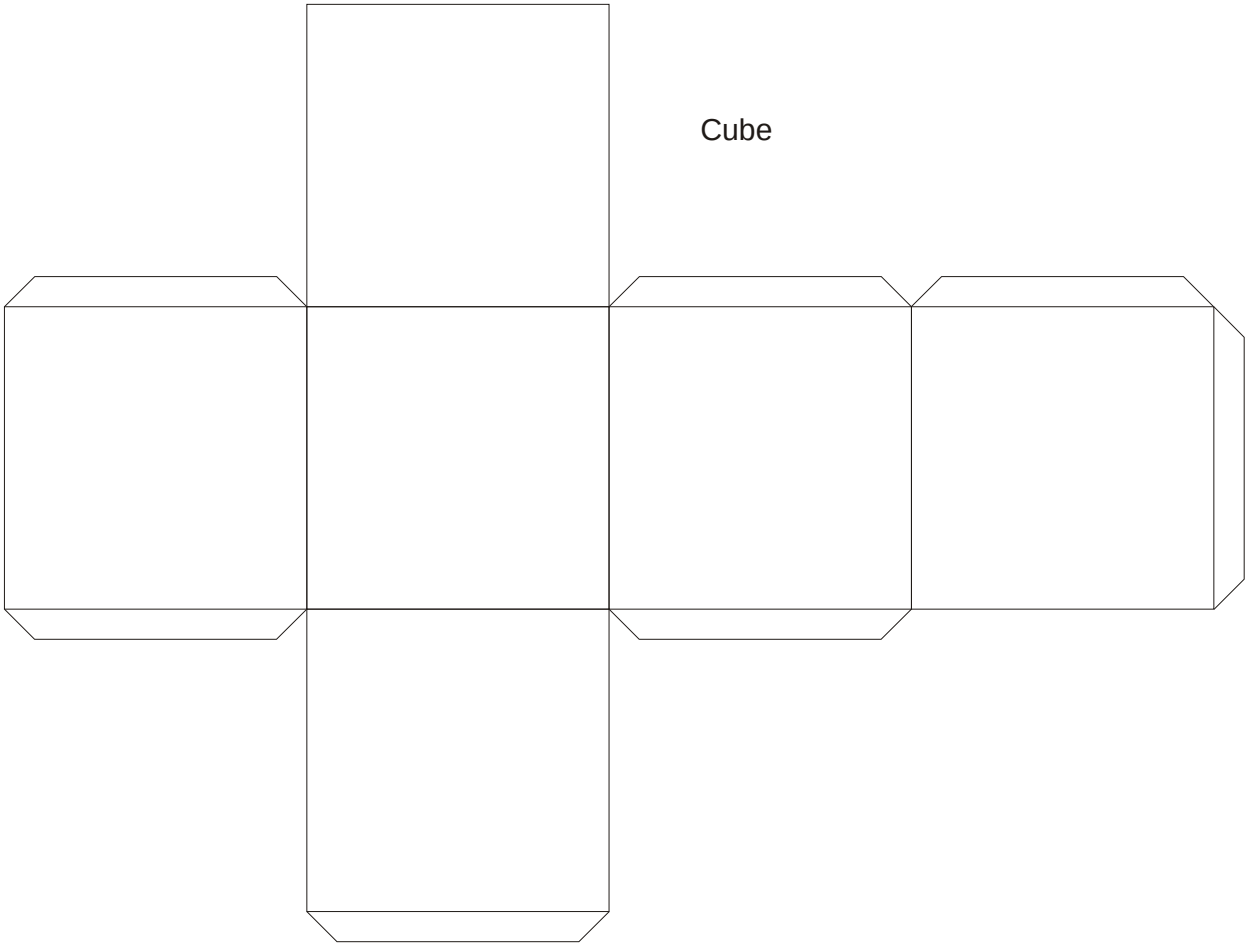
Dodecahedron

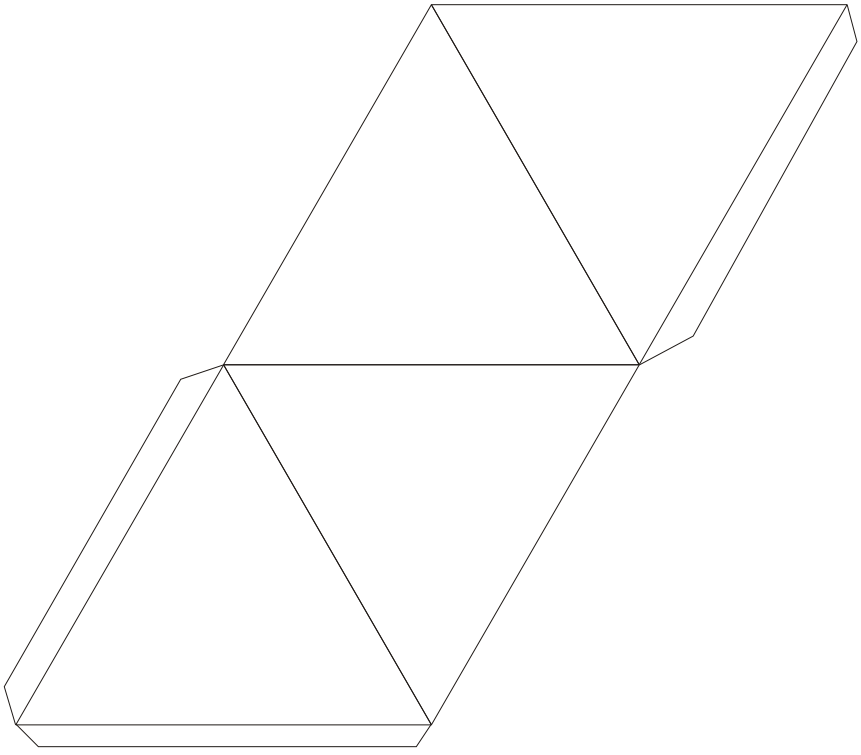


Dodecahedron

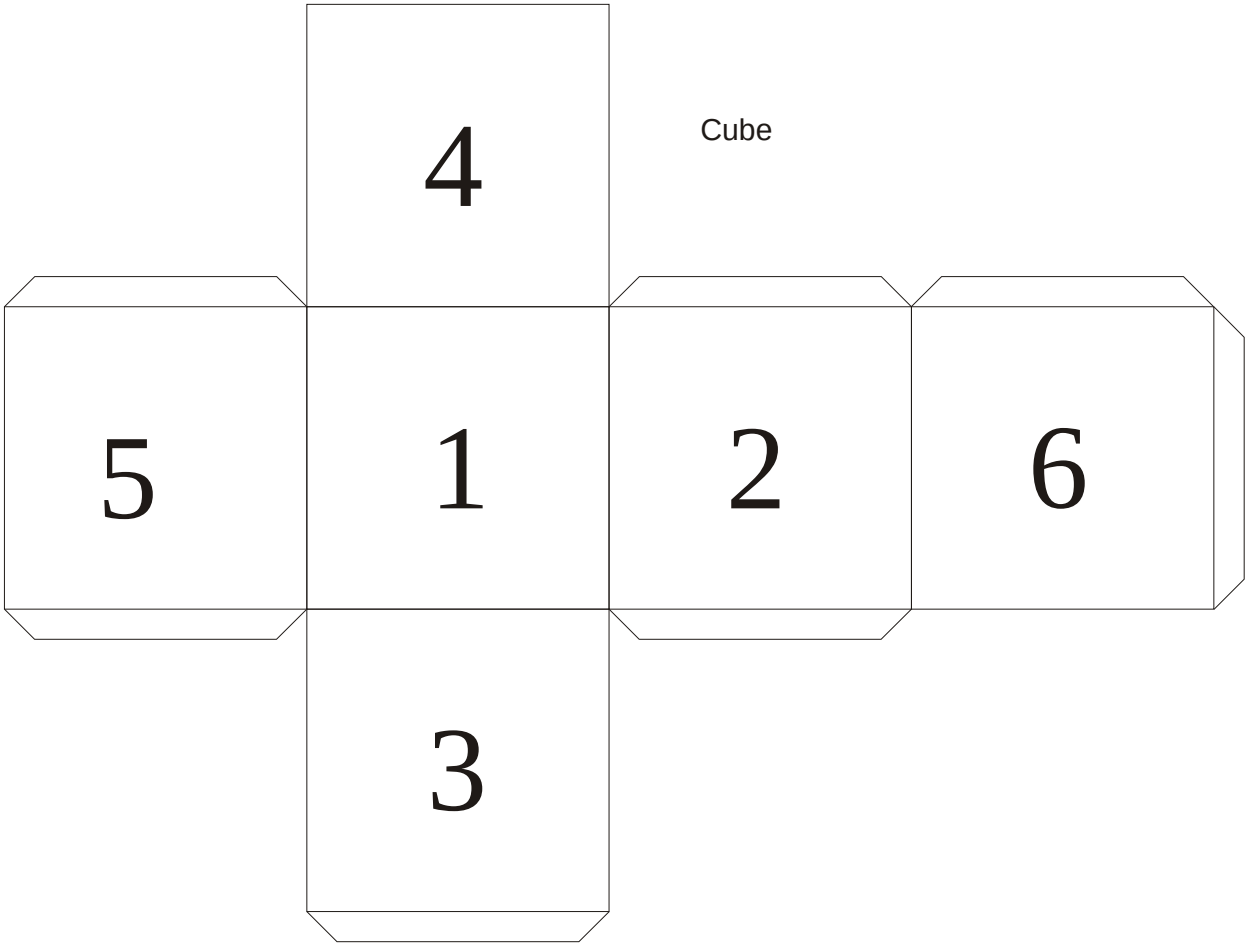


Cube

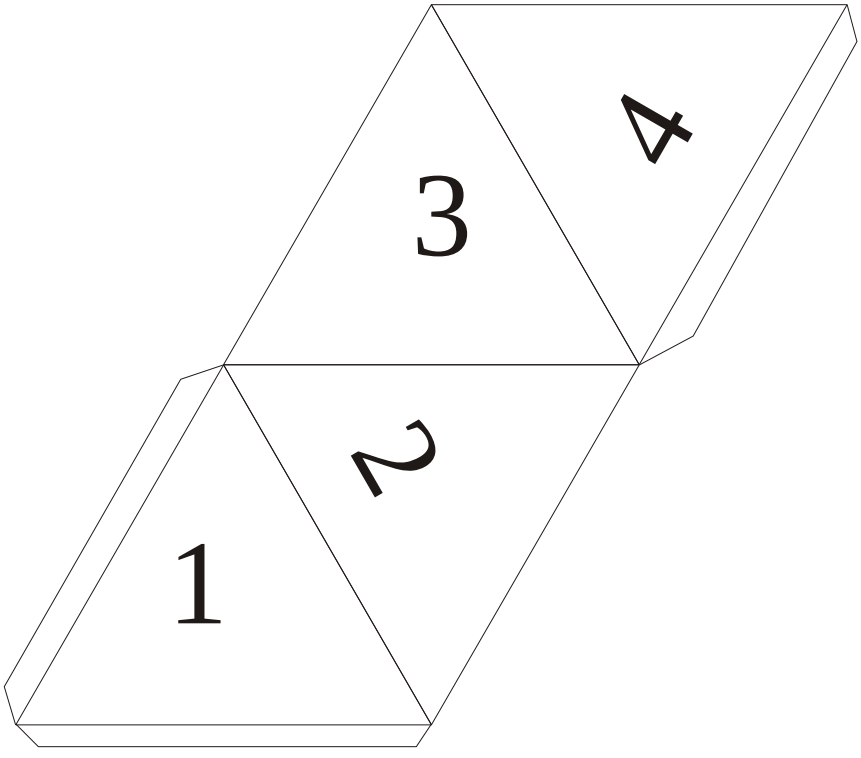




Tetrahedron

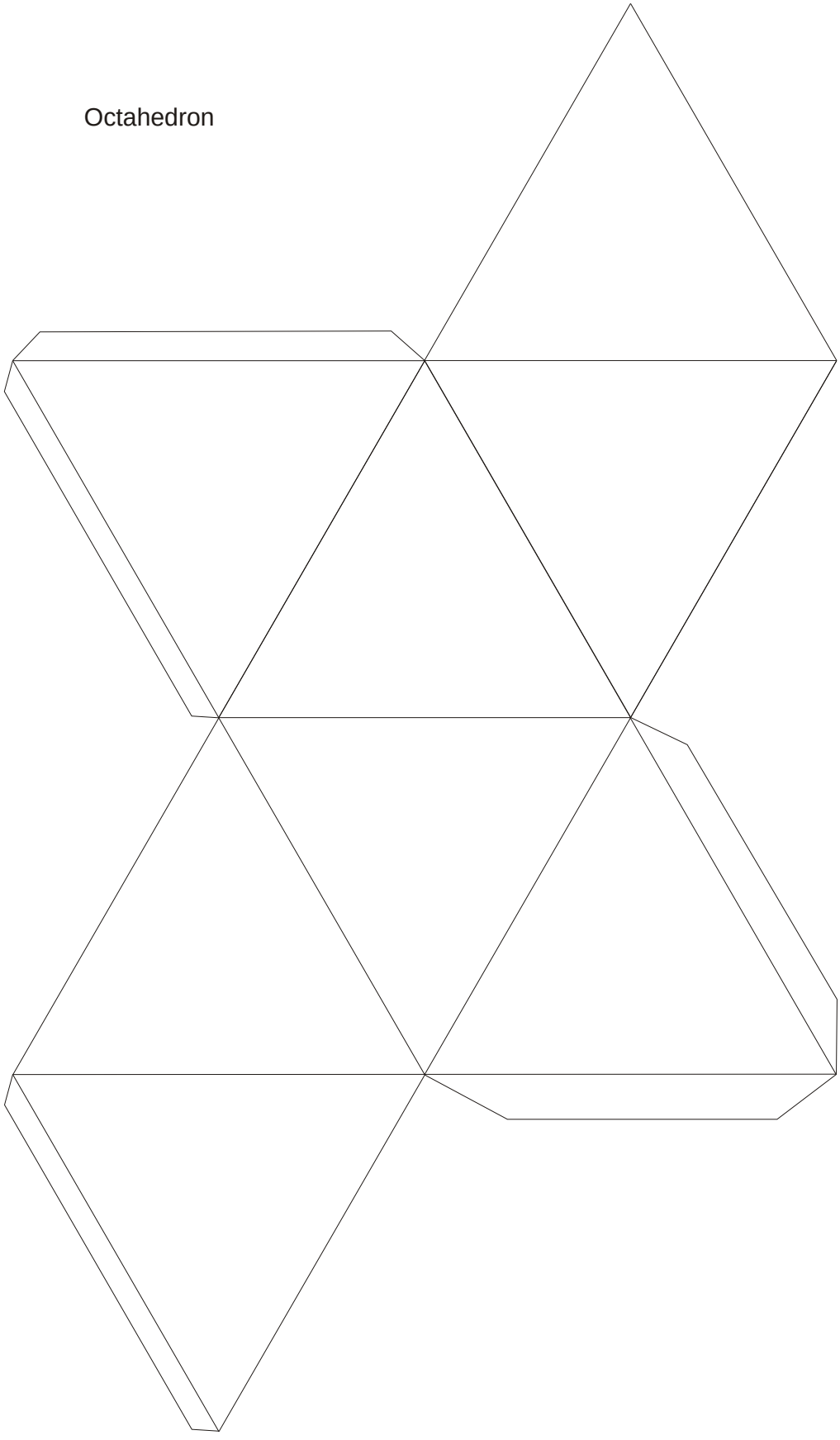


Cube

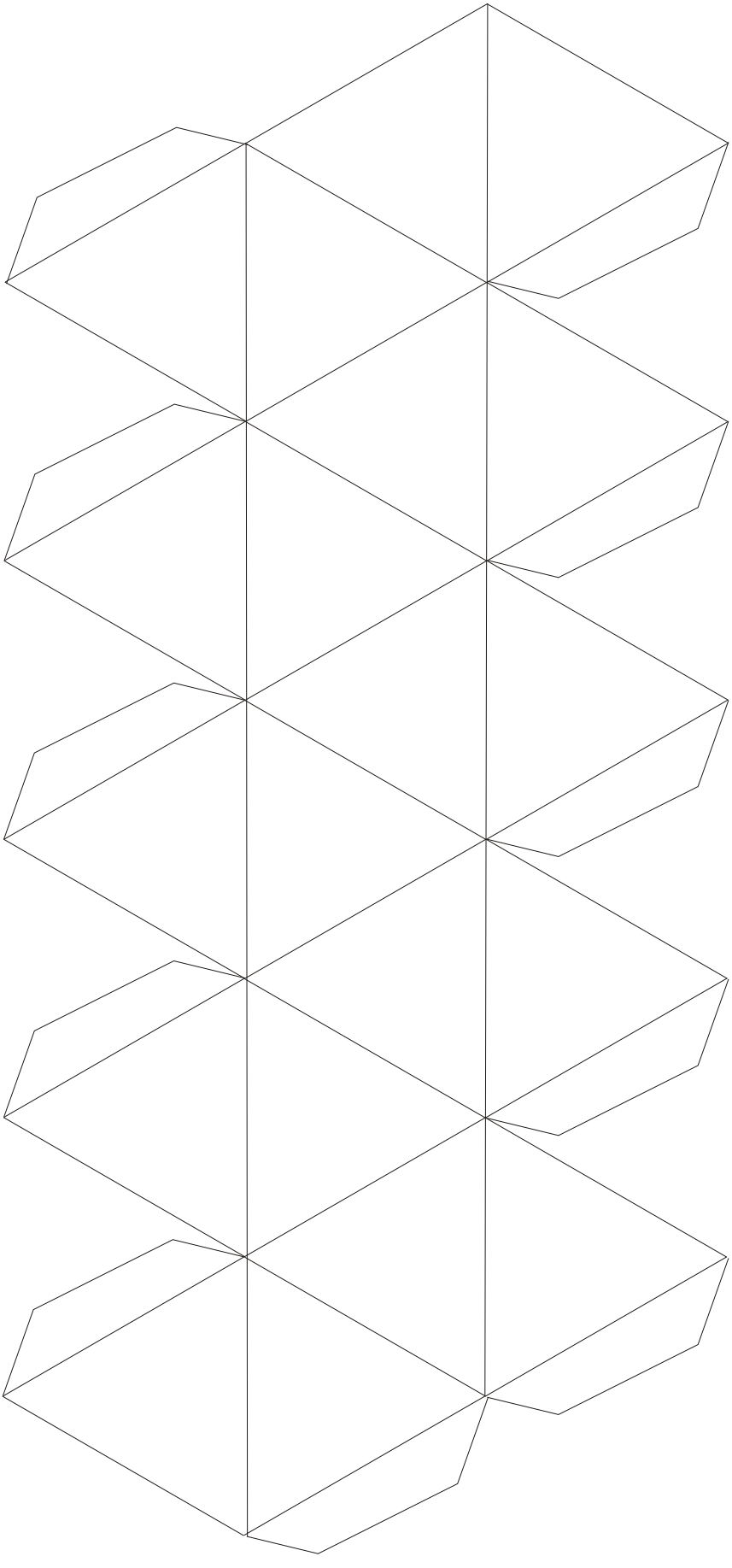


Tetrahedron

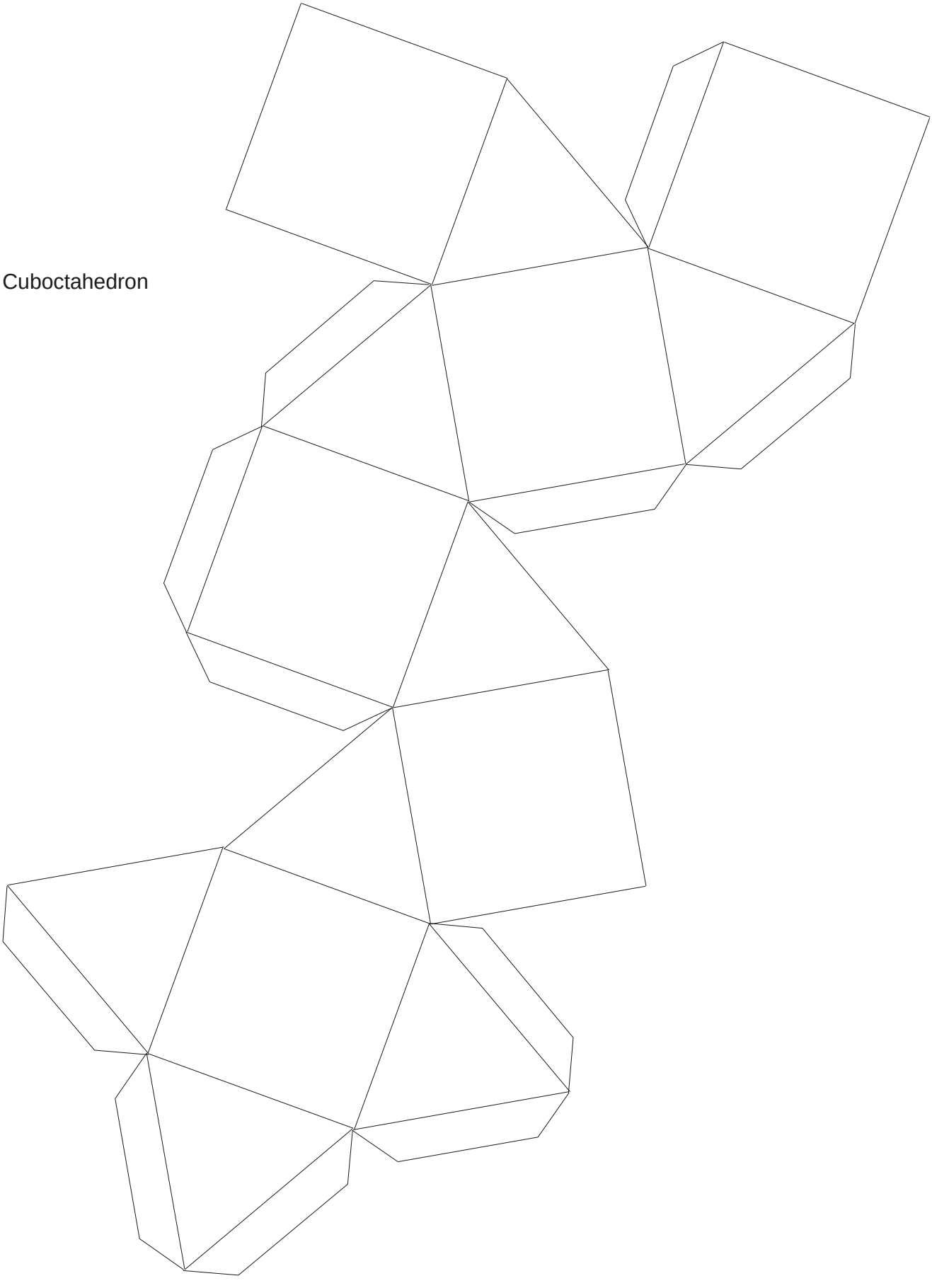
Octahedron



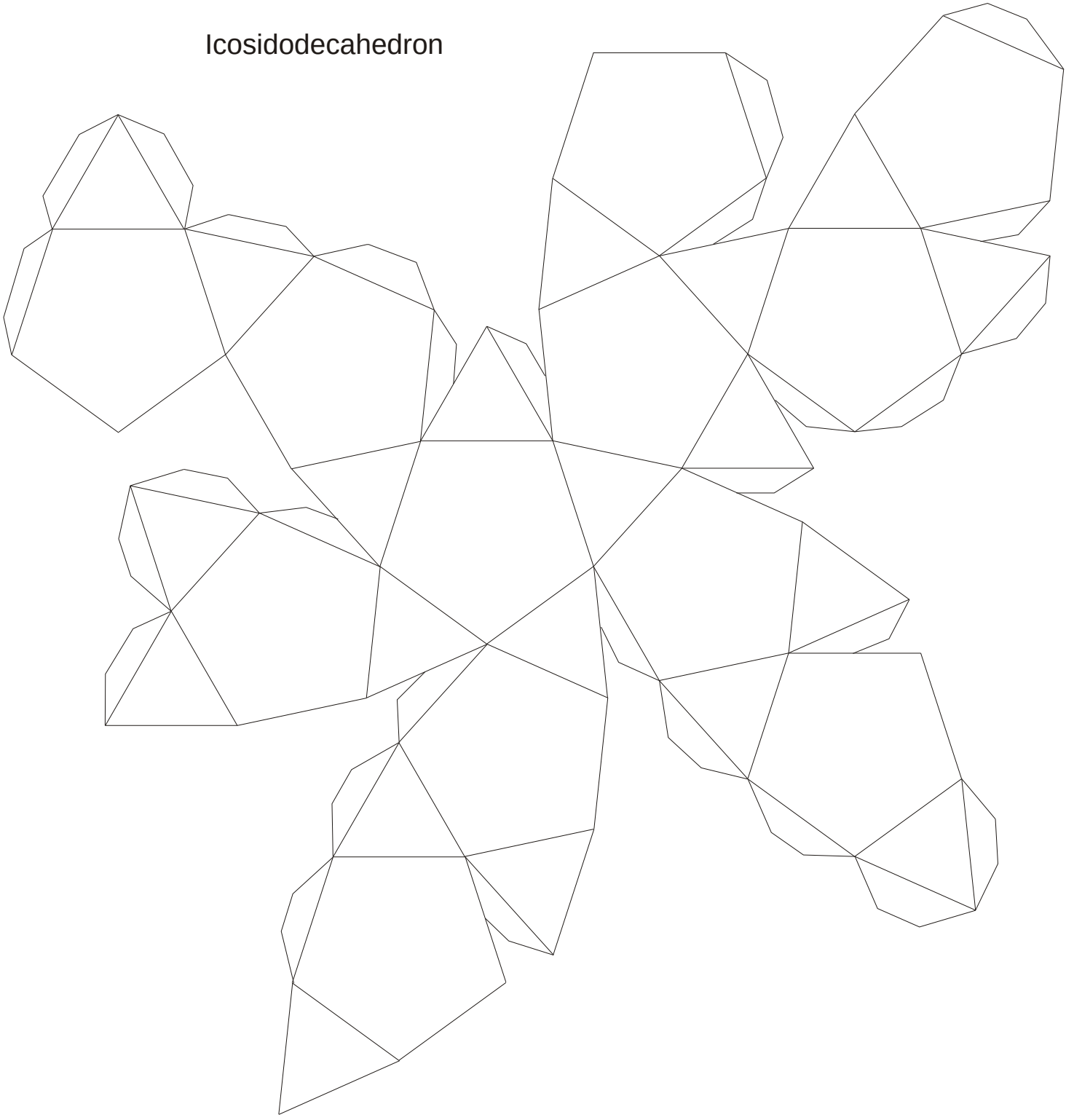
Icosahedron



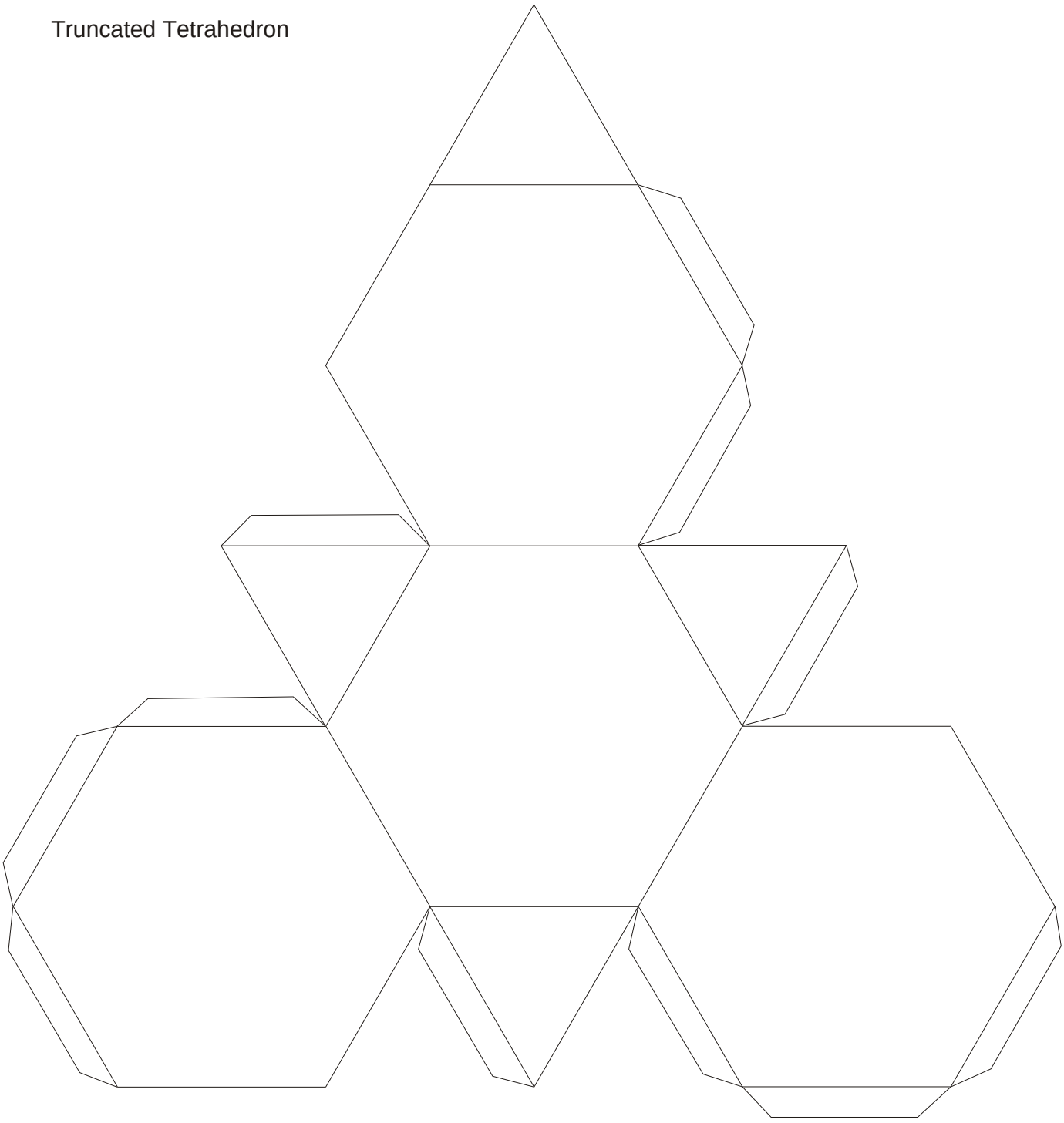
Cuboctahedron

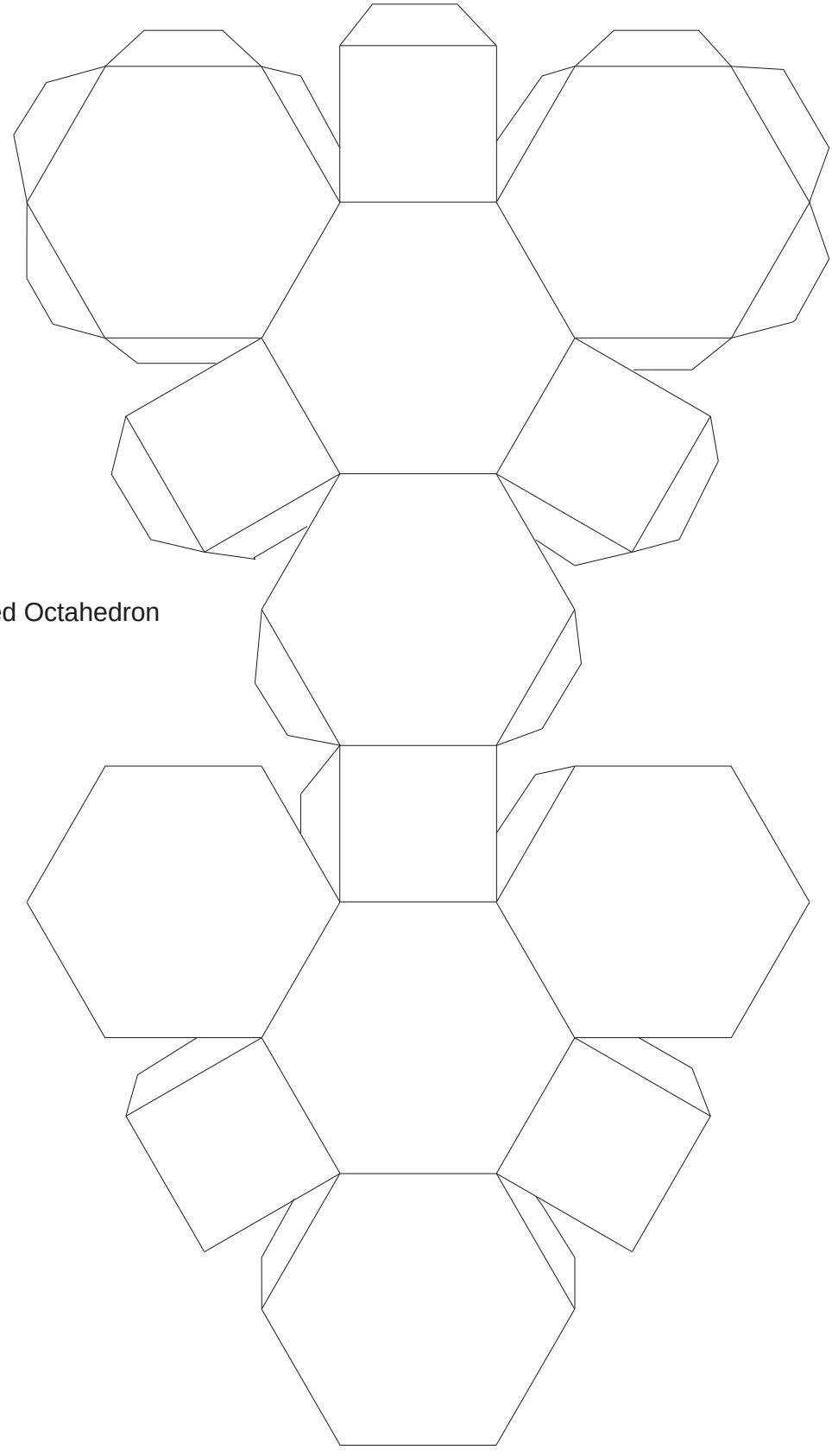


Icosidodecahedron



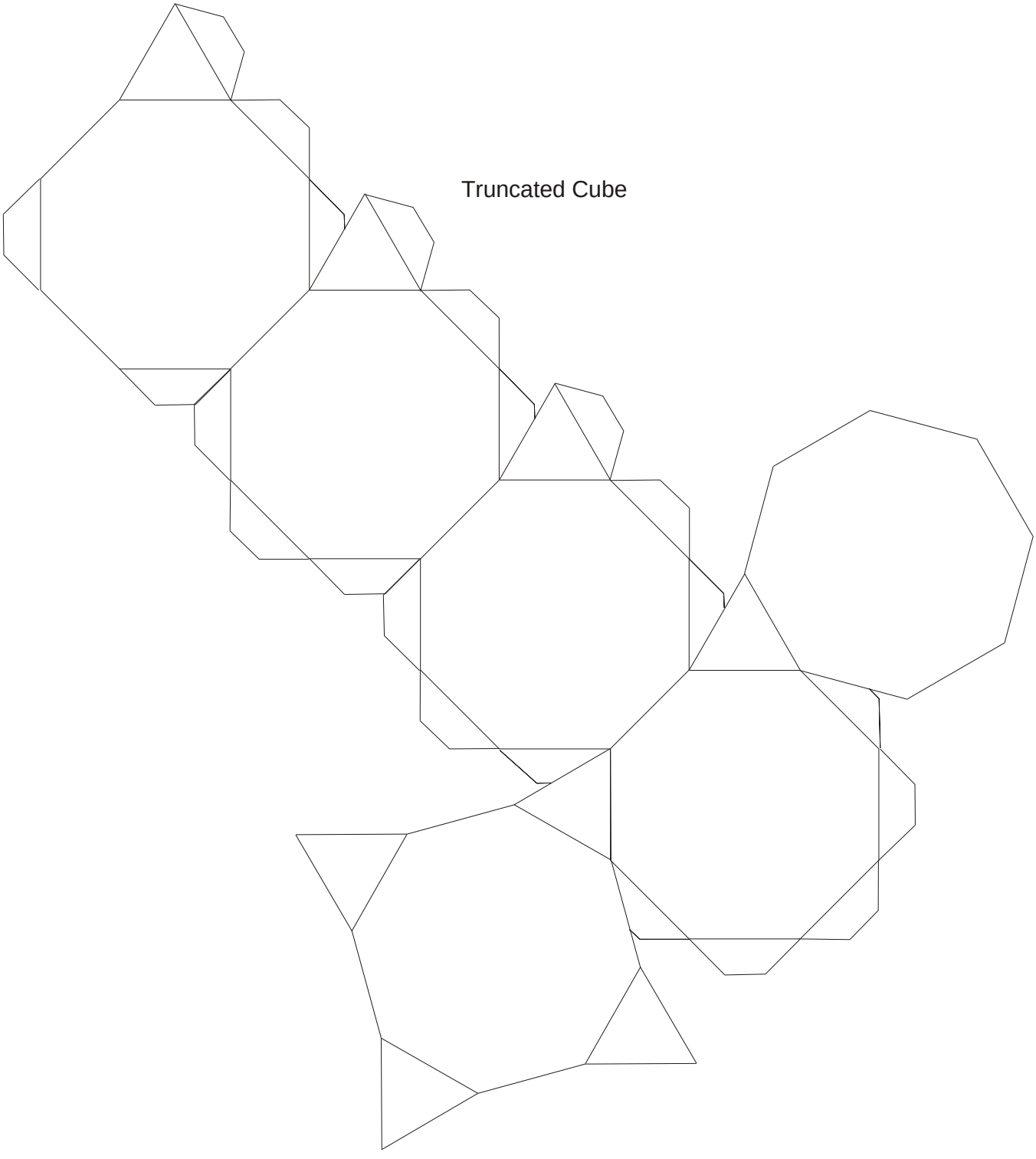
Truncated Tetrahedron



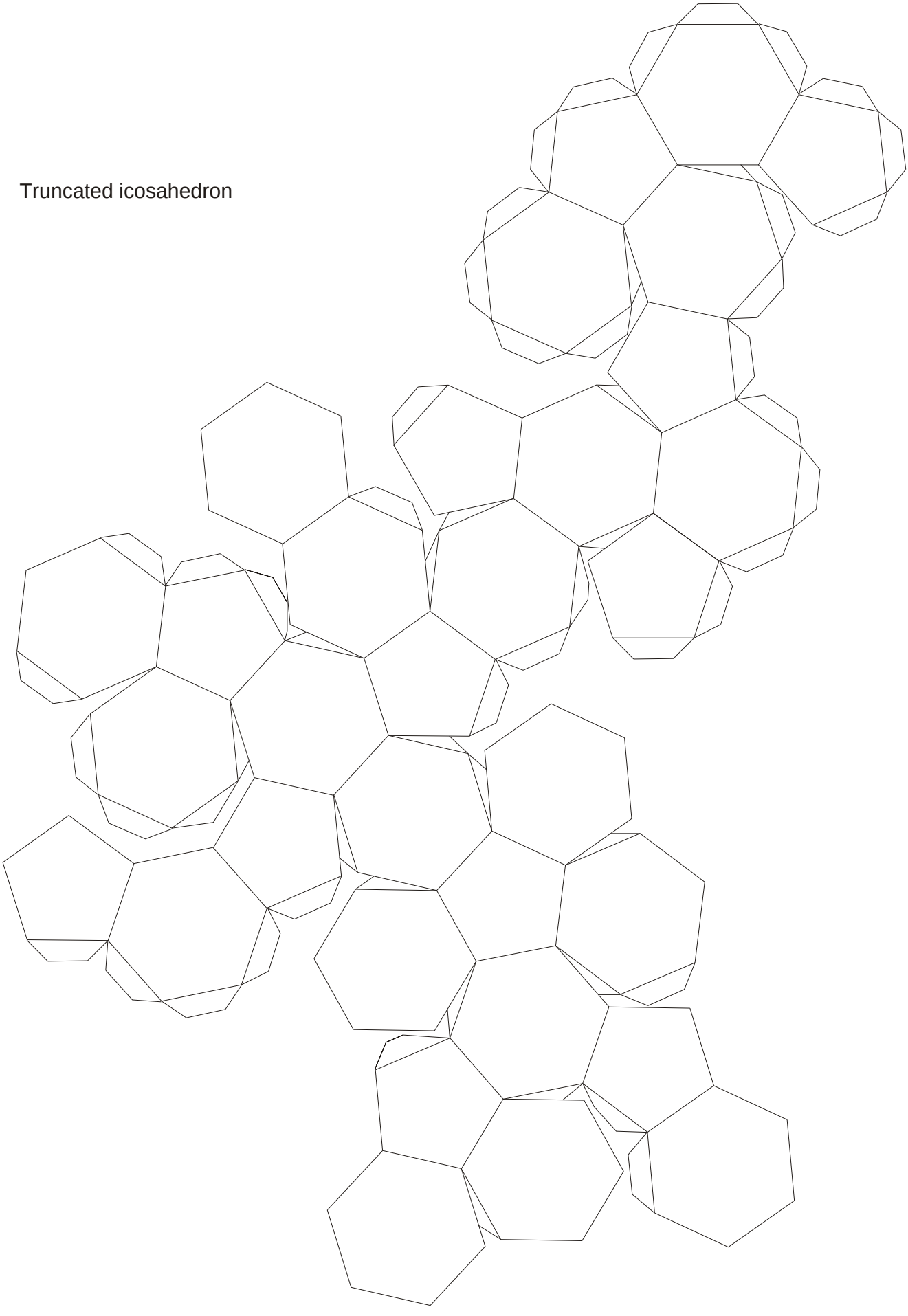


Truncated Octahedron

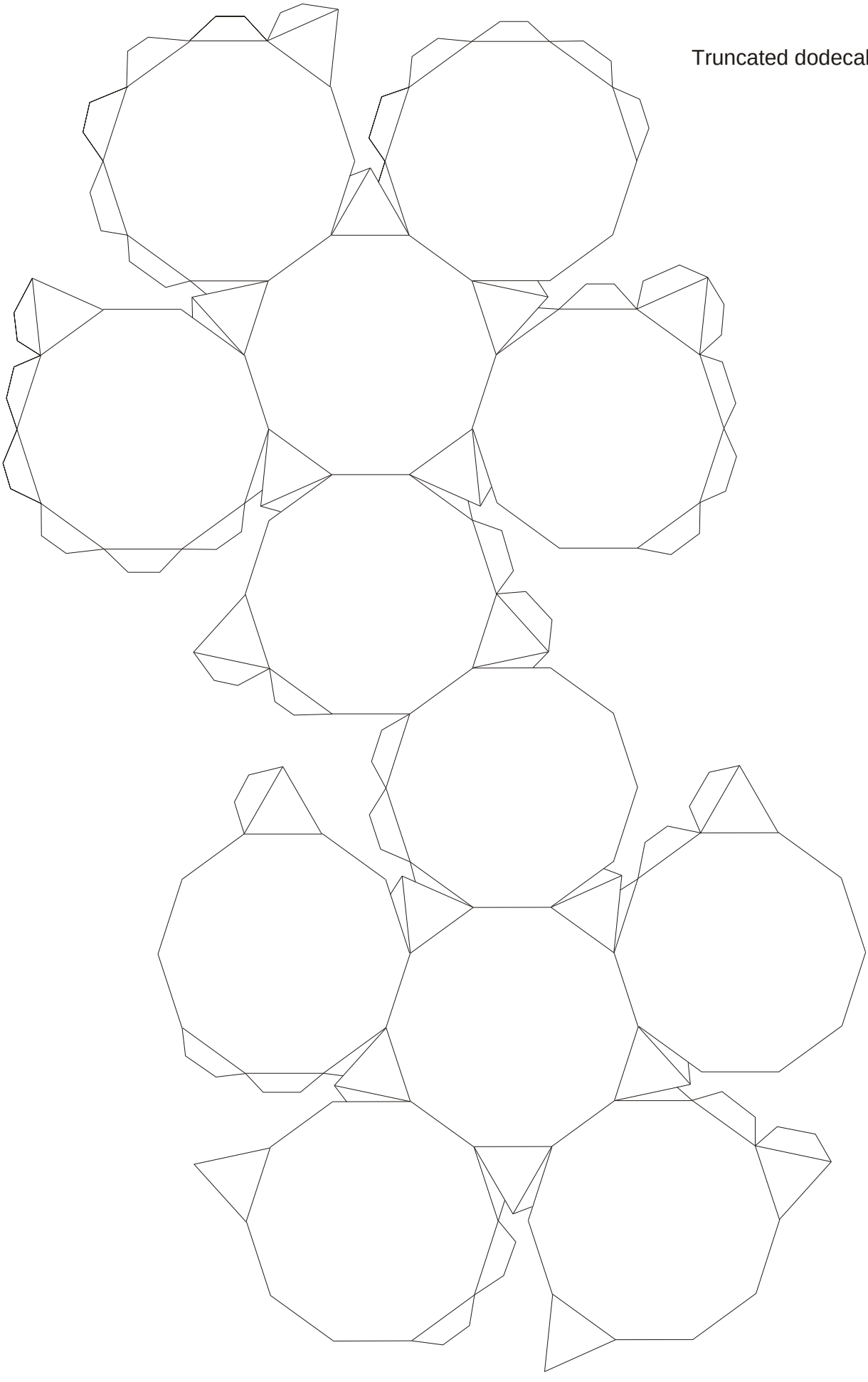
Truncated Cube



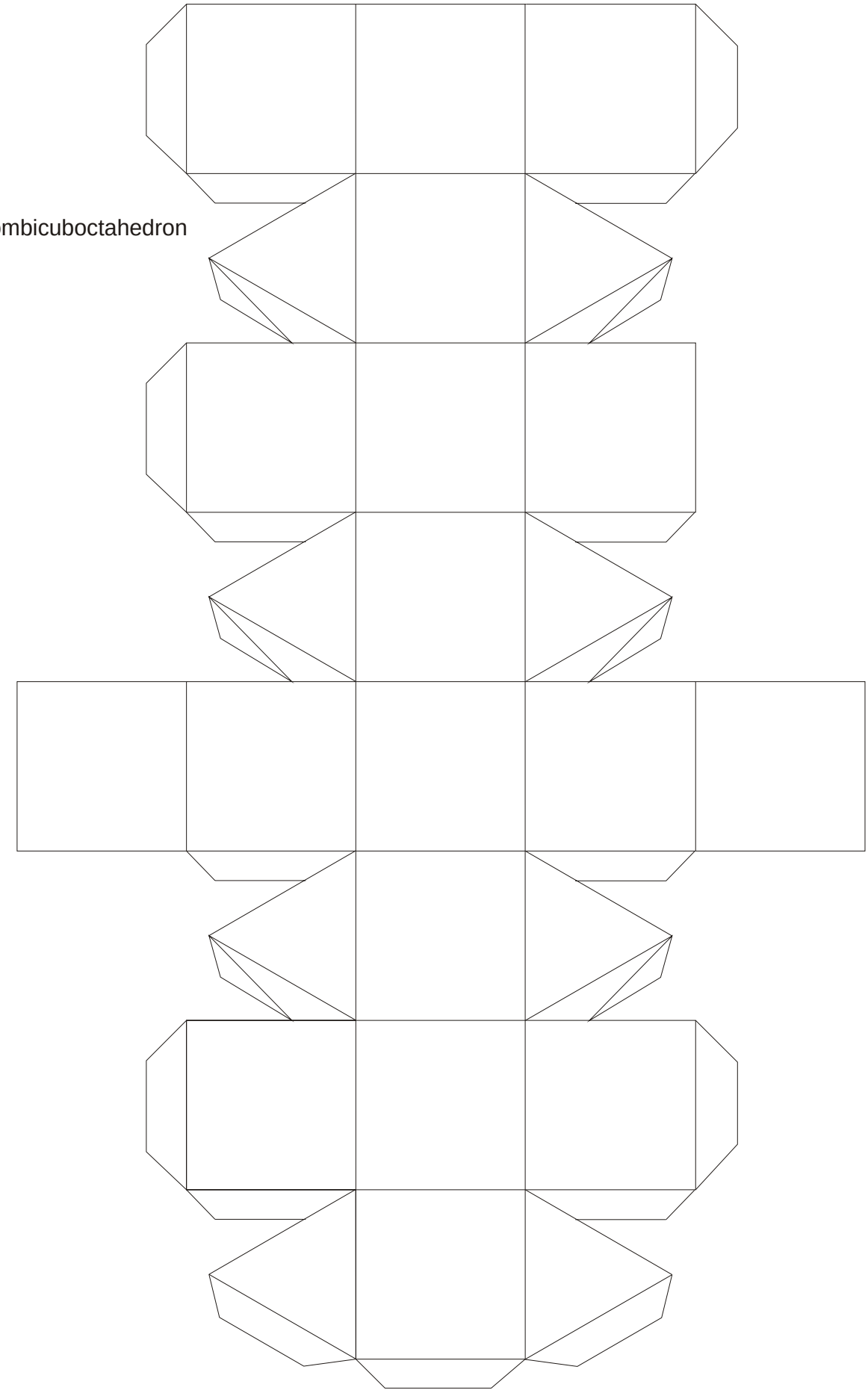
Truncated icosahedron



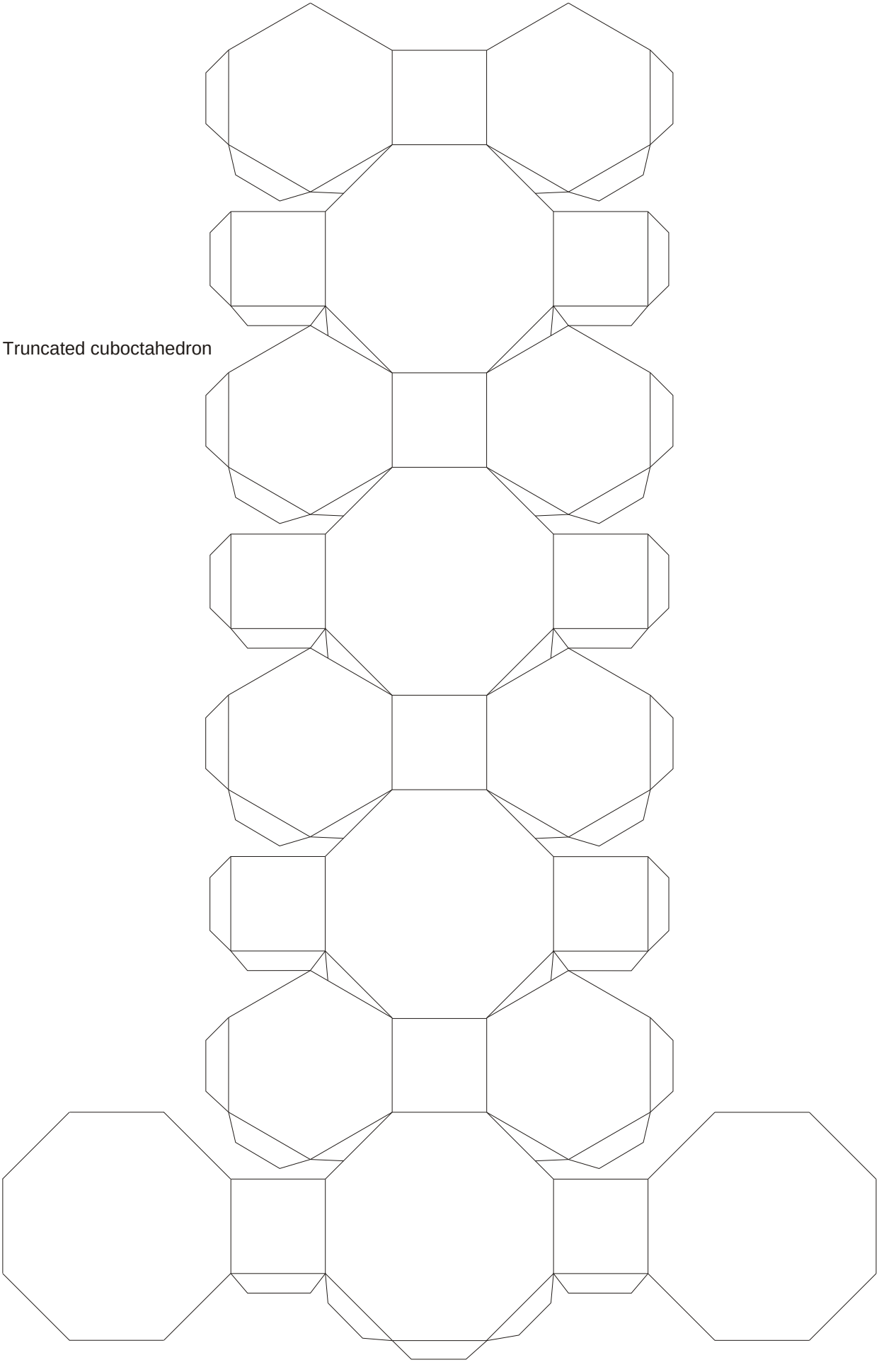
Truncated dodecahedron



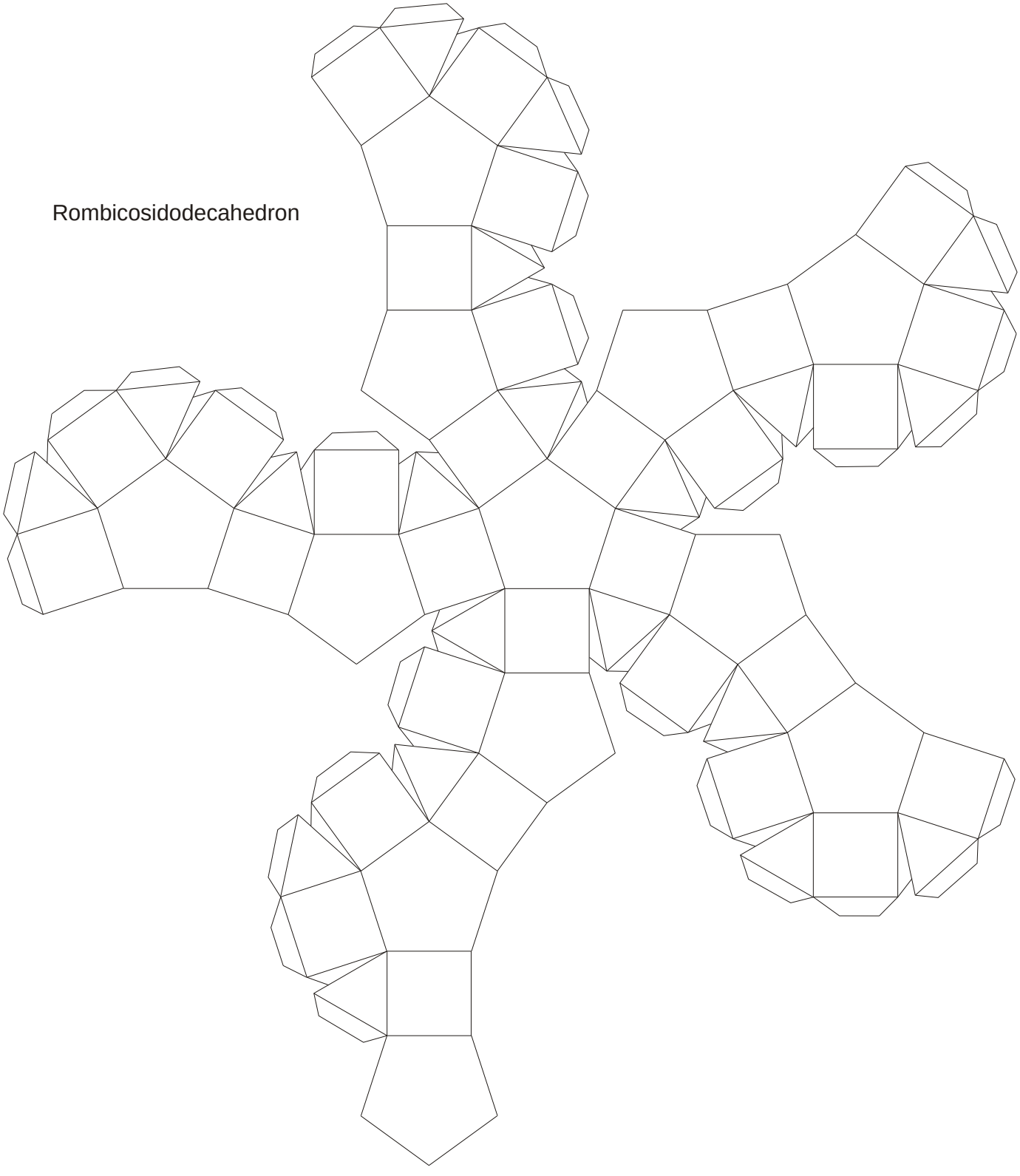
Rhombicuboctahedron



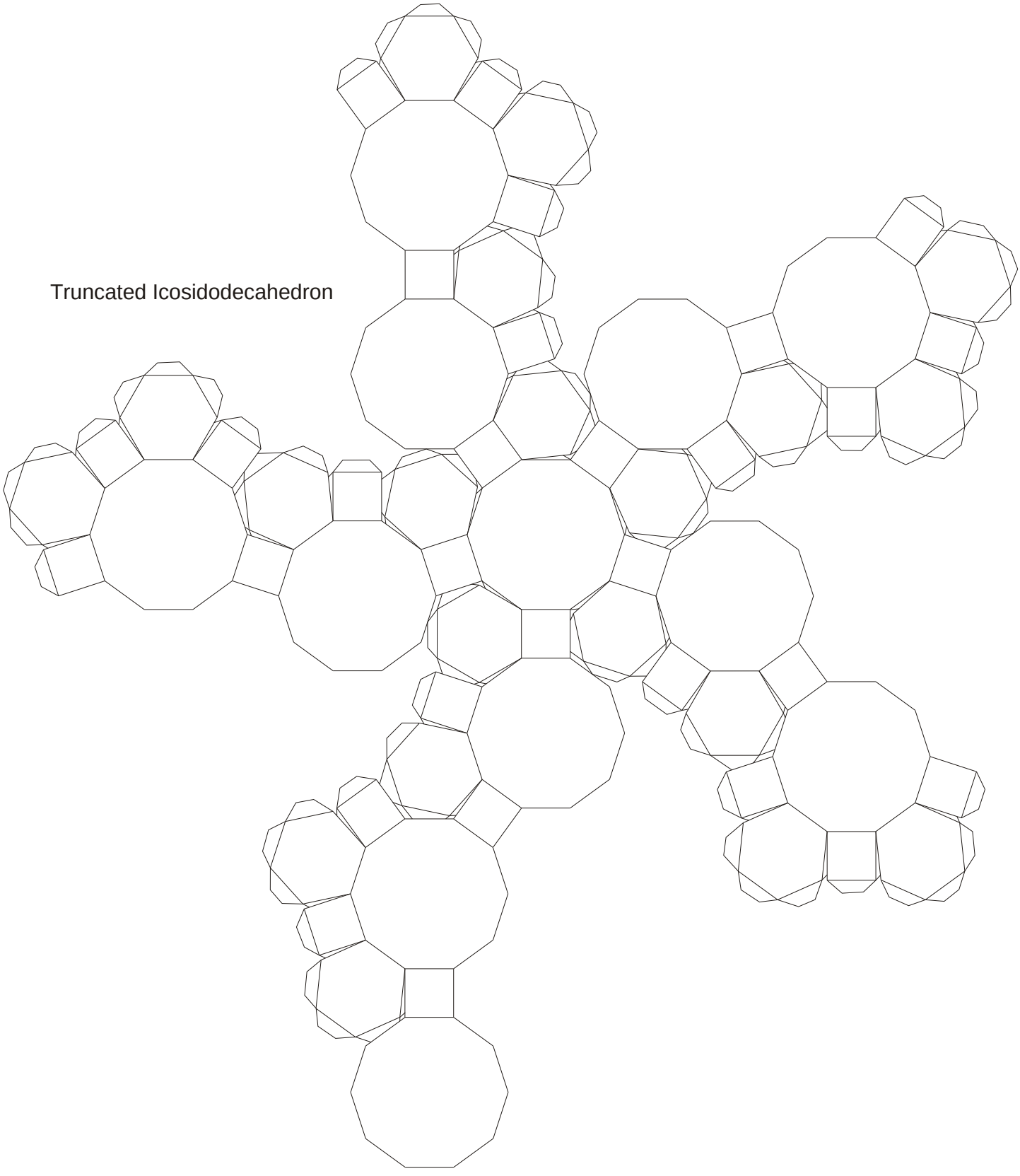
Truncated cuboctahedron



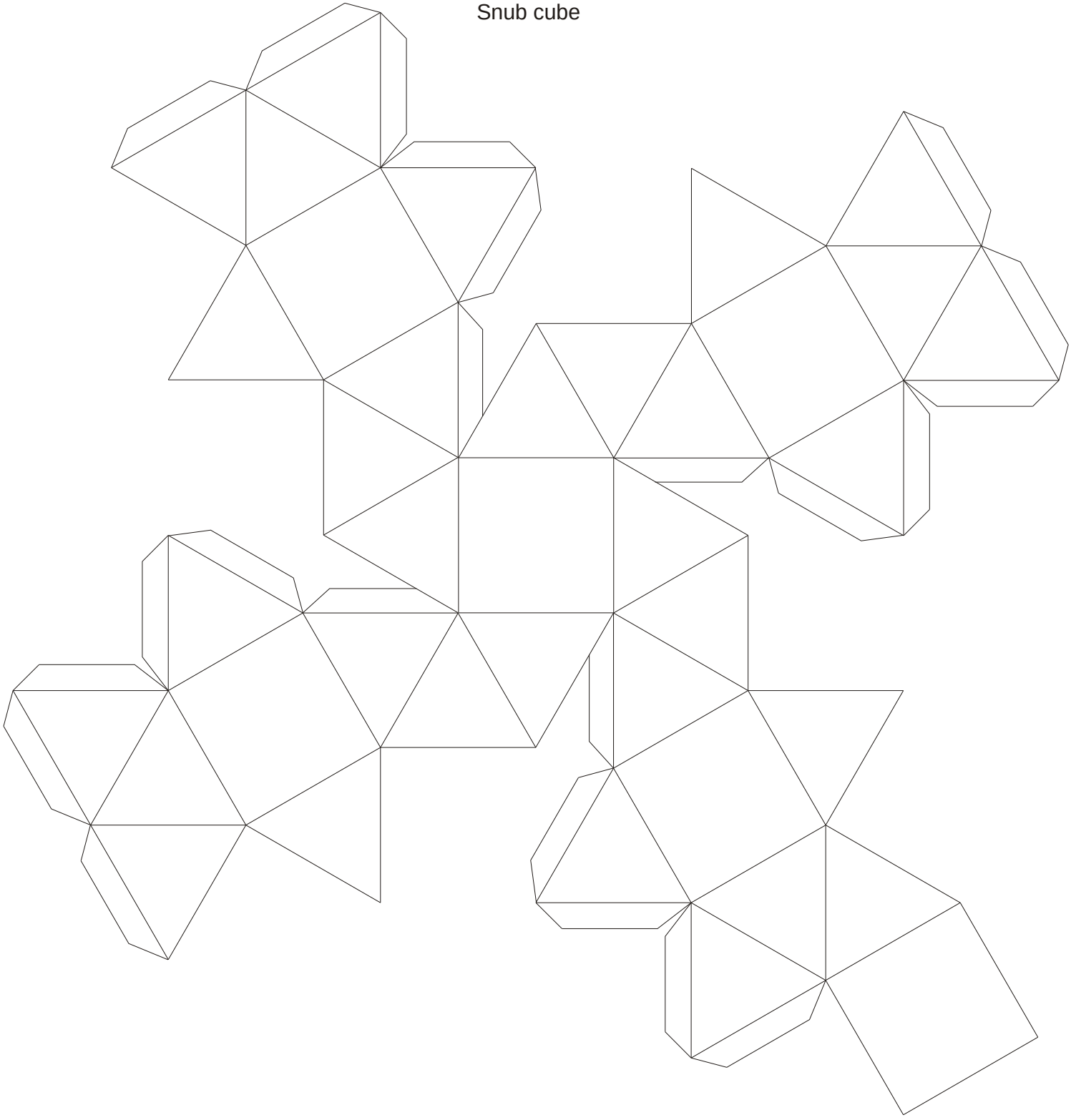
Rombicosidodecahedron



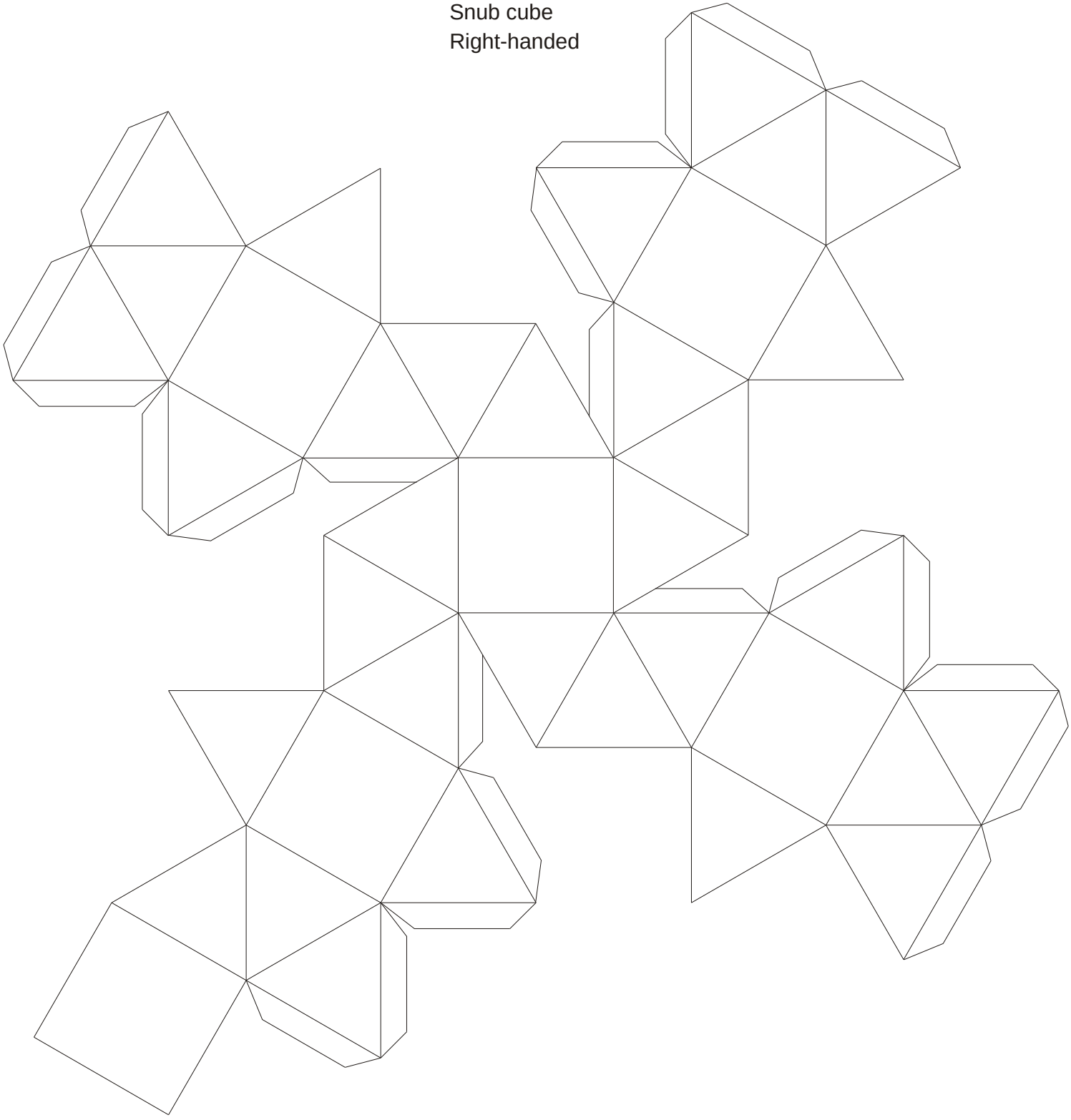
Truncated Icosidodecahedron



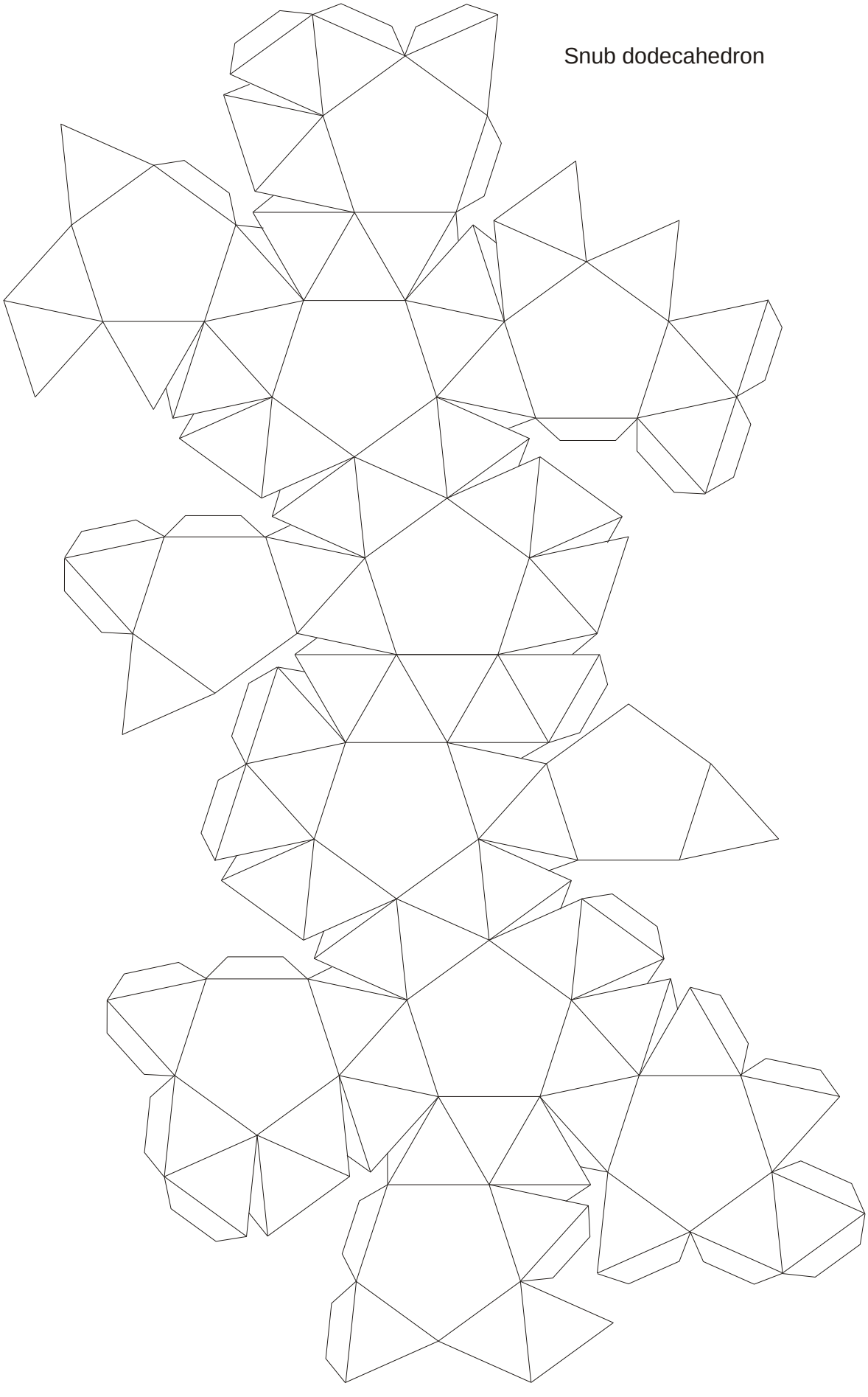
Snub cube



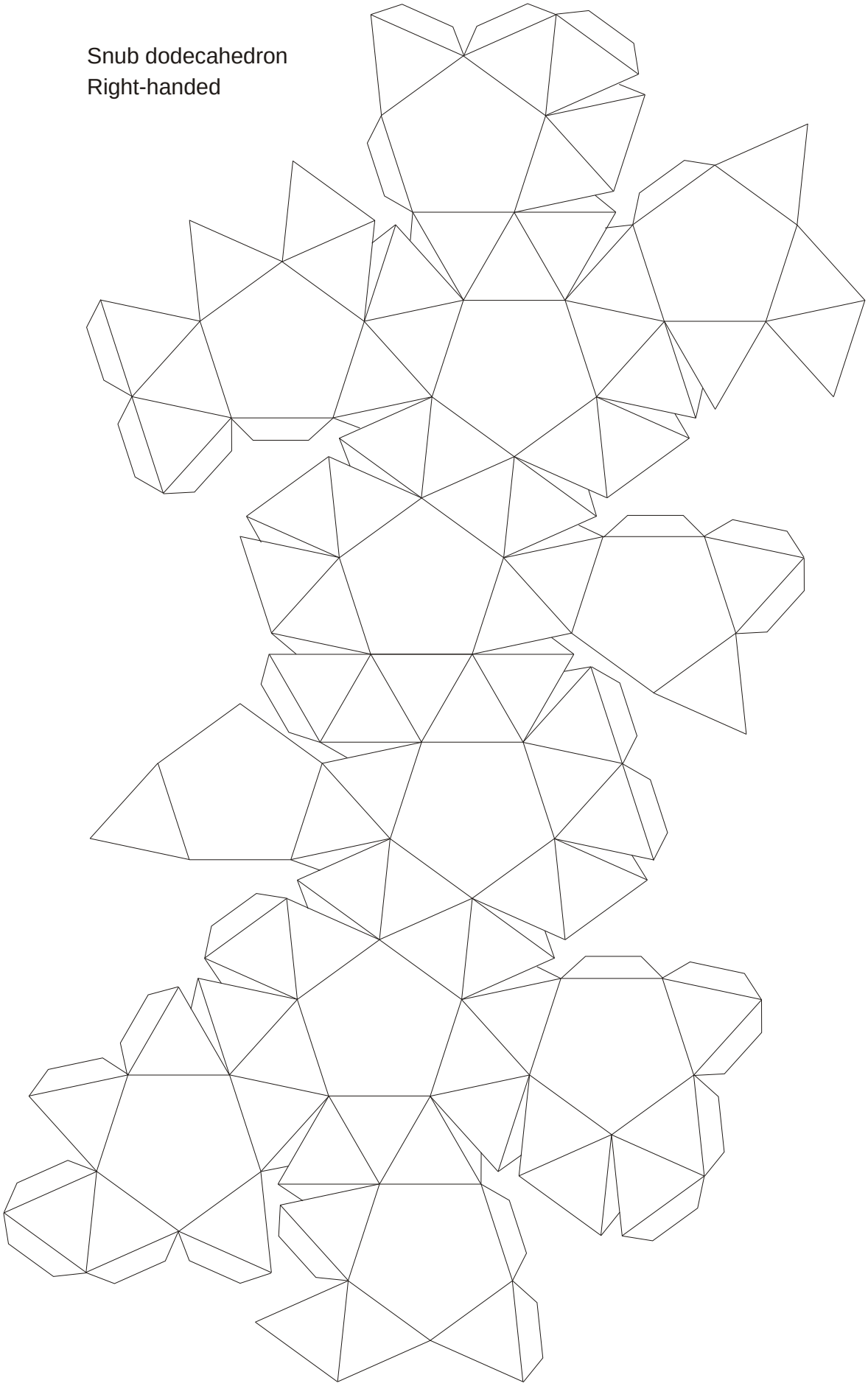
Snub cube
Right-handed



Snub dodecahedron

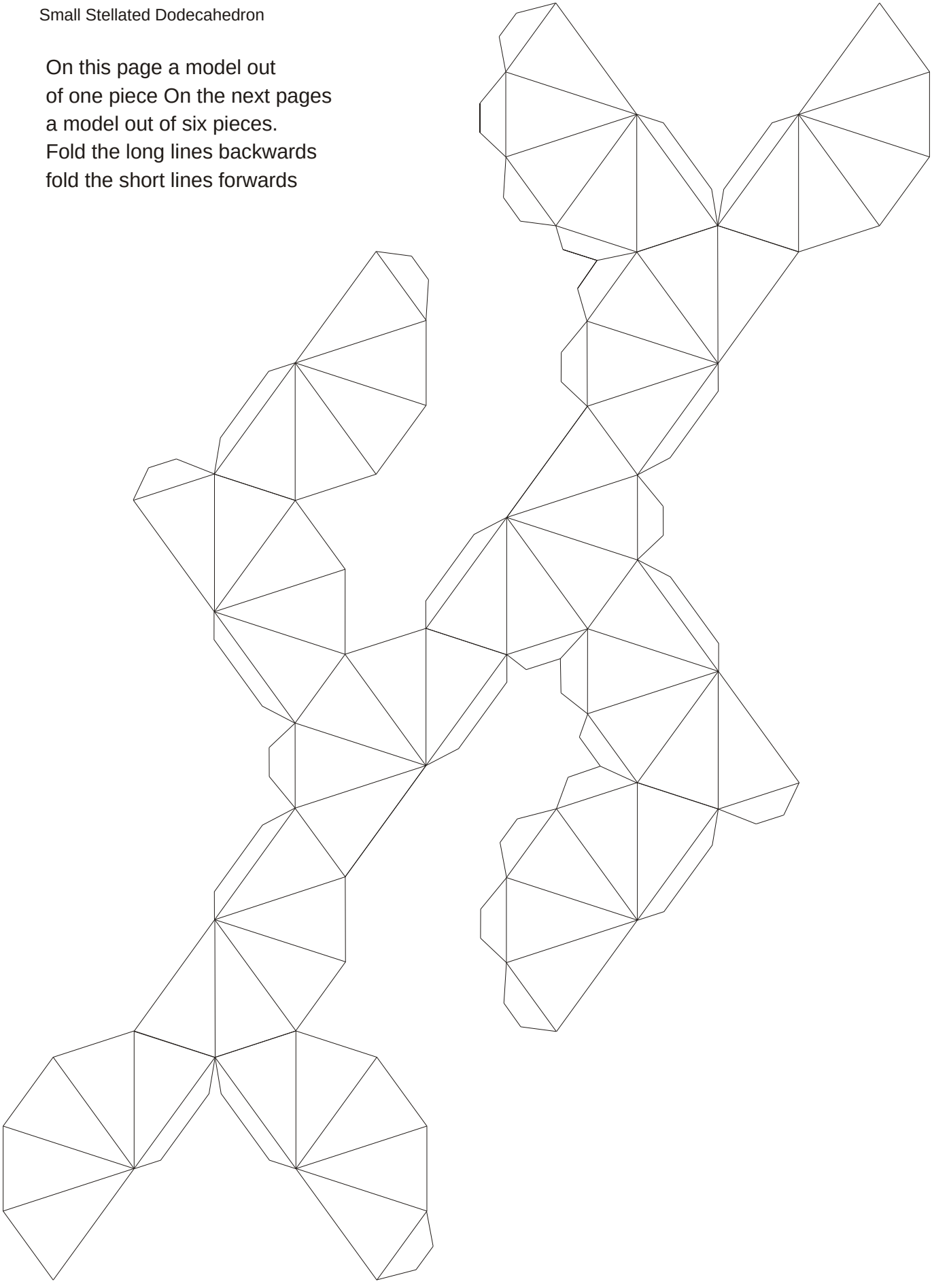


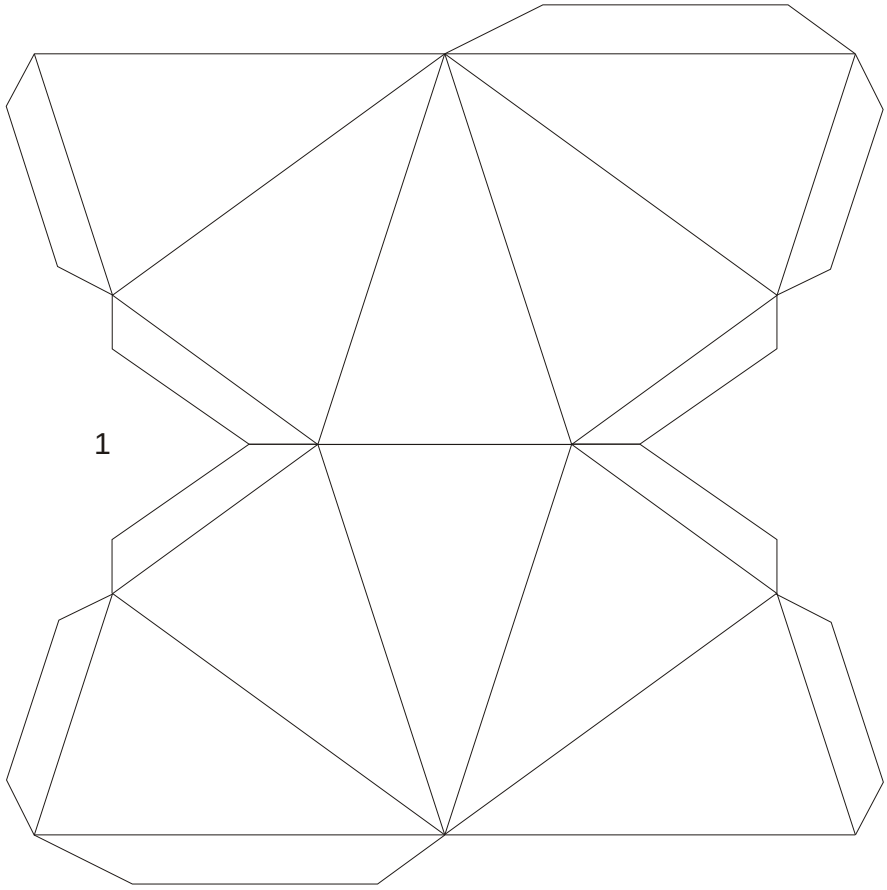
Snub dodecahedron
Right-handed



Small Stellated Dodecahedron

On this page a model out
of one piece On the next pages
a model out of six pieces.
Fold the long lines backwards
fold the short lines forwards

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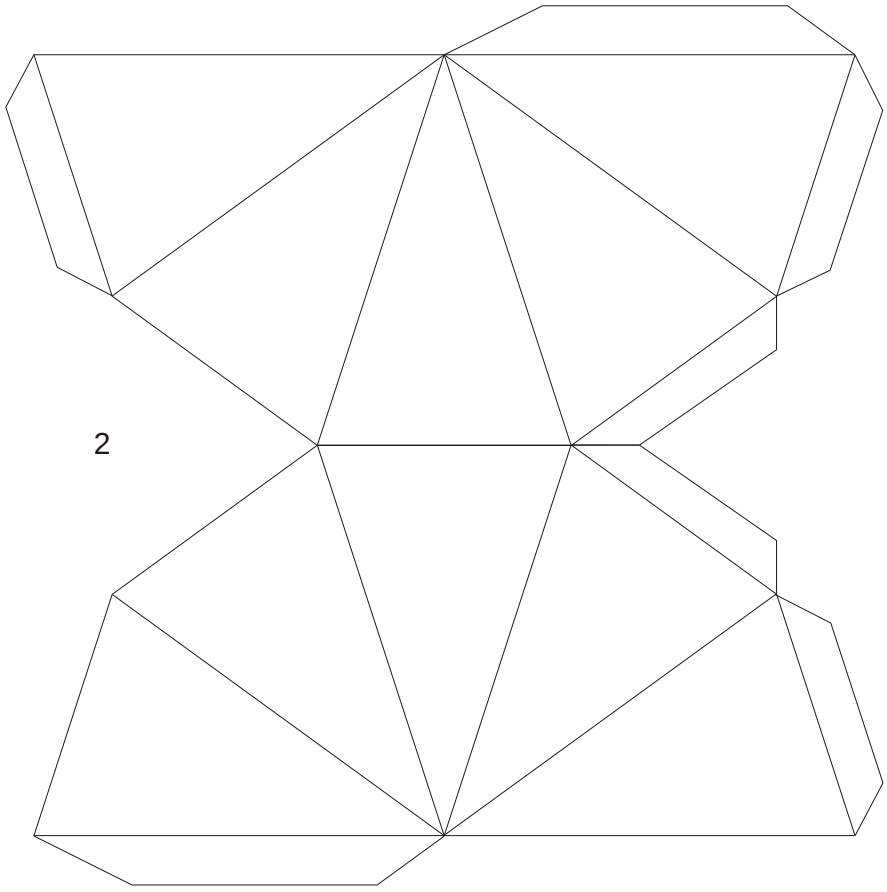
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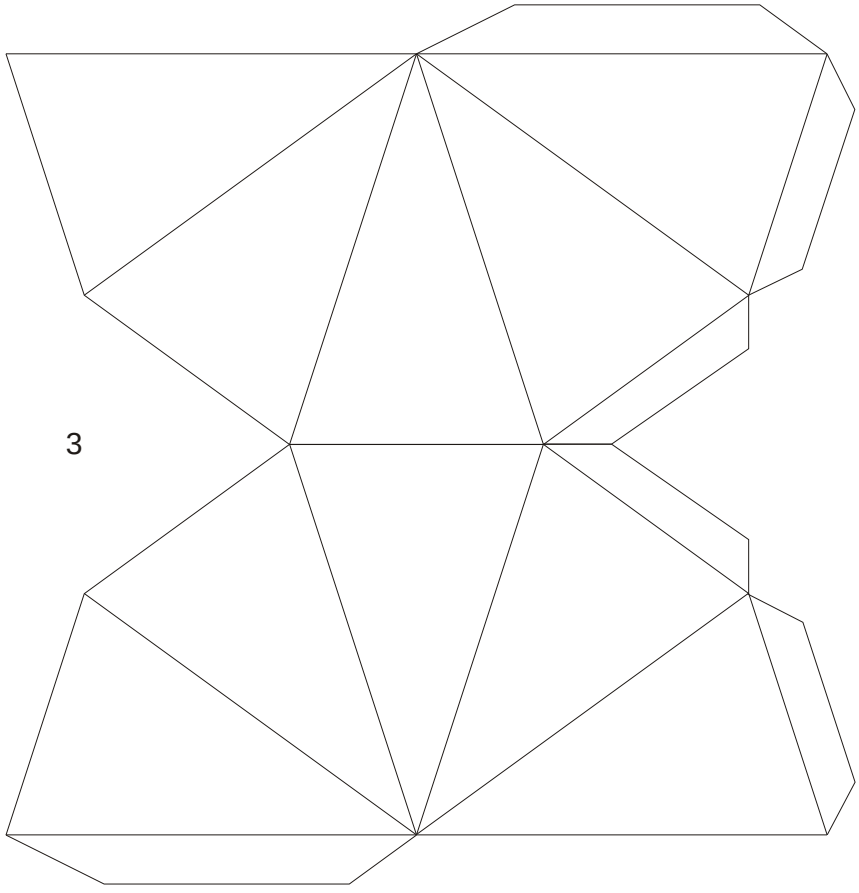

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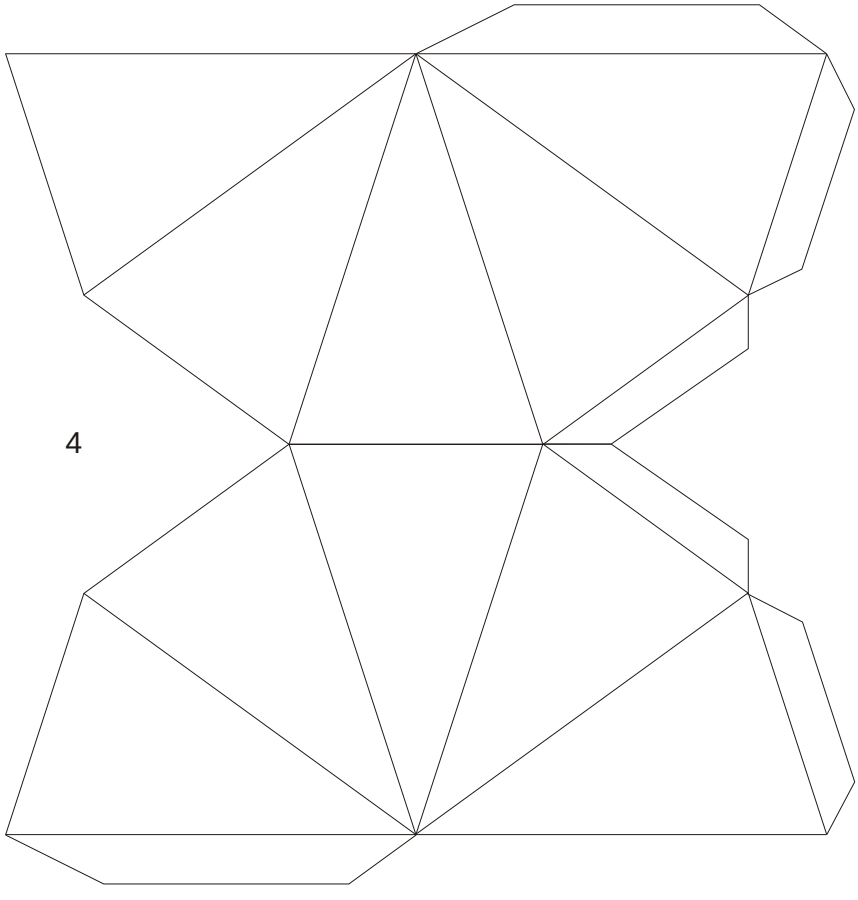
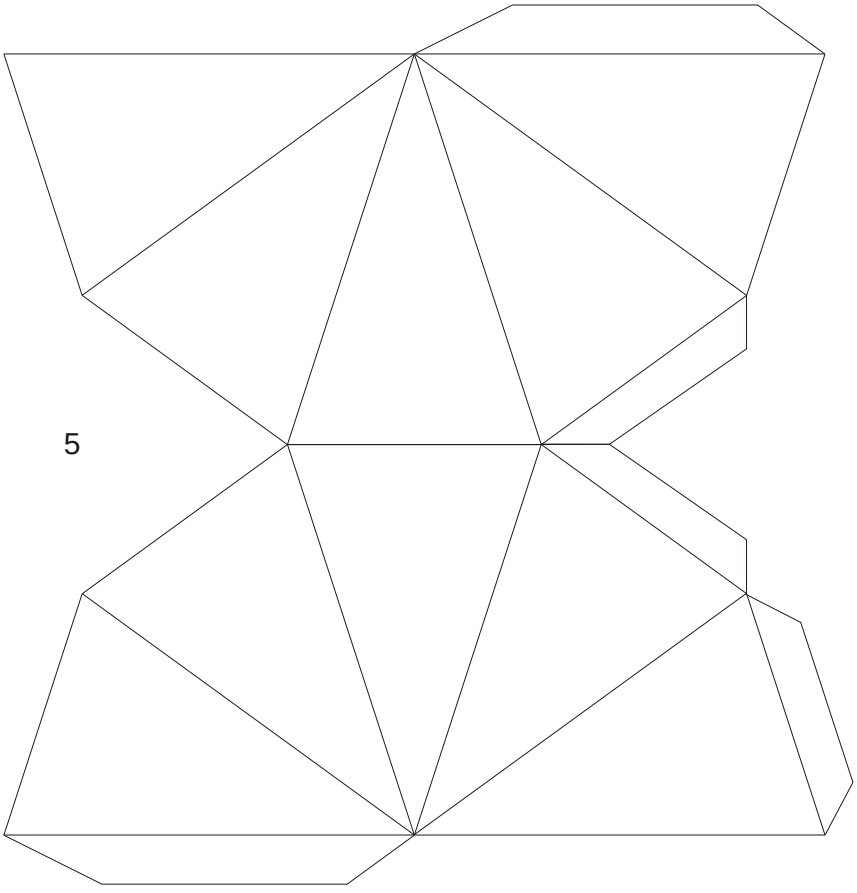


4



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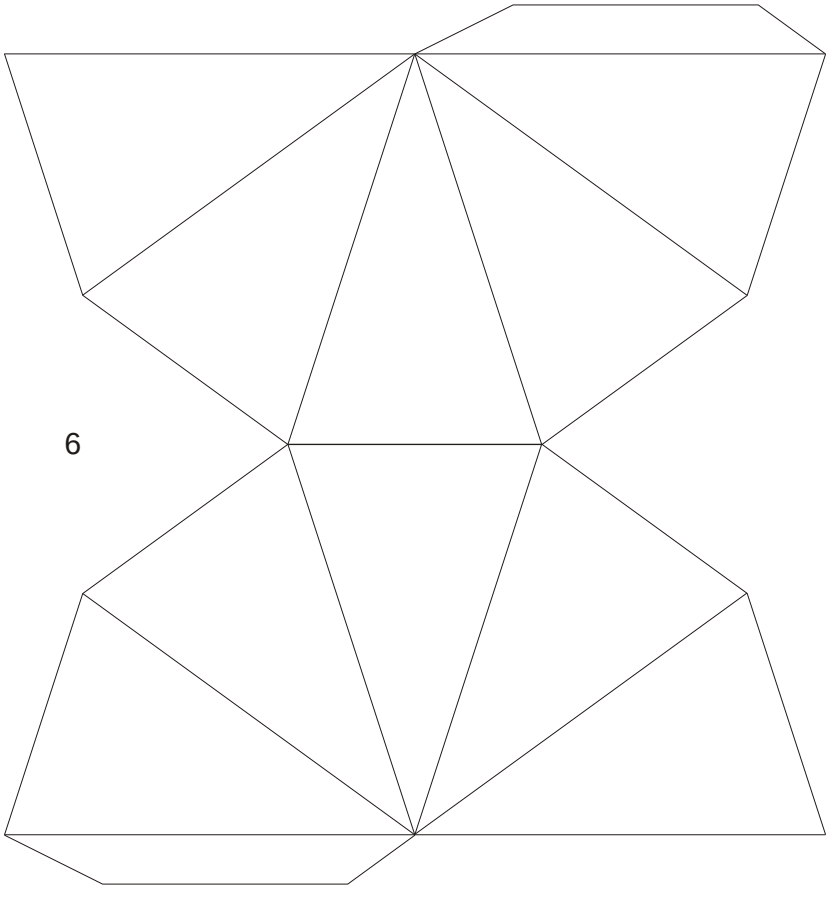
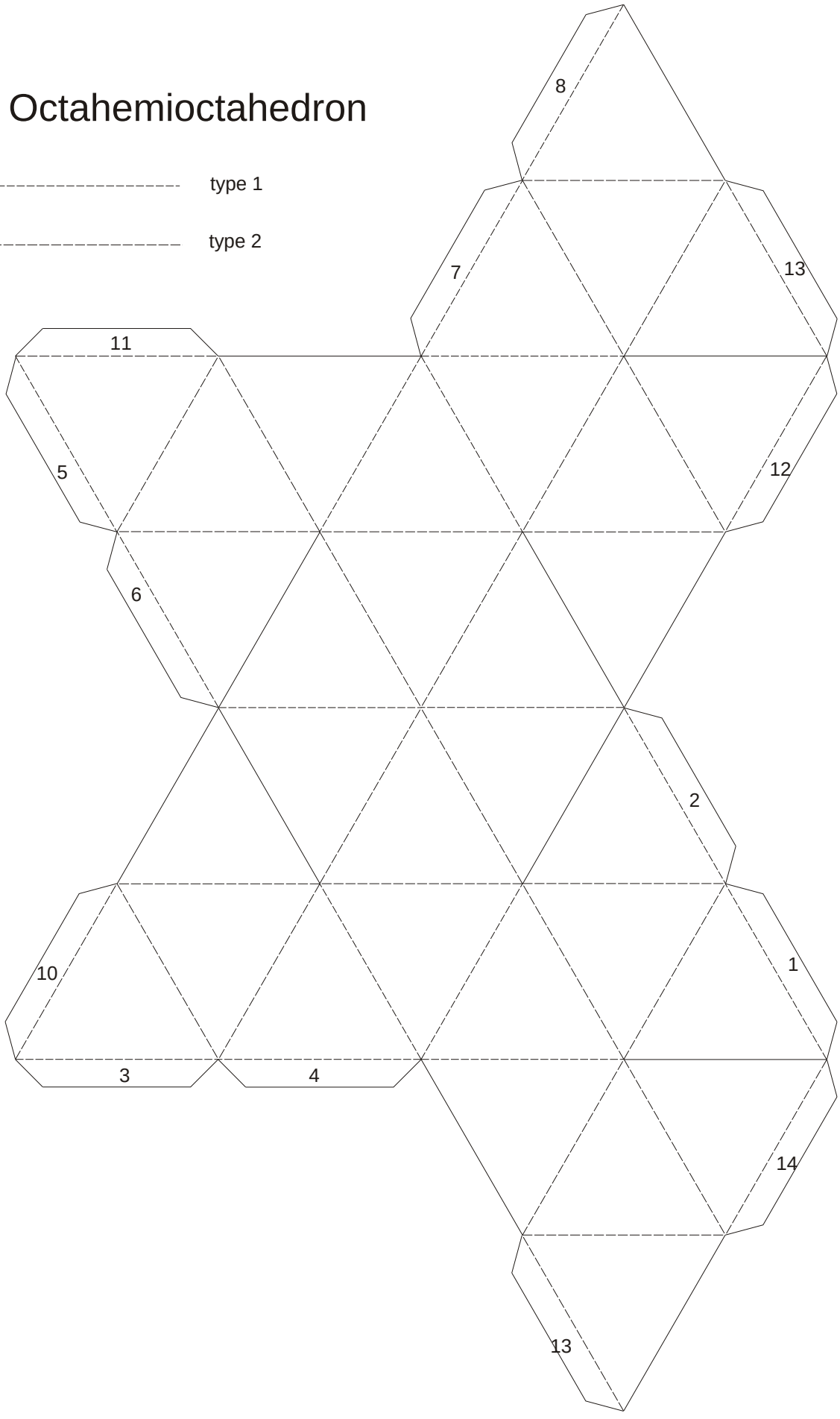


6

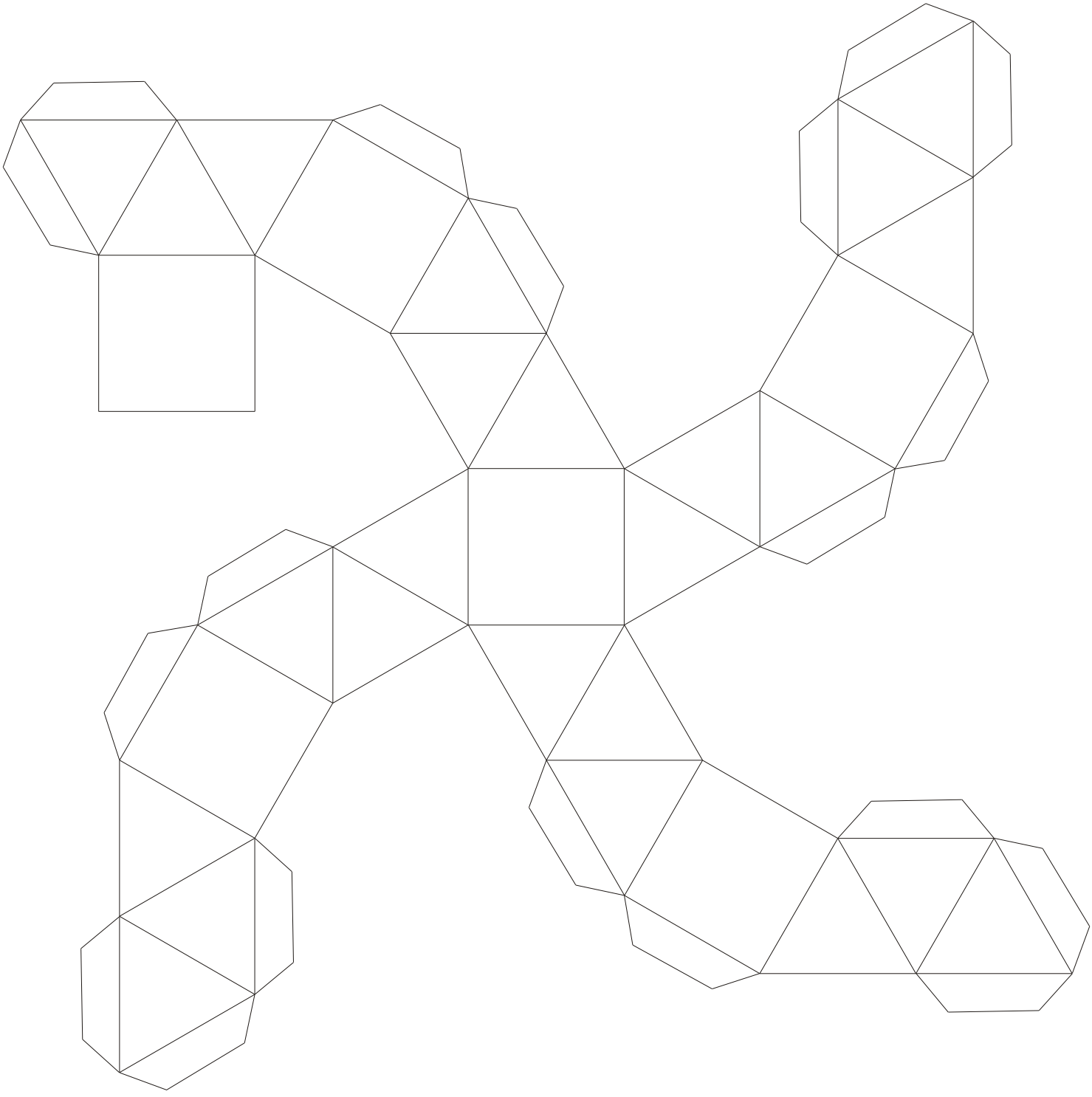
Octahemioctahedron

type 1

type 2



Cubohemioctahedron

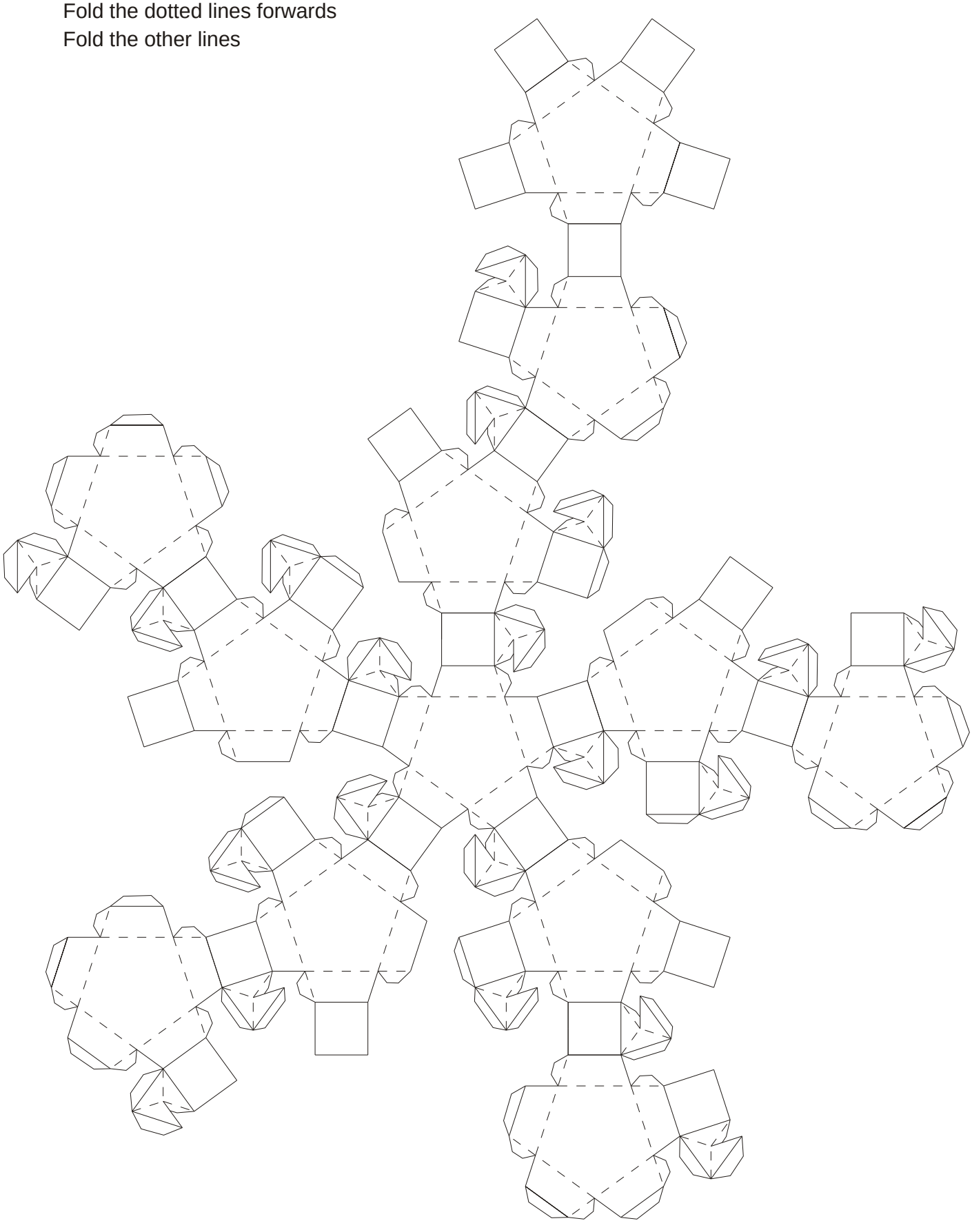


Small Rhombidodecahedron

(small version)

Fold the dotted lines forwards

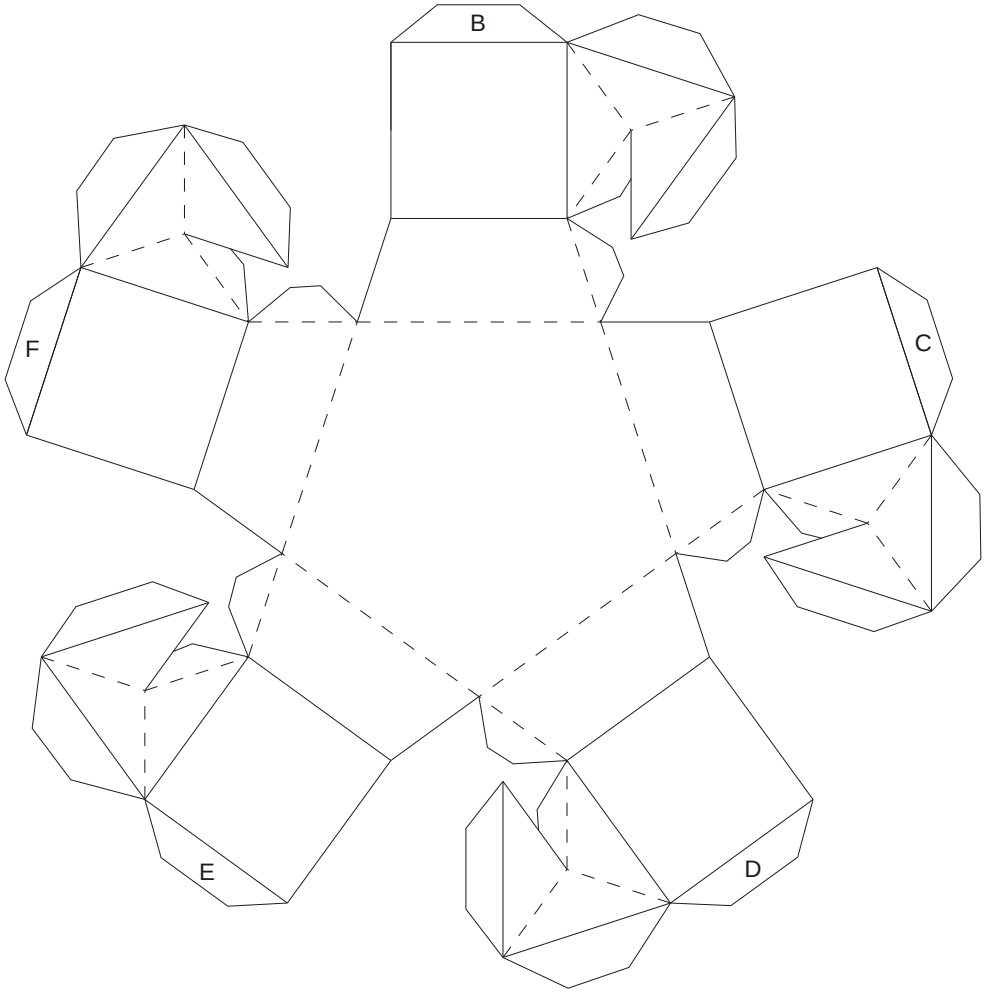
Fold the other lines



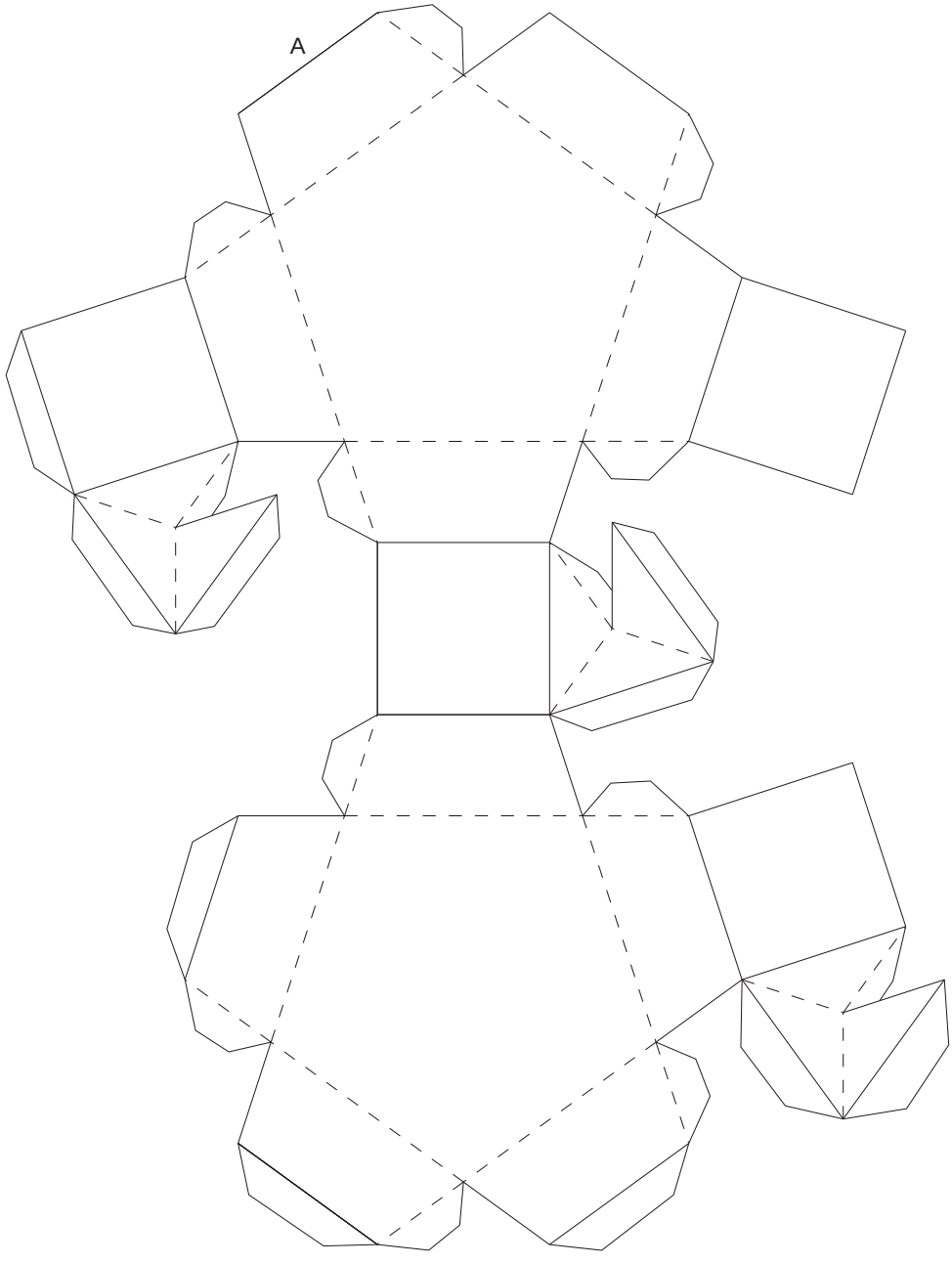
Small Rhombidodecahedron

(large version)
Fold the dotted lines forwards
Fold the other lines

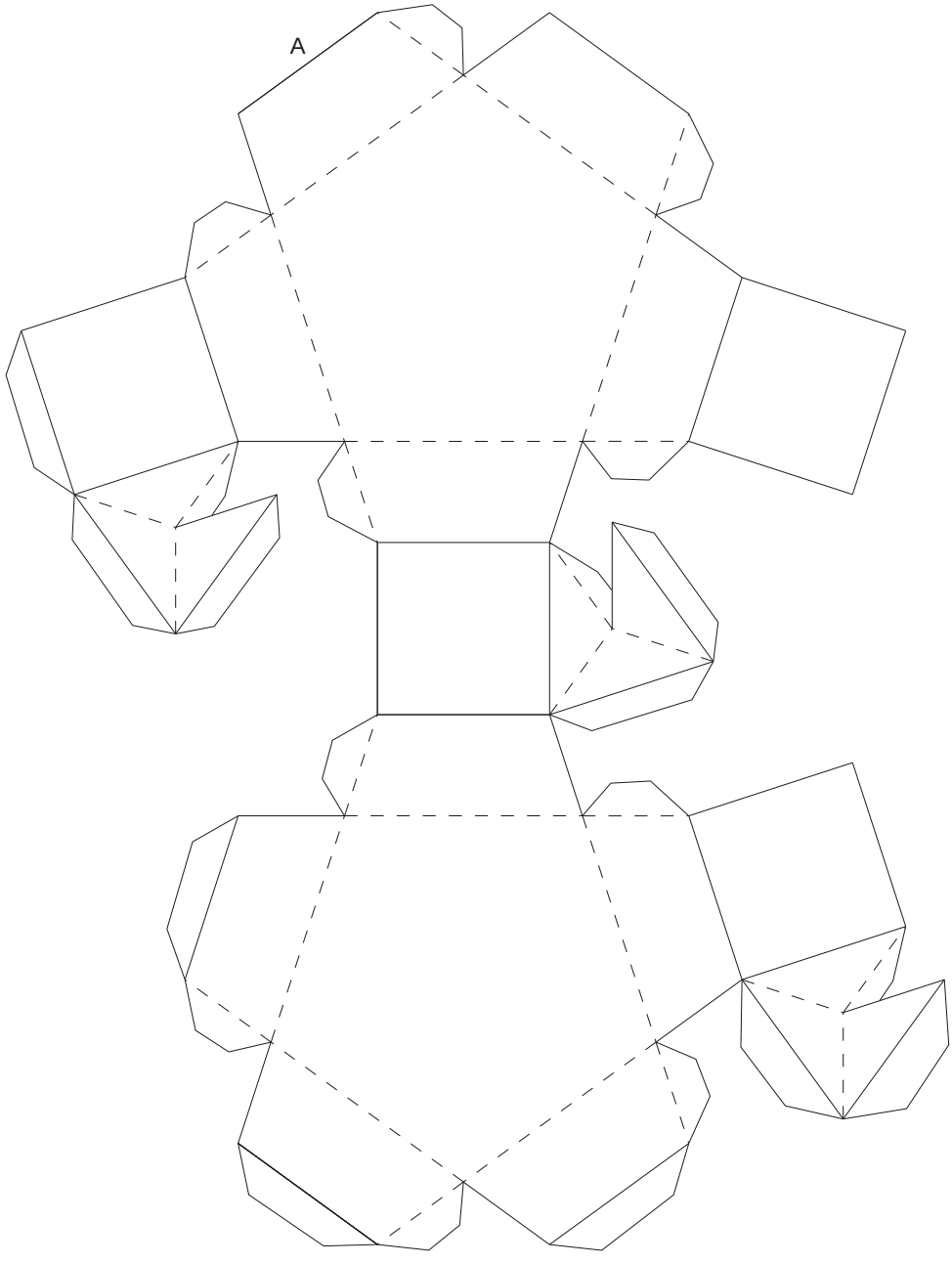
A



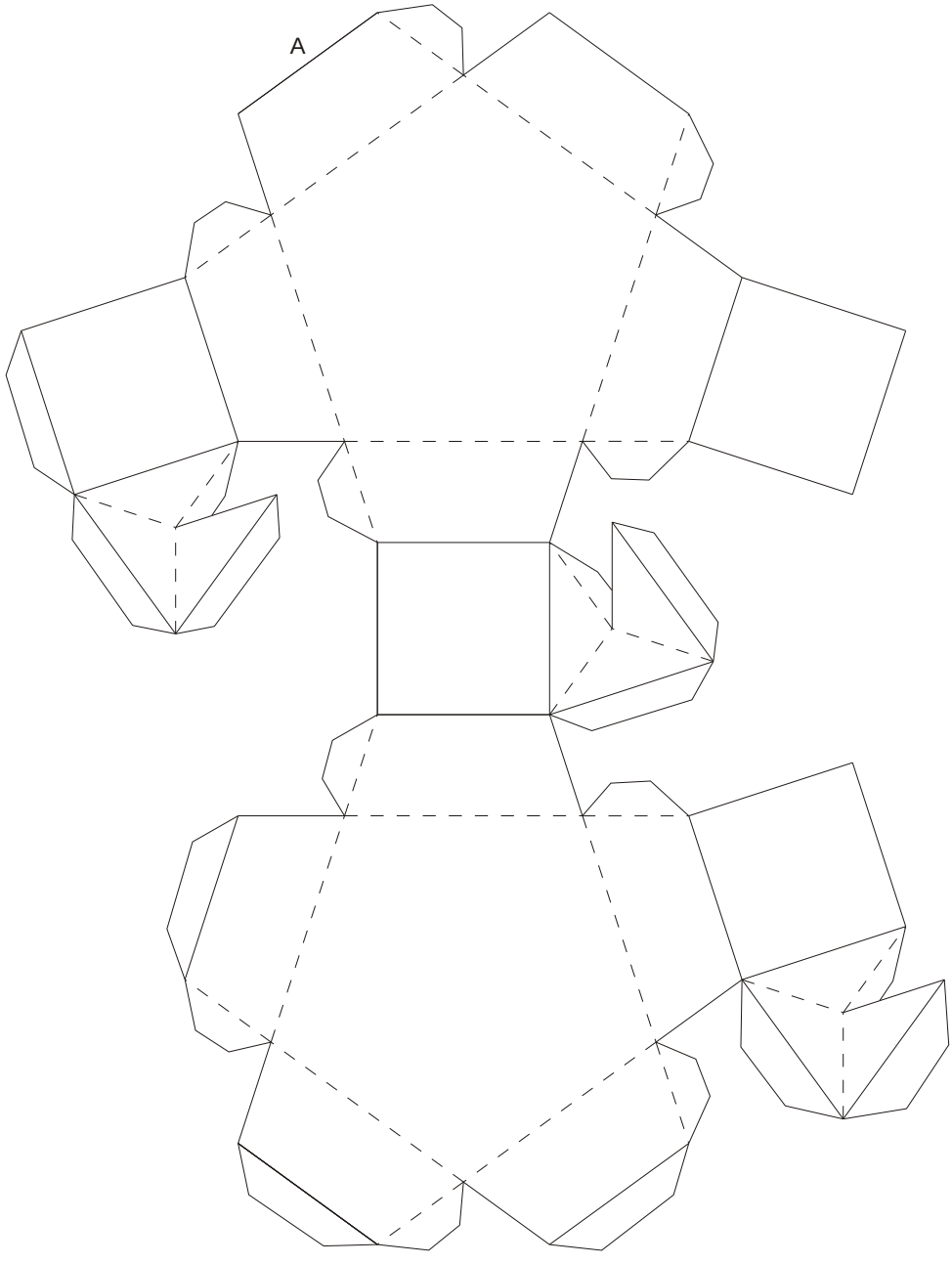
B



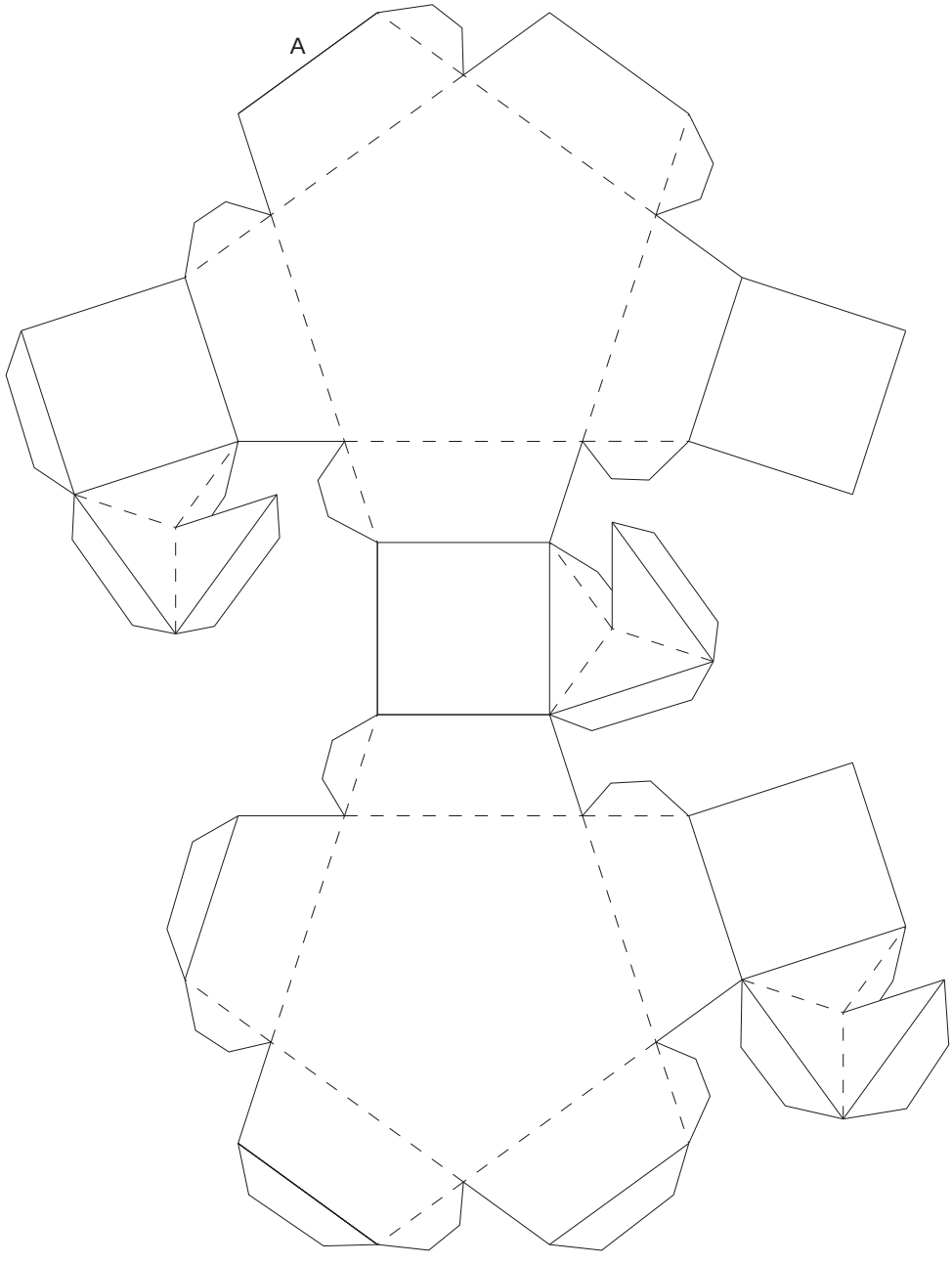
C



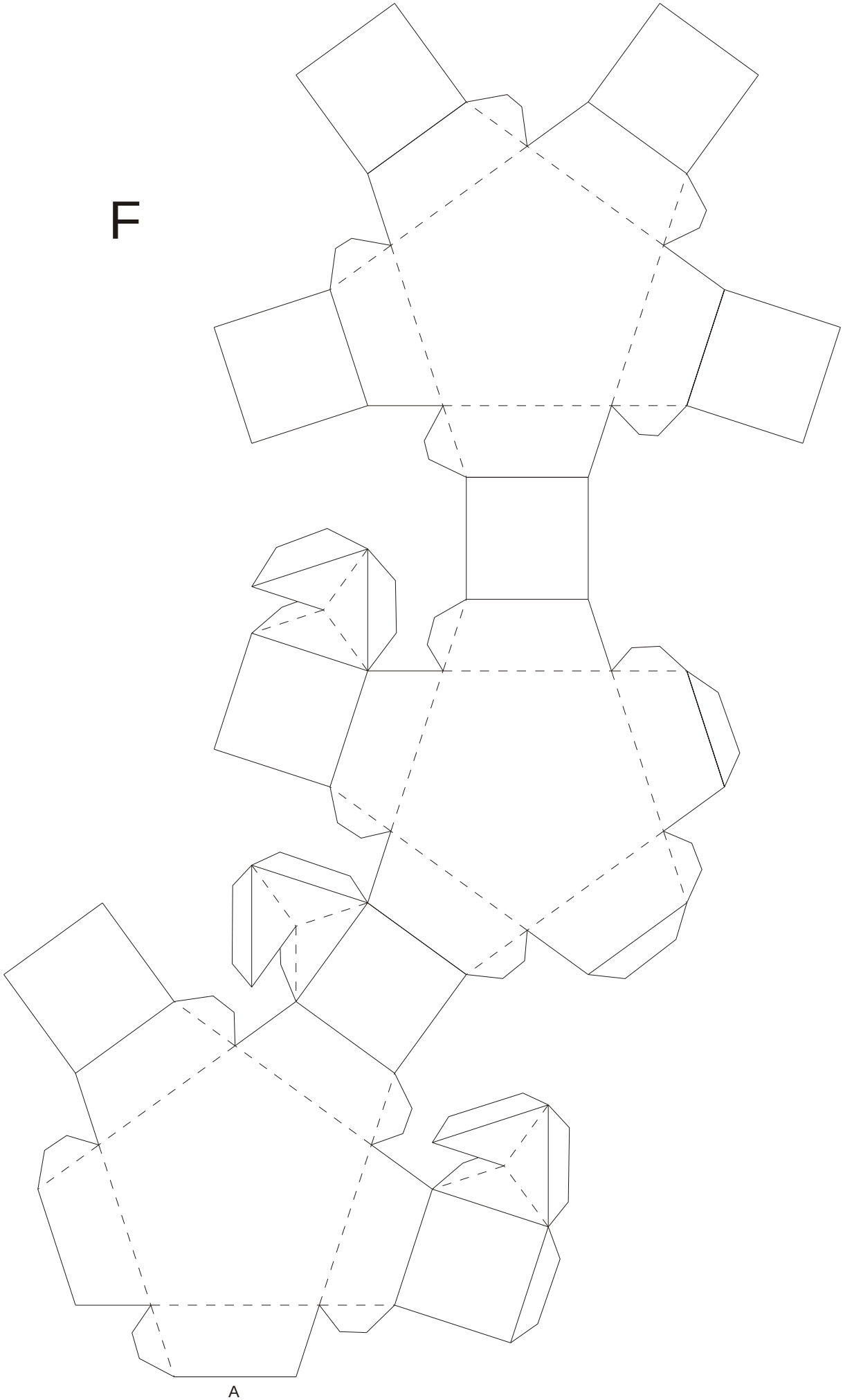
D



E

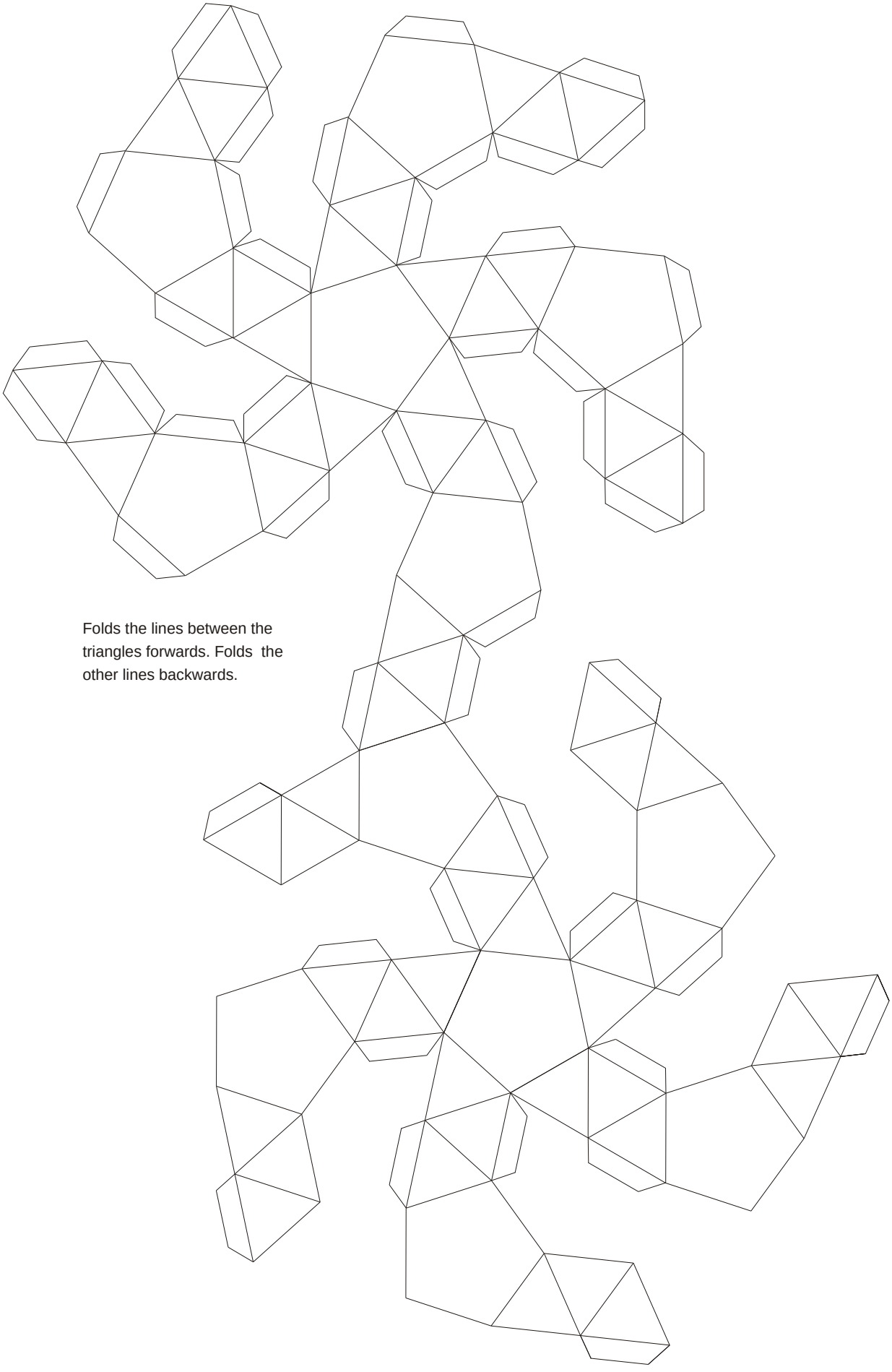


F



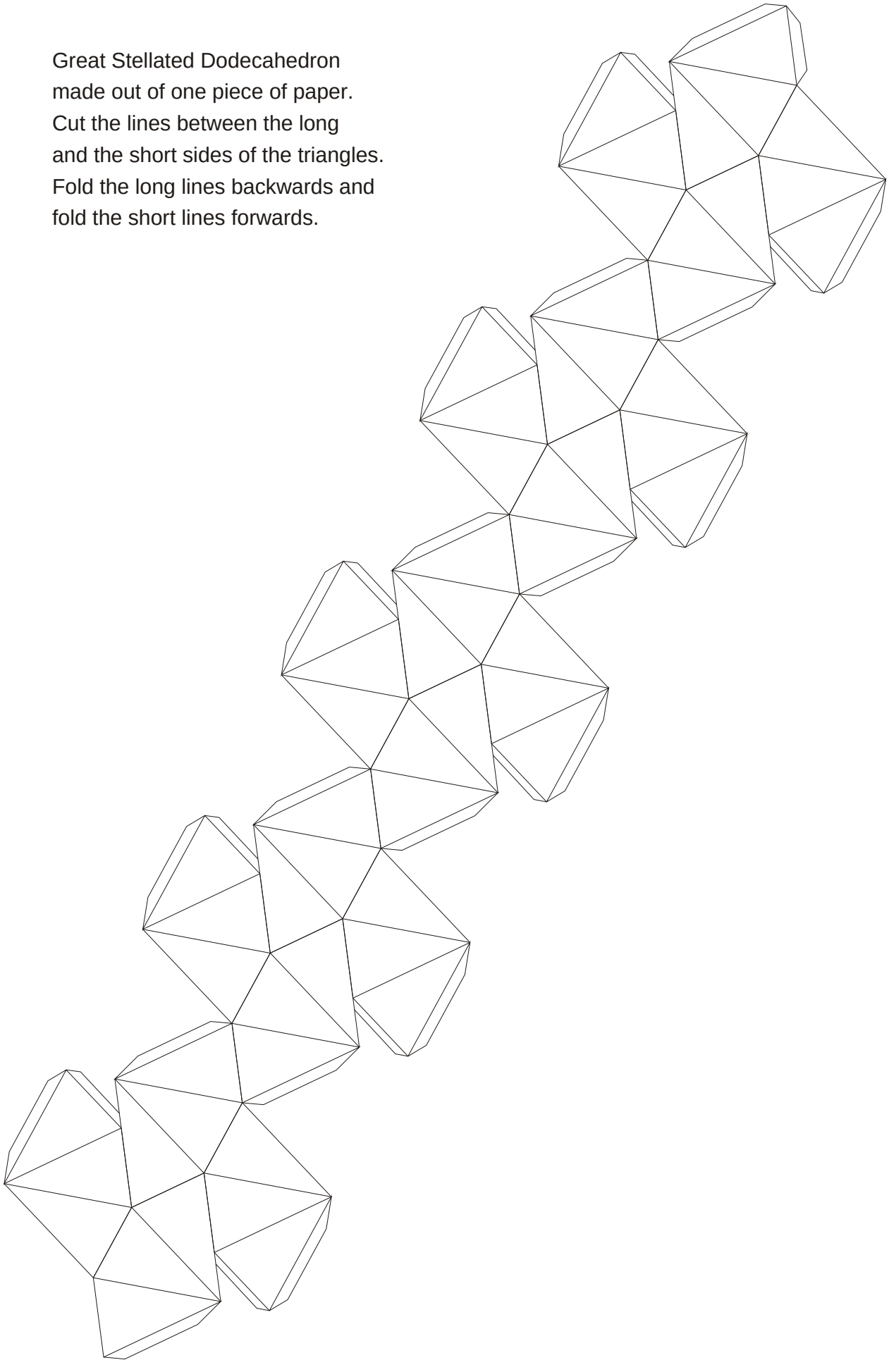
A

Small dodecahemidodecahedron

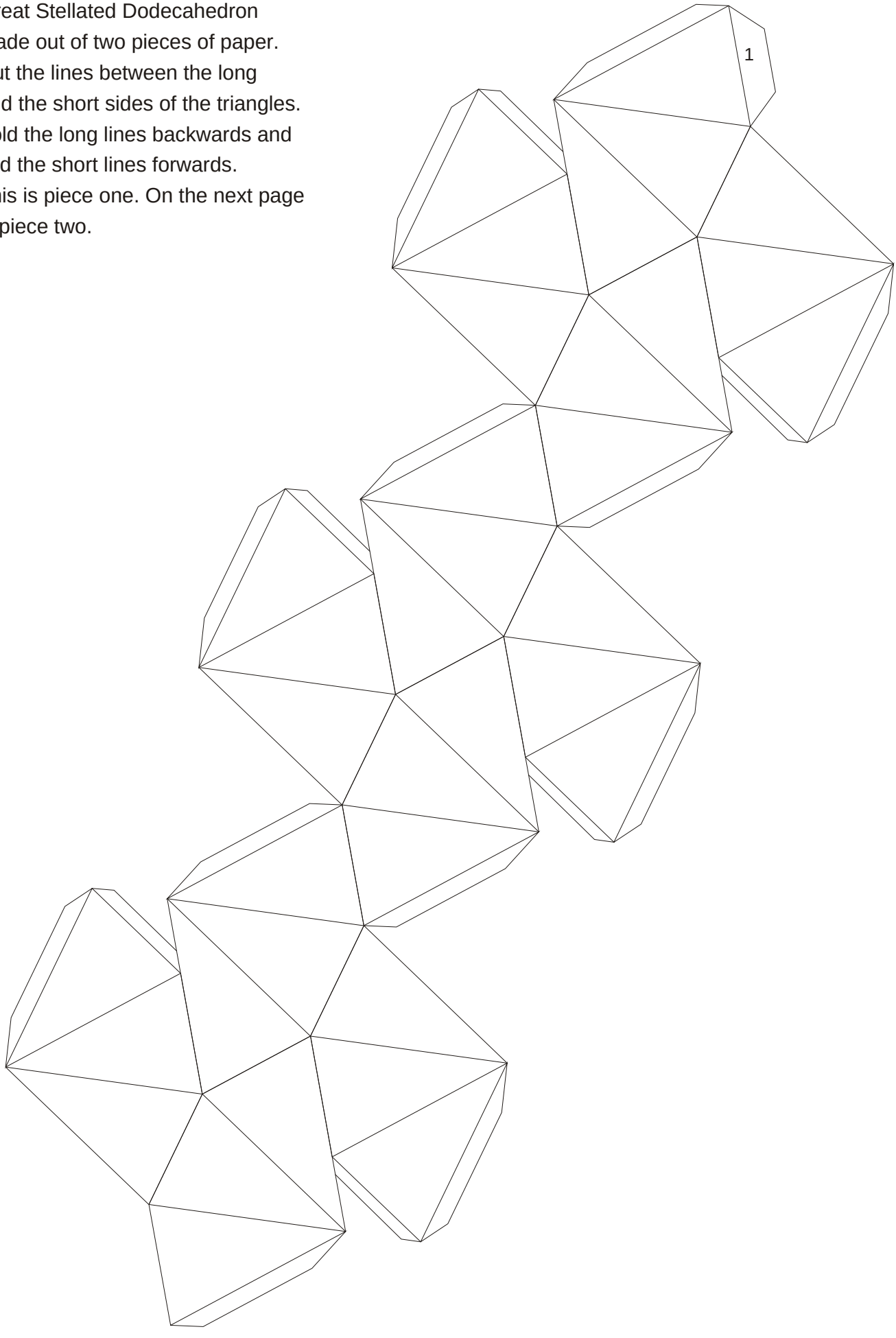


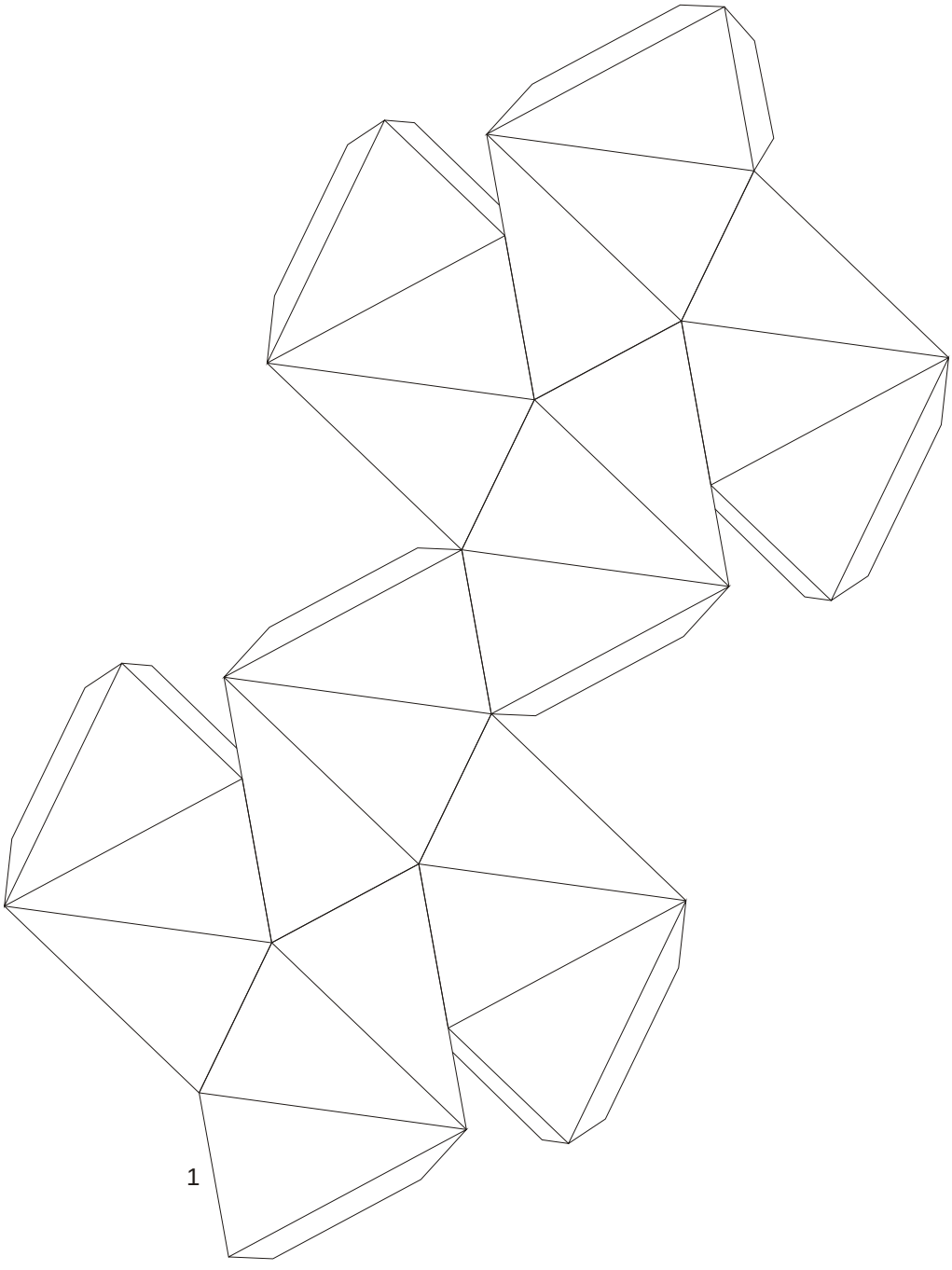
Folds the lines between the triangles forwards. Folds the other lines backwards.

Great Stellated Dodecahedron
made out of one piece of paper.
Cut the lines between the long
and the short sides of the triangles.
Fold the long lines backwards and
fold the short lines forwards.

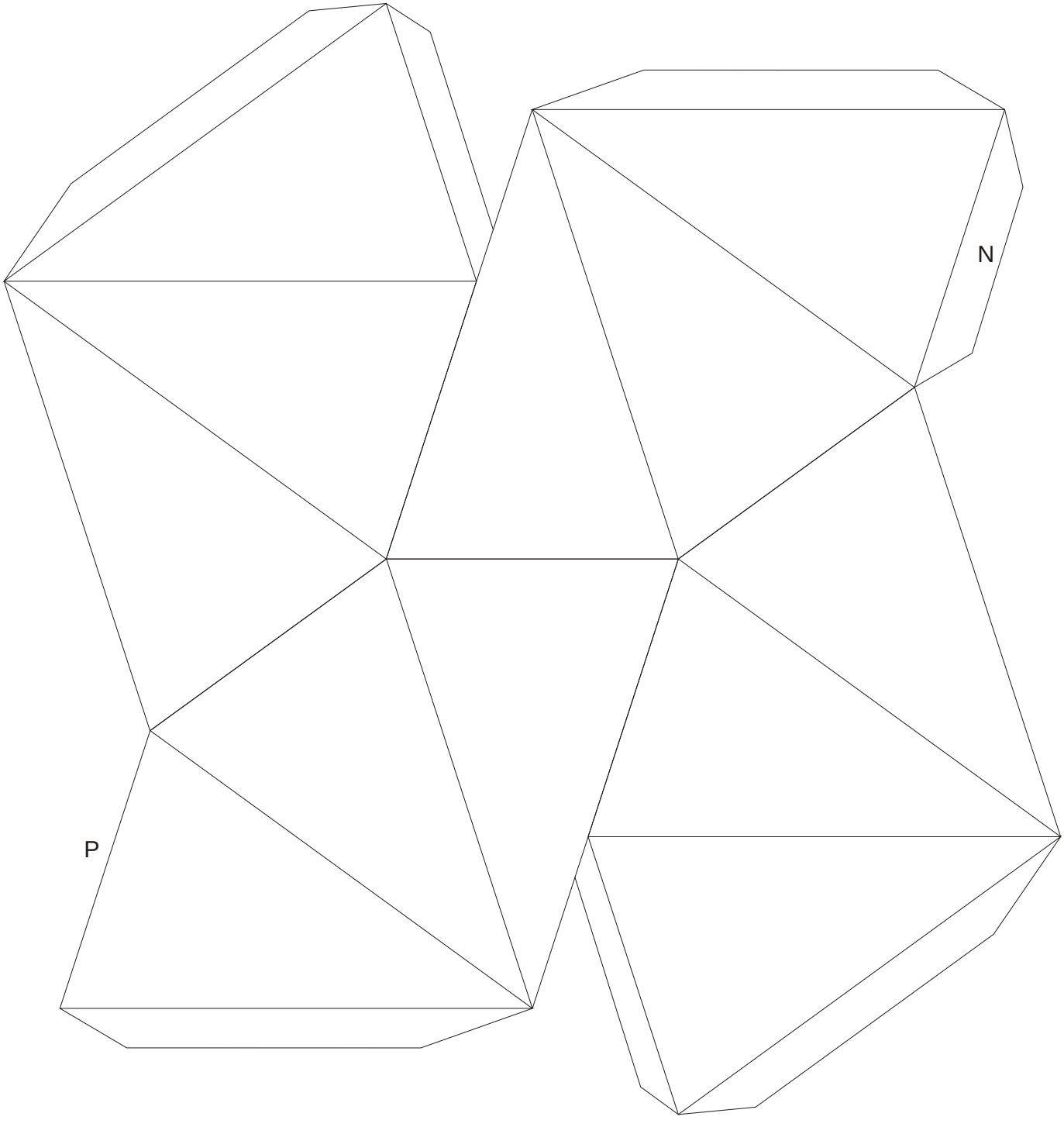


Great Stellated Dodecahedron
made out of two pieces of paper.
Cut the lines between the long
and the short sides of the triangles.
Fold the long lines backwards and
fold the short lines forwards.
This is piece one. On the next page
is piece two.

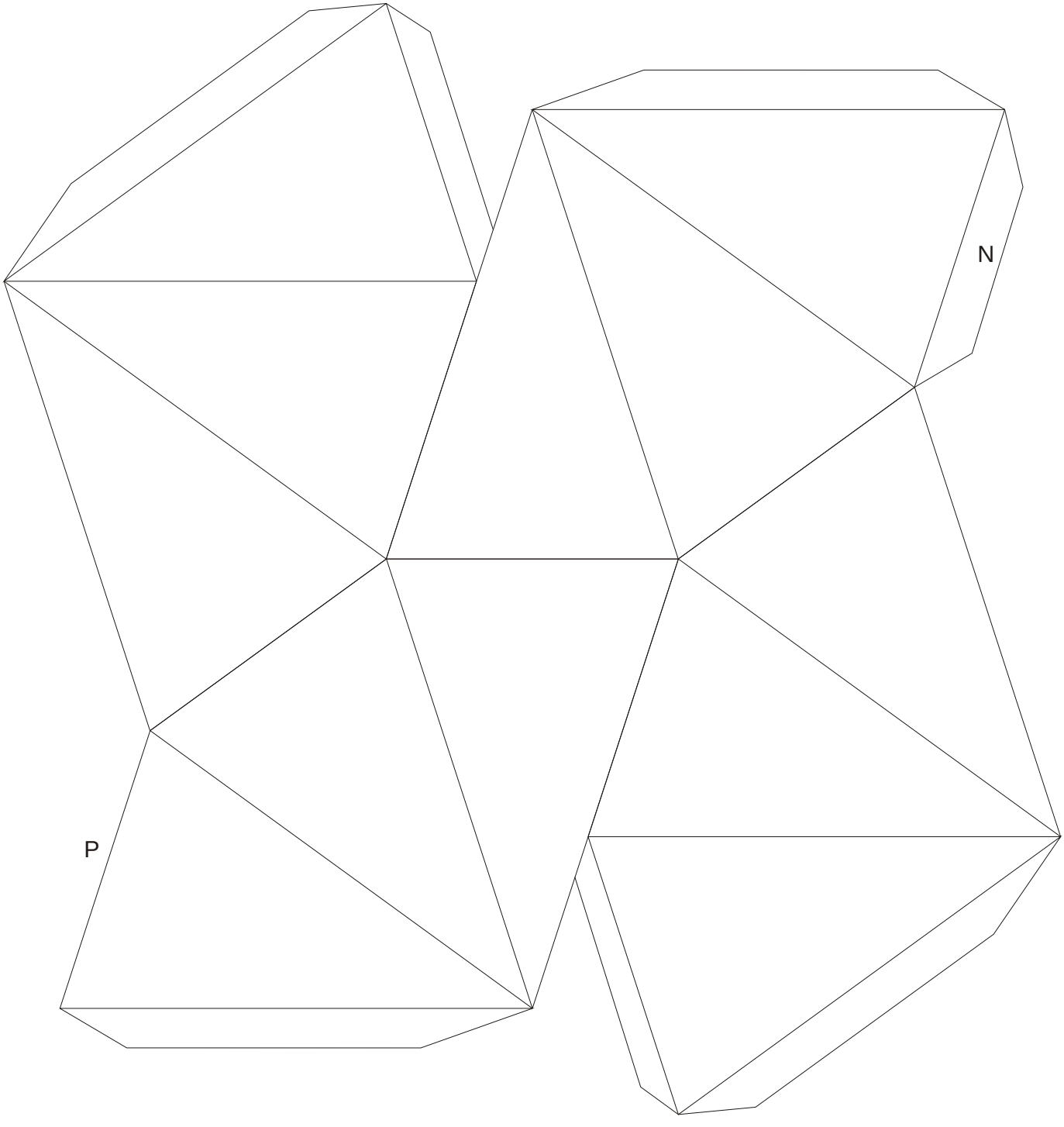



1

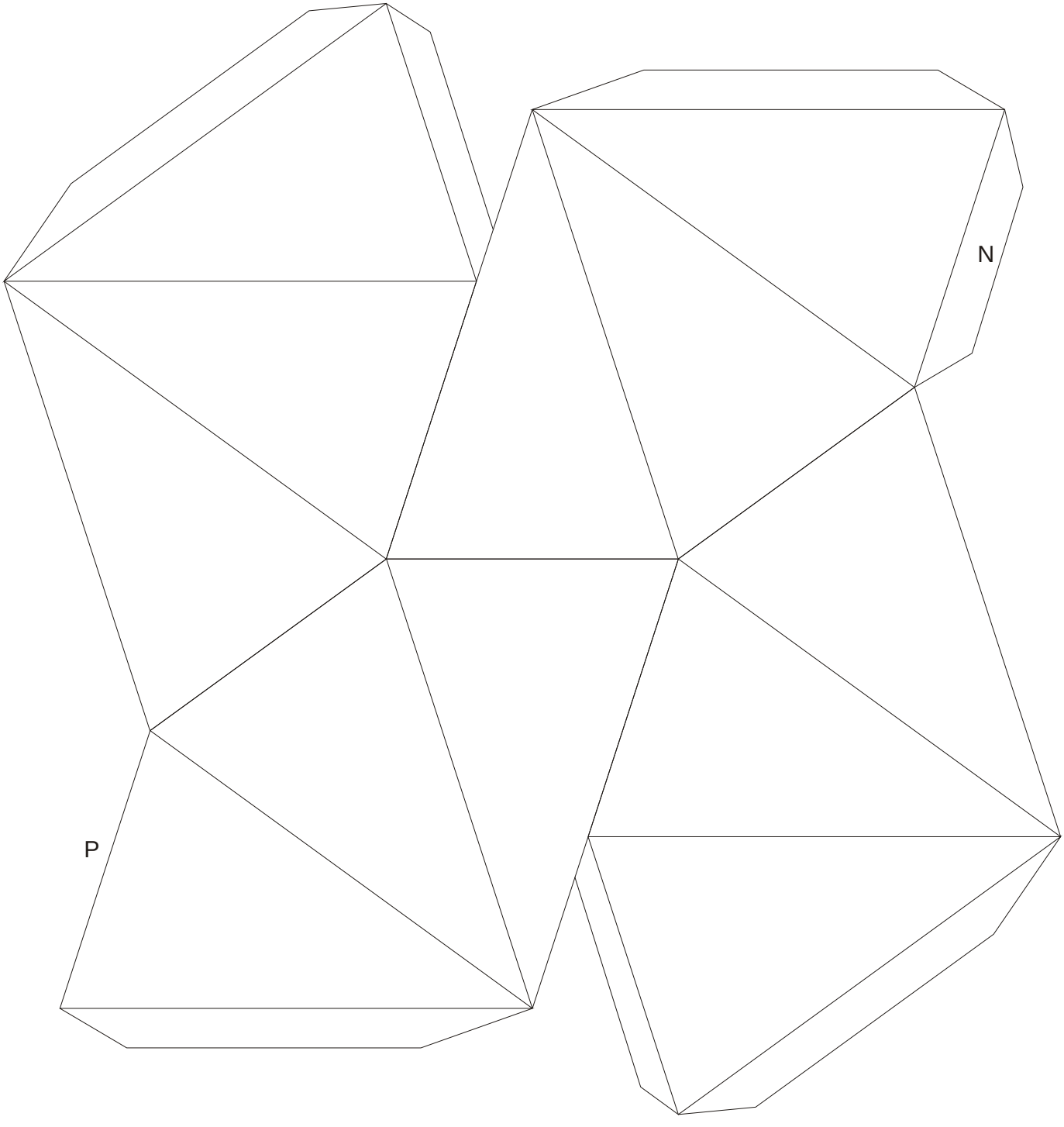
Great Stellated Dodecahedron
made out of five pieces of paper.
Cut the lines between the long
and the short sides of the triangles.
Fold the long lines backwards and
fold the short lines forwards.
N= Next part P= Previous part



Great Stellated Dodecahedron
made out of five pieces of paper.
Cut the lines between the long
and the short sides of the triangles.
Fold the long lines backwards and
fold the short lines forwards.
N= Next part P= Previous part



Great Stellated Dodecahedron
made out of five pieces of paper.
Cut the lines between the long
and the short sides of the triangles.
Fold the long lines backwards and
fold the short lines forwards.
N= Next part P= Previous part



Great Stellated Dodecahedron
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and the short sides of the triangles.
Fold the long lines backwards and
fold the short lines forwards.
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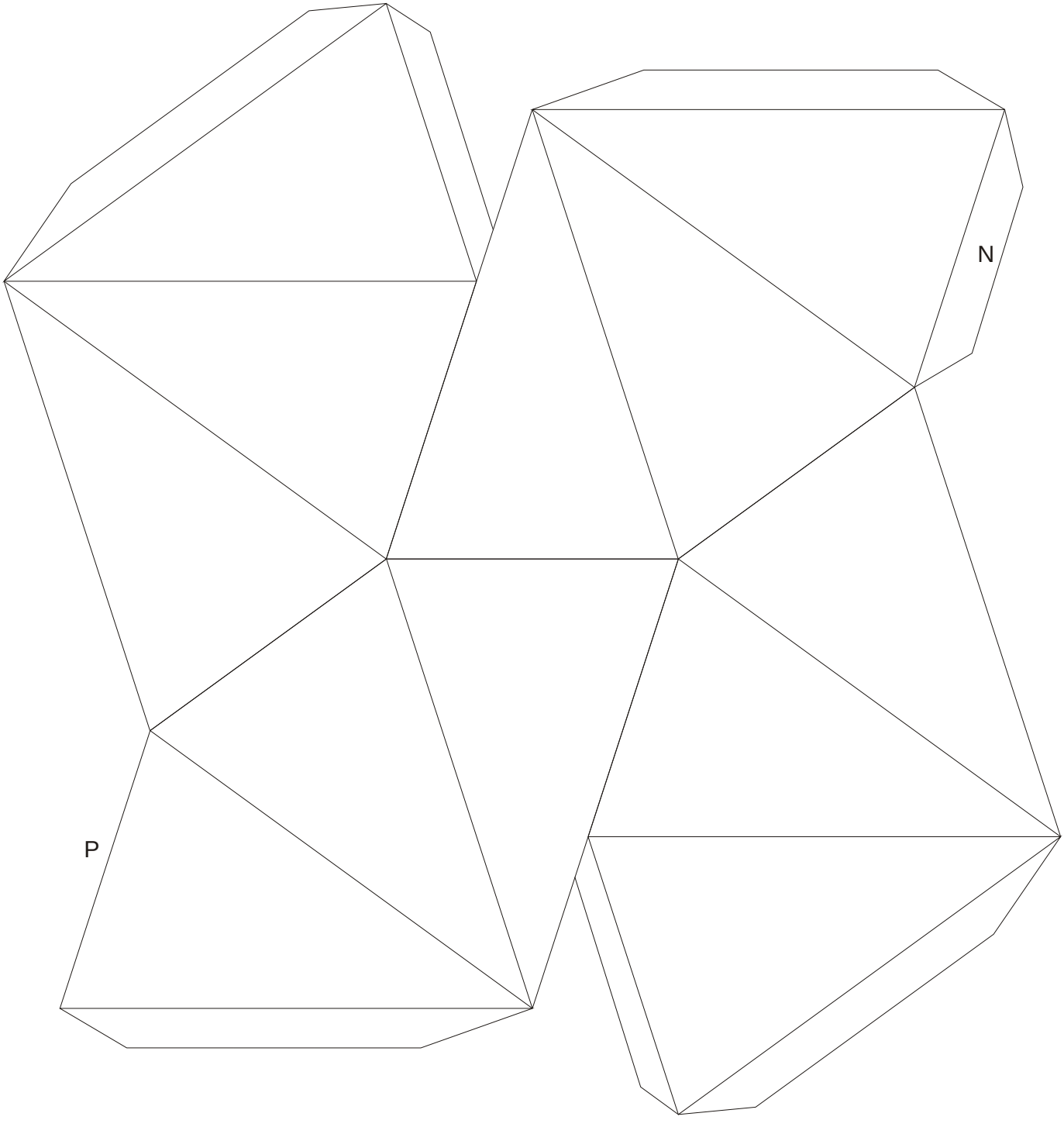
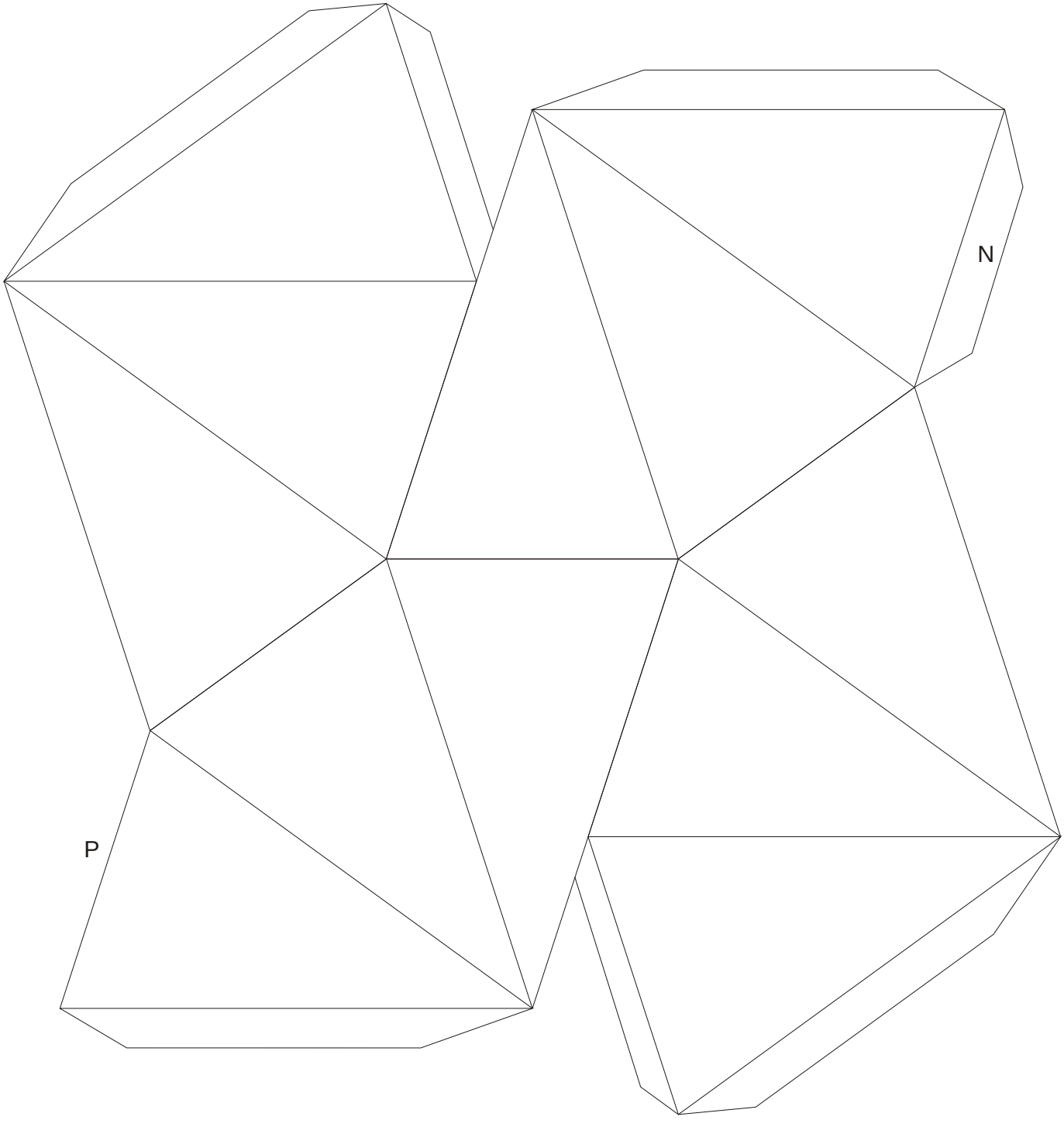
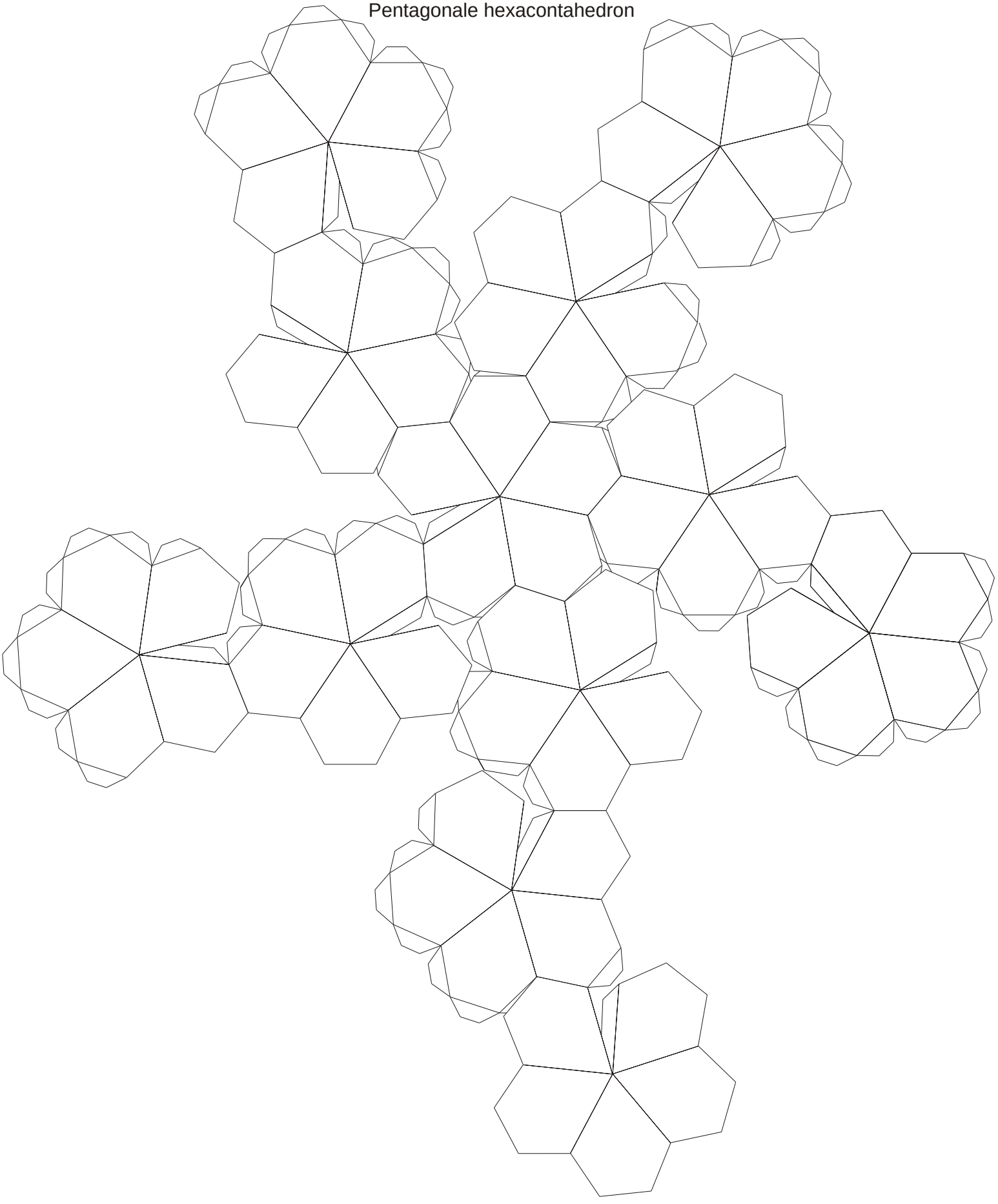
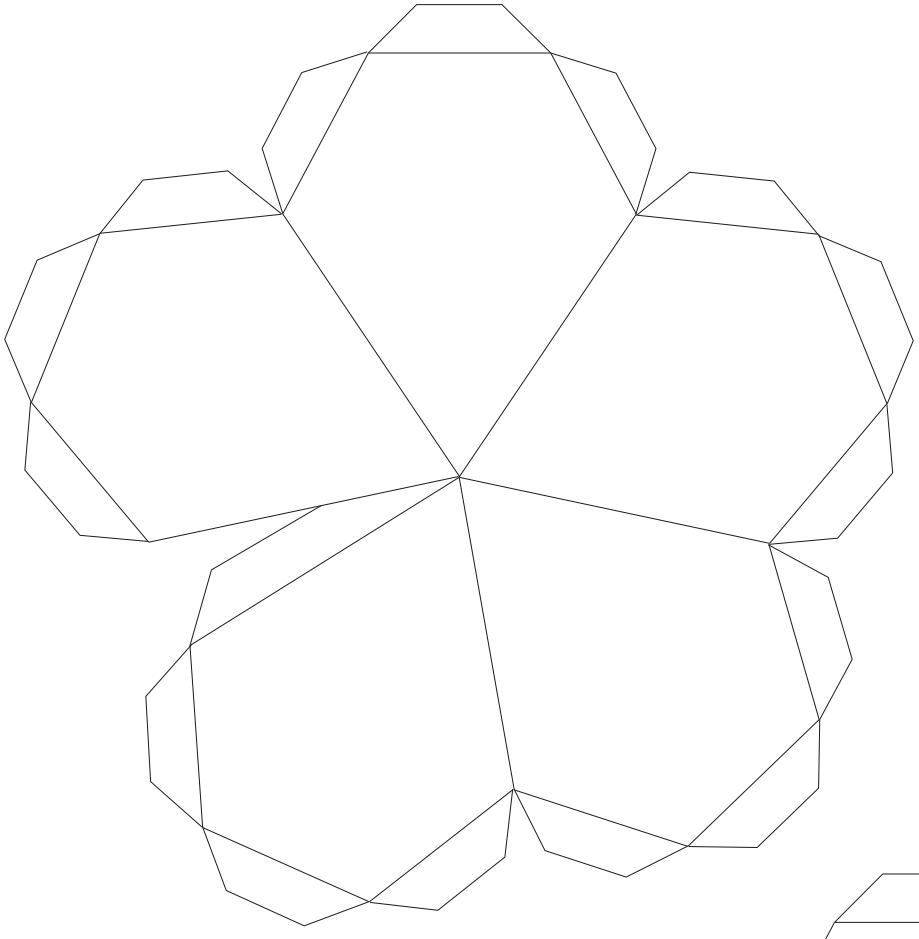


Great Stellated Dodecahedron
made out of five pieces of paper.
Cut the lines between the long
and the short sides of the triangles.
Fold the long lines backwards and
fold the short lines forwards.
N= Next part P= Previous part

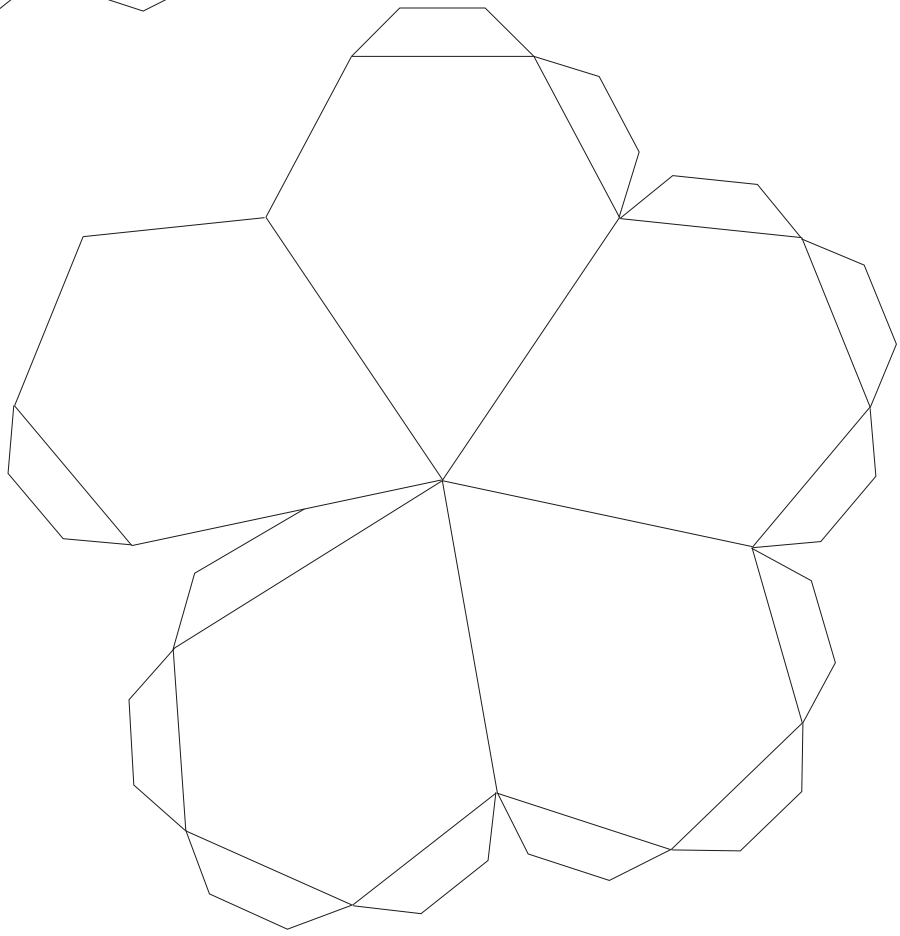


Pentagonale hexacontahedron





1



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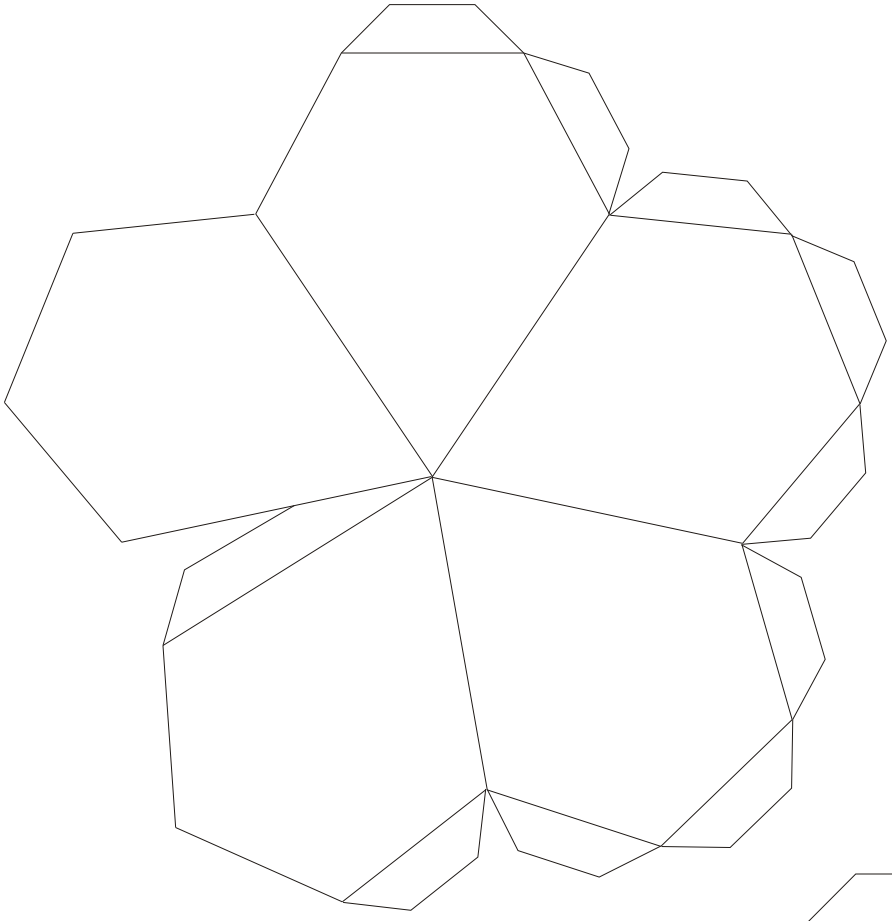

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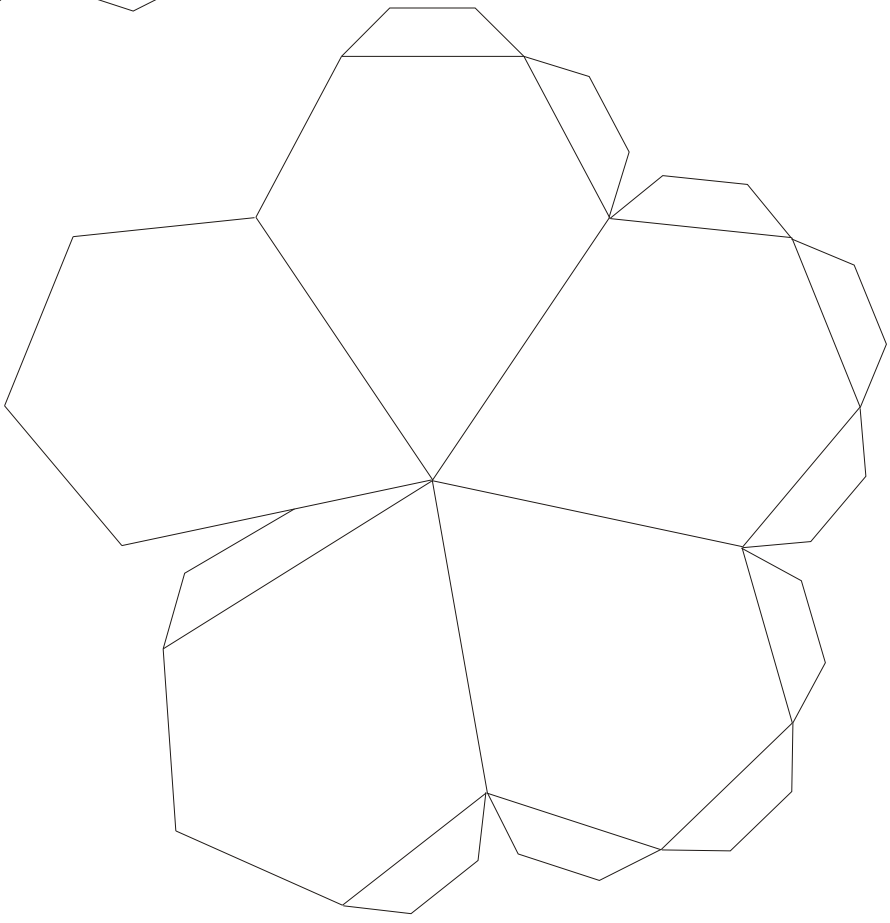

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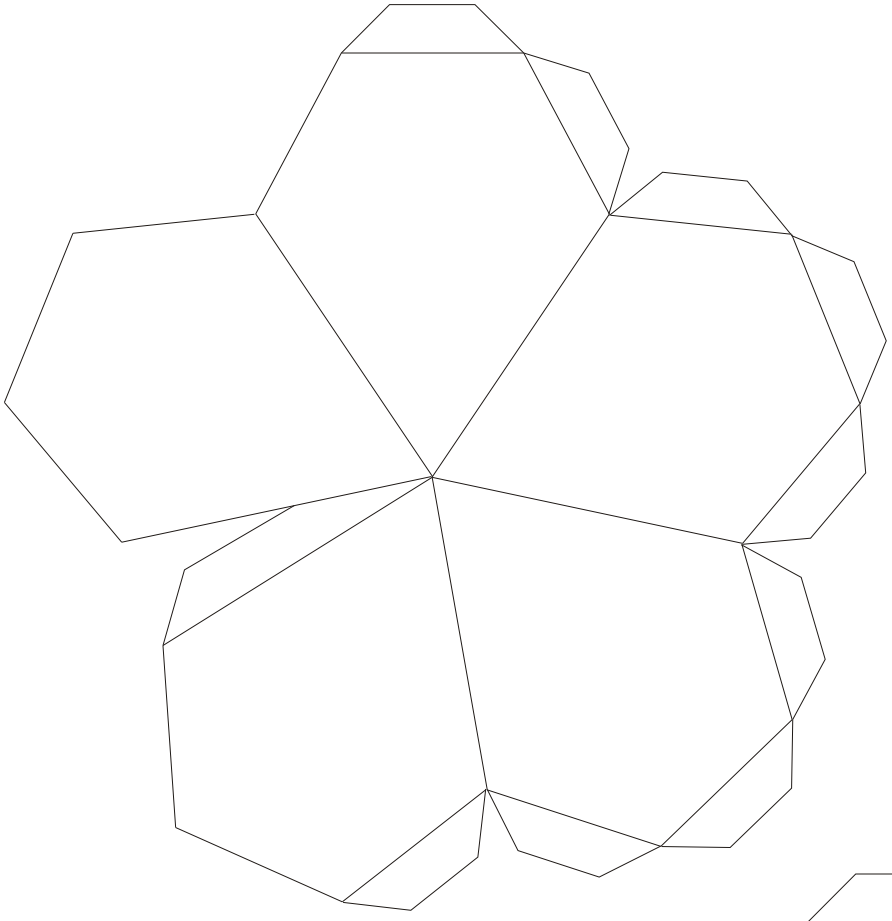

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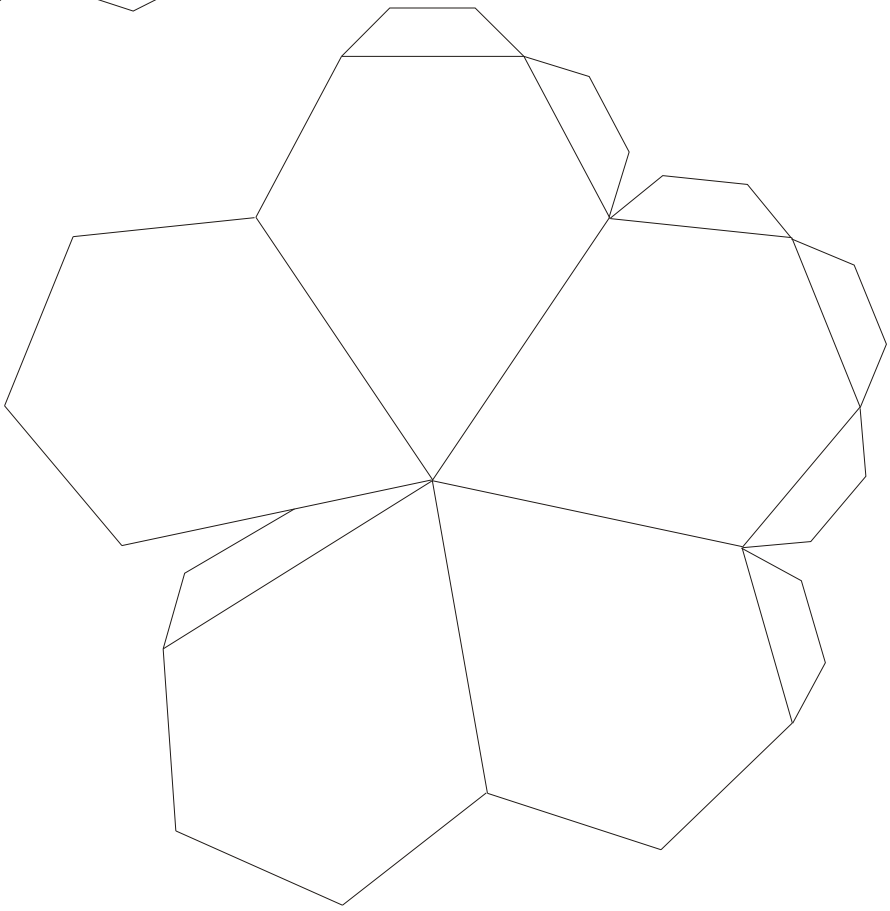

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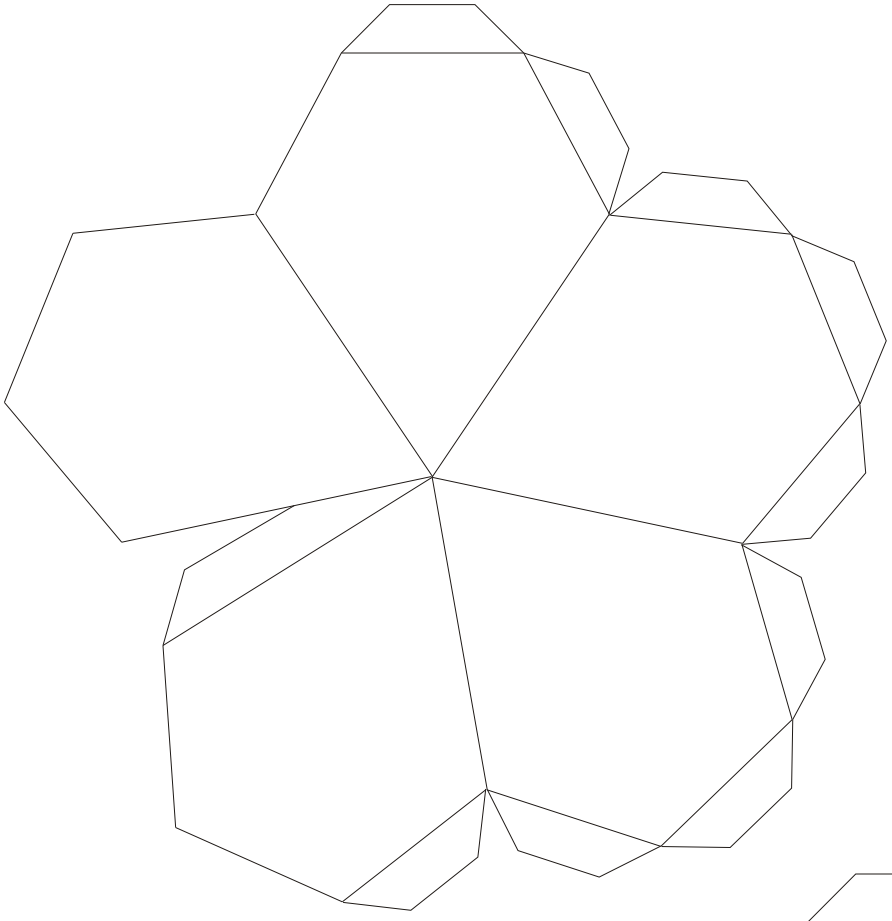

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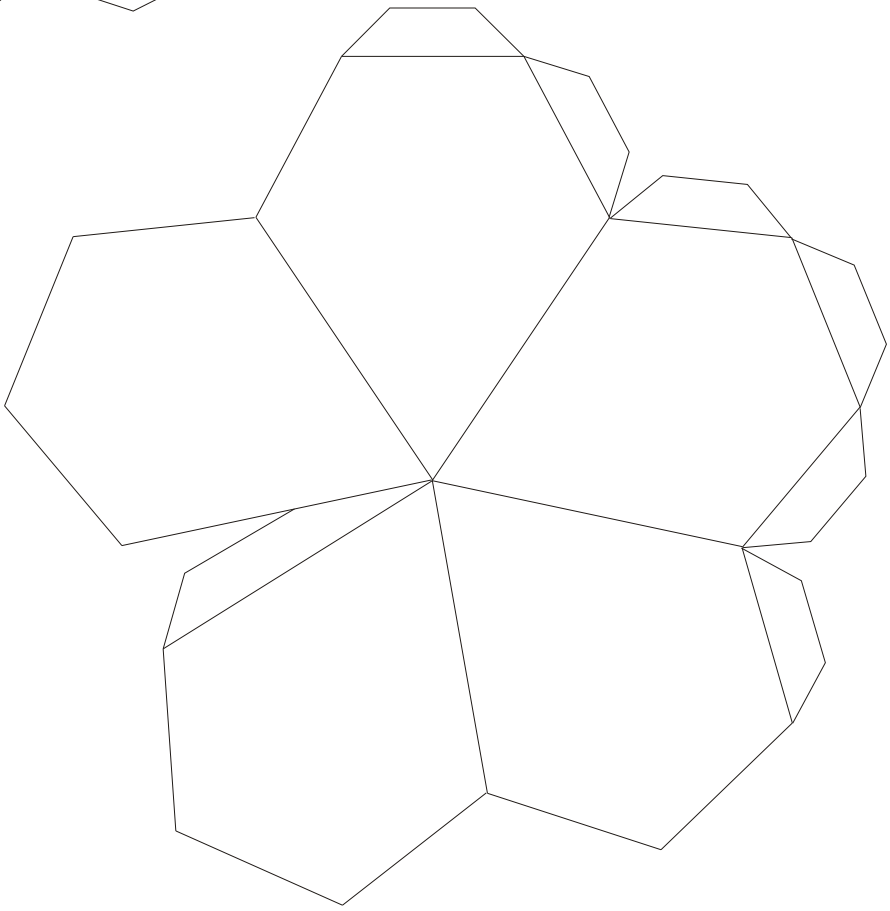

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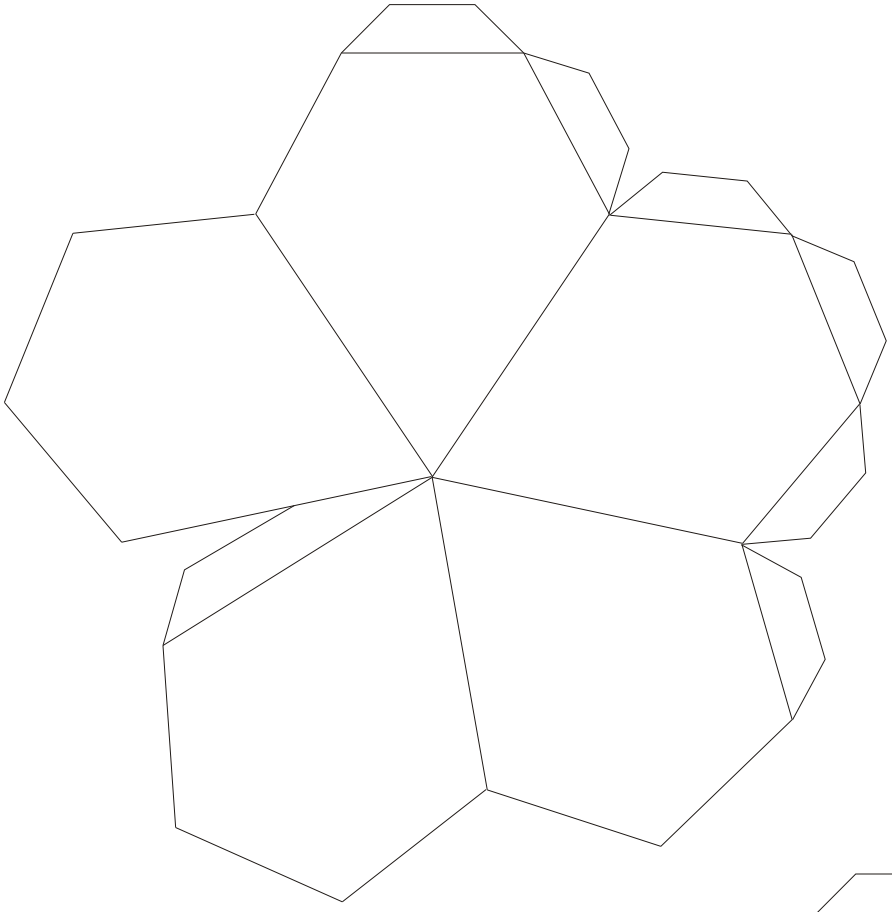

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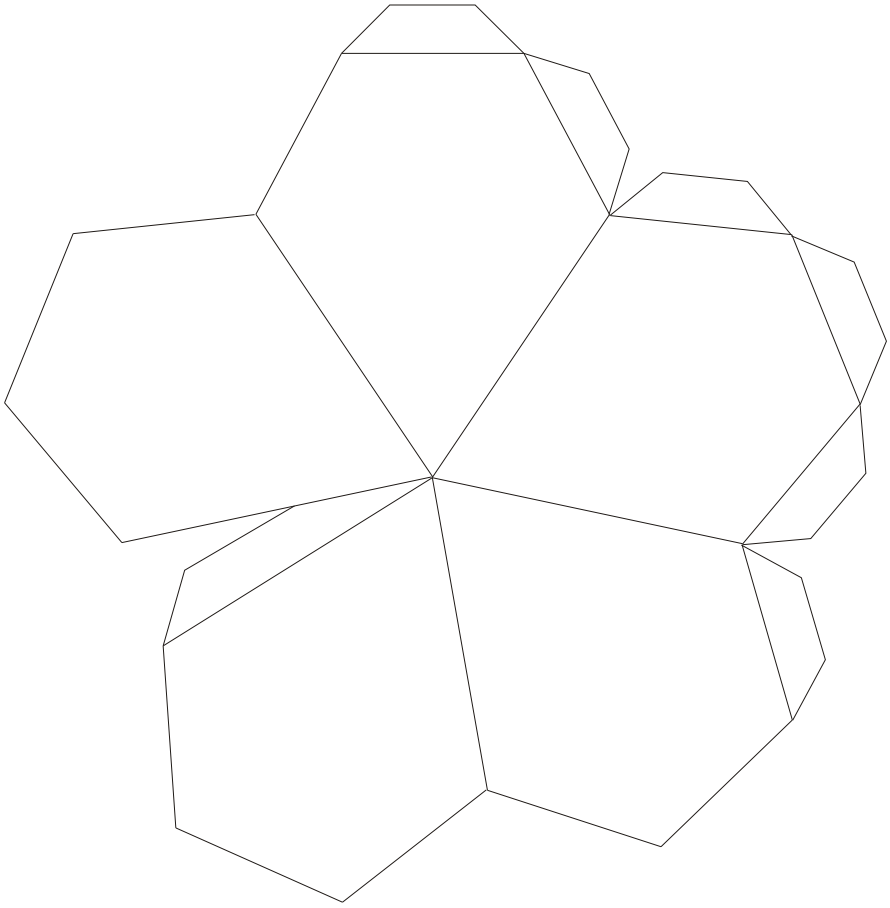

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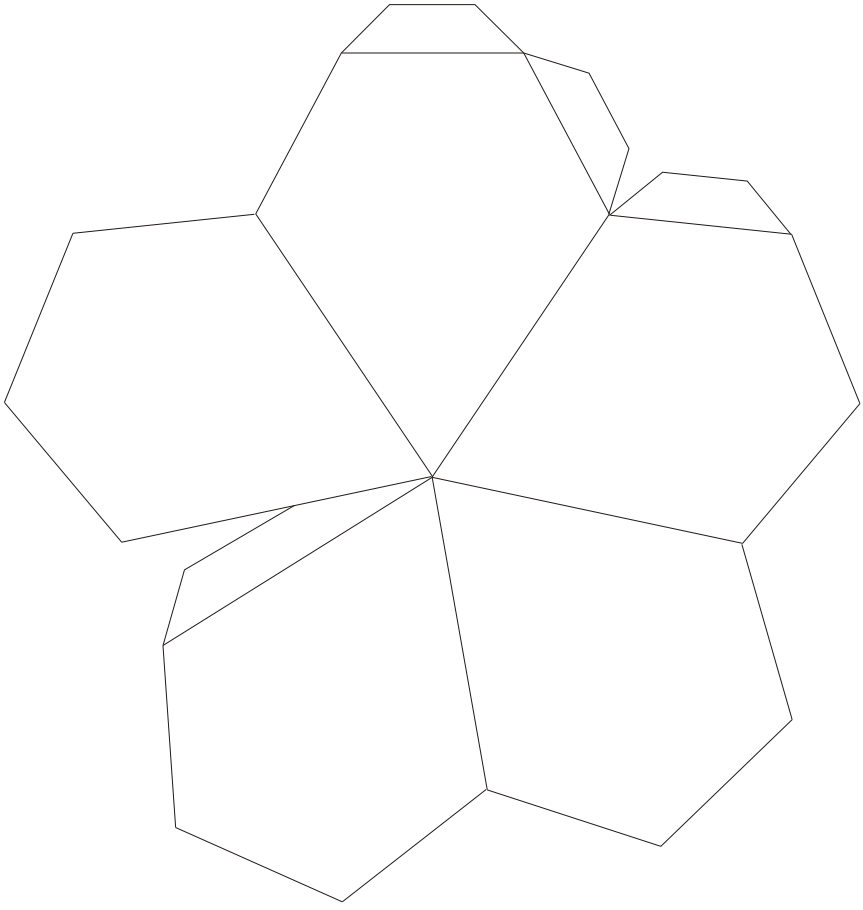
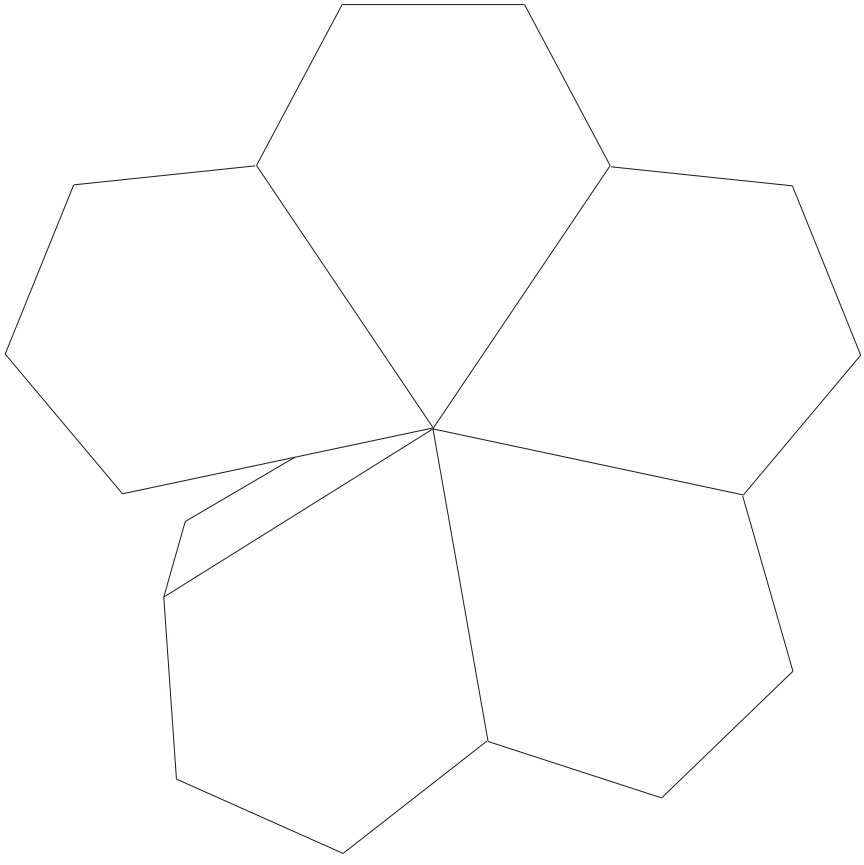
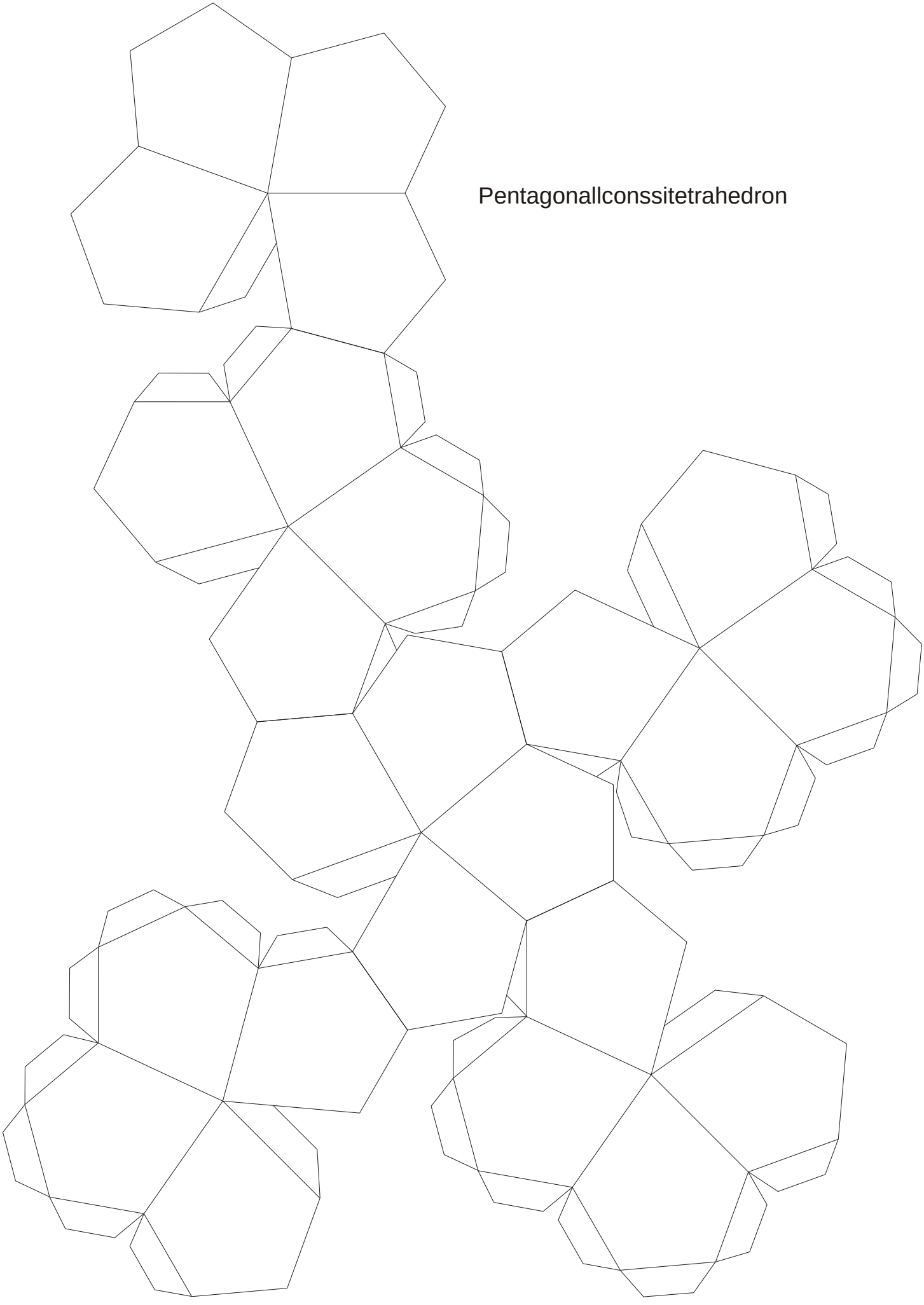




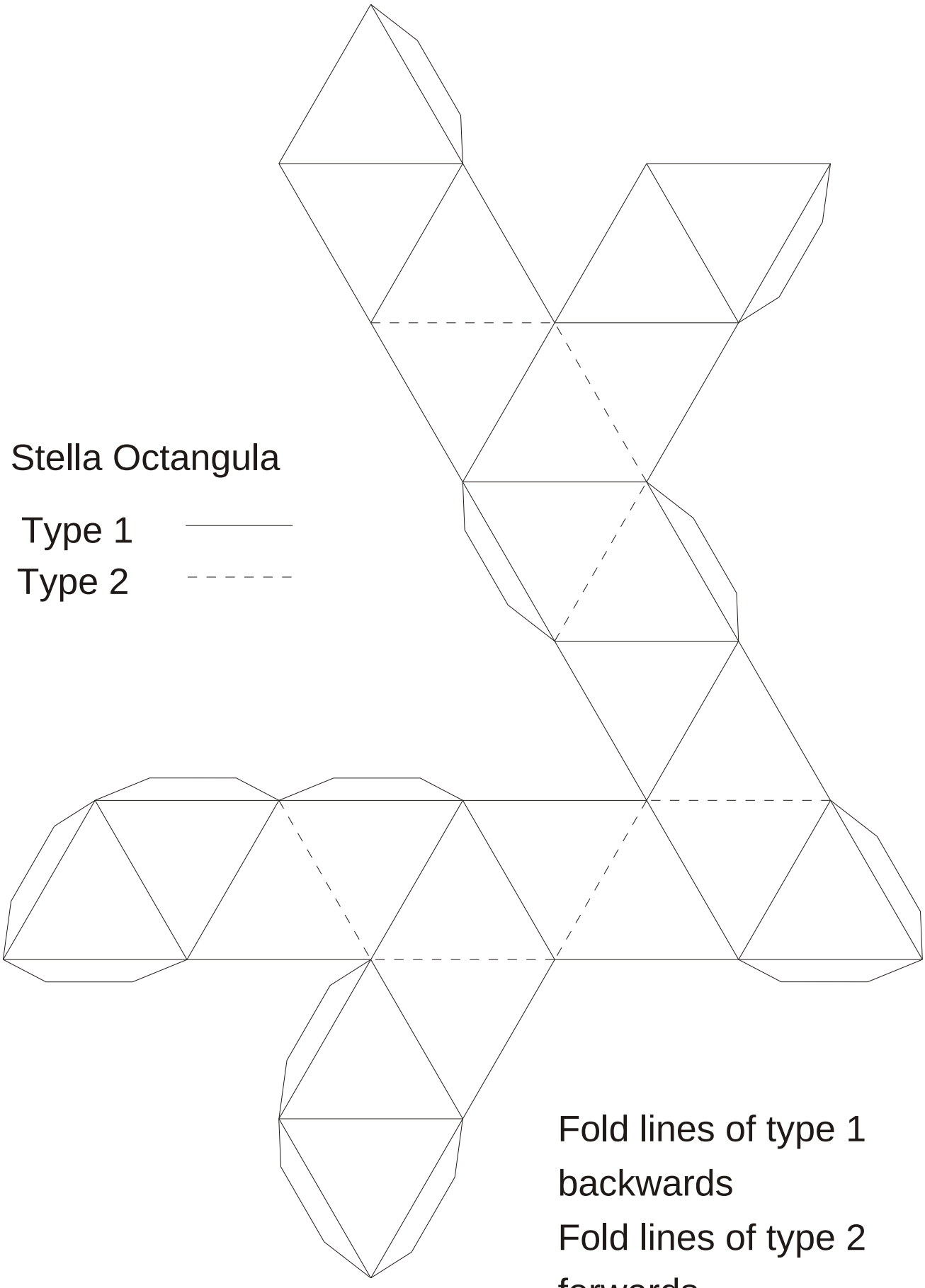
Pentagonallconssitetrahedron



Stella Octangula

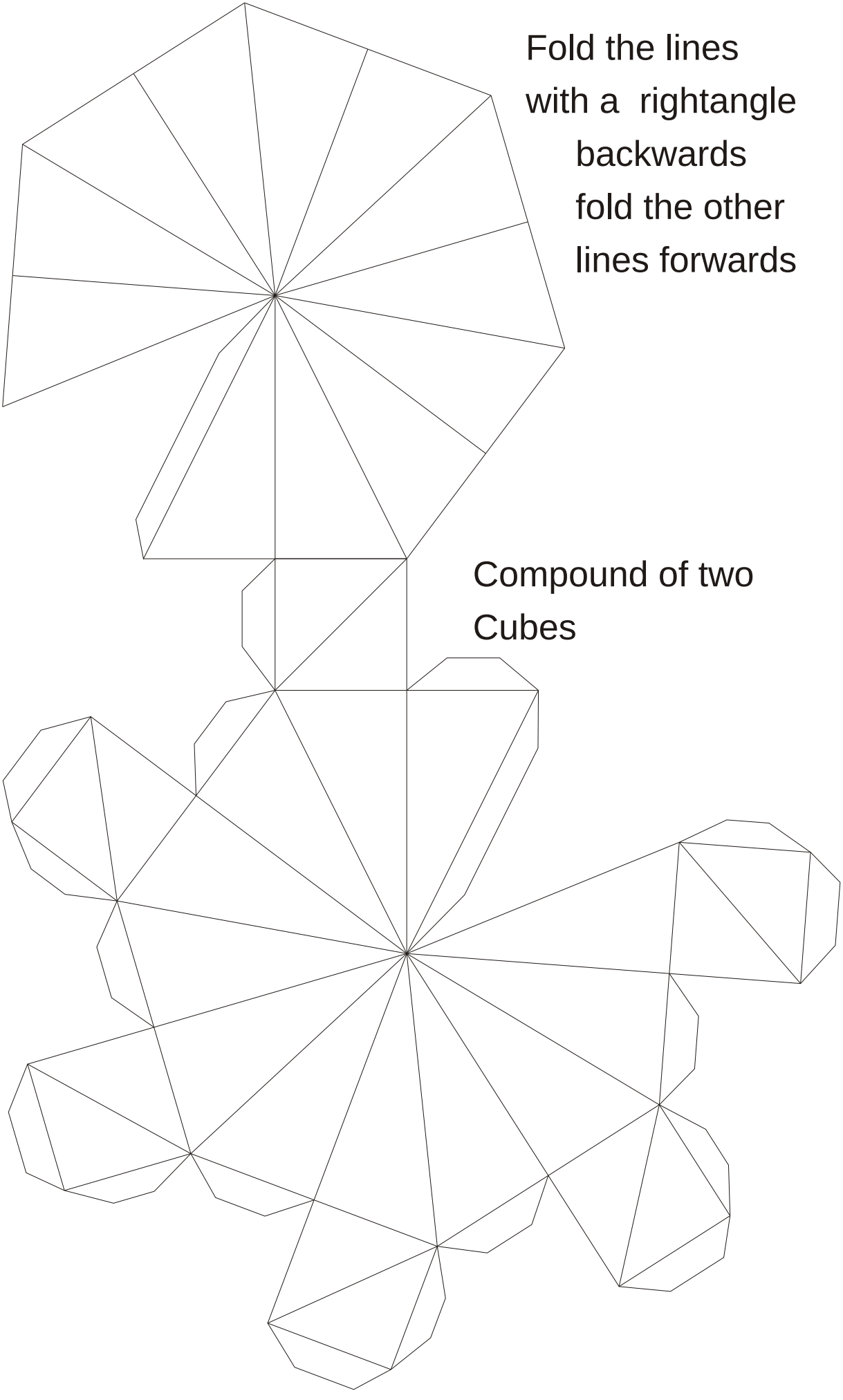
Type 1

Type 2



Fold lines of type 1 backwards

Fold lines of type 2 forwards



Fold the lines
with a rightangle
backwards
fold the other
lines forwards

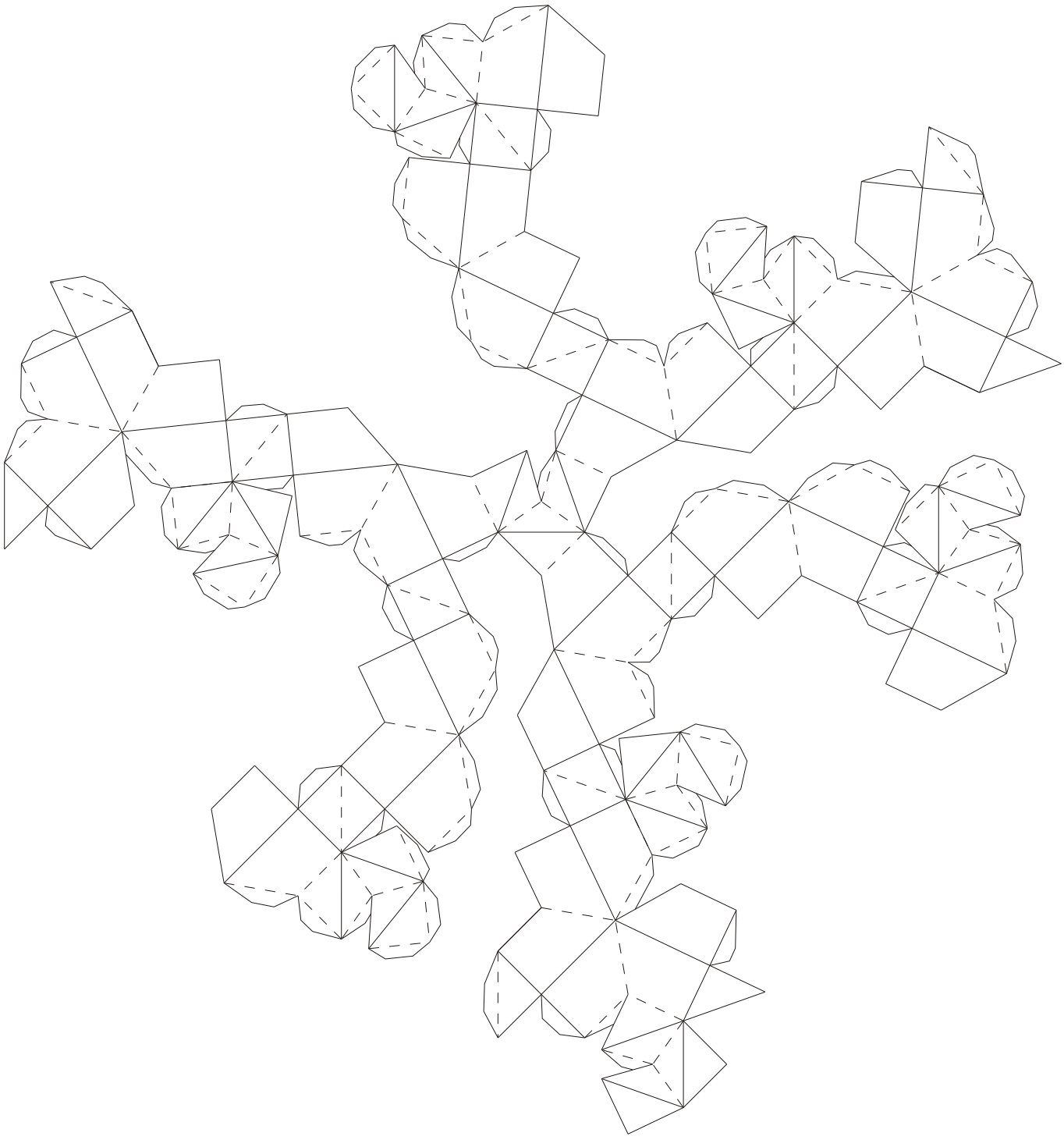
Compound of two
Cubes

Compound of Three Cubes

(Small version)

Fold the dotted liines forwards

Fold the other lines backwards



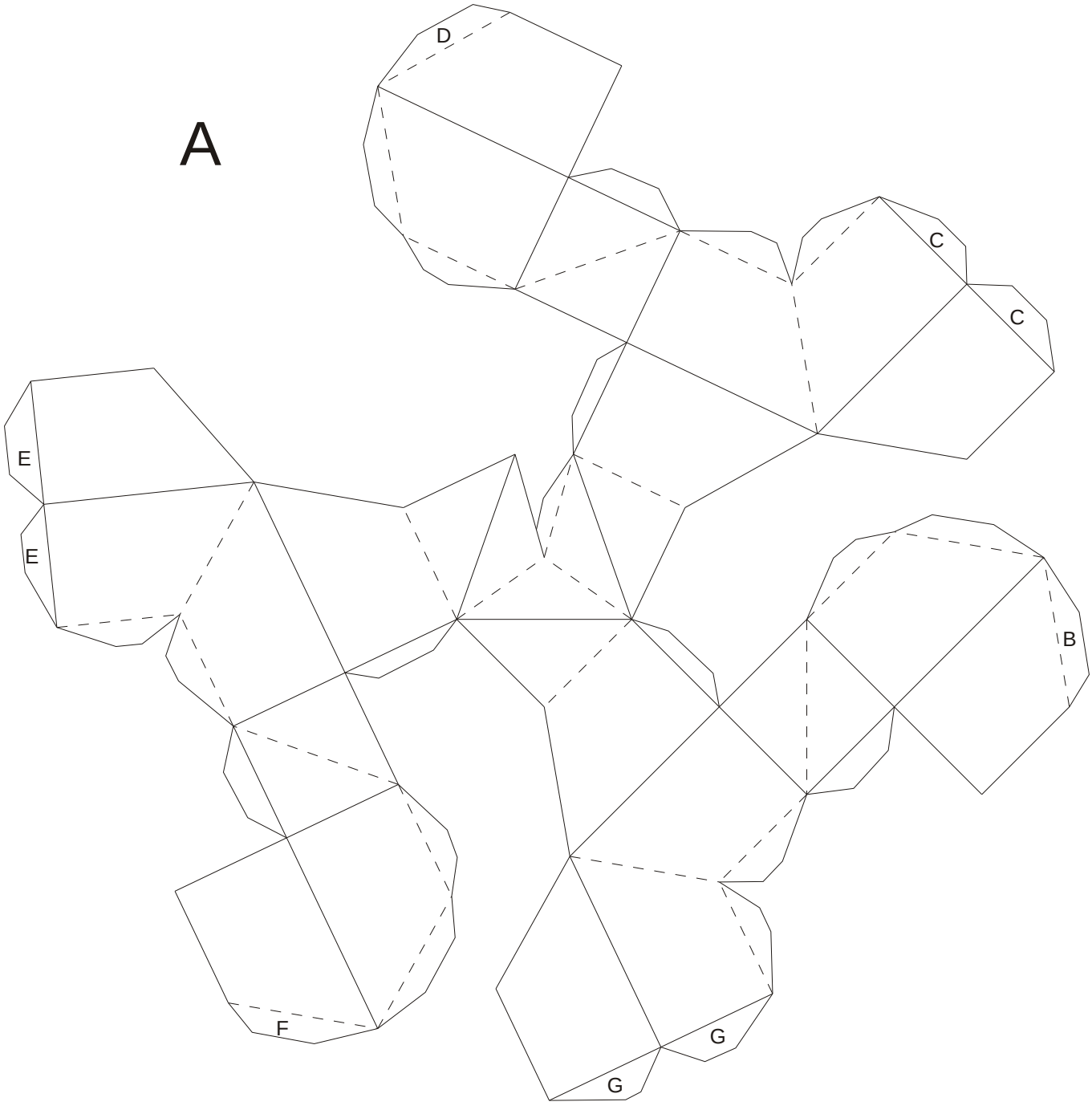
Compound of Three Cubes

(Small version)

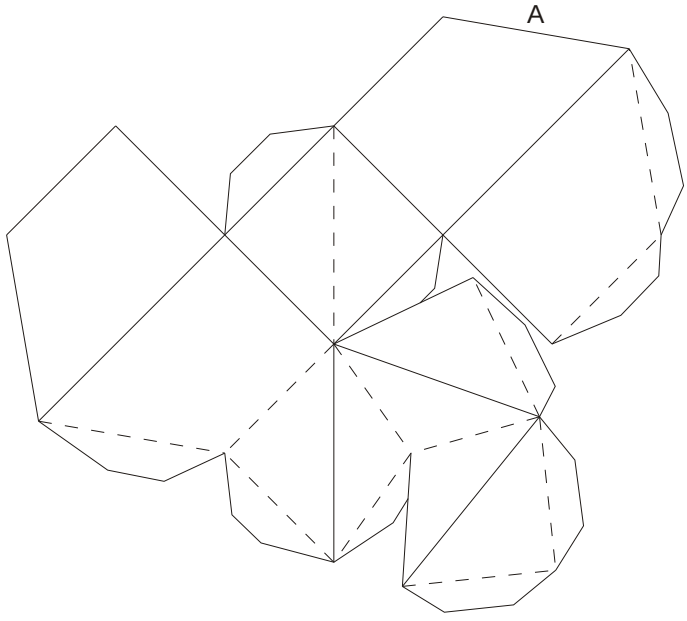
Fold the dotted liines forwards

Fold the other lines backwards

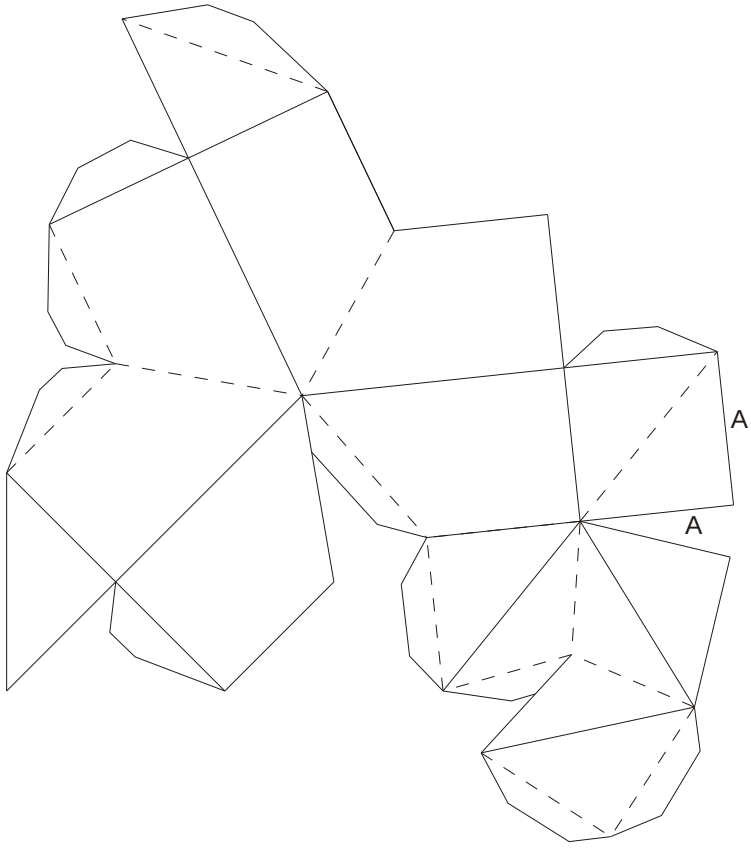
A



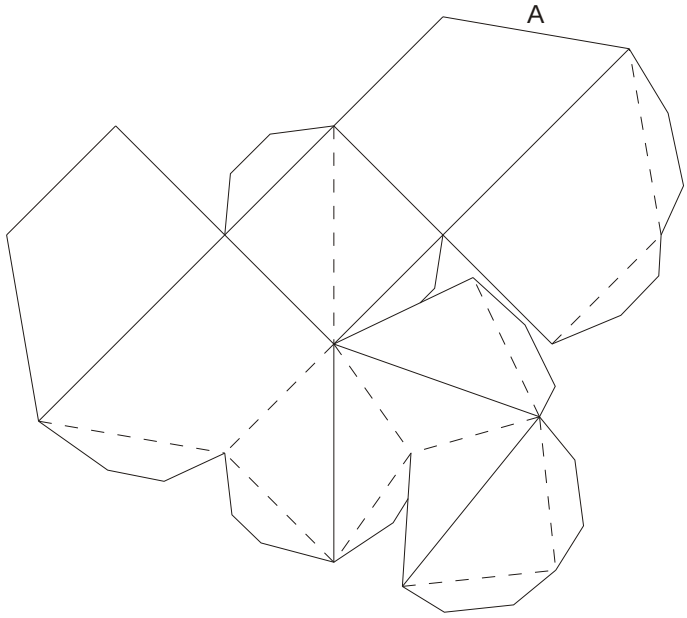
B



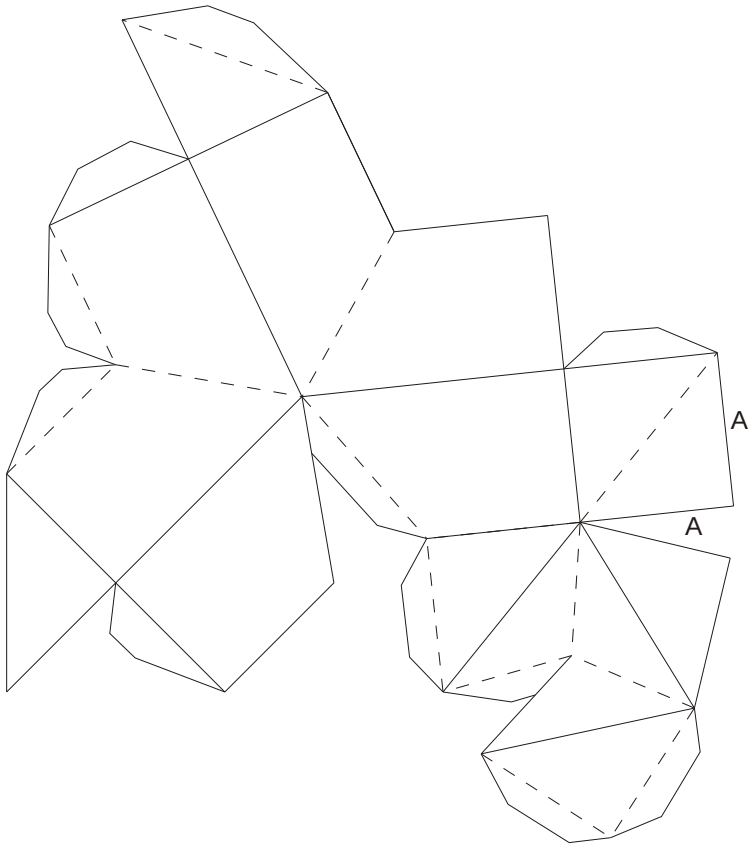
C



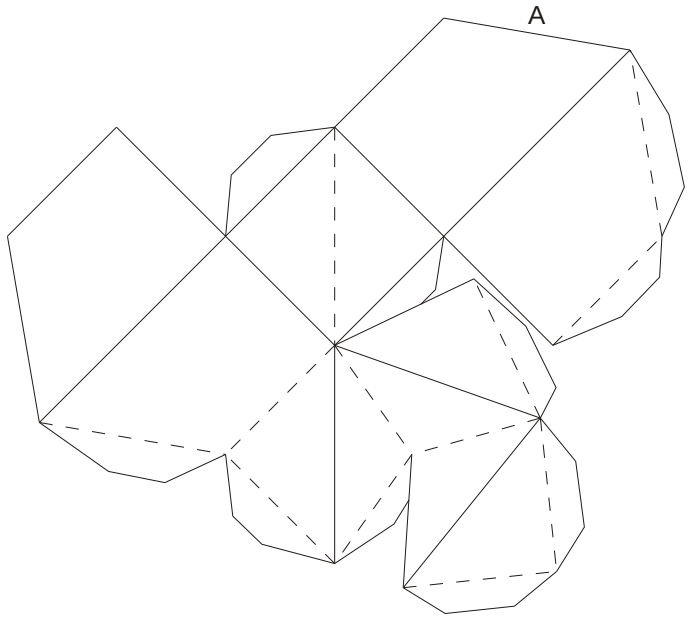
D



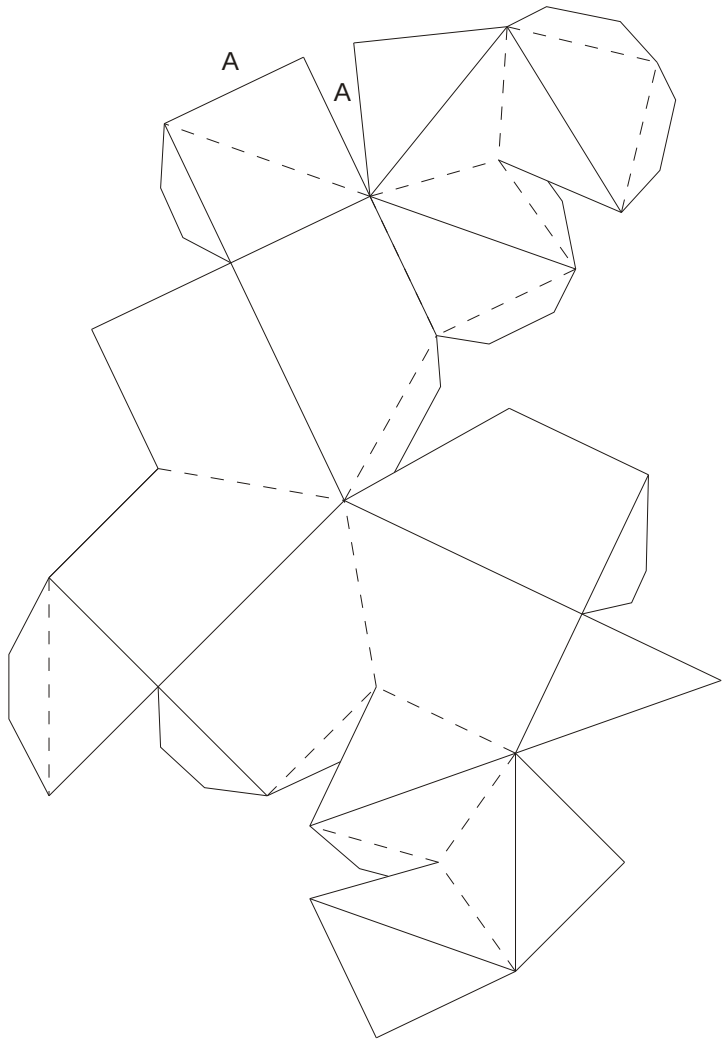
E



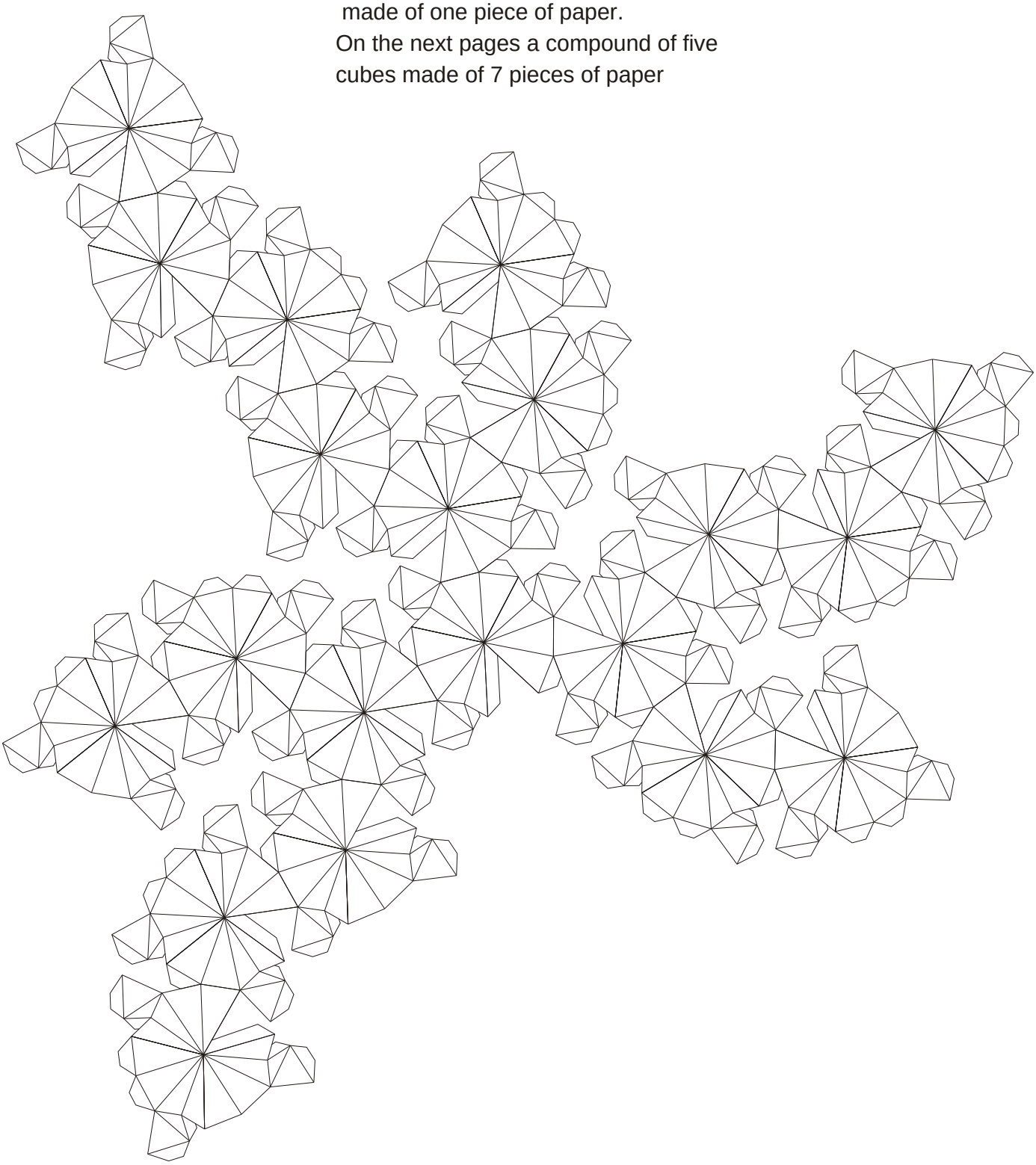
F



G



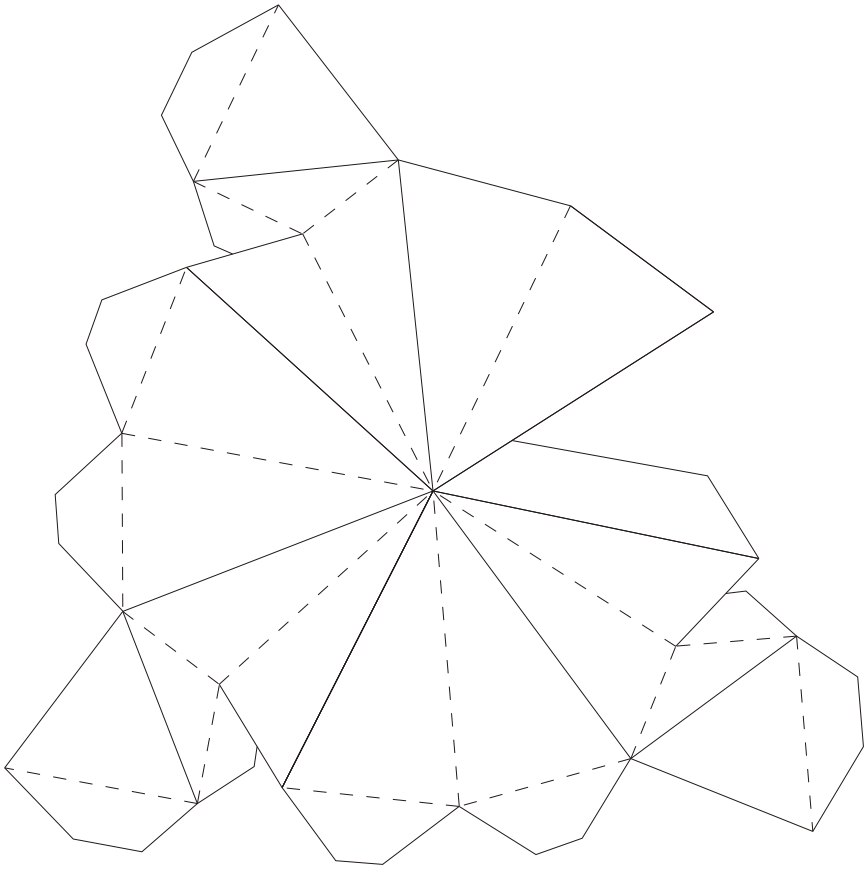
On this page a compound of five cubes
made of one piece of paper.
On the next pages a compound of five
cubes made of 7 pieces of paper



Instructions:

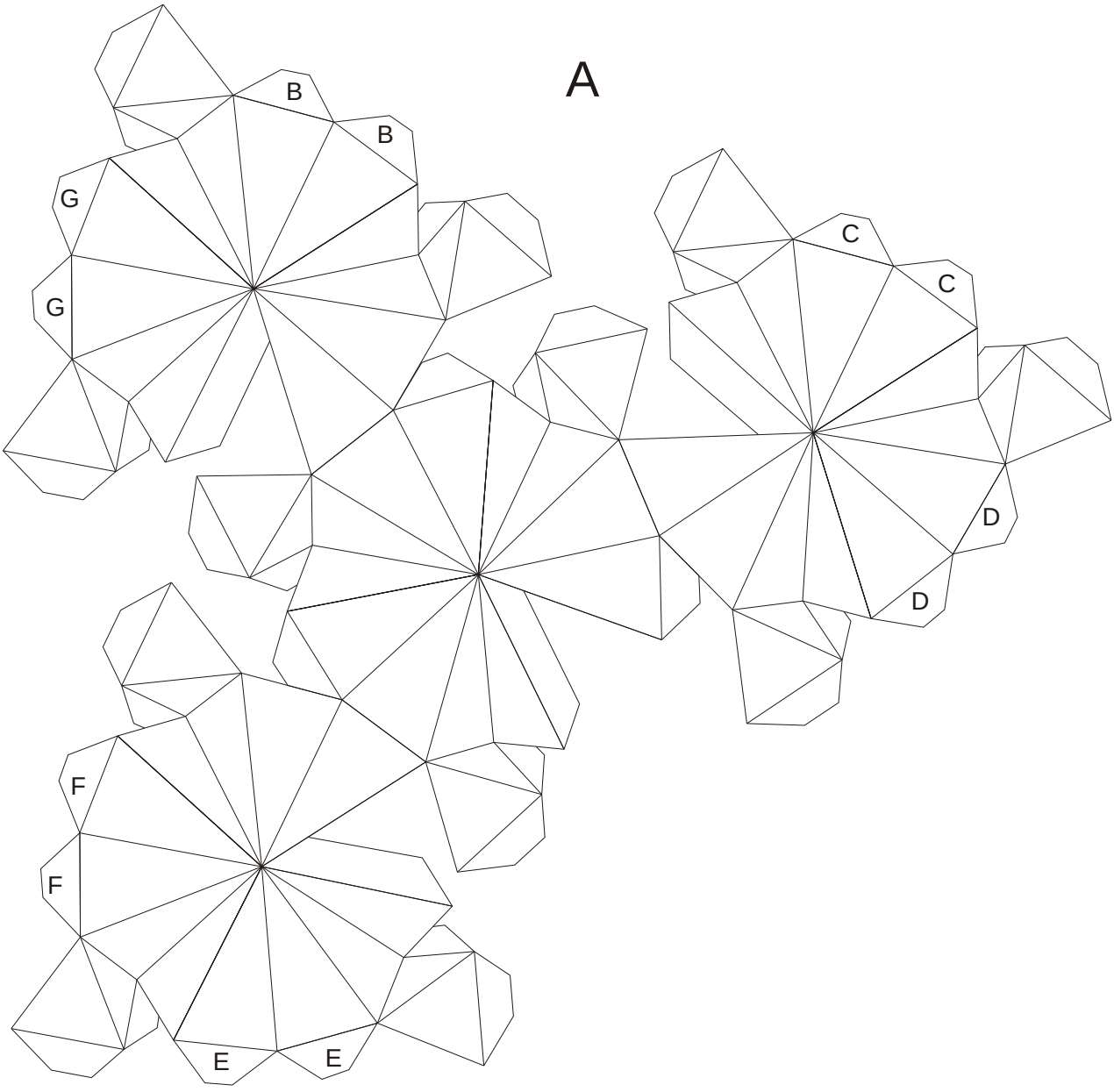
Cut and fold the piece(s) of paper.
Glue the part without tabs around it last.
This is the top part of piece F. This one
opposites the center part of piece A.

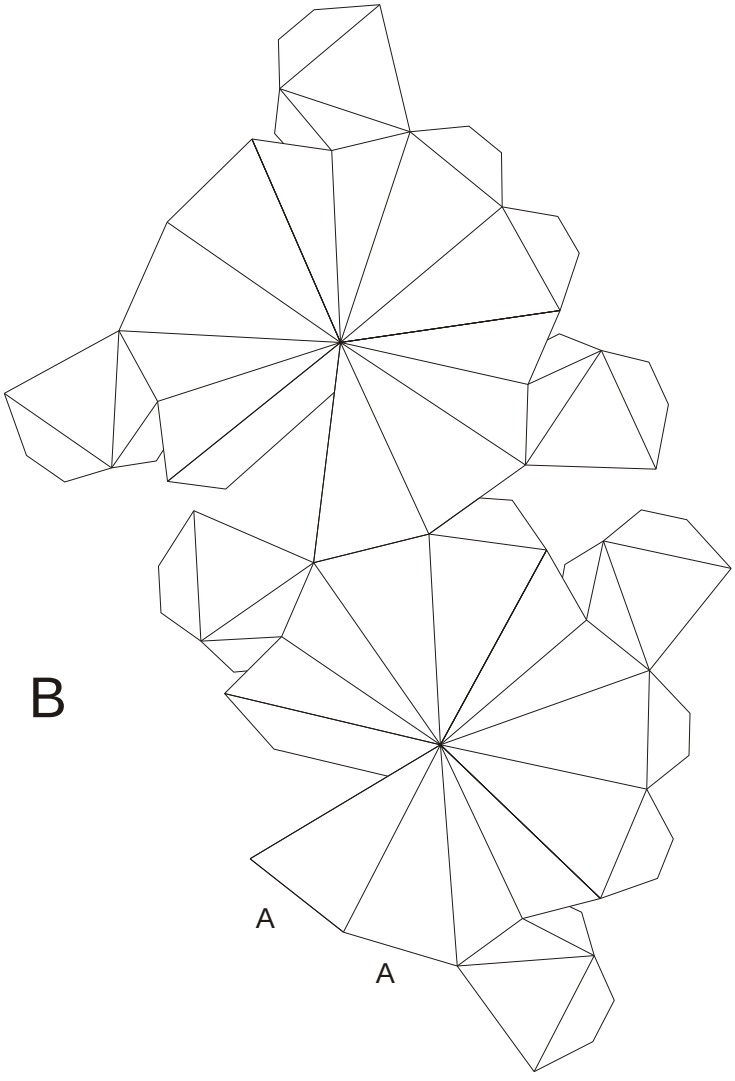
Below an example of a part

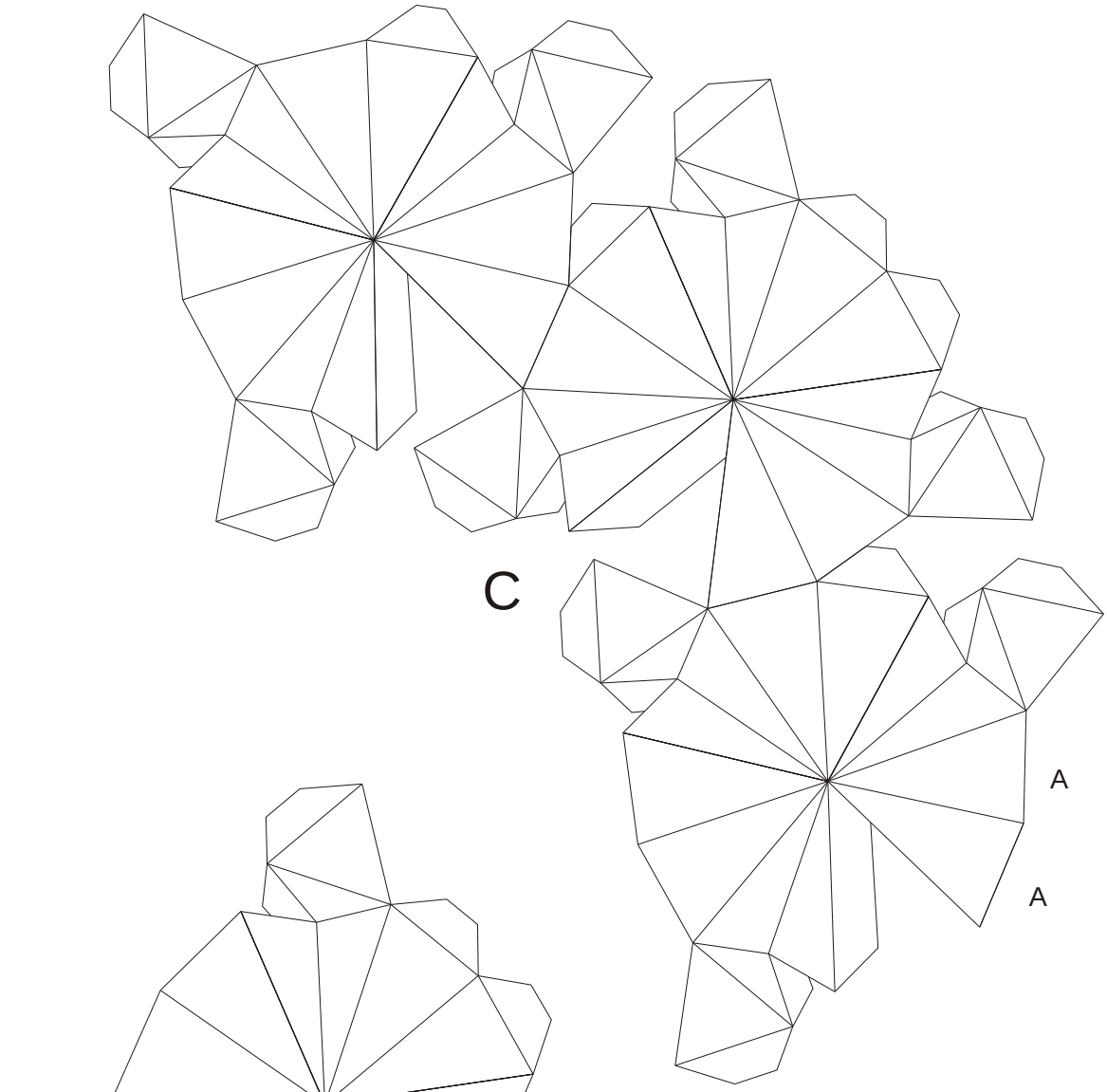


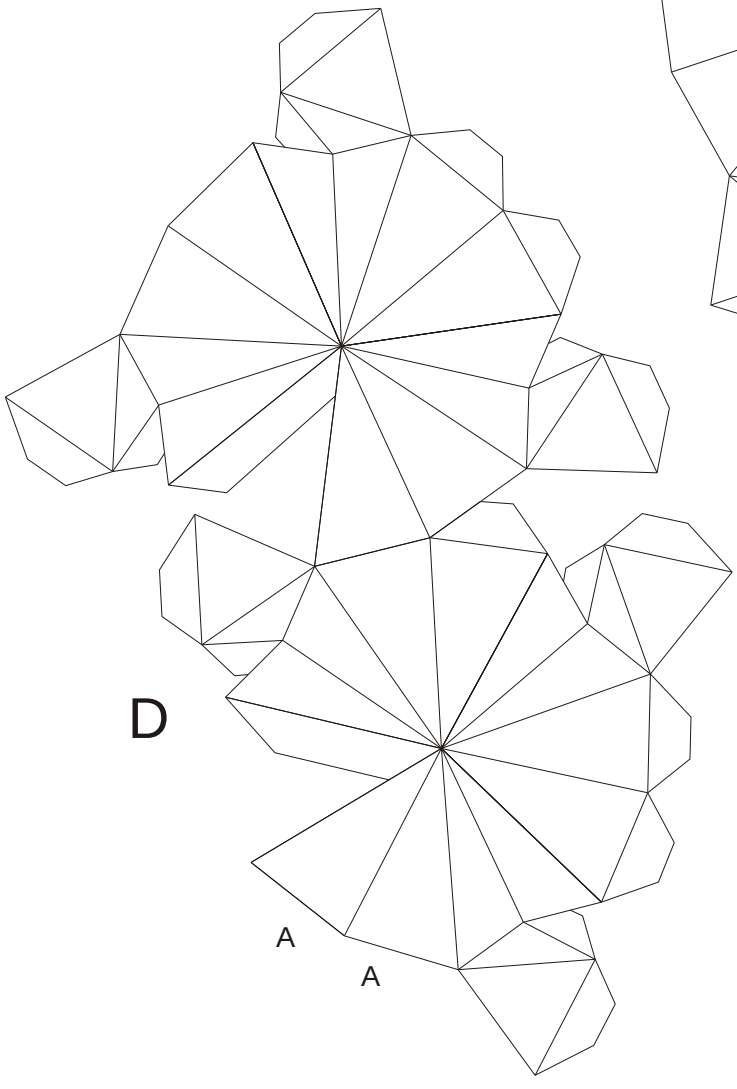
Fold forwards

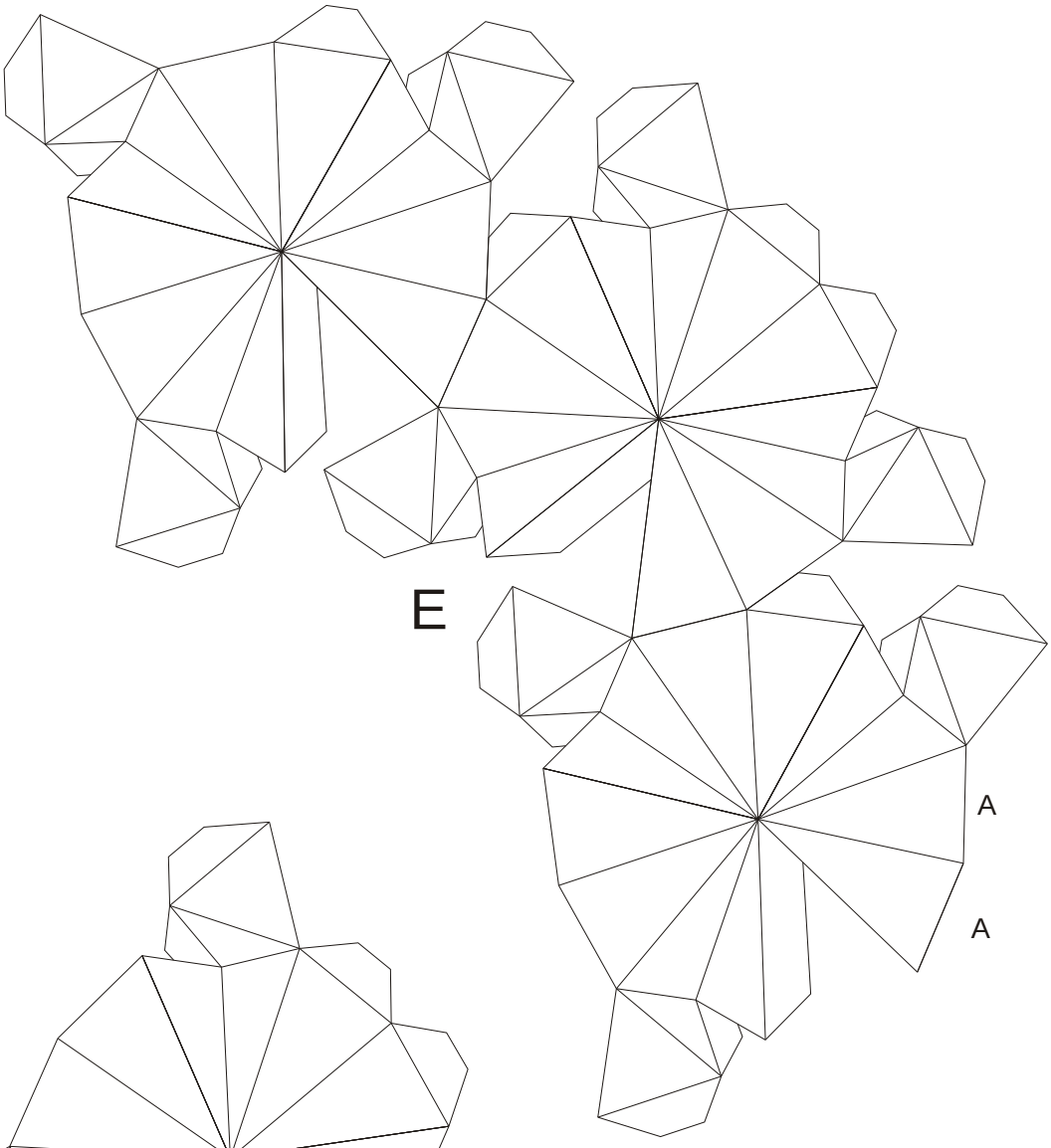
Fold backwards

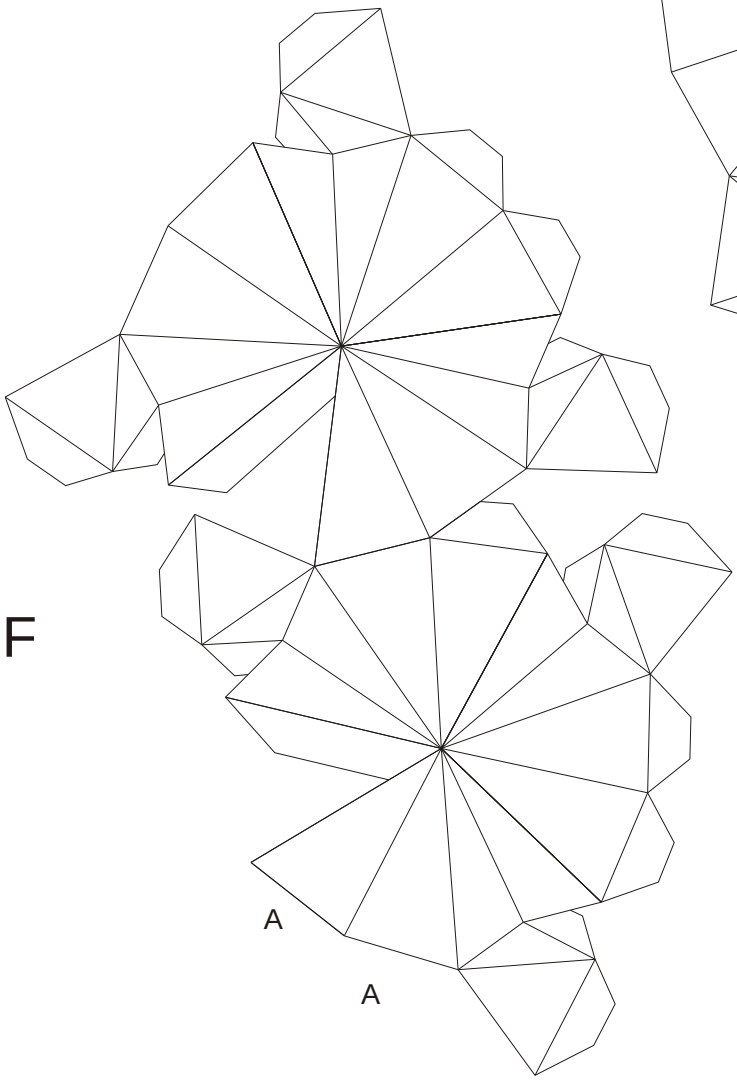

A
B
B
G
G
C
C
D
D
F
F
E
E

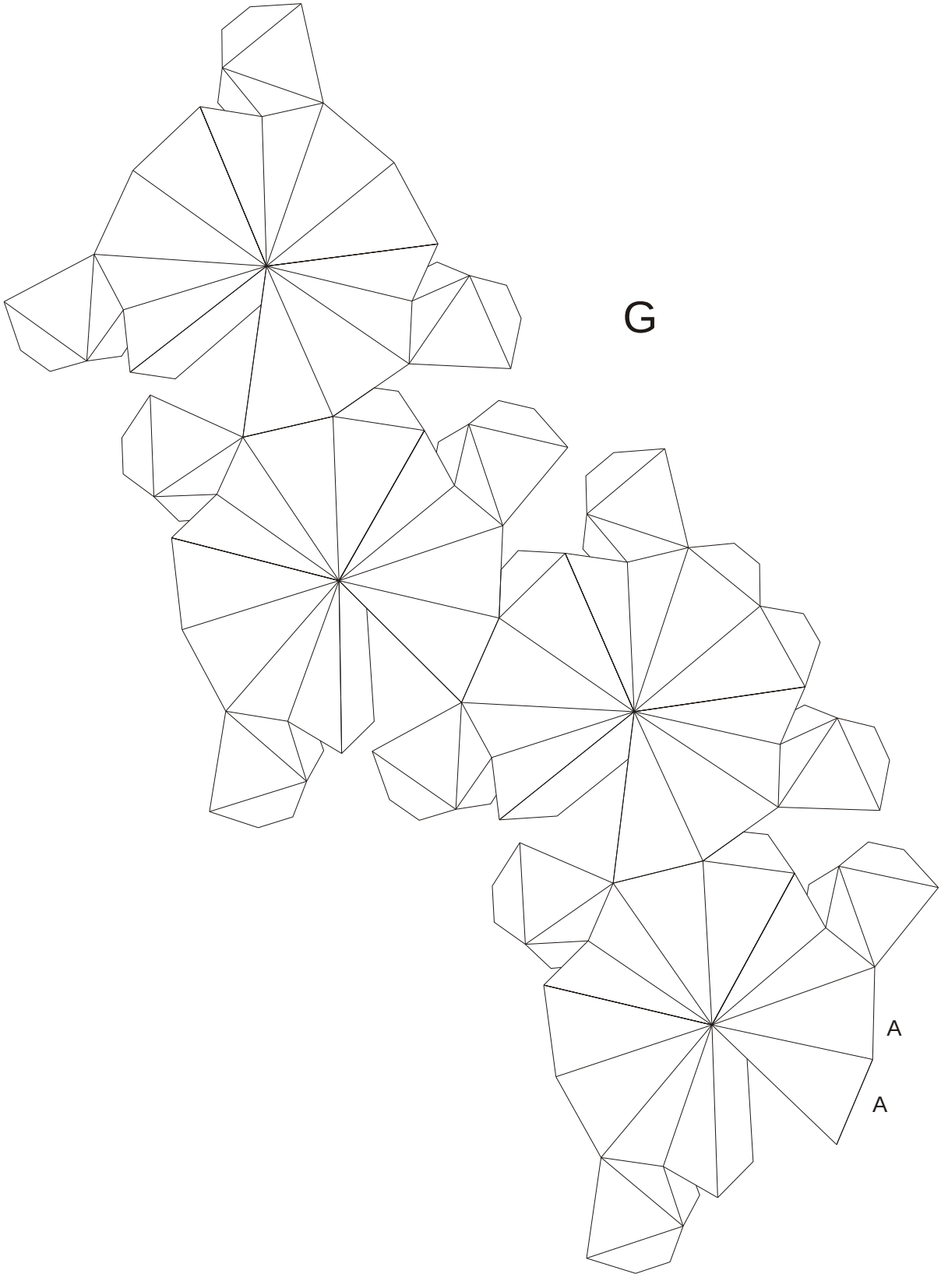

B
A
A


C
A
A


D
A
A


E
A
A

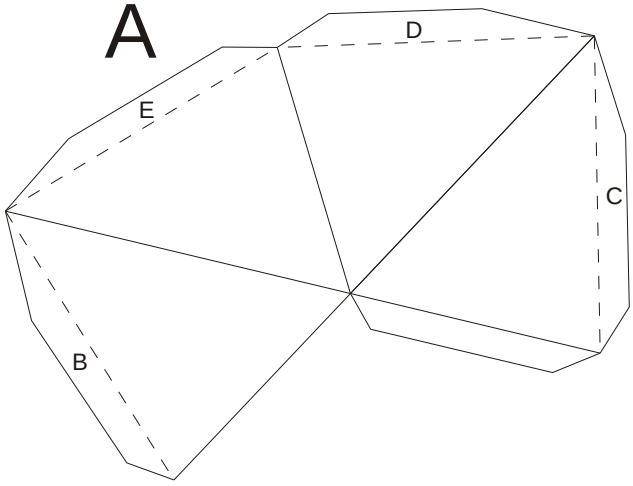

F
A
A

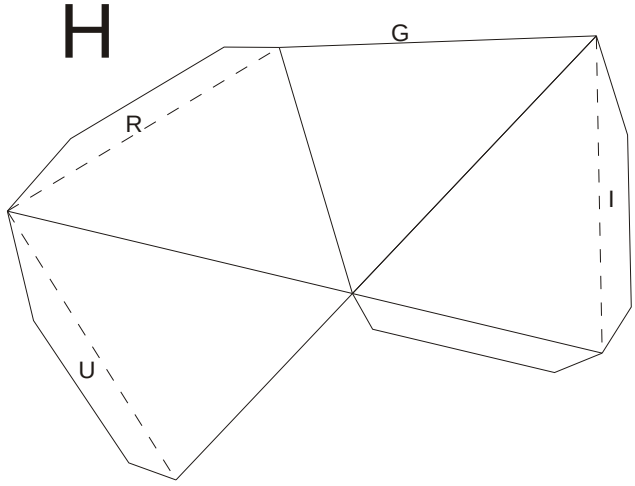

G
A
A

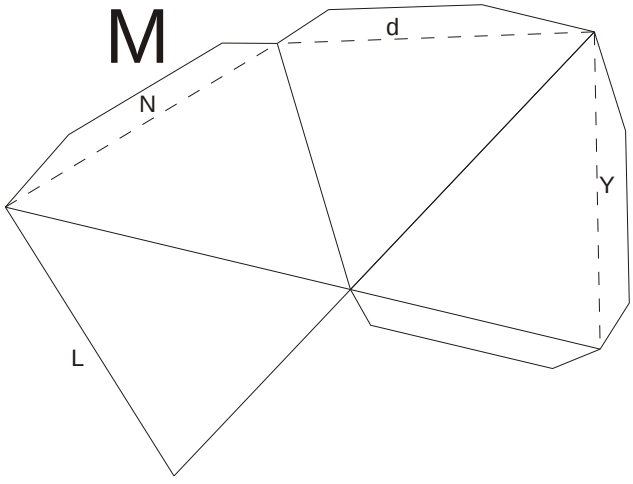
Compound of five Octahedra

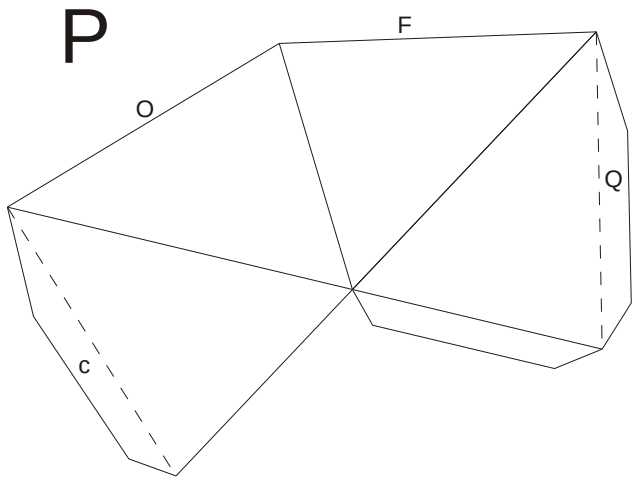
If you use paper in five different colors
each octahedron has a different color

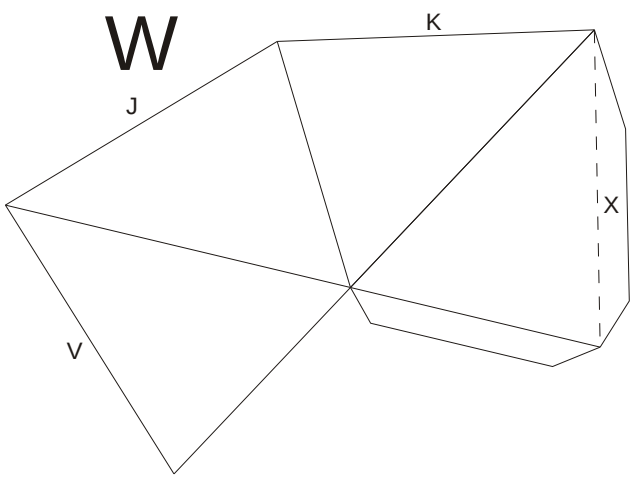
Color 1

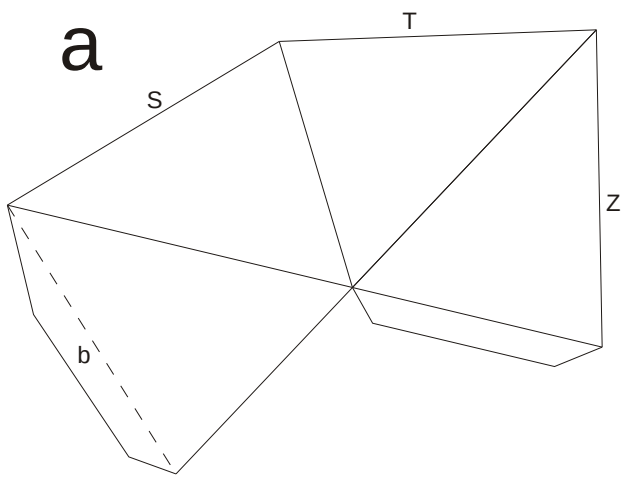






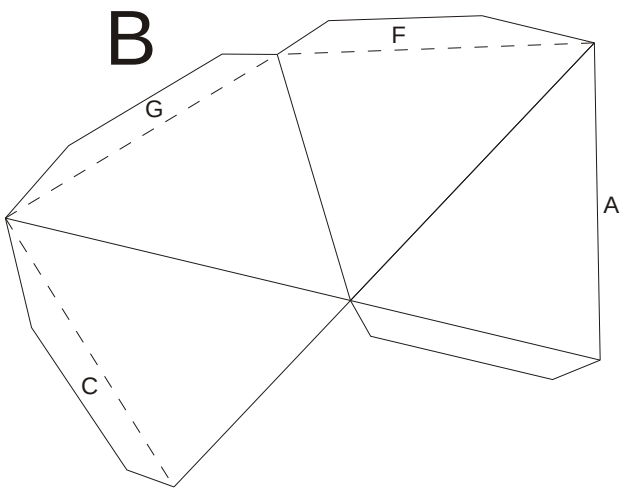


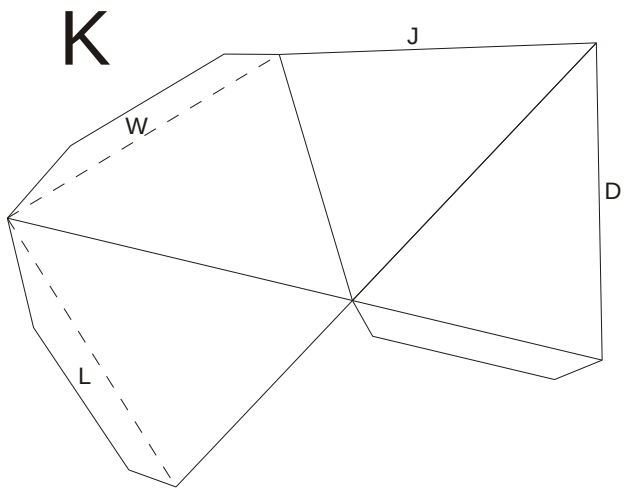


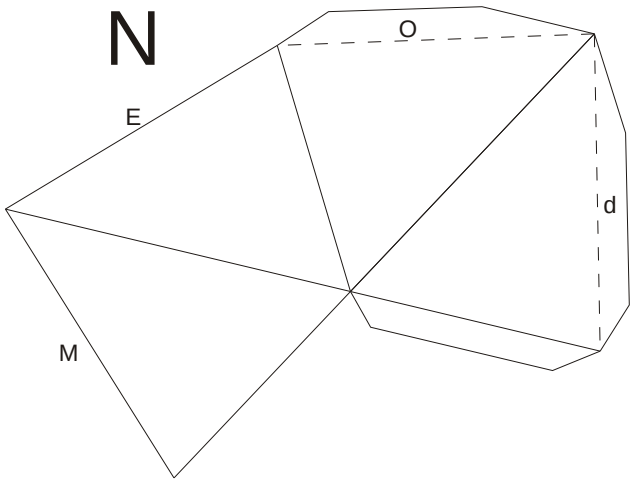


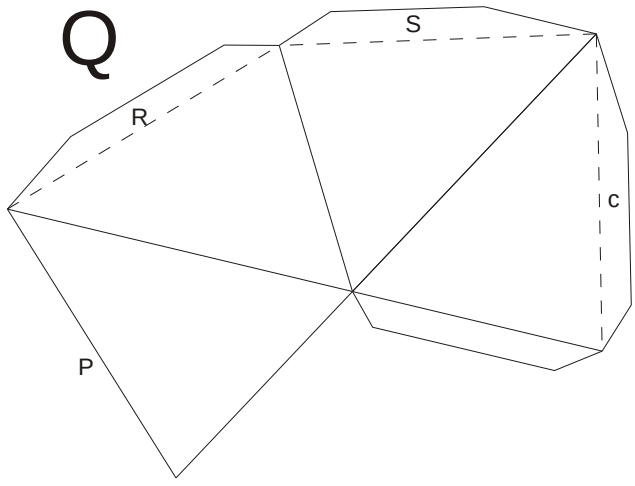
Compound of five Octahedra

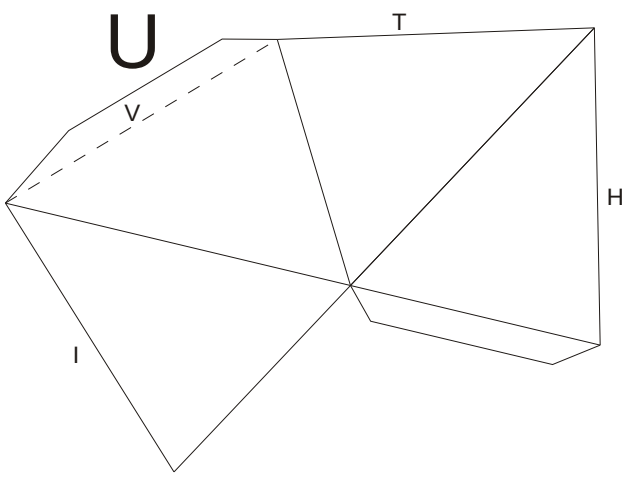
Color 2

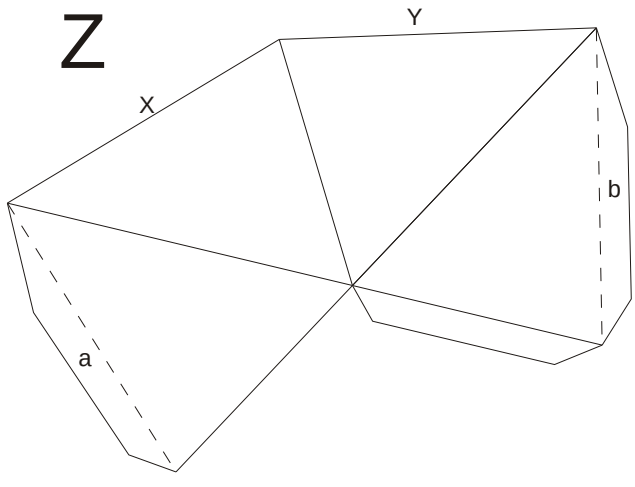






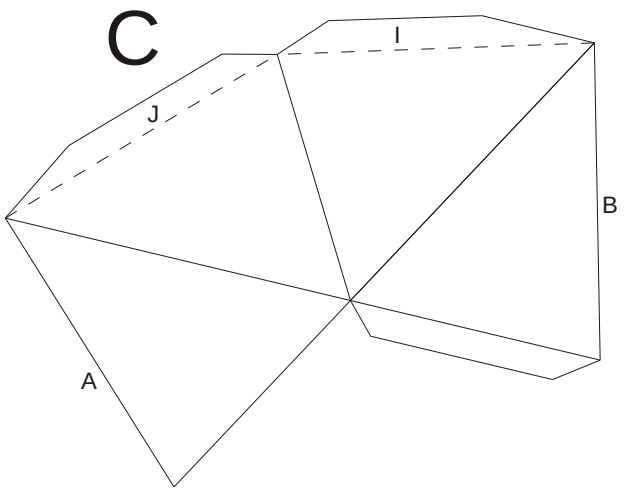


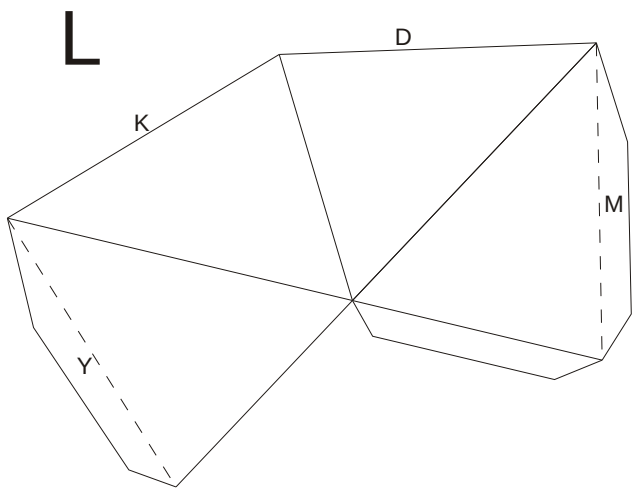


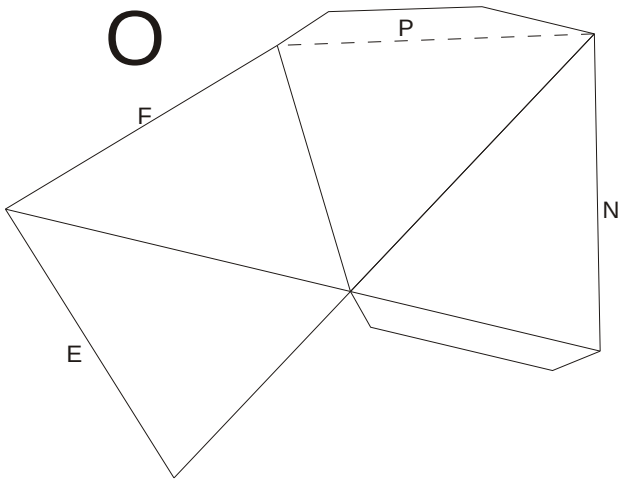


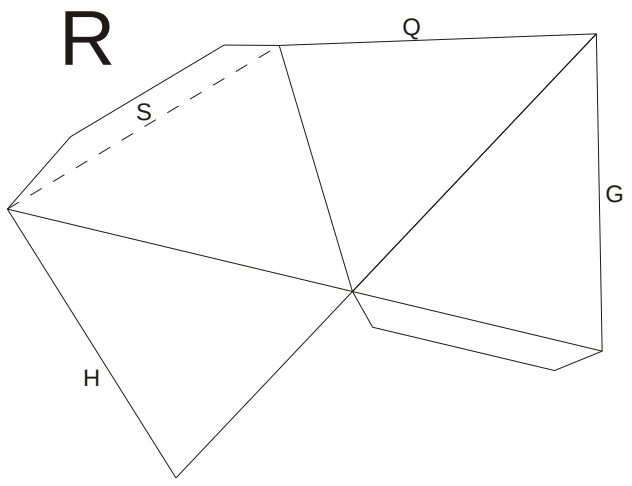
Compound of five Octahedra

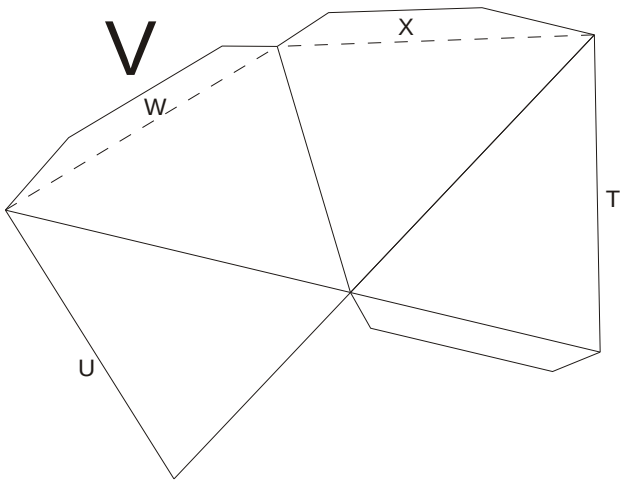
Color 3

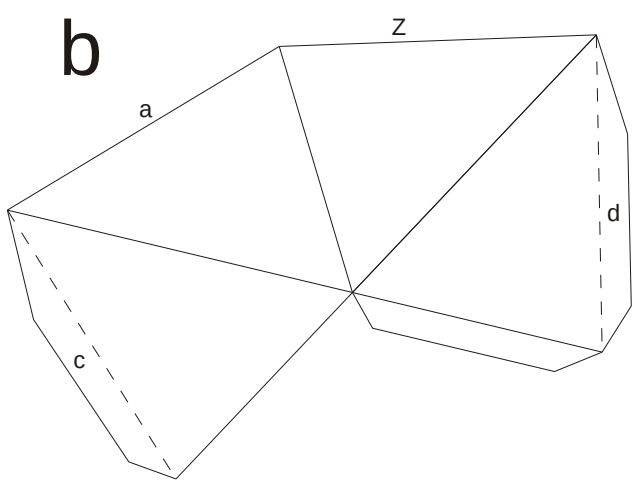






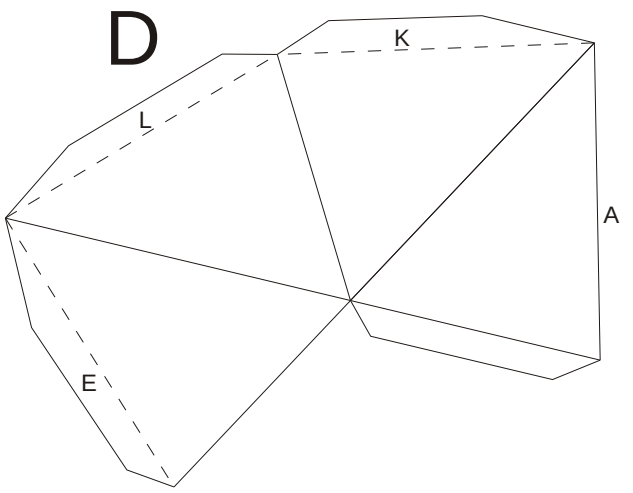


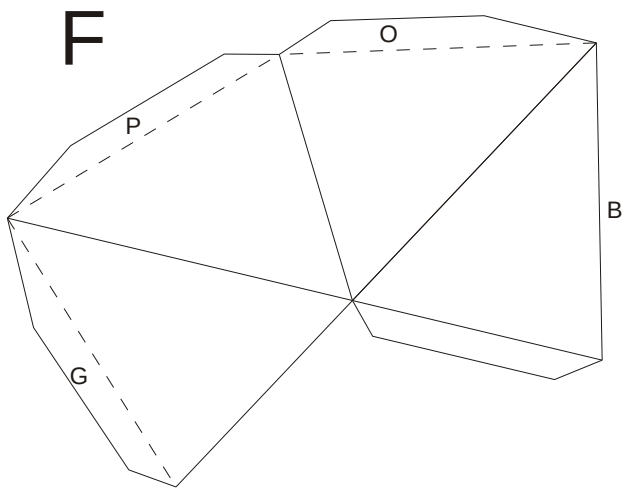


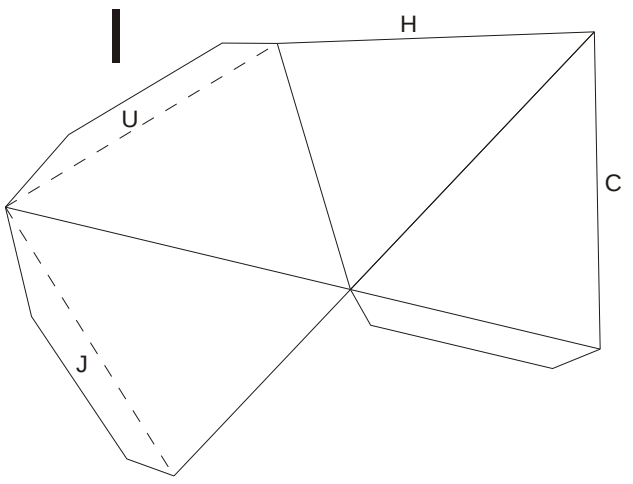


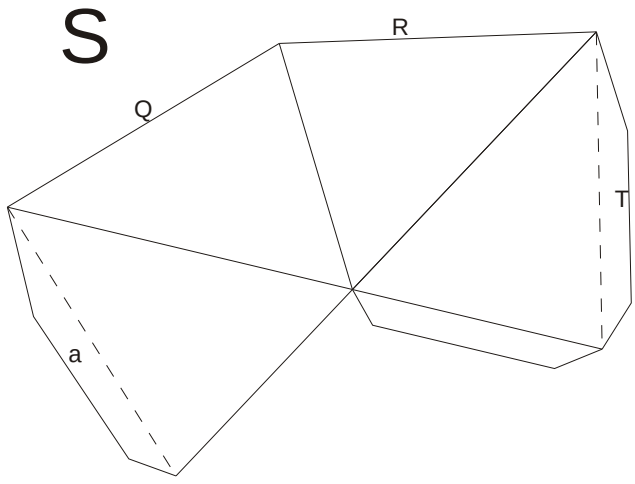
Compound of five Octahedra

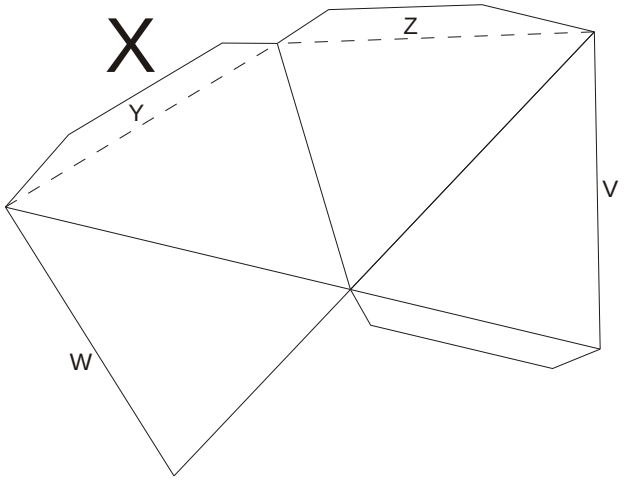
Color 4

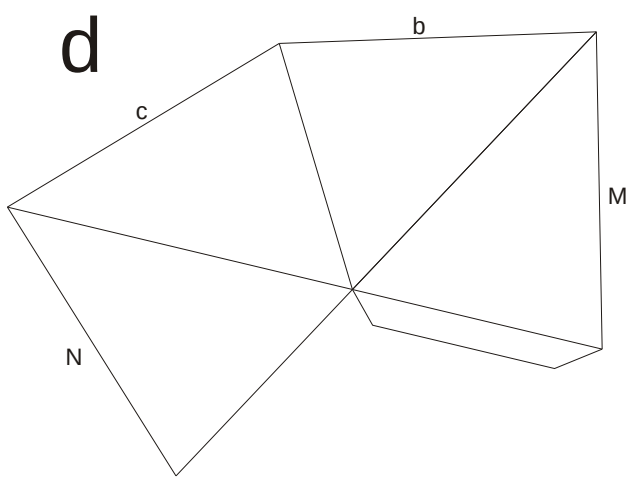






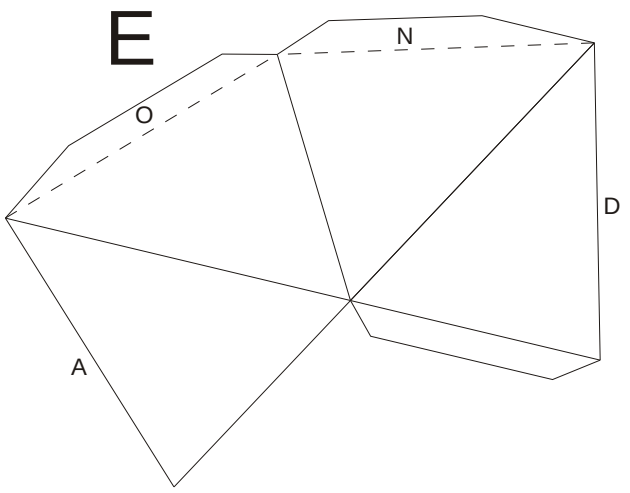


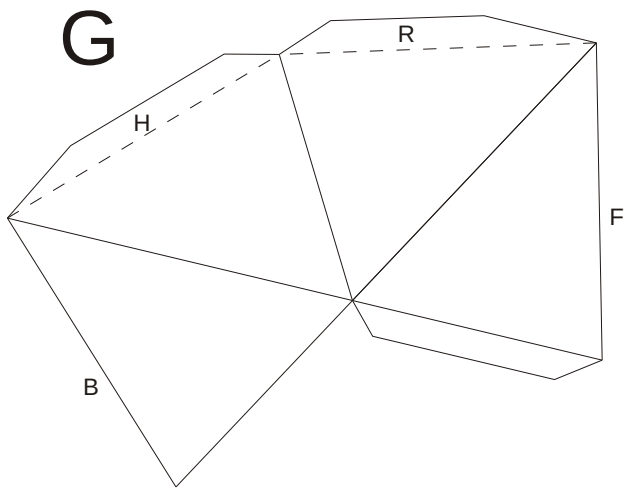


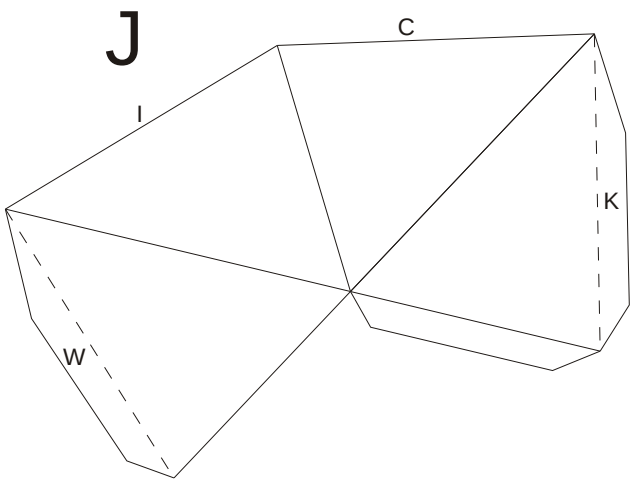


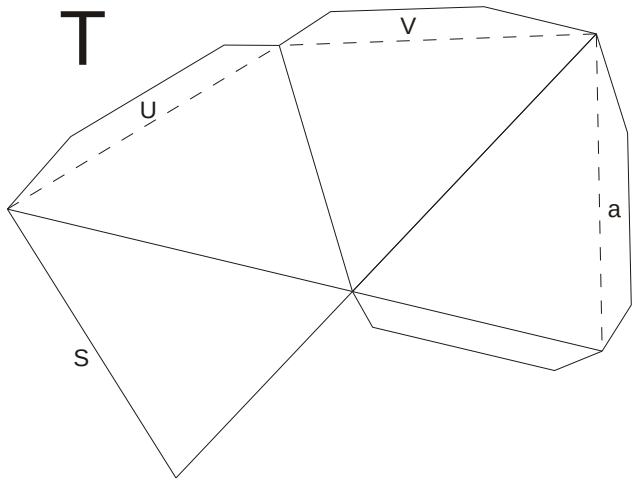
Compound of five Octahedra

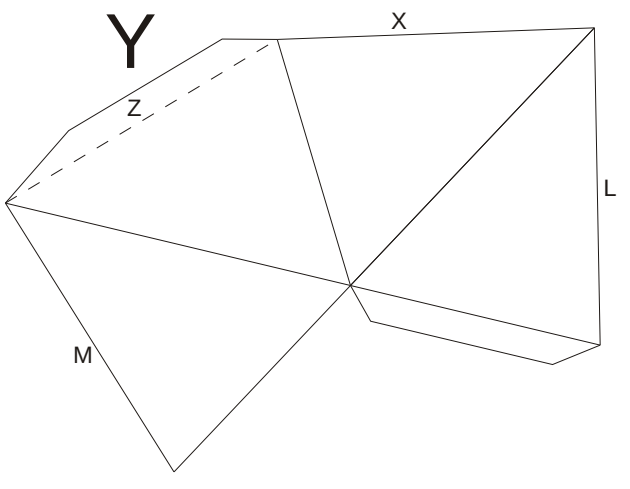
Color 5

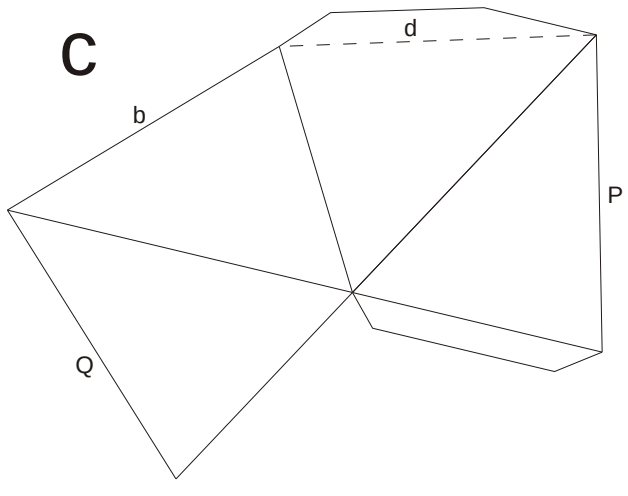




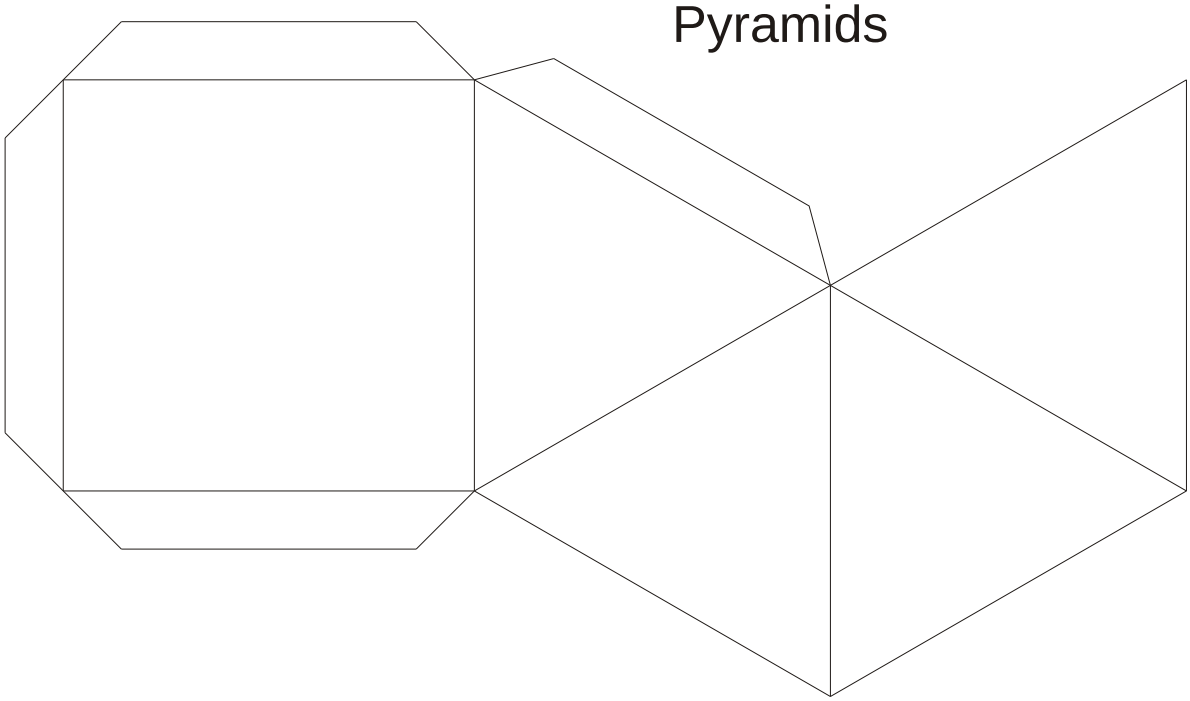


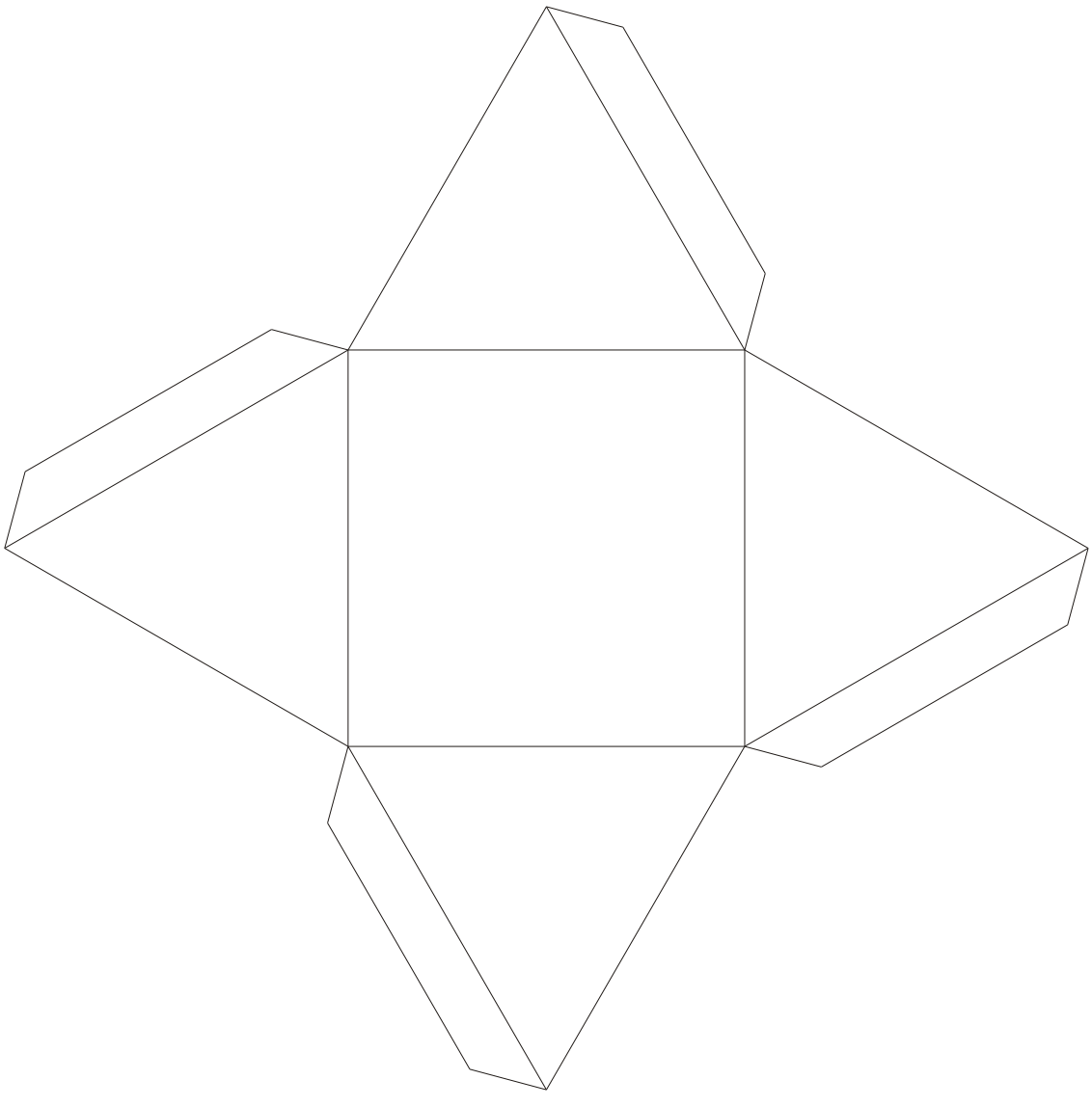


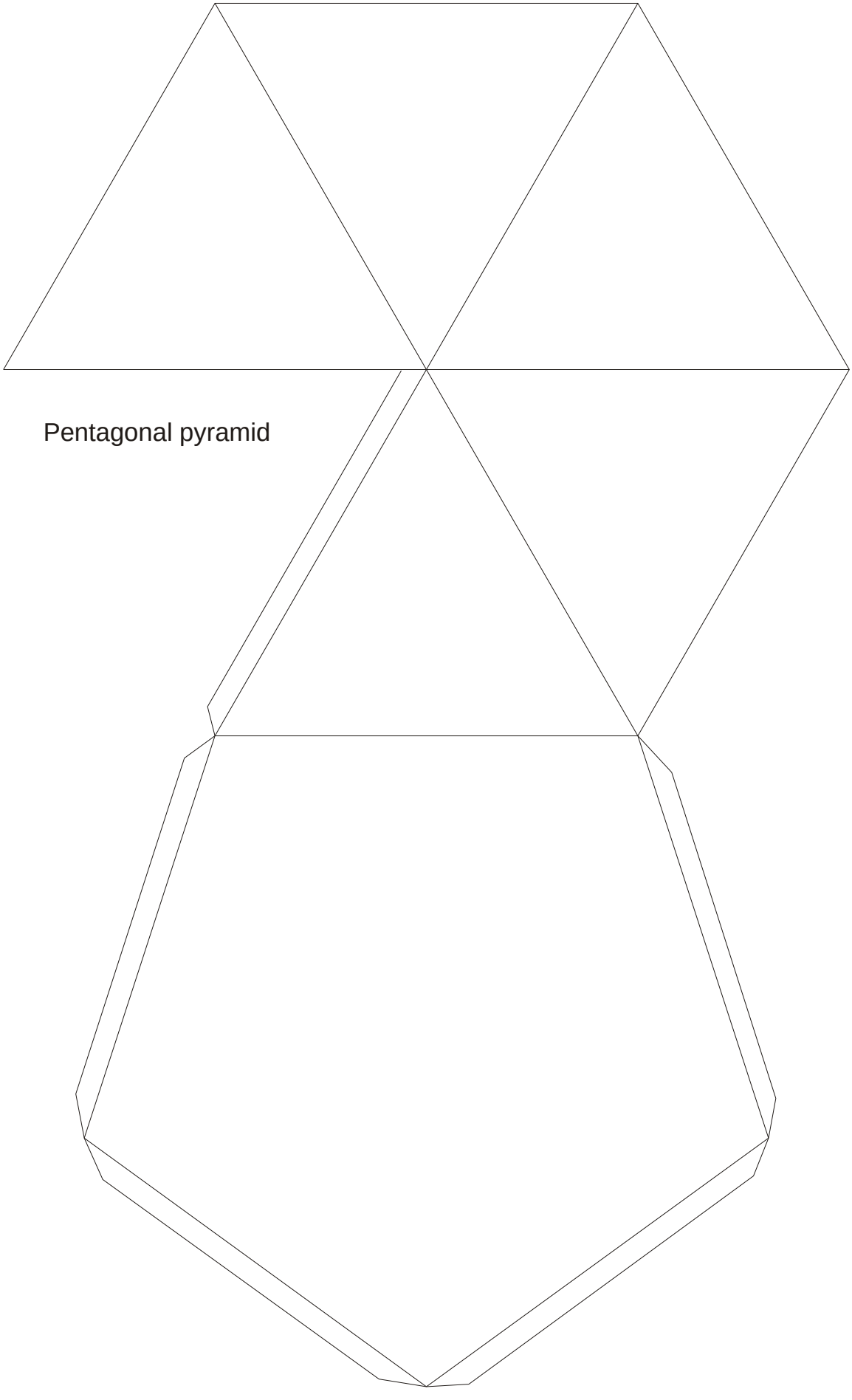




Pyramids

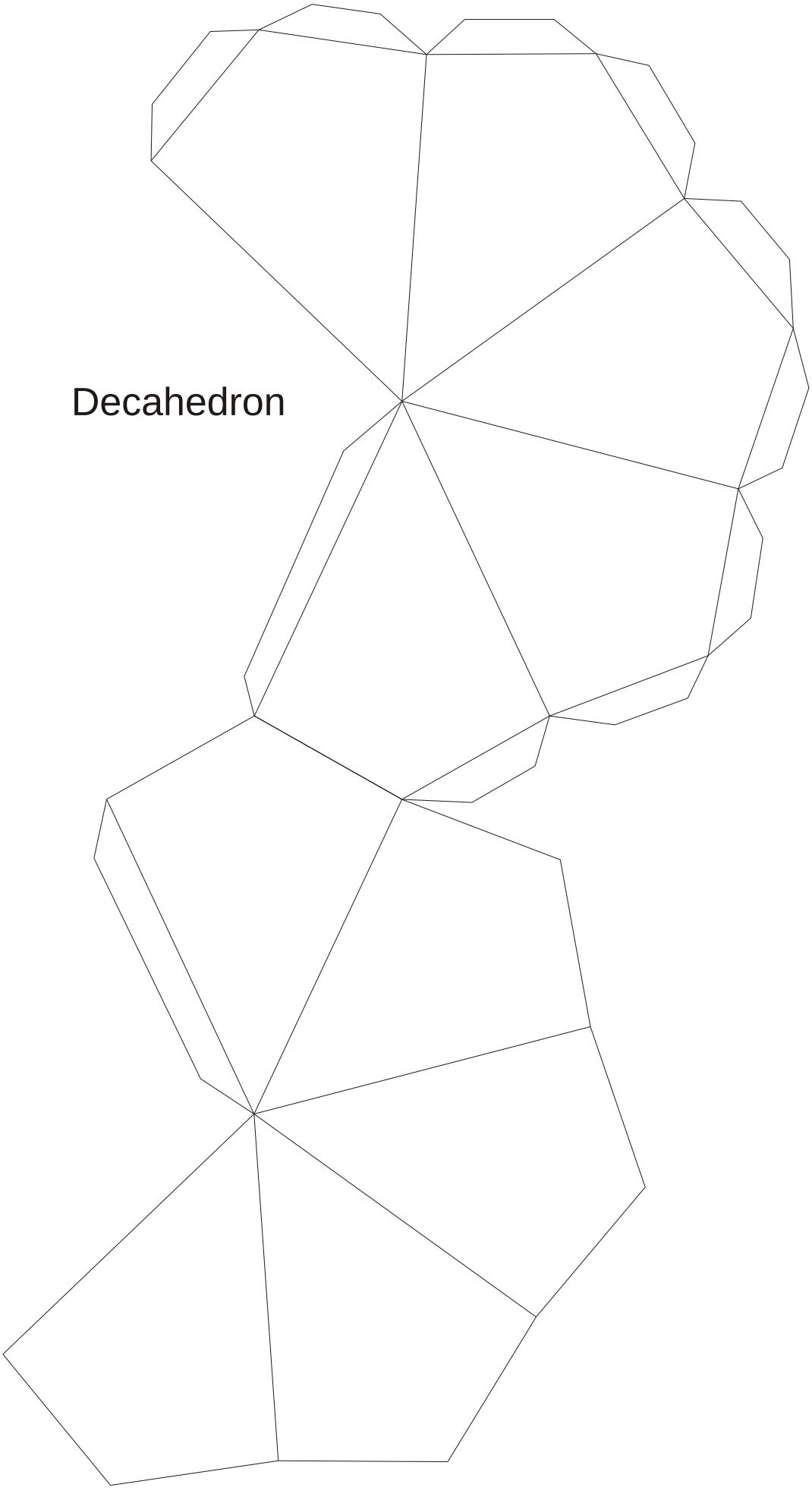




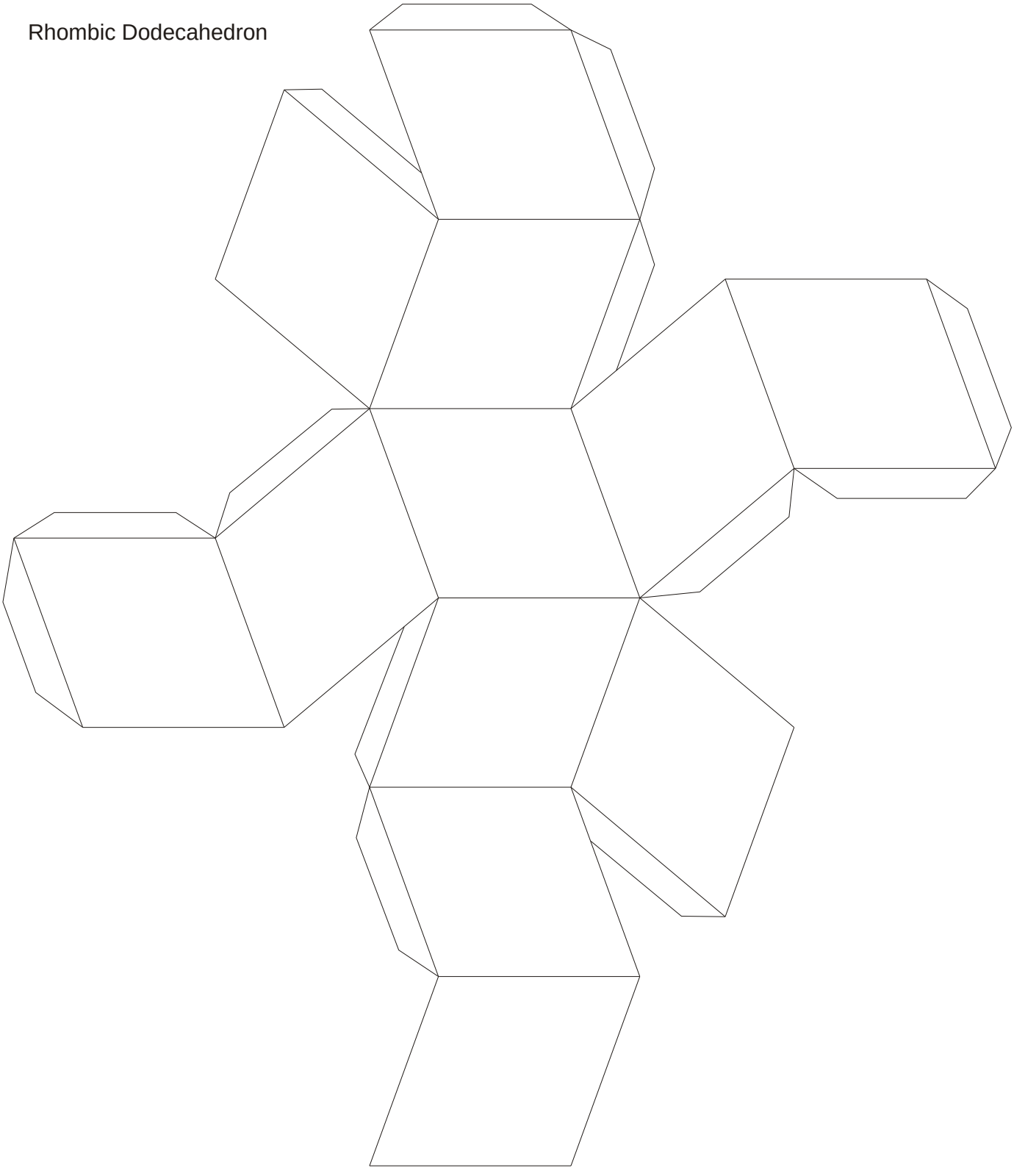


Pentagonal pyramid

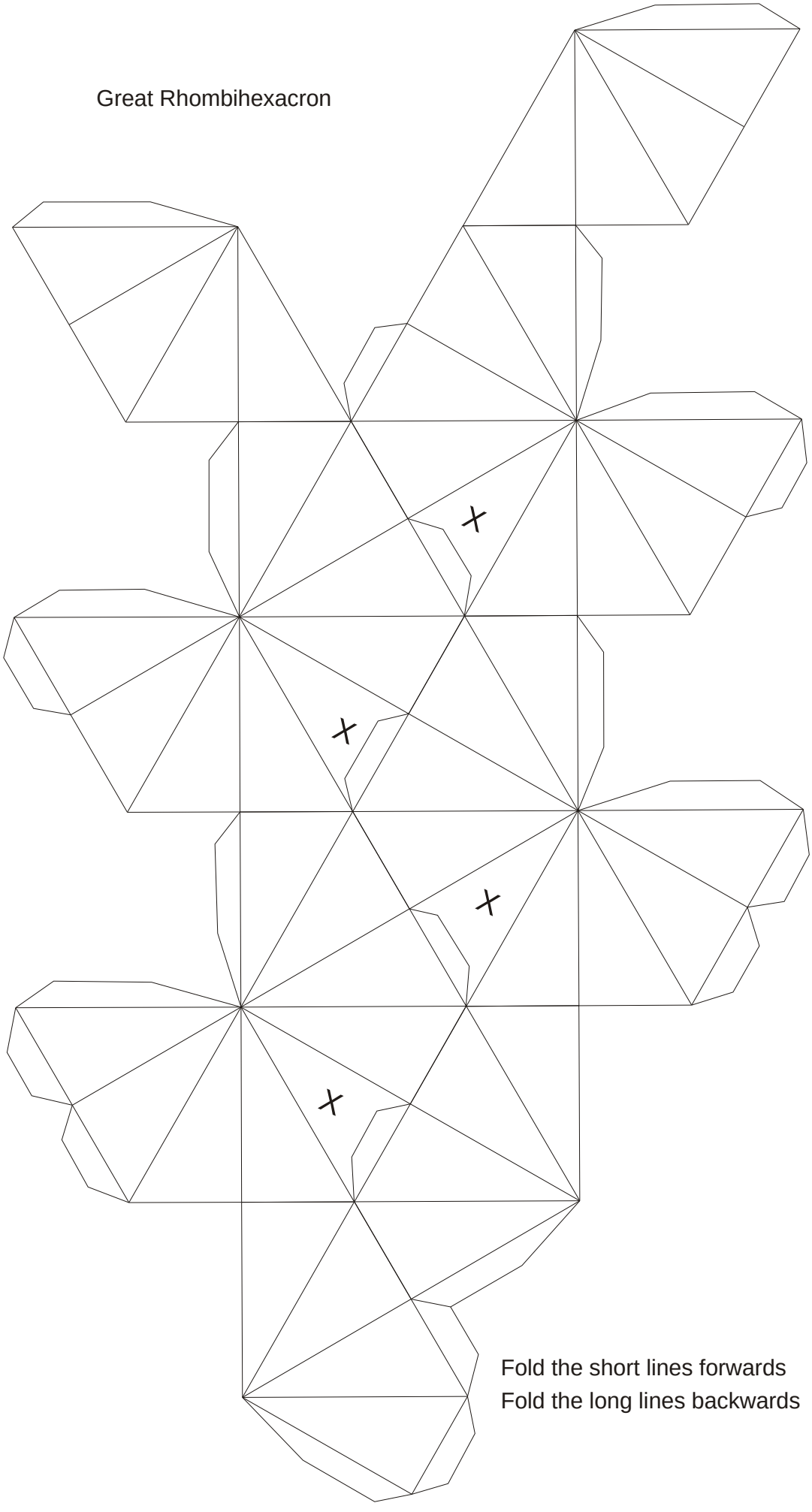
Decahedron



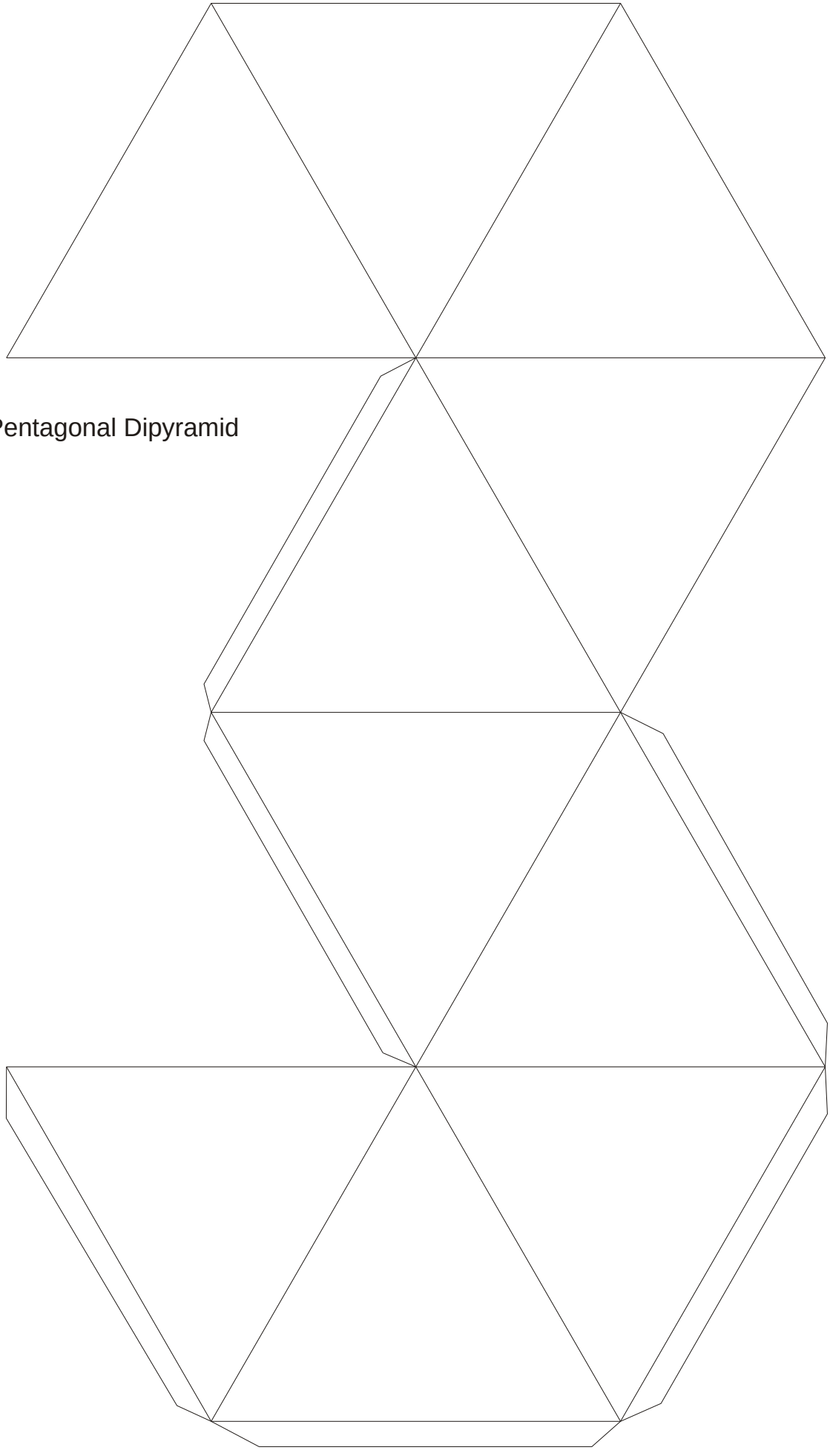
Rhombic Dodecahedron



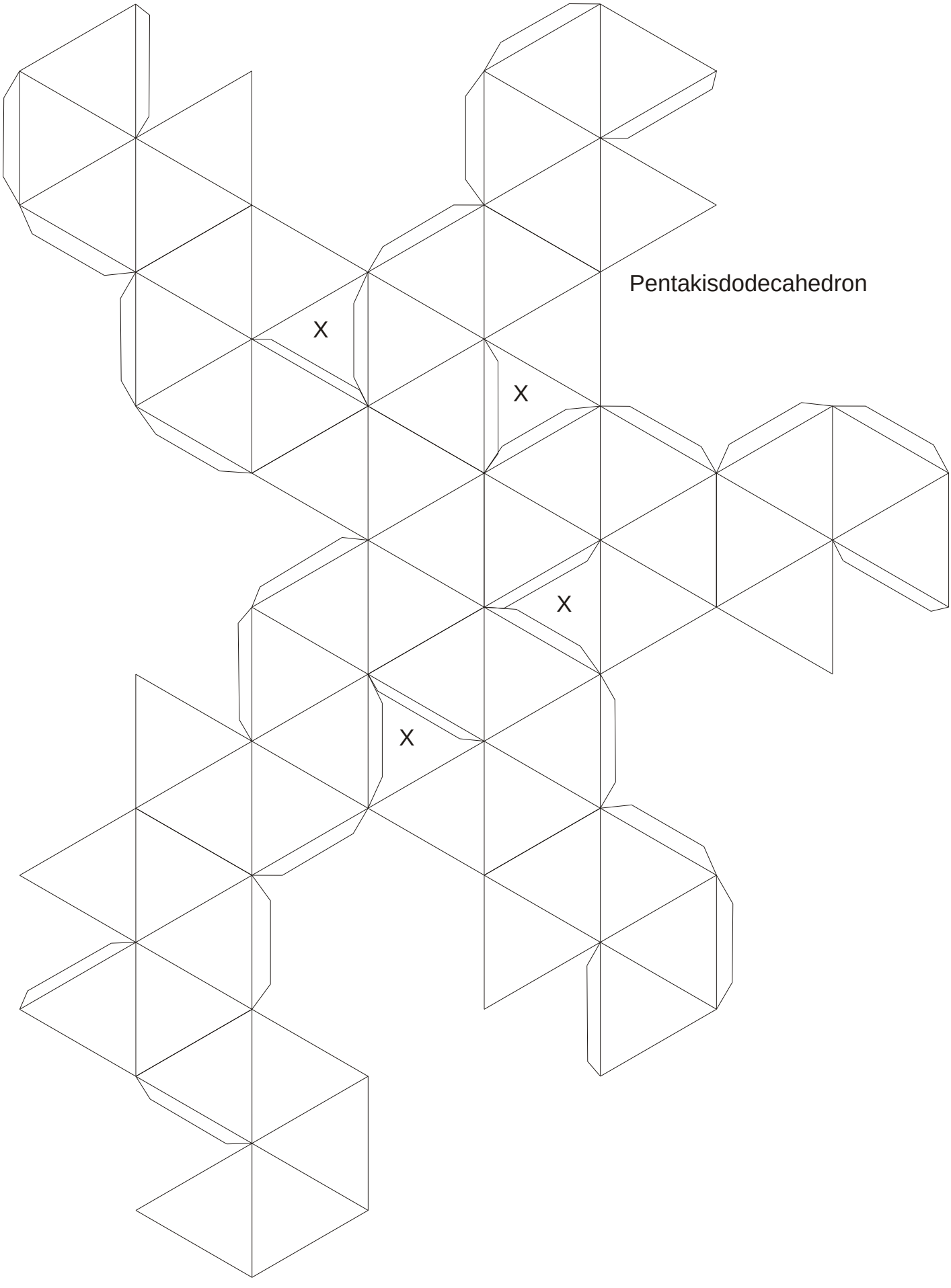
Great Rhombihexacron

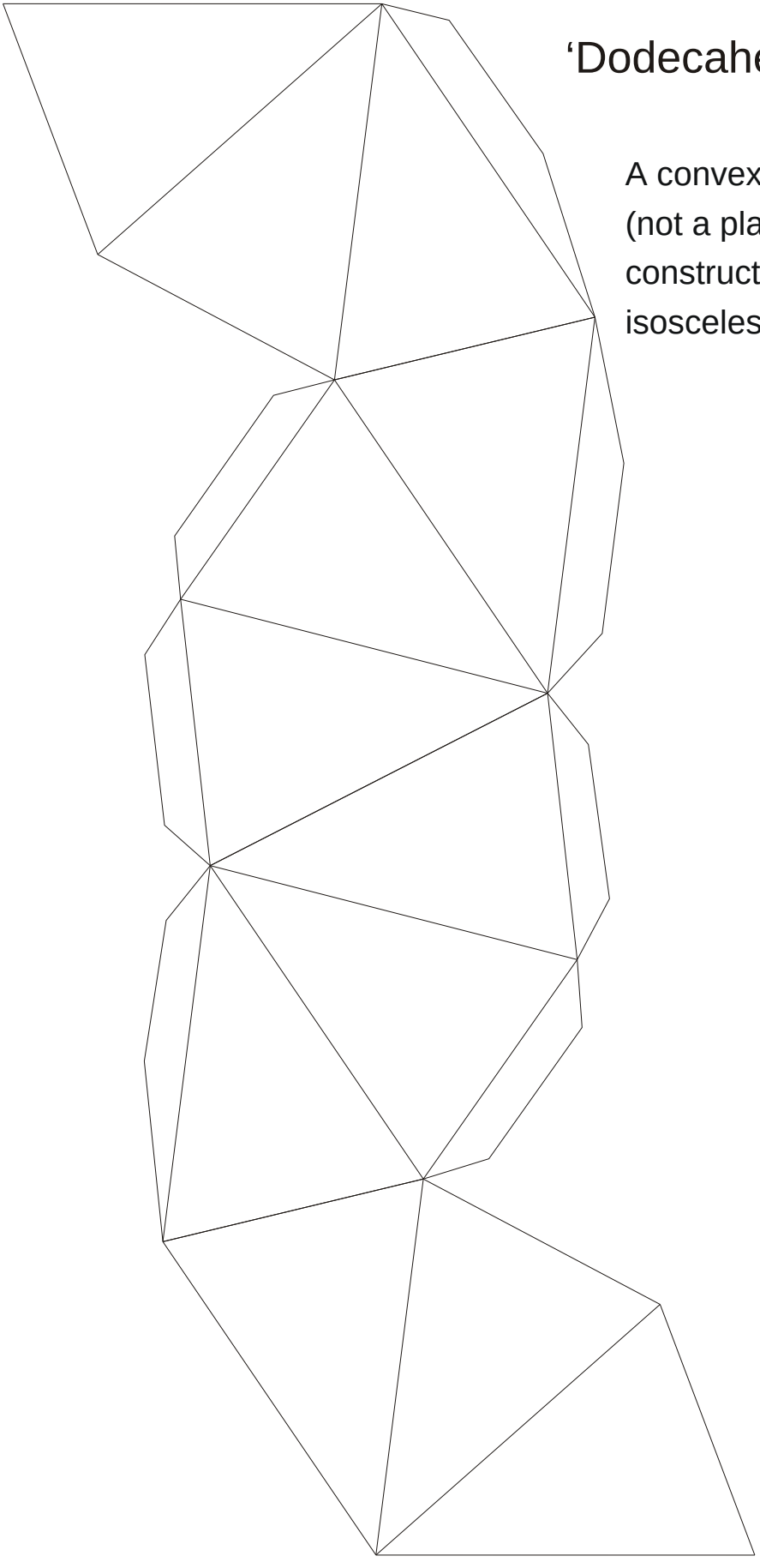


Fold the short lines forwards
Fold the long lines backwards



Pentagonal Dipyramid

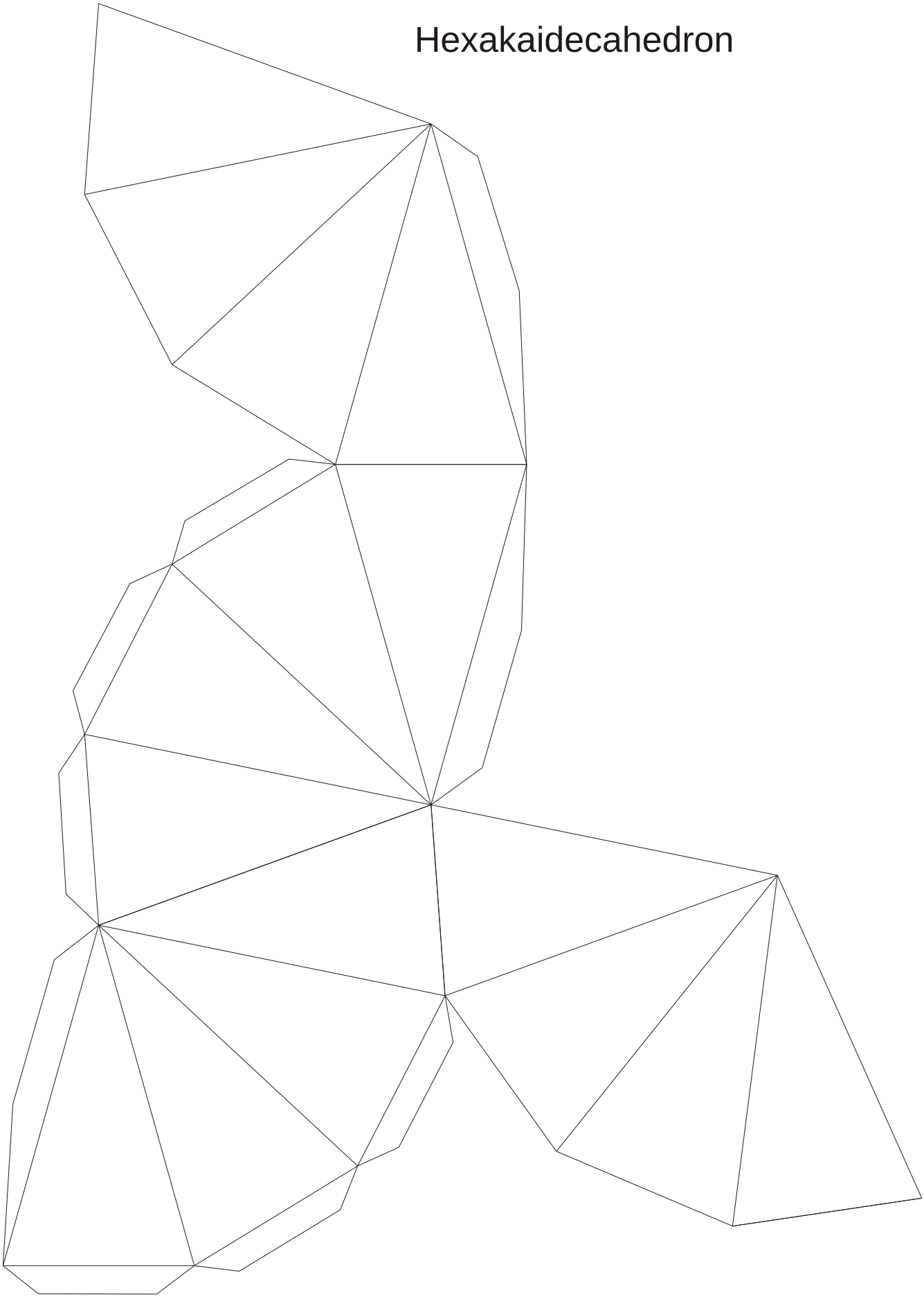

Pentakisdodecahedron
X
X
X
X



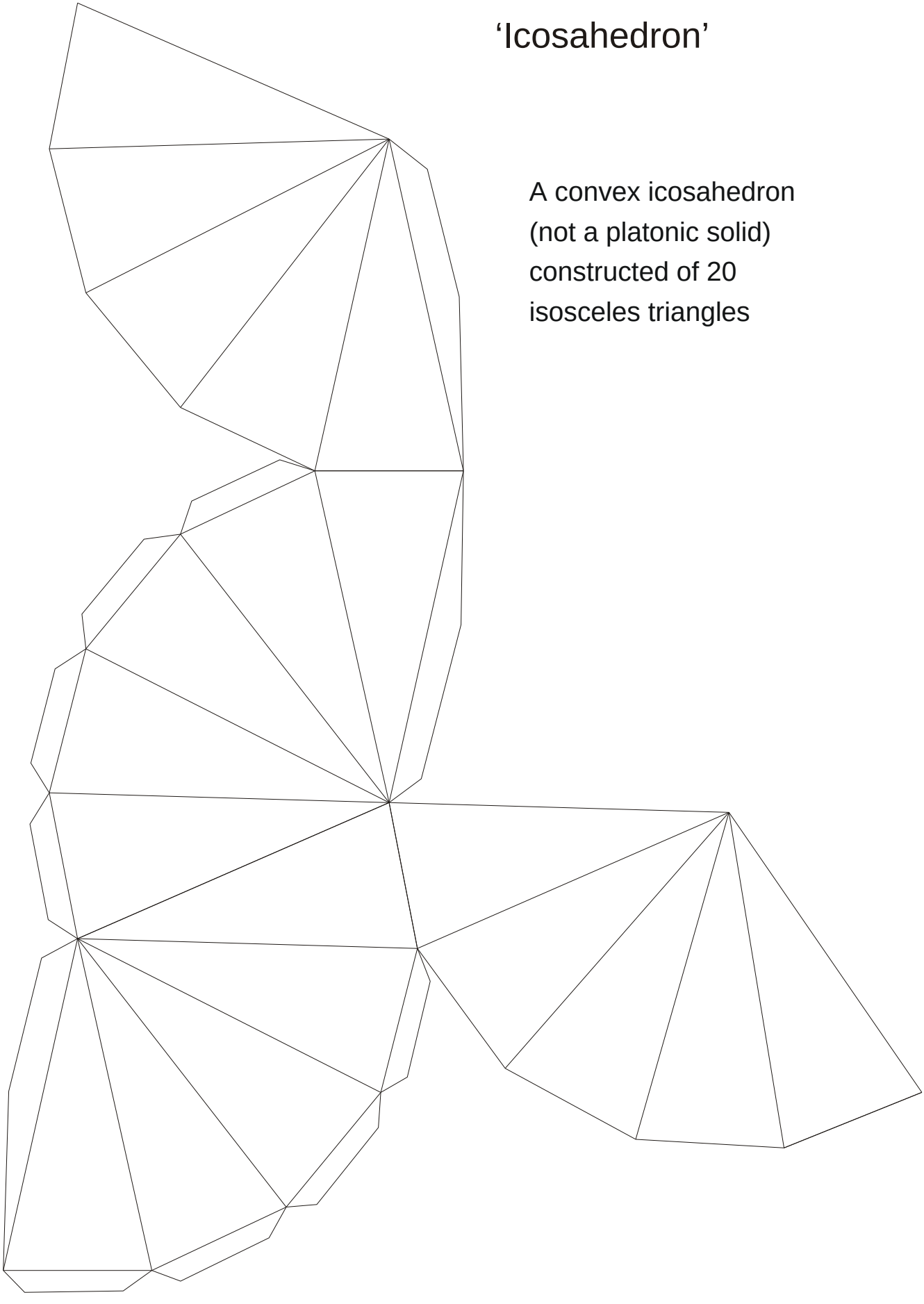
‘Dodecahedron’

A convex dodecahedron (not a platonic solid) constructed of 12 isosceles triangles

Hexakaidecahedron

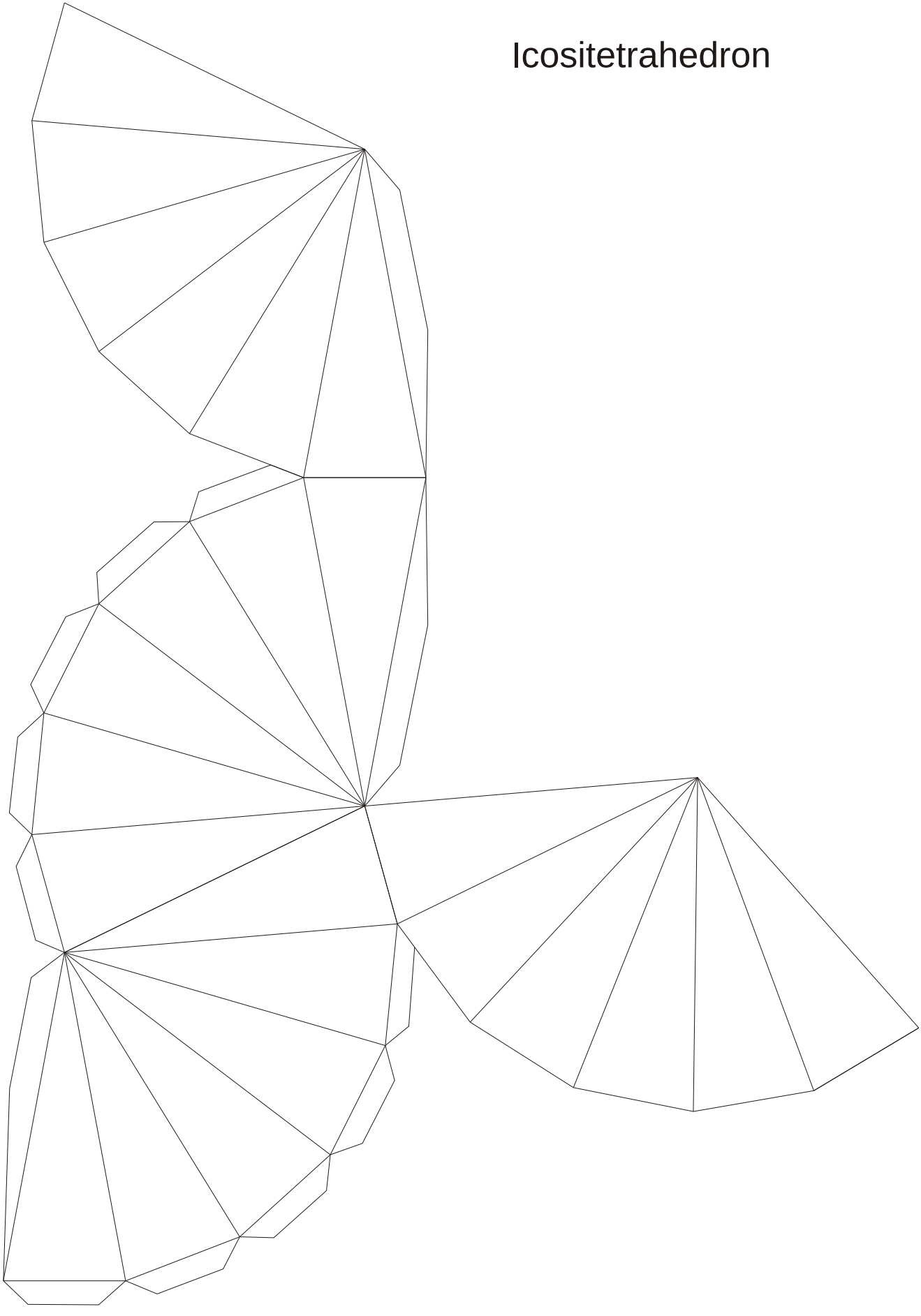


‘Icosahedron’

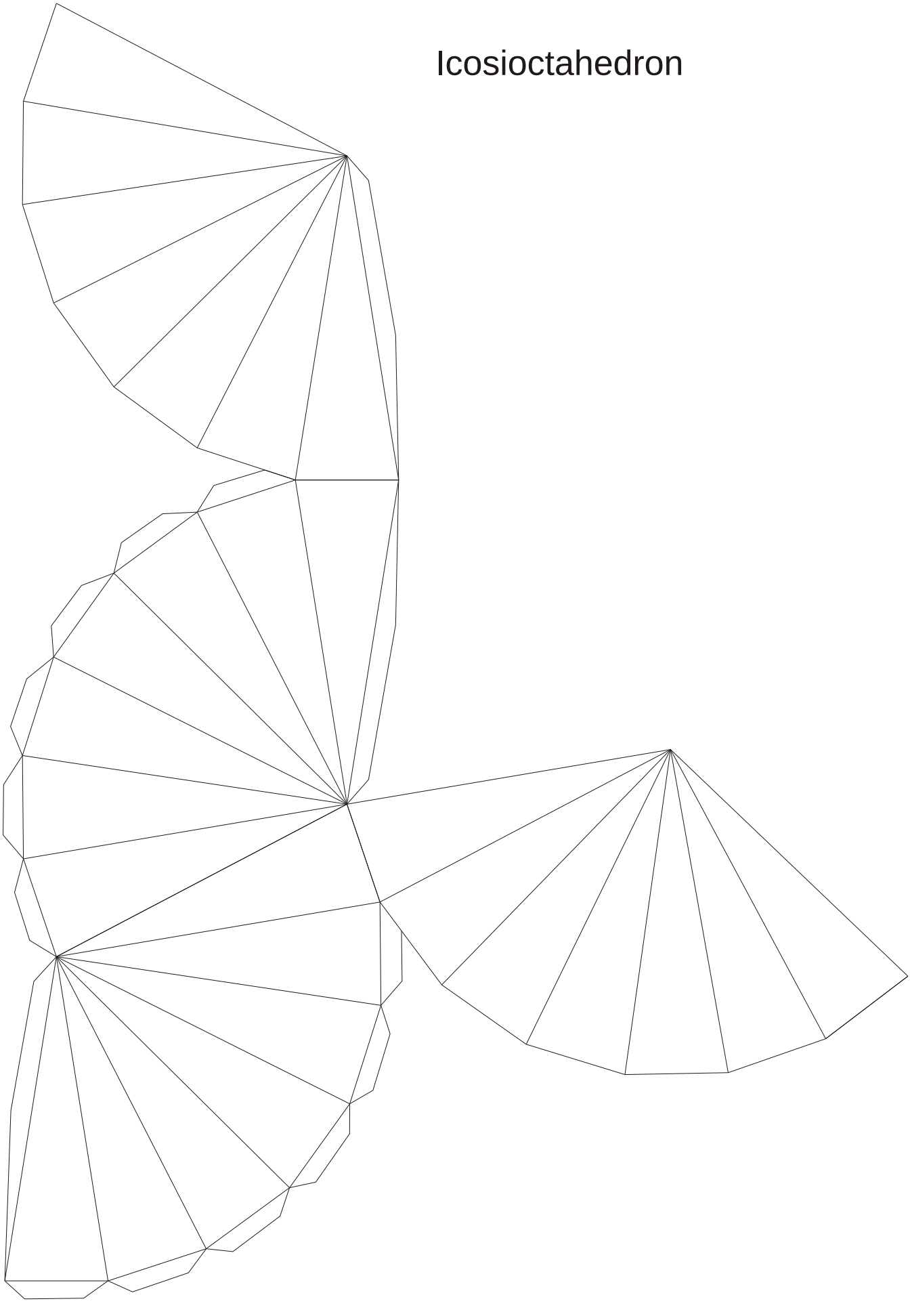


A convex icosahedron (not a platonic solid) constructed of 20 isosceles triangles

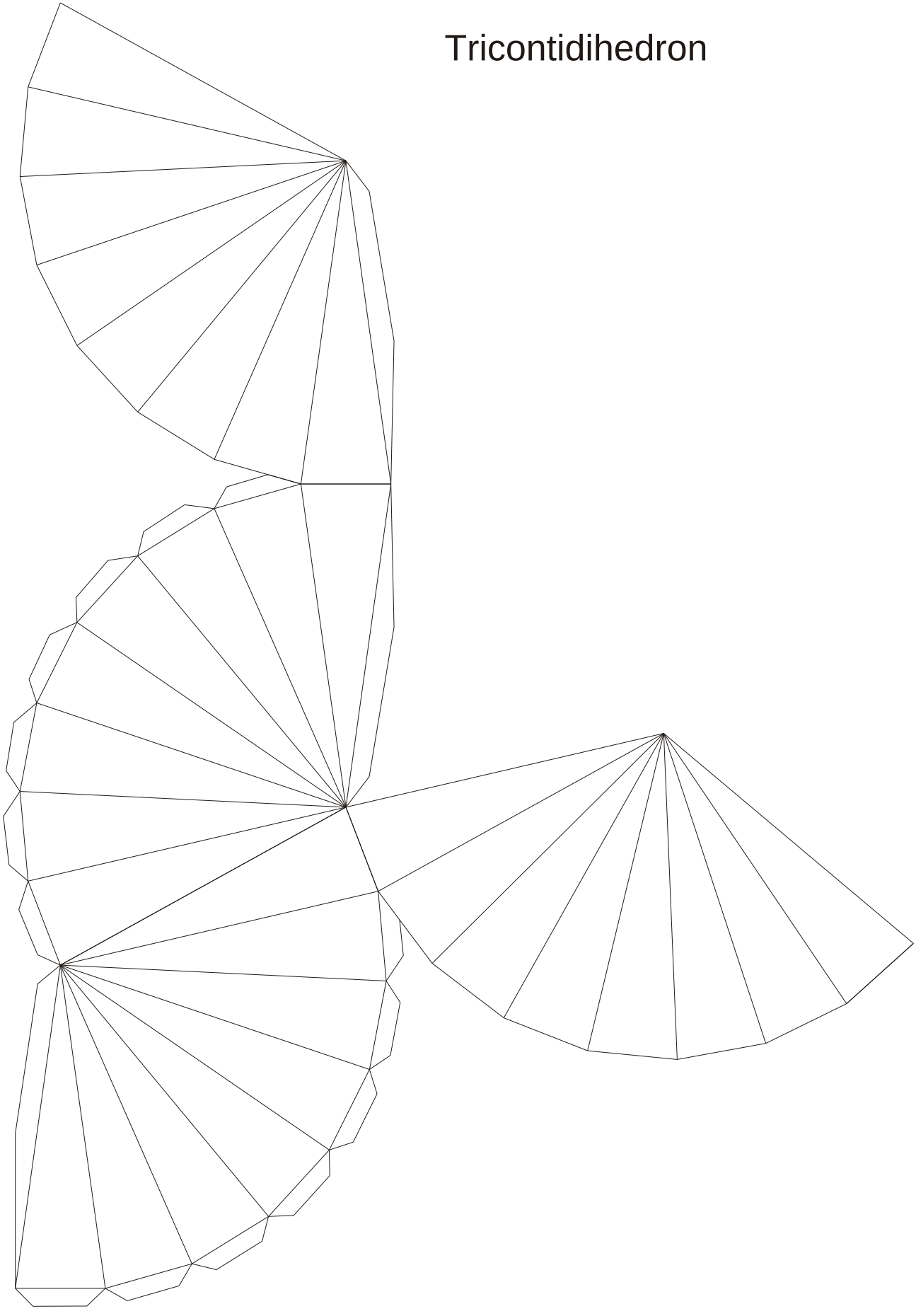
Icositetrahedron



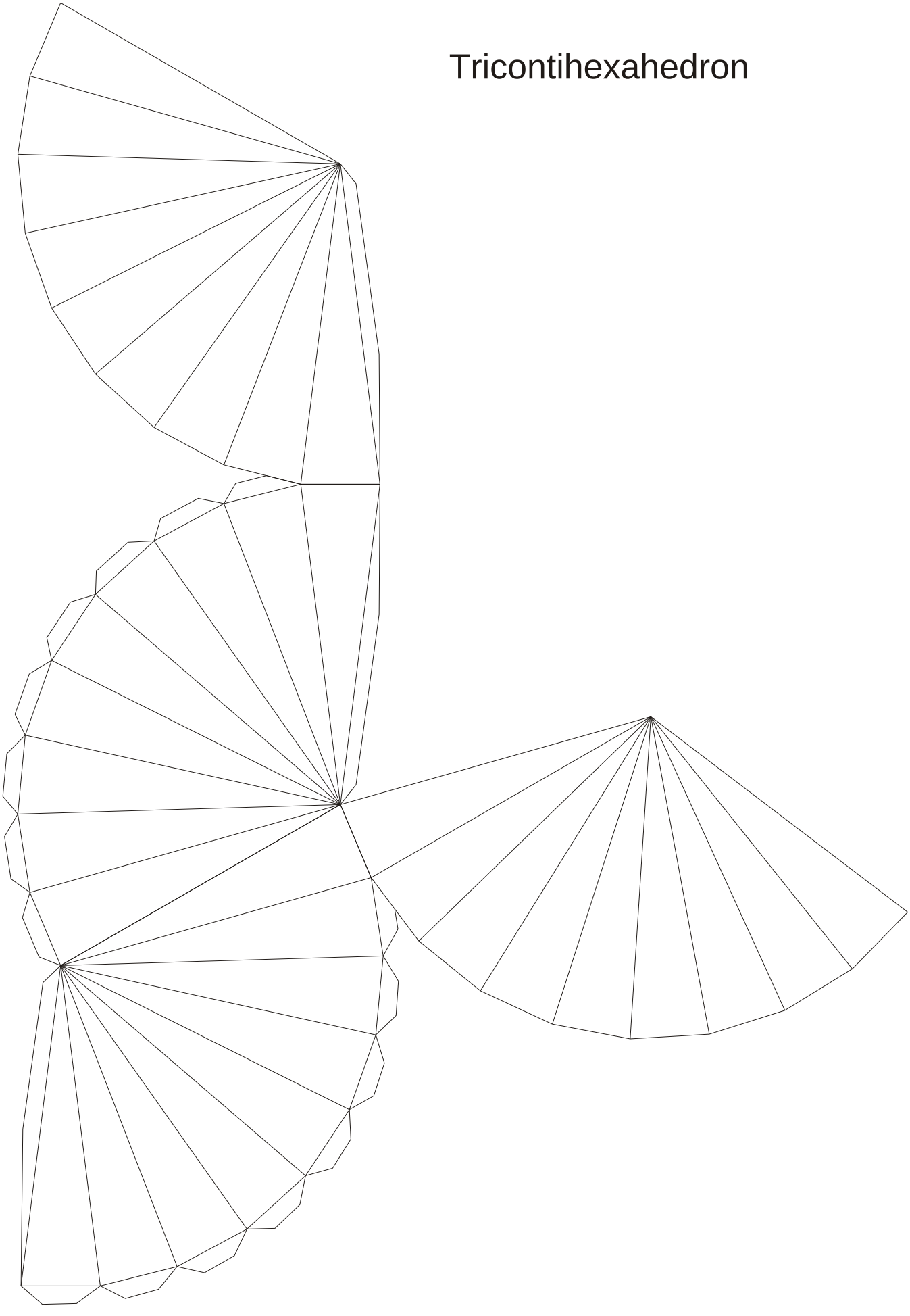
Icosioctahedron



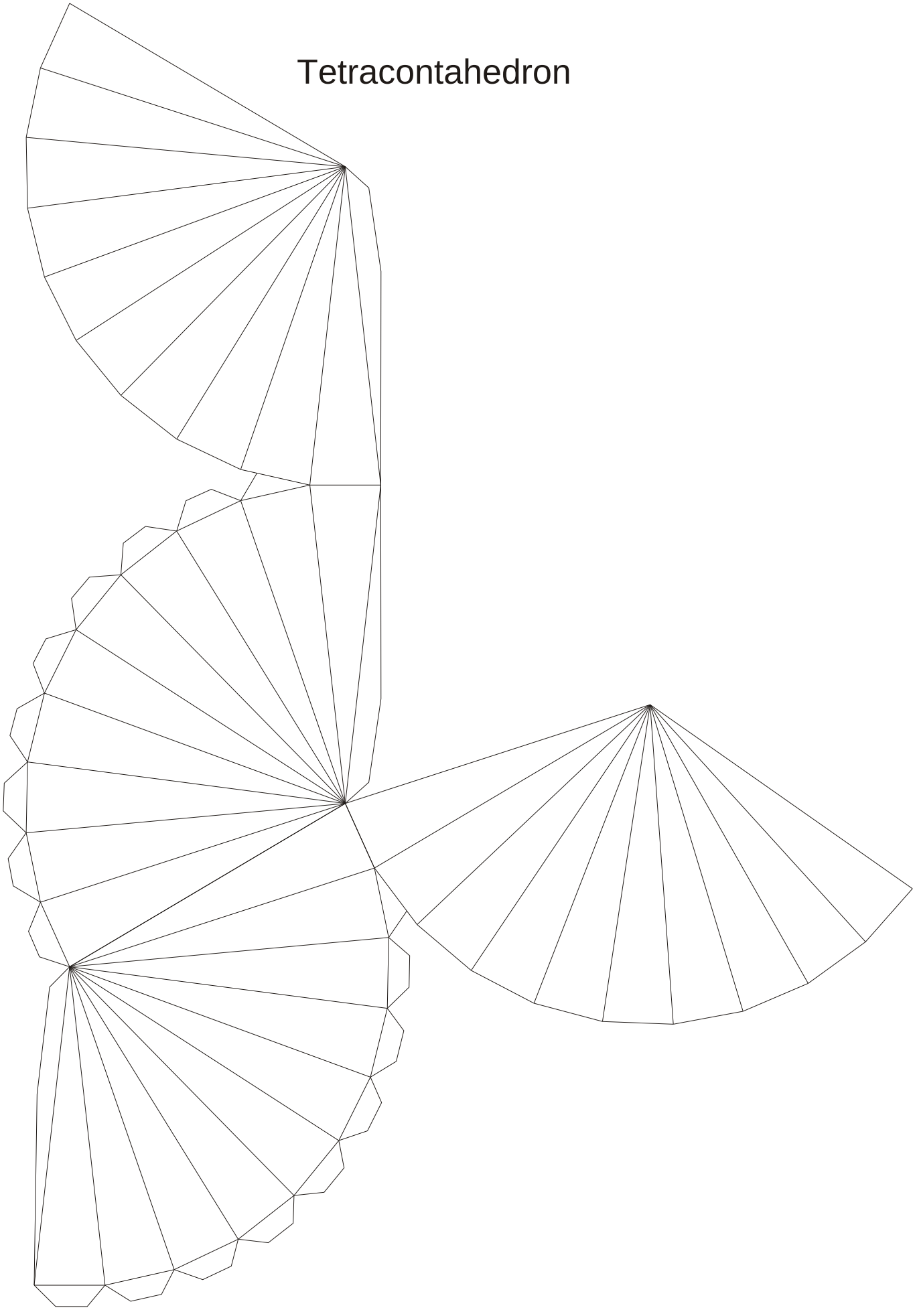
Tricontidihedron



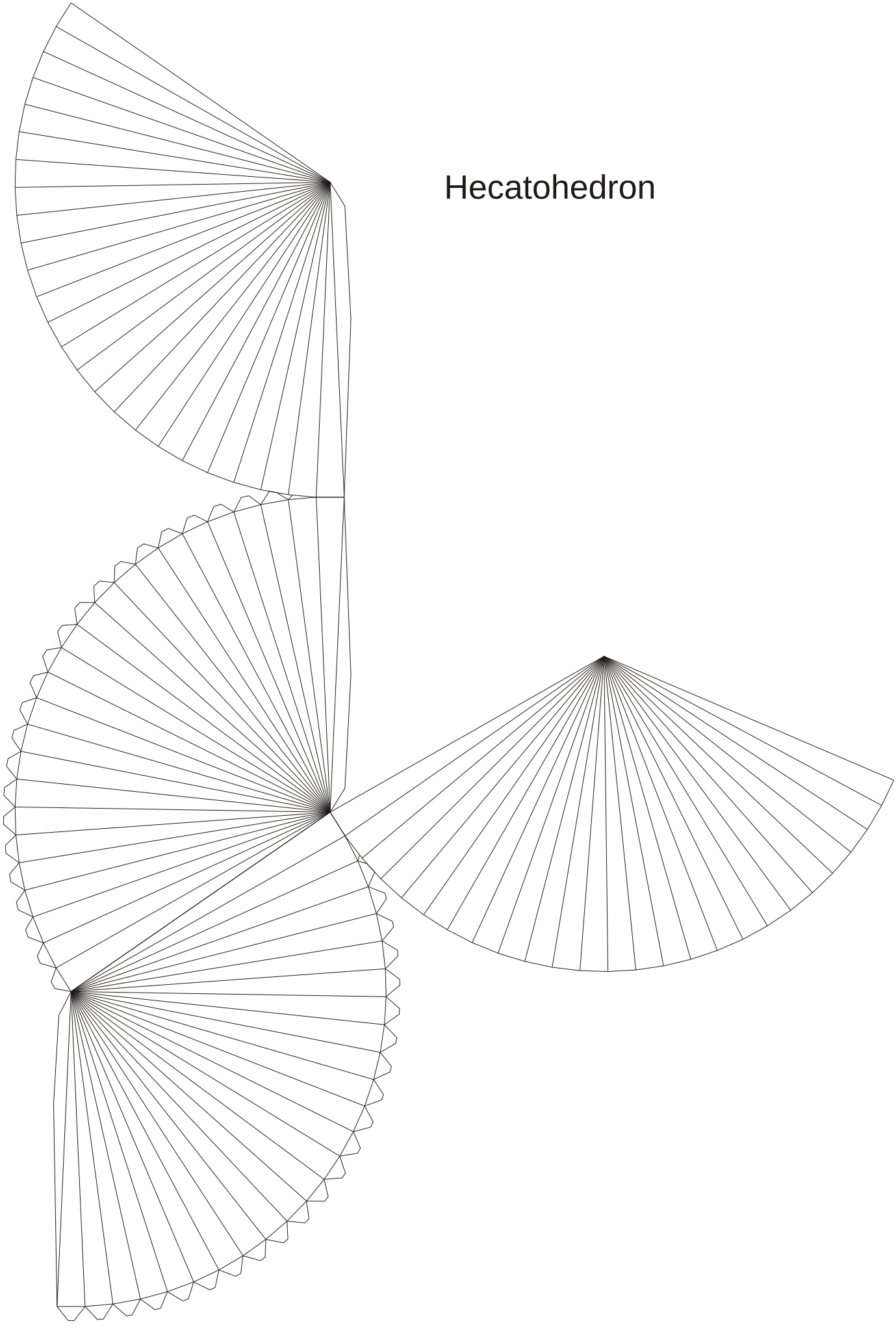
Tricontihexahedron



Tetracontahedron

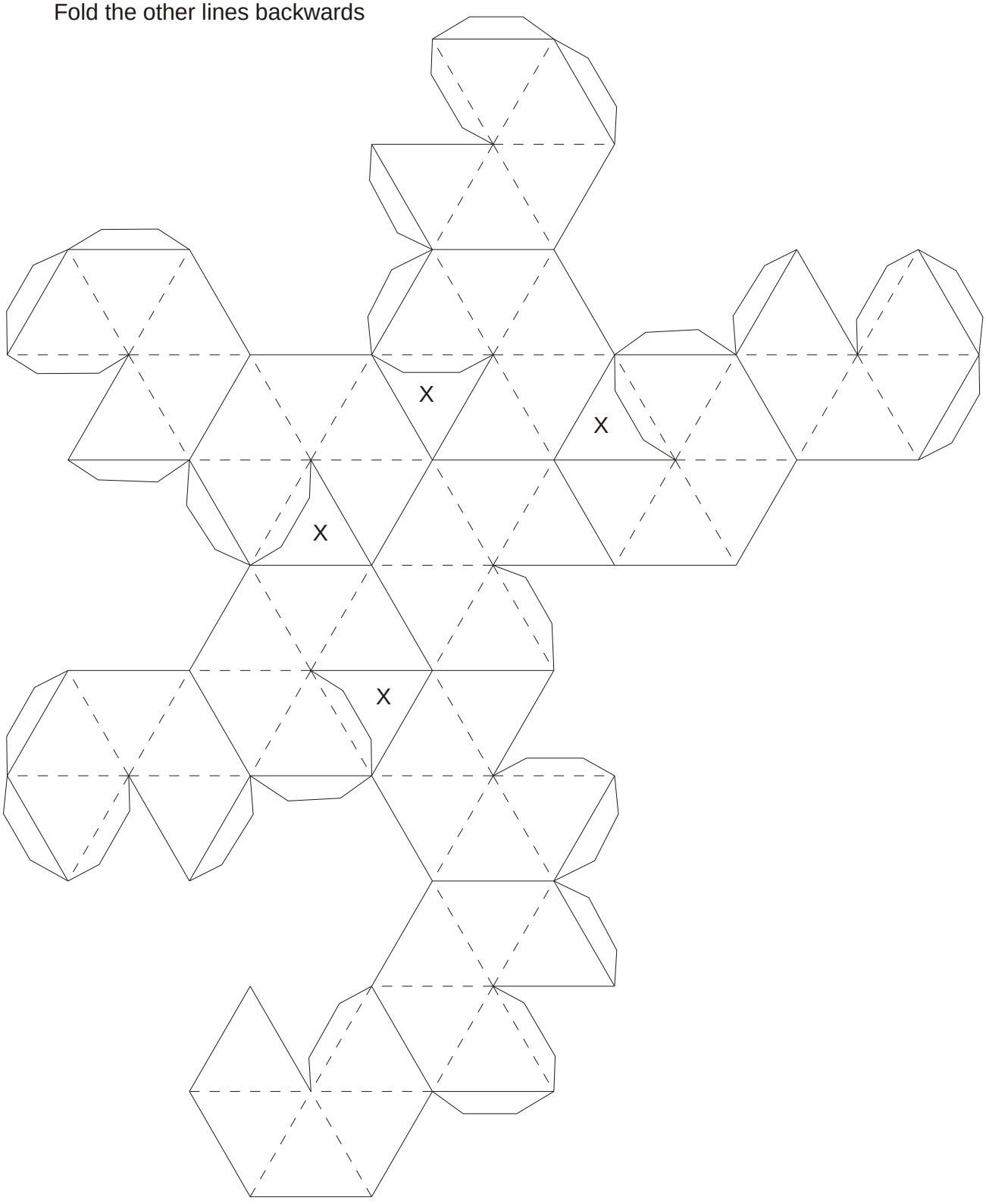


Hecatohedron



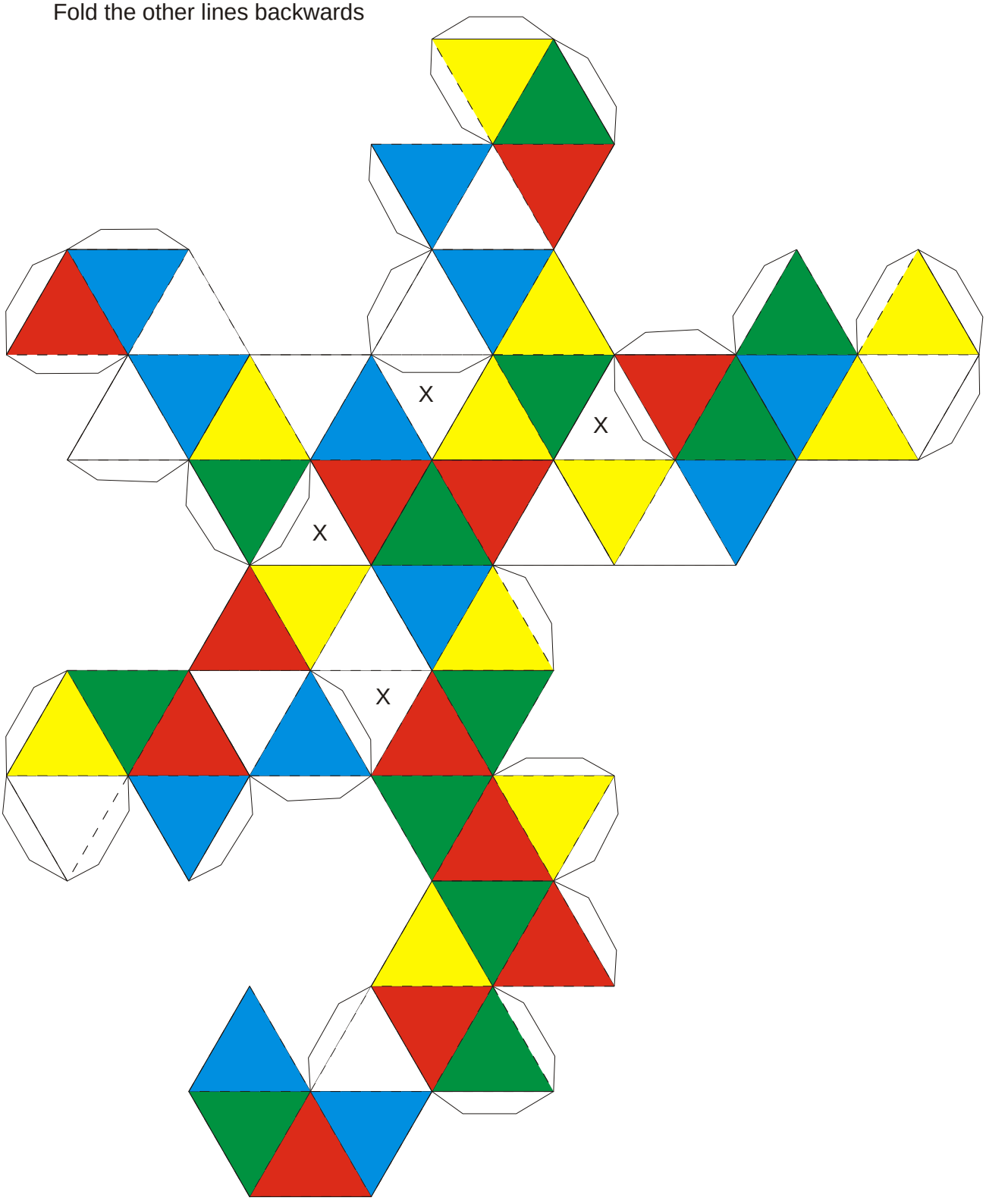
Third Stallation of the Icosahedron

Fold the dotted lines forwards
Fold the other lines backwards



Third Stallation of the Icosahedron

Fold the dotted lines forwards
Fold the other lines backwards



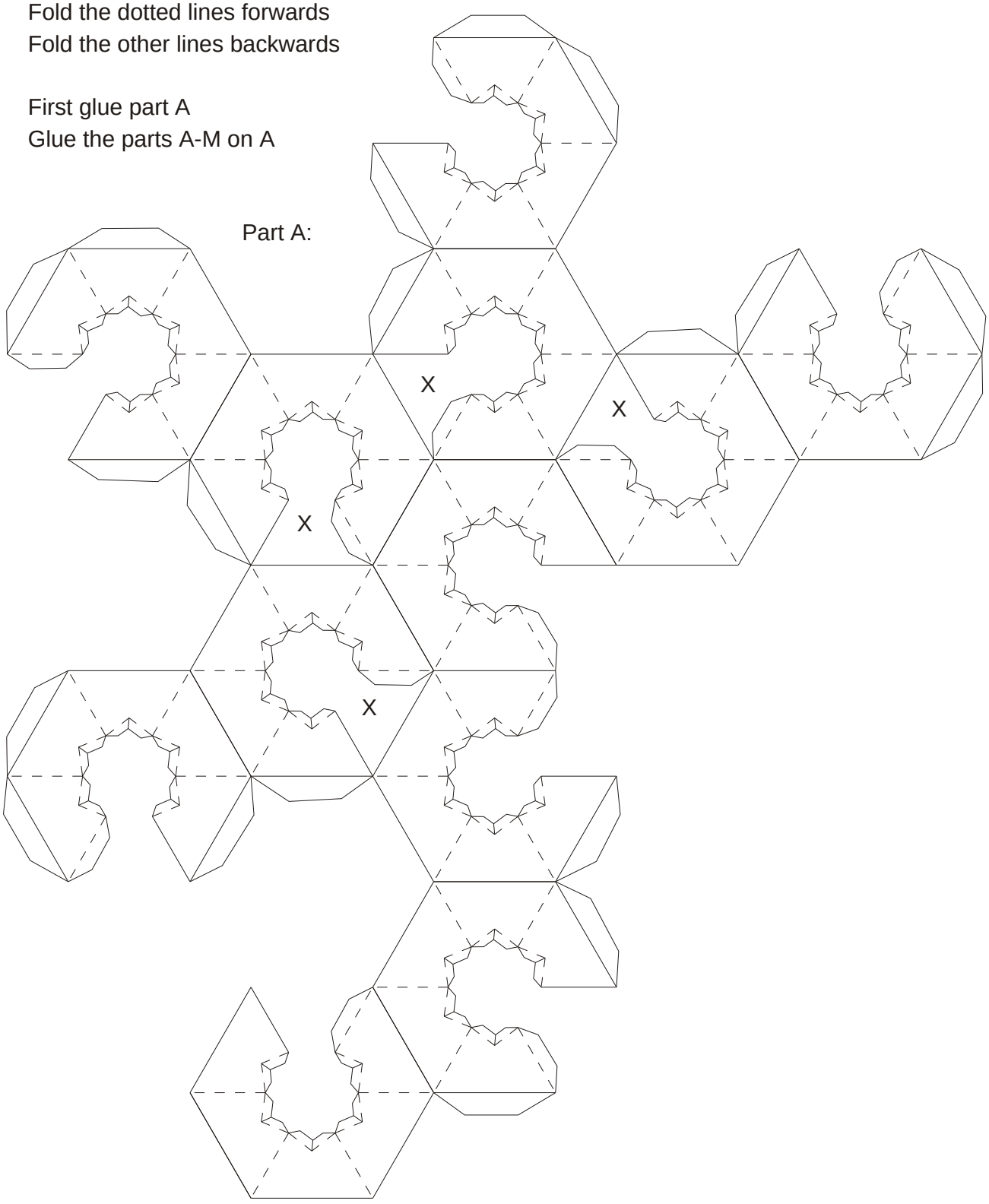
Sixth Stallation of the Icosahedron

(small version)

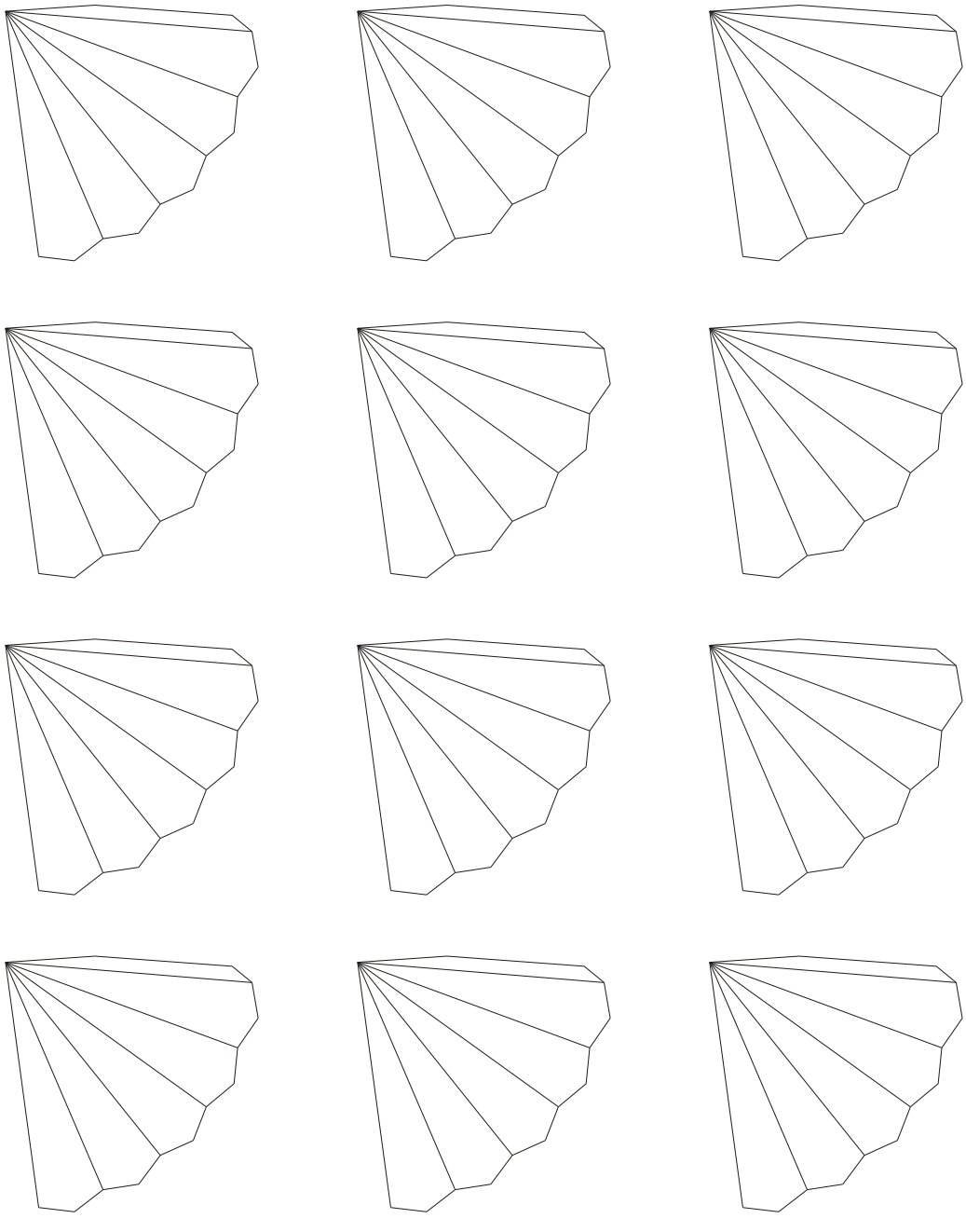
Fold the dotted lines forwards
Fold the other lines backwards

First glue part A
Glue the parts A-M on A

Part A:



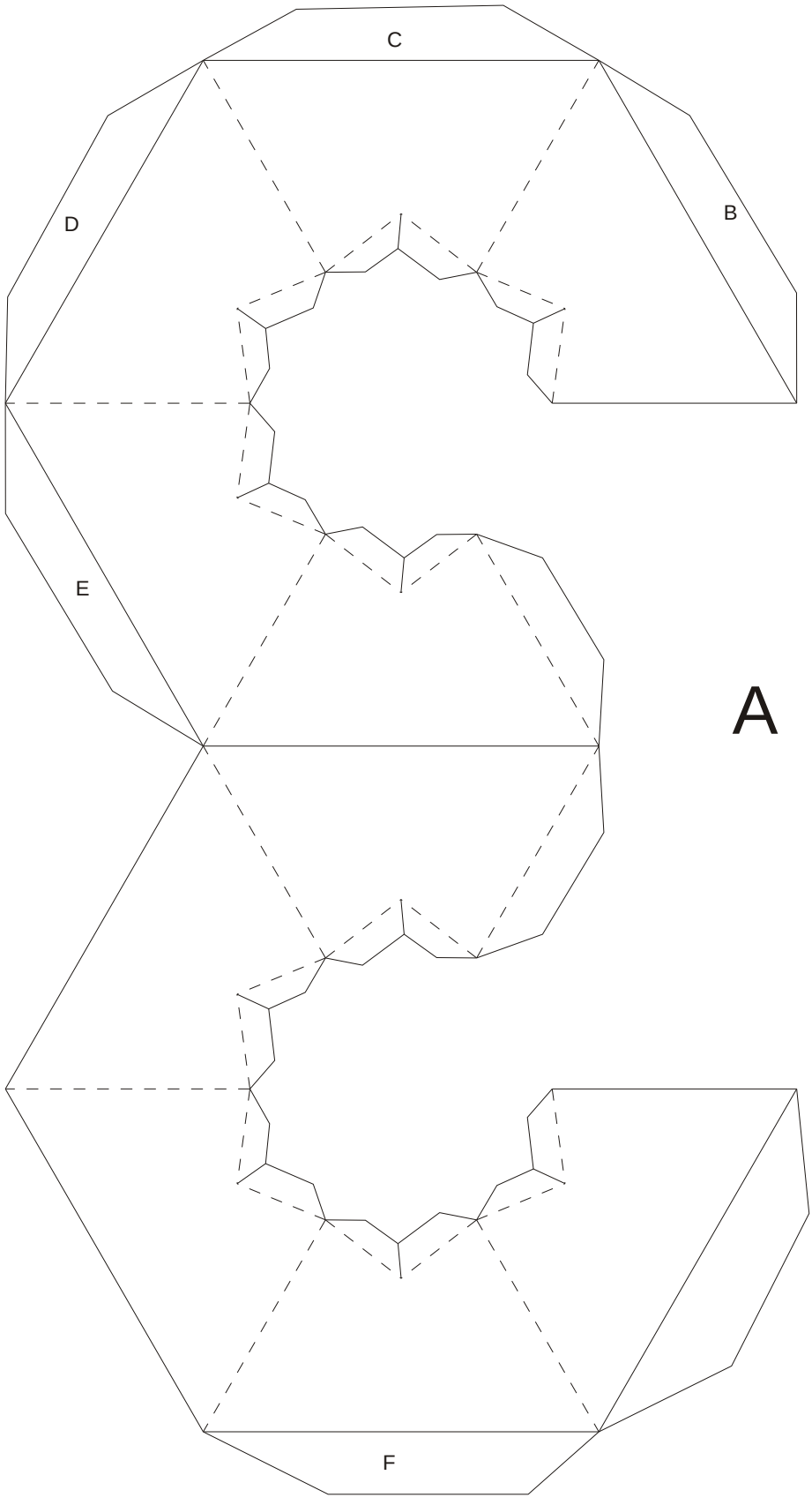
Parts B-M



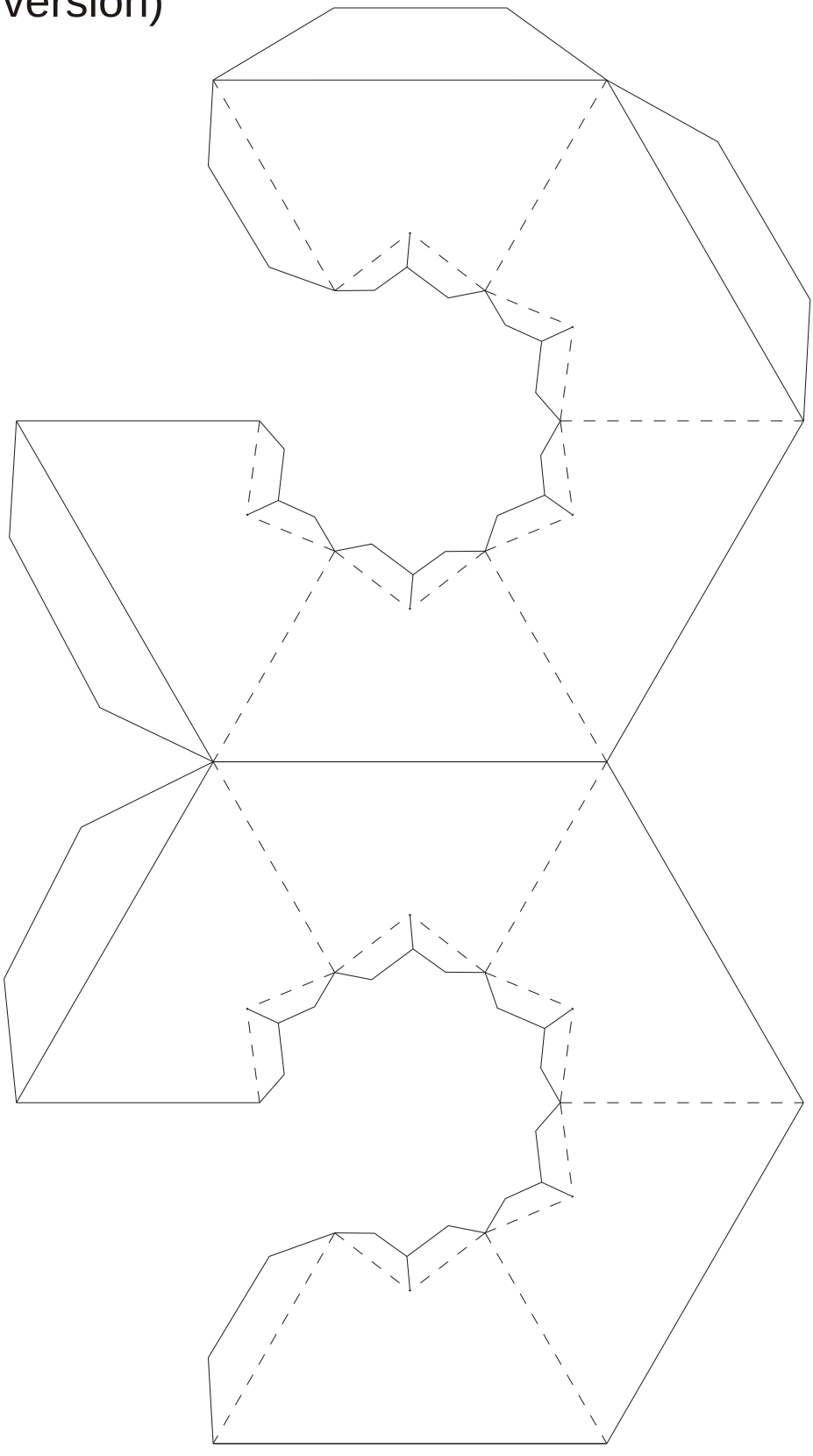
Sixth Stallation of the Icosahedron (large version)

First glue the parts A until F

Glue the 12 other parts on the ABCDEF



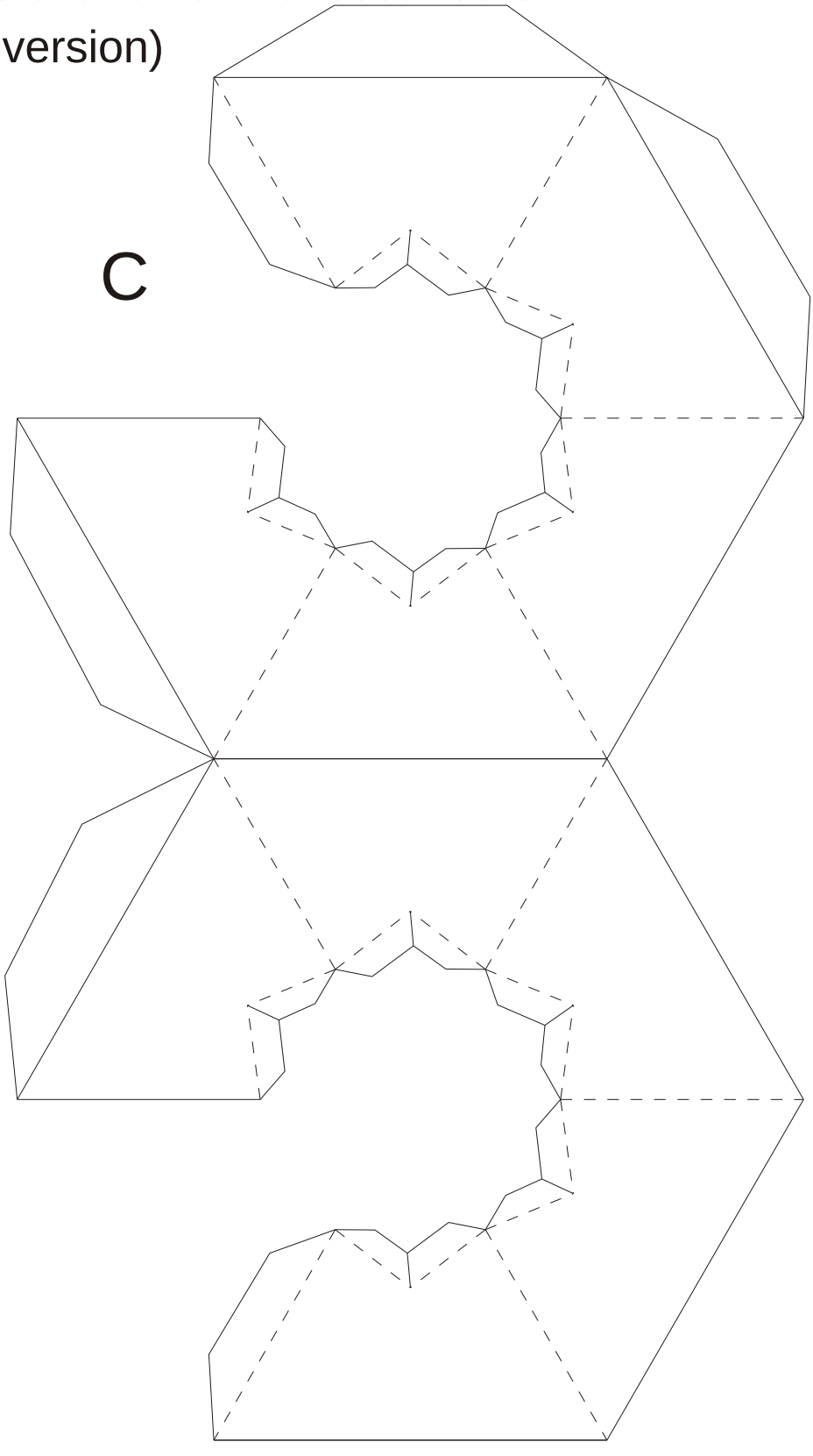
Sixth Stallation of the Icosahedron
(large version)



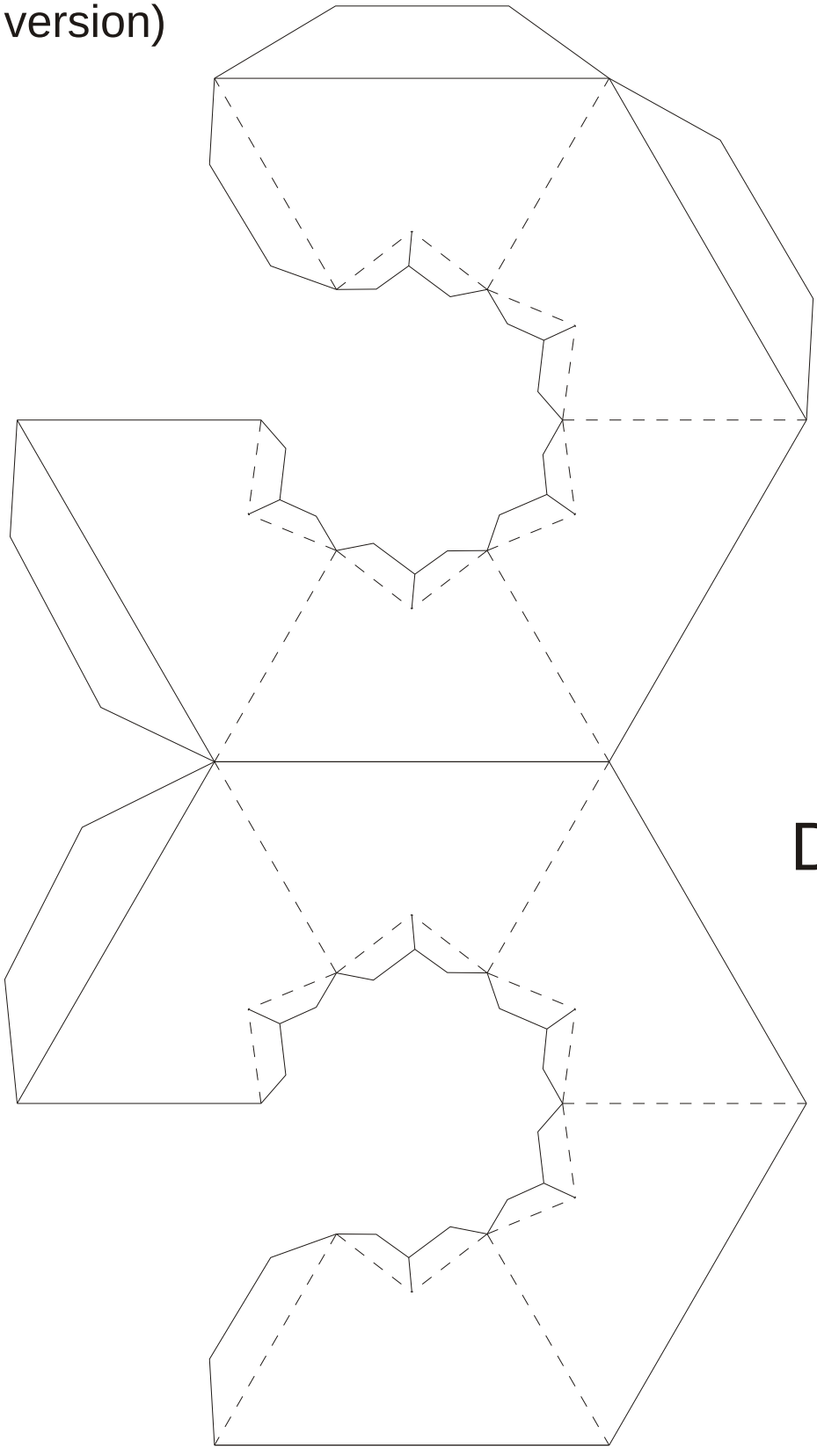
B

A

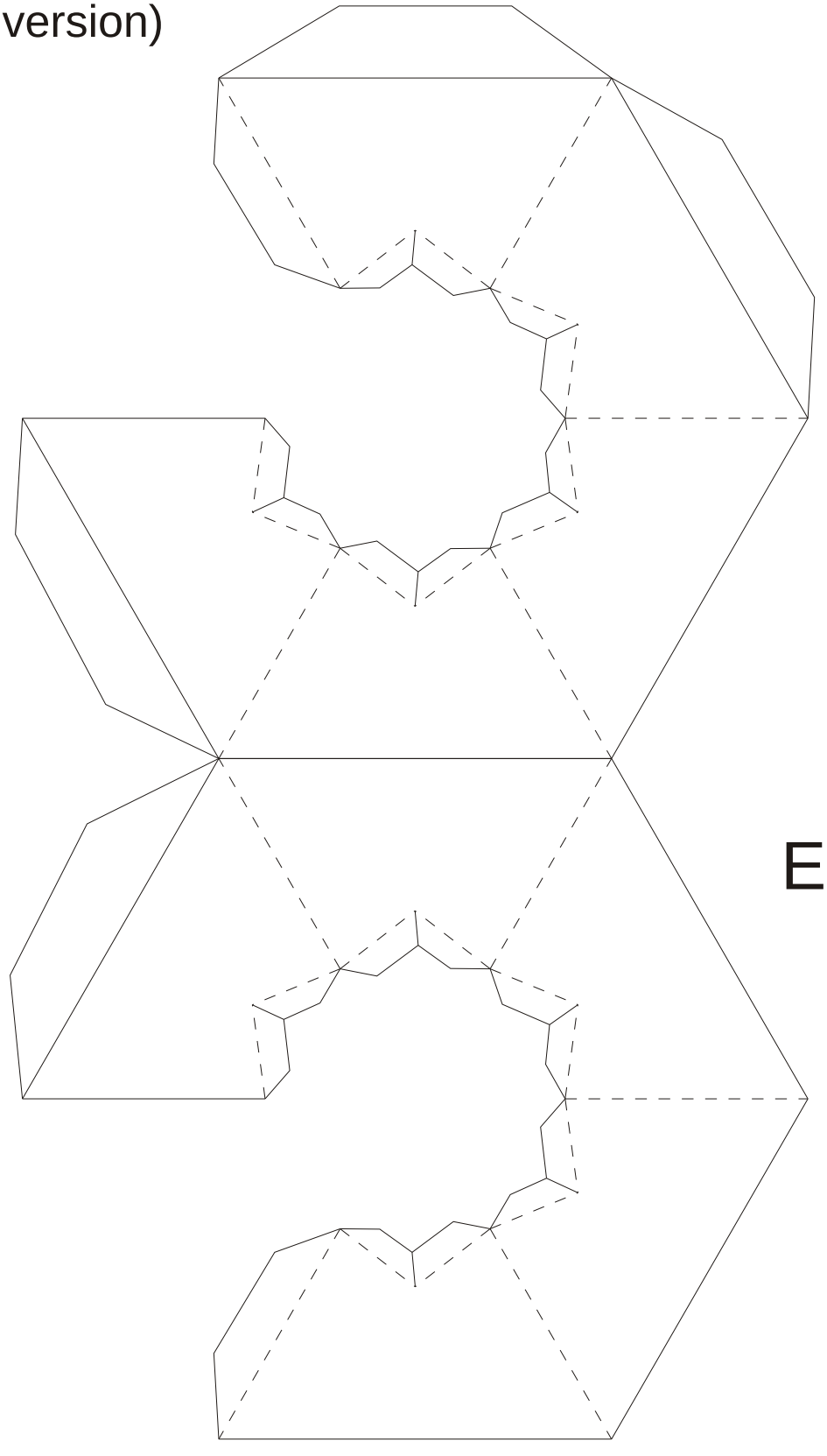
Sixth Stallation of the Icosahedron (large version)



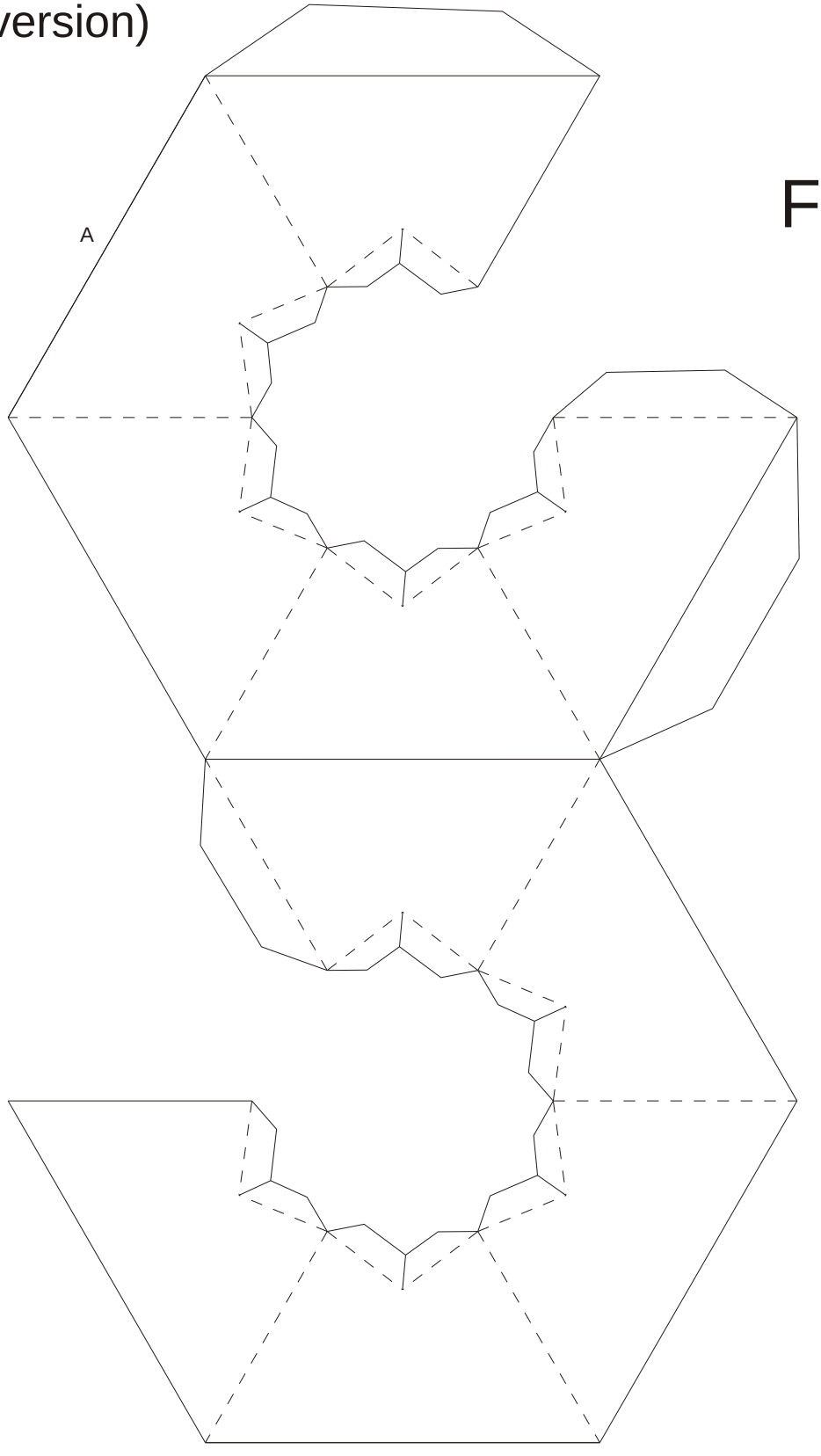
Sixth Stallation of the Icosahedron
(large version)



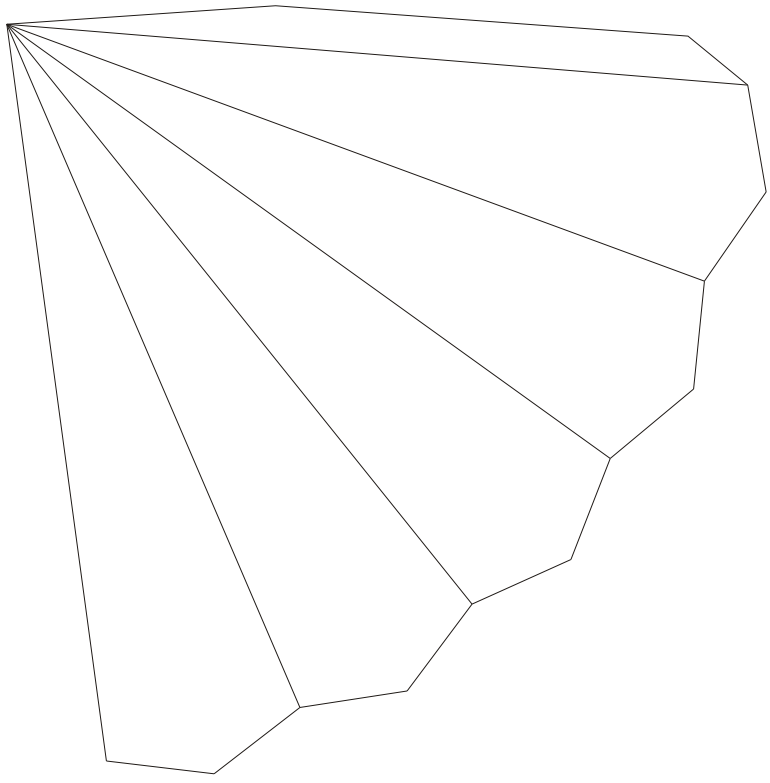
Sixth Stallation of the Icosahedron
(large version)

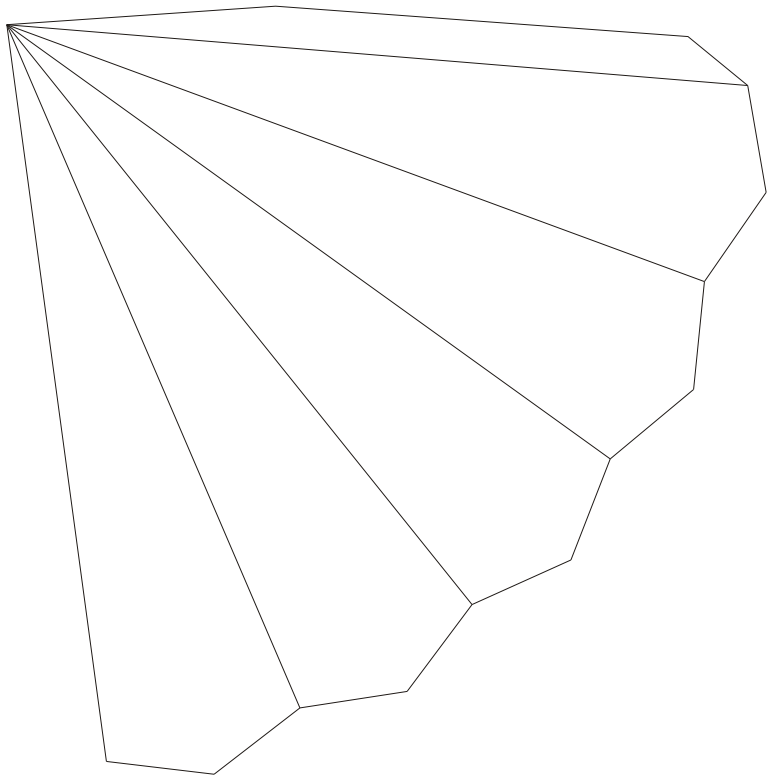


Sixth Stallation of the Icosahedron (large version)

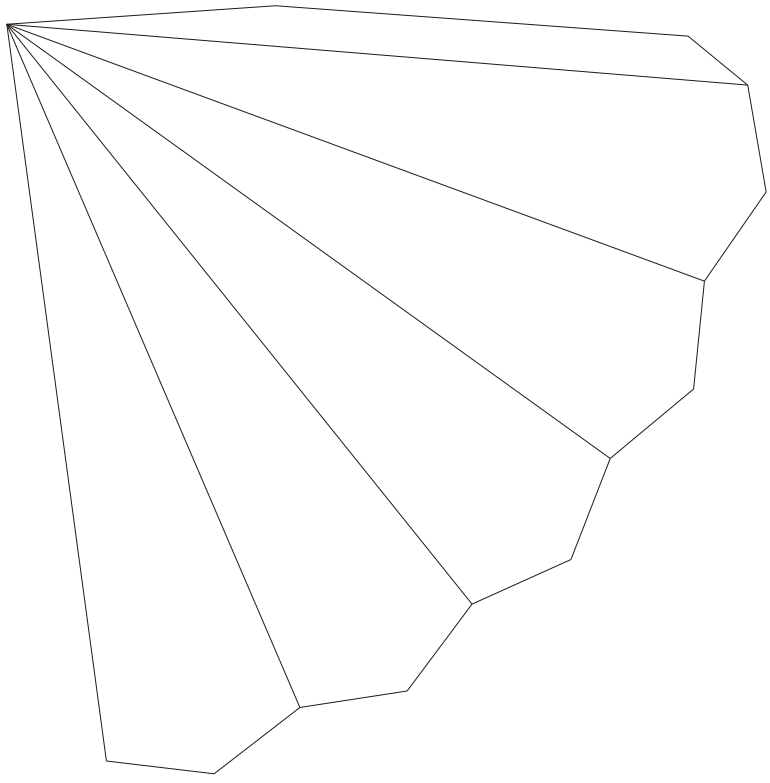


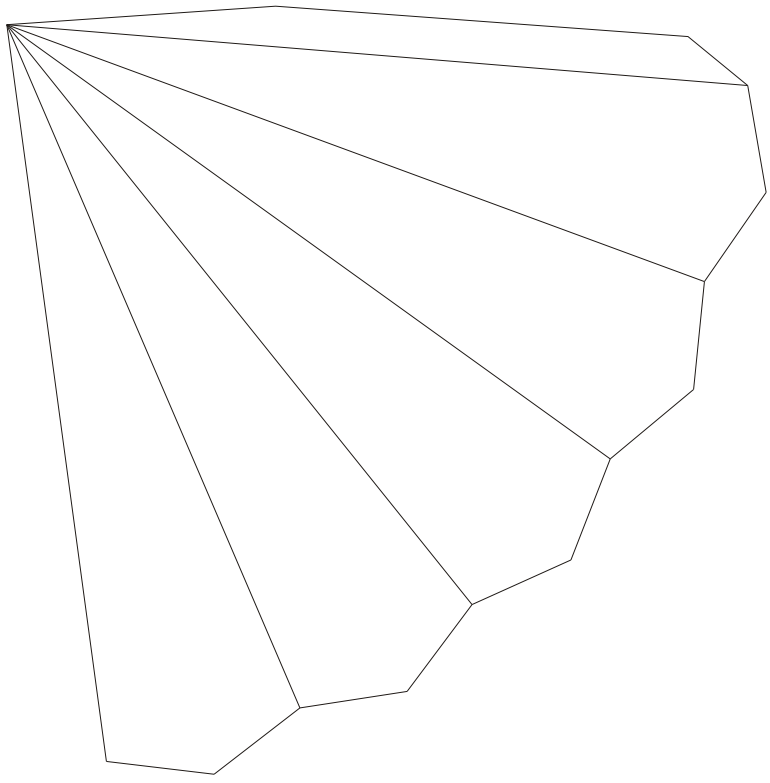
Sixth Stallation of the Icosahedron (large)



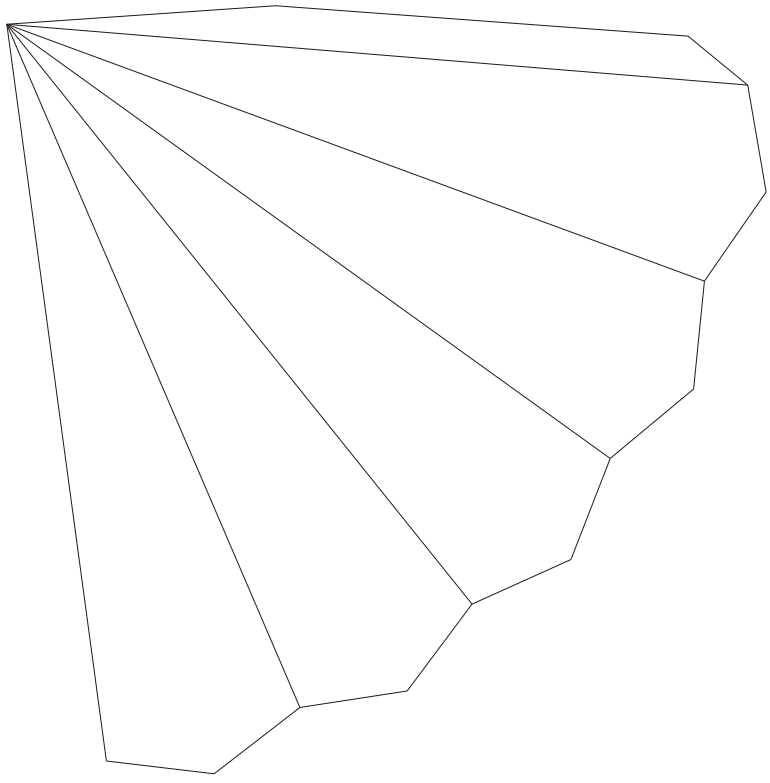


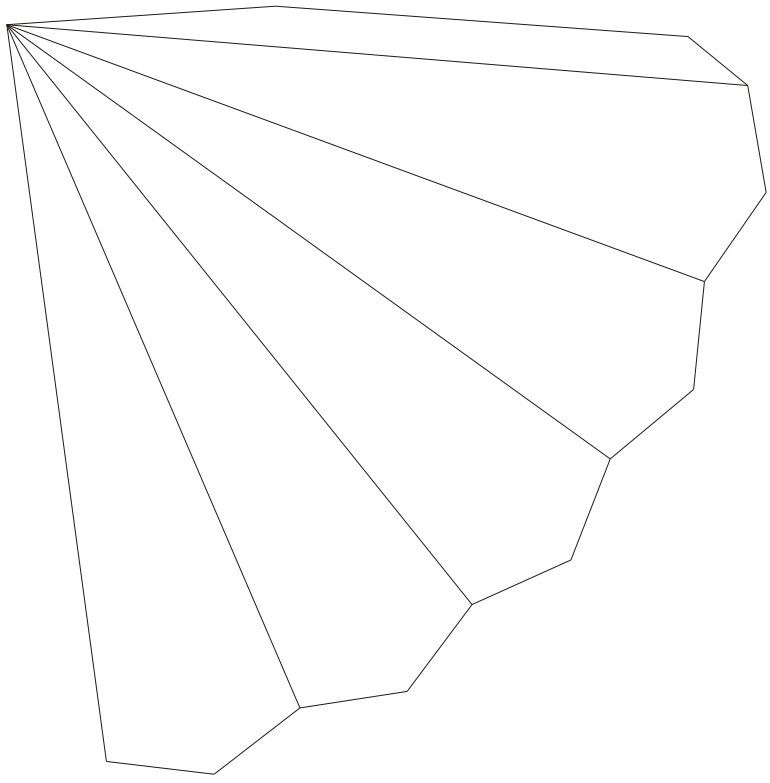
Sixth Stallation of the Icosahedron (large)



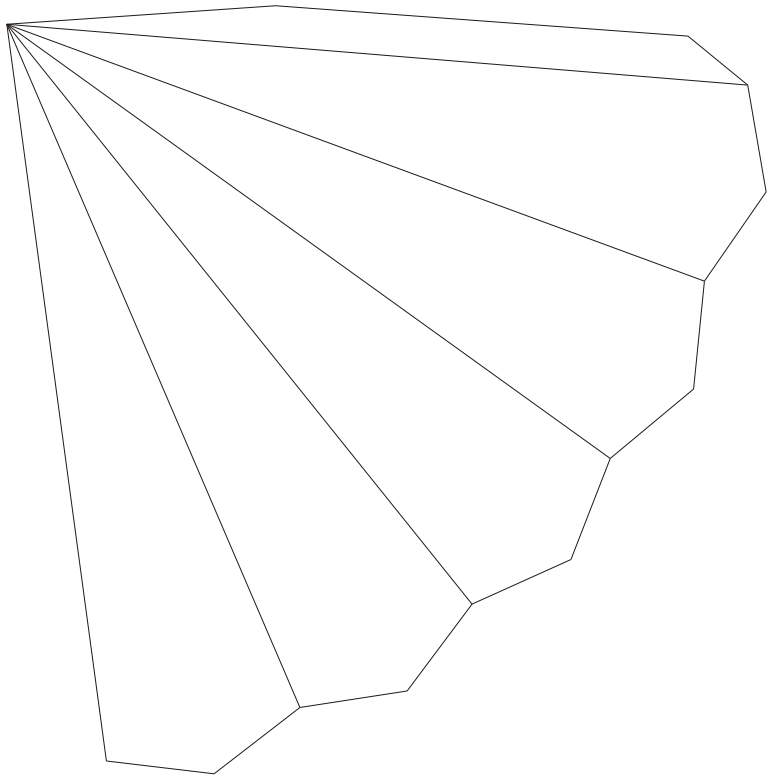


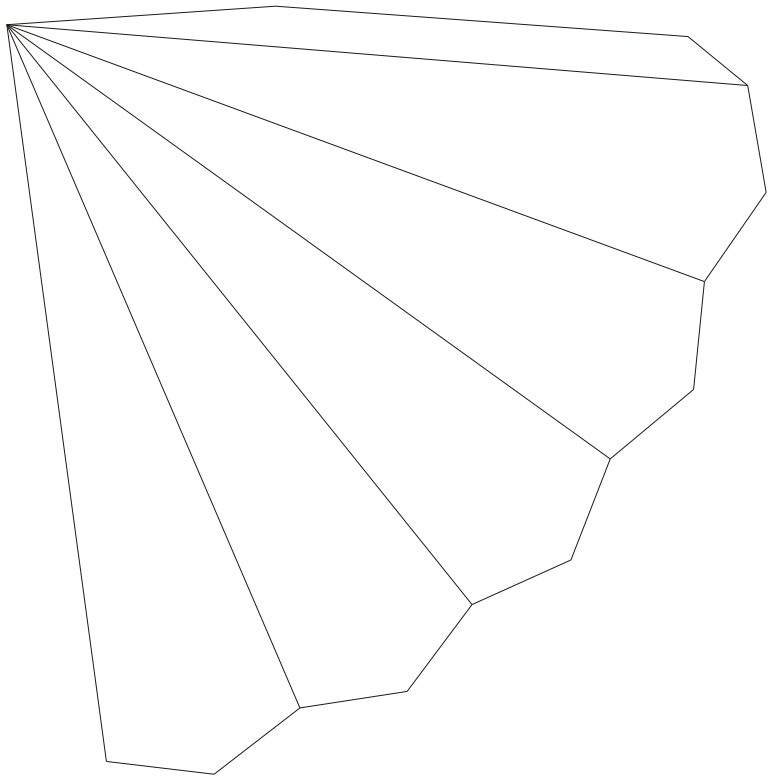
Sixth Stallation of the Icosahedron (large)



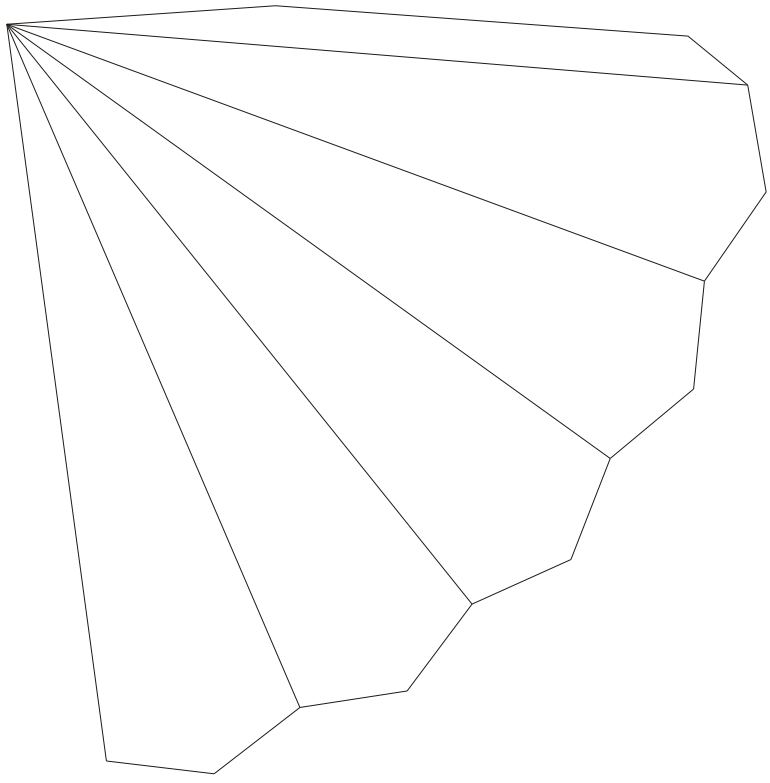


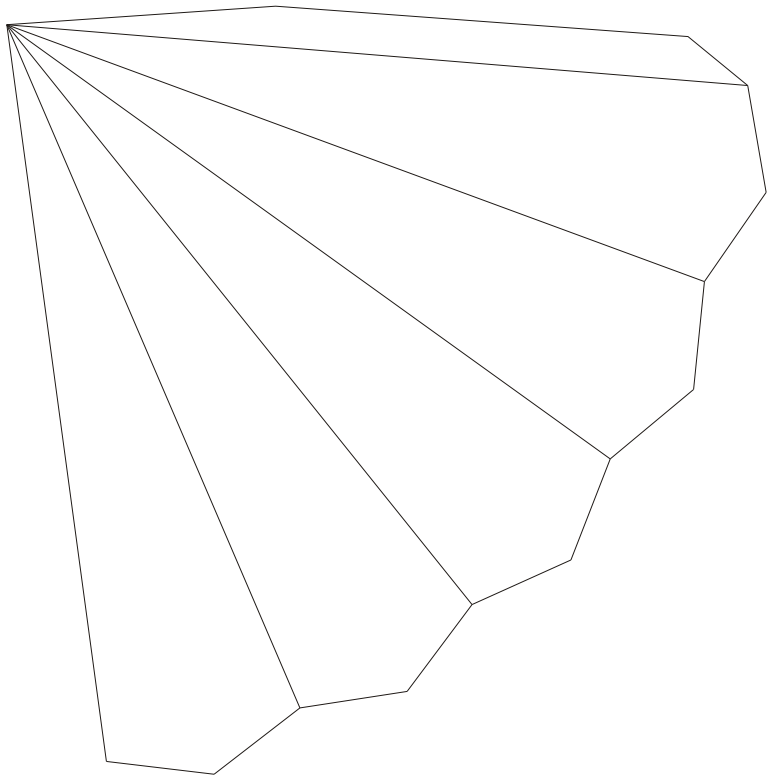
Sixth Stallation of the Icosahedron (large)



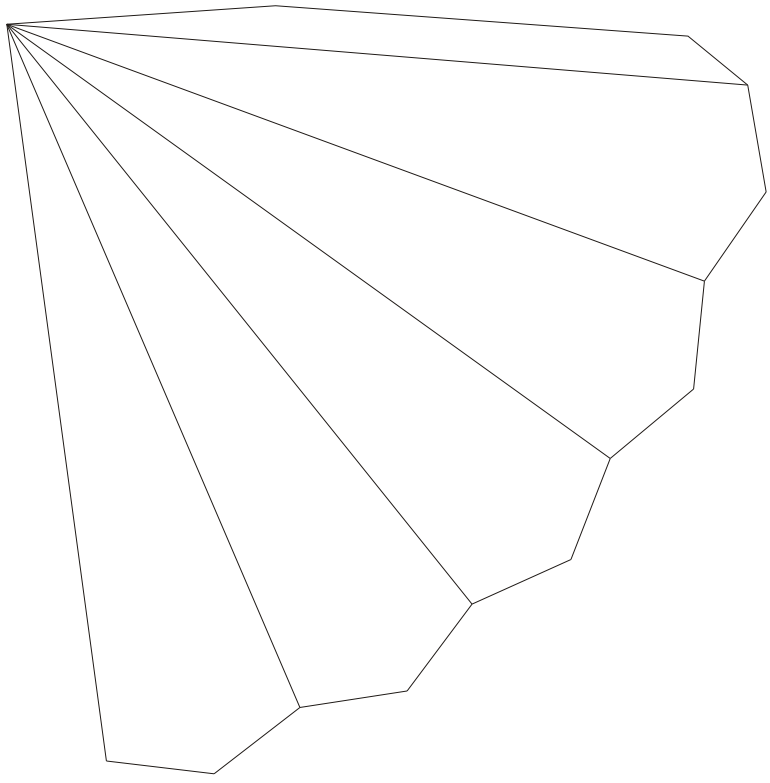


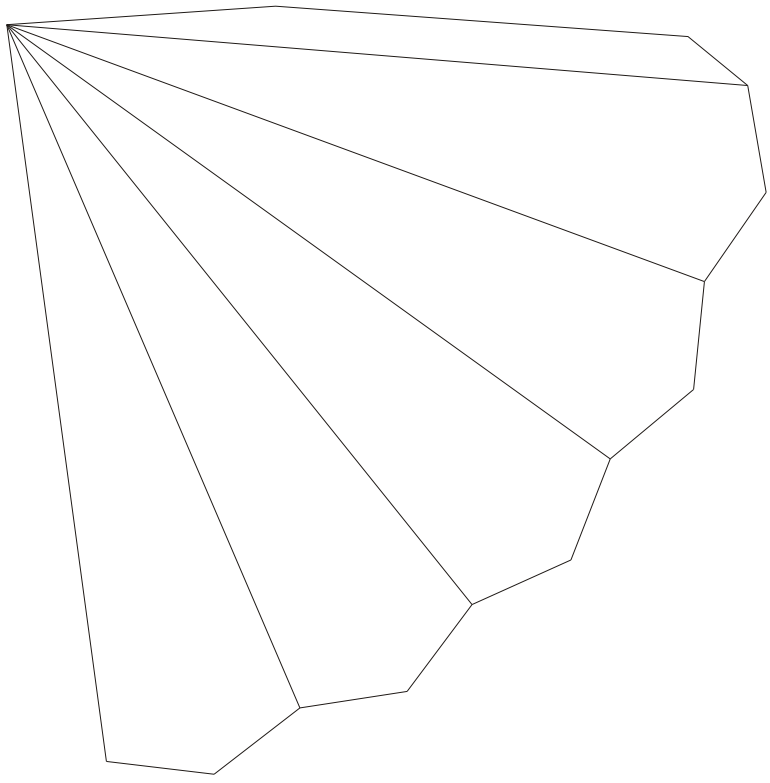
Sixth Stallation of the Icosahedron (large)





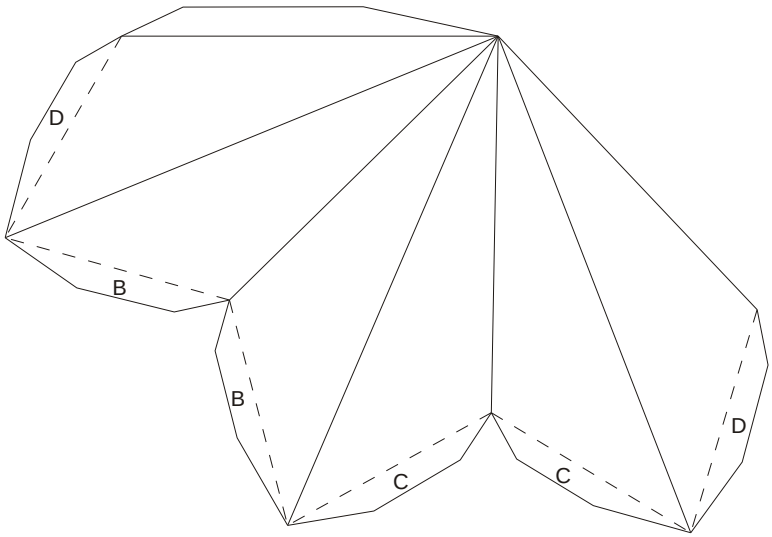
Sixth Stallation of the Icosahedron (large)



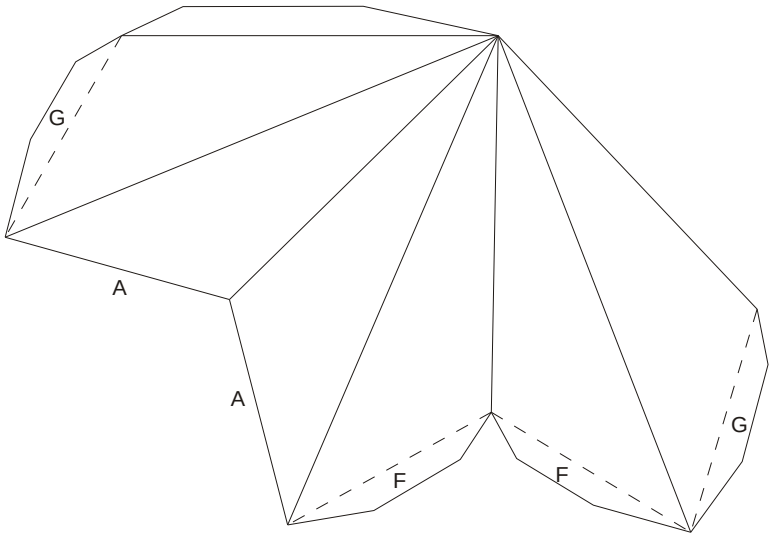


Seventh Stellation of the Icosahedron

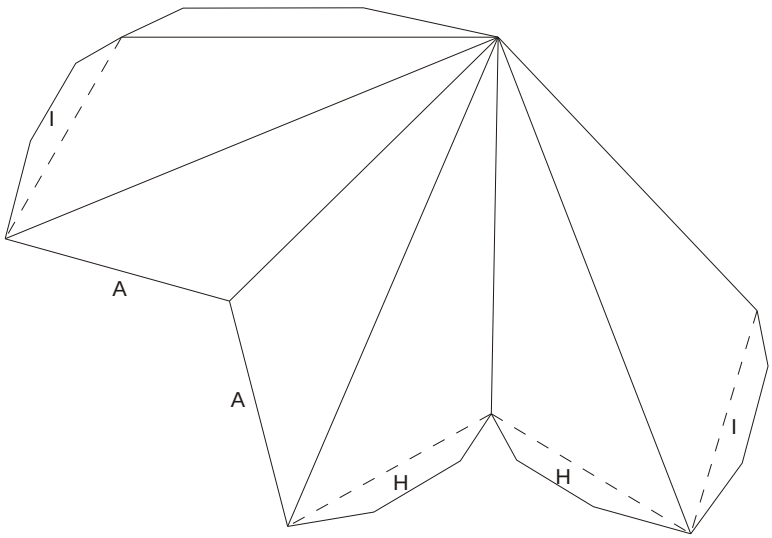
A



B

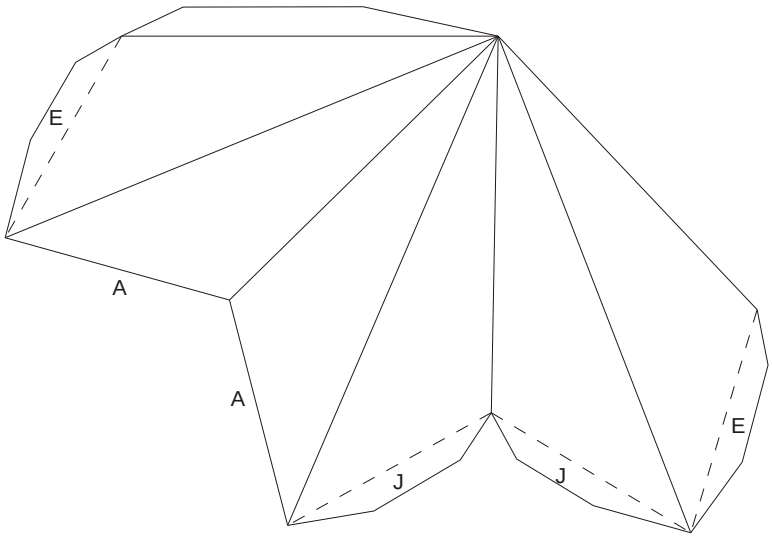


C

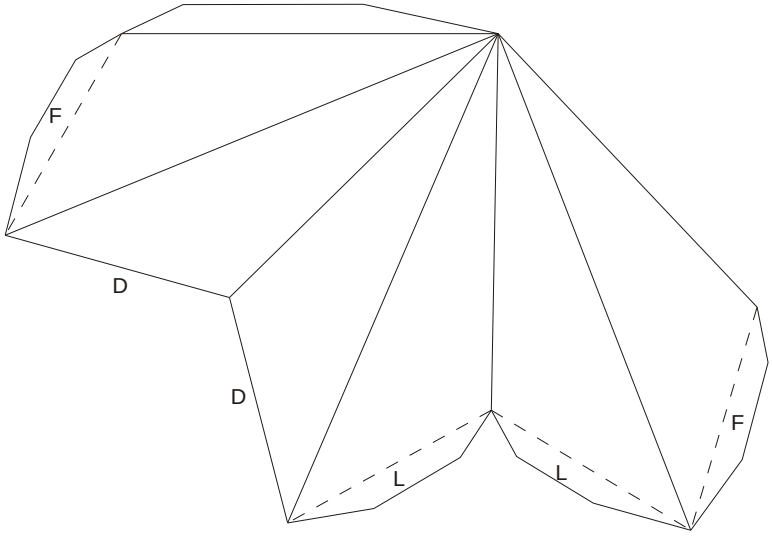


Seventh Stellation of the Icosahedron

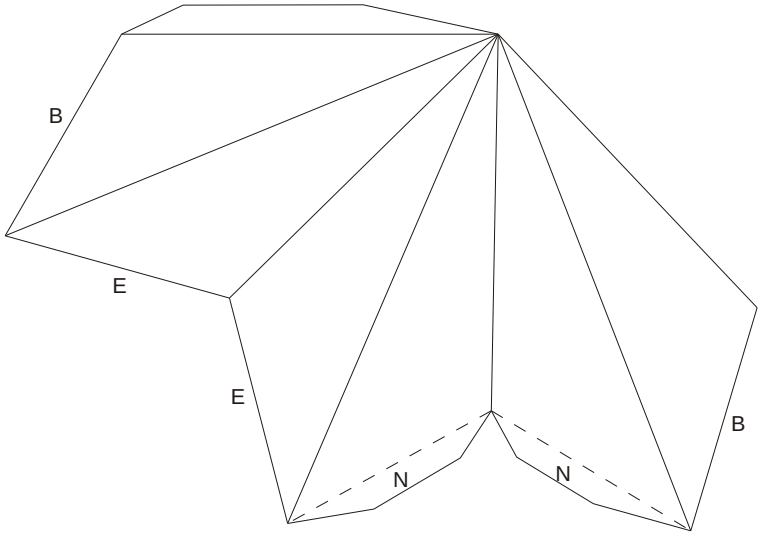
D



E

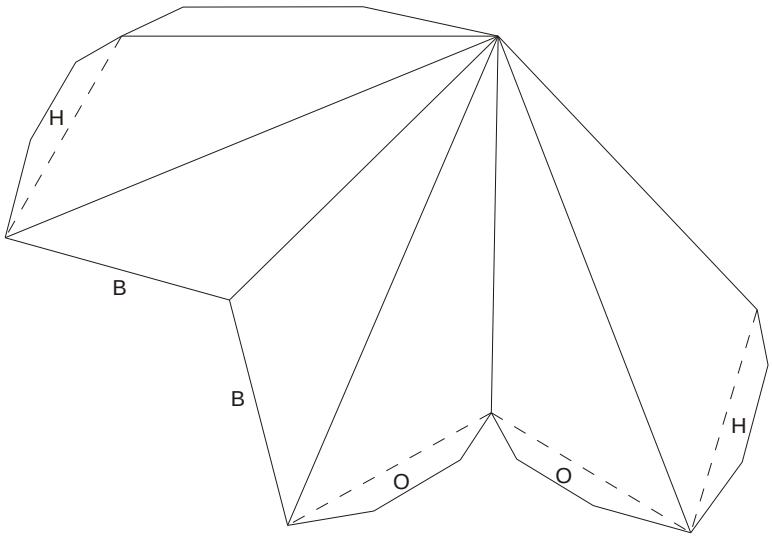


F

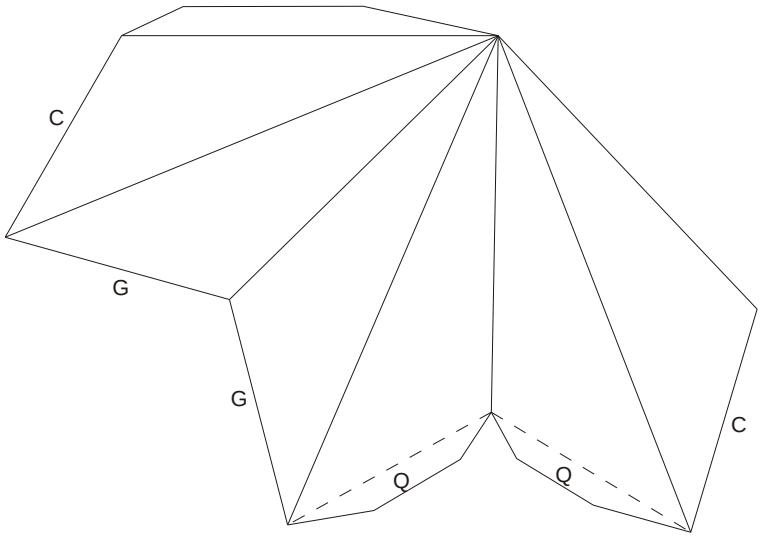


Seventh Stellation of the Icosahedron

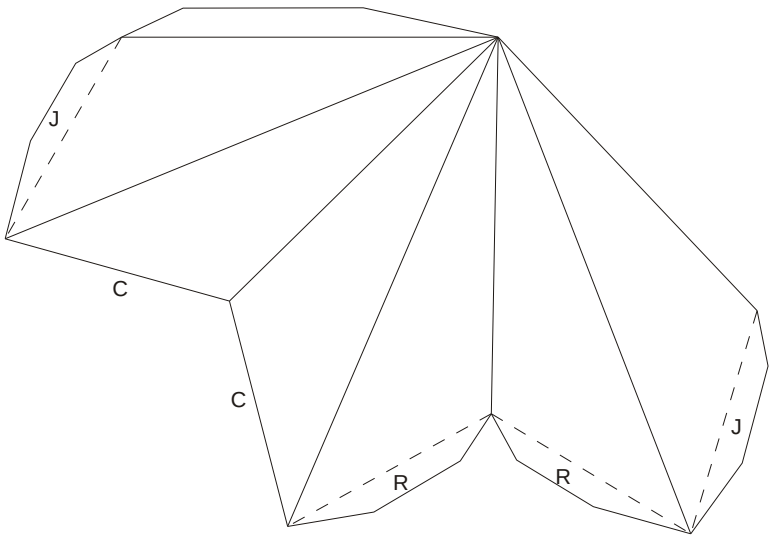
G



H

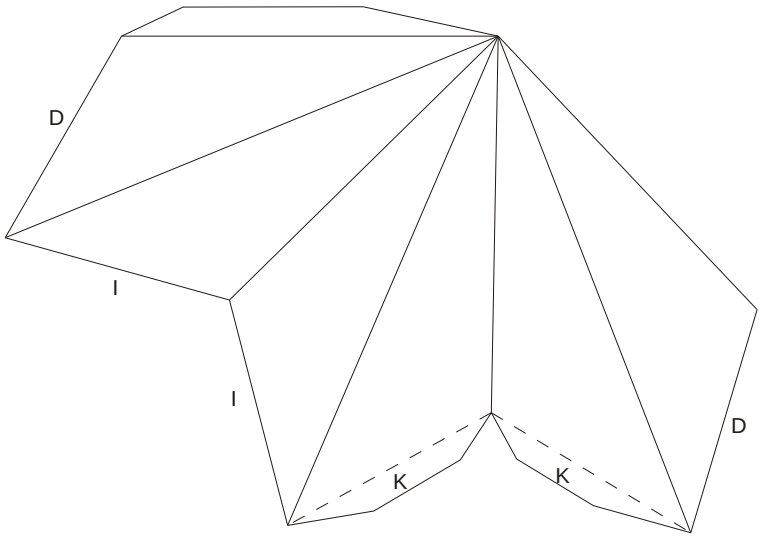


I

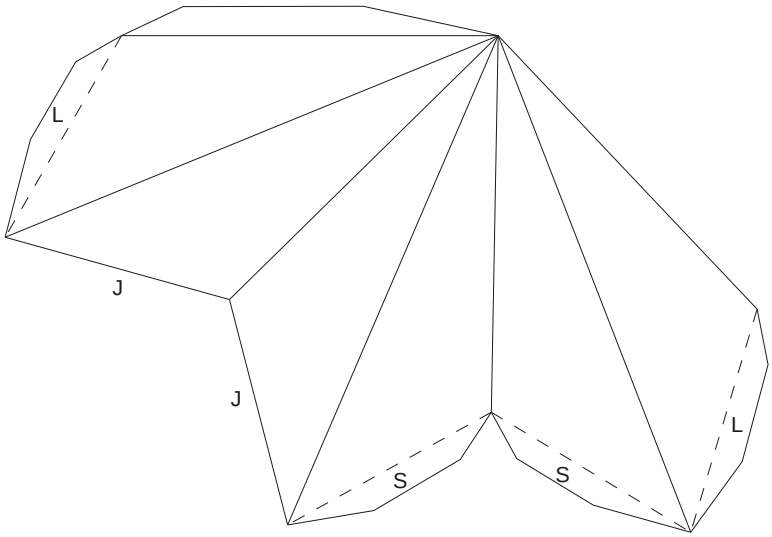


Seventh Stellation of the Icosahedron

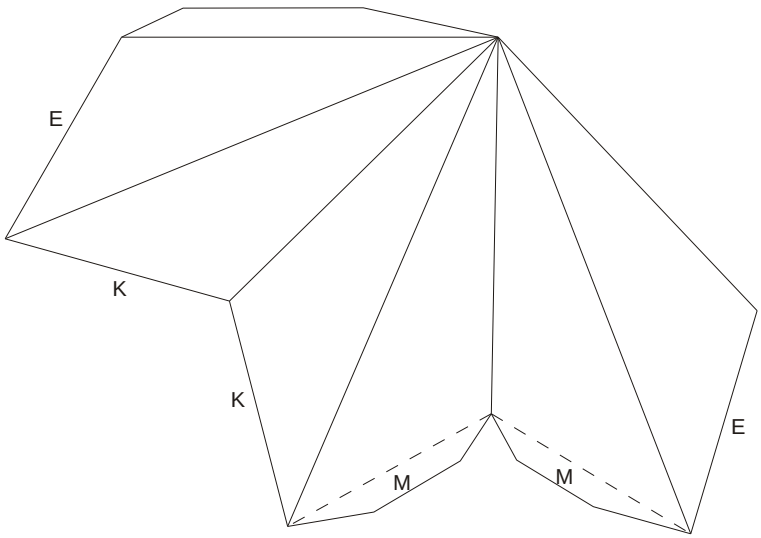
J



K

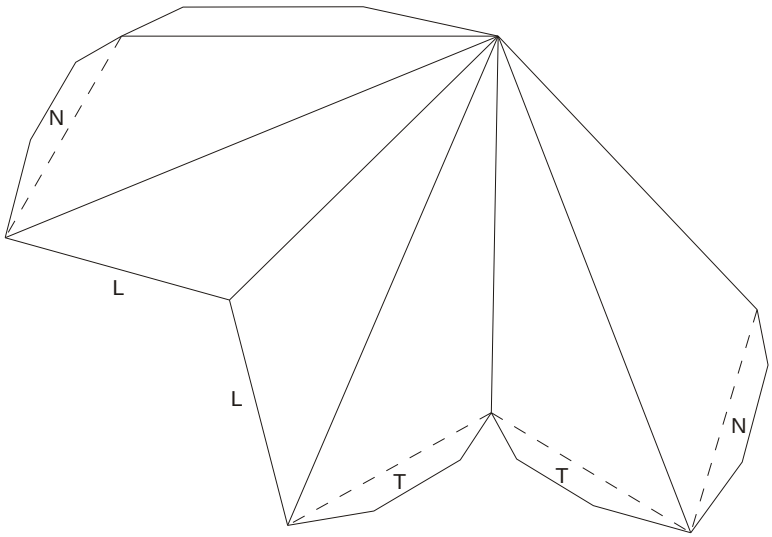


L

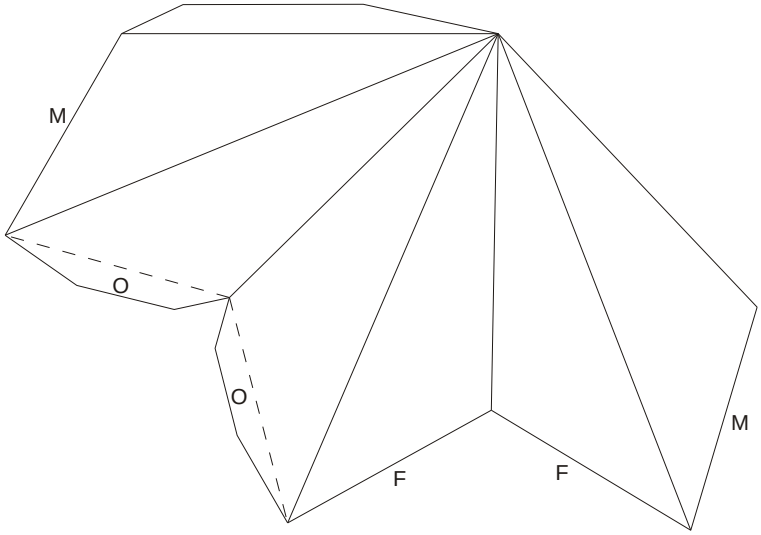


Seventh Stellation of the Icosahedron

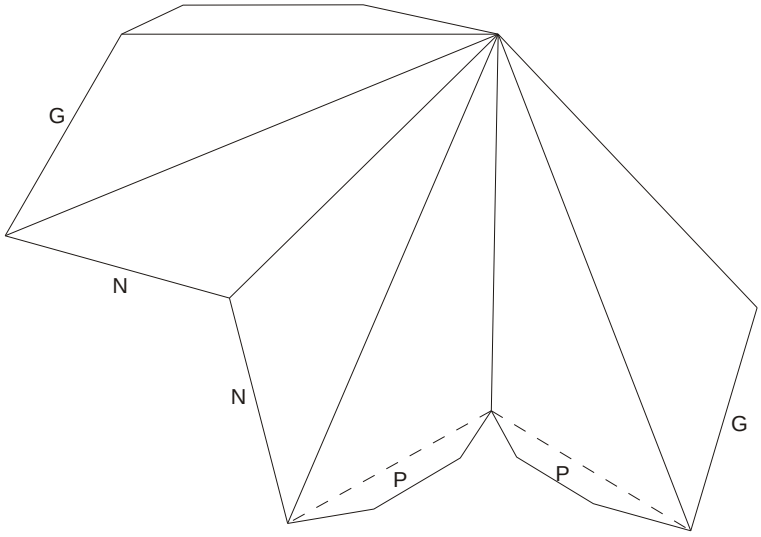
M



N

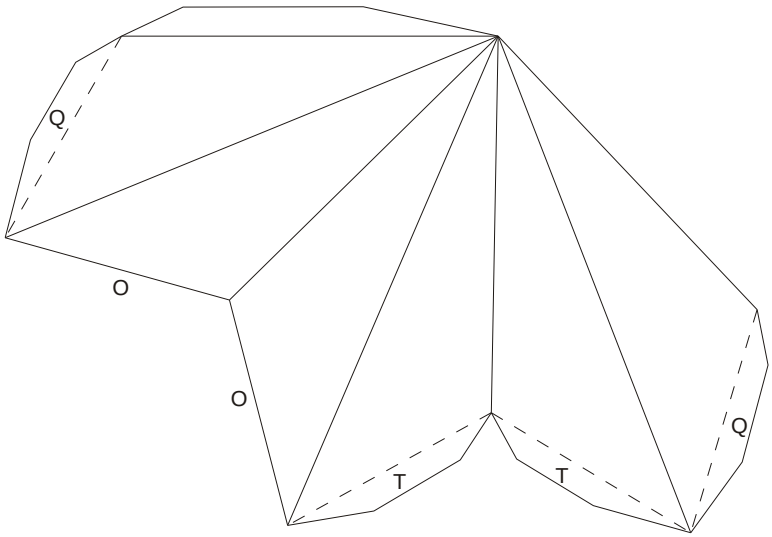


O

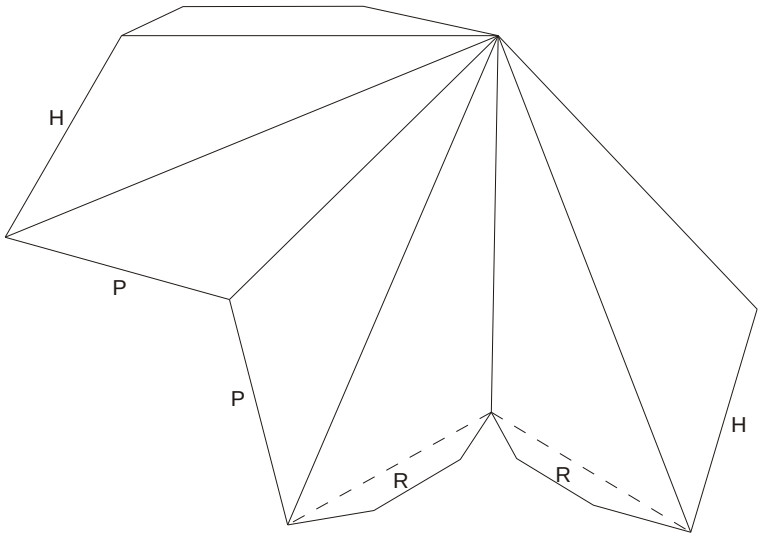


Seventh Stellation of the Icosahedron

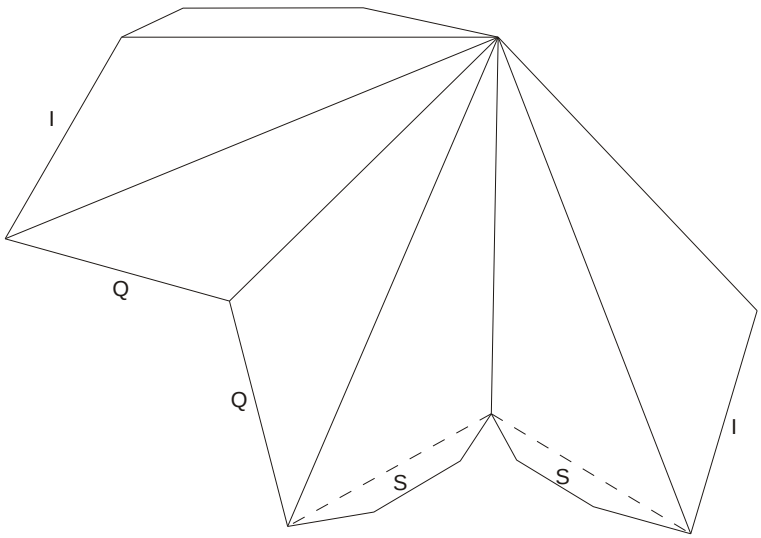
P



Q

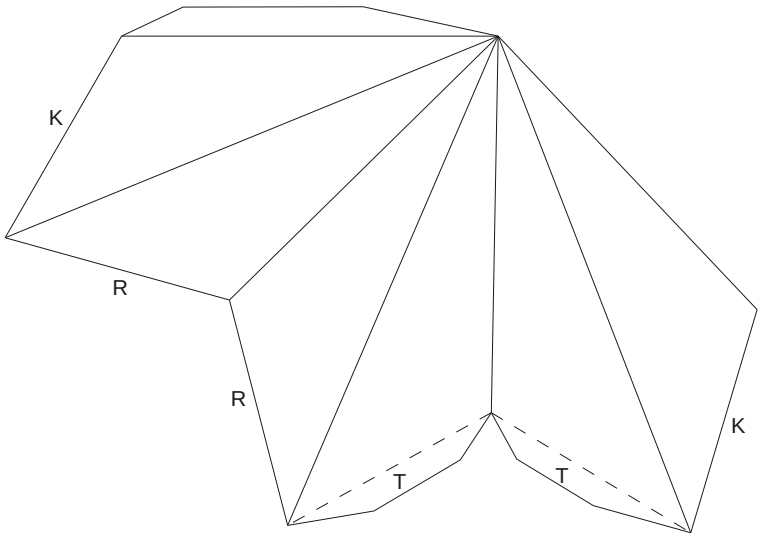


R

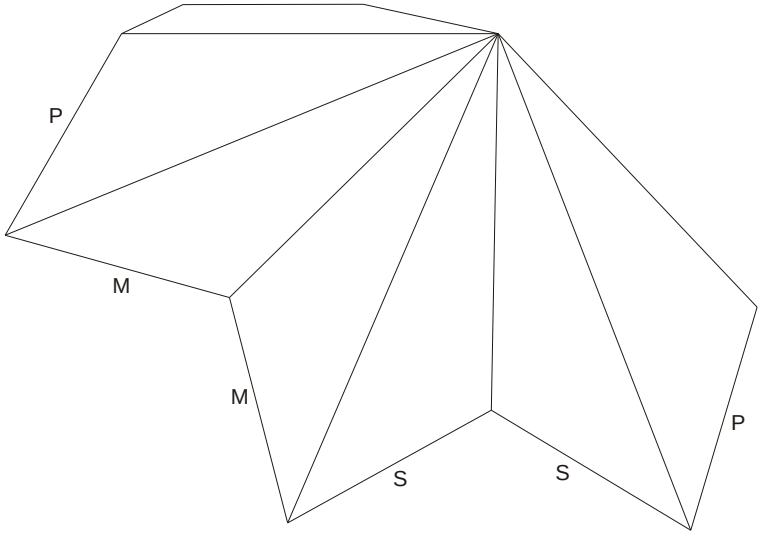


Seventh Stellation of the Icosahedron

S

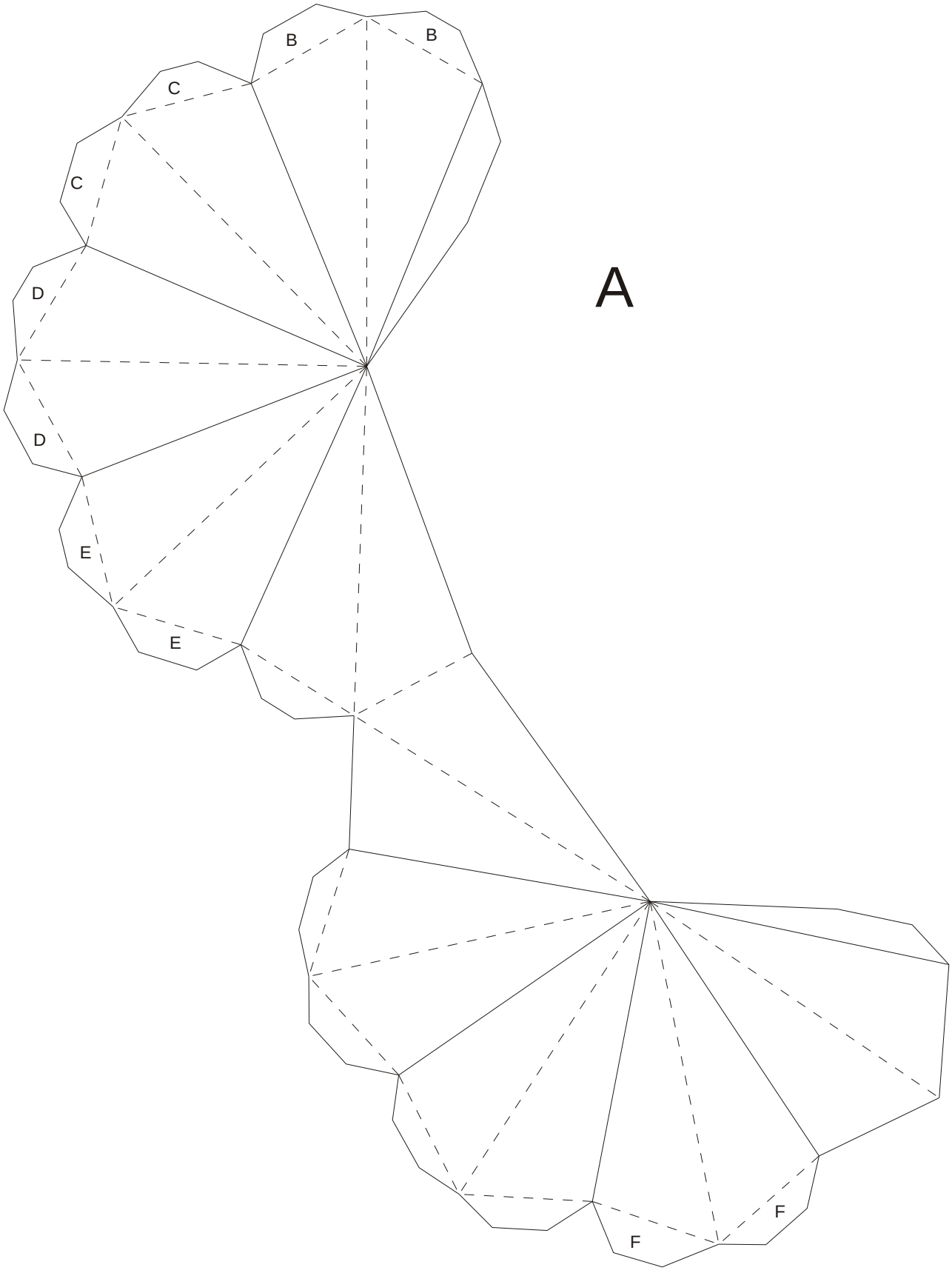


T



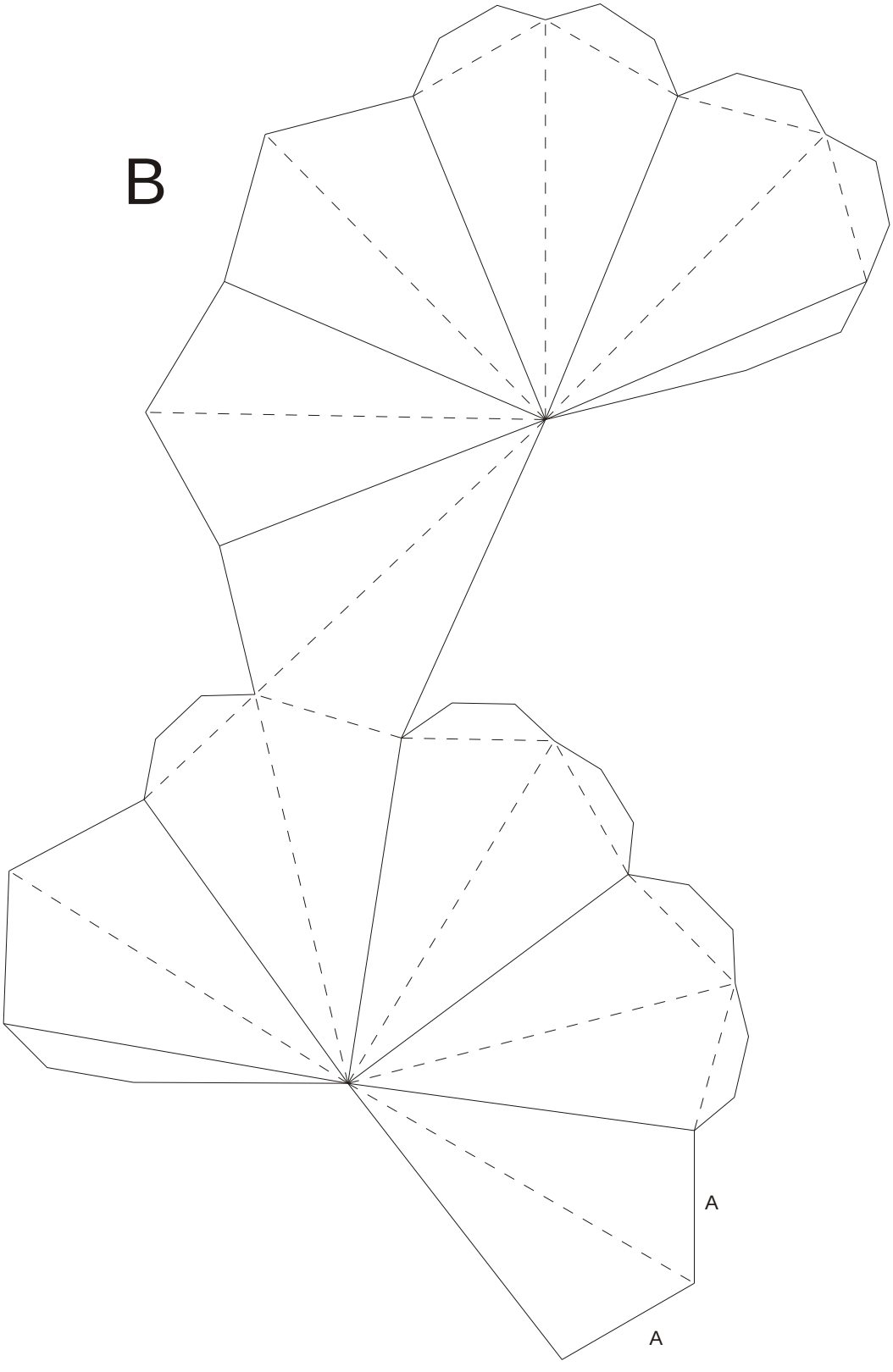
Eighth Stellation of the Icosahedron

(Large version)
Lold dotted lines forwards
Fold other lines backwards



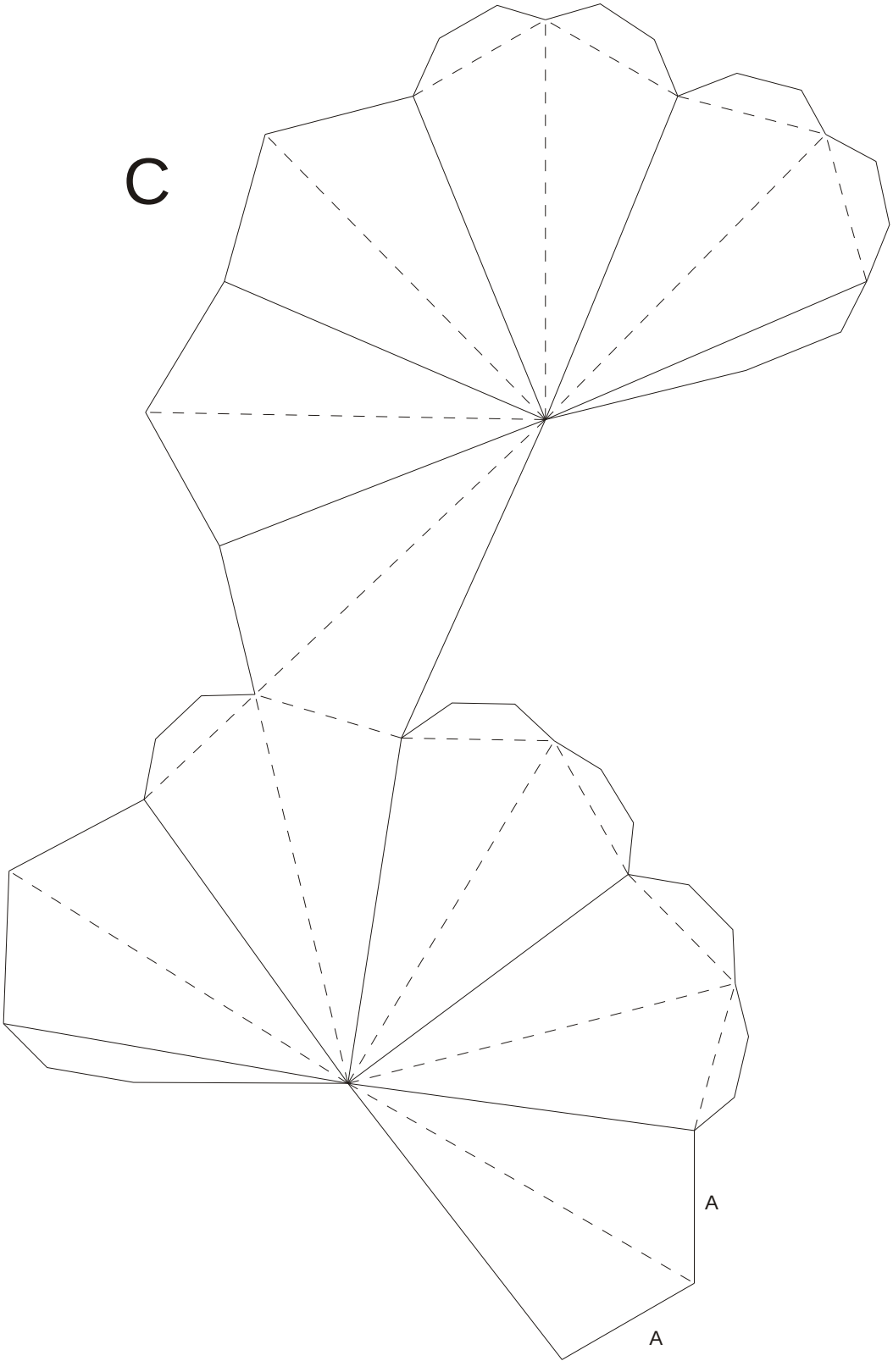
Eighth Stellation of the Icosahedron

(Large version)
Lold dotted lines forwards
Fold other lines backwards



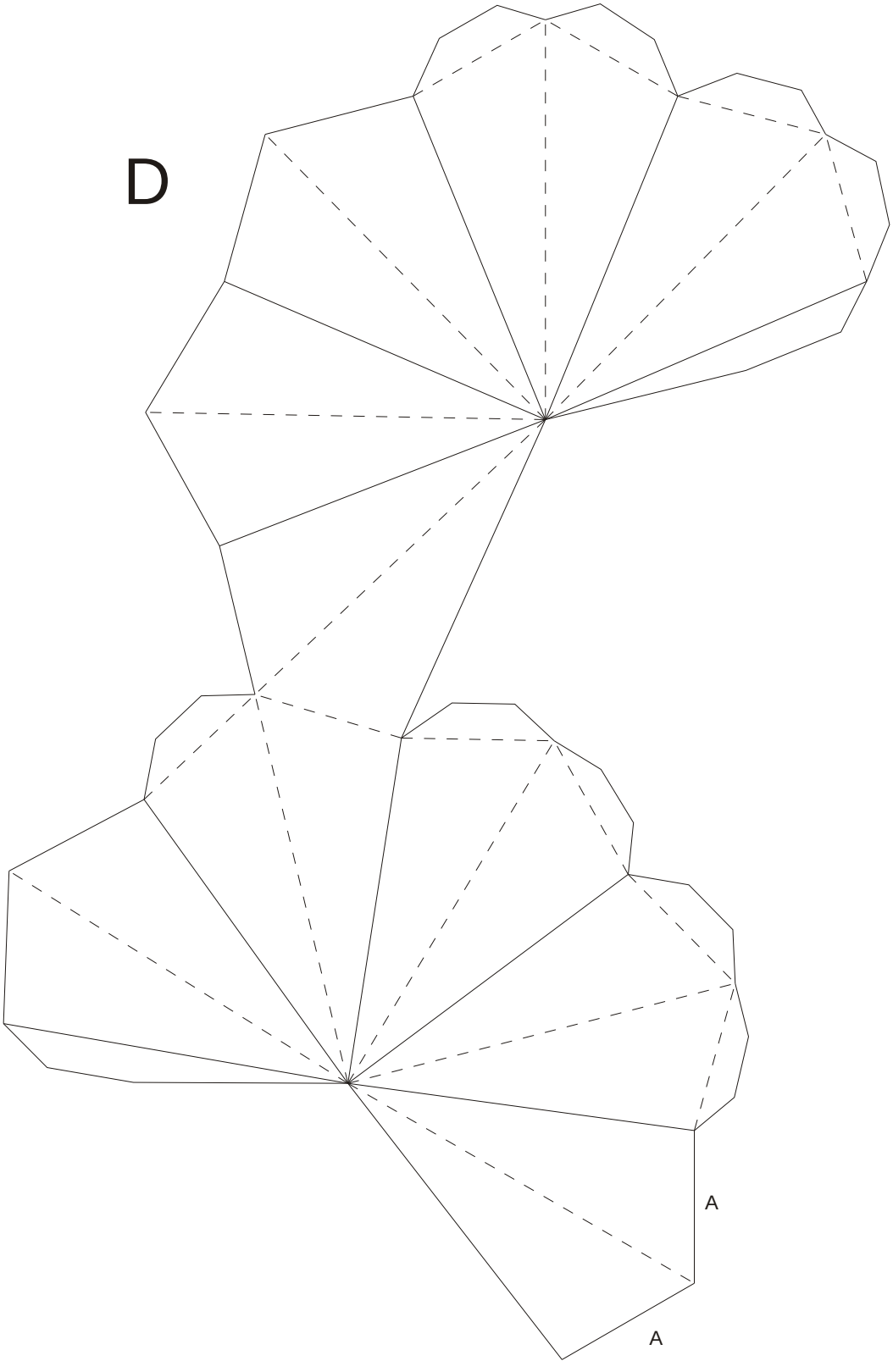
Eighth Stellation of the Icosahedron

(Large version)
Lold dotted lines forwards
Fold other lines backwards



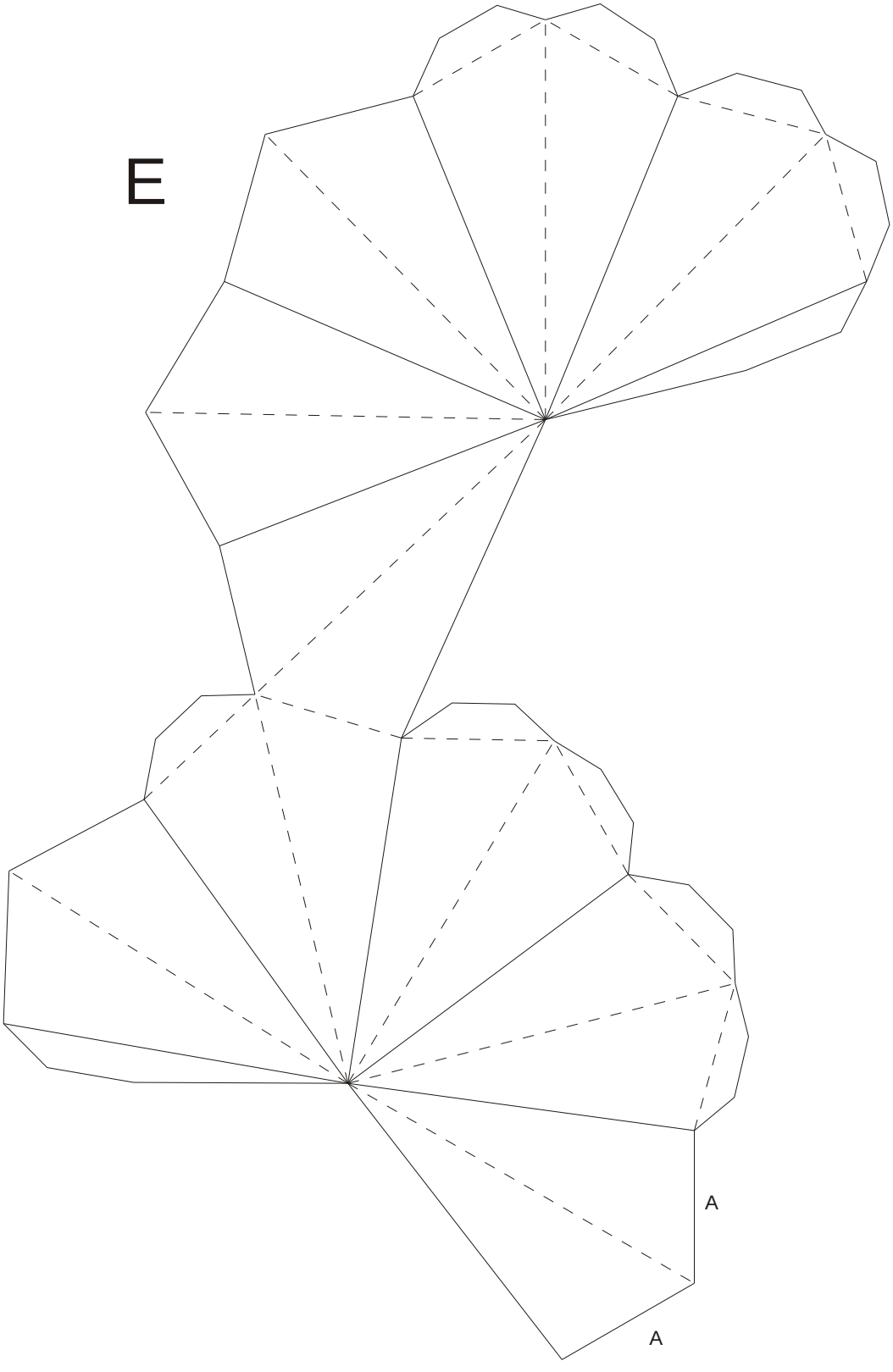
Eighth Stellation of the Icosahedron

(Large version)
Lold dotted lines forwards
Fold other lines backwards



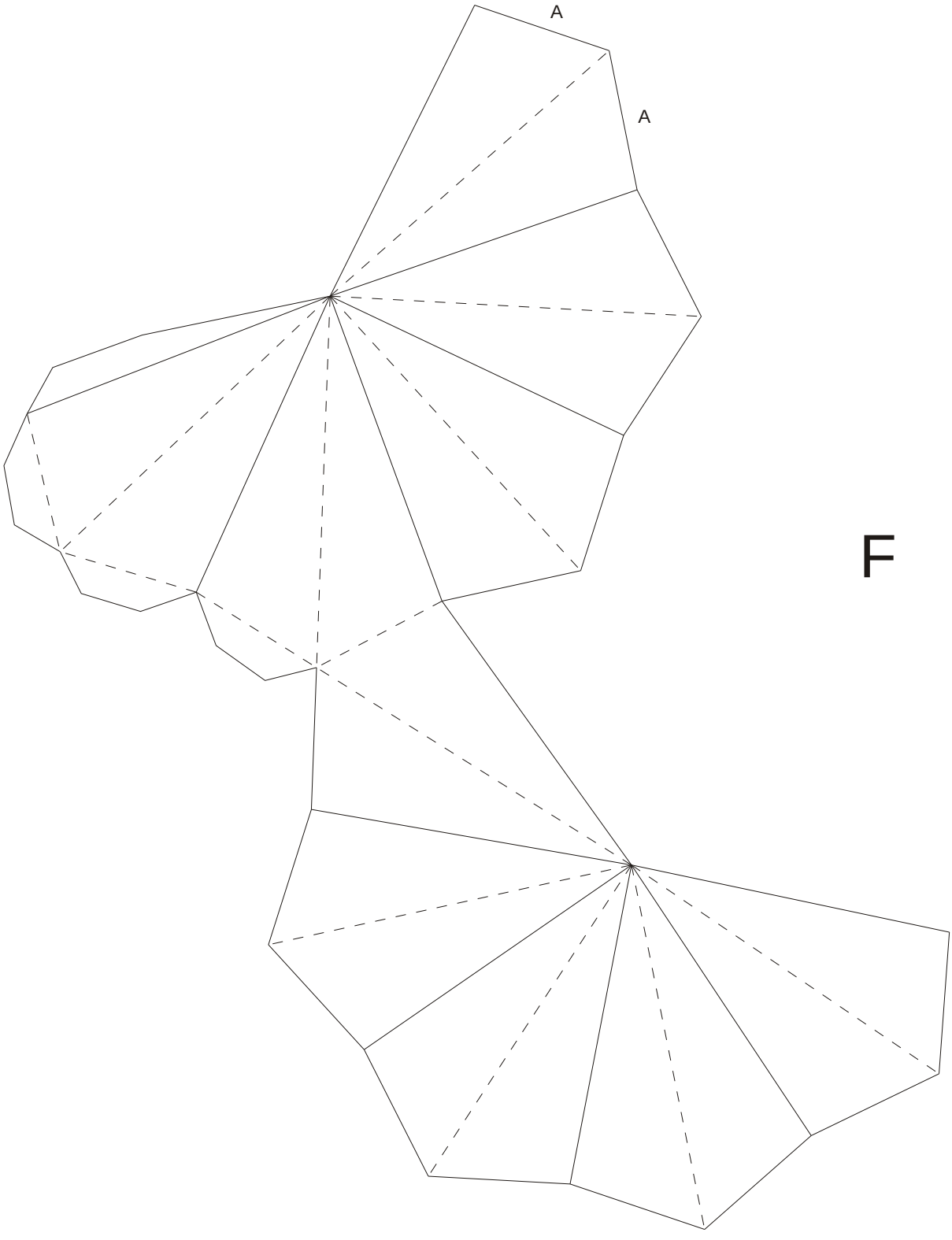
Eighth Stellation of the Icosahedron

(Large version)
Lold dotted lines forwards
Fold other lines backwards



Eighth Stellation of the Icosahedron

(Large version)
Lold dotted lines forwards
Fold other lines backwards

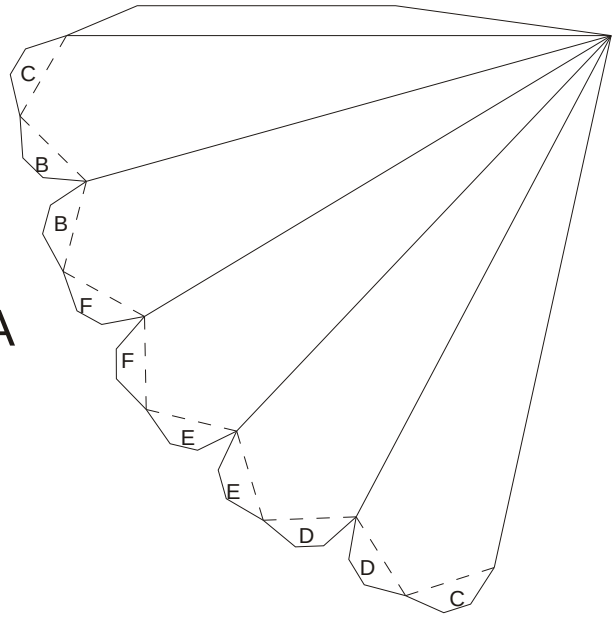


Ninth Stellation of the Icosahedron

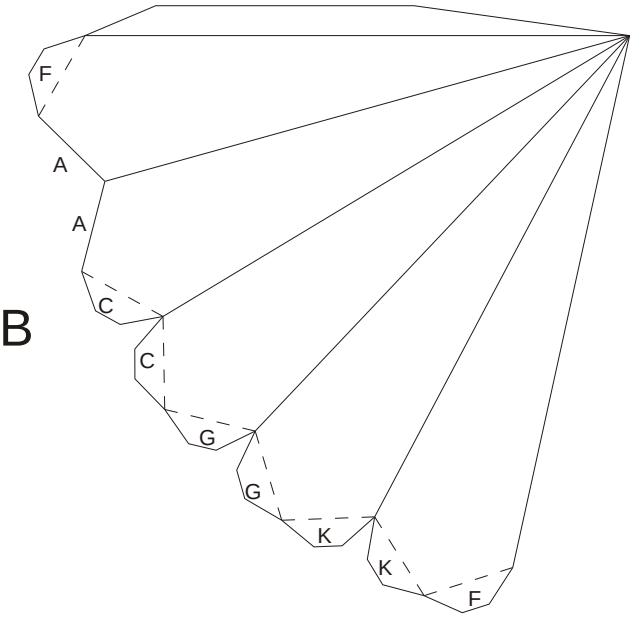
Fold the dotted lines forwards

Fold the other lines backwards

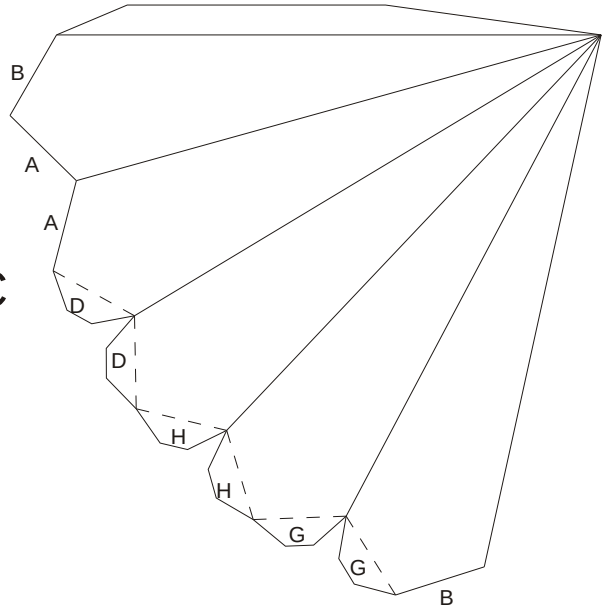
A



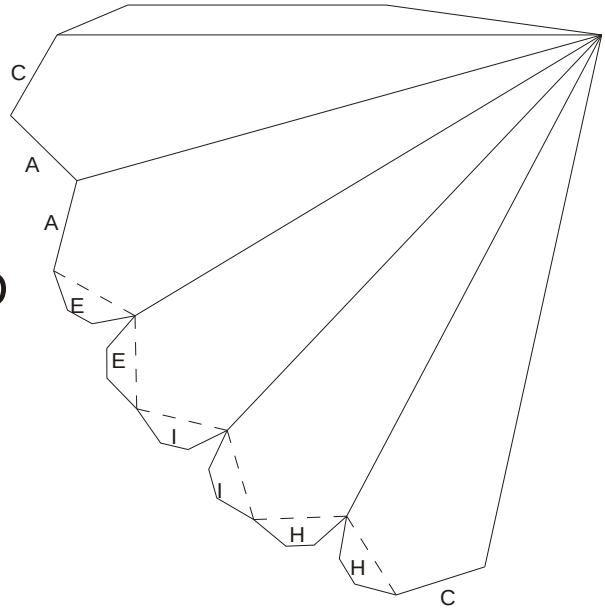
B



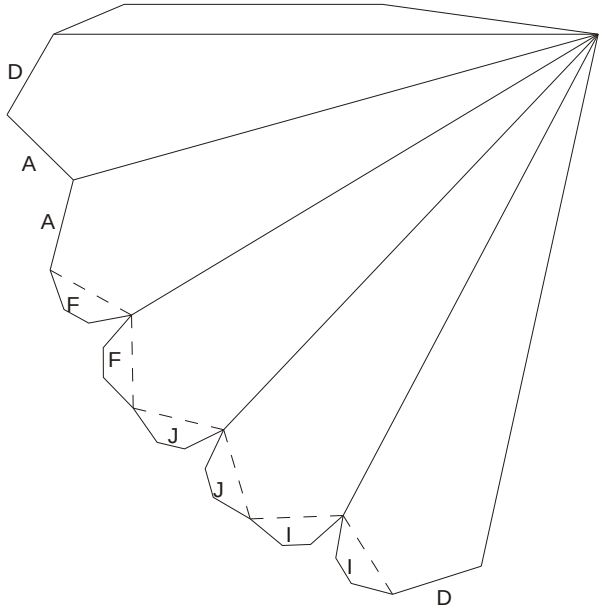
C



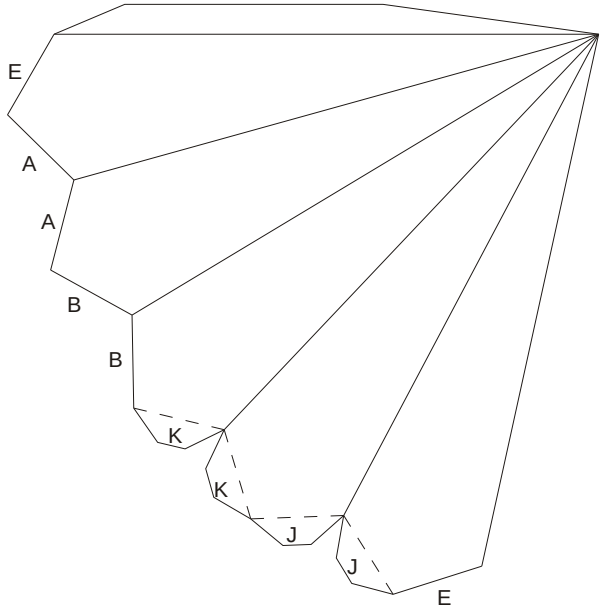
D



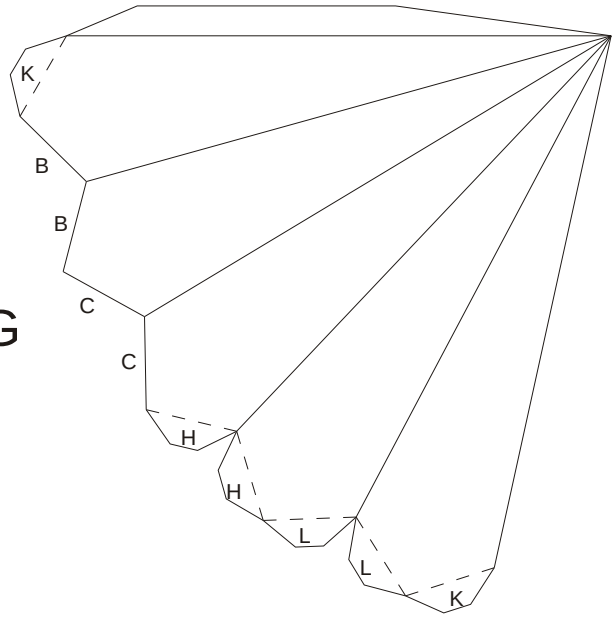
E



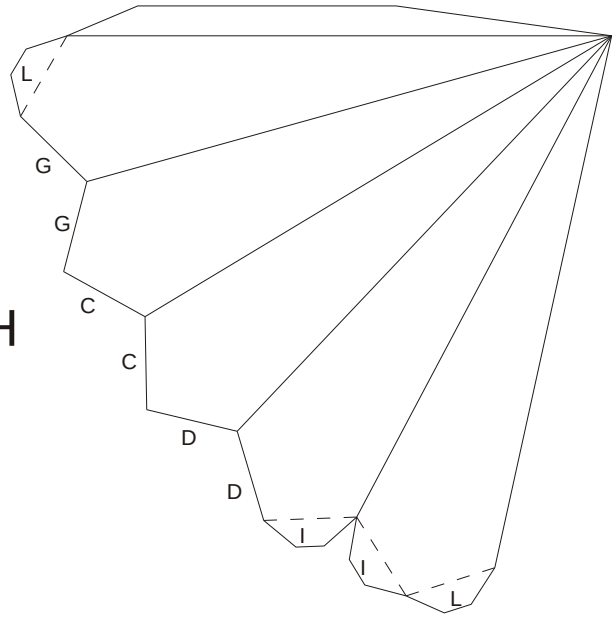
F



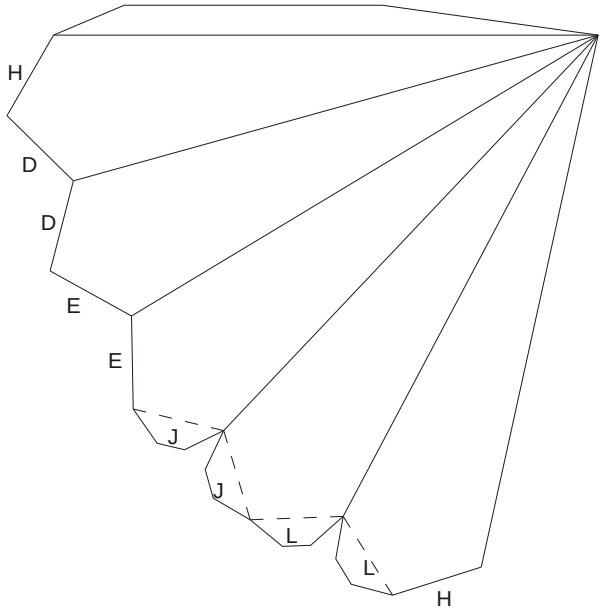
G


K
B
B
C
C
H
H
L
L
K

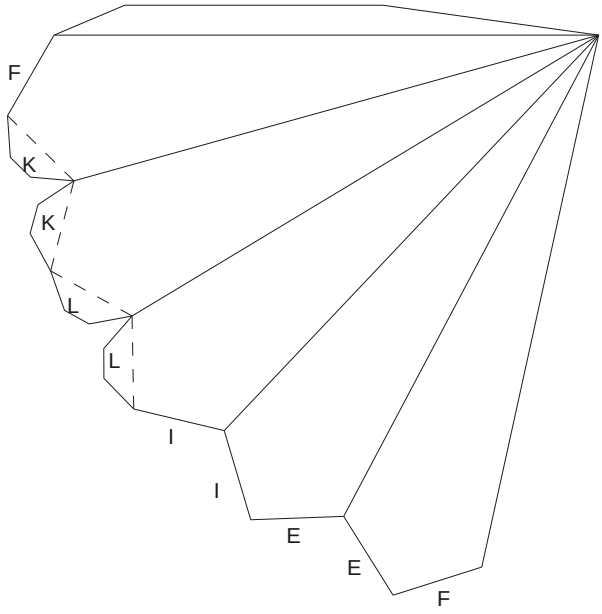
H


L
G
G
C
C
D
D
I
I
L

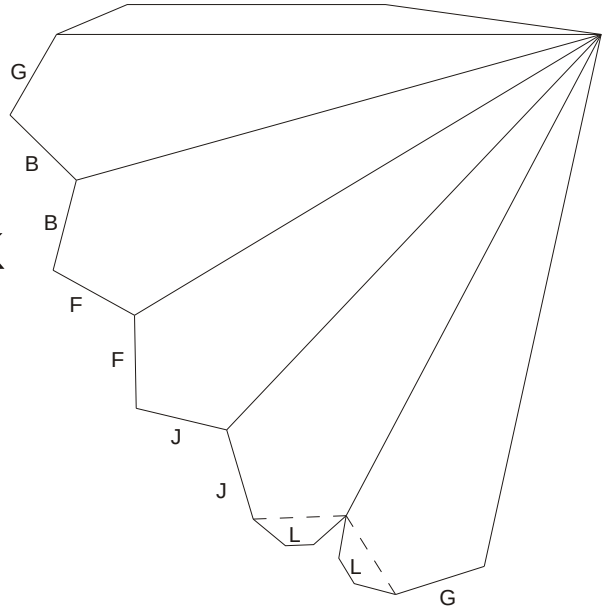
I


H
D
D
E
E
J
J
L
L
H

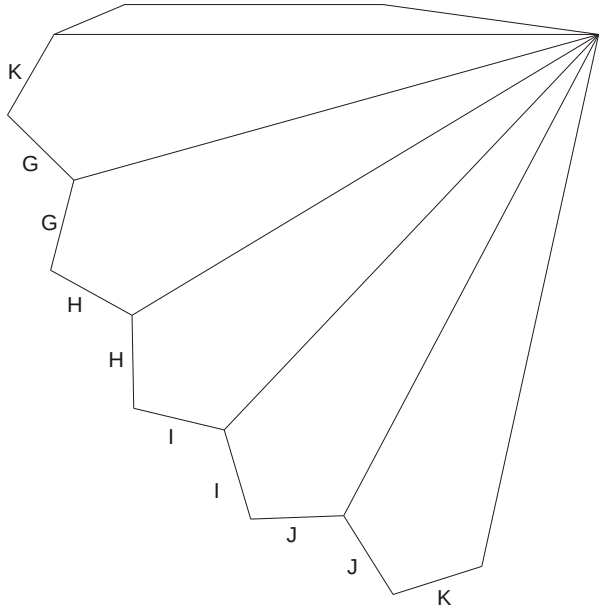
J


F
K
K
L
L
I
I
E
E
F

K


G
B
B
F
F
J
J
L
L
G

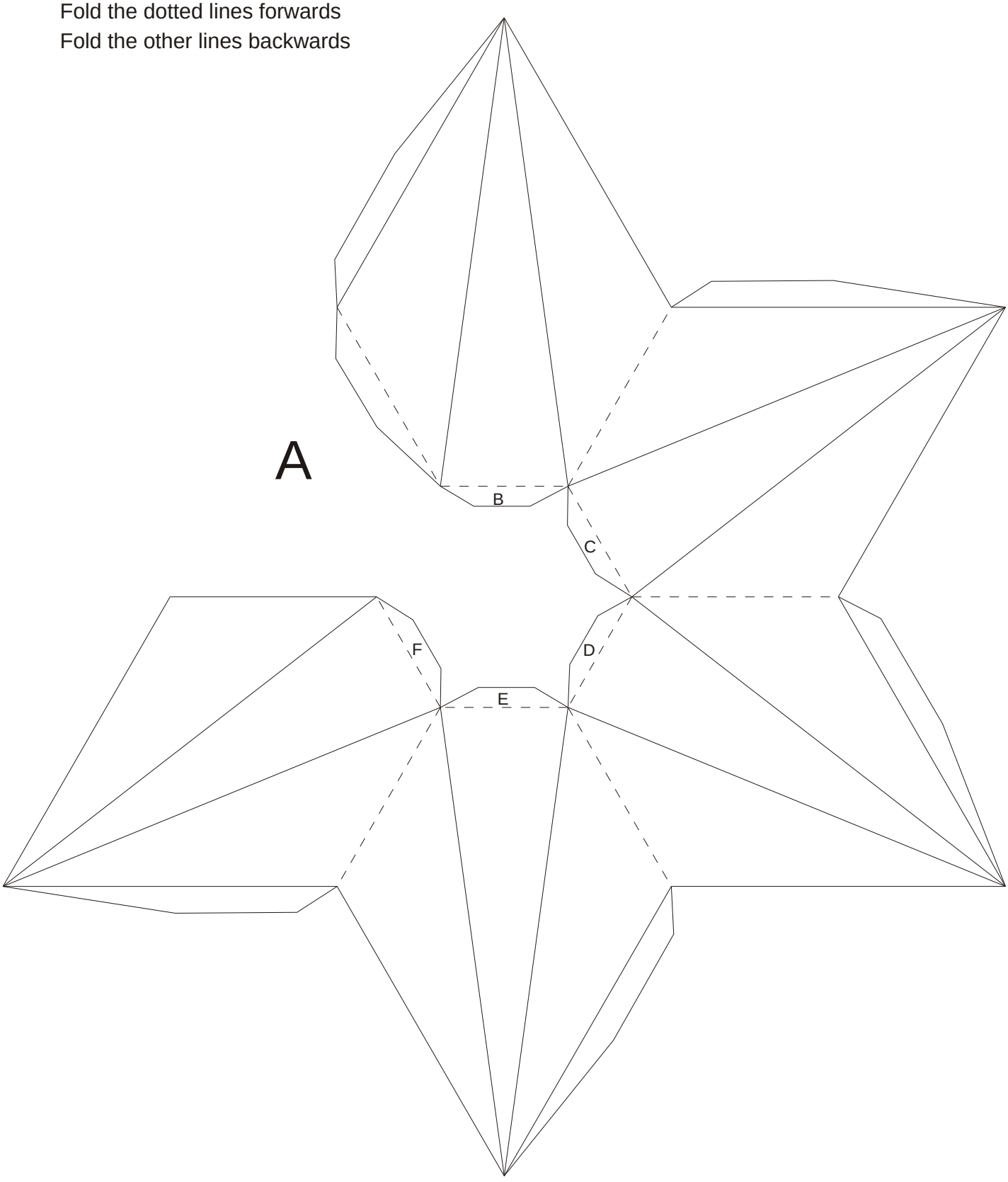
L


K
G
G
H
H
I
I
J
J
K

Final Stellation of the icosahedron

Fold the dotted lines forwards

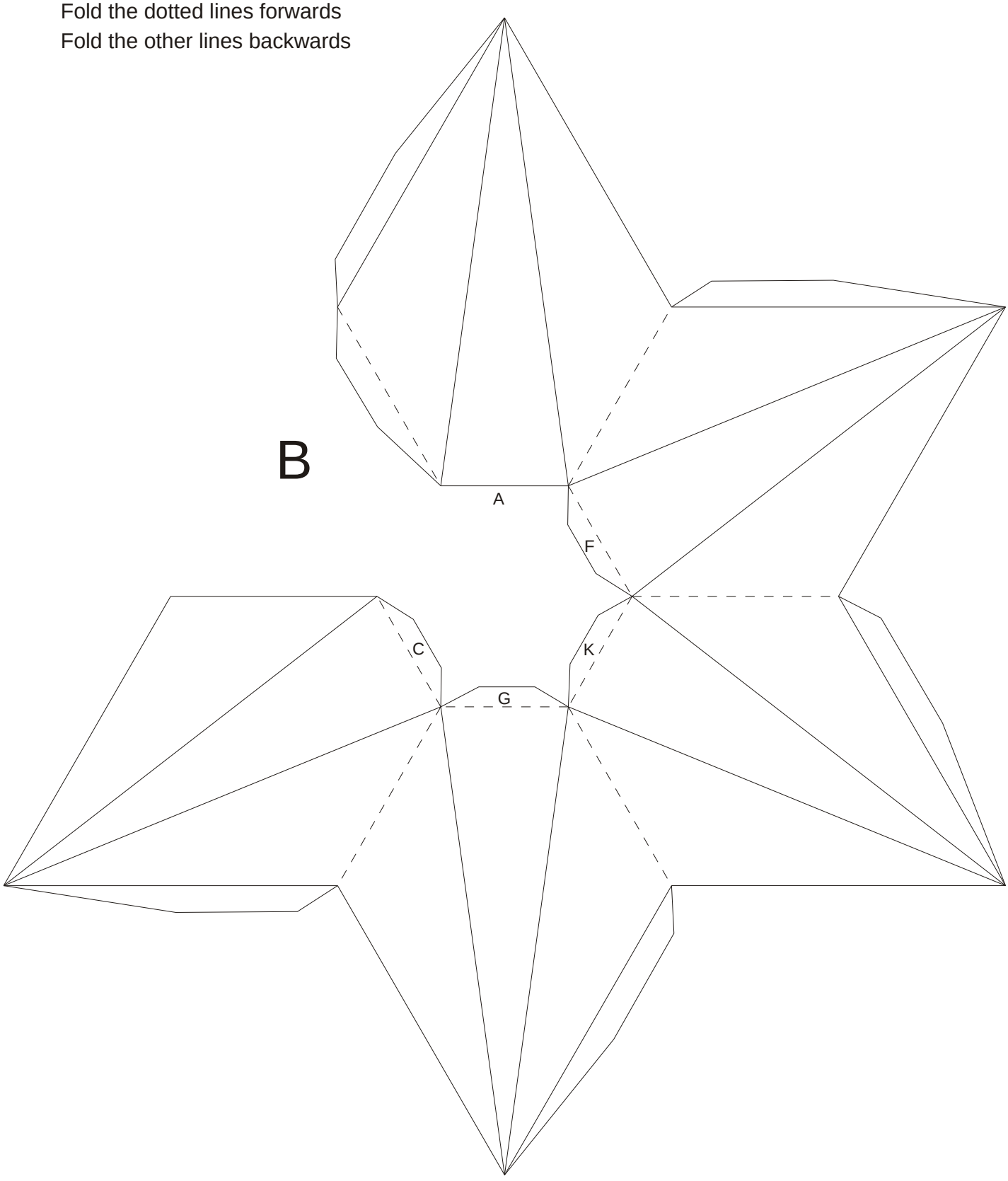
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

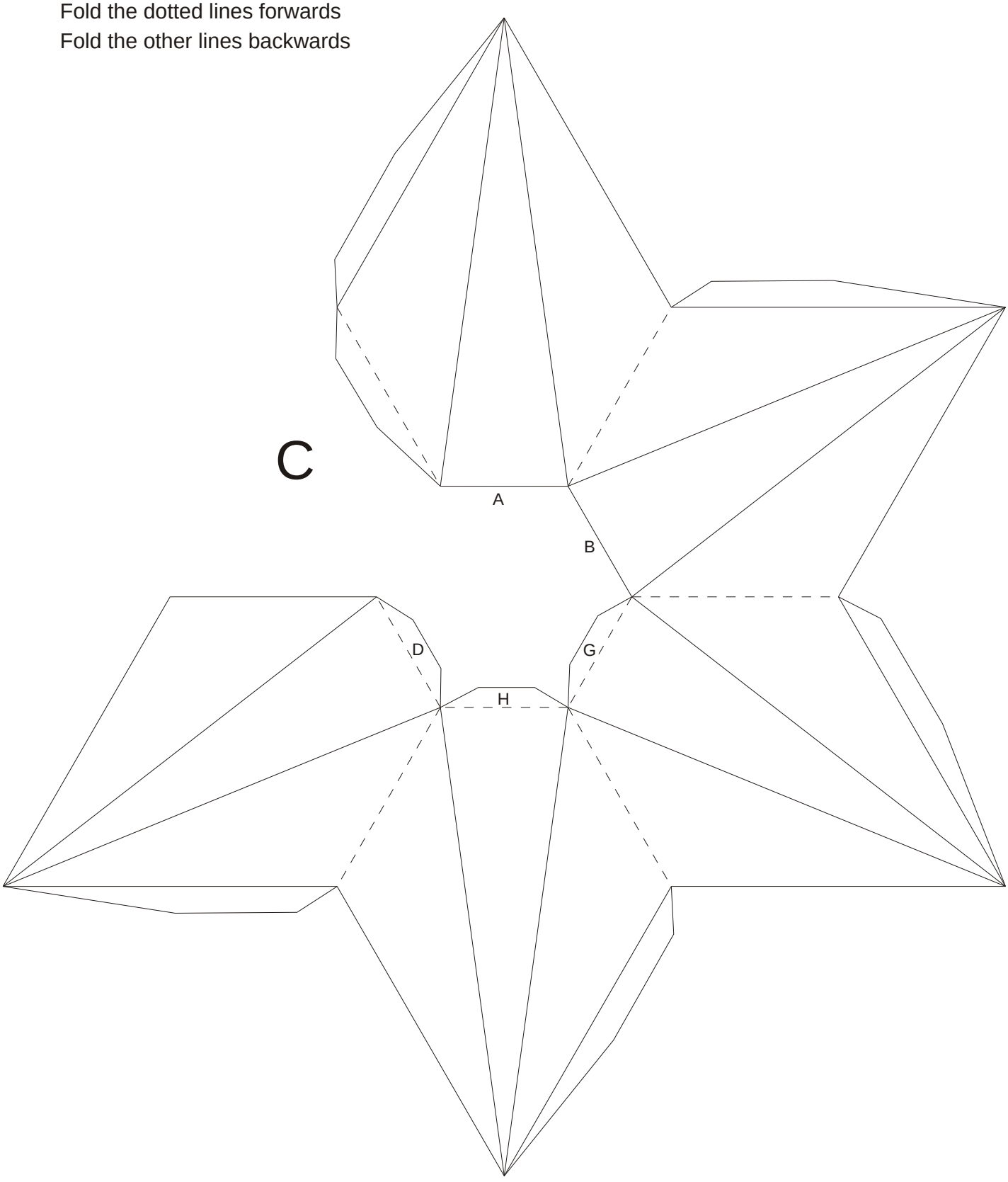
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

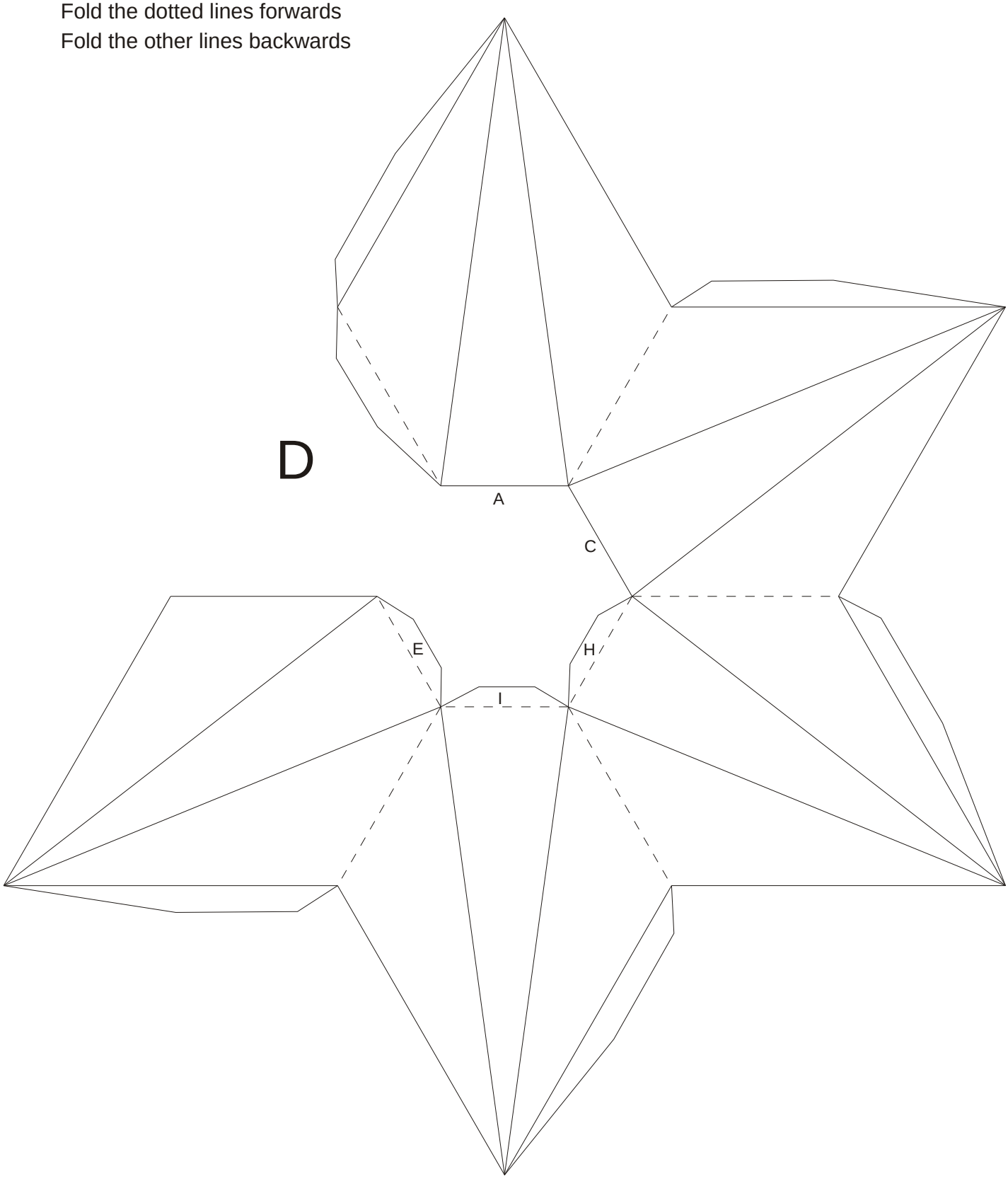
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

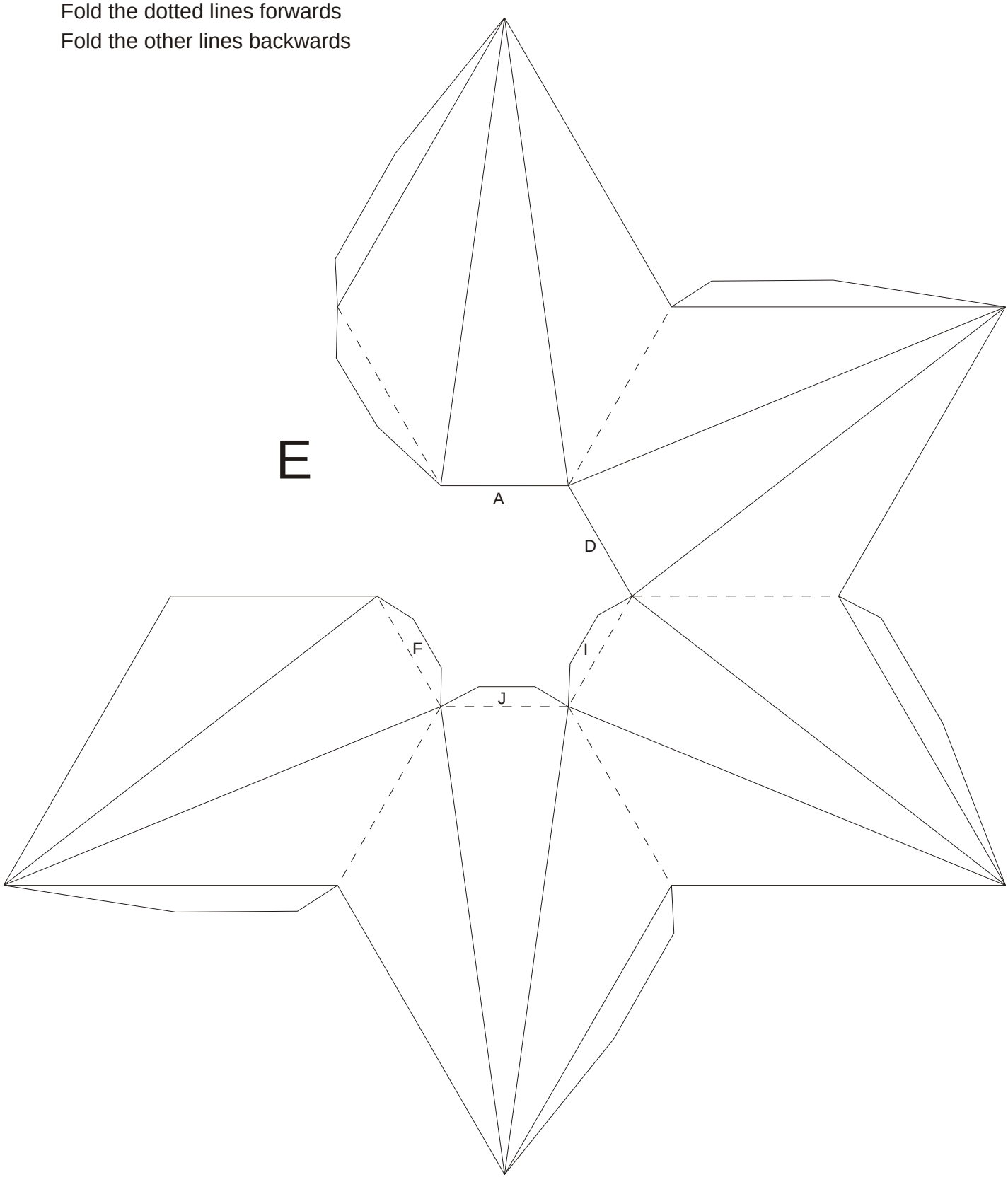
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

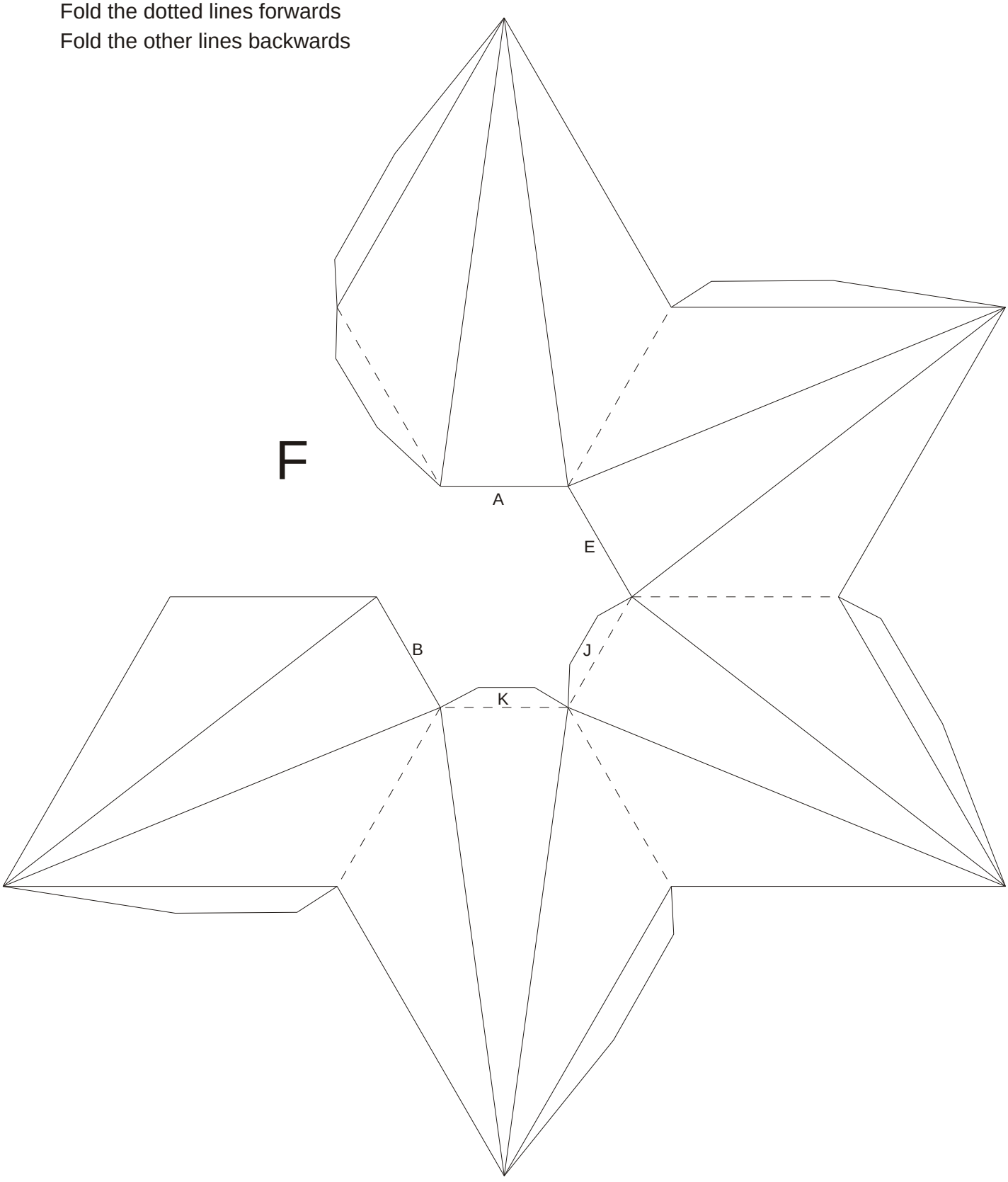
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

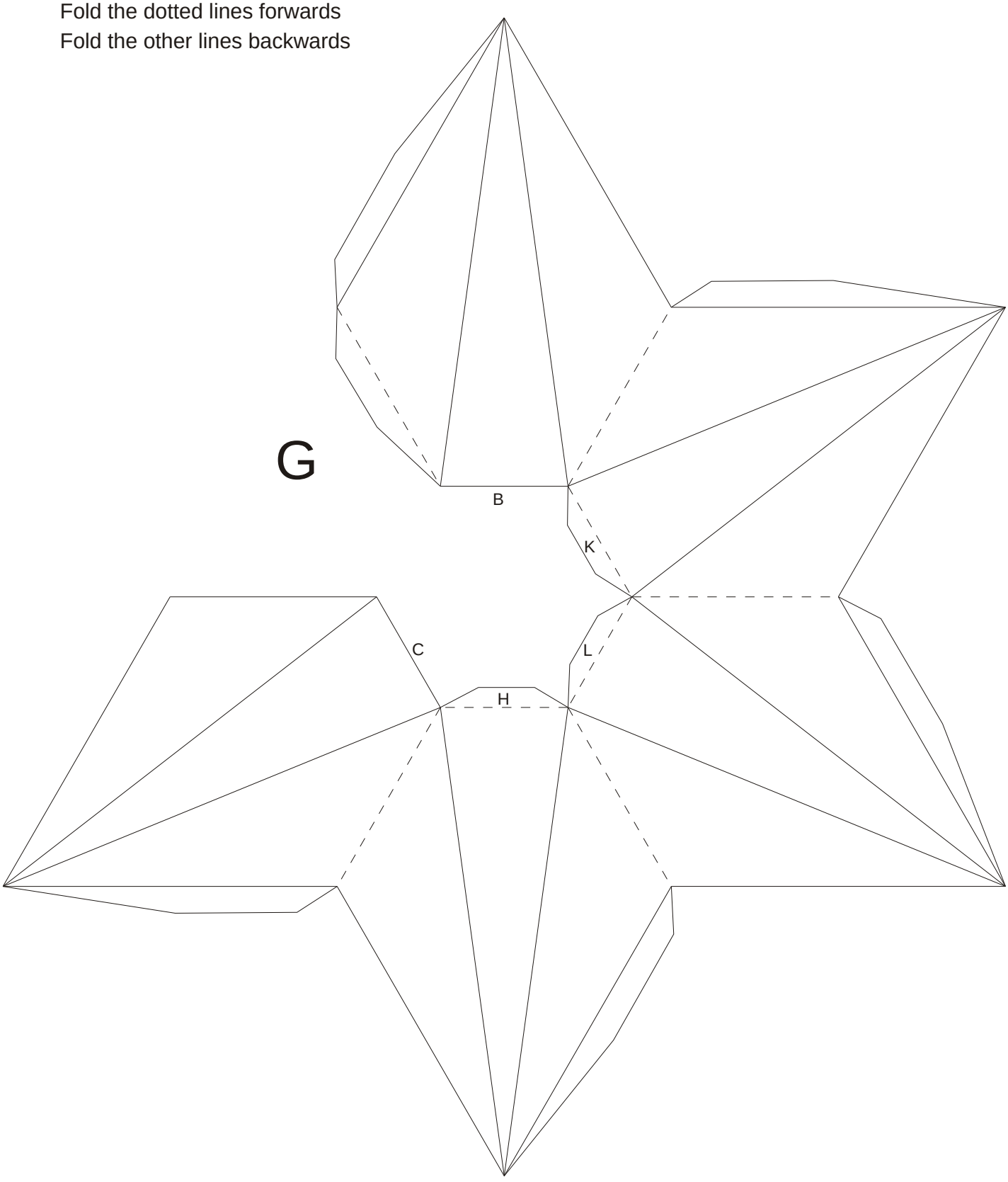
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

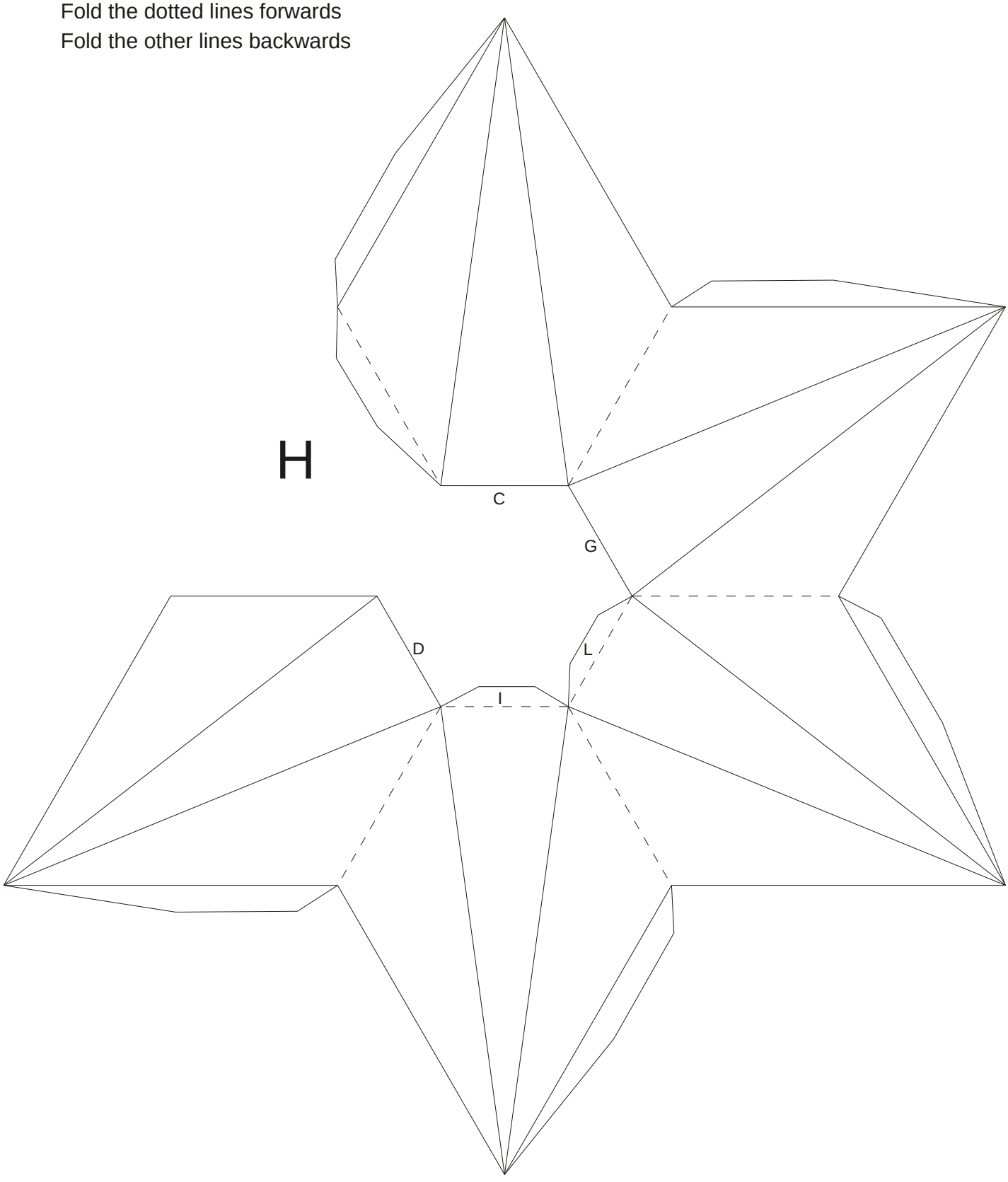
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

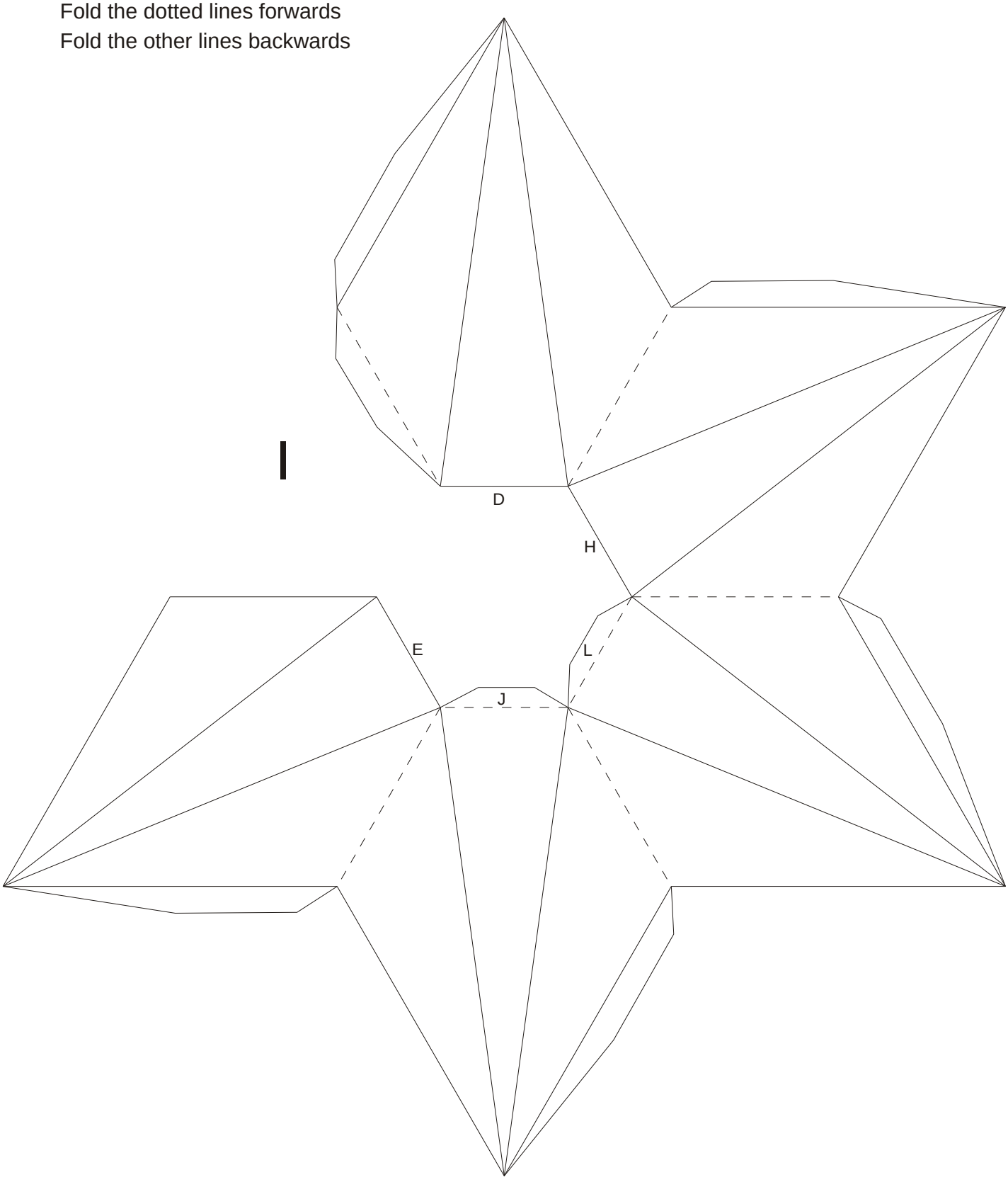
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

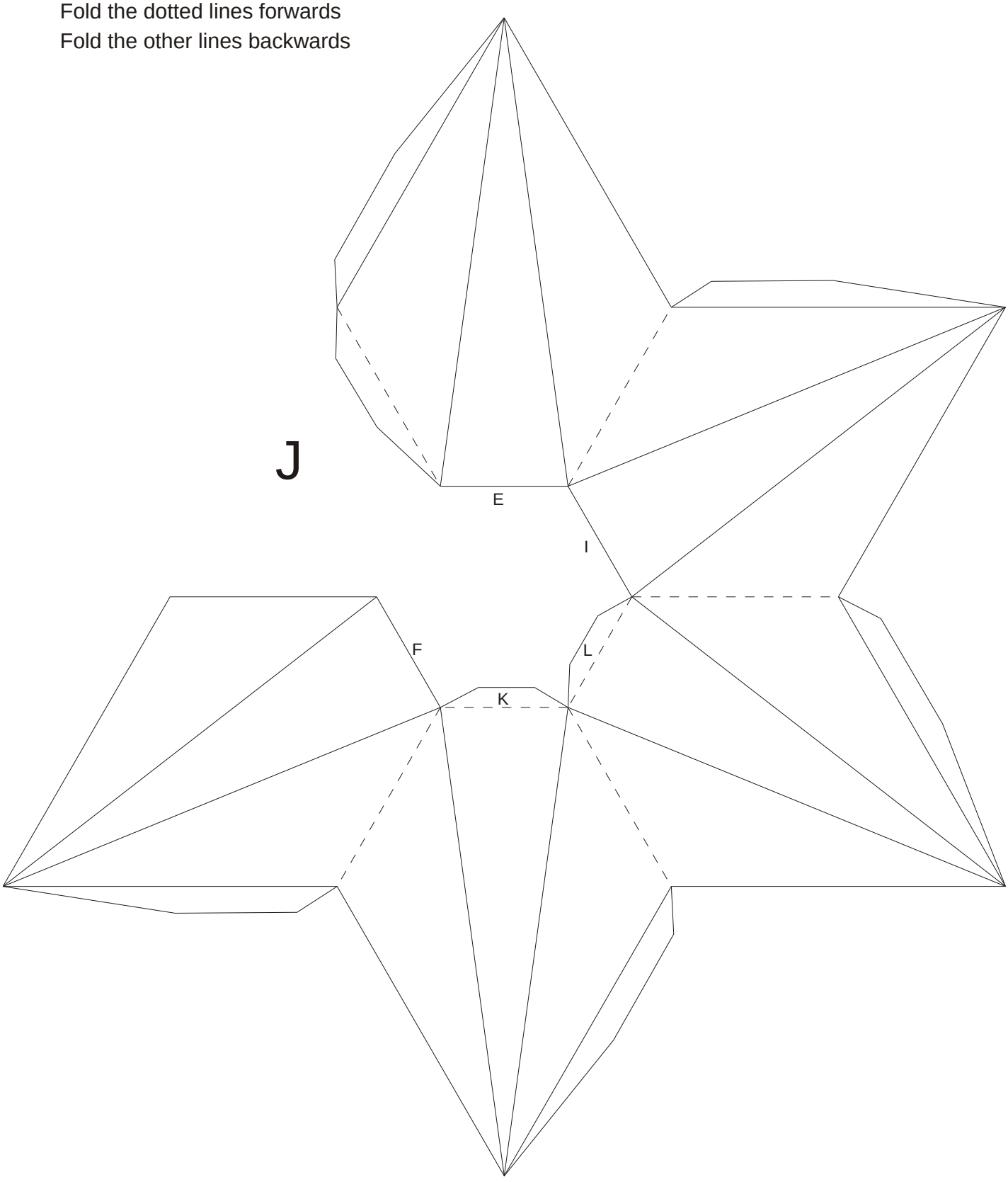
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

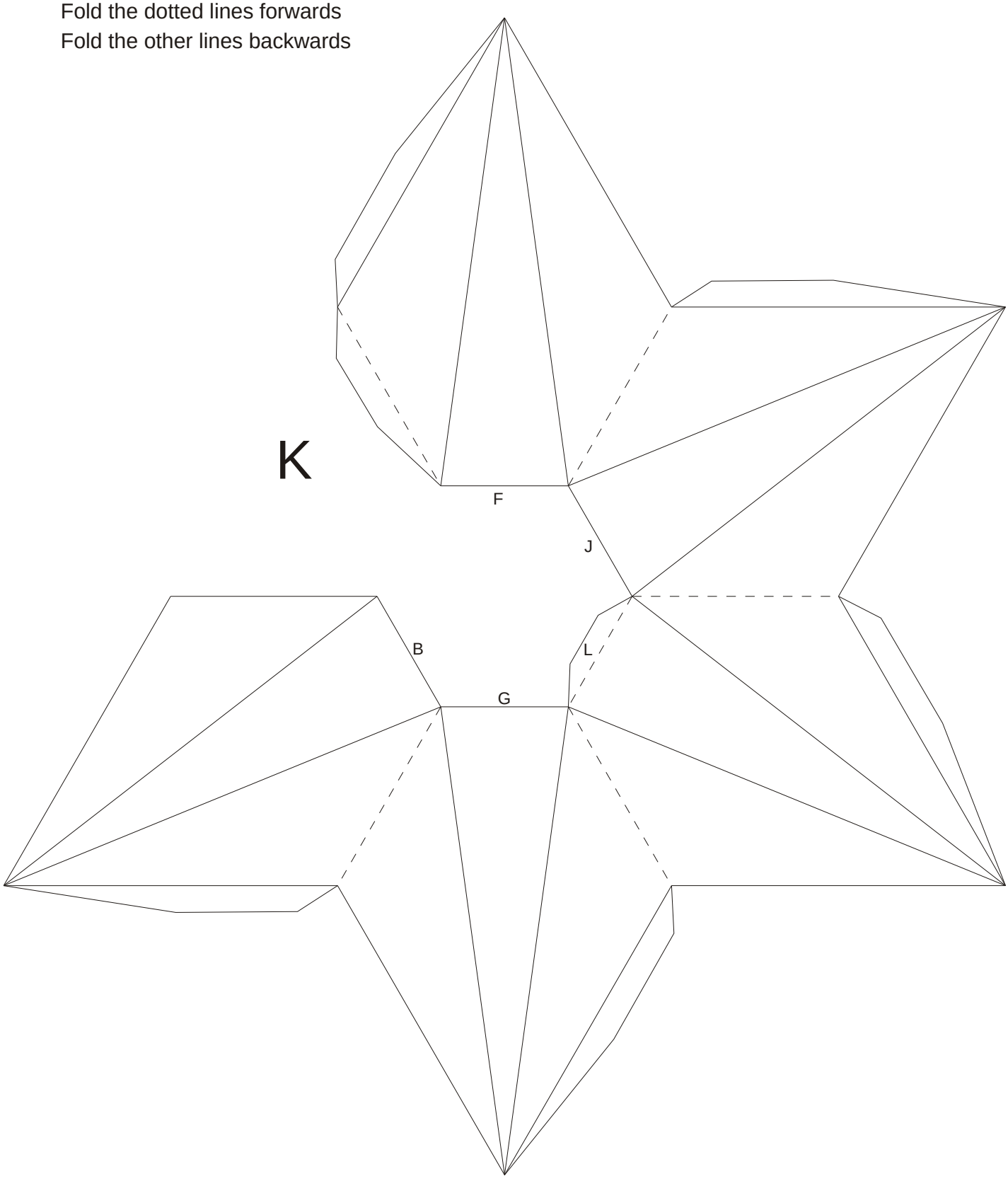
Fold the other lines backwards



Final Stellation of the icosahedron

Fold the dotted lines forwards

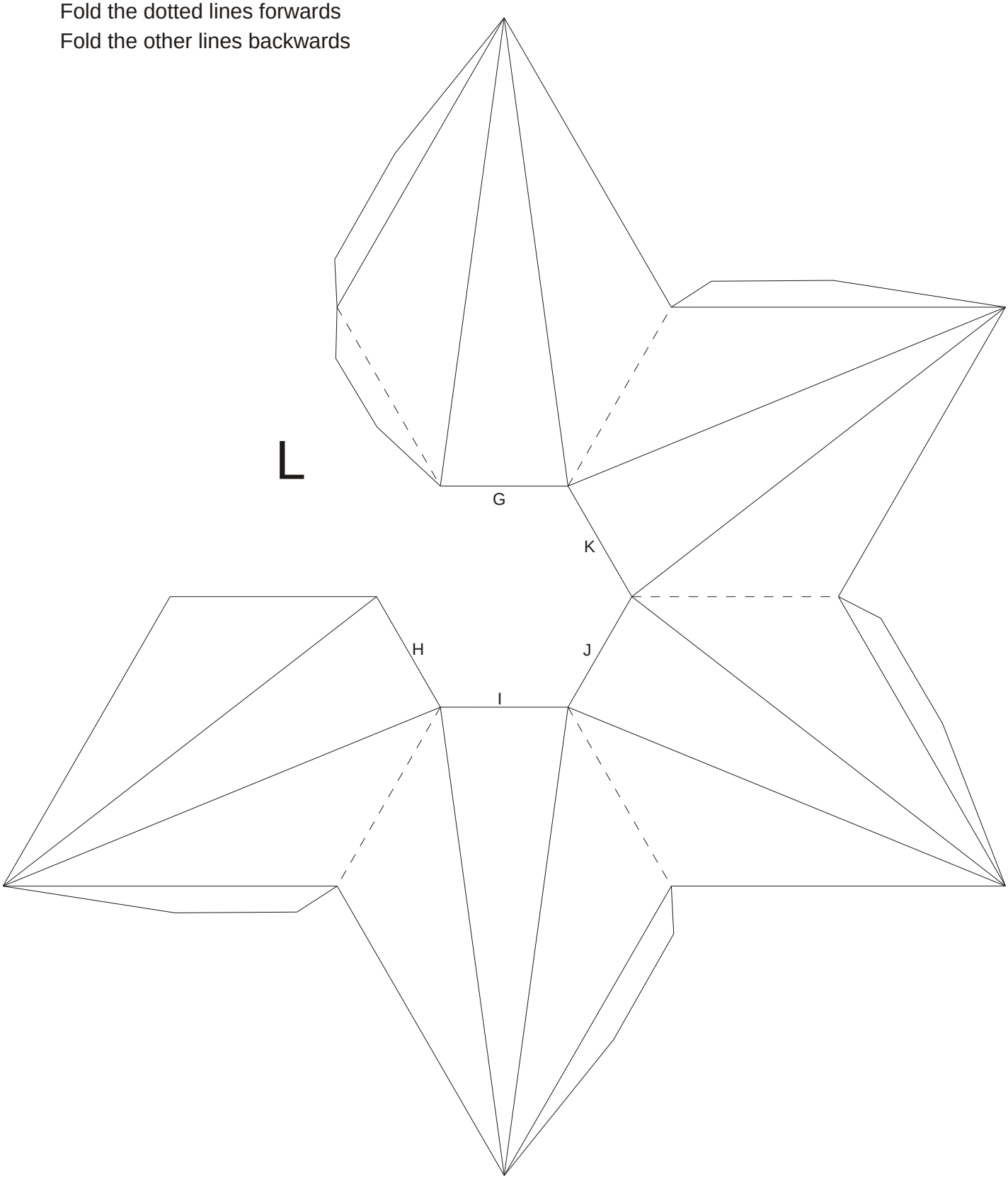
Fold the other lines backwards



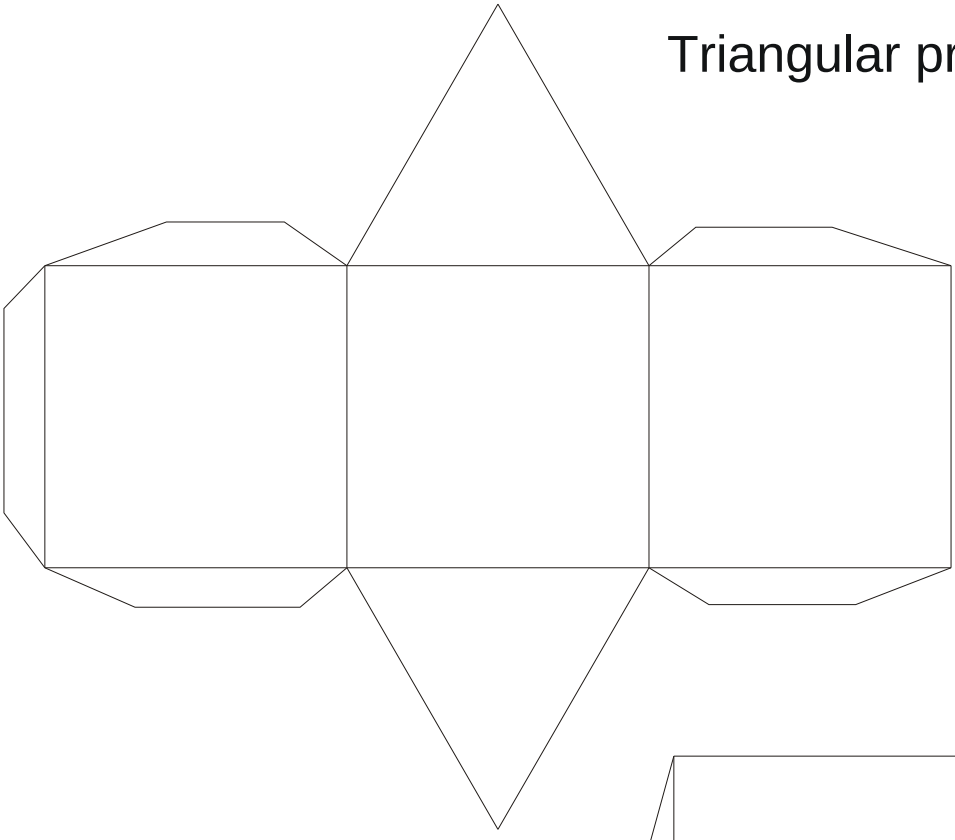
Final Stellation of the icosahedron

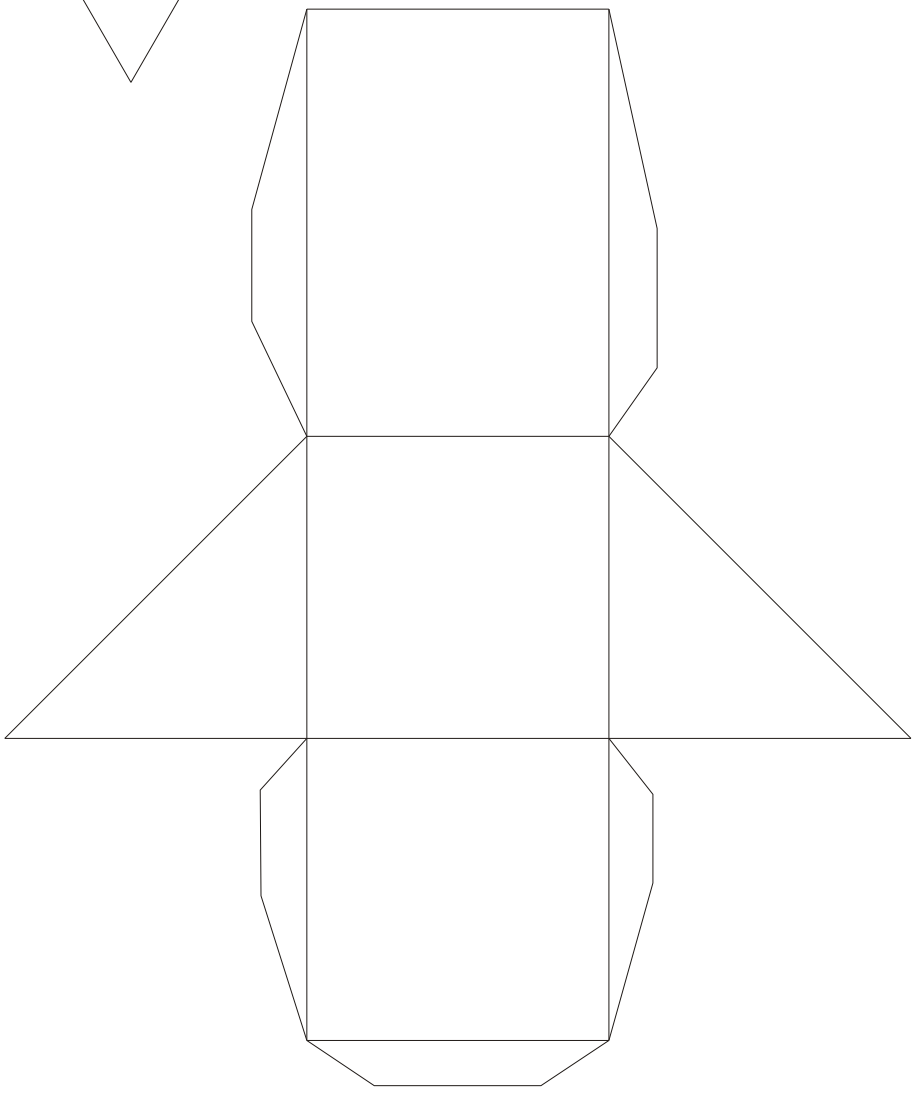
Fold the dotted lines forwards

Fold the other lines backwards

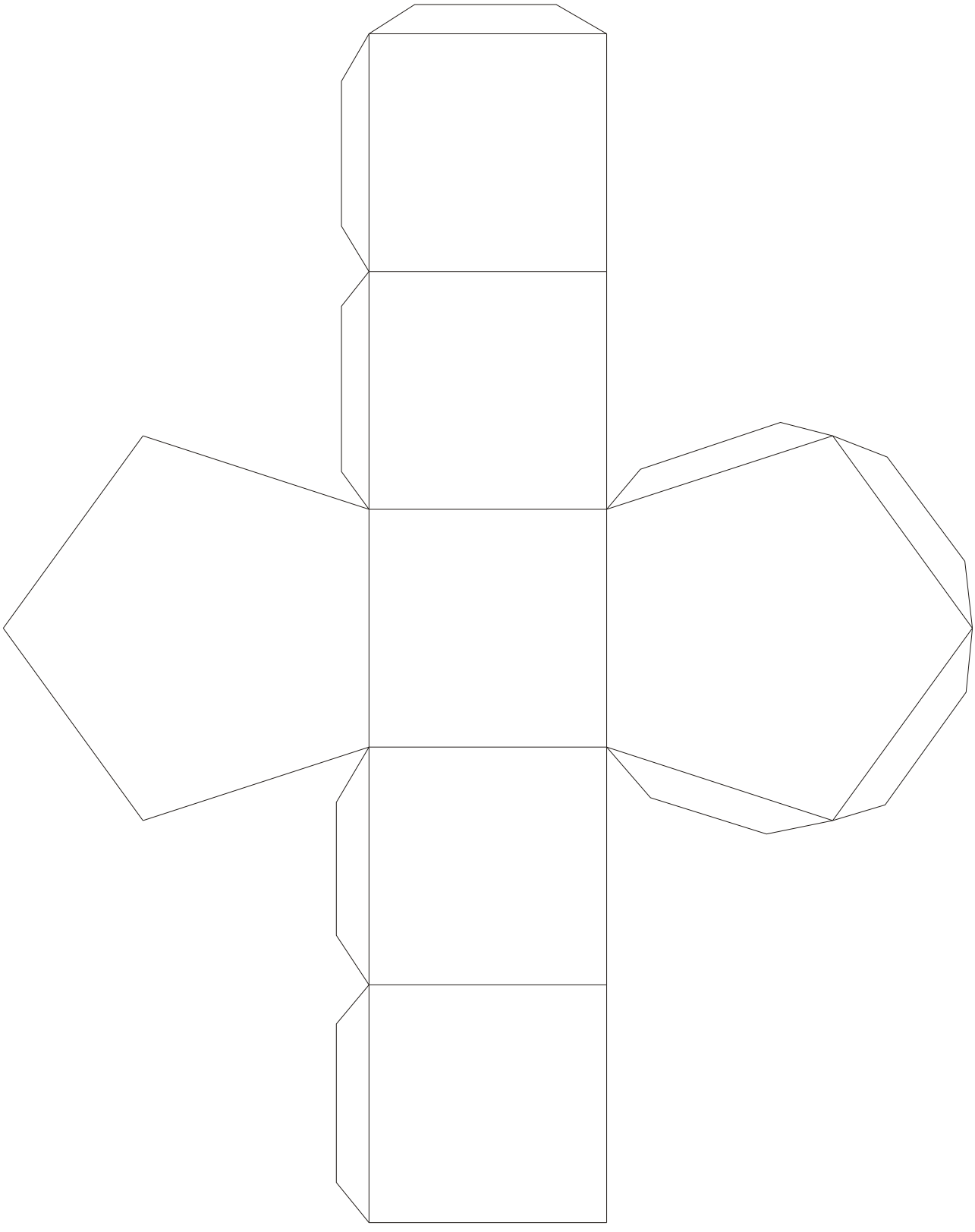


Triangular prisms

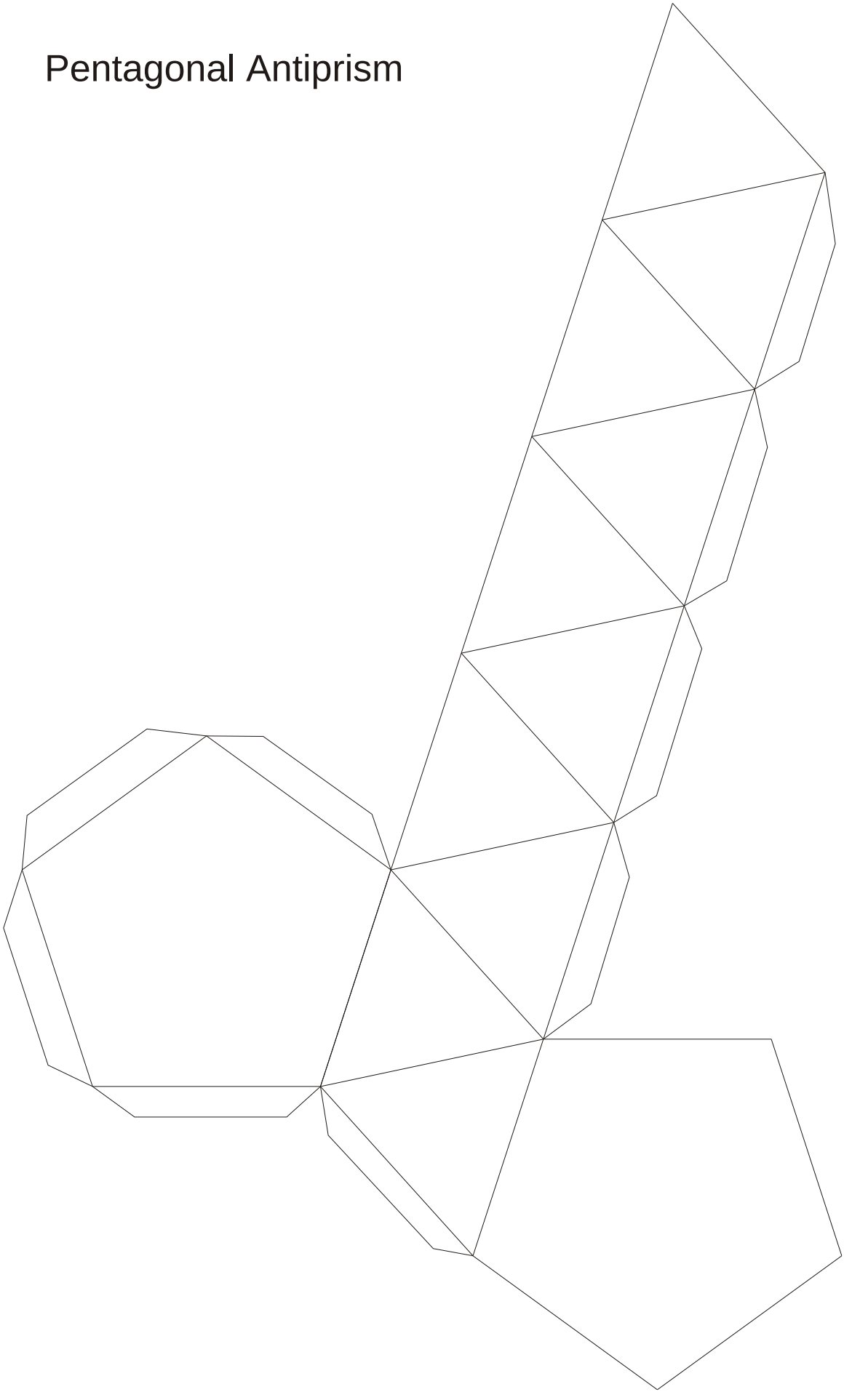




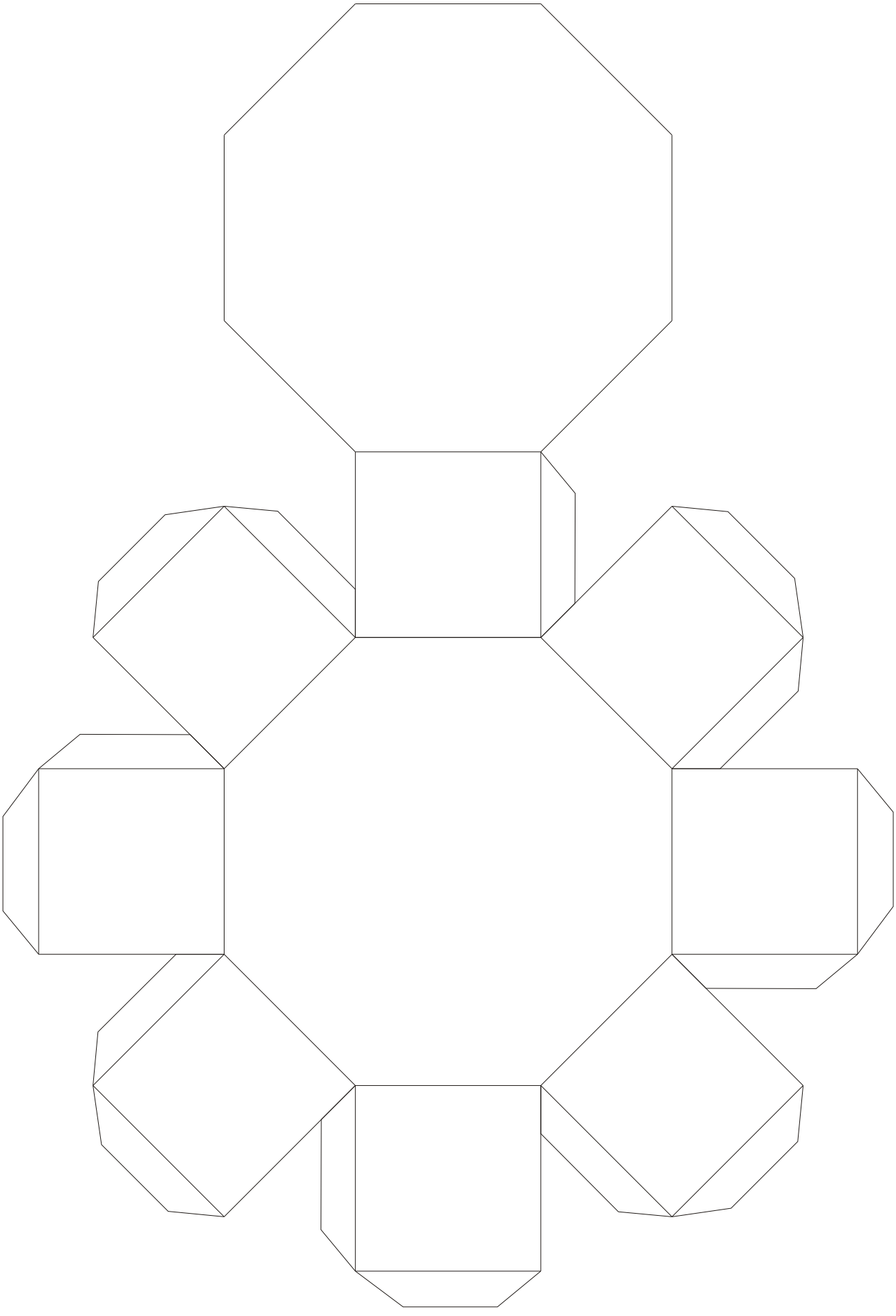
Pentagonal Prism



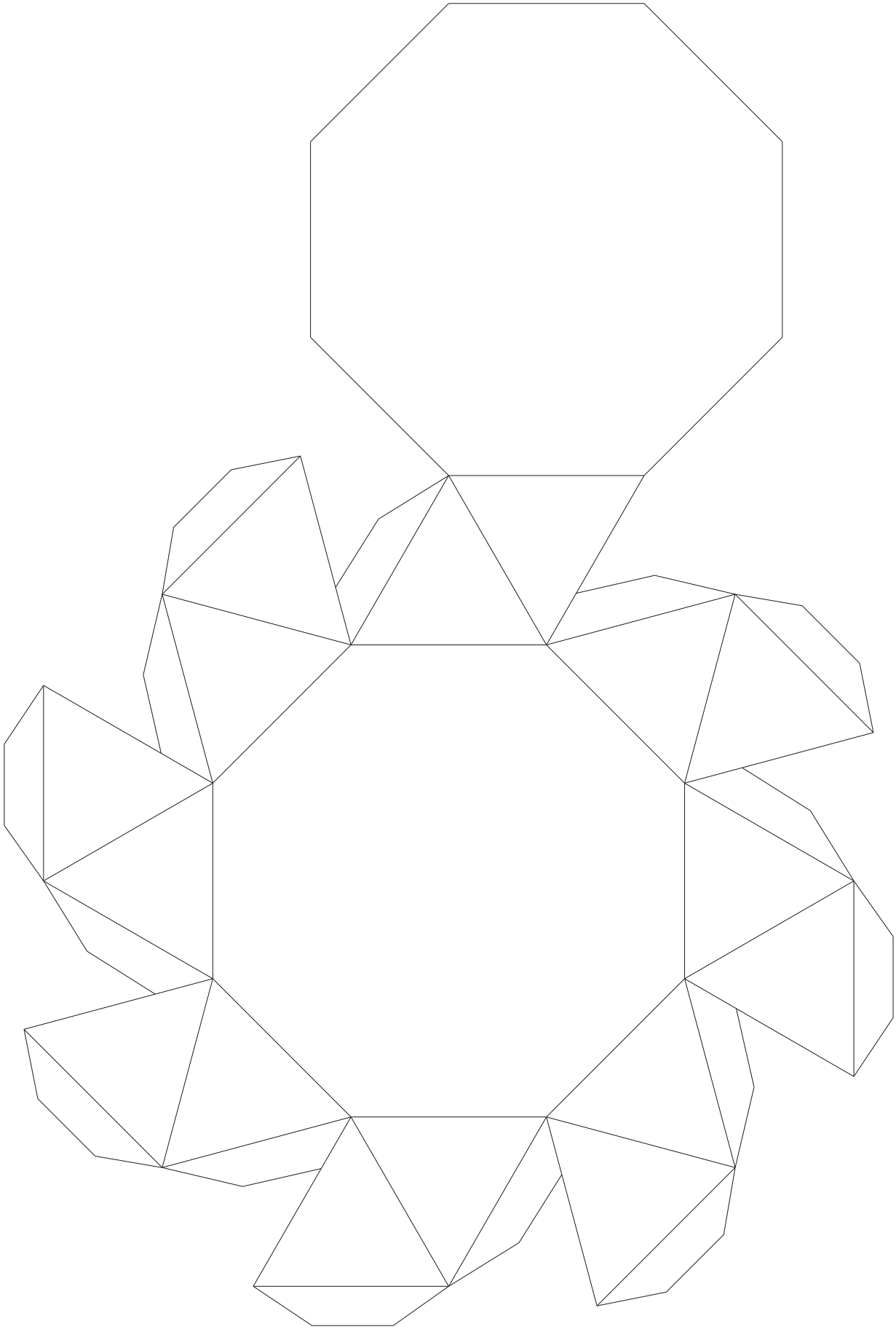
Pentagonal Antiprism



Octagonal Prism



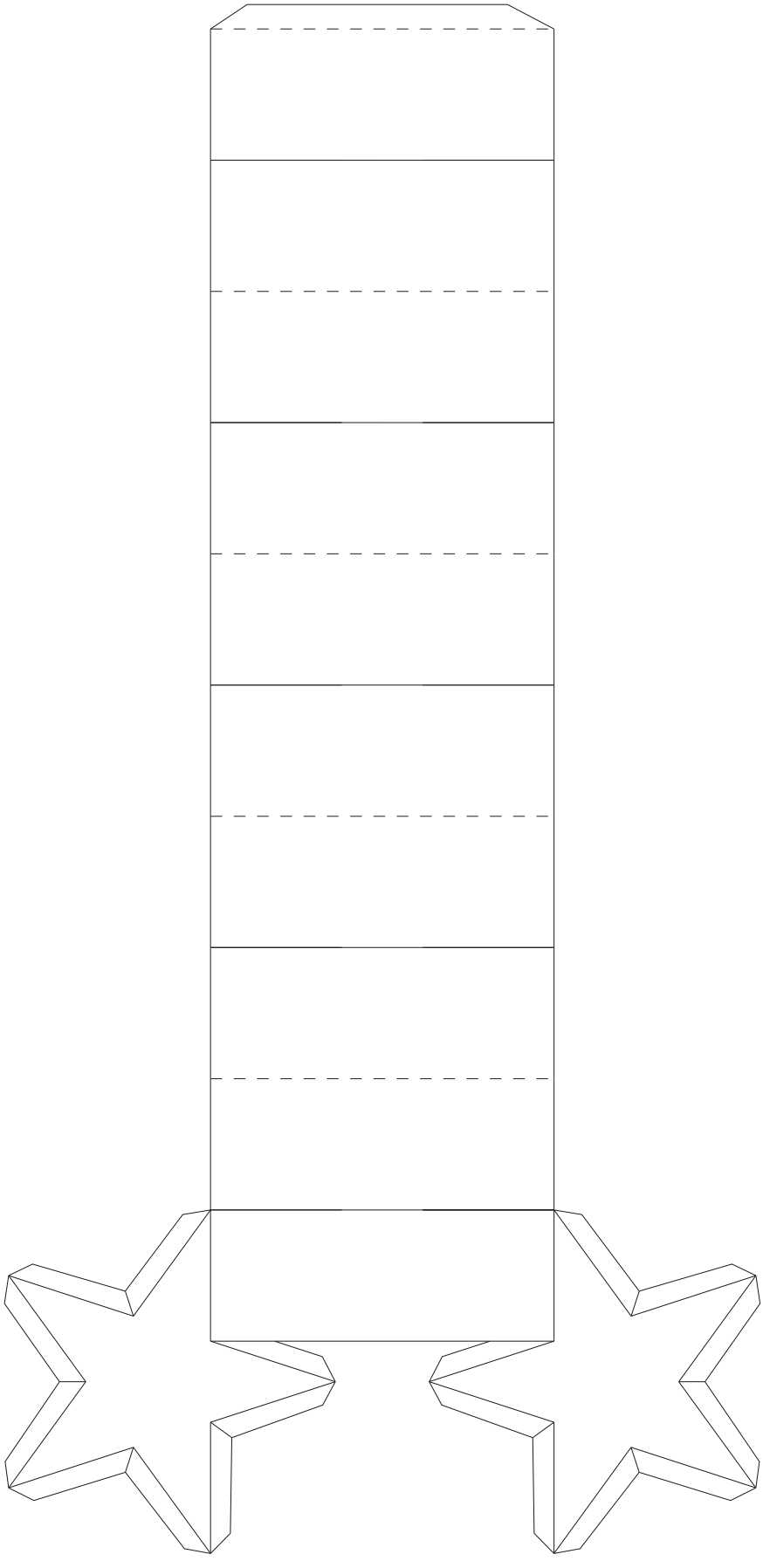
Octagonal Antiprism



Pentagrammic Prism

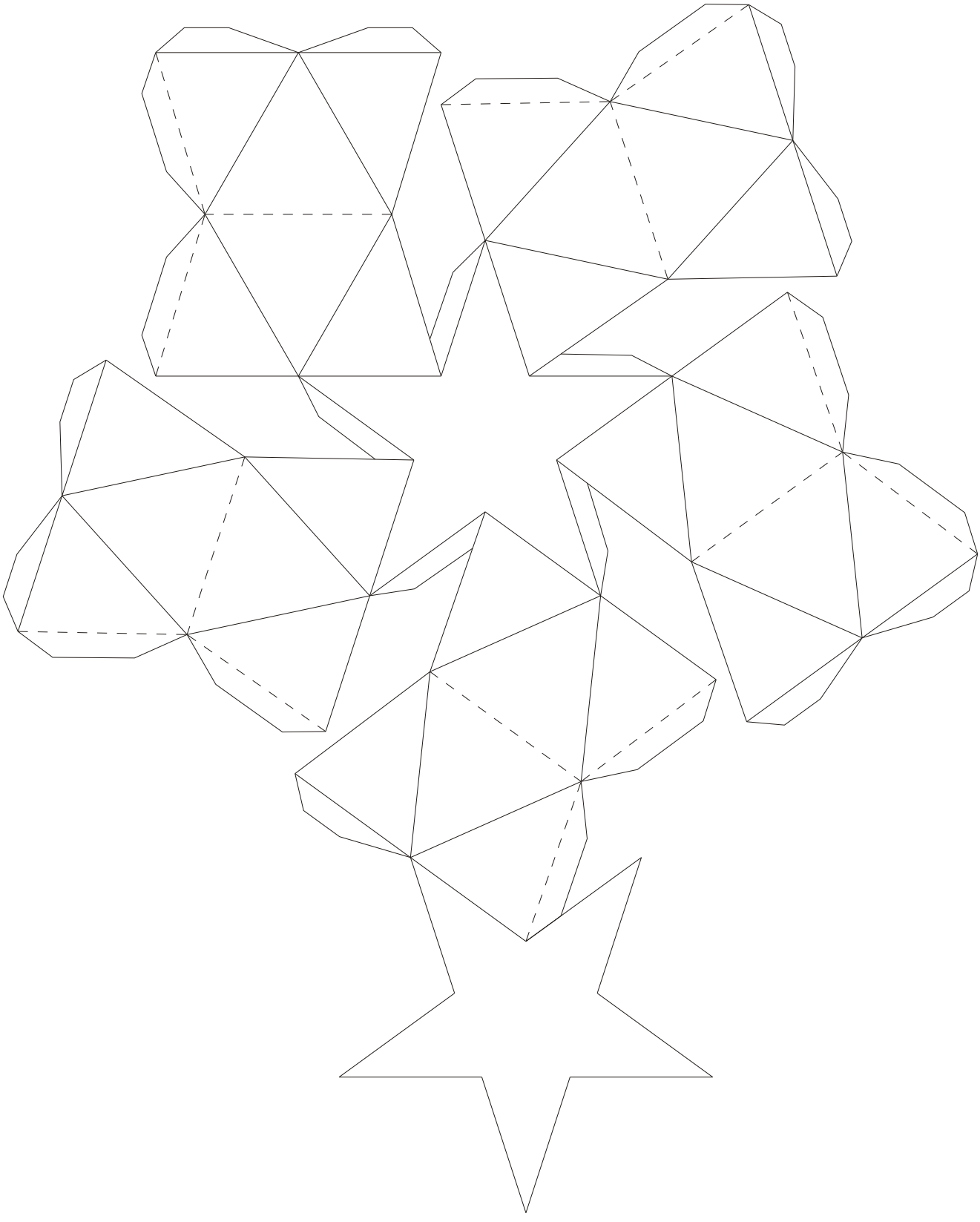
Fold the dotted lines forwards

Fold the other lines backwards



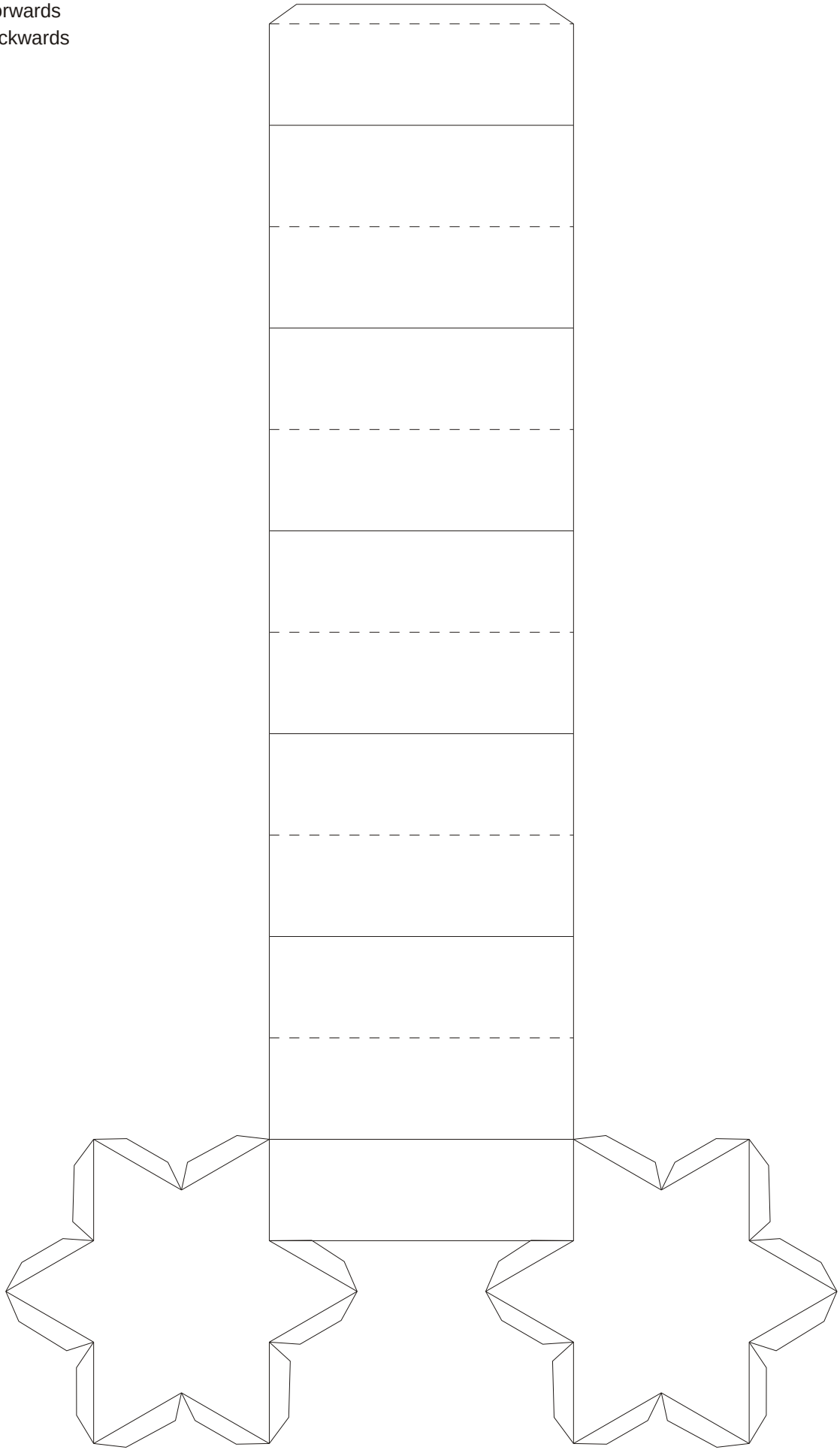
Pentagrammic Antiprism

Fold the dotted lines forwards
Fold the other lines backwards



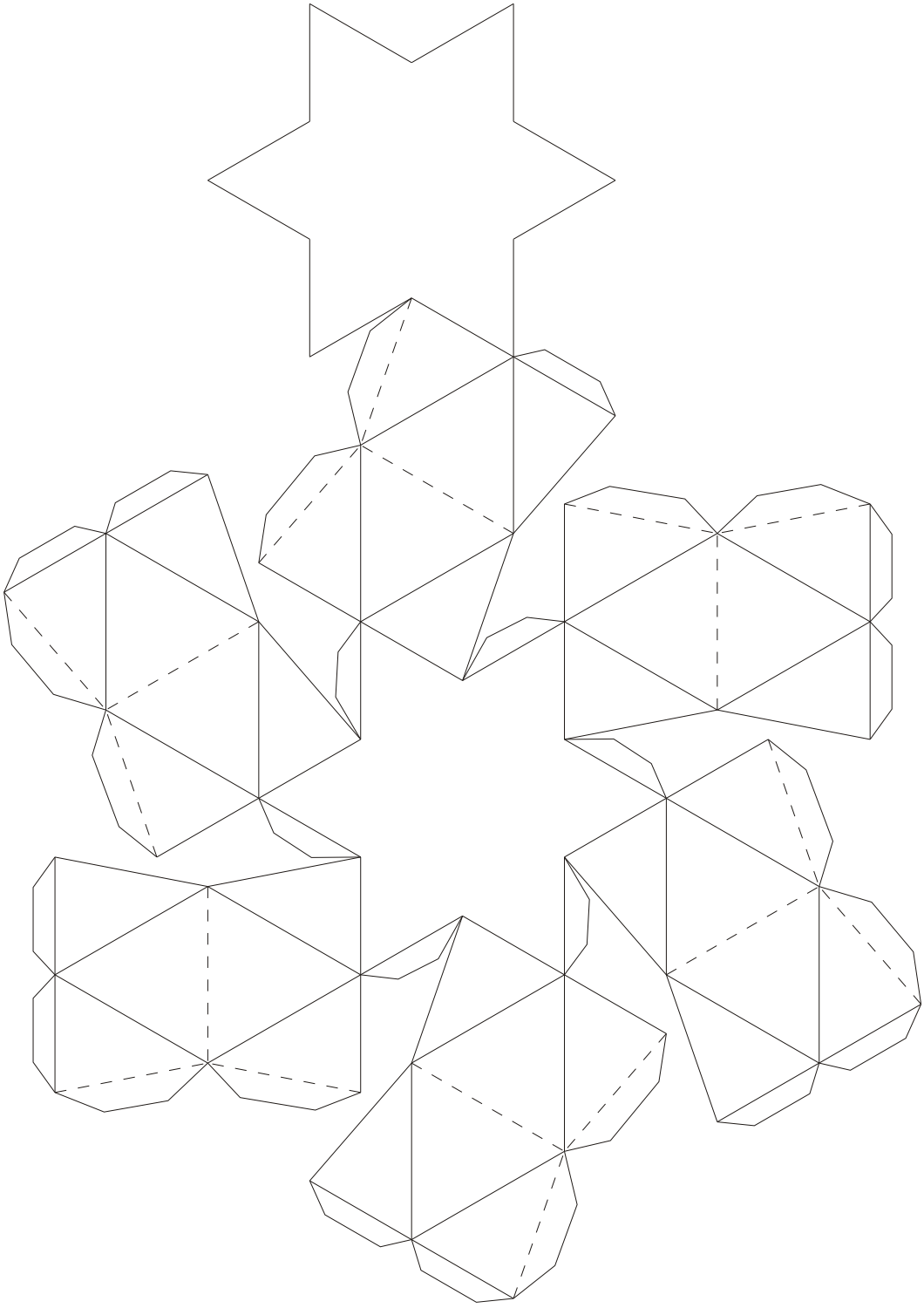
Hexagrammic Prism

Fold the dotted lines forwards
Fold the other lines backwards

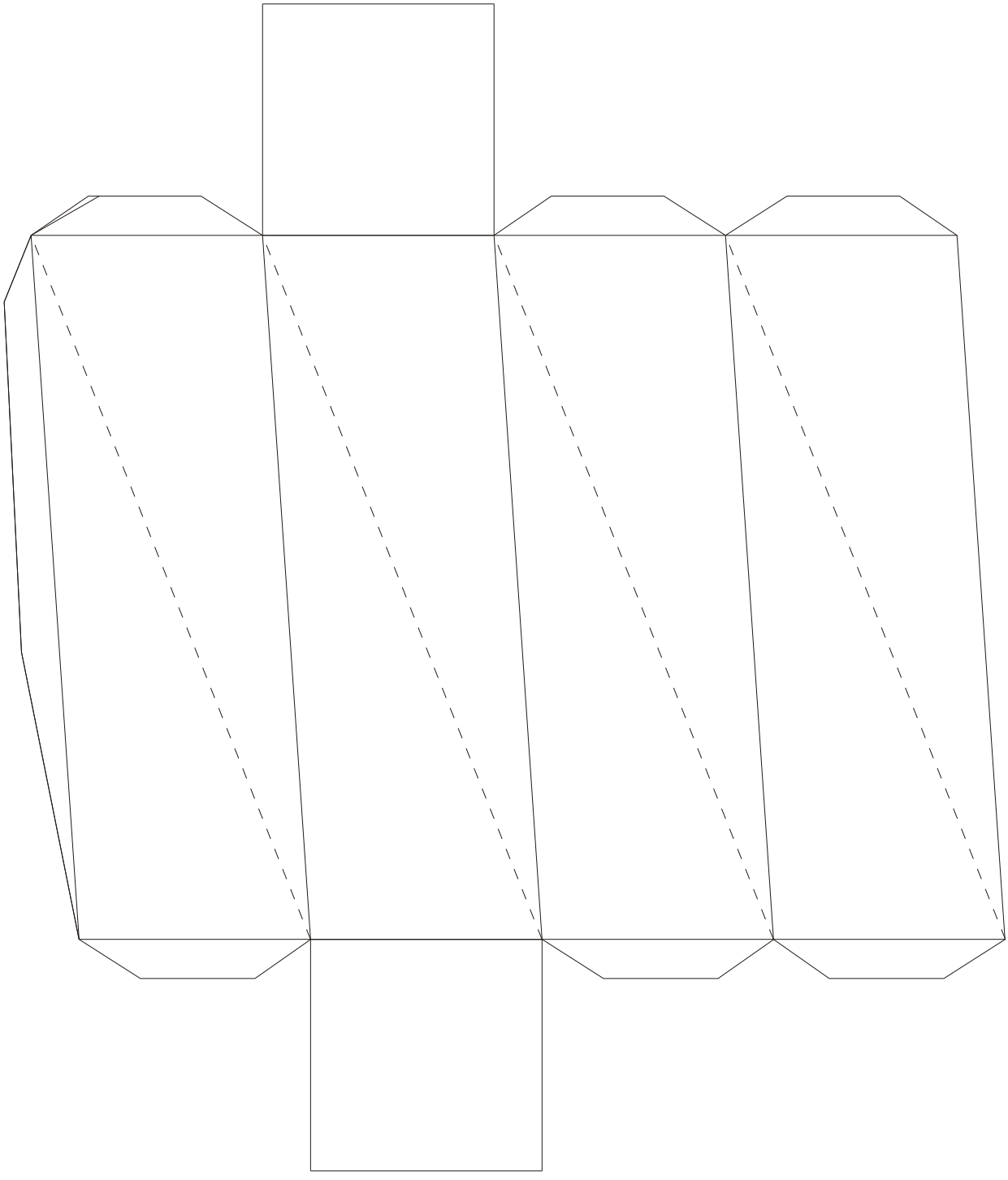


Hexagramic Antiprism

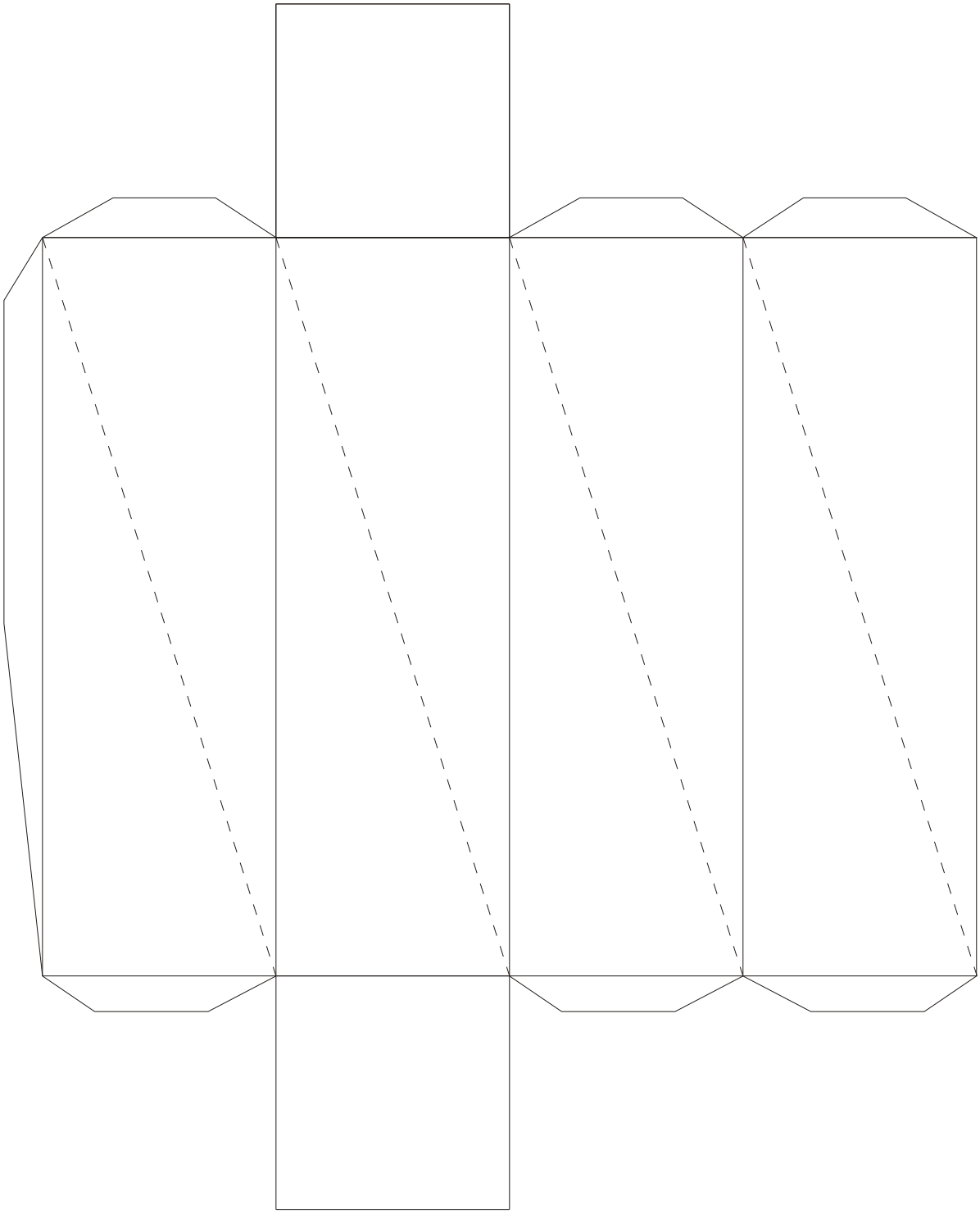
Fold the dotted lines forwards
Fold the other lines backwards



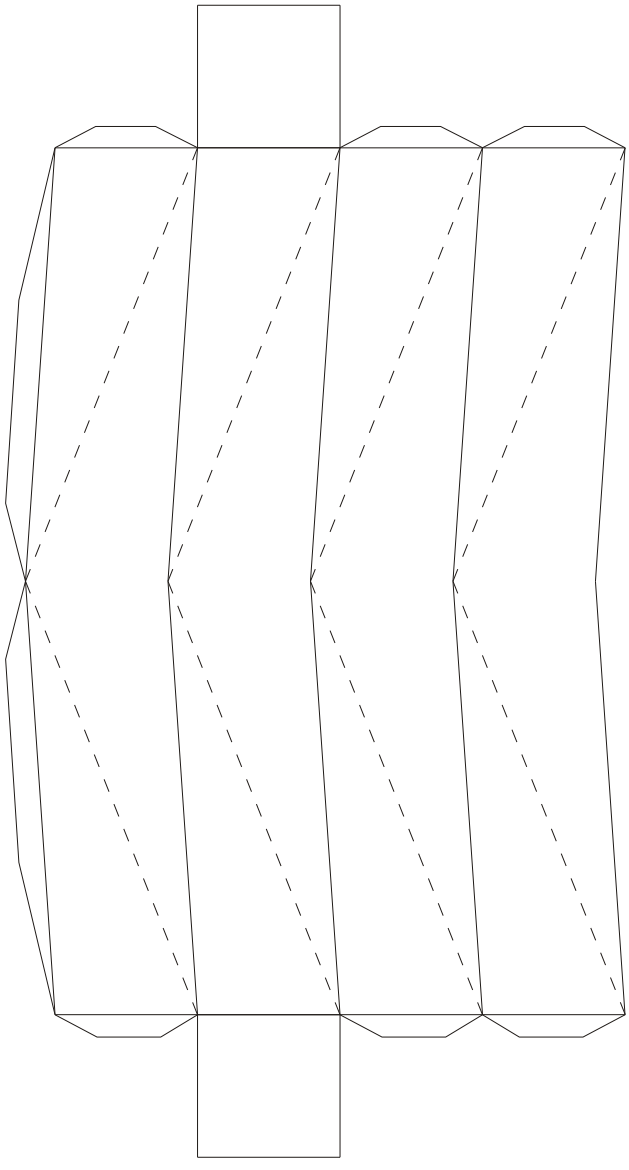
Twisted rectangular prism (45 degrees)



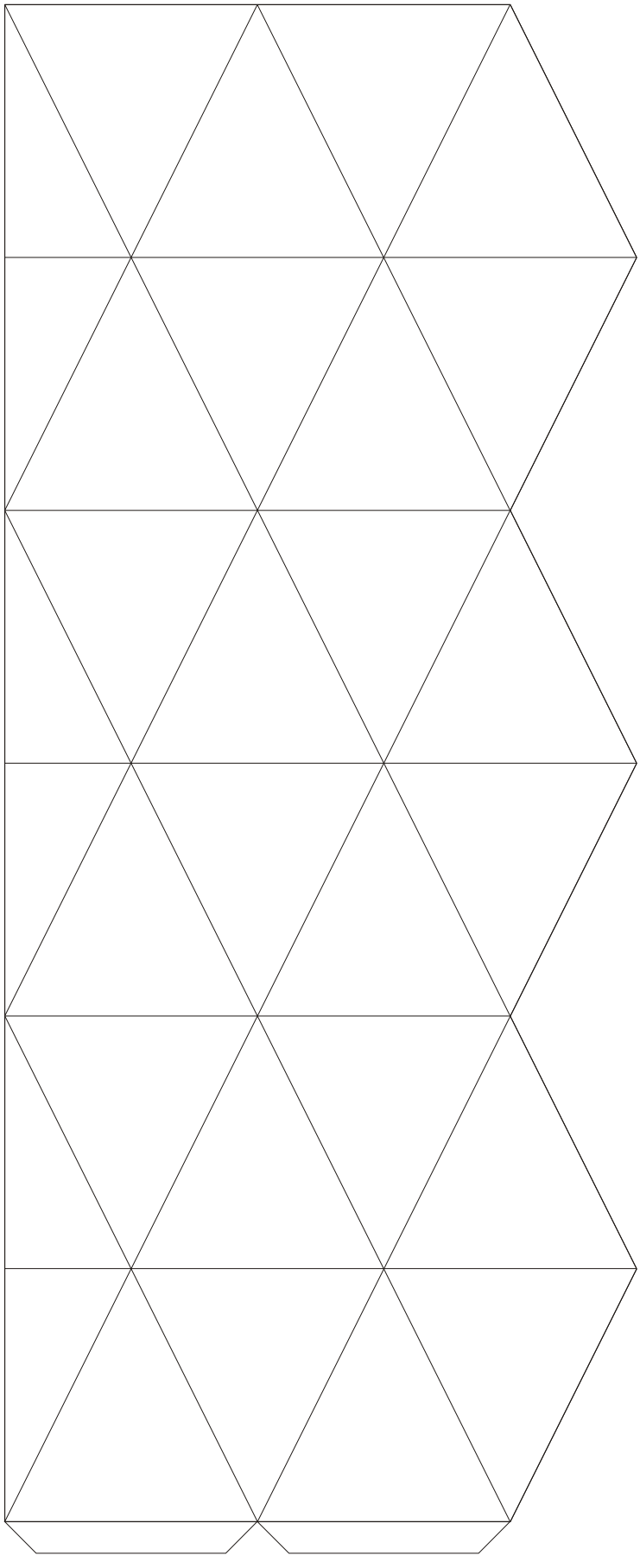
Twisted rectangular prism (90 degrees)



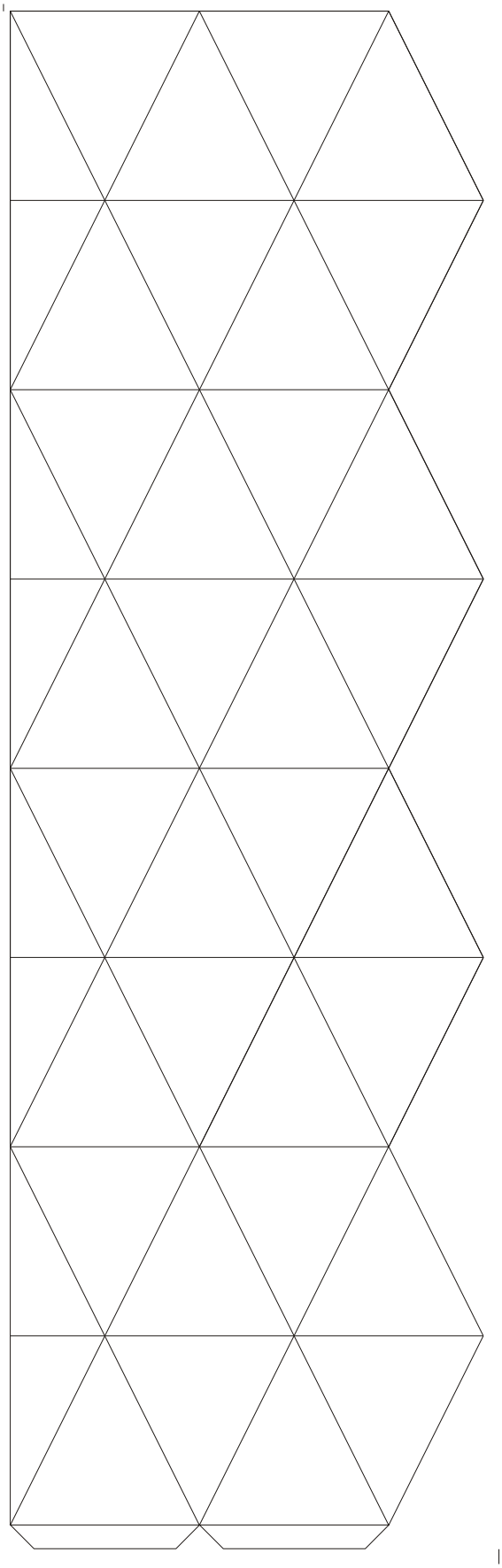
Twisted rectangular prism (+ 45 -45 degrees)



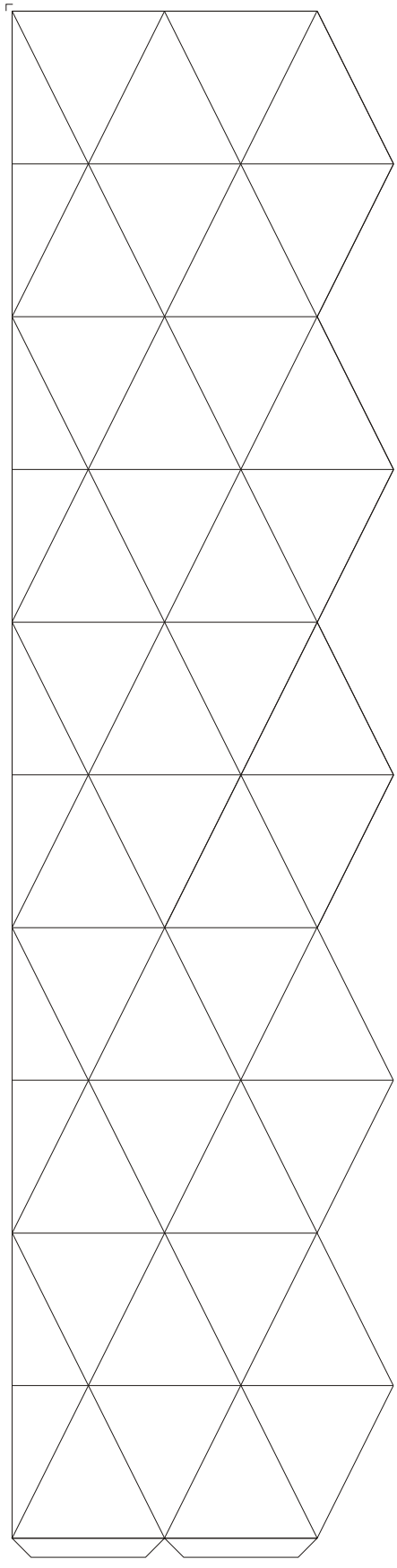
caleidocyclus



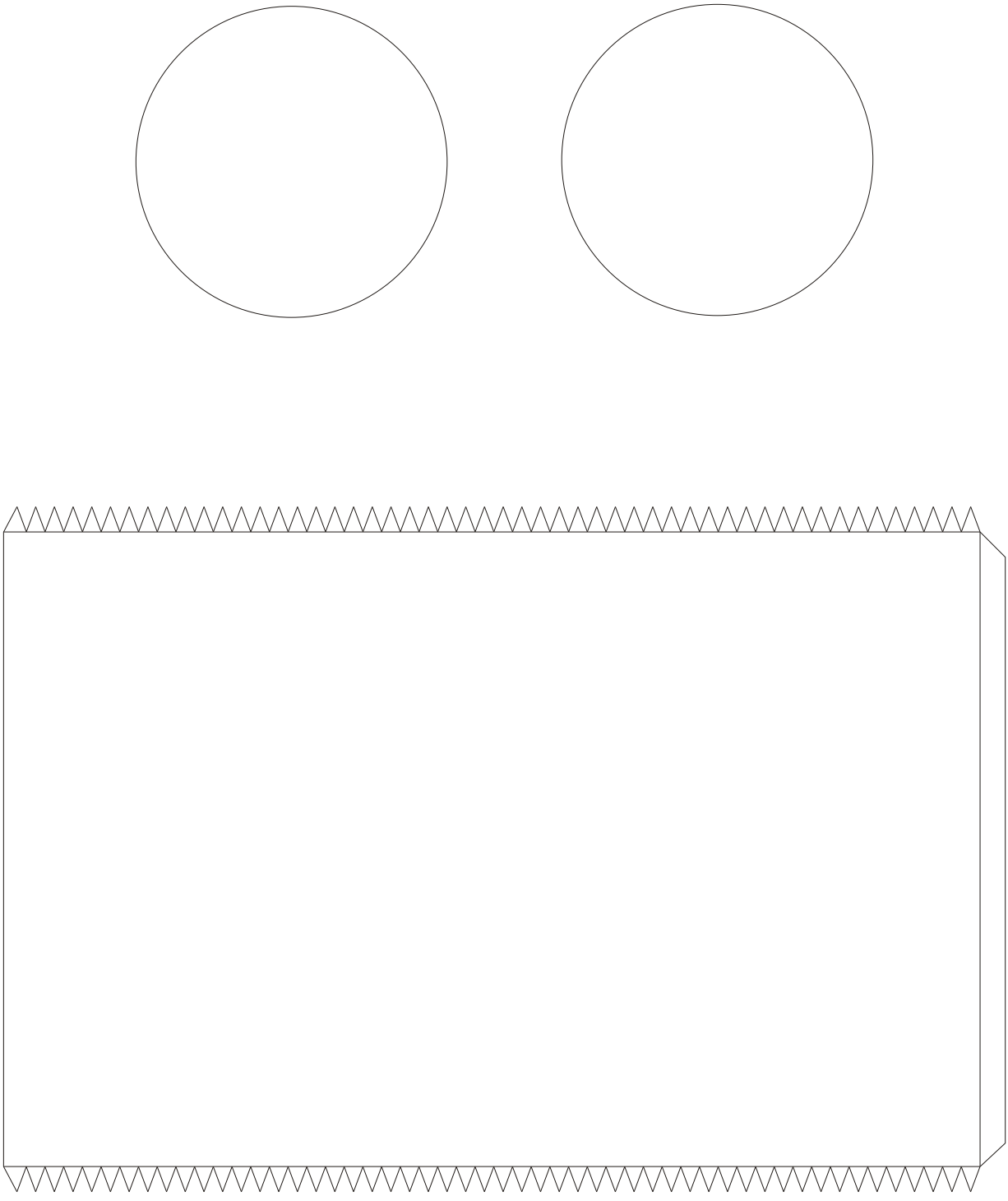
Caleidocyclus 8



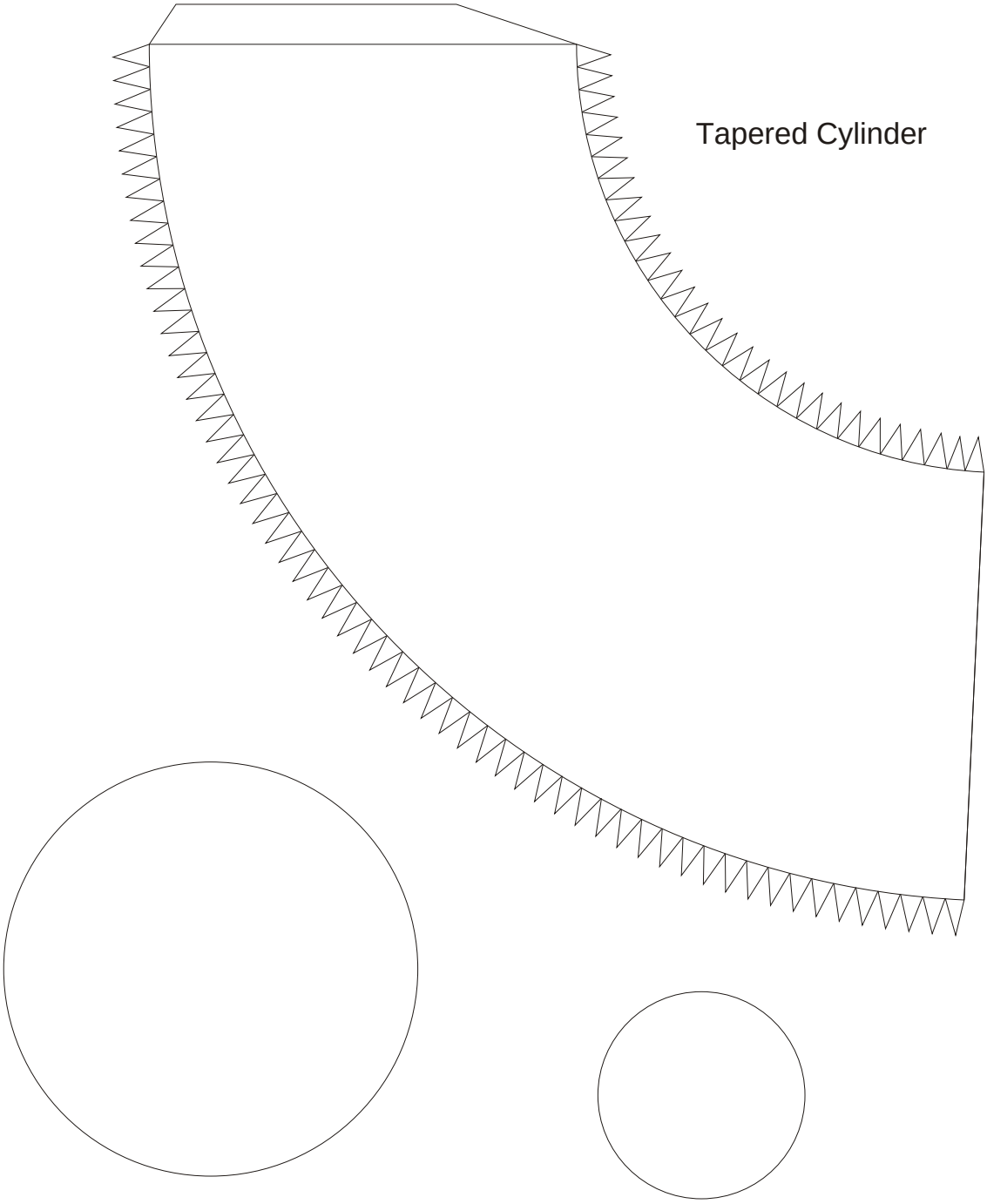
Caleidocyclus 10

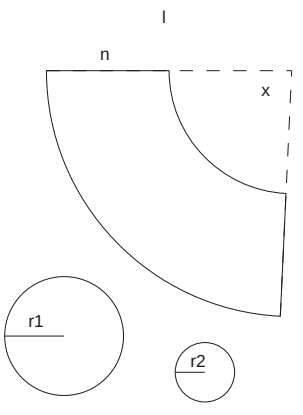


Cylinder



Tapered Cylinder





$l = \sqrt{r^2 + h^2}$

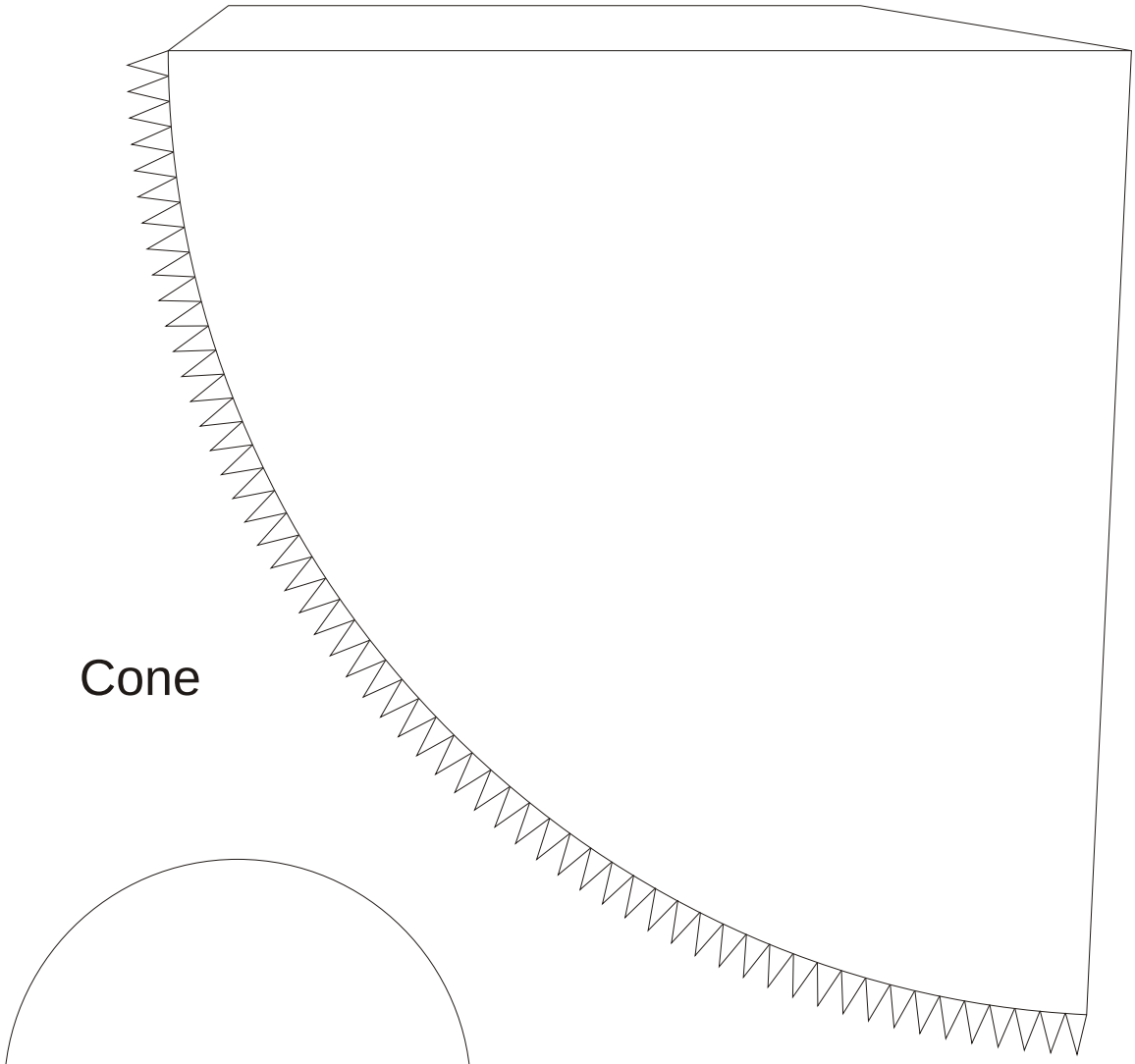
$c = 2 \pi r1$

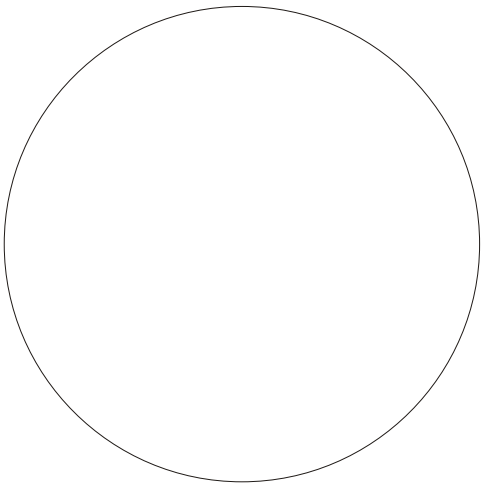
$x = 360.2. \pi / c$

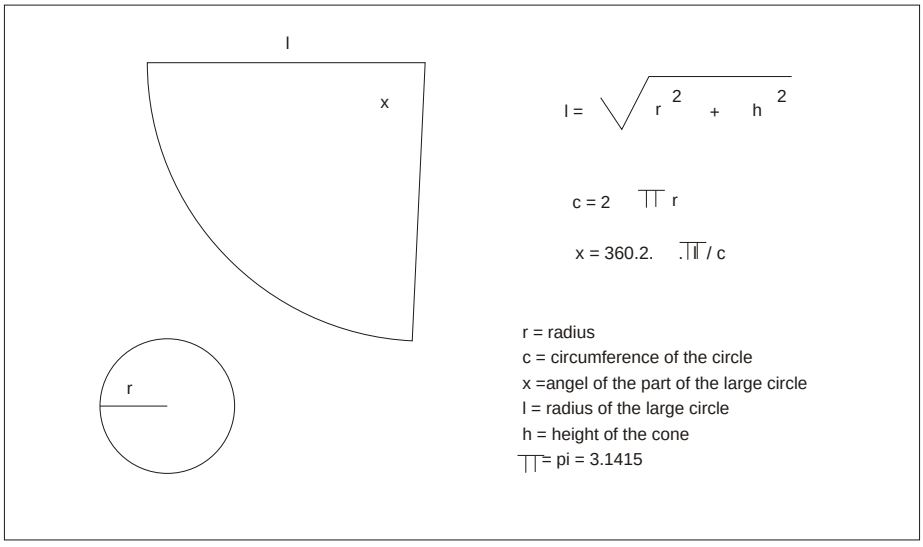
$d = c . n / l$

r1 = radius
r2 = radius
c = circumference of circle 1
d = circumference of circle 2
x =angel of the part of the large circle
l = radius of the large circle
h = height of the cone
i = heigt of the tapered cylinder
π pi = 3.1415

Cone







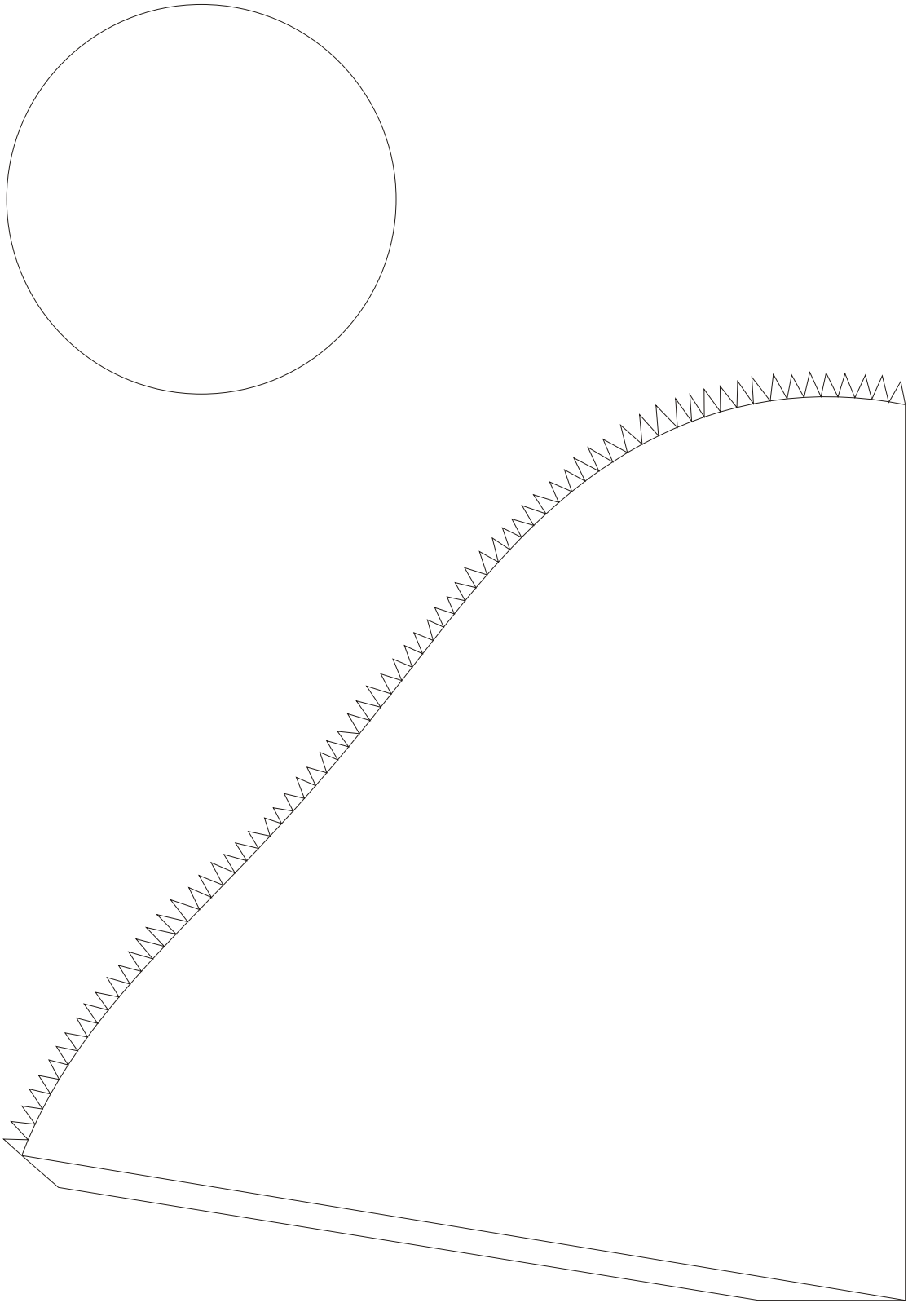
$l = \sqrt{r^2 + h^2}$

$c = 2 \pi r$

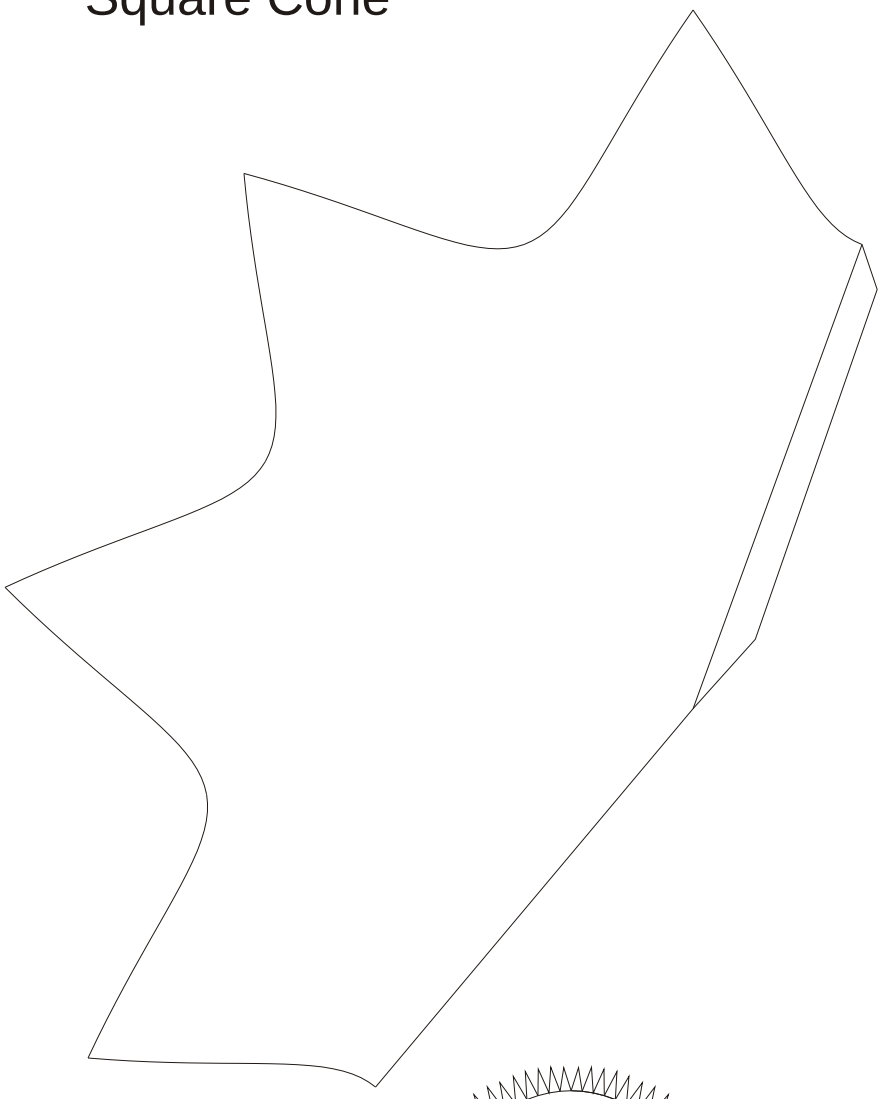
$x = 360.2. \pi / c$

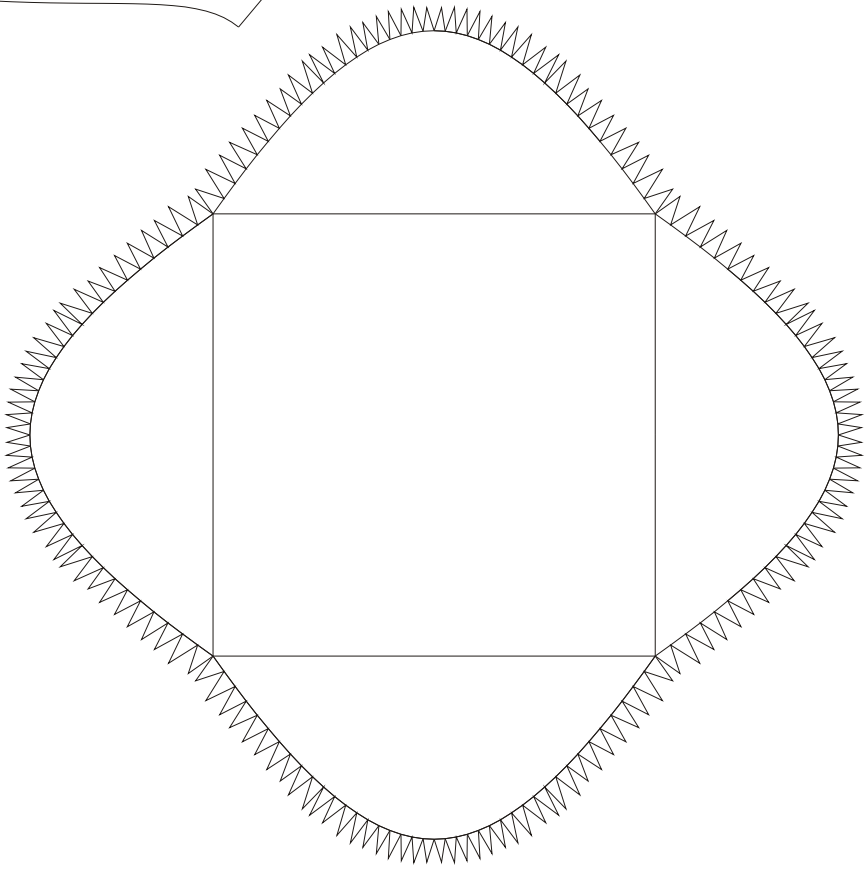
r = radius
c = circumference of the circle
x =angel of the part of the large circle
l = radius of the large circle
h = height of the cone
π = pi = 3.1415

Asymetric Cone

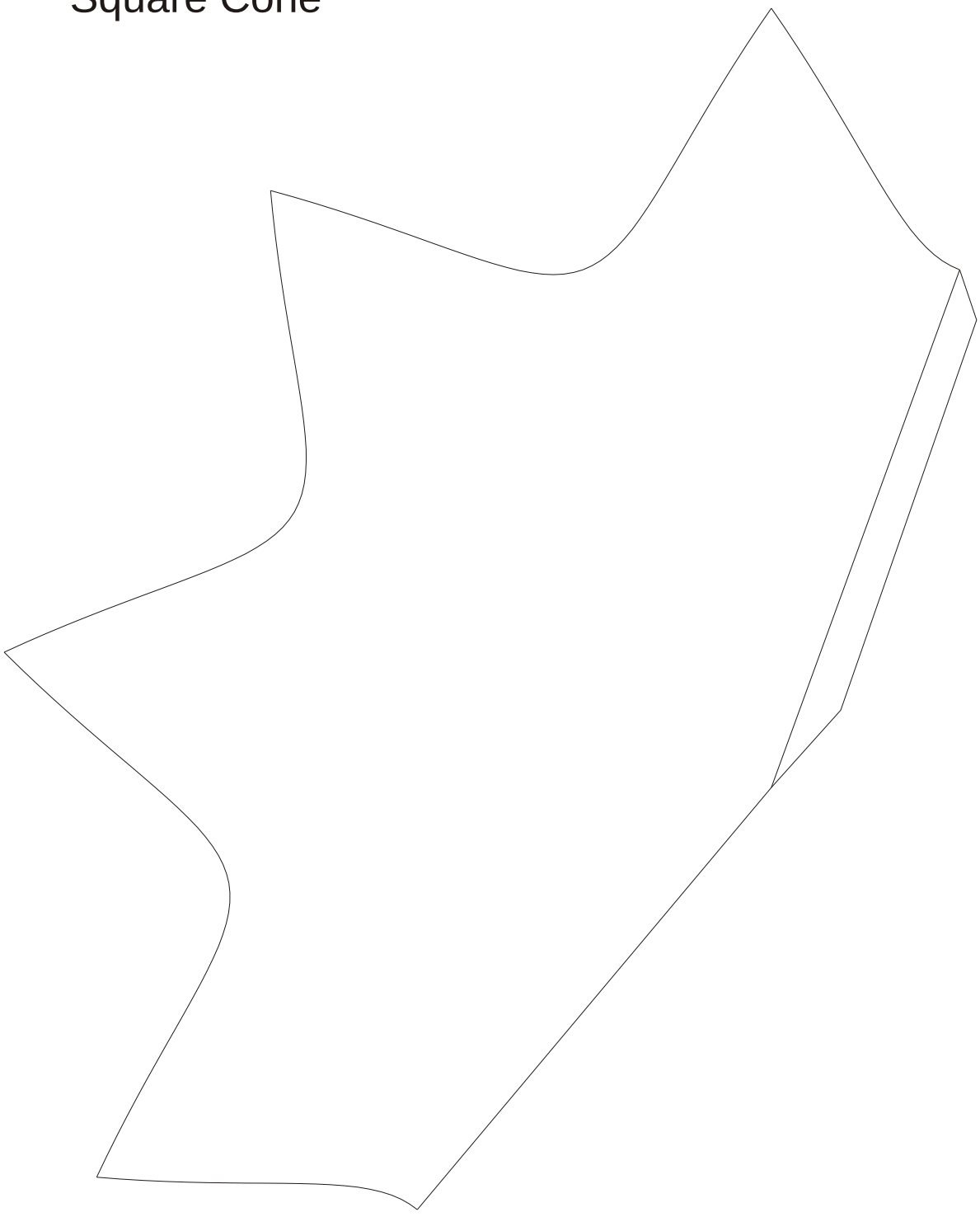


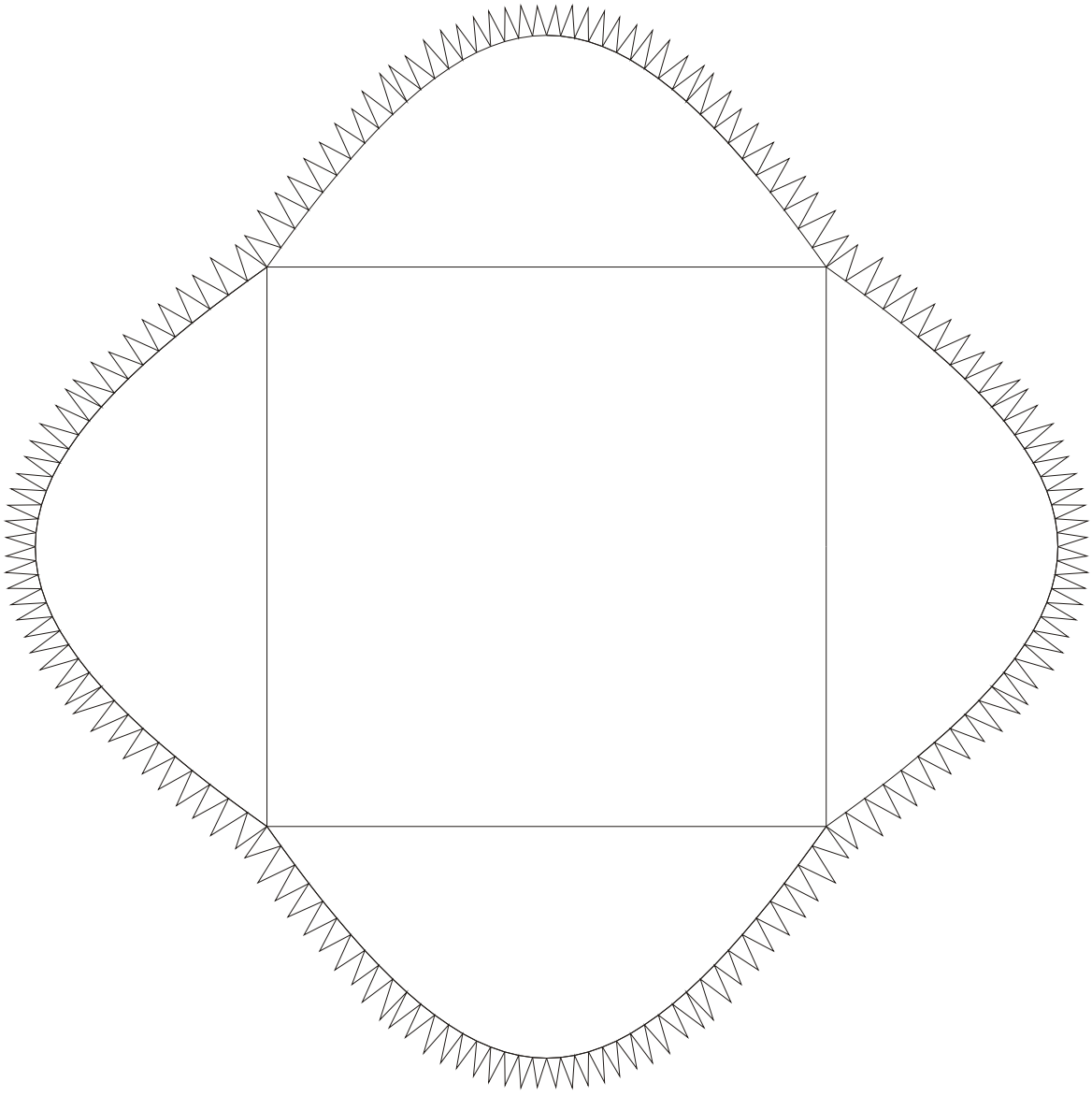
Square Cone



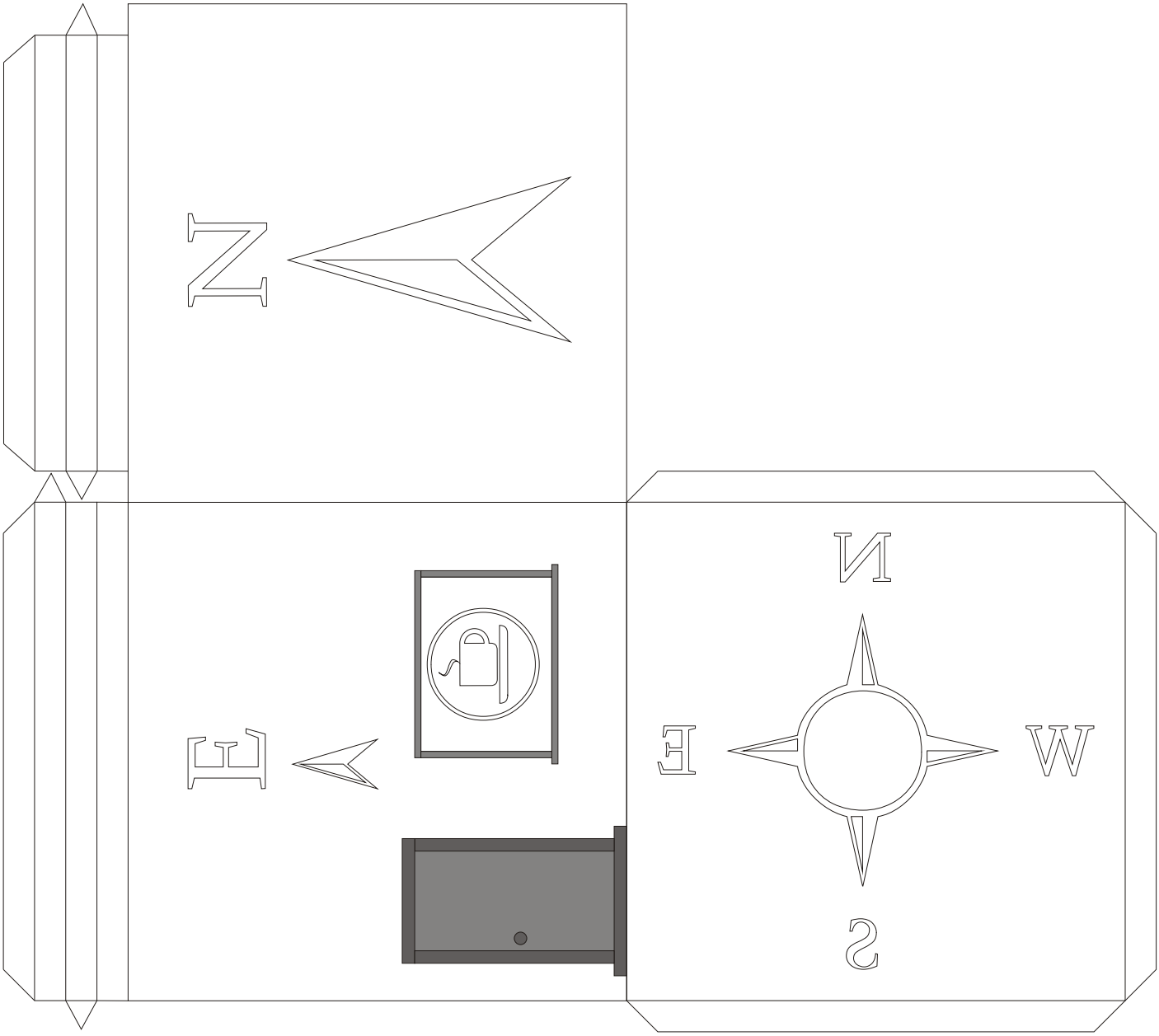


Square Cone





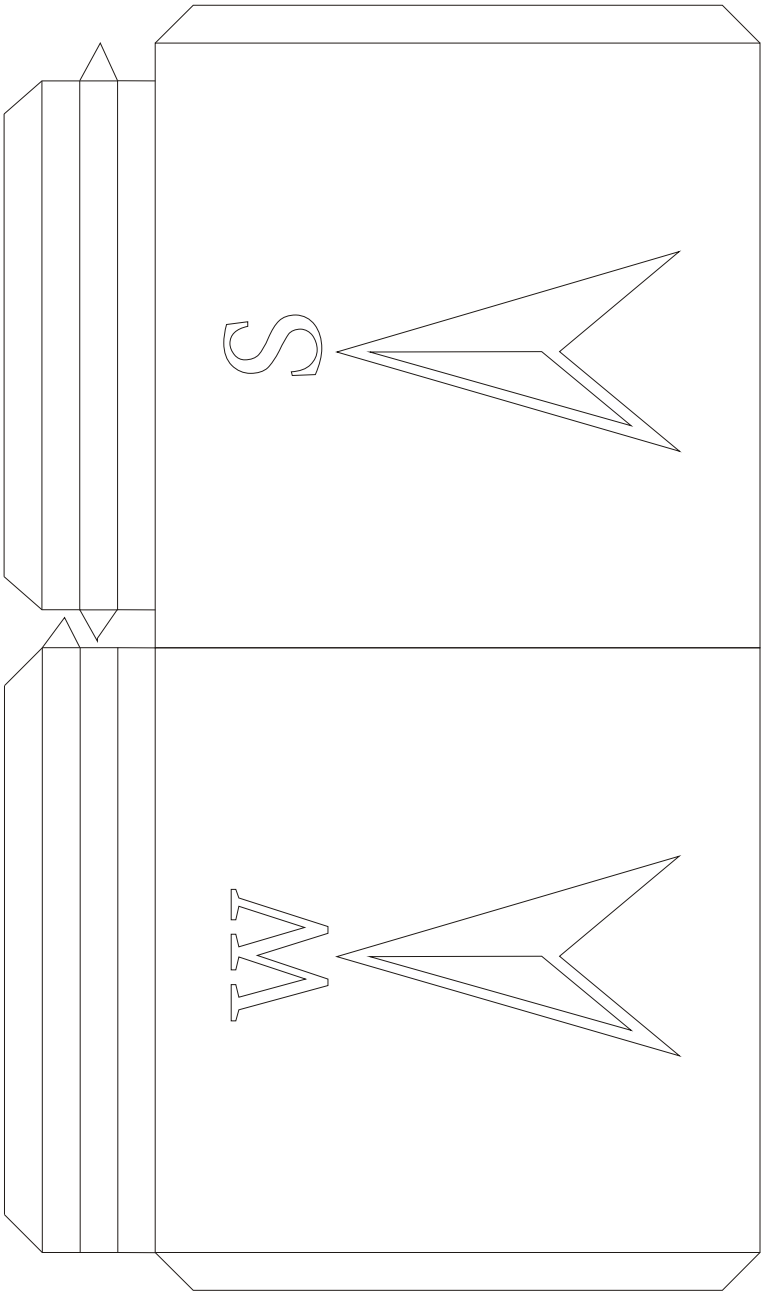
Paper Colour 1/ papier kleur1

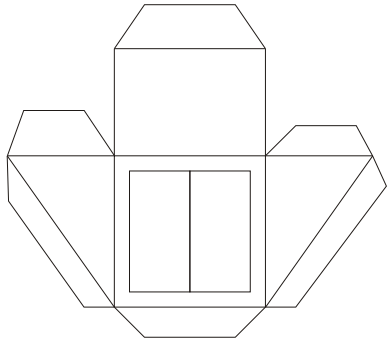


noordelijke, oostelijke muur huis en de bodem

north, east wall of the house and the floor

Paper Colour 1/ papier kleur1





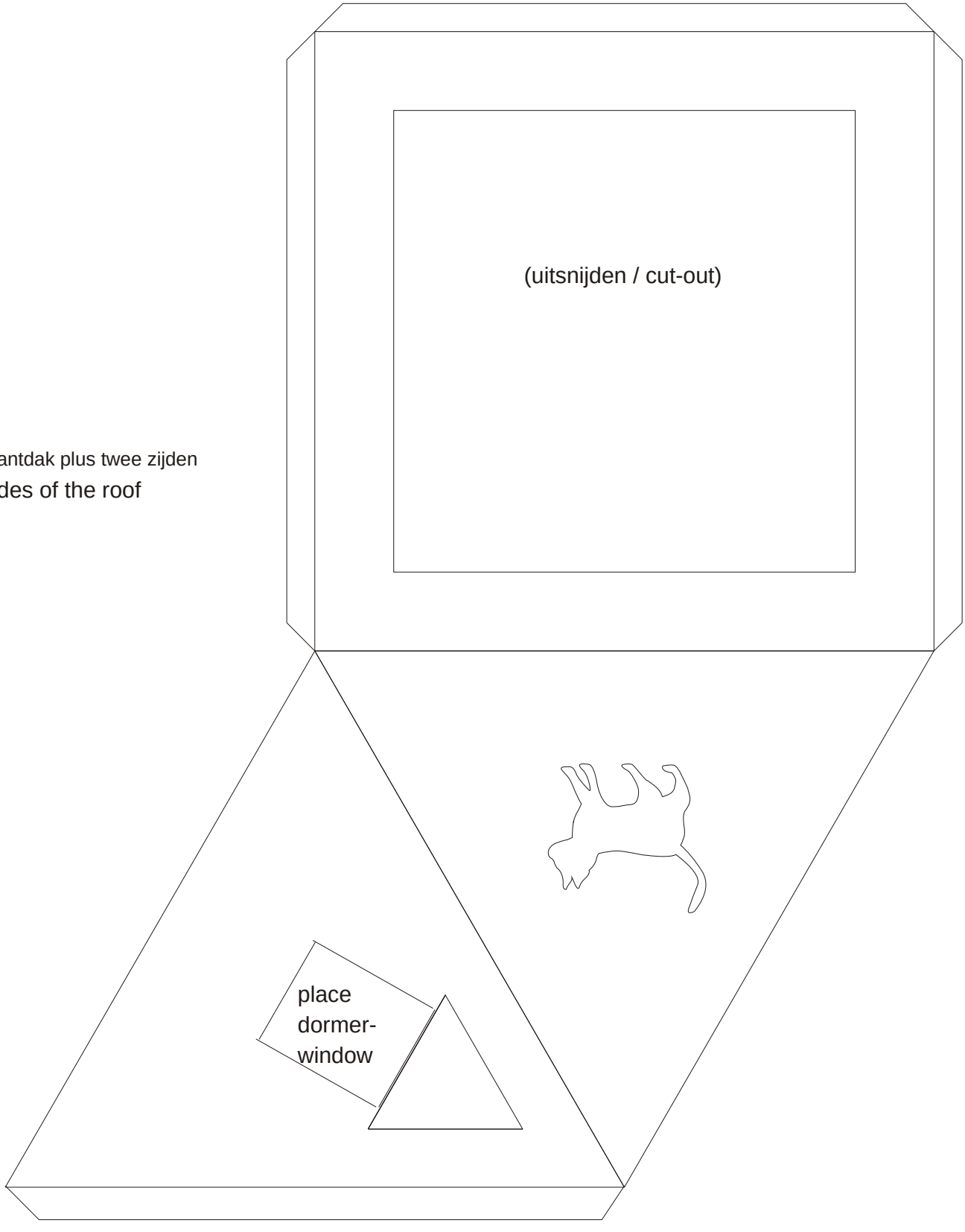
dakkapel

dormer-window

zuidelijke en westelijke muur huis

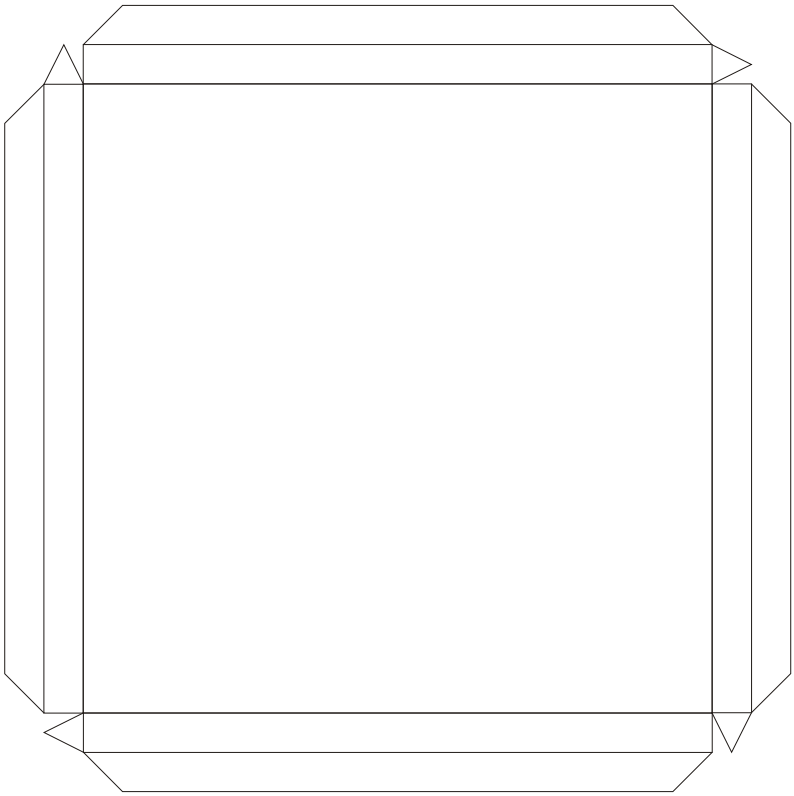
south and west wall house

paper colour 2 / papier kleur 2



onderkantdak plus twee zijden

two sides of the roof

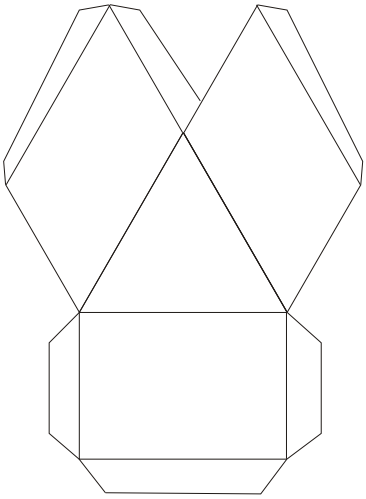


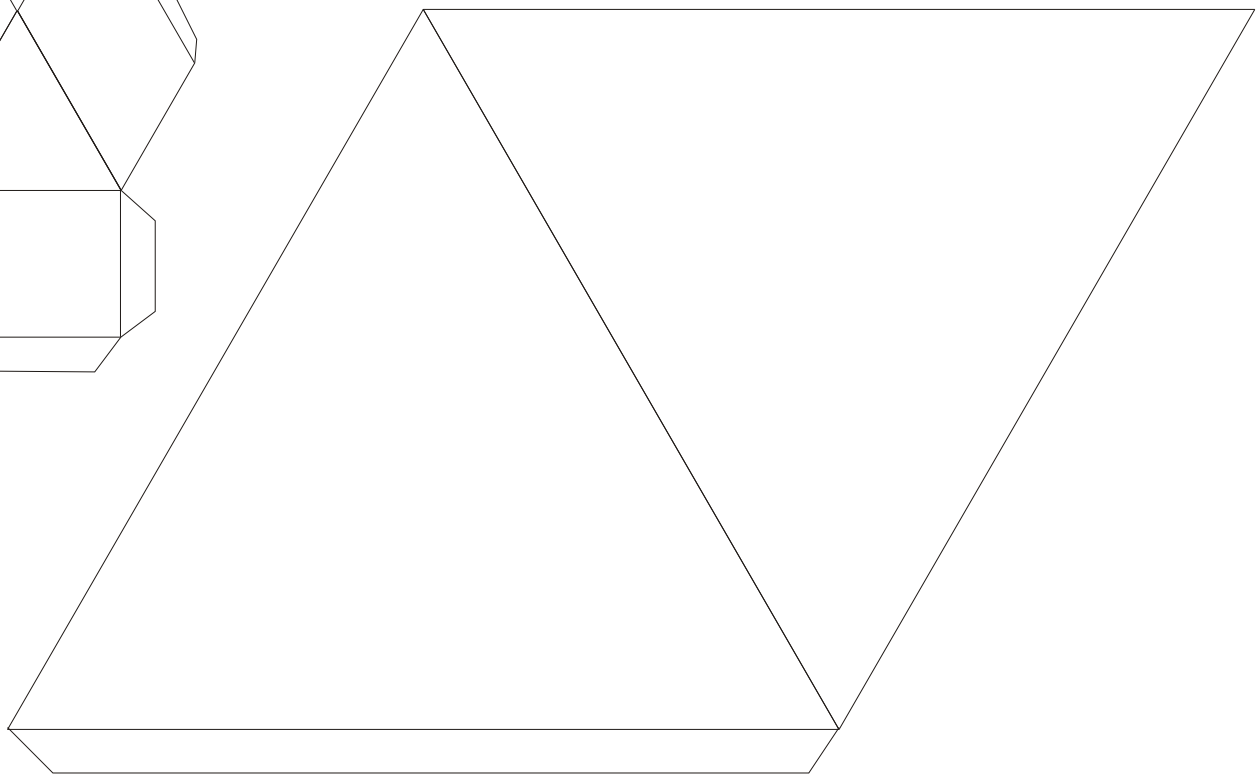
onderkant dak/

bottom roof

fits around walls

don't glue roof on the walls



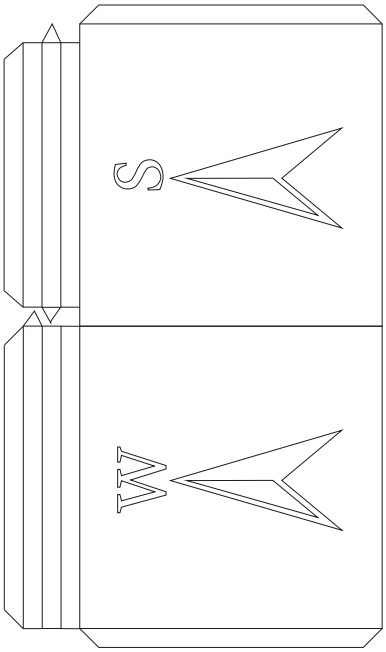


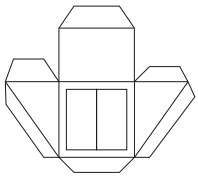
Twee zijden dak

Two sides of the roof

paper colour 2 / papier kleur 2

Paper Colour 1/ papier kleur1





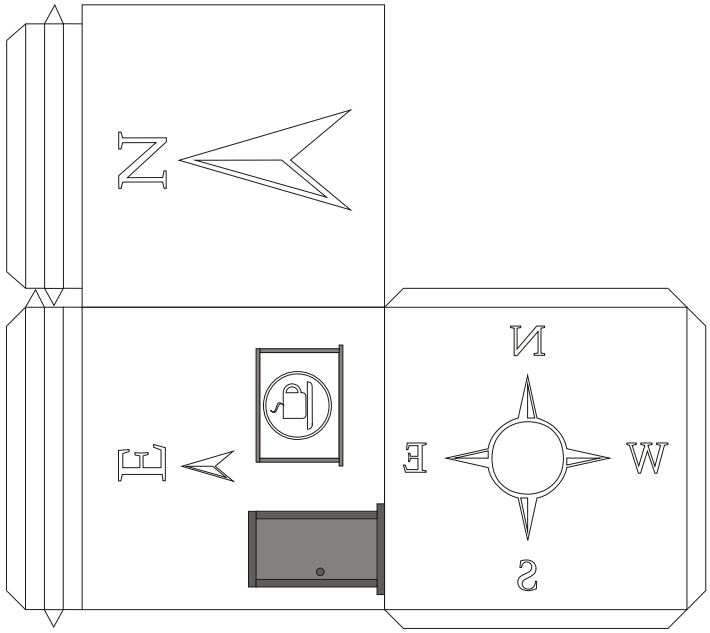
dakkapel

dormer-window

zuidelijke en westelijke muur huis

south and west wall house

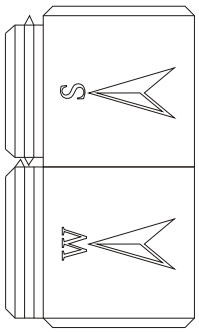
Paper Colour 1/ papier kleur1

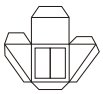


noordelijke, oostelijke muur huis en de bodem

north, east wall of the house and the floor

Paper Colour 1/ papier kleur1





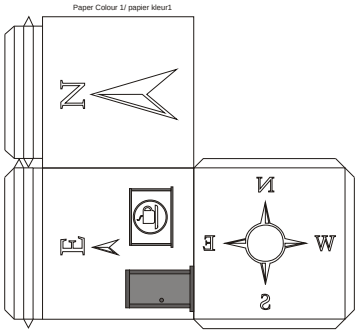
dakkapel

dormer-window

zuidelijke en westelijke muur huis

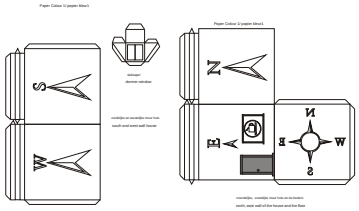
south and west wall house

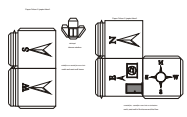
Paper Colour 1/ papier kleur1



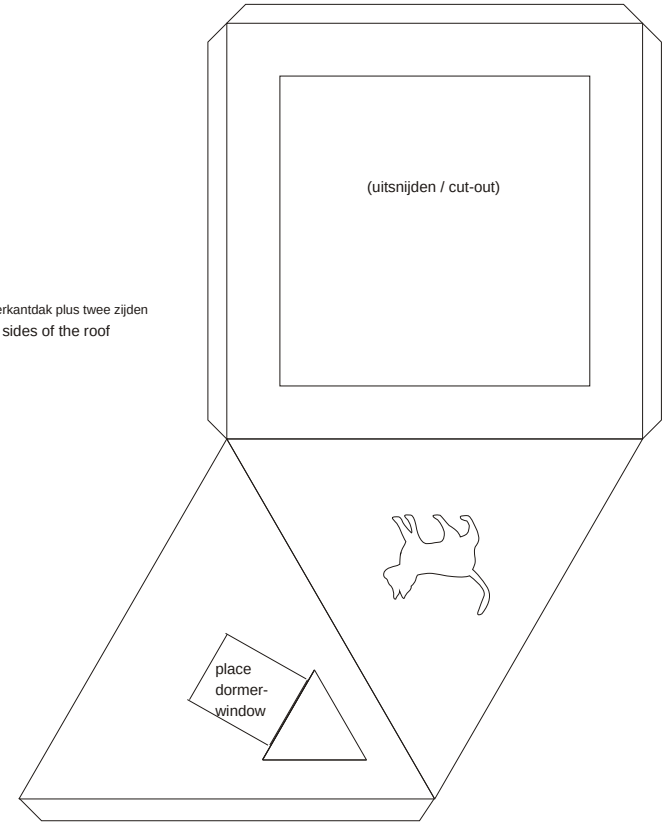
noordelijke, oostelijke muur huis en de bodem

north, east wall of the house and the floor

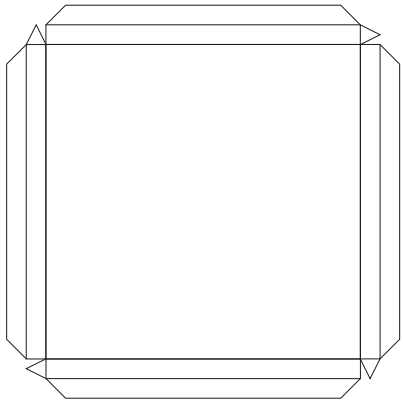




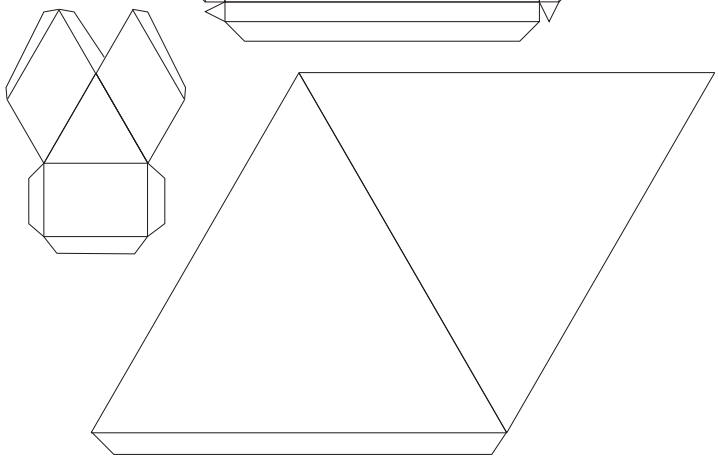
paper colour 2 / papier kleur 2



onderkantdak plus twee zijden
two sides of the roof

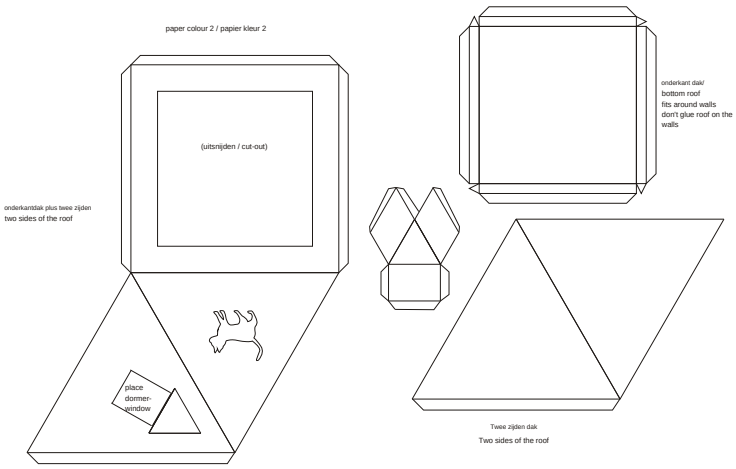


onderkant dak/
bottom roof
fits around walls
don't glue roof on the
walls



Twee zijden dak
Two sides of the roof

paper colour 2 / papier kleur 2

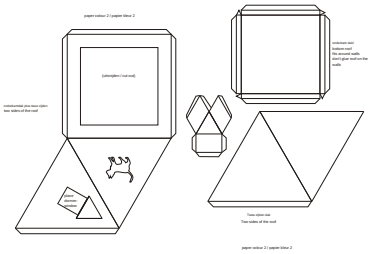


onderkantdak plus twee zijden
two sides of the roof

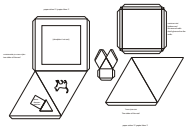
onderkant dak/
bottom roof
fits around walls
don't glue roof on the
walls

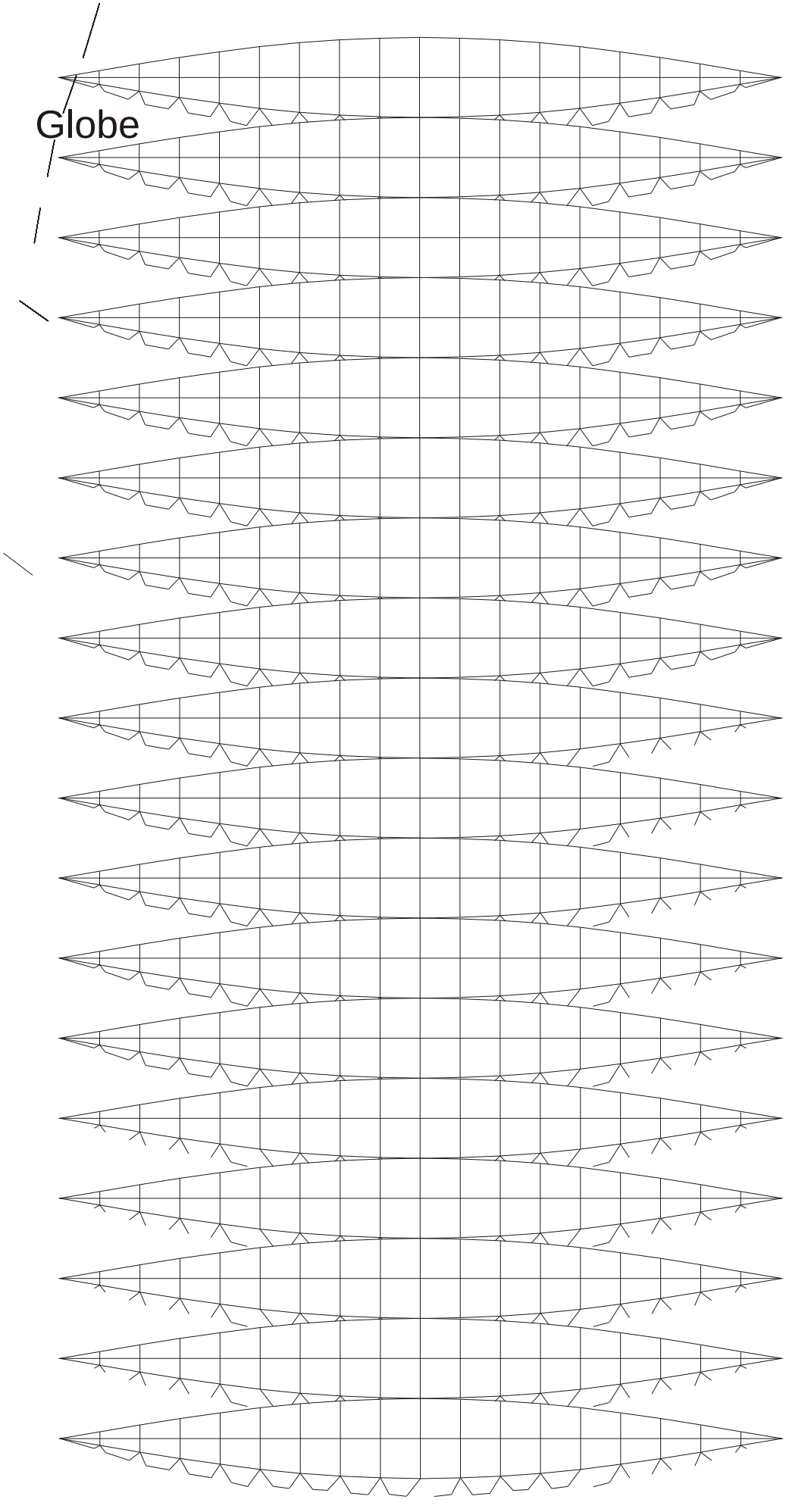
Twee zijden dak
Two sides of the roof

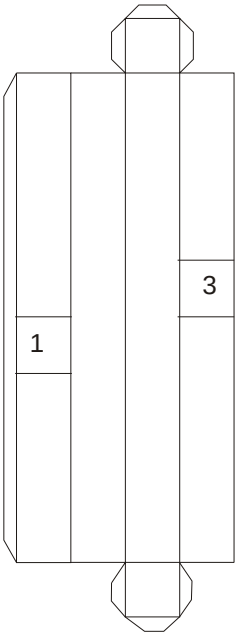
paper colour 2 / papier kleur 2



paper colour 2 / papier kleur 2




Globe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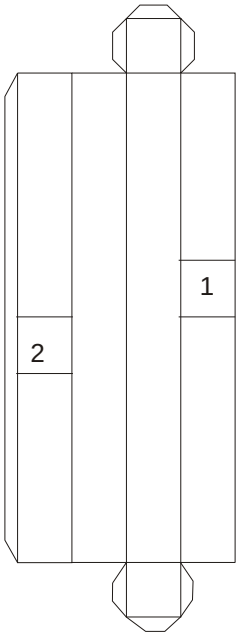
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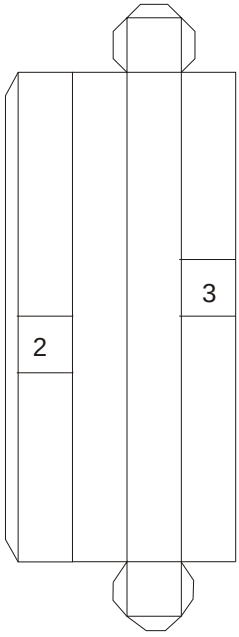
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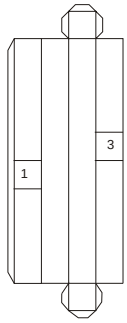
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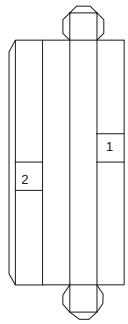
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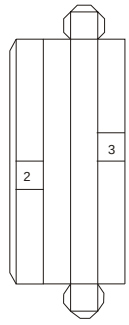
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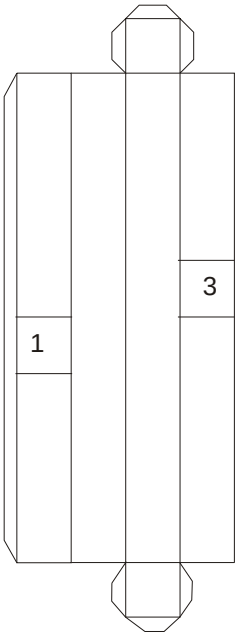
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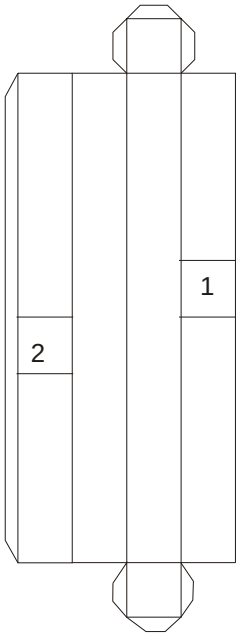
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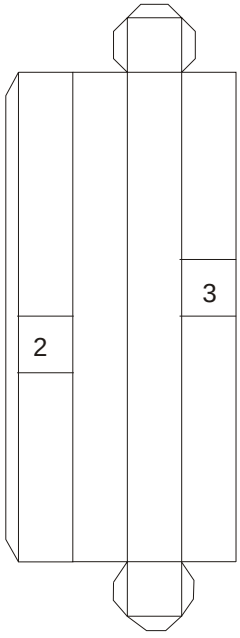
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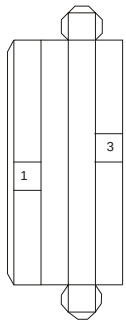
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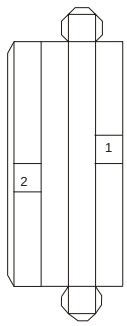
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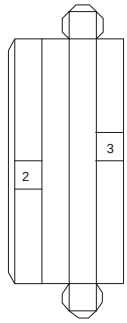
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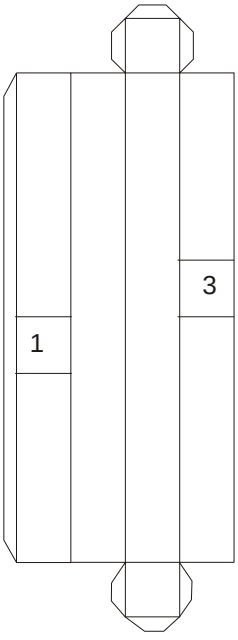
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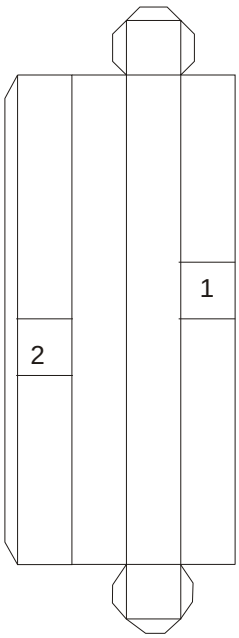
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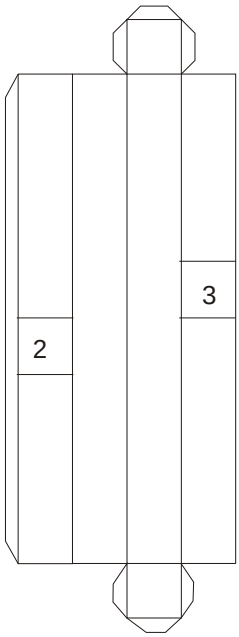
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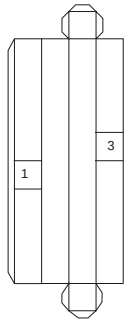
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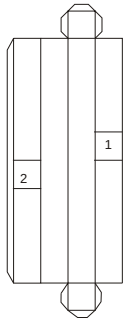
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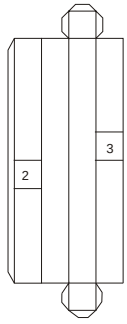
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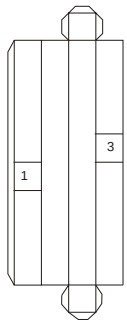
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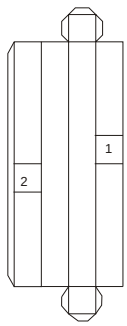
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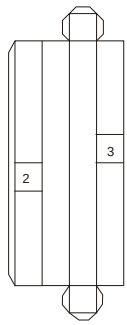
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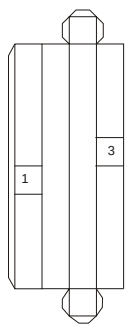
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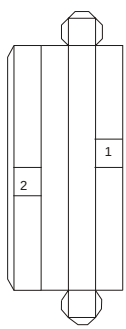
2
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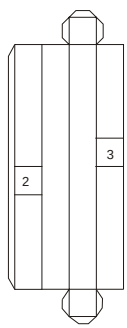
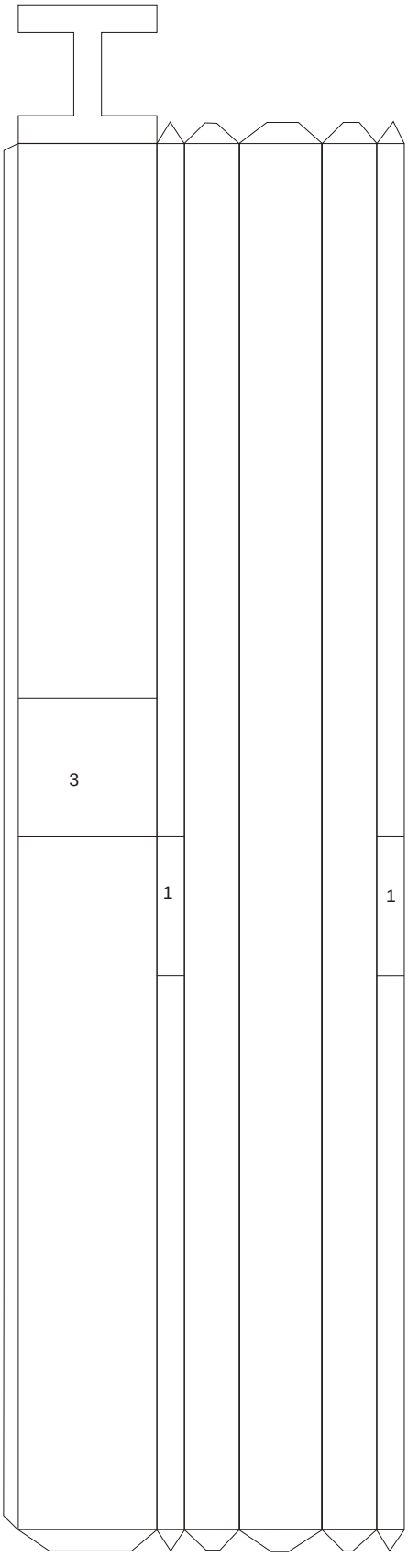
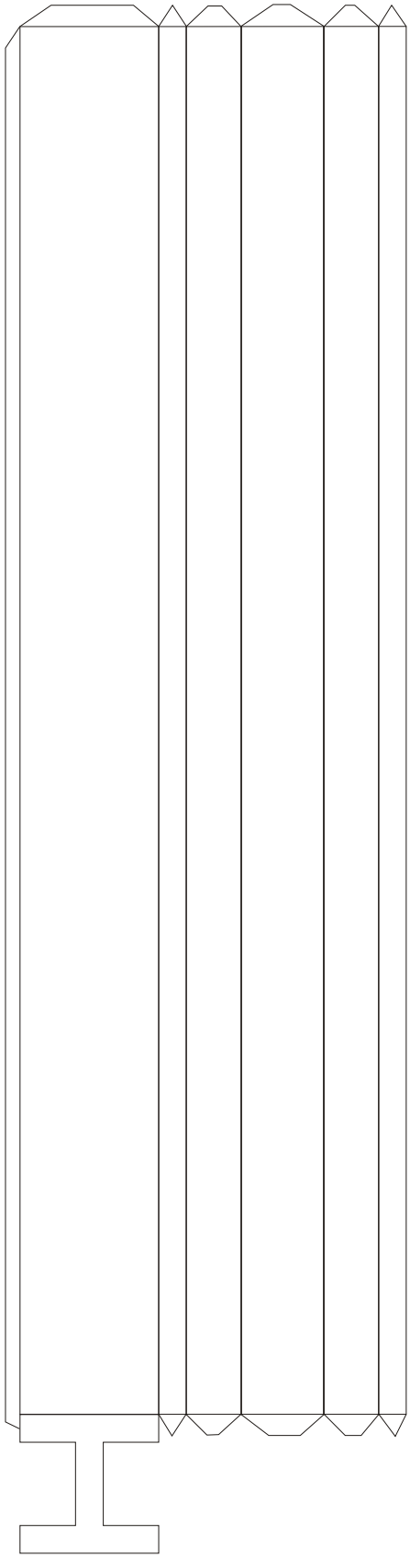
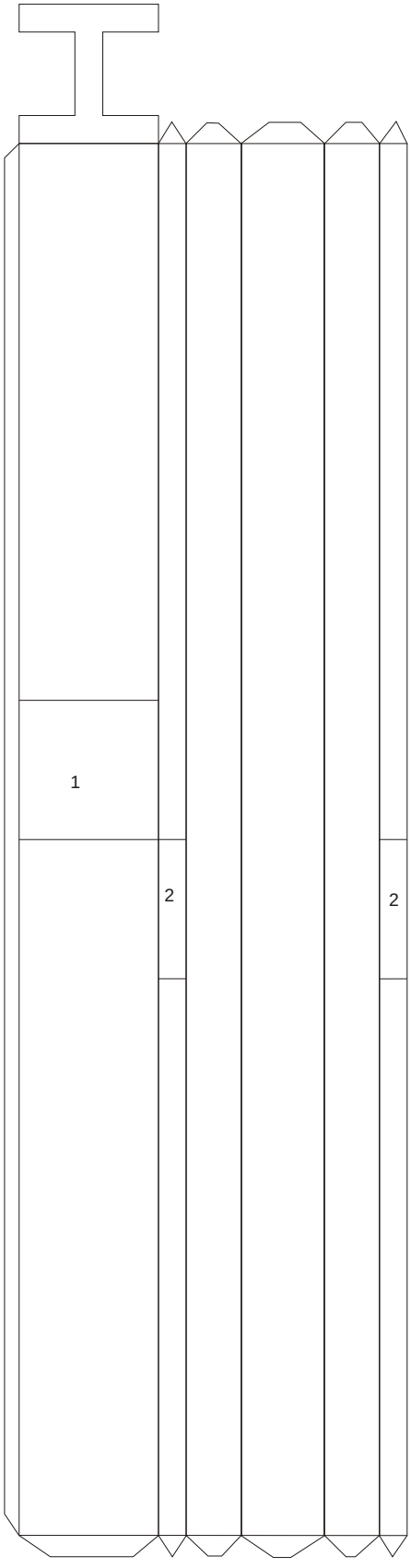

2
3

Large Chevaux-de-frise

The other two parts are on the next two pages



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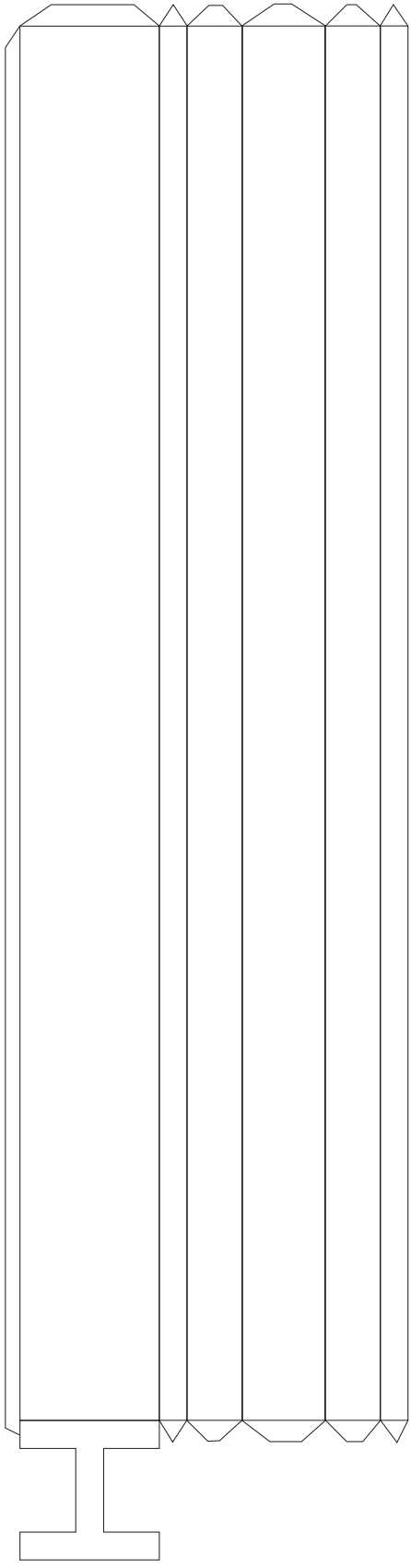
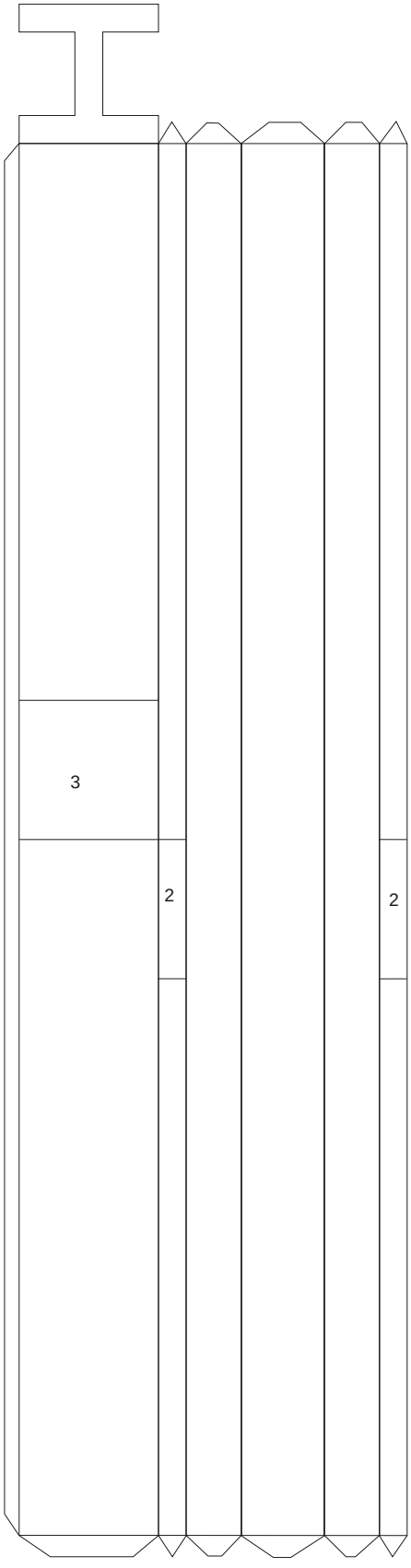
2
2




3
2
2