

TRABALHO 1

U LISBOA

UNIVERSIDADE
DE LISBOA



FACULDADE DE ARQUITETURA
UNIVERSIDADE DE LISBOA

MGG

Mestrado Integrado em Arquitectura
Ano Lectivo 2025-2025 2º Semestre
Docente - Nuno Alão 2º Ano

20241115



BEATRIZ MARTINS

U LISBOA

UNIVERSIDADE
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**POLIEDROS
PLATÓNICOS**



Tetraedro



Hexaedro



Octaedro



Dodecaedro



Icosaedro

ARQUIMEDIANOS

**POLIEDROS
ARQUIMEDIANOS**



Tetraedro truncado



Cubo truncado



Cubo doblamente truncado



Cuboctaedro



Dodecaedro truncado



Dodecaedro doblamente truncado



Icosidodecaedro



Icosaedro truncado



Rombicuboctaedro



Gran Rombicuboctaedro

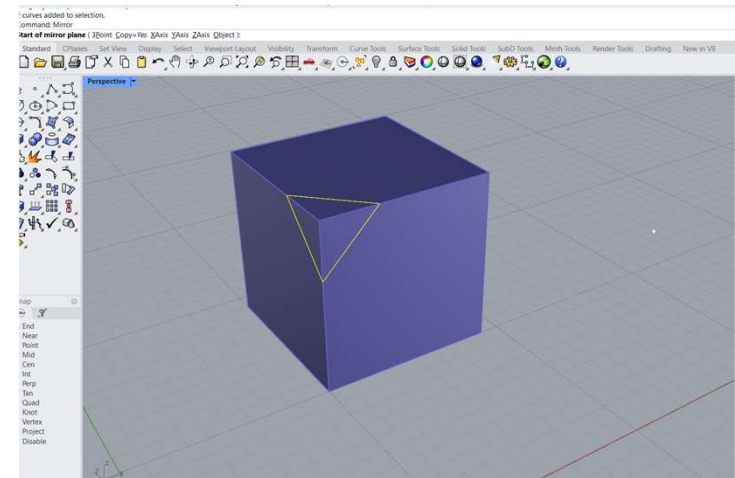
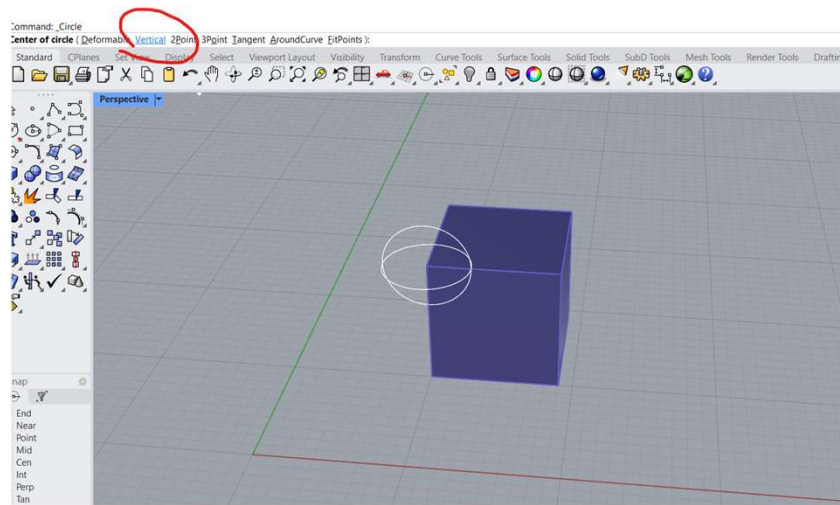
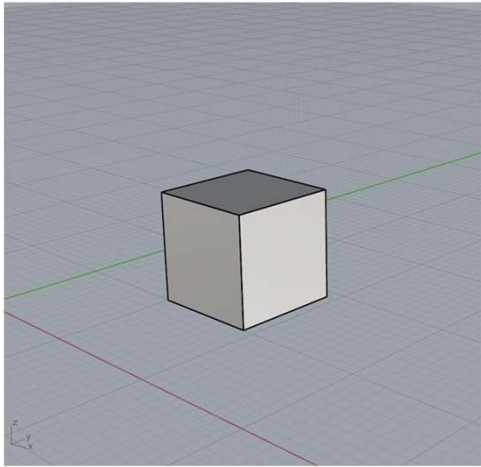


Rombicosidodecaedro



Gran rombicosidodecaedro

Trabalho 1.



BOX

10,10

@9,9

9

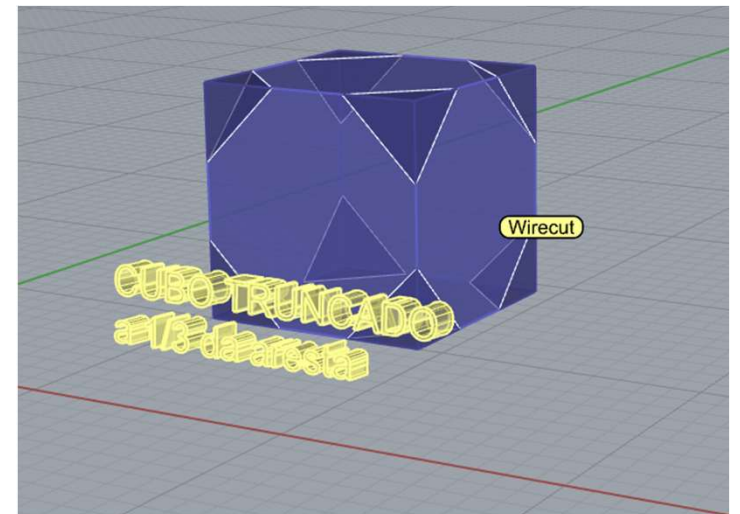
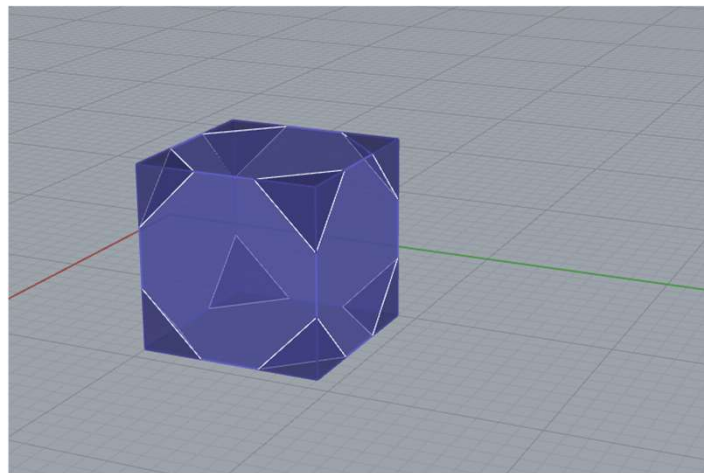
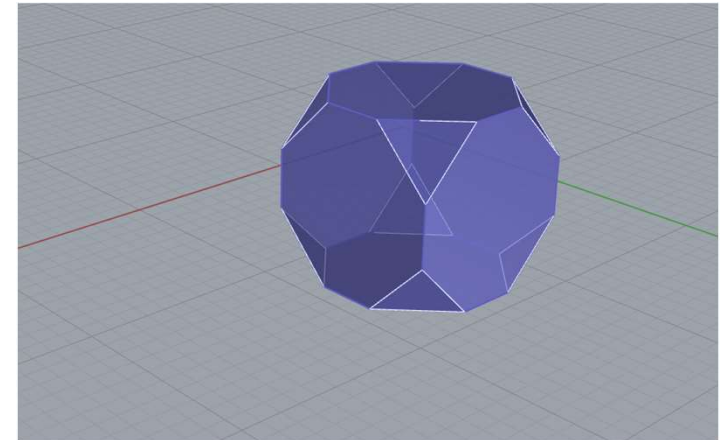
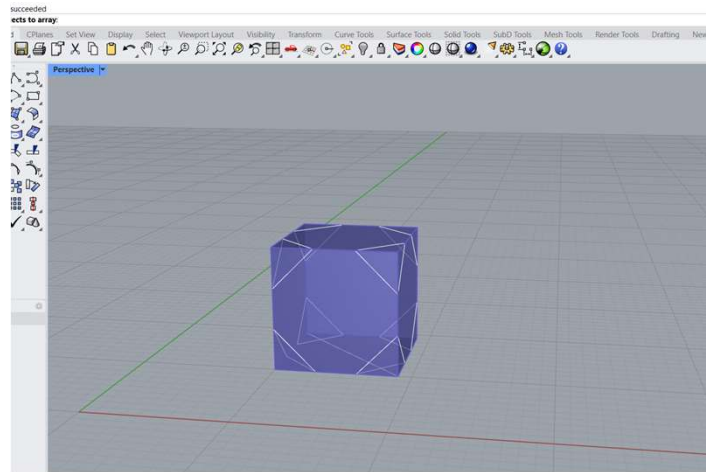
CIRCLE – 1/3 da aresta – criar círculo horizontal e vertical

POLYLINE – unir intercessões

MIRROR – para o vértice de baixo

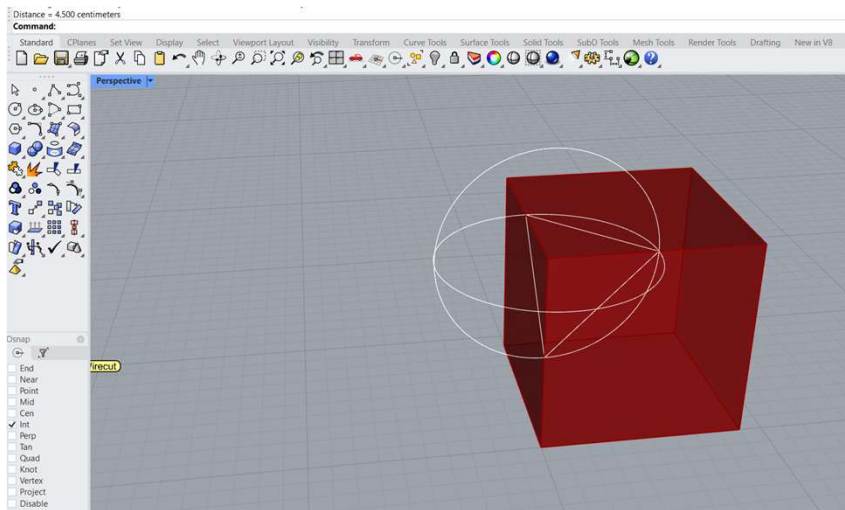
Trabalho 1.

ARRAY POLAR - Select -
Axis - Select mid points - 360° -
repetir para todos os vértices
WIRECUT - select line - enter
- select cube - enter - puxar -
separa os vértices criados do resto
do polígono
Mudar vértices para outra camada
e removê-los

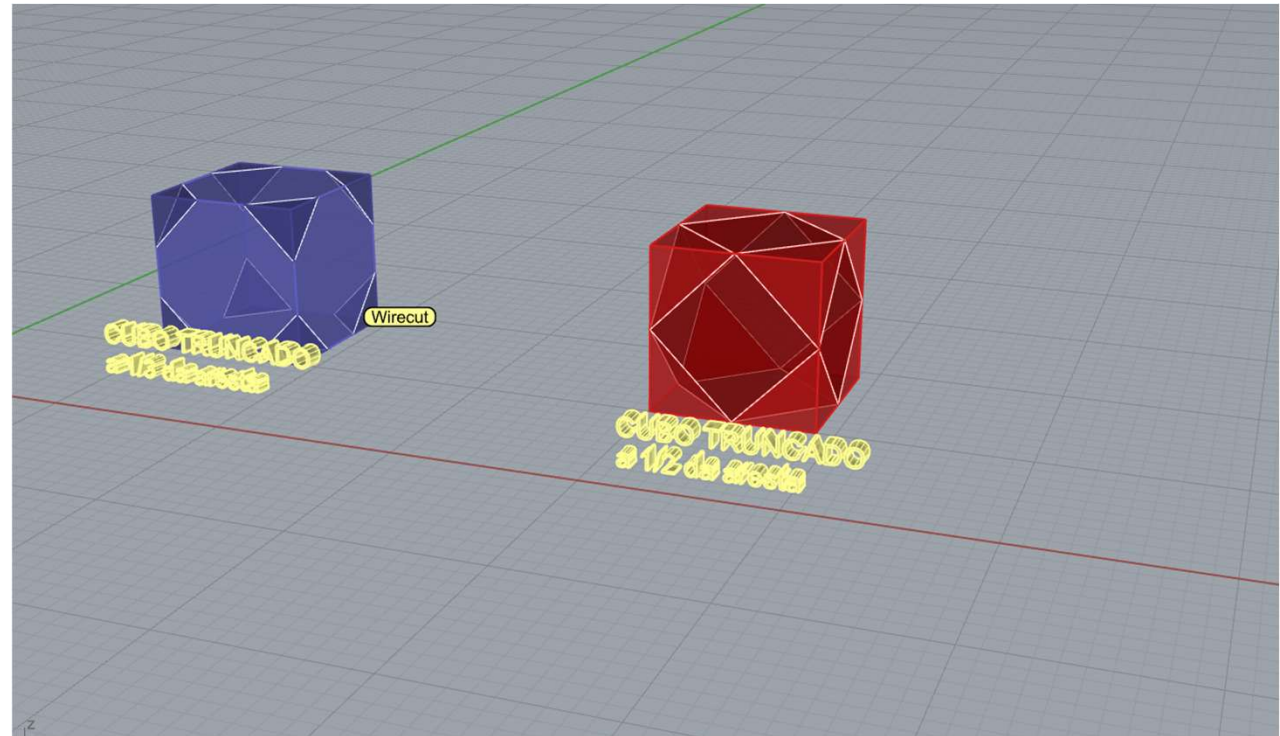


Trabalho 1.

BOX – Criar um cubo (9 por 9)
CIRCLE – 1/2 da aresta – criar círculo horizontal e vertical
POLYLINE – unir intercessões
Ou utilizar a função **MID** do **OSNAP** para criar os triângulos em volta dos vértices
WIRECUT – **select line** – **enter** – **select cube** – **enter** –
puxar – separa os vértices criados do resto do polígono
Mudar vértices para outra camada e removê-los

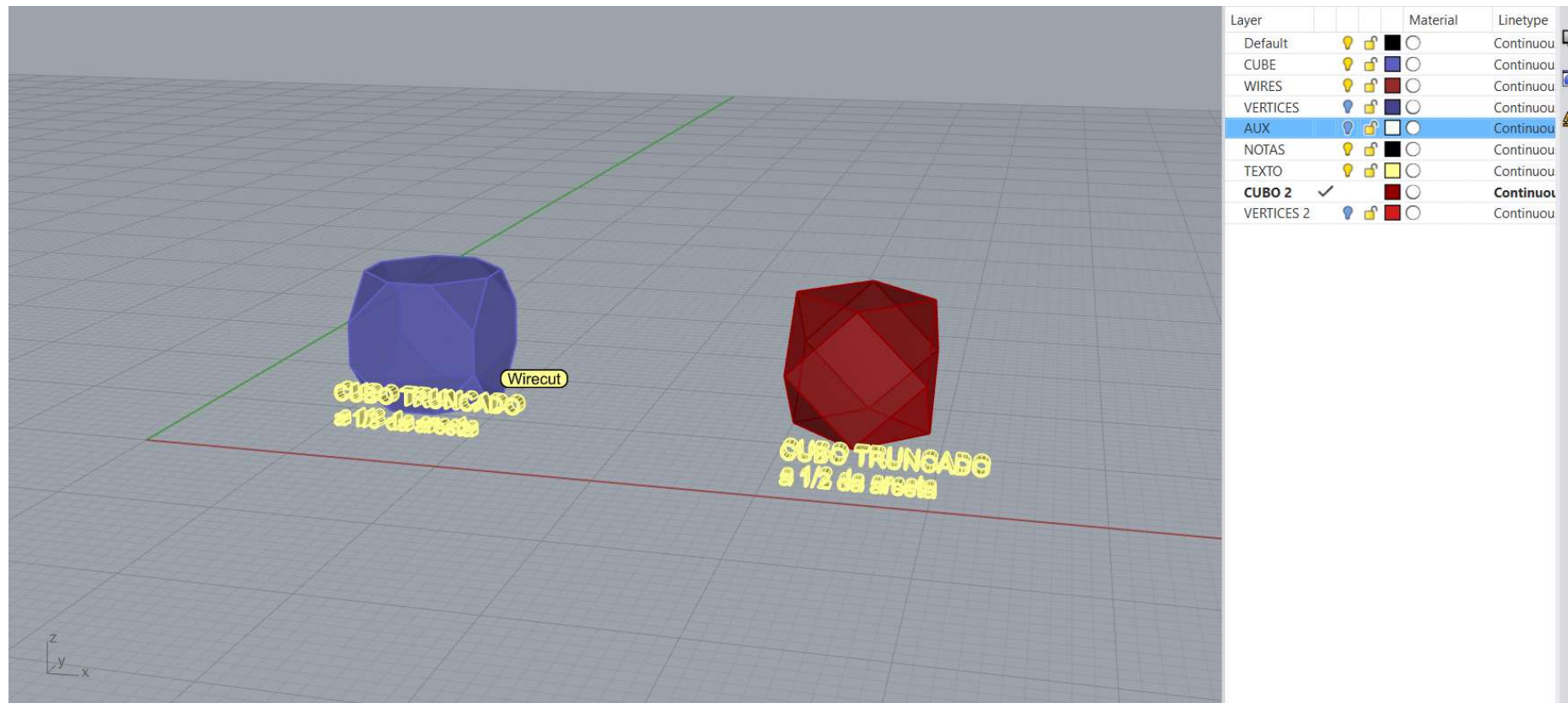


CUBOCTAEDRO



Trabalho 1.

CUBO TRUNCADO E CUBOCTAEDRO



Trabalho 1.

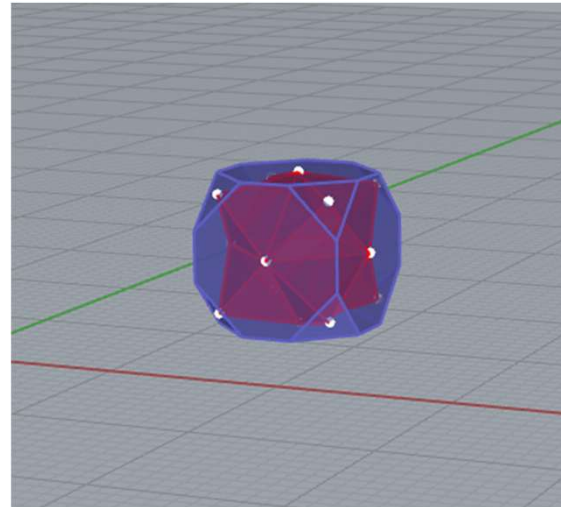
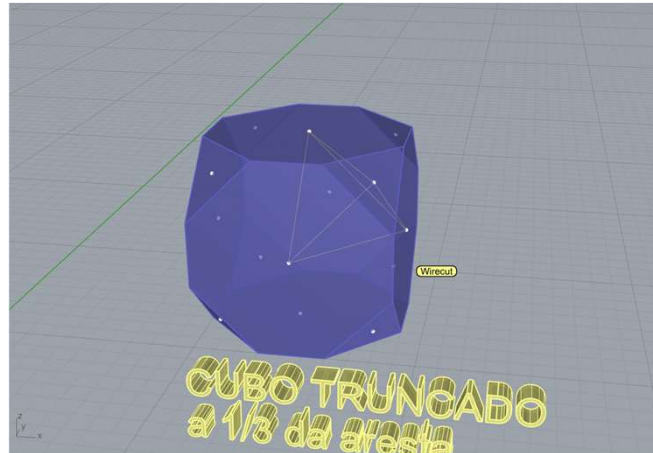
POINT – colocar um ponto no centro de todas as faces do sólido utilizando a função CEN do OSNAP

POLYLINE - unir determinados pontos

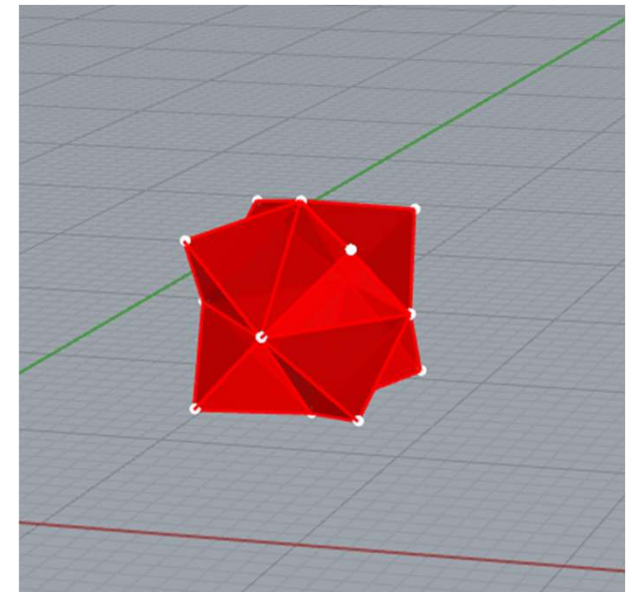
SURFACE FROM PLANAR

CURVES – tornar linhas em faces

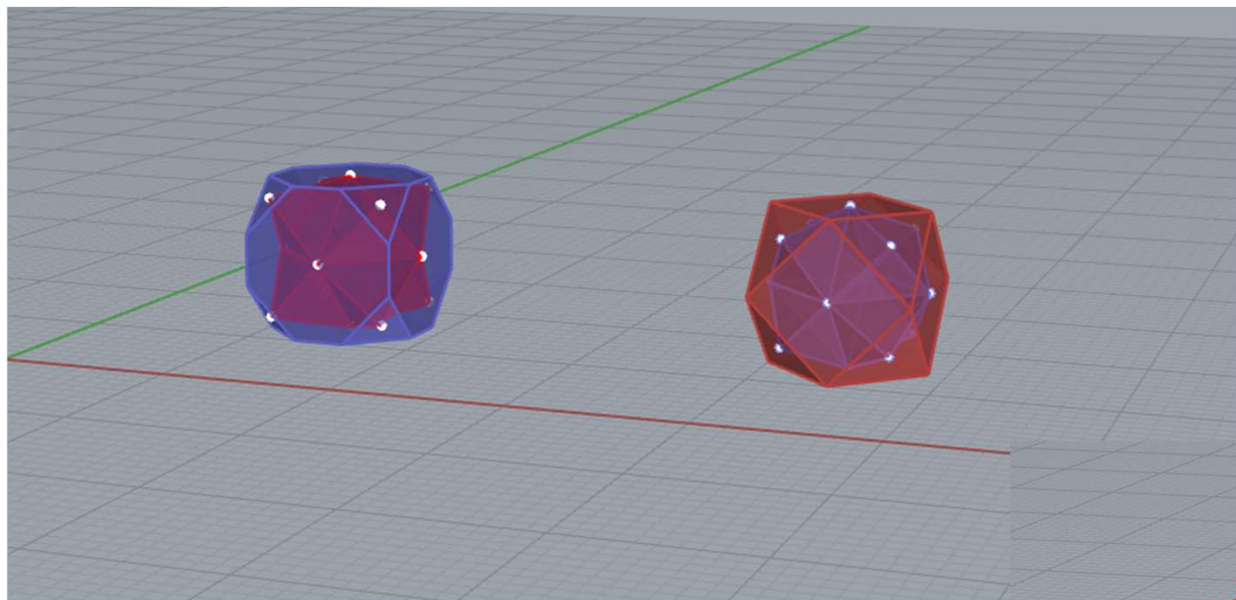
ARRAY POLAR – 4 – 360° – para completar o sólido



DUAL DE UM CUBO TRUNCADO A 1/3 DE ARESTA

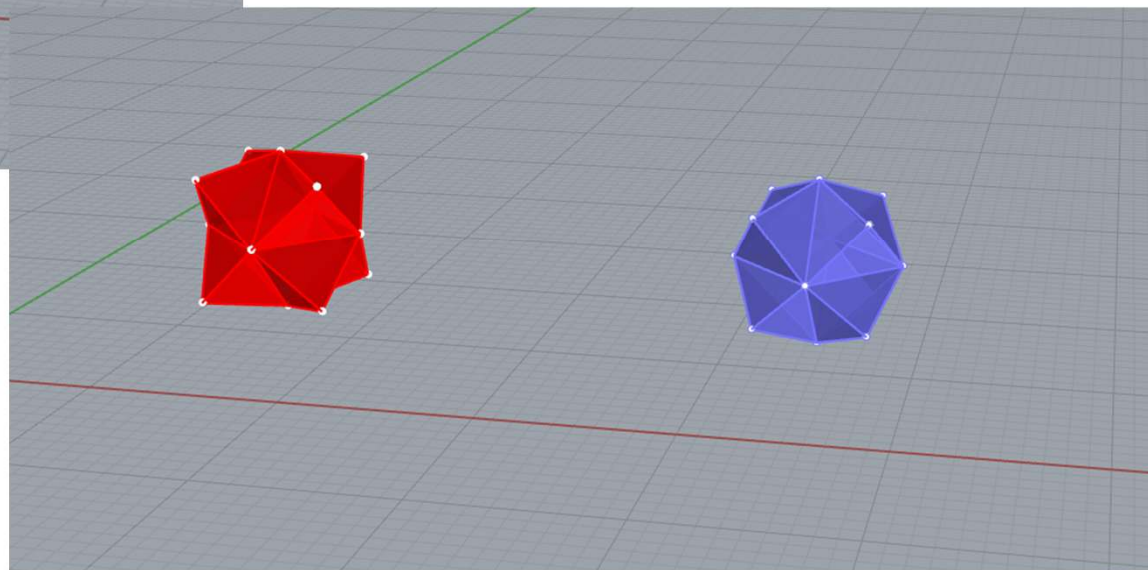


Trabalho 1.



DUAIS

Repetir processo para o
cuboctaedro



Trabalho 1.

PENTAGONO:

POLYLINE

@9<0

@9<72

@9<144

@9<216

c

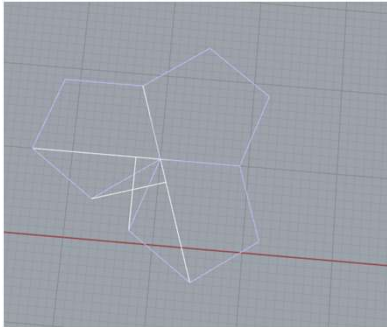
MIRROR (2x)

Prolongar as linhas

Linha perpendicular do

vértice até á linha

oposta



CÍRCULO – Vertical – com o centro a intercessão da linha prolongada com a perpendicular

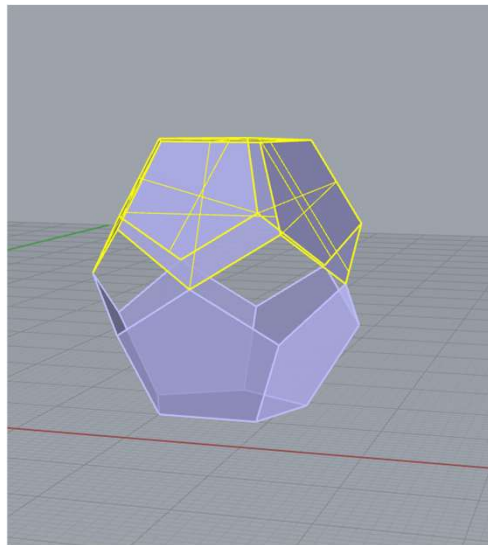
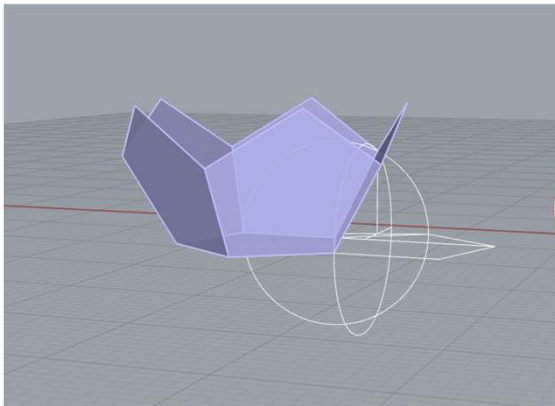
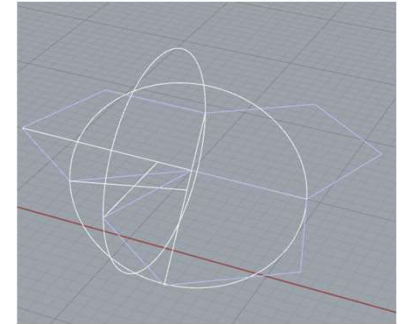
ROTATE 3D – Axis - linha junto do pentágono inicial e arrastar aresta mais próxima para o ponto onde os círculos se intercetam

SURFACE FROM PLANAR CURVES – criar face

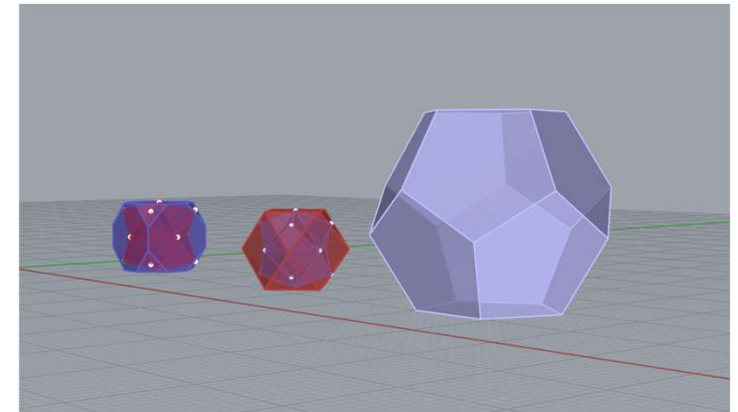
MIRROR – para fazer as outras faces do polígono

MIRROR – 3 pontos – colocar fig em cima

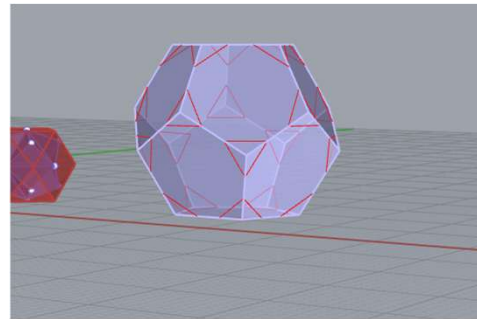
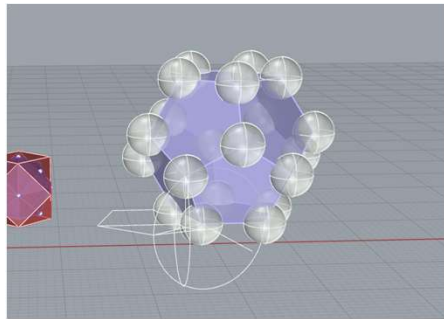
ROTATE – 36° - arrastar para baixo



DODECAEDRO



Trabalho 1.

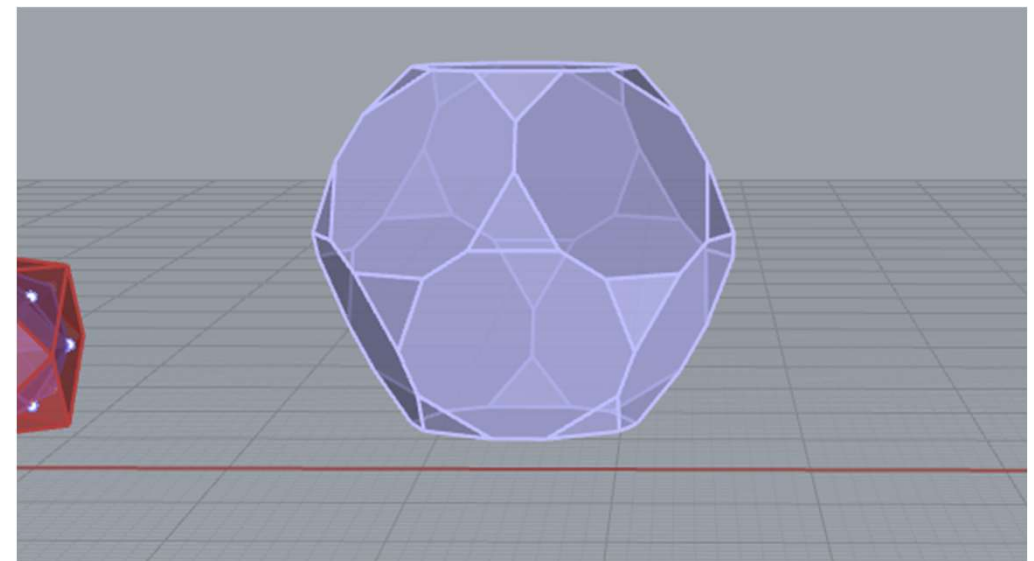
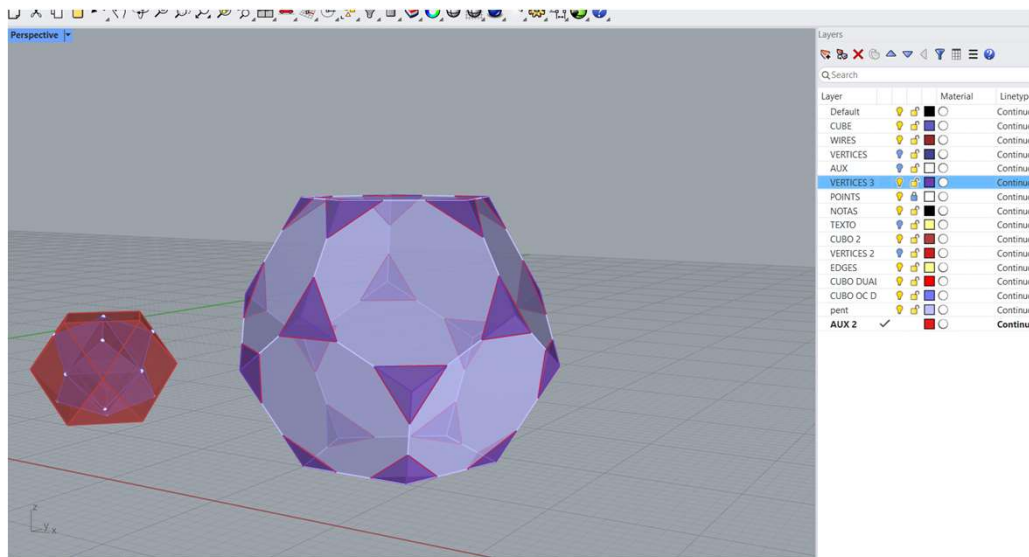


SHFERE – 3 de raio ($1/3$ da aresta) – em todos os vértices
BOOLEAN DIFFERENCE – select esfera – enter – select figura – enter
 – dá nos a intercessão da esfera com as arestas

POLYLINE – desenhar os triângulos que serão retirados

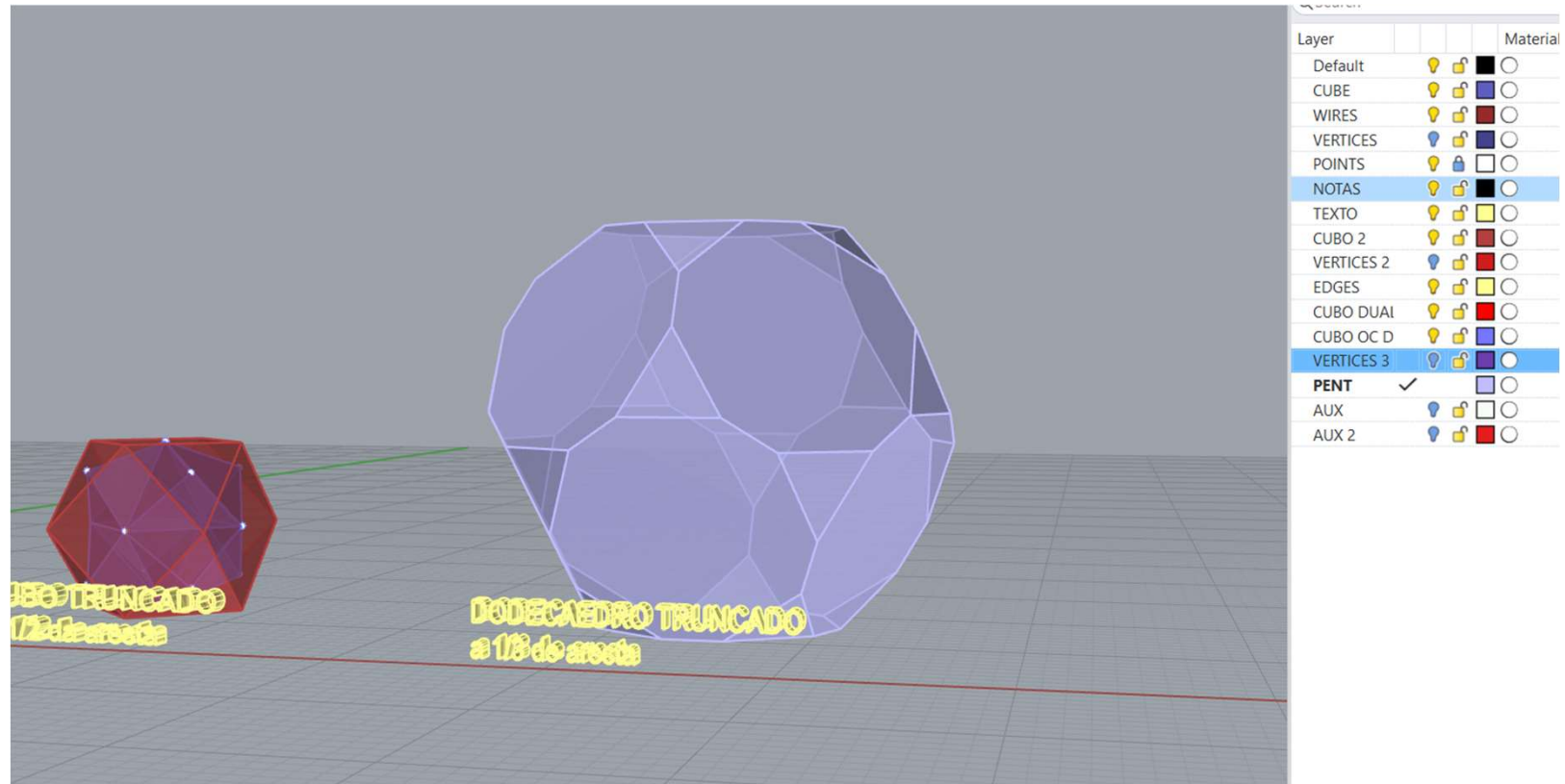
WIRE CUT – linhas – enter – fig – enter – puxar – separa os vértices do polígono

Passar vertices para outra camada e escondê-los

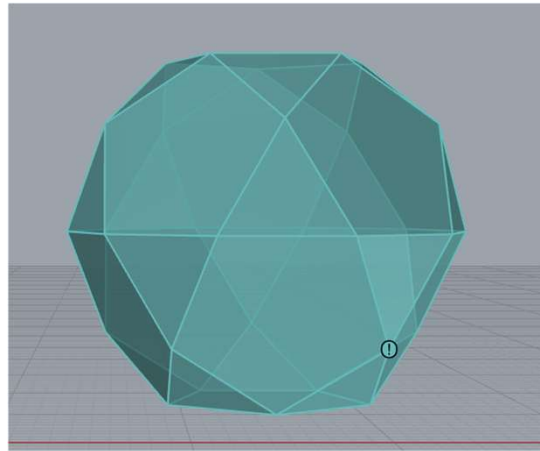
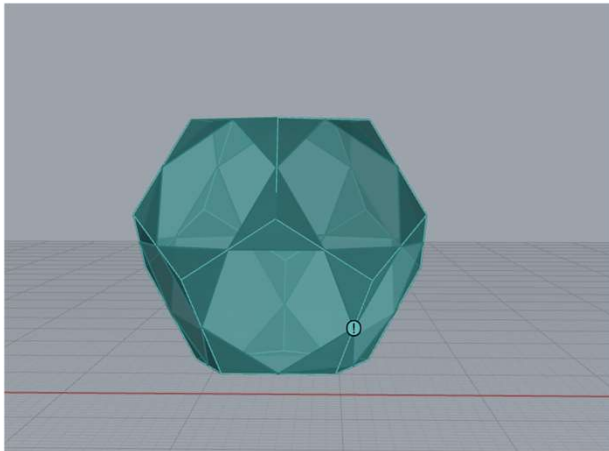
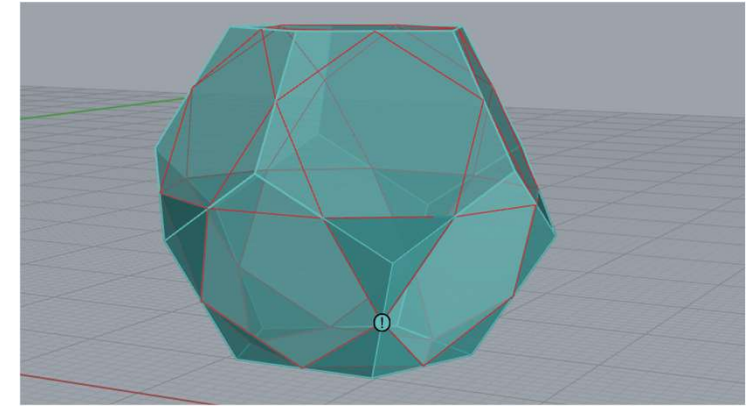
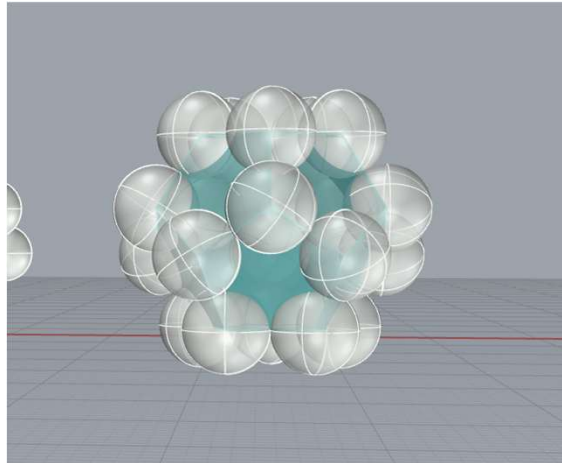
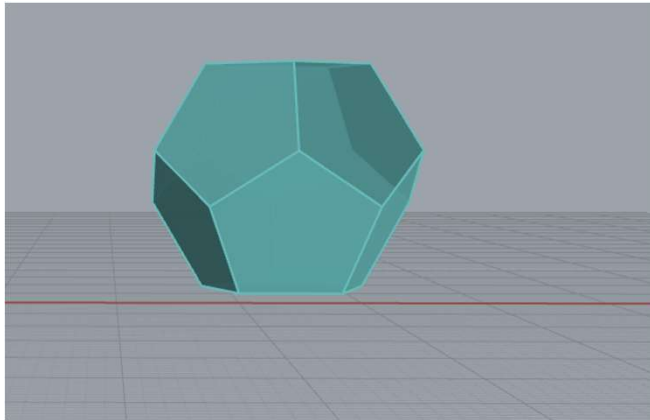


Trabalho 1.

DODECAEDRO TRUNCADO



Trabalho 1.



Iniciamos com um dodecaedro

SPHERE – 4.5 de raio ou $\frac{1}{2}$ da aresta – colocar em todos os vértices

BOOLEAN DIFFERENCE – select esfera – enter – select figura – enter – dá nos a intercessão da esfera com as arestas

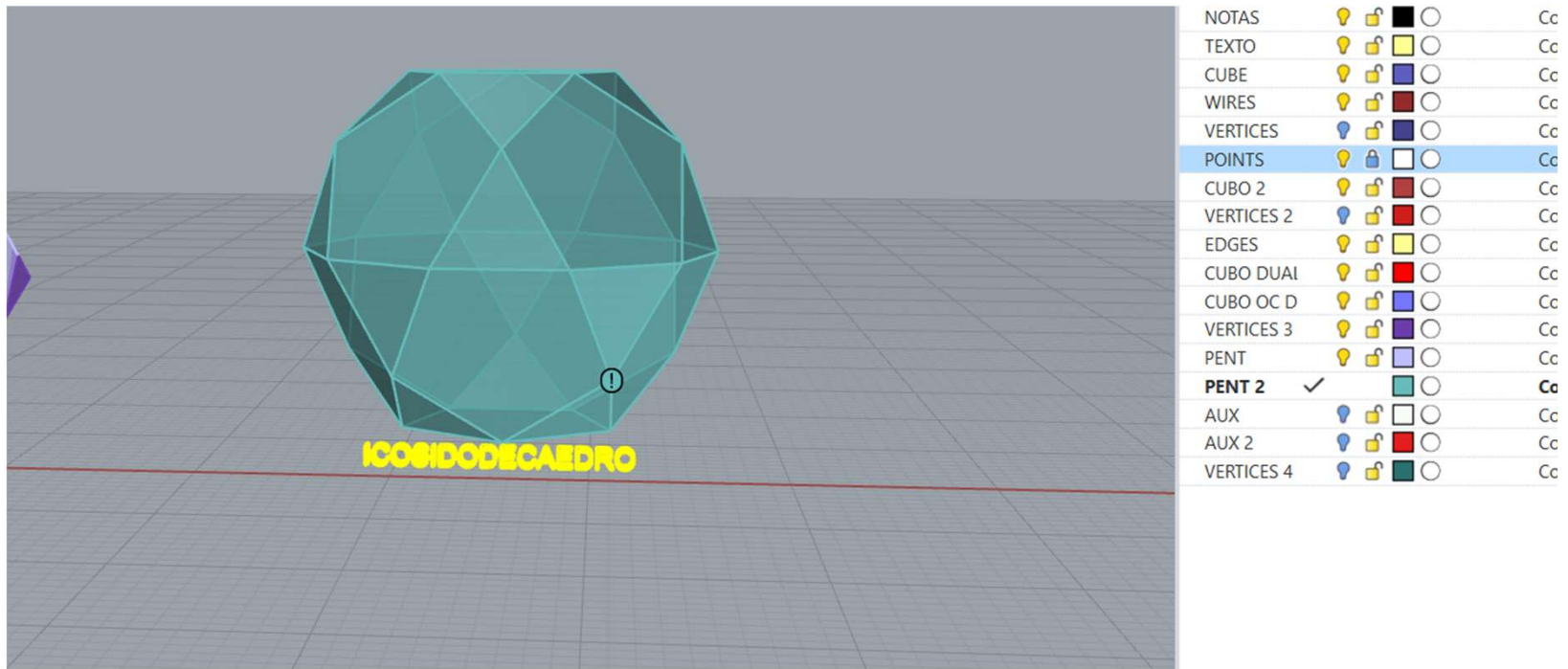
POLYLINE – desenhar os triângulos que serão retirados

WIRE CUT – linhas – enter – fig – enter – puxar – separa os vértices do polígono

Passar vértices para outra camada e escondê-los

Trabalho 1.

ICOSIDODECAEDRO



Trabalho 1.

A partir do icosidodecaedro

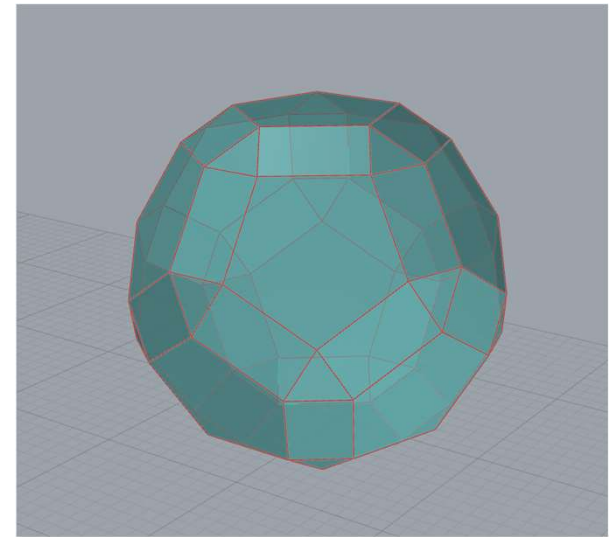
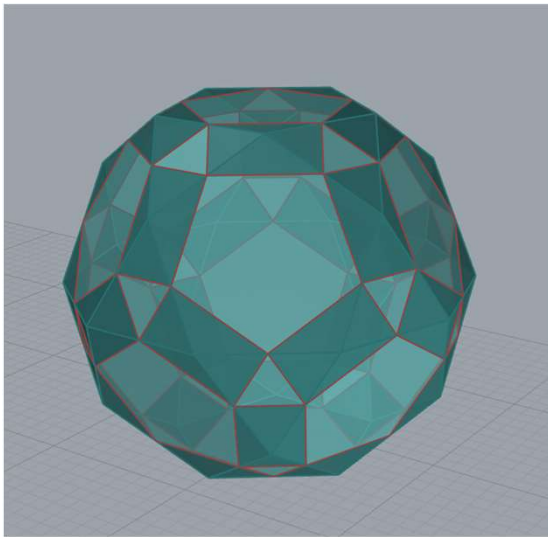
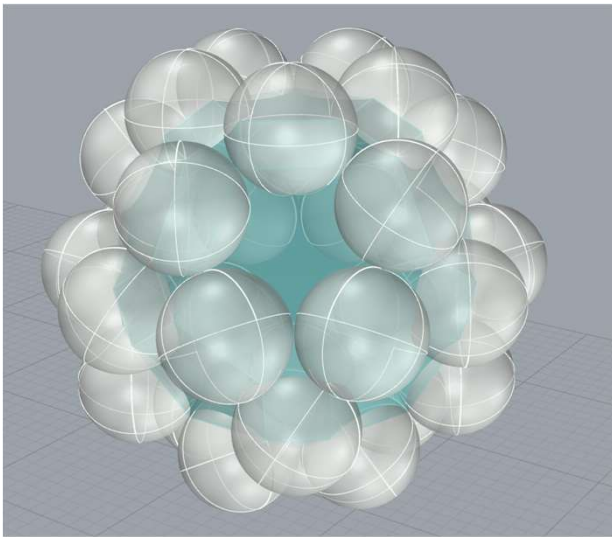
SPHERE – $\frac{1}{2}$ da aresta – colocar em todos os vértices

BOOLEAN DIFFERENCE – **select esfera** – **enter** – **select figura** – **enter** – dá nos a intercessão da esfera com as arestas

POLYLINE – desenhar os triângulos que serão retirados

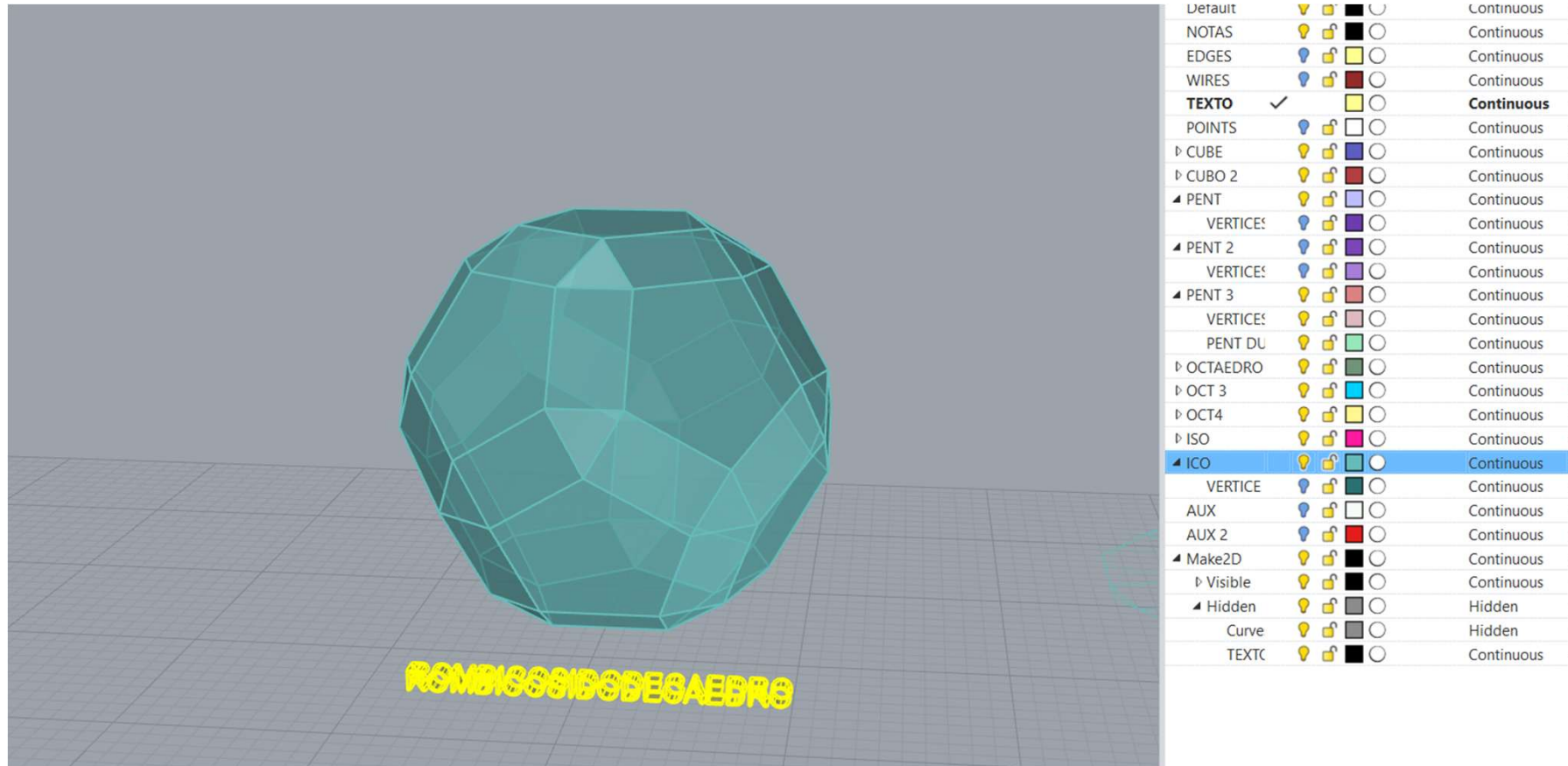
WIRECUT – **linhas** – **enter** – **fig** – **enter** – **puxar** – separa os vértices do polígono

Passar vértices para outra camada e escondê-los

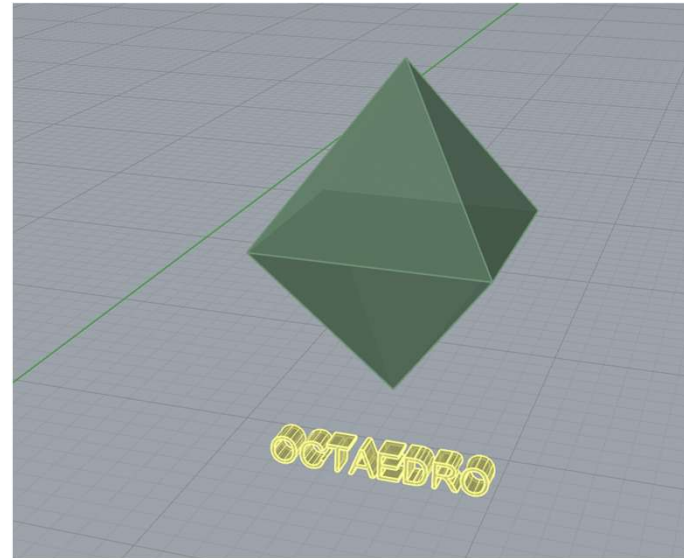
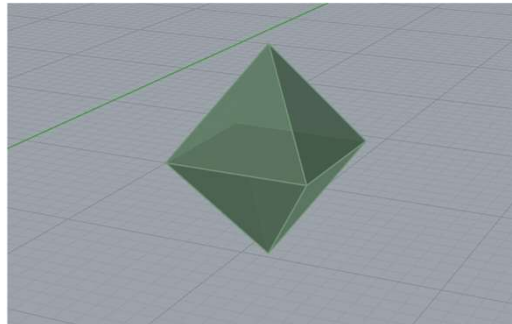
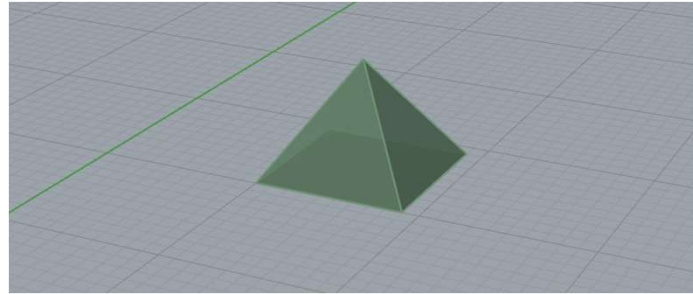
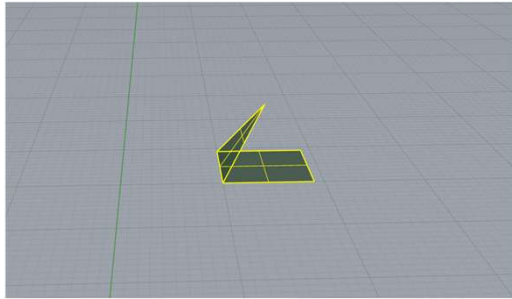


Trabalho 1.

ROMBICOSIDODECAEDRO



Trabalho 1.



OCTAEDRO

- POLYLINE** – criar um quadrado (9 por 9)
 - linha vertical no centro do quadrado
 - Linha horizontal a meio de uma das arestas
- CIRCLE** – centro num dos vértices e raio de 9
- SURFACE FROM 3 OR 4 CORNERS** – criar uma das faces (triângulo)
- ROTATE 3D** – rodar o triângulo até á linha vertical no centro do quadrado
- ARRAY POLAR** – **select face** – **4** – **360** – para completar a pirâmide
- MIRROR** – **3 pontos** – para obter uma pirâmide invertida
- JOIN** – juntar todas as faces para se tornar num só sólido

Trabalho 1.

A partir do octaedro

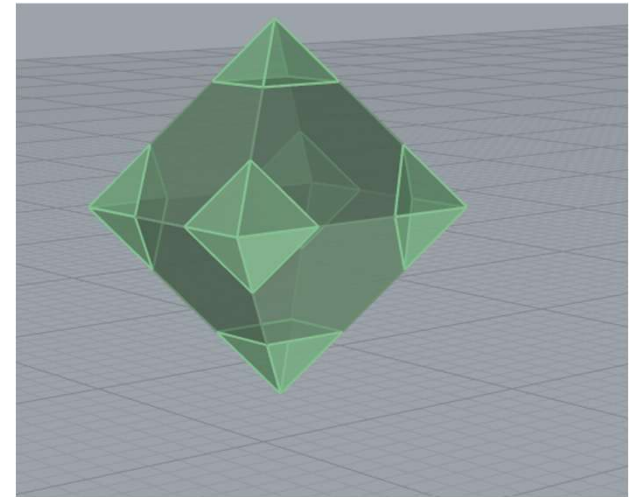
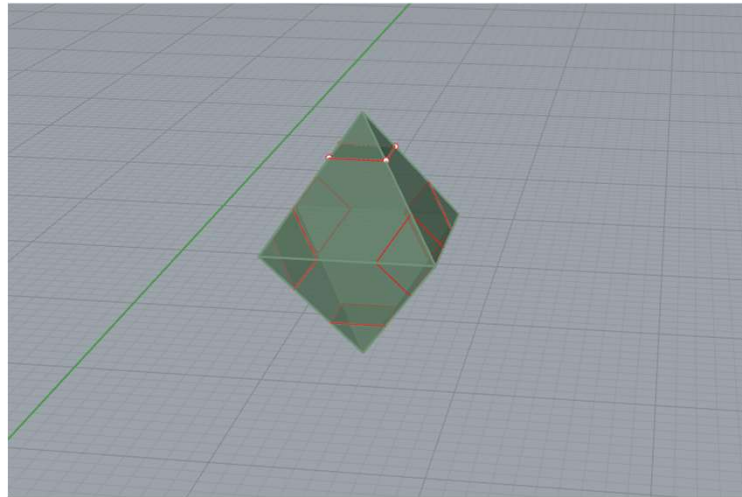
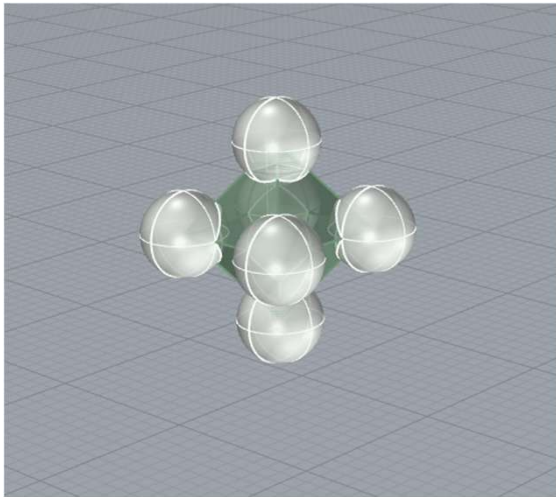
SHFERE – 3 de raio ($1/3$ da aresta) – em todos os vértices

BOOLEAN DIFFERENCE – select esfera – enter – select figura – enter – dá nos a intercessão da esfera com as arestas

POLYLINE – desenhar os triangulos que seram retirados

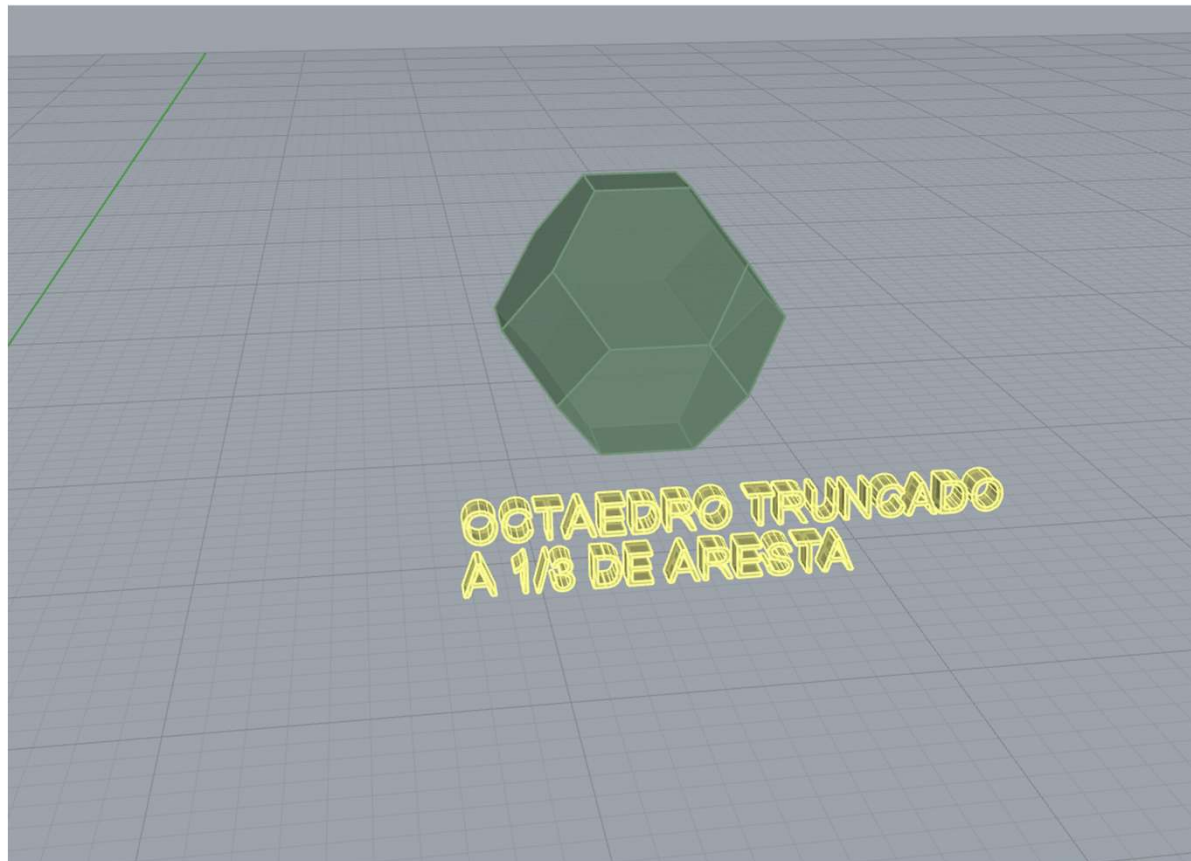
WIRECUT – linhas – enter – fig – enter – puxar – separa os vertices do poligono

Passar vertices para outra camanda e escondê-los



Trabalho 1.

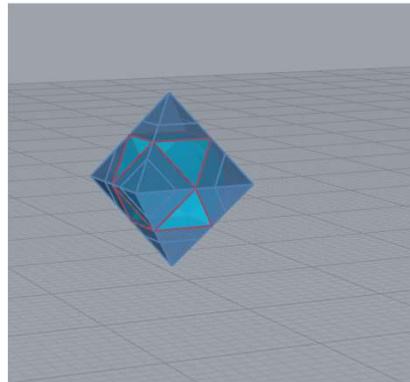
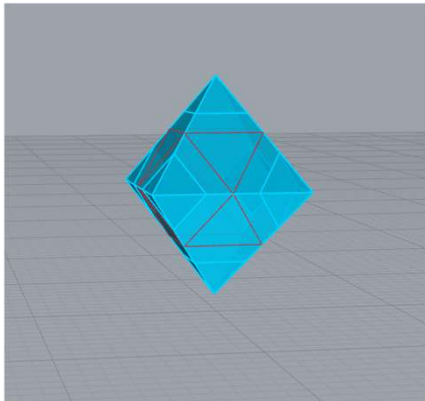
OCTAEDRO TRUNCADO



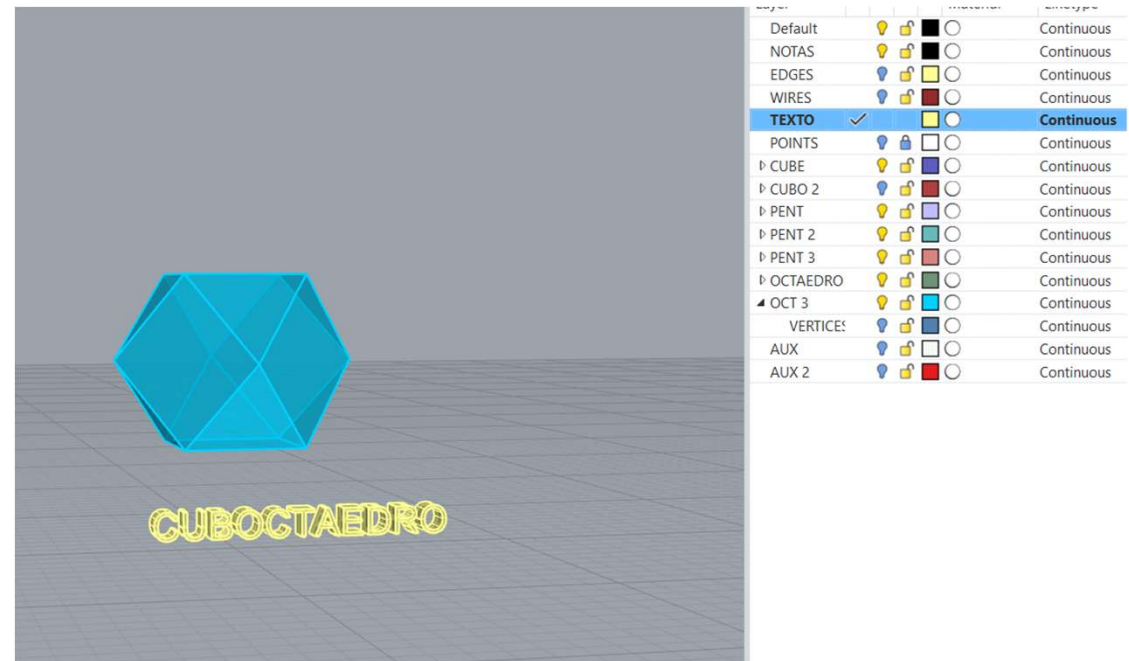
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NOTAS			Continuous
TEXTO	✓		Continuous
CUBE			Continuous
WIRES			Continuous
VERTICES			Continuous
POINTS			Continuous
CUBO 2			Continuous
VERTICES 2			Continuous
EDGES			Continuous
CUBO DUAL			Continuous
CUBO OC D			Continuous
PENT DUAL			Continuous
PENT			Continuous
VERTICES 3			Continuous
PENT 2			Continuous
PENT 3			Continuous
VERTICES 5			Continuous
VERT6			Continuous
OCTAEDRO			Continuous
VERTICES 4			Continuous
AUX			Continuous
AUX 2			Continuous

Trabalho 1.

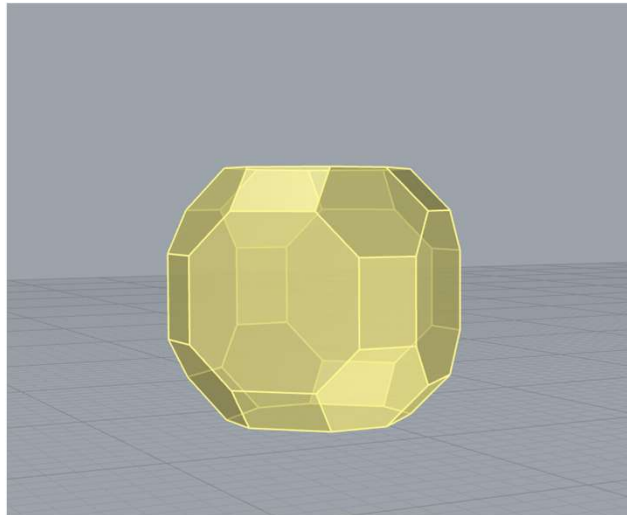
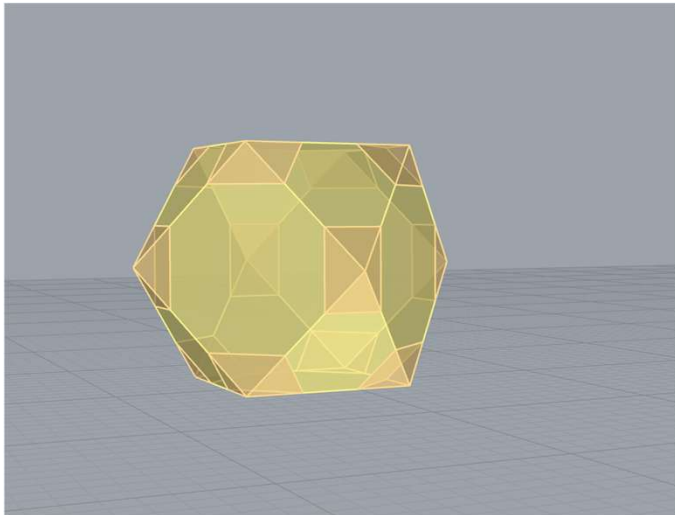
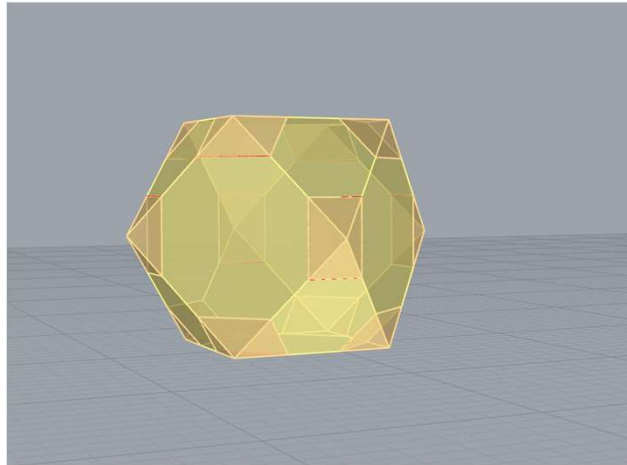
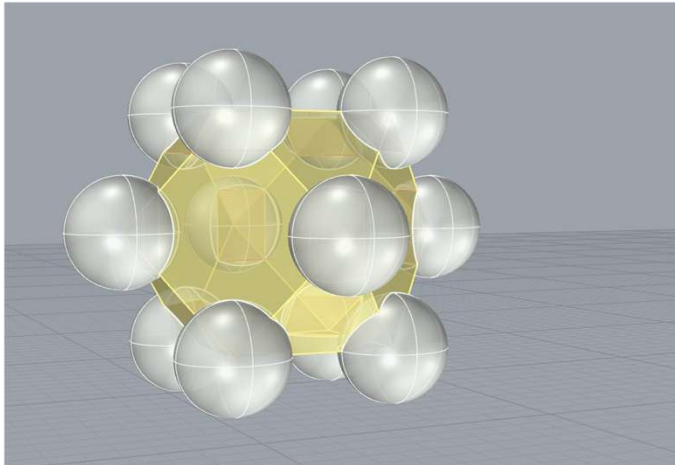
A partir do octaedro
POLYLINE – desenhar triângulos com vértices a meio das arestas do octaedro que serão retirados
WIRE CUT – linhas – enter – fig – enter – puxar –
 separa os vértices do polígono
 Passar vértices para outra camada e escondê-los



CUBOCTAEDRO A PARTIR DE UM OCTAEDRO



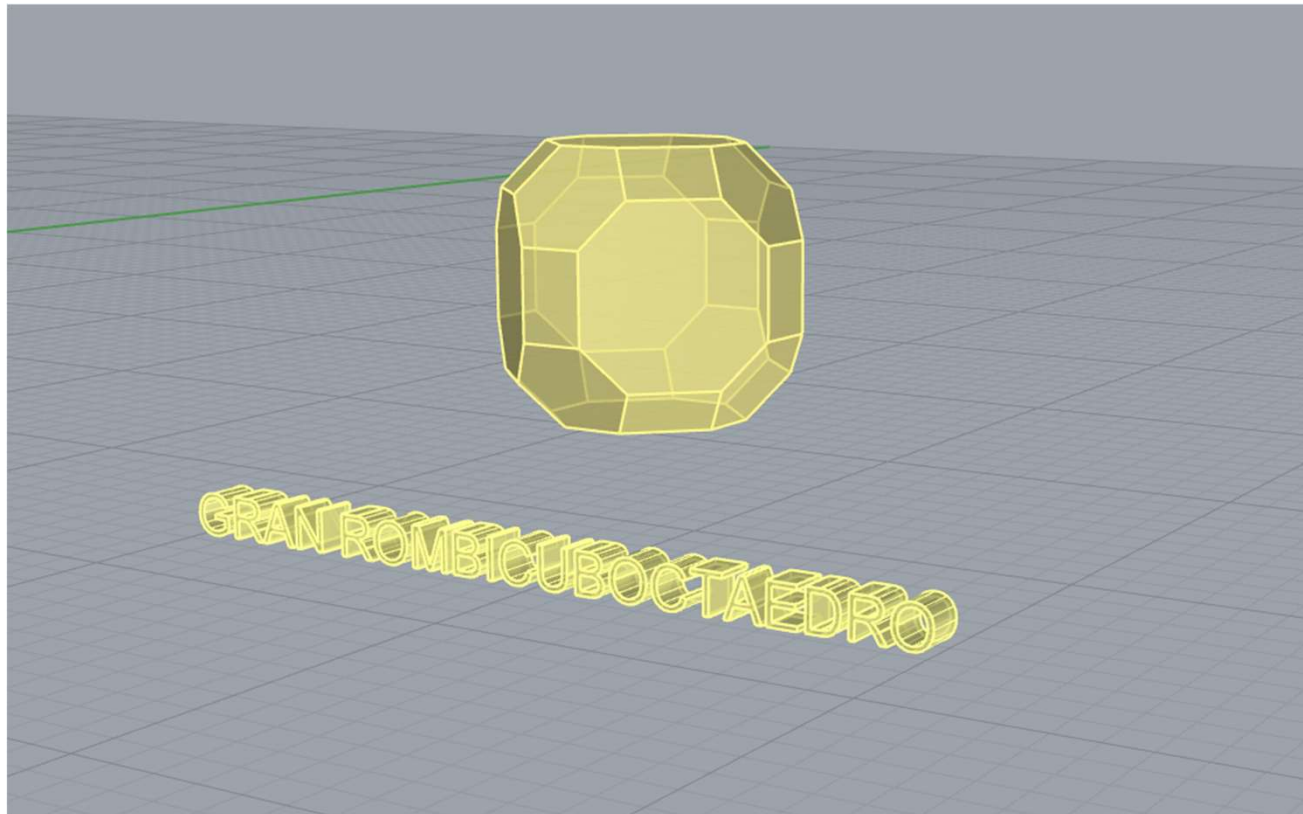
Trabalho 1.



A partir do cuboctaedro
SHFERE – 1,5 de raio ($1/3$ da aresta) – em todos os vértices
BOOLEAN DIFFERENCE – select esfera – enter – select figura – enter – dá nos a intercessão da esfera com as arestas
POLYLINE – desenhar os triângulos que serão retirados
WIRECUT – linhas – enter – fig – enter – puxar – separa os vértices do polígono
 Passar vértices para outra camada e escondê-los

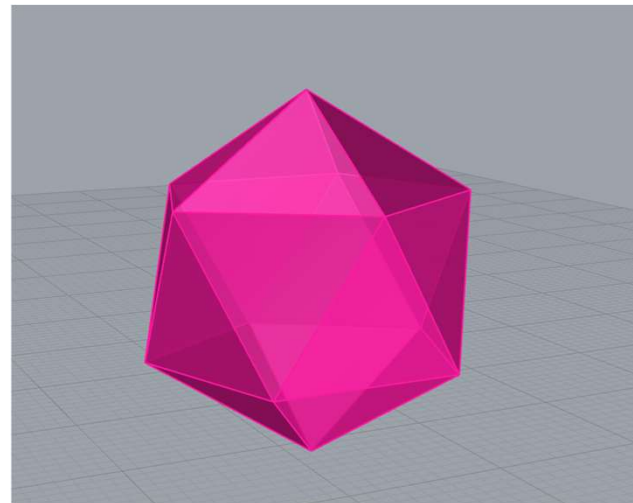
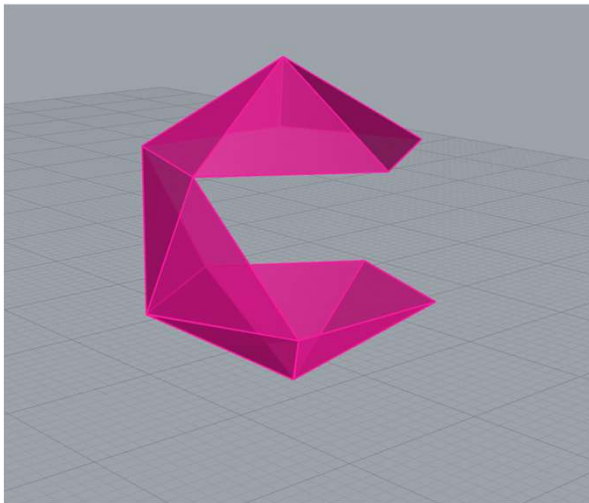
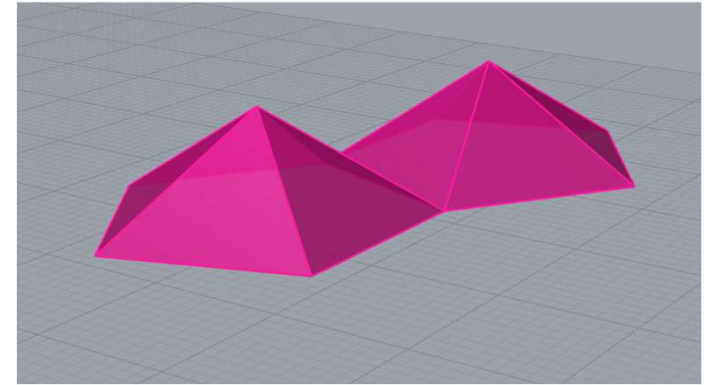
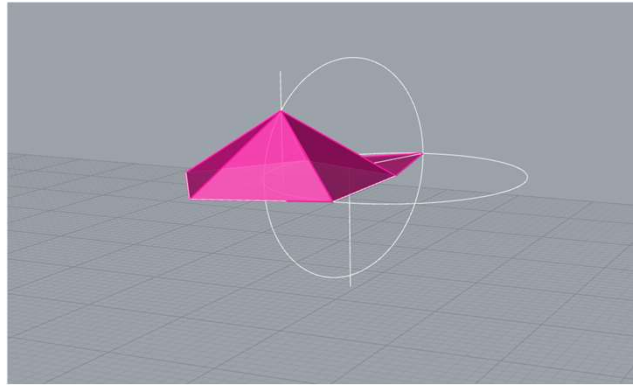
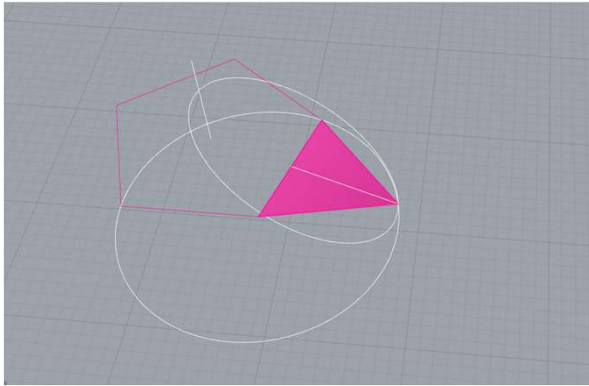
Trabalho 1.

GRAN ROMBICUBOCTARDRO



Default					Continuous
NOTAS					Continuous
EDGES					Continuous
WIRES					Continuous
TEXTO					Continuous
POINTS					Continuous
▷ CUBE					Continuous
▷ CUBO 2					Continuous
▷ PENT					Continuous
▲ PENT 2					Continuous
VERTICES					Continuous
▲ PENT 3					Continuous
PENT DU					Continuous
VERT6					Continuous
▷ OCTAEDRO					Continuous
▲ OCT 3					Continuous
VERTICES					Continuous
▲ OCT4					Continuous
VERTICES					Continuous
AUX					Continuous
AUX 2					Continuous

Trabalho 1.



ICOSAEDRO

POLYLINE – criar pentágono (aresta de 9)

Criar uma pirâmide pentagonal

SURFACE FROM 3 OR 4 CORNERS – para criar as faces

COPY – copiar a pirâmide

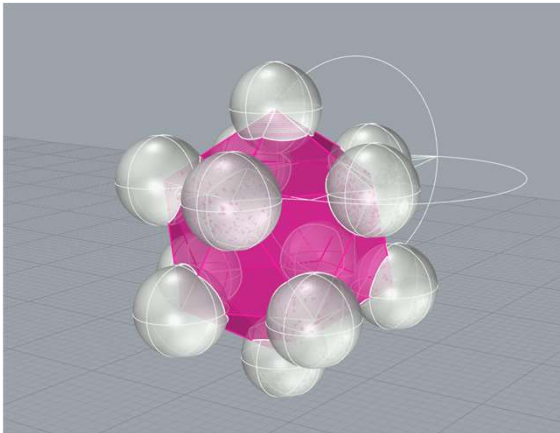
Alinhar pirâmide copiada

MIRROR – **3 pontos** - para baixo

ROTATE – **36°** - criara a base do polígono

ARRAY POLAR – **5** – **360°** - em 2 faces para completar o sólido

Trabalho 1.



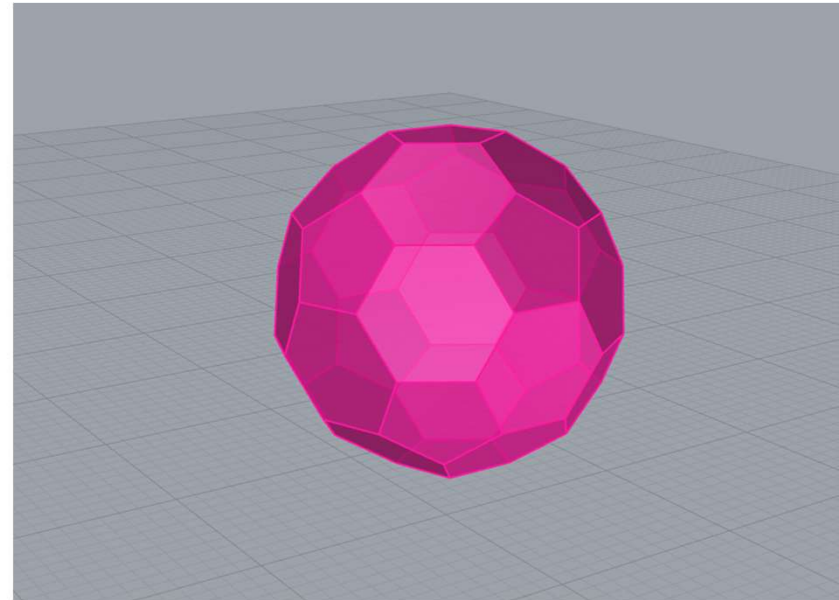
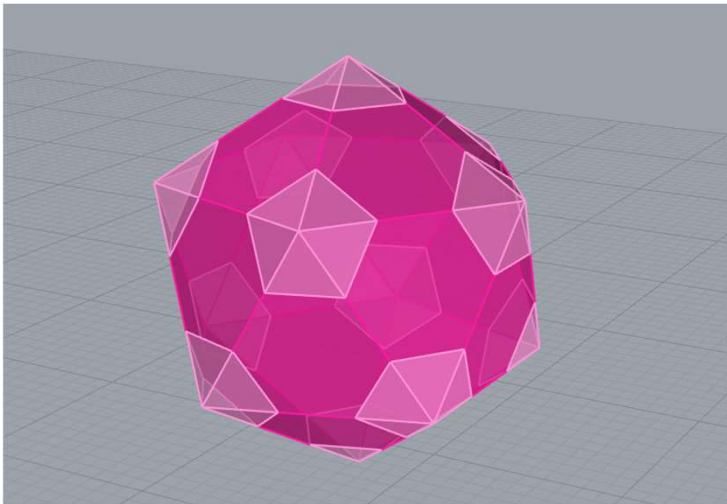
A partir do icosaedro

SHFERE – $\frac{1}{3}$ da aresta – em todos os vértices

BOOLEAN DIFFERENCE – **select esfera** – **enter** – **select figura** – **enter** – dá nos a intercessão da esfera com as arestas

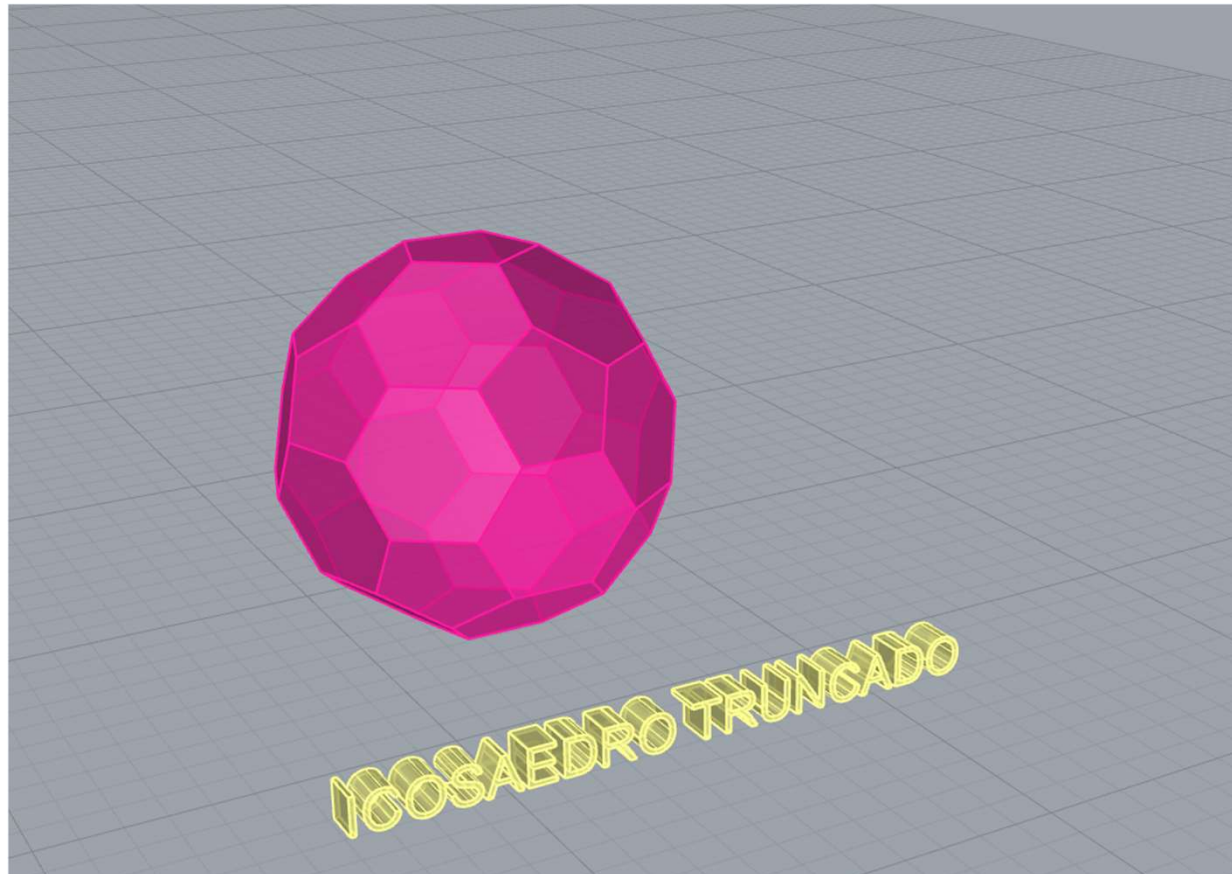
POLYLINE – desenhar os triângulos que serão retirados

WIRECUT – **linhas** – **enter** – **fig** – **enter** – **puxar** – separa os vértices do polígono
Passar vértices para outra camada e escondê-los



Trabalho 1.

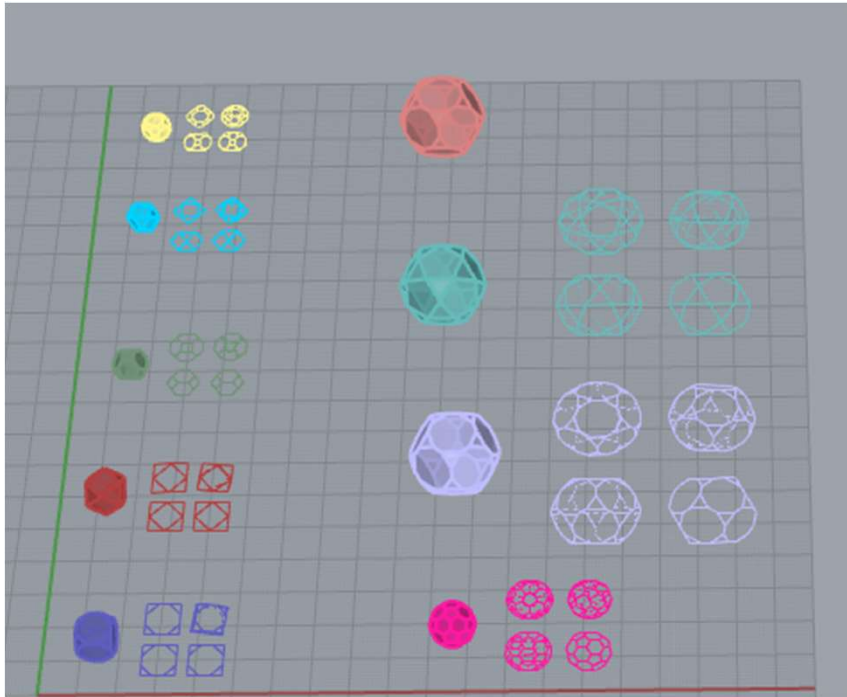
ICOSAEDRO TRUNCADO



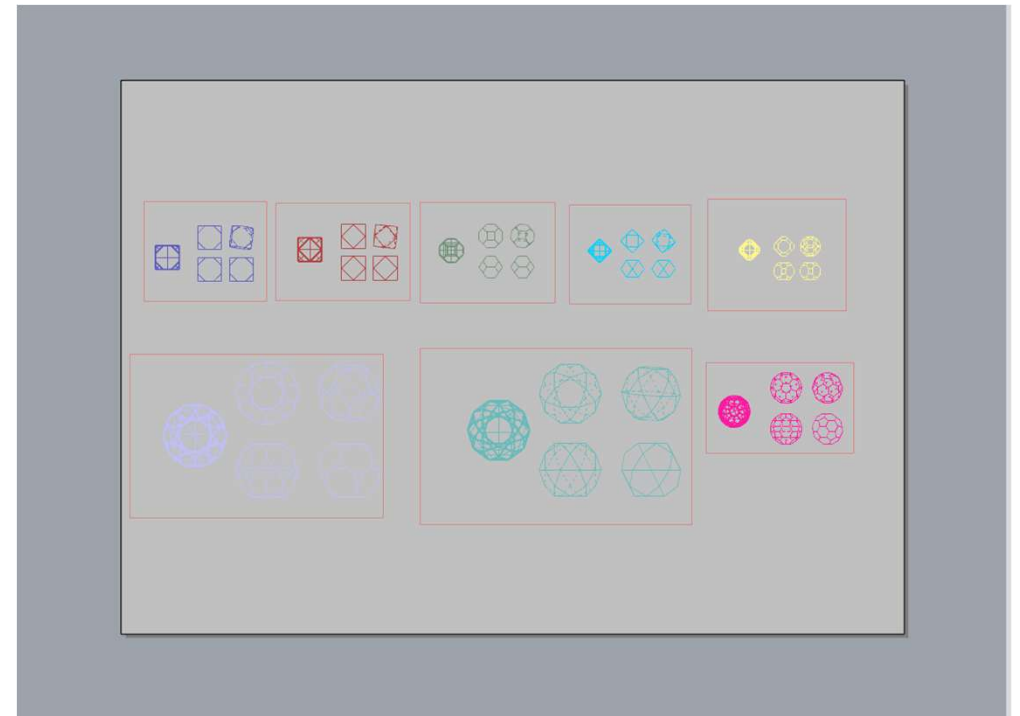
Default					Continuous
NOTAS					Continuous
EDGES					Continuous
WIRES					Continuous
TEXTO					Continuous
POINTS					Continuous
▷ CUBE					Continuous
▷ CUBO 2					Continuous
▷ PENT					Continuous
◀ PENT 2					Continuous
VERTICES!					Continuous
◀ PENT 3					Continuous
PENT DL					Continuous
VERT6					Continuous
▷ OCTAEDRO					Continuous
◀ OCT 3					Continuous
VERTICES!					Continuous
◀ OCT4					Continuous
VERTICES!					Continuous
◀ ISO					Continuous
VERTICE					Continuous
AUX					Continuous
AUX 2					Continuous

Trabalho 1.

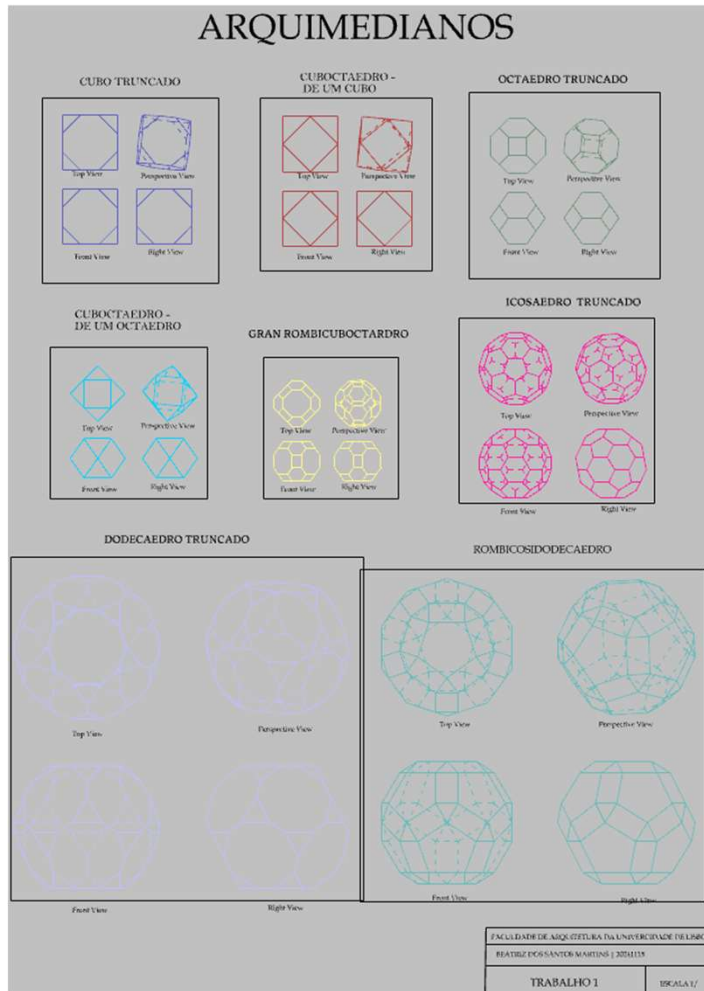
MAHE 2D – select shape – select third angle
projection – okk - 4 vistas de cima, frente,
perspectiva e direita



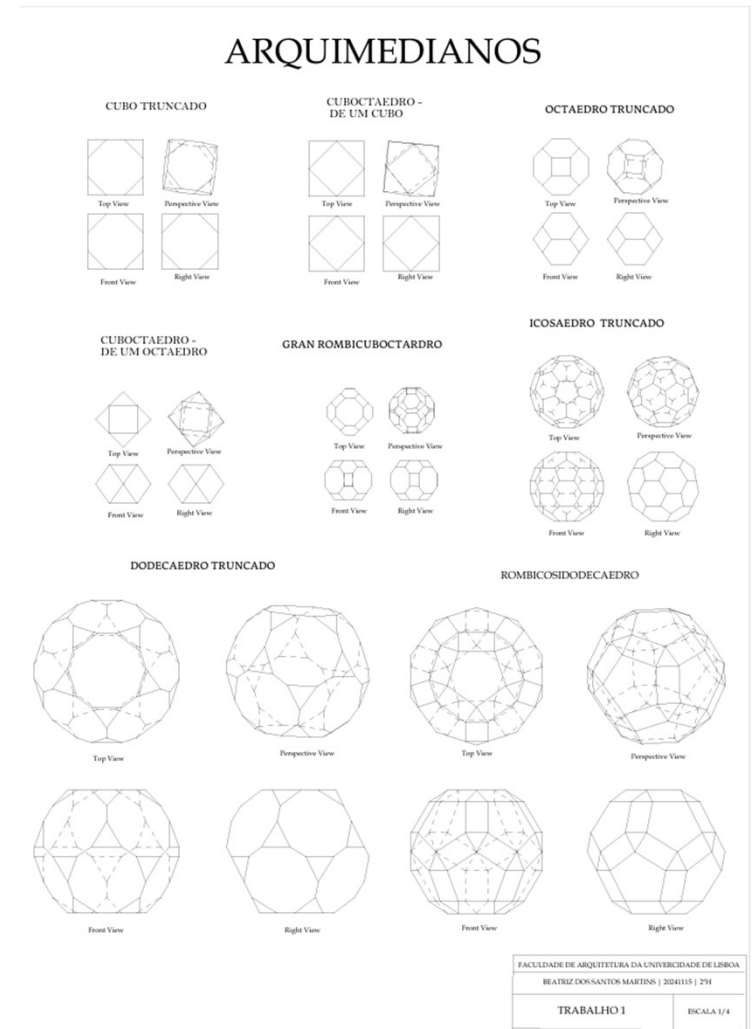
LAYOUT – okk – cria uma página para layouts
DETAIL – add – cria uma janela
PROPERTIES – scale – alteração da escala, neste caso para 1 mm =
0,4 cm ou 1/4



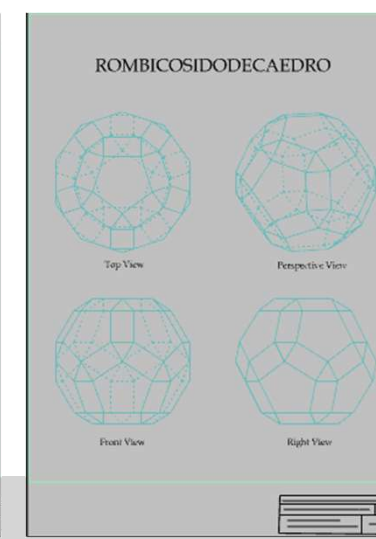
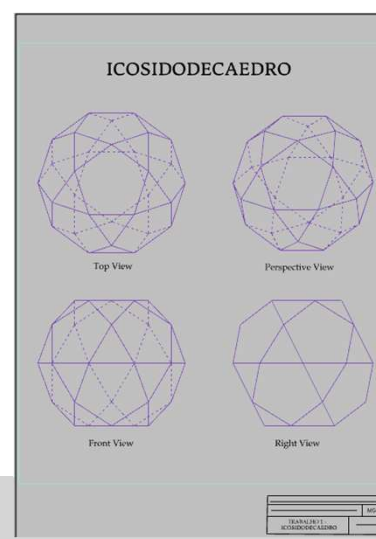
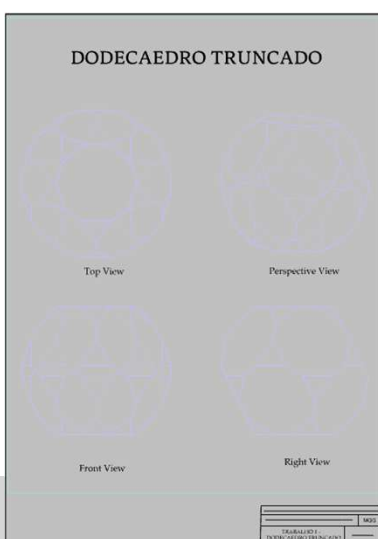
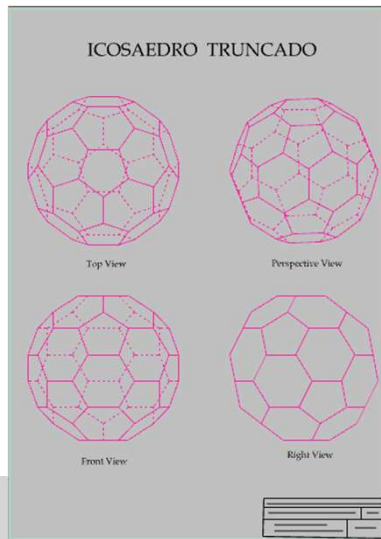
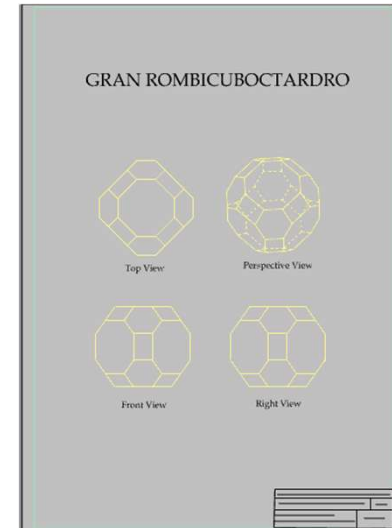
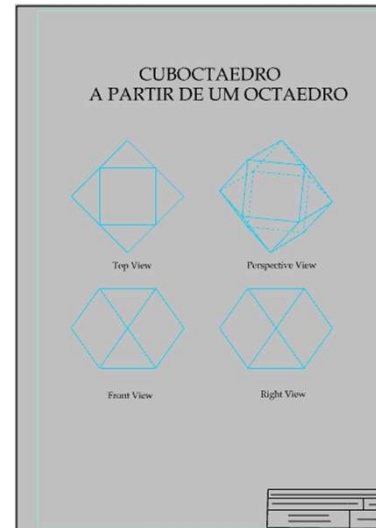
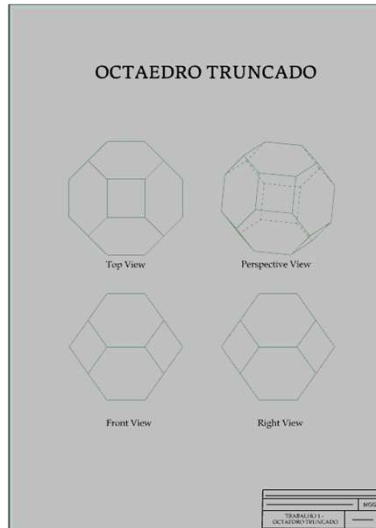
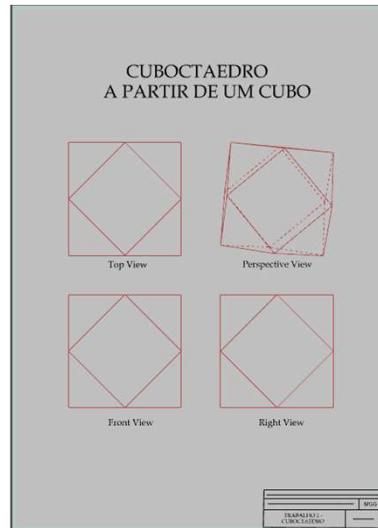
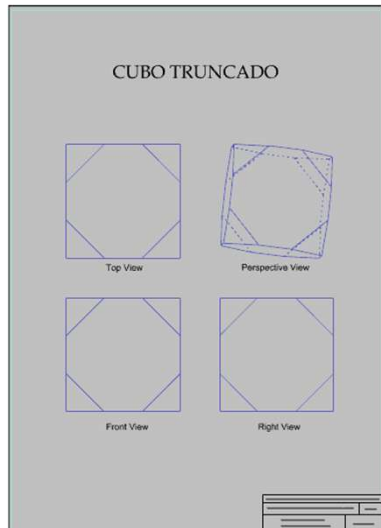
Trabalho 1.



Editar folha para A3 e Portrait
TEXT – para legendar
PRINT – como Rhino PDF – size
A3 – black and white – para salvar
o layout como um PDF



Trabalho 1.



Repetir o processo para
cada polígono

Trabalho 1.