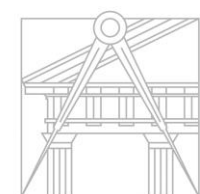


# Representação Digital

# 2023-2024

**U** LISBOA

UNIVERSIDADE  
DE LISBOA



FACULDADE DE ARQUITETURA  
UNIVERSIDADE DE LISBOA

Mestrado Integrado em Arquitectura  
Ano Lectivo 2023-2024 1º Semestre  
Docente - Nuno Alão 2º Ano

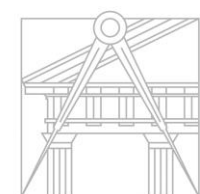
20221207

NOME E APELIDOS DO ALUNO



**U** LISBOA

UNIVERSIDADE  
DE LISBOA



FACULDADE DE ARQUITETURA  
UNIVERSIDADE DE LISBOA

**ReDig**

Mestrado Integrado em Arquitectura  
Ano Lectivo 2023-2024 1º Semestre  
Docente - Nuno Alão 2º Ano

## ÍNDICE – Aulas

**Semana 1** – 19 e 20 de Setembro

**Semana 2** – 26 e 27 de Setembro

**Semana 3** – 3 e 4 de Outubro

**Semana 4** – 10 e 11 de Outubro

**Semana 5** – 17 e 18 de Outubro

**Semana 6** – 24 e 25 de Outubro

**Semana 7** – 31 de Outubro

**Semana 8** – 7 e 8 de Novembro

**Semana 9** – 14 e 15 de Novembro

**Semana 10** – 21 e 22 de Novembro

**Semana 11** –

**Semana 12** –

## PROGRAMAS NECESSÁRIOS PARA A UC:

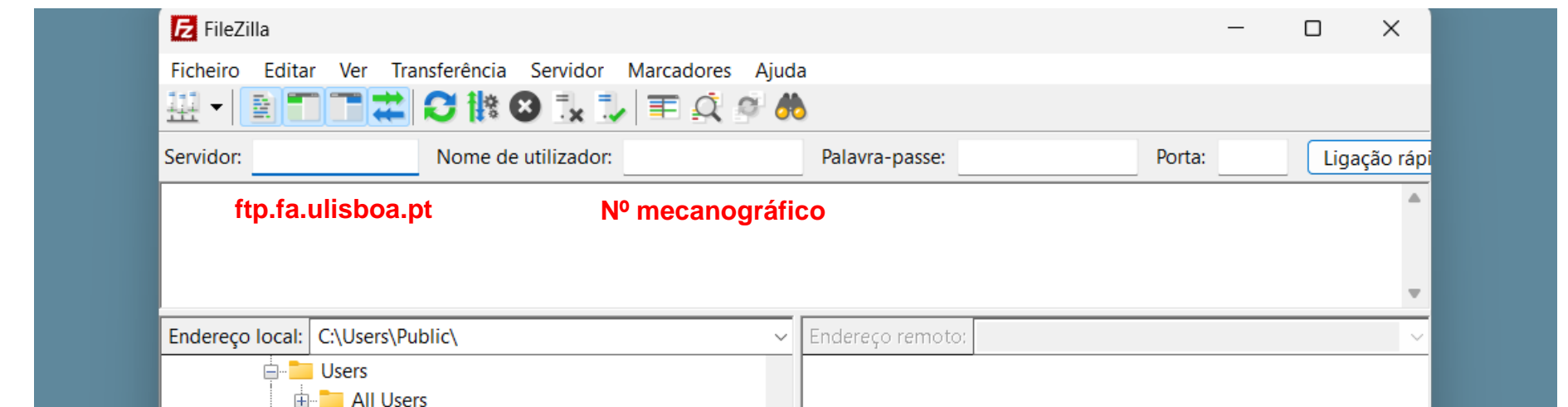
- FileZilla client
- Brackets / Notepad ++ / Sublime
- AutoCAD 2021 (pedir comprovativo de matricula para autenticação)
- 3D st. Max 2021

## MATÉRIA:

- Desenho 2D/3D
- Modelação 3D
- Visualização

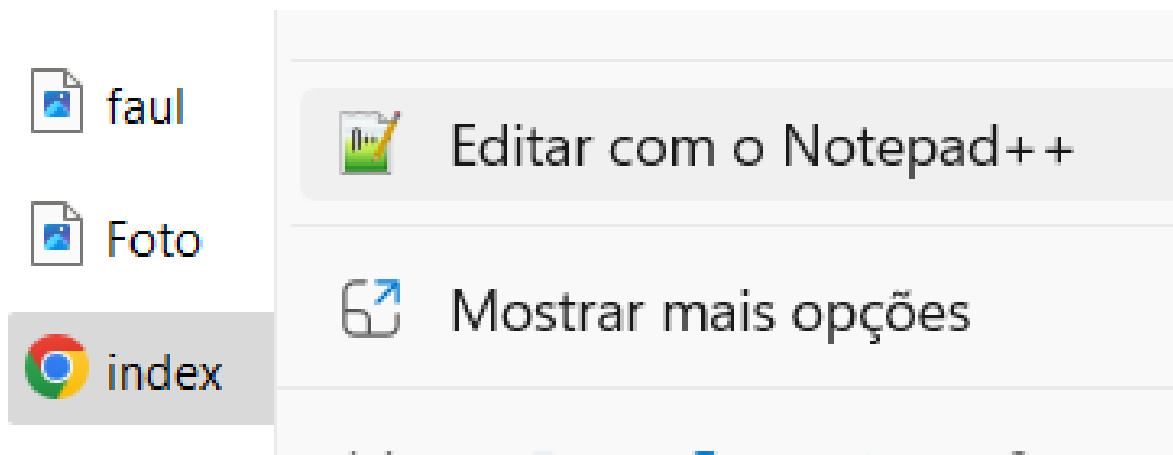
## AVALIAÇÃO:

- Exercícios
- Sumários das Aulas
- Frequência (60% de presenças p/ ter avaliação continua)



## Para a realização do site:

1. Entrar no FileZilla
2. Criar pasta public\_html
3. Descarregar o ficheiro index.html
4. Abrir o mesmo com o Notepad ++ e realizar as alterações
5. Colocar na pasta o ficheiro index e a fotografia



```
C:\Users\const\OneDrive\Documents\FAUL\2º ANO\1º Semestre\REPRESENTAÇÃO DIGITAL\Blog\index.html - Notepad++
Ficheiro Editar Procurar Visualização Codificação Linguagem Definições Ferramentas Macro Executar Plugins Janela ?
change.log index.html
1 <html>
2 <head>
3 <title> Constan&cedila Rolo </title>
4 <style>
5 body {
6   background-color: brownsmoke;
7   font-family: Arial, monospace;
8 }
9 p.sansserif {
10  font-family: Arial, sans-serif;
11 }
12 h1 {
13  color: black;
14  text-align: left;
15  font-family: arial, sans-serif;
16  font-size: 35px;
17 }
18 footer {
19  color: black;
20  text-align: center;
21  font-family: arial, sans-serif;
22  font-size: 15px;
23 }
24 </style>
25 </head>
26 <link type="text/css" rel="stylesheet" href="estilos.css">
27 <body>
28 <div id="Foto.jpg" style="position:absolute; left:950px; width:430px; height:50px; z-index:0 ; margin-left:100px;margin-bottom: 250px">
29 <br>
30 <br>
31 <br>
32 <br>
33 </div>
34 <div class="quadro">
35 <fa>
36 <a href="http://www.fa.ulisboa.pt/">Faculdade de Arquitetura - ULisboa </a>
37 </fa>
38 </div>
39 <a href="http://home.fa.ulisboa.pt/~nunoalao"> Representa&cedil&atildeo Digital </a>
40 <br>
41 <br>
42 2023/2024
43 <hr>
```

### Acentos:

1. “á”- &agrav;
2. “à”- &acuti;
3. “ã”- &atilde;
4. “ê”- &ecirc;
5. “ç”- &ccedil;
6. “1º”- &ordm;

Alterar o id para o nome da foto e ajustar pelas coordenadas

## AutoCAD 2021:

Abrir desenhos em **acadiso.dwt**

Escala: relacionar 2 medidas (medida do objeto real e medida da sua representação à escala pretendida)

. – casas decimais

, - passa à prox. coordenada

# - Coordenadas absolutas

@ - Coordenadas relativas

L – linha

E – apagar

LI – list

La – layer

PI – polyline

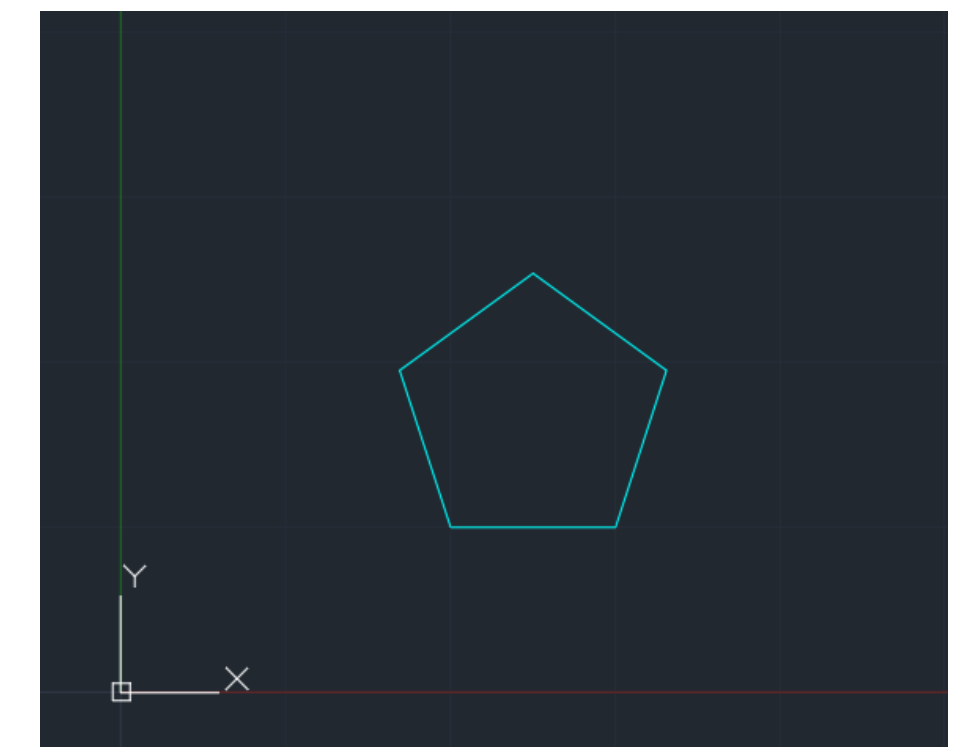
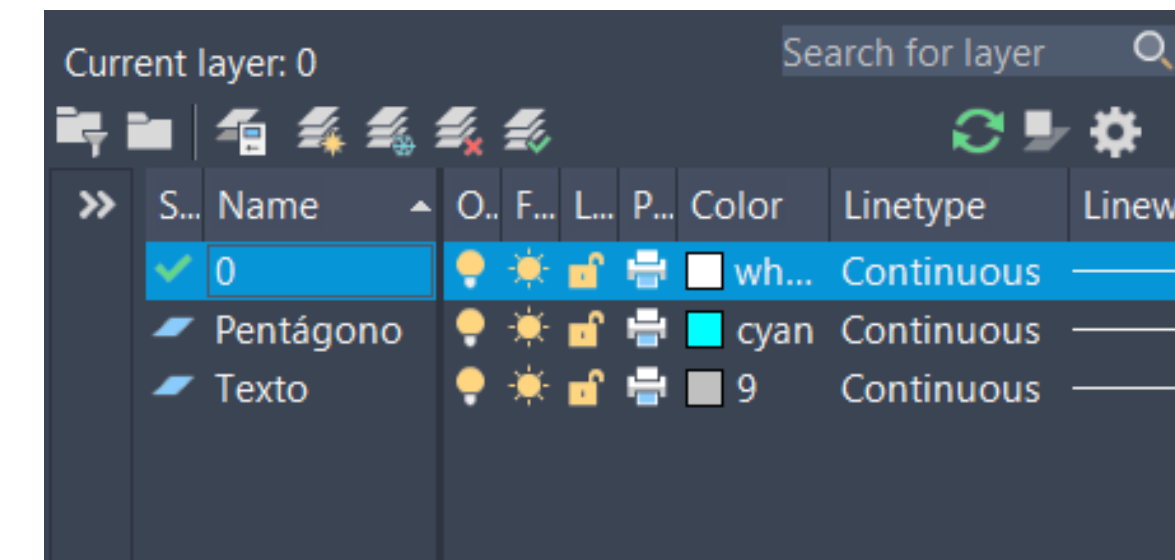
U – Undo

## Exercício pentágono:

- Criar 2 layers:
  - L1 – Pentágono
  - L2 – Texto
- Na layer pentágono, fazer **L** enter e digitar as coordenadas:
  - 1ª – 10, 10
  - 2ª - @10,<0
  - 3ª - @10<72
  - 4ª - @10<144
  - 5ª - @10<216
  - 6ª - @10<288

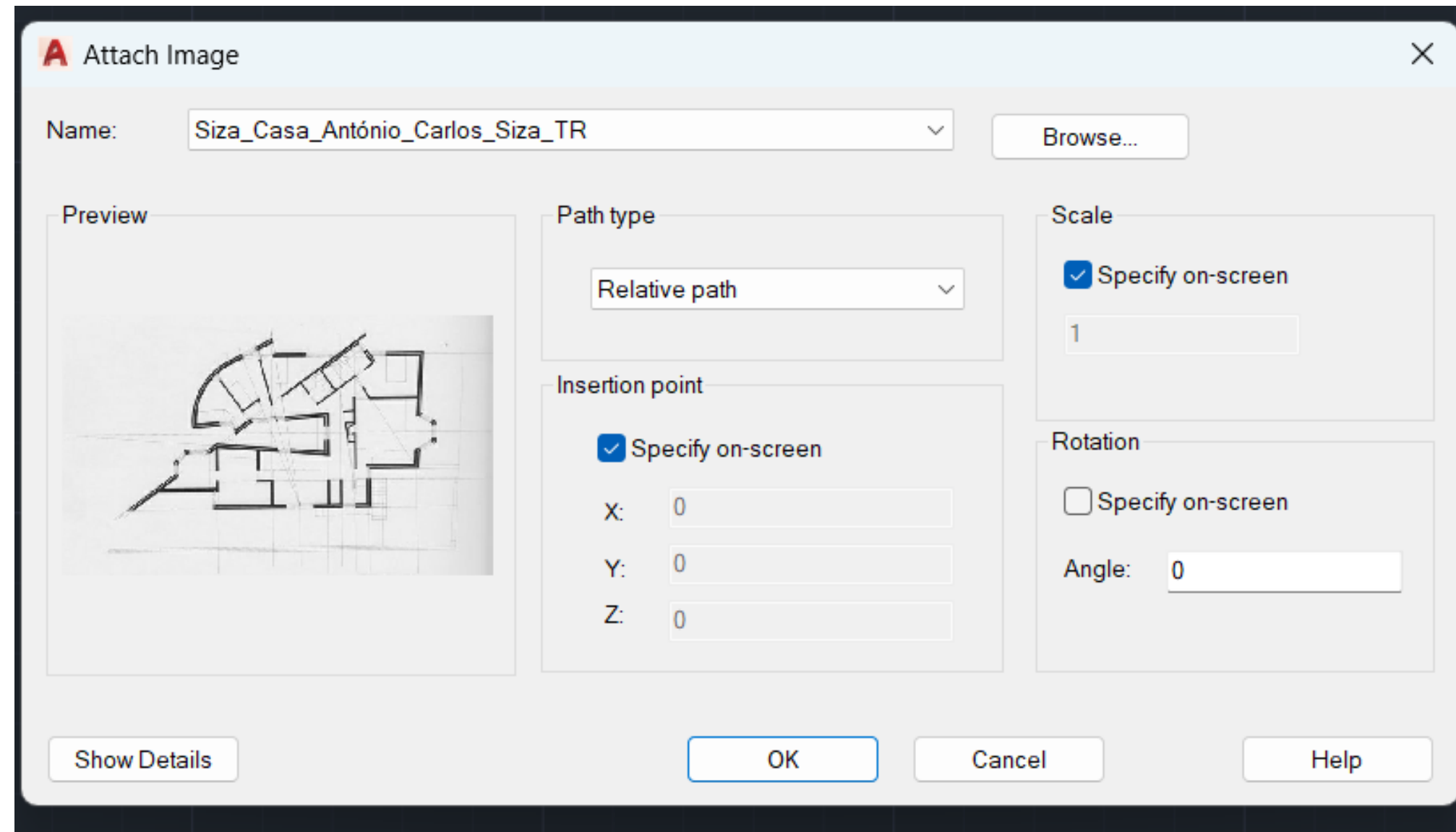
Usar tab ou < para alterar entre o comprimento e o angulo

- Na layer texto digitar numa caixa de texto “Pentágono”



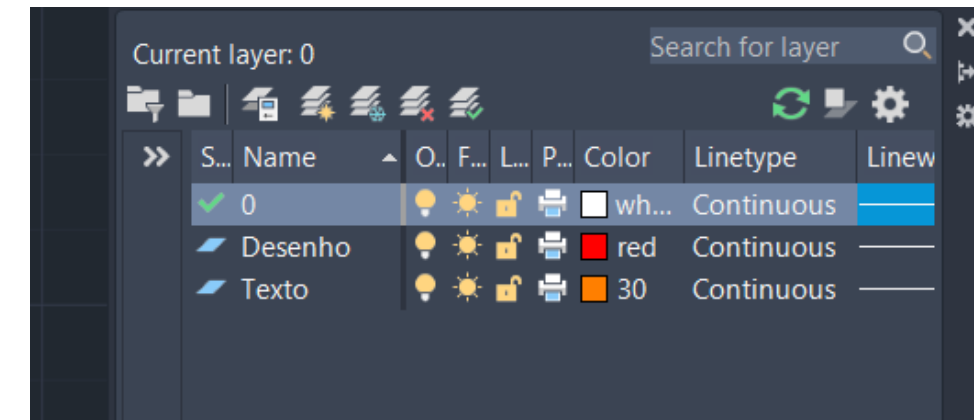
## Exercício: Casa Siza Vieira

- Colocar foto .jpg (mail de turma) no AutoCAD pelo comando **Attach**

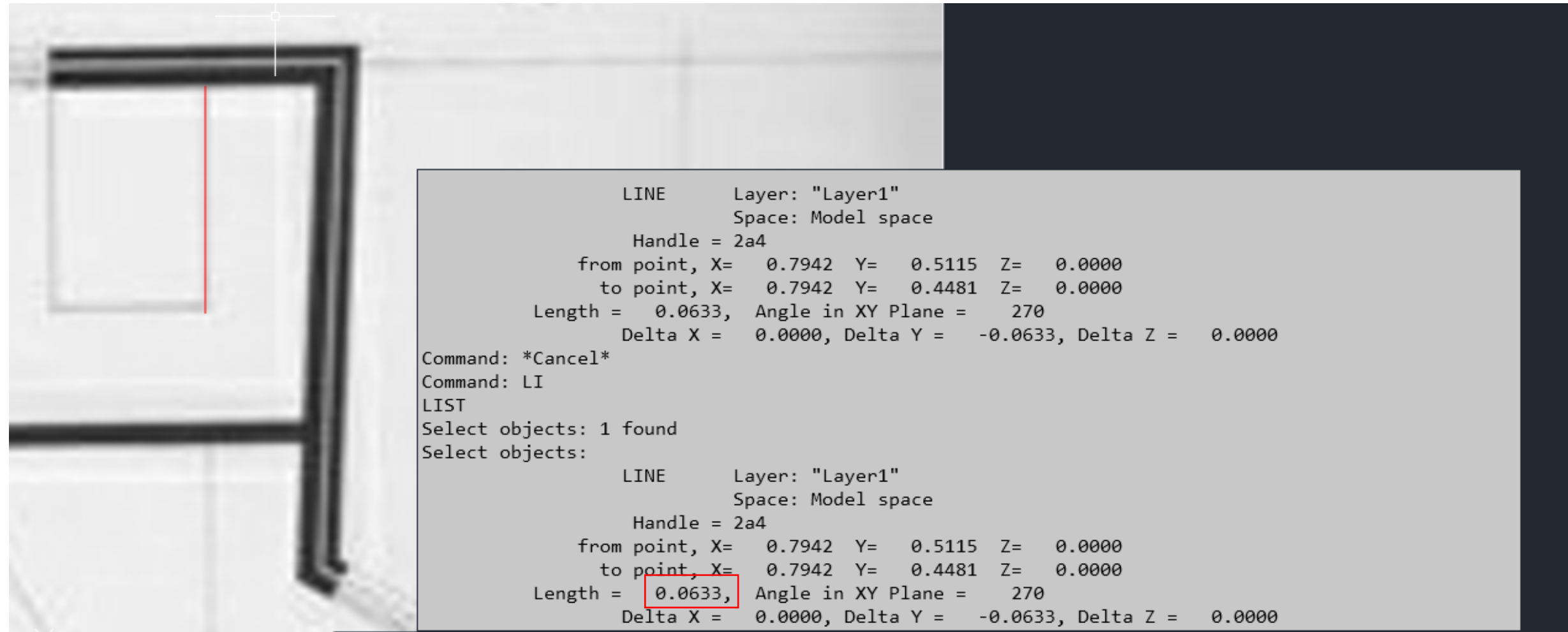


Selecionar Ok e meter no ponto 0,0

- Criar dois layers no comando **layers properties**

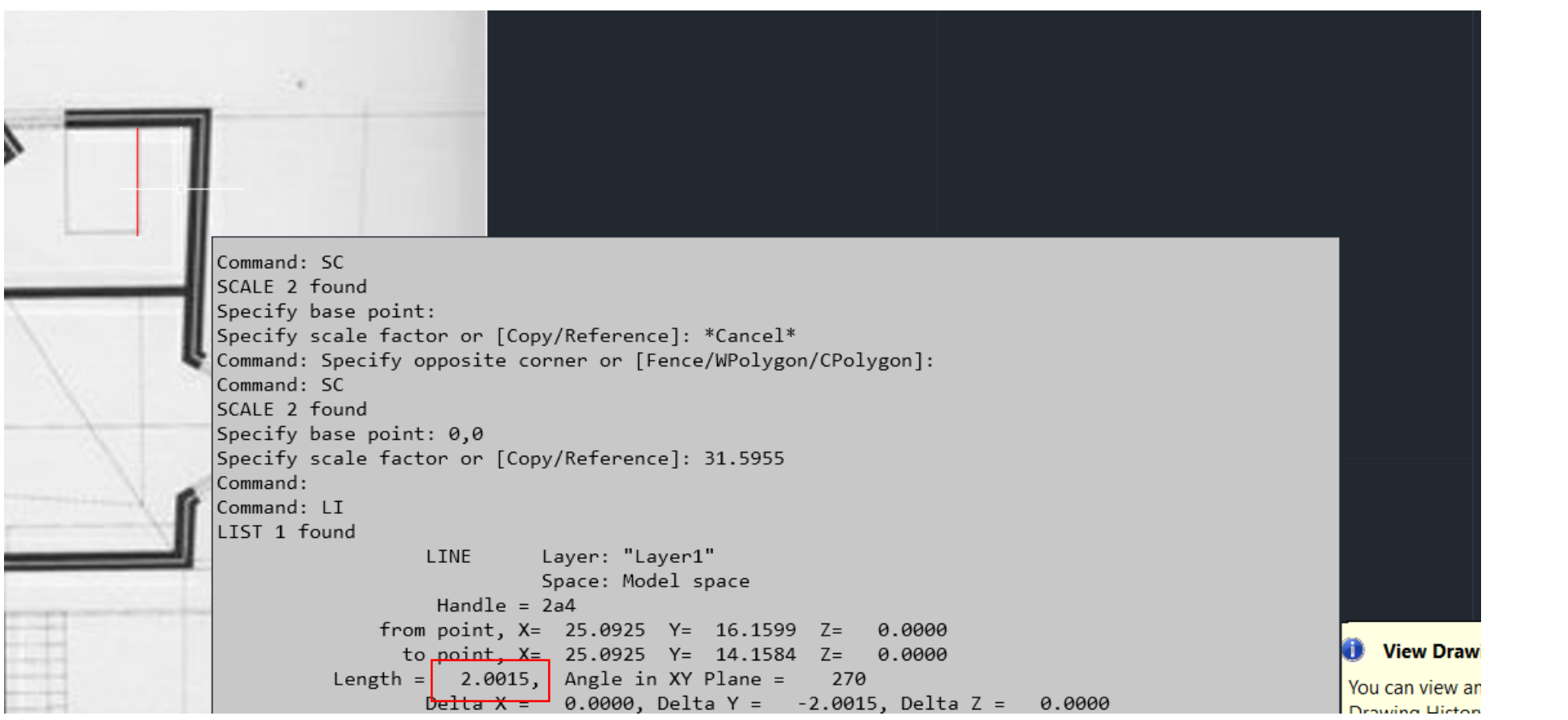
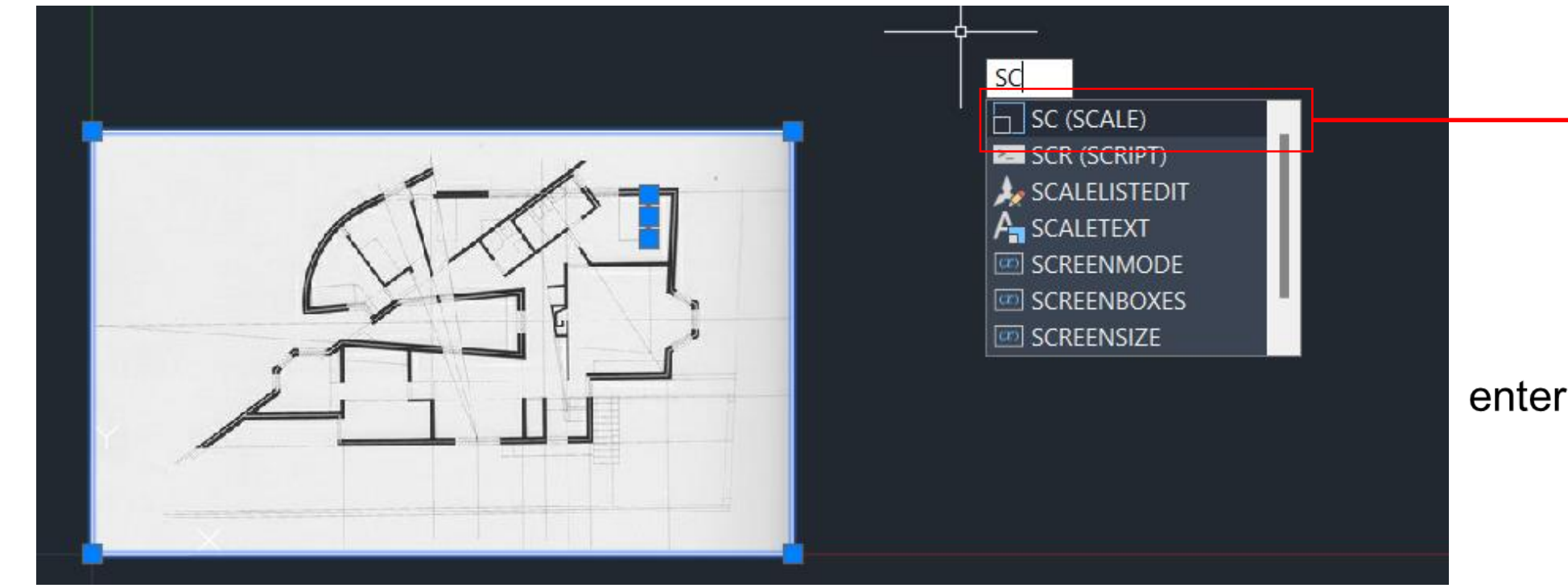


- Aproximar de um objecto na imagem (ex: cama ou porta) e com a opção **Orthomode** on (Fn+F8) desenhar uma linha por cima com o comando **Line (L)** em seguida com o comando **Dist** seleccionar o ponto inicial da linha e o ponto final, obtenho a distância. Pode medir também com o comando **LI (list)**.



- Considera-se que a cama mede 2m, tendo que escalar a imagem. Estando o CAD em mm tem de medir 2. Para isso acontecer fazer  $2/0.0633 = 31.595$  sendo este o nosso fator de escala
- Selecionar a linha e a imagem e fazer **SC (scale)**
- Para confirmar fazer **list** ou **dist** mais uma vez

- O comando **AL (align)**
  1. fazer fora da foto uma linha com 2 de comprimento c/ **ortho on**
  2. seleciona-se a foto e a linha existente na cama
  3. AL enter, e escolhe-se o ponto do cimo da cama e o ponto de cima da linha fora da foto e em seguida o ponto no fim da cama e o ponto de baixo da linha de fora da foto.
  4. Enter e vai perguntar, scale? E escolhemos yes

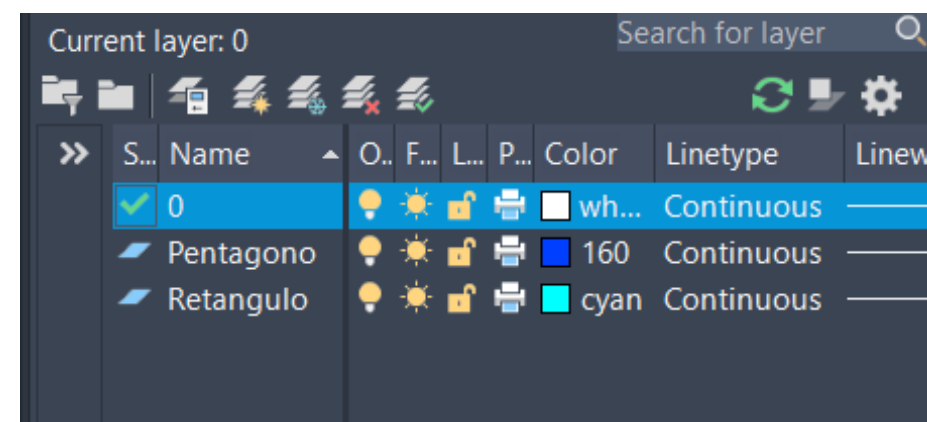




## Exercício: pentágono e retângulos

Abrir um novo desenho:

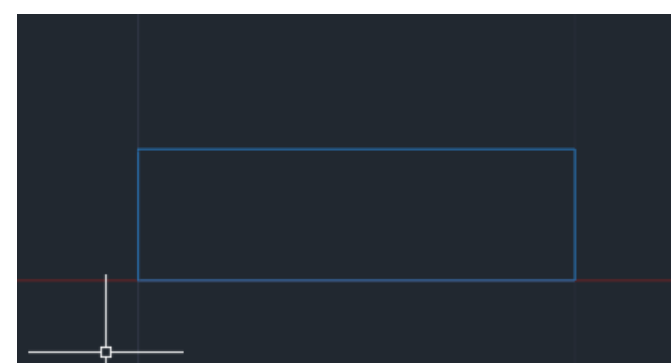
1. Criar dois layers



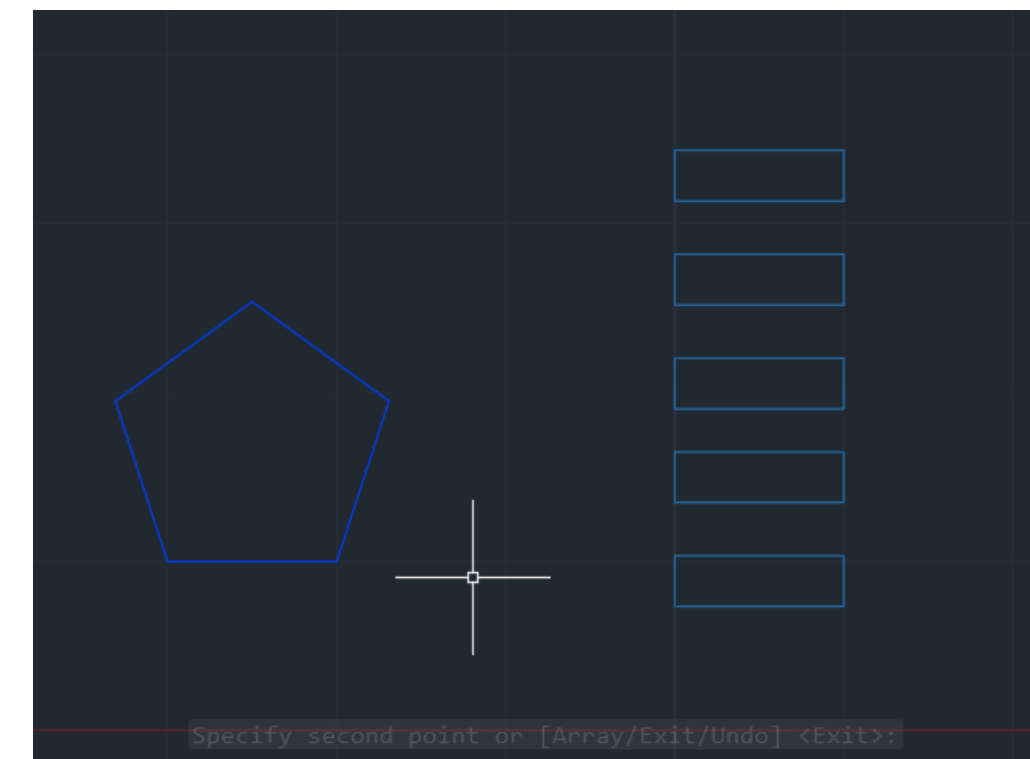
2. Criar um pentágono como na aula precedente.



3. Criar um retângulo c/ altura 3 e comprimento 10 (usar **PL** c/ Ortho on)

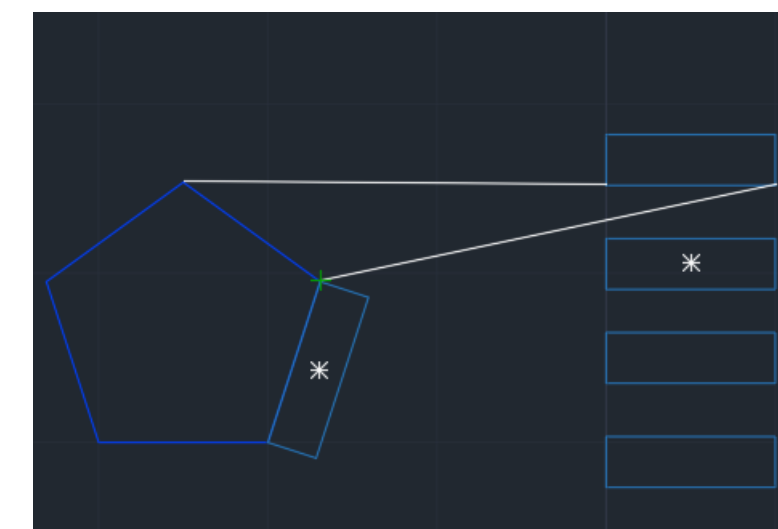


4. M (move) e enter, em seguida CO (copy) do retângulo 4x.



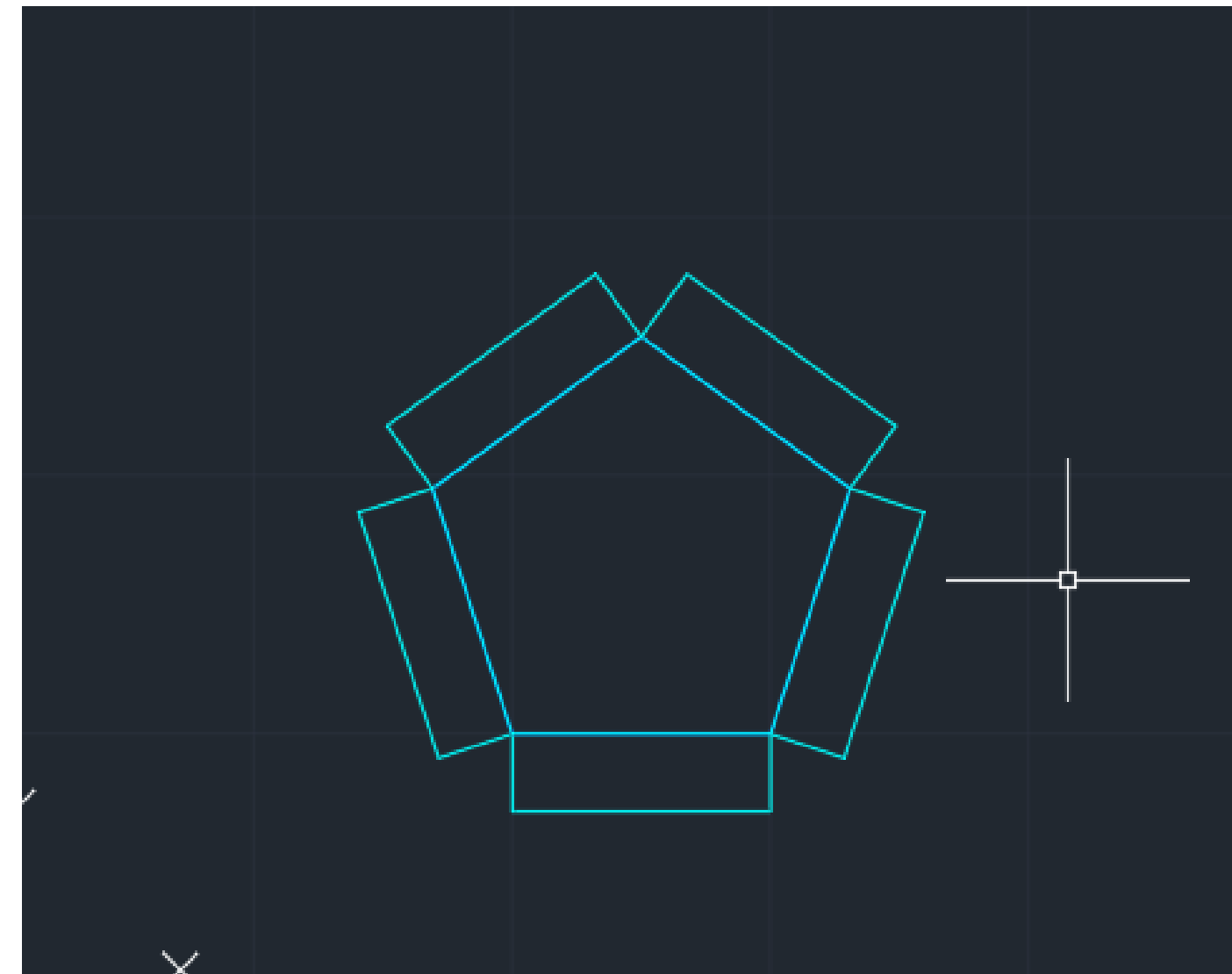
5. RO (rotate) rodar enter e meter angulo  $72^\circ$  neste caso e dps M (move)

6. AL (align) selecionar um retângulo e os pontos cujo pretendo alinhar c/ o retângulo (não escalar)

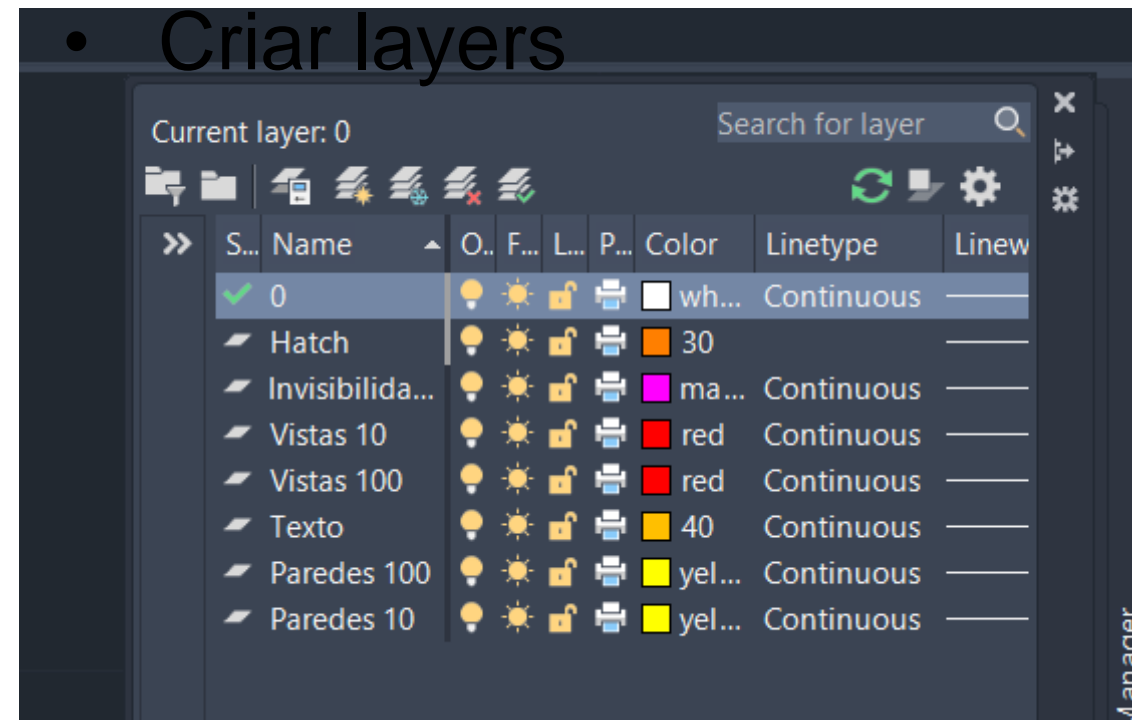


## Exercício: pentágono e retângulos

Resultado final:



## Exercício: Casa Siza Vieira (continuação)



- Medidas de tijolo:
  - 0.07
  - 0.11
  - 0.15
  - 0.21

## COMANDOS:

**DR (DRAWORDER)** – front/back/above/under

**EX (extend)** – estender a linha

**TR (trim)** – permite aparar/apagar partes de linha a mais

**F - fillet**

**MATCHP** – match properties

**H (hatch)** – trama

**BREAK** – quebra a linha

**MI (mirror)** – espelha

**STRECH**

**O (offset)** – cria uma linha paralela da selecionada

**ARC** – arco (seta p/ baixo e tab p escolher opção)

**SPL** – linhas curvas

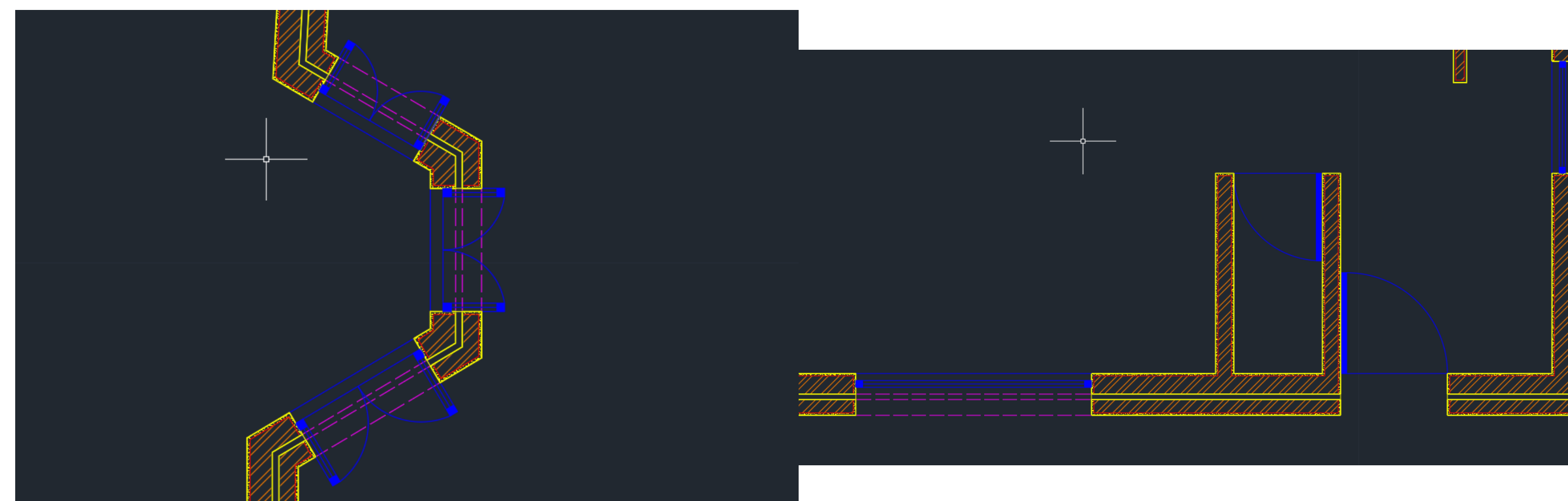
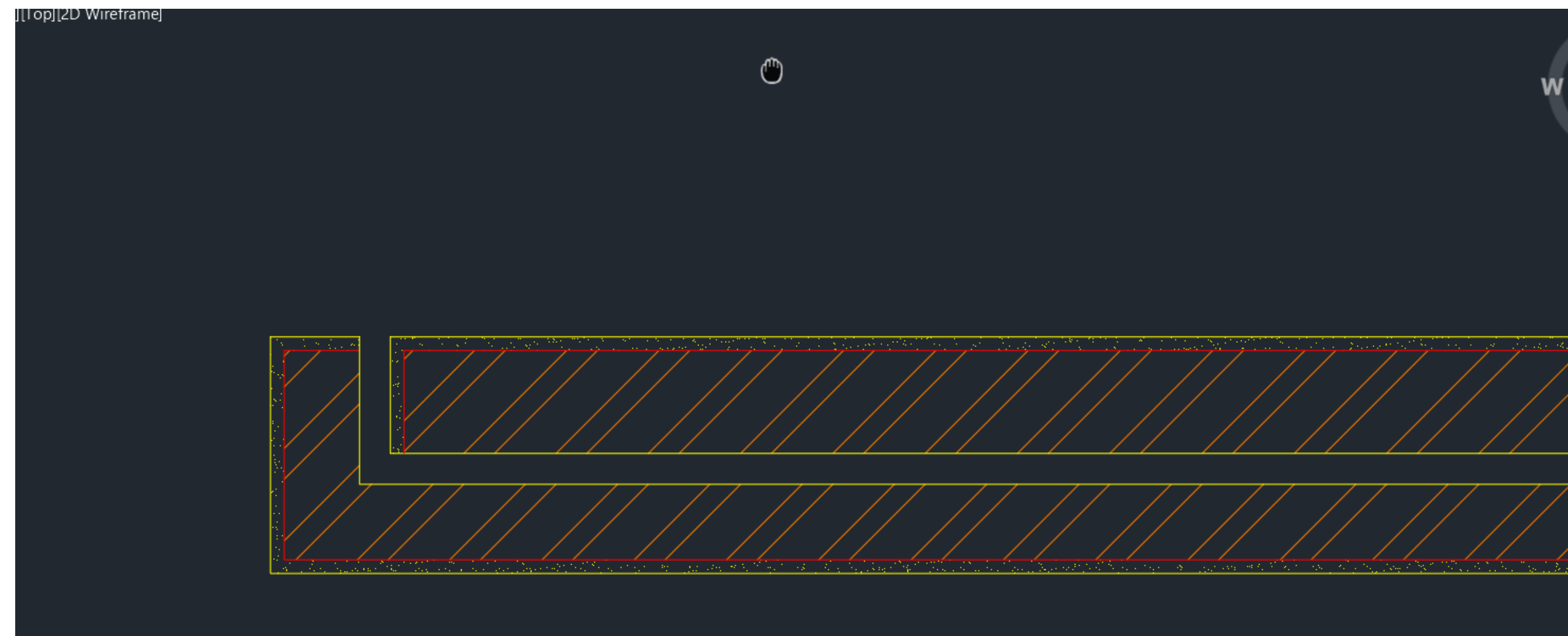
**PEDIT** - Polyline Edit

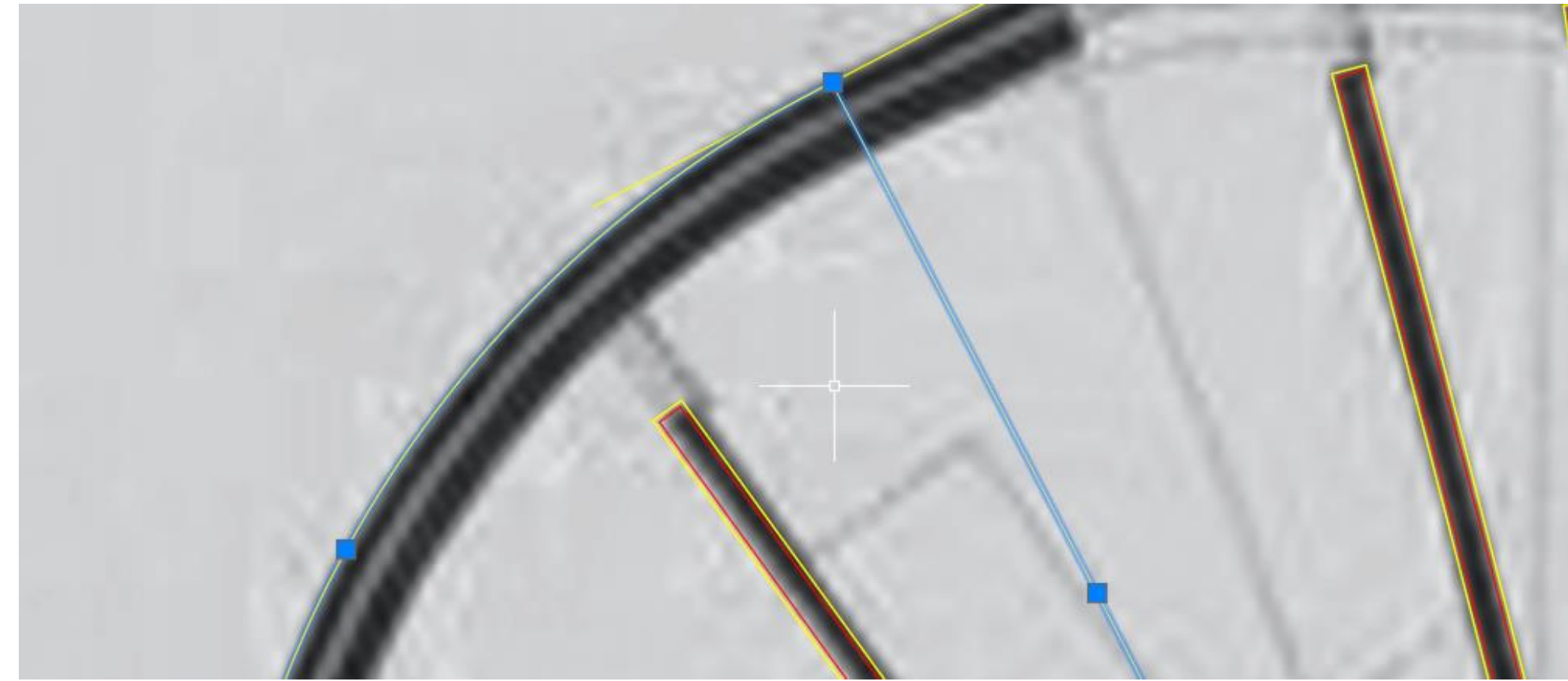
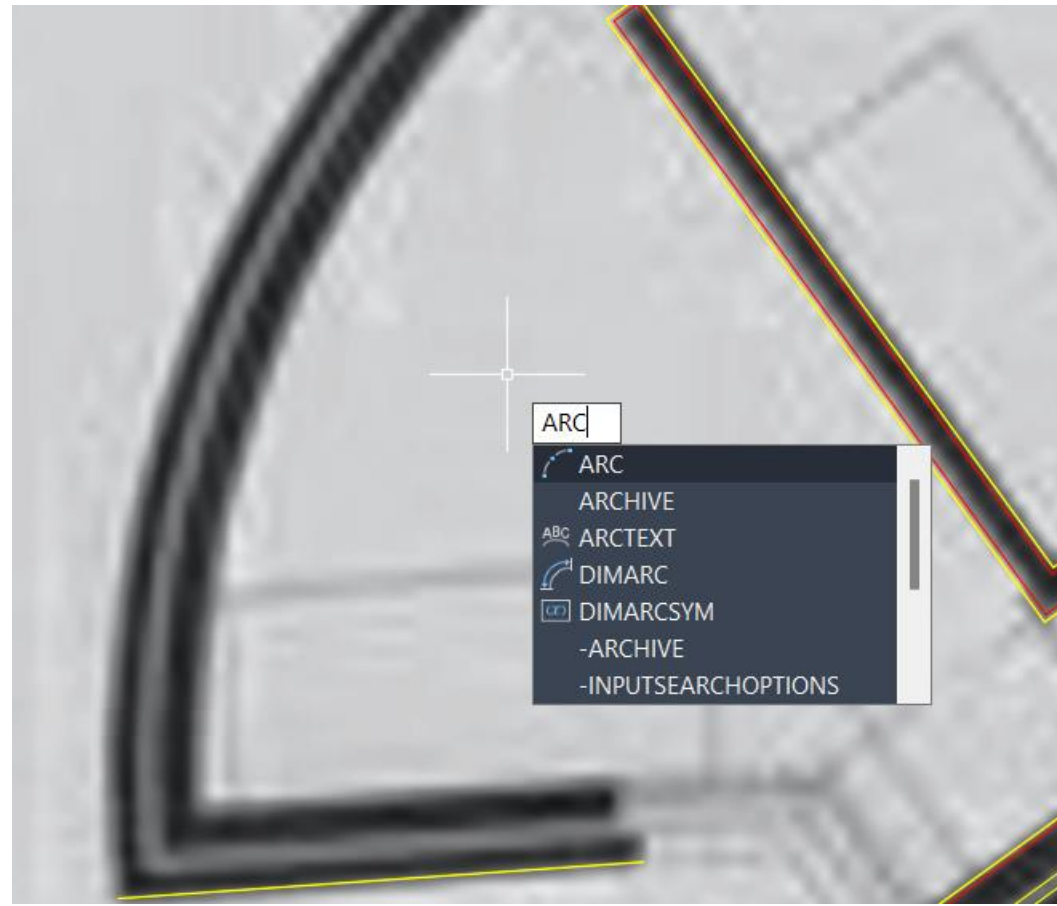
### Medidas de paredes:

- Reboco (0.02) + Parede interior (0.15) + caixa de ar (0.045) + parede exterior (0.11) + Reboco (0.02)
- Caixa de ar de 0.045, permite e regularização de temperatura entre as paredes exterior e interior, uma vez que existe circulação de ar na mesma.
- Para representar o material das paredes usar **Hatch** e selecionamos o “ANSI32”, para o reboco usamos o “AR-SAND”, para o ajuste dos mesmos trabalhamos na barra de tarefas.

### Vãos (criar layer):

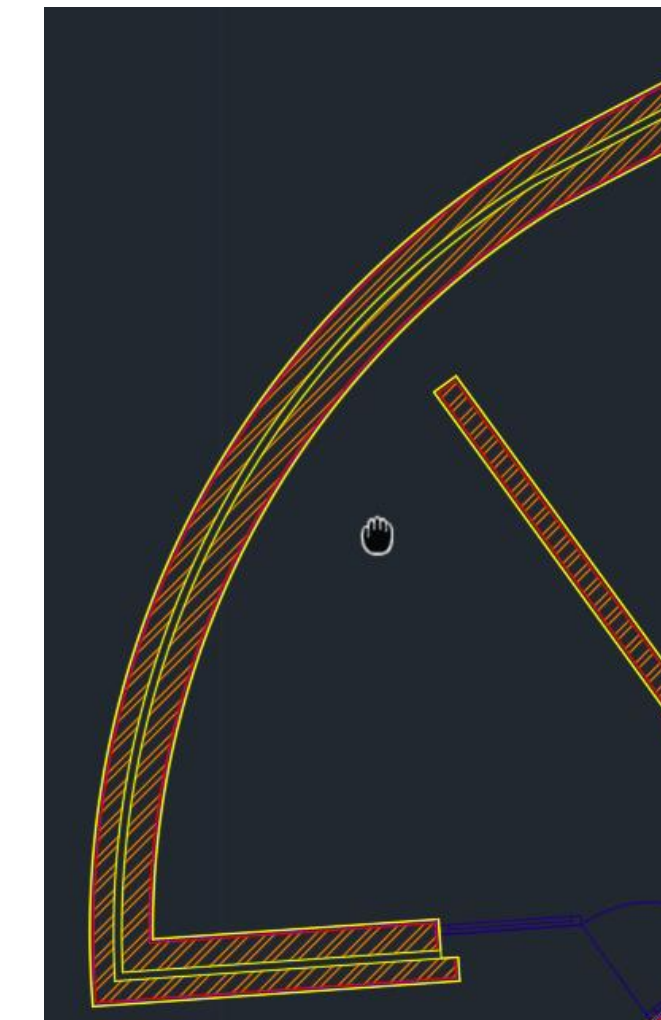
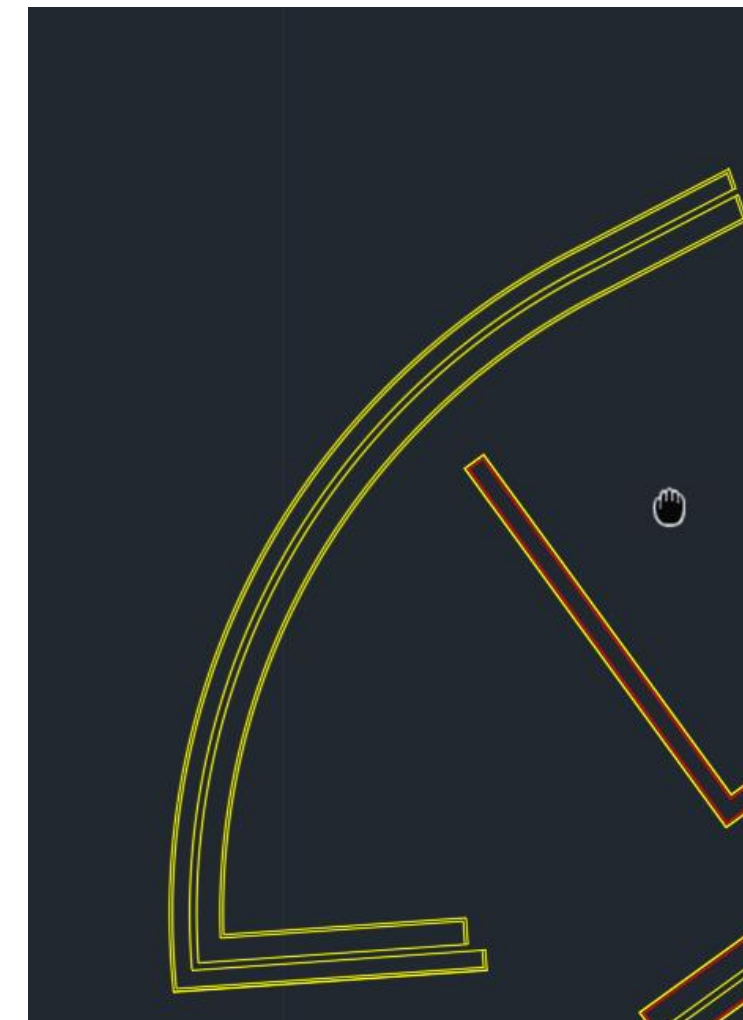
- 5 cm de espessura dos vãos (não deixar espaços entre a janela e a parede)
- 4cm de espessura para as portas
- Portas e janelas que abrem -> abertas (seja vidro ou maciço/madeira/metálica)
- Janelas fixas -> fechadas





### Parede curva:

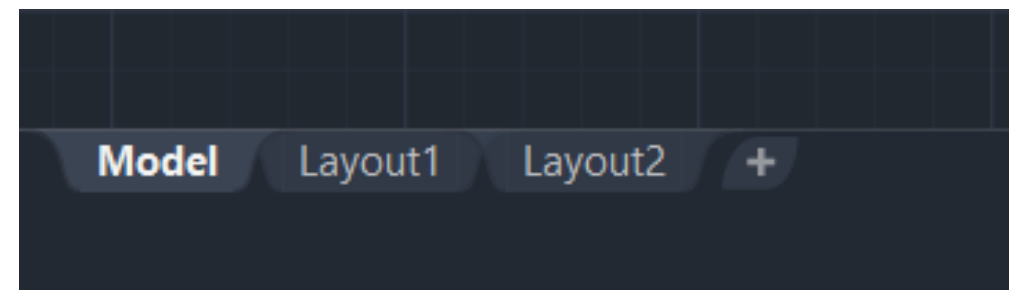
1. Usar o comando ARC
2. Definir três pontos que irão guiar a direção do arco. Quanto + longe estes pontos estiverem, - margem de erro obteremos ao desenhá-lo.
3. A partir do arco já desenhado, conseguimos saber o seu centro, que aparece marcado com “+” onde for o seu lugar (ou escrever “cent”).
4. Desenhar a linha da parede que se prolonga na parte final do arco.
5. A seguir tornar a linha que desenhámos tangente ao arco. Desenhar uma reta perpendicular desde o centro da circunferência até à linha da parede.
6. Juntar a ponta do arco ao ponto de perpendicularidade feito pelas retas anteriores, onde se interseitam.



7. Para concluir, **offset e hatch**

## Para fazer o Layout:

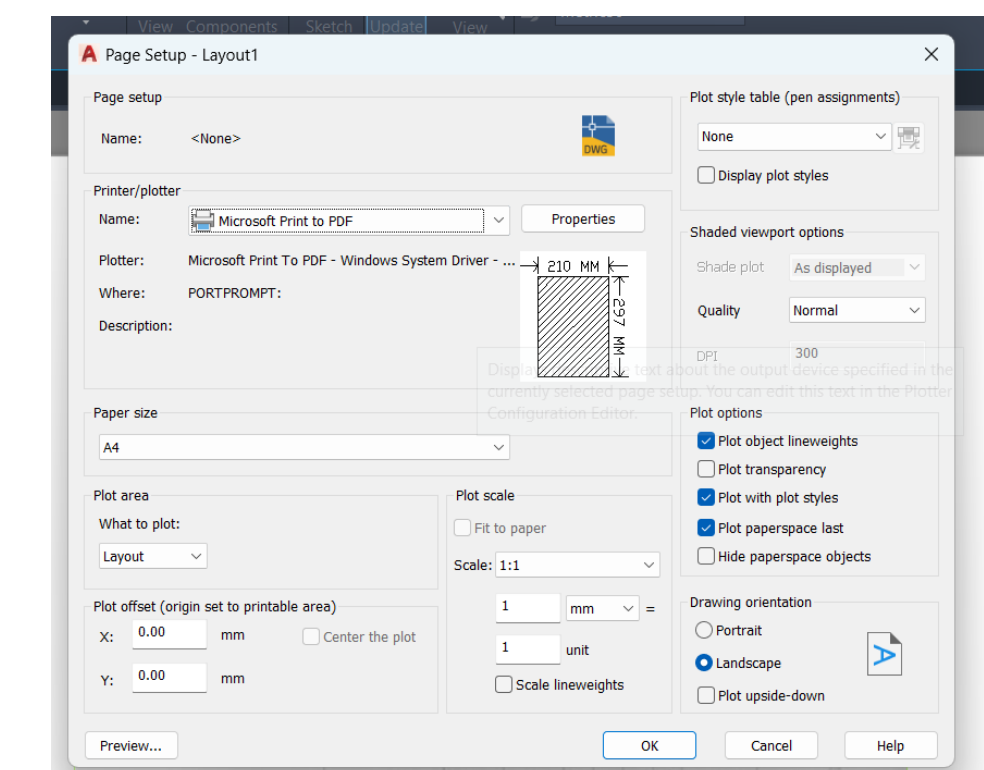
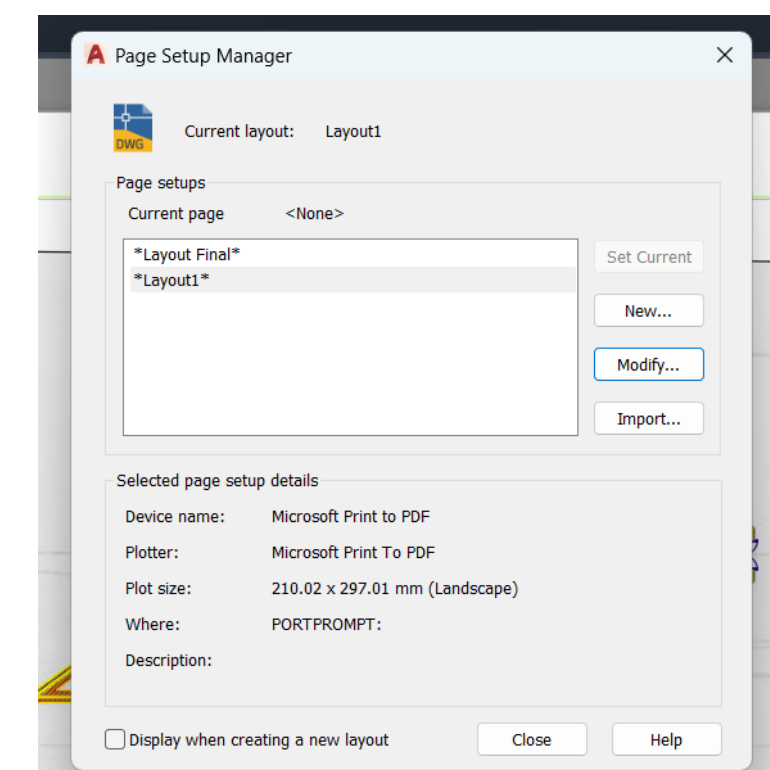
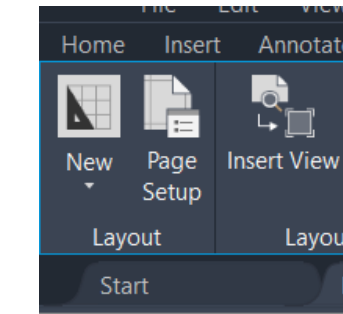
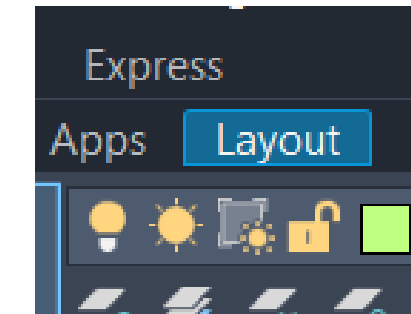
No canto inferior esquerdo



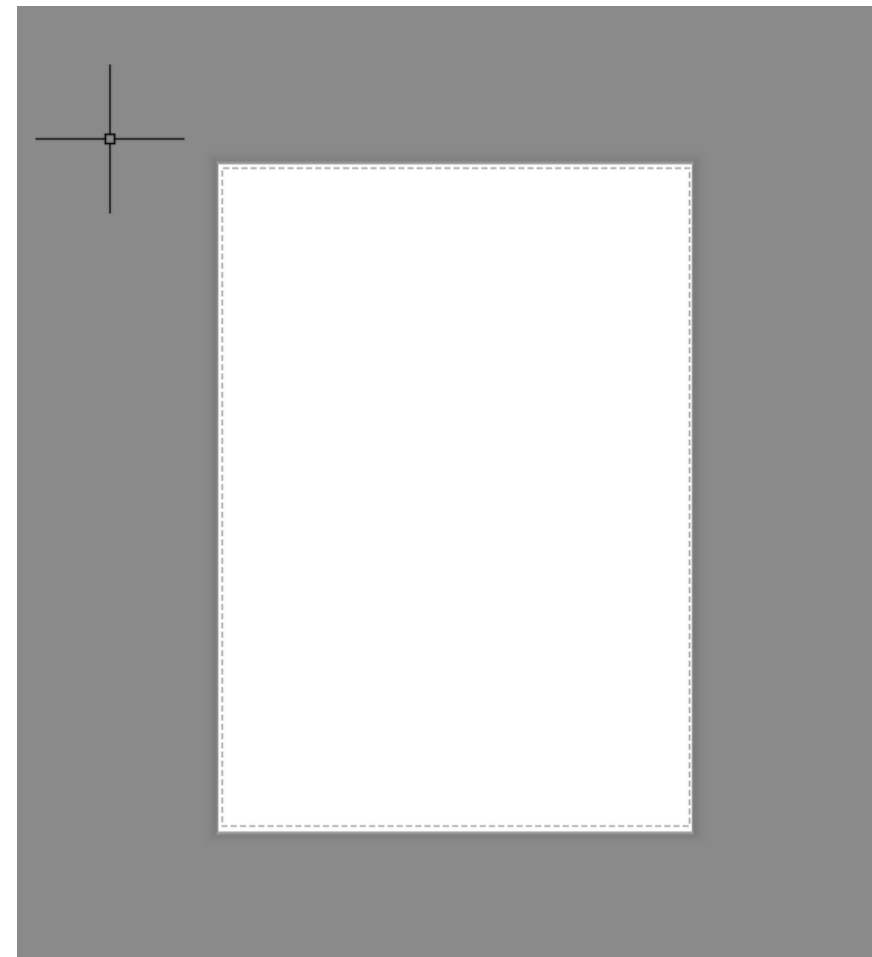
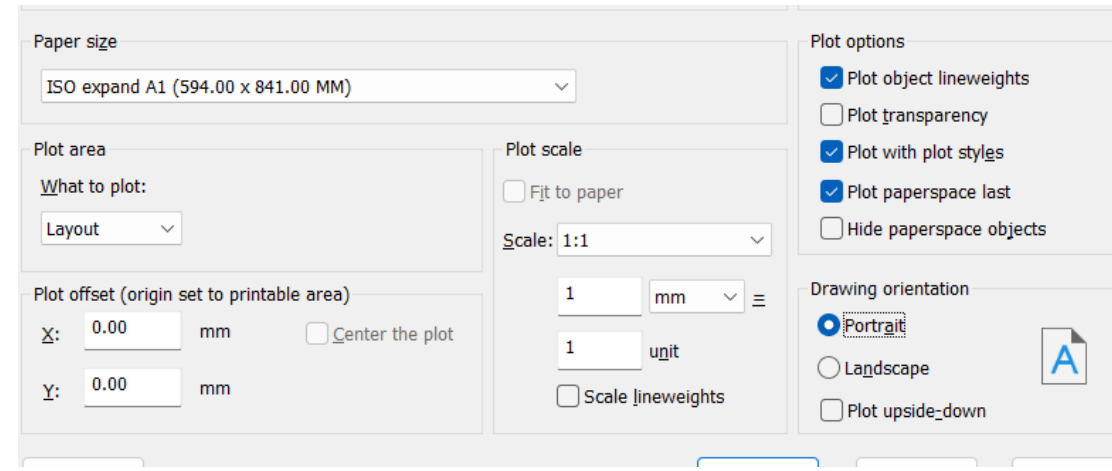
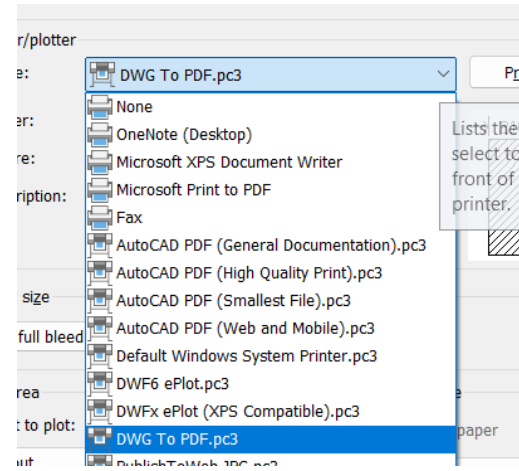
É o espaço onde preparamos as impressões dos desenhos feitos no MODEL, no formato pretendido.  
Quando abrimos, a página aberta é uma A4 horizontal.



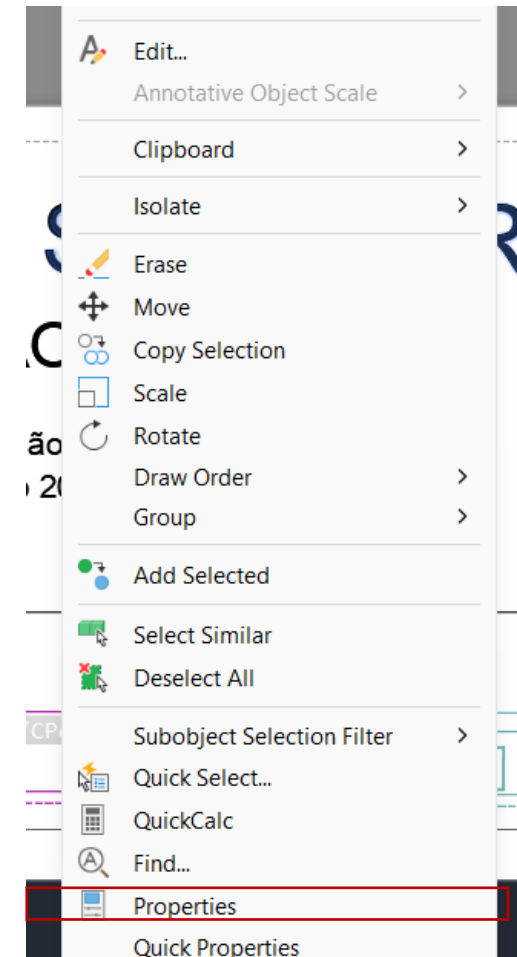
Para ver e alterar as configurações da folha:



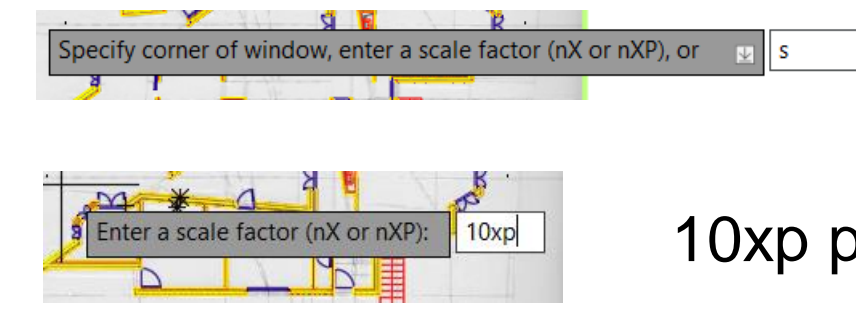
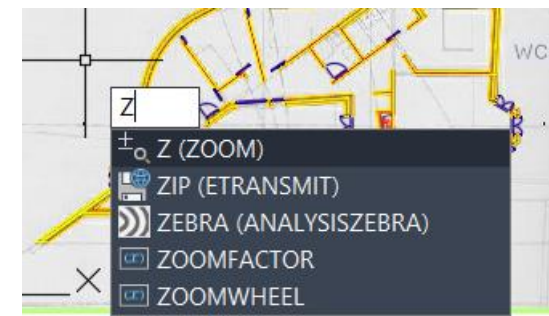
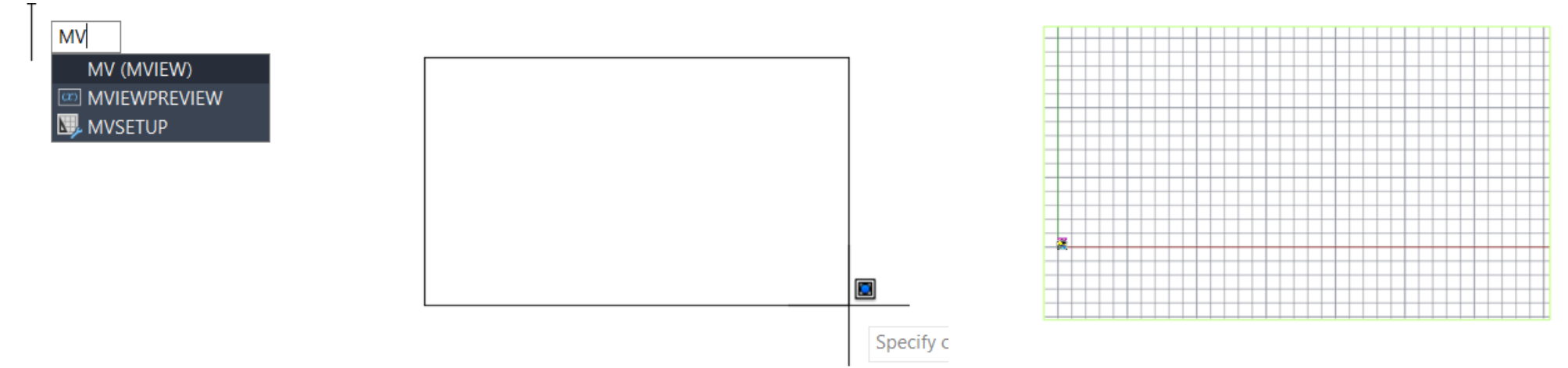
## Para o layout final:



- Fazer um cabeçalho (comando DTEXT) com o nome da cadeira, o ano, o nome da faculdade, o nome do exercício a entregar, o nosso nome, número de aluno e turma. Para definir e alterar os tamanhos de letra: properties



## Do MODEL para o Layout:

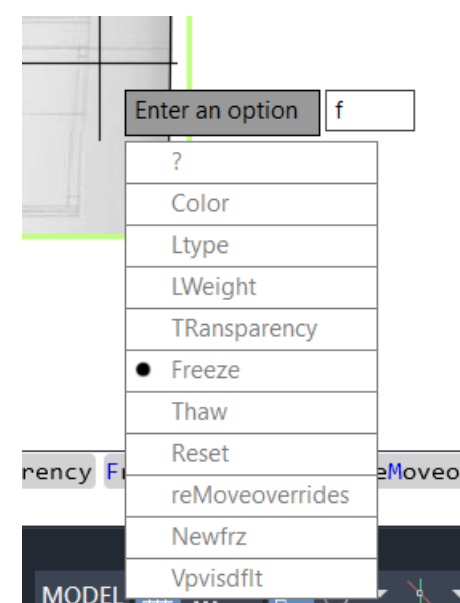
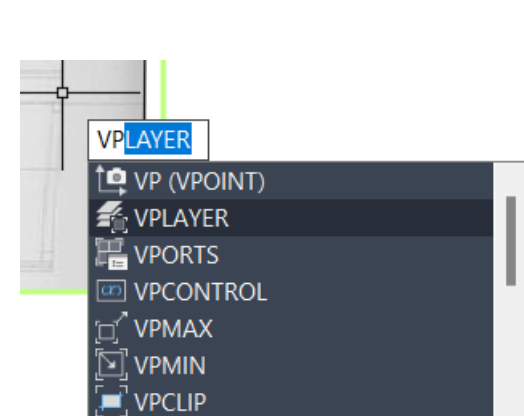


10xp para escala 1:100

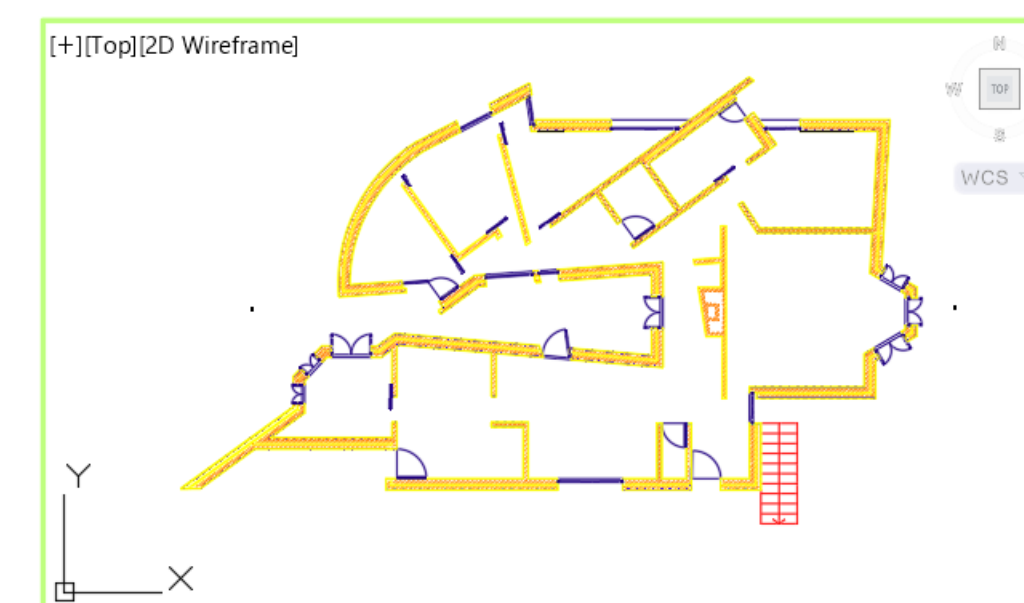
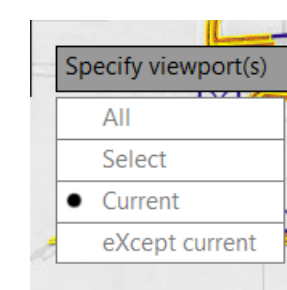


**PAN:** mover sem alterar escala dentro do MODEL

## Desativar layers:



Inserir nome de layer que não queremos ver



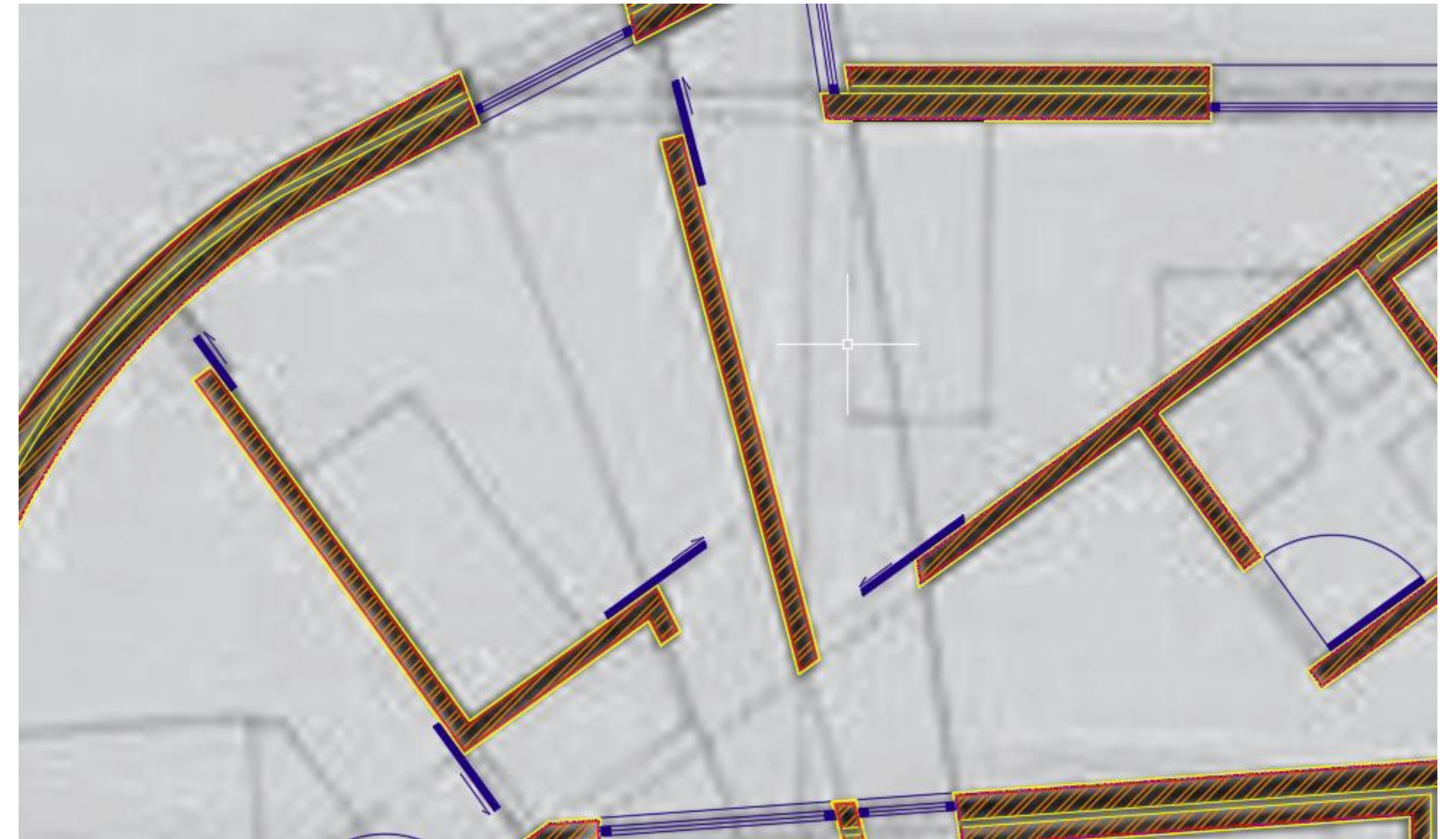
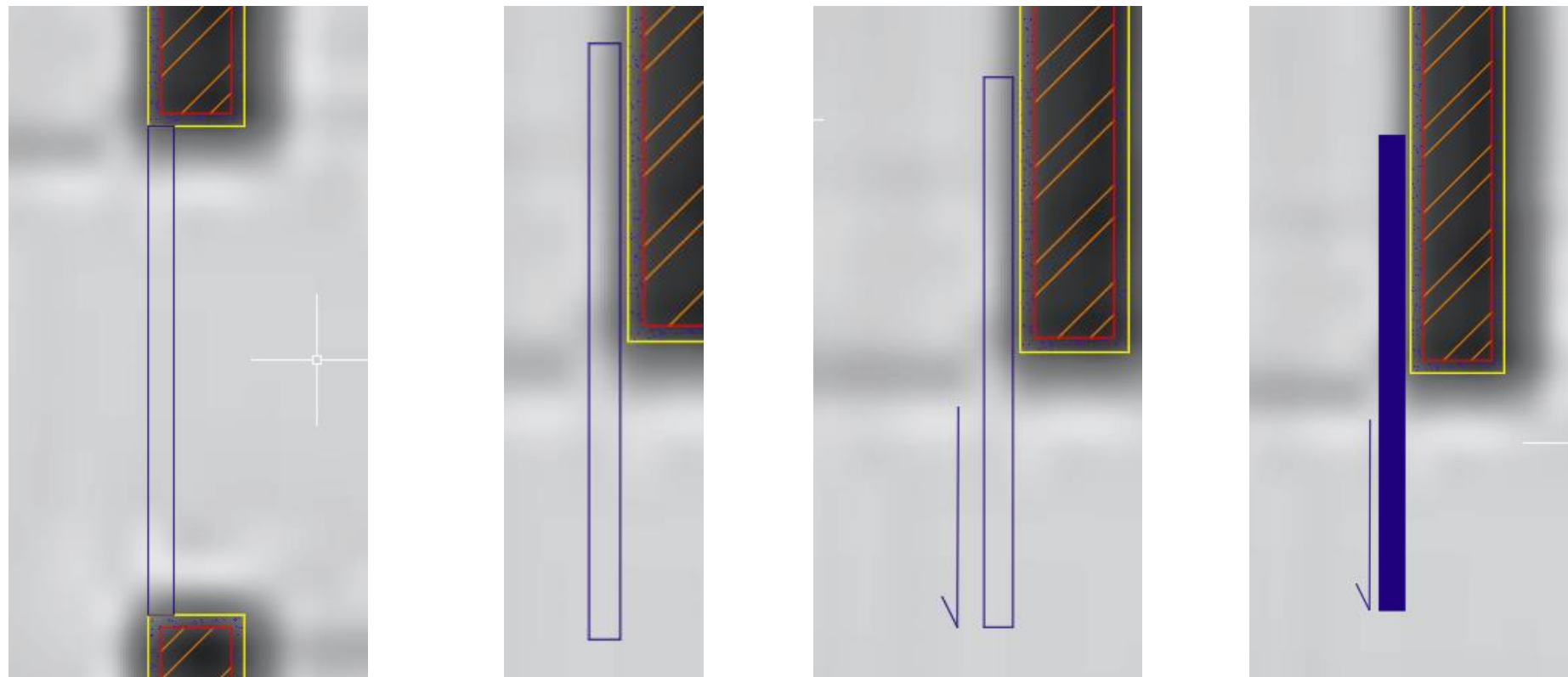
Para descongelar alguma layer que tenhamos congelado por engano, fazer VPLAYER e THAW (indicar a layer)

NOTA: Não esquecer que quando alteramos alguma coisa no MODEL SPACE, também se altera no LAYOUT

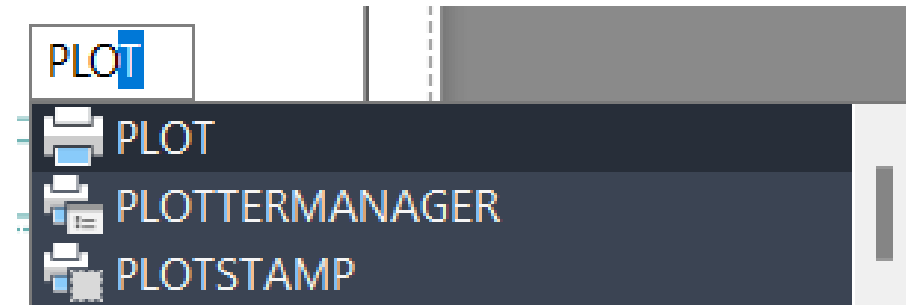


## Portas de correr:

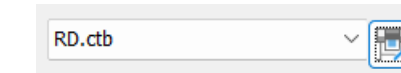
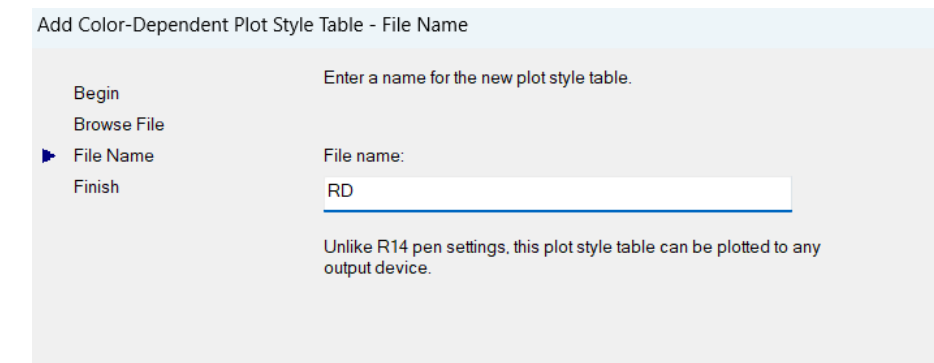
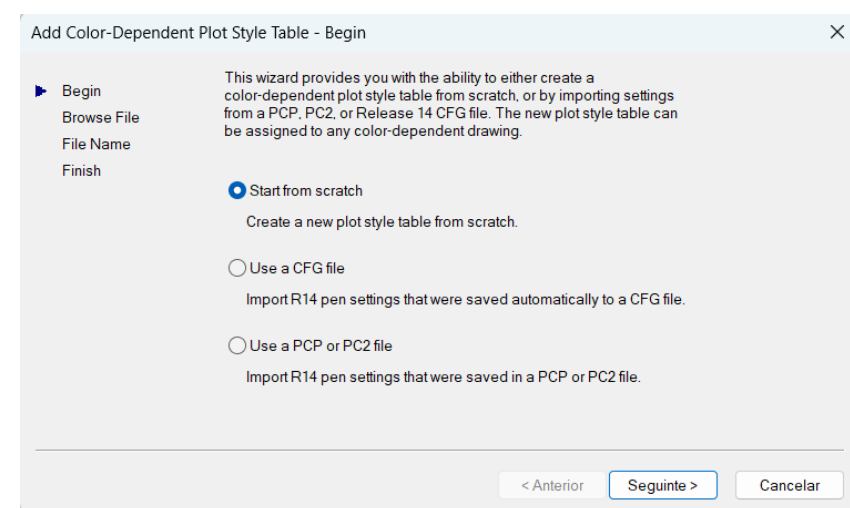
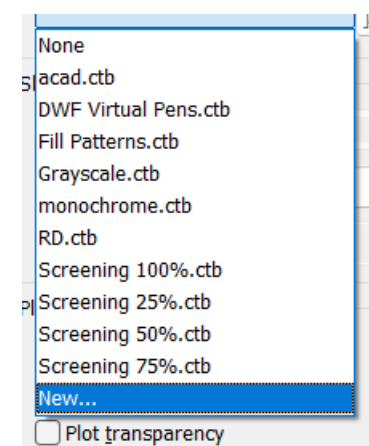
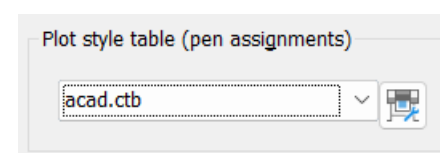
1. Desenhar a linha da porta como se estivesse fechada
2. OFFSET de 4cm (espessura que atribuída às portas)
3. Verificar se as portas têm no mínimo 70cm, caso não tiverem devemos encurtar a parede onde a porta está.
4. Em seguida, fazemos o HATCH ao volume da porta.
5. Afastá-las cerca de 1cm da parede, fazendo MOVE (Podemos posicionar as portas colocando o midpoint da porta a bater com o fim da parede).
6. Desenhar uma seta perto da porta que irá representar o sentido de abertura da porta. (A seta deve também ser afastada cerca de 1cm do volume da porta)



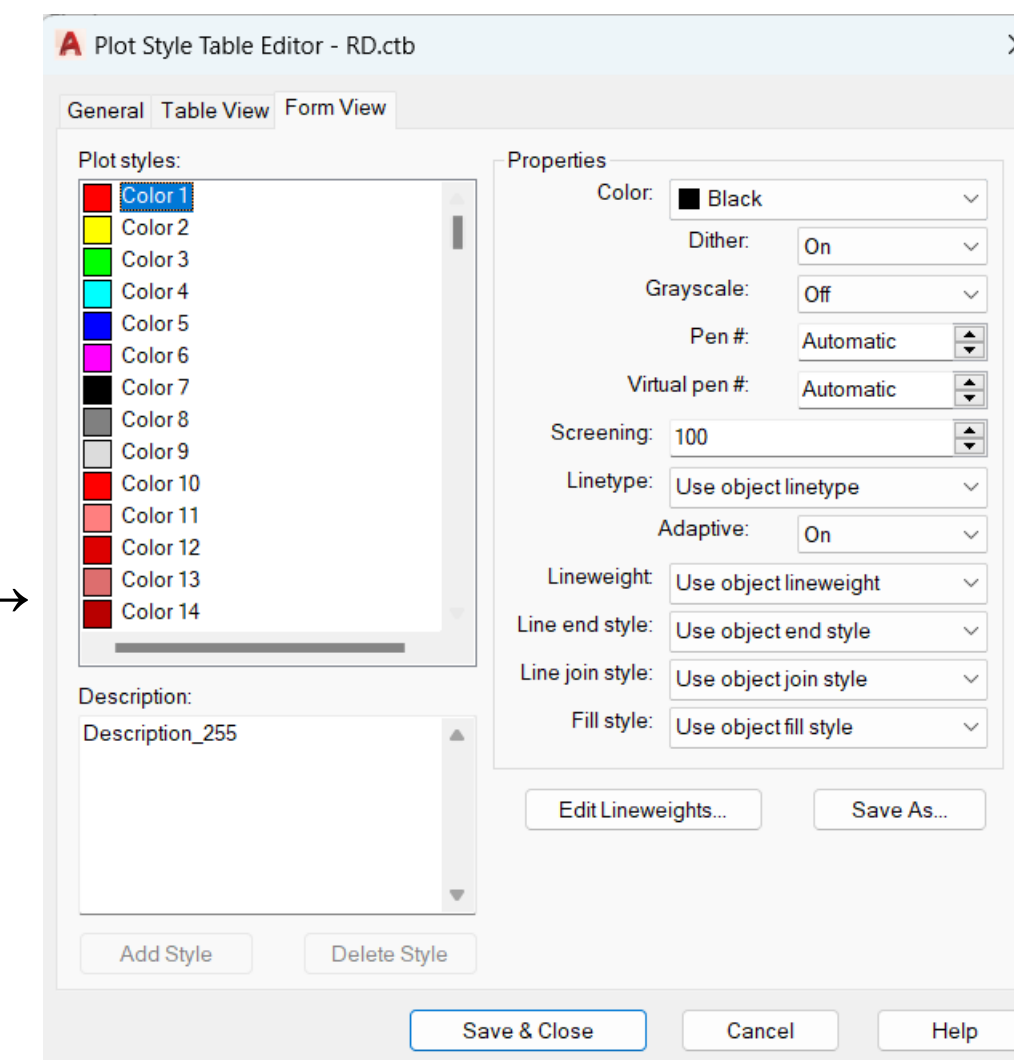
Para a impressão do layout usamos o comando PLOT ou PRINT.



Para a folha da entrega final devemos alterar as canetas usadas no desenho. Para alterar as mesmas:



Clicar no botão ao lado para a edição →



Devemos imprimir os desenhos em cores cinzentas ou pretas, dependendo daquilo que estamos a representar. Caso seja necessário devemos alterar, também, o Linetype e o Lineweight. Na secção Line end style devemos seleccionar a opção “Butt”

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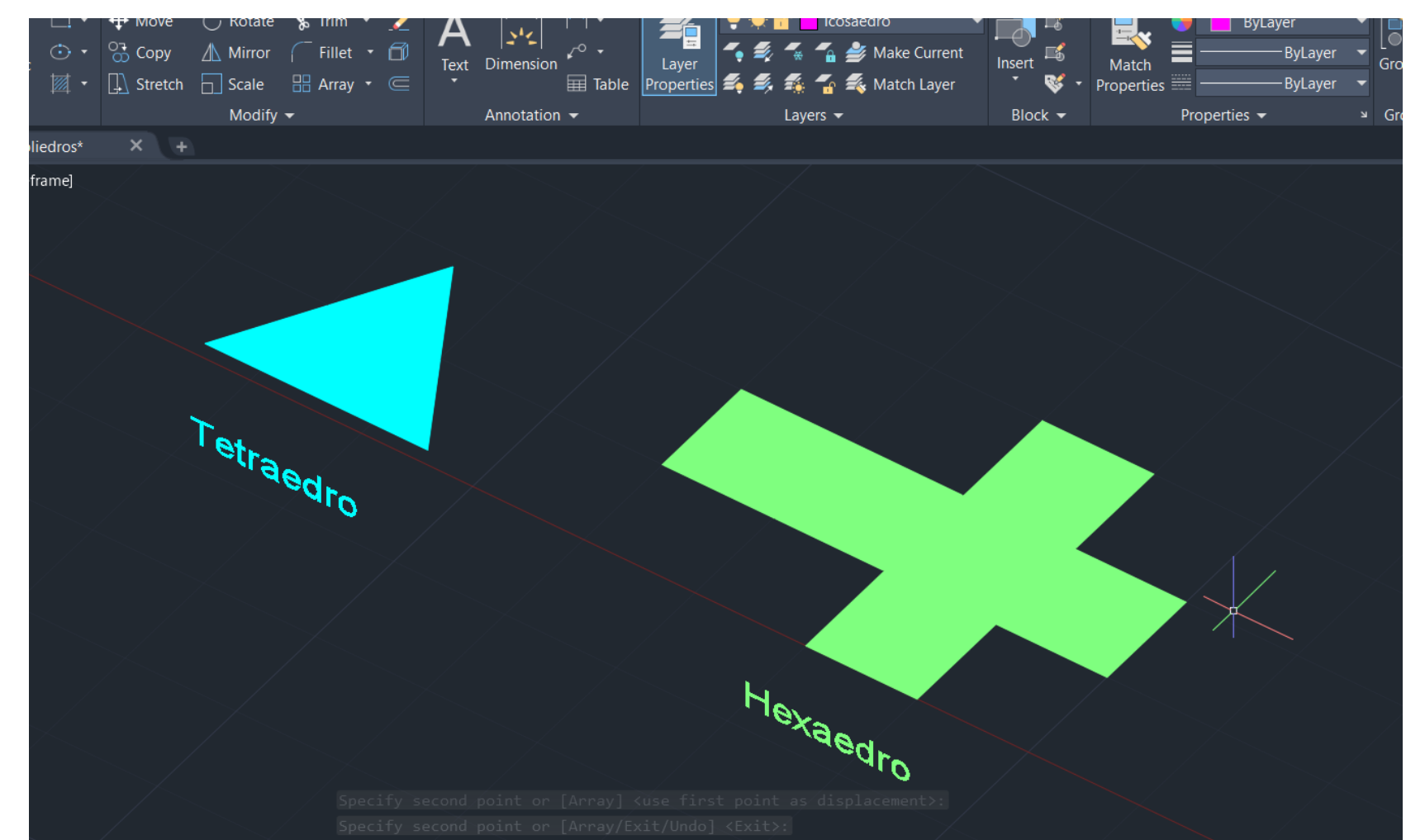
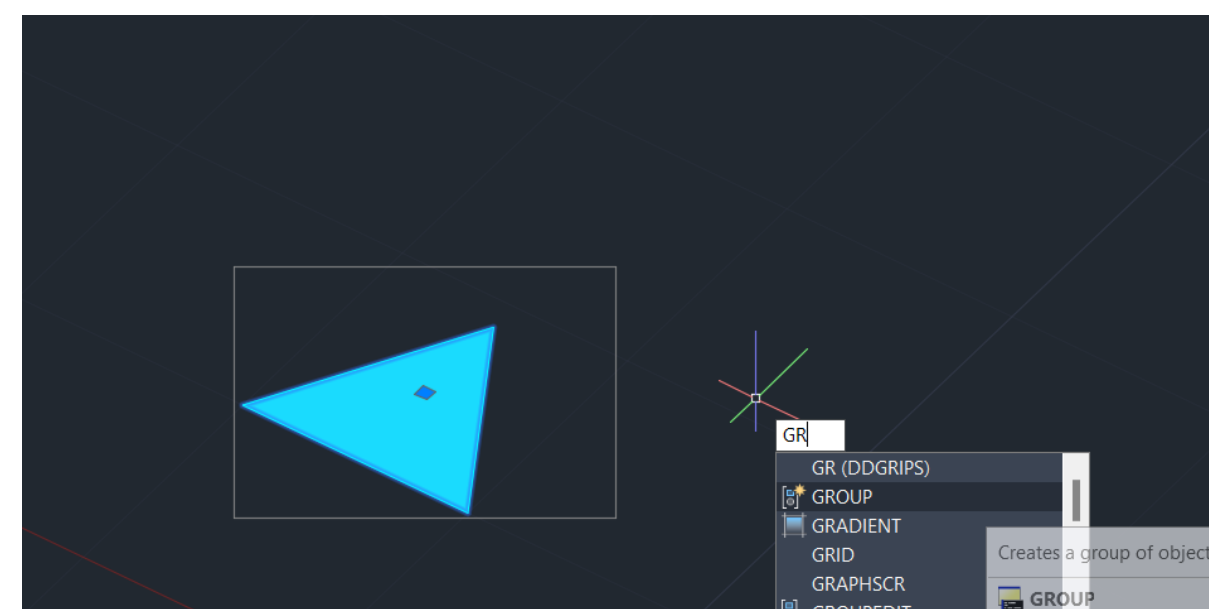
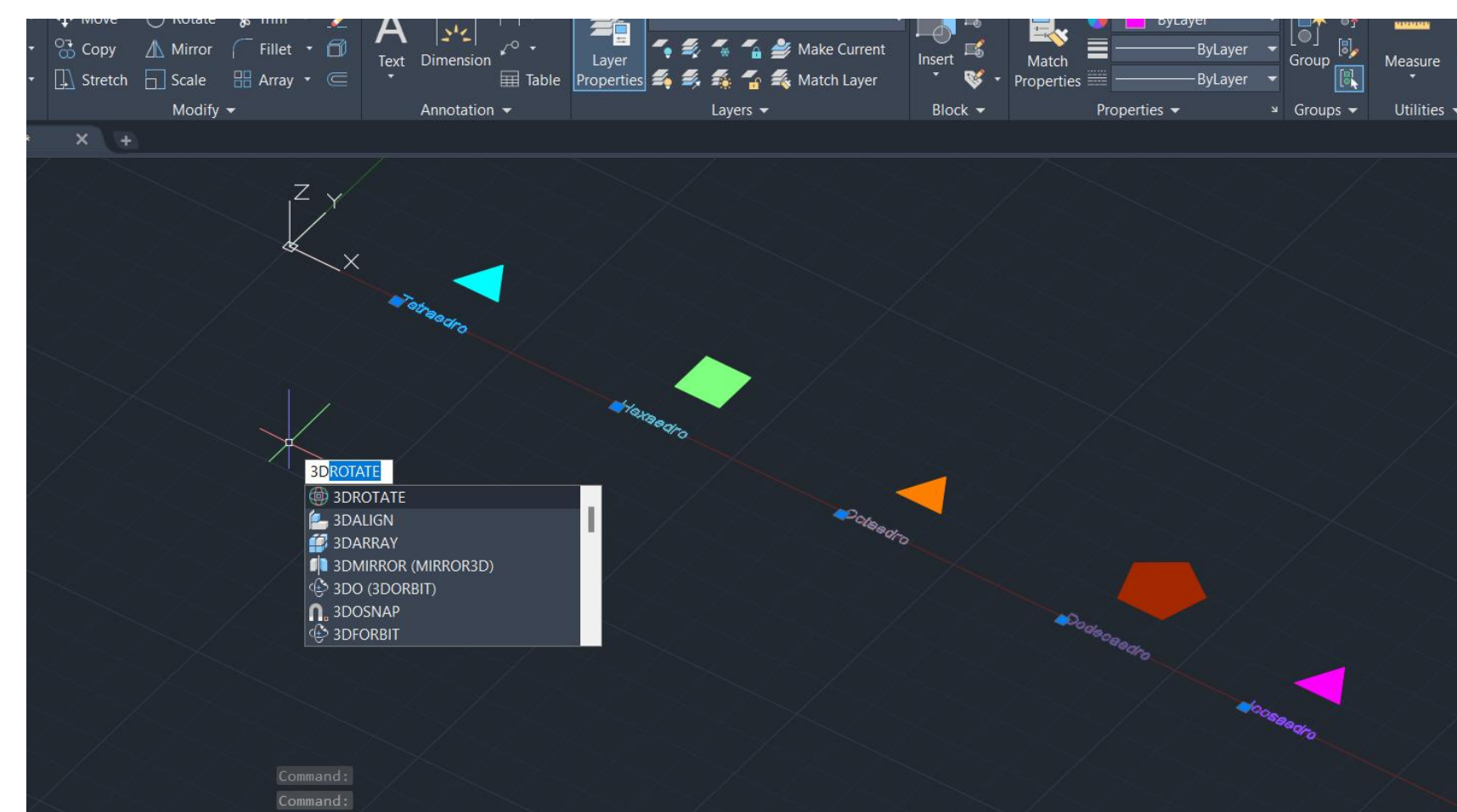
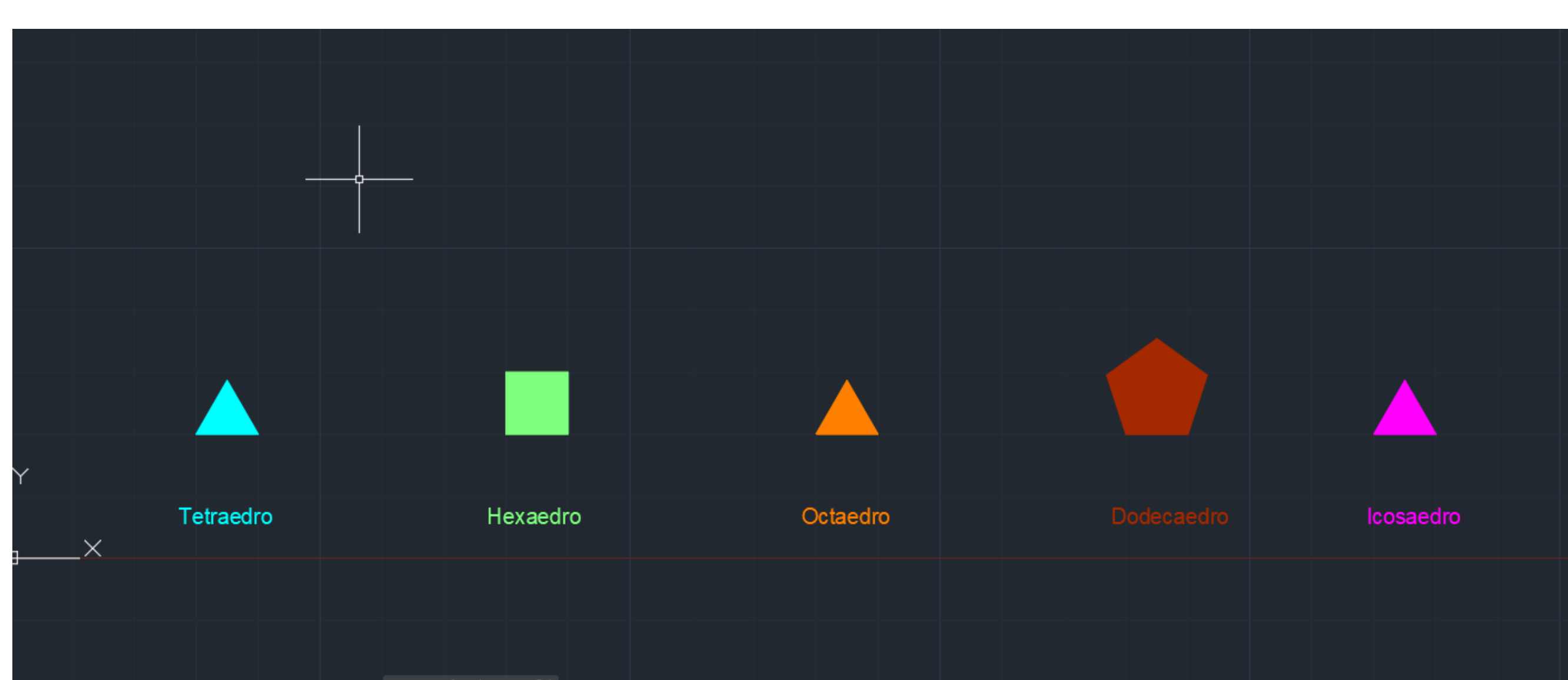
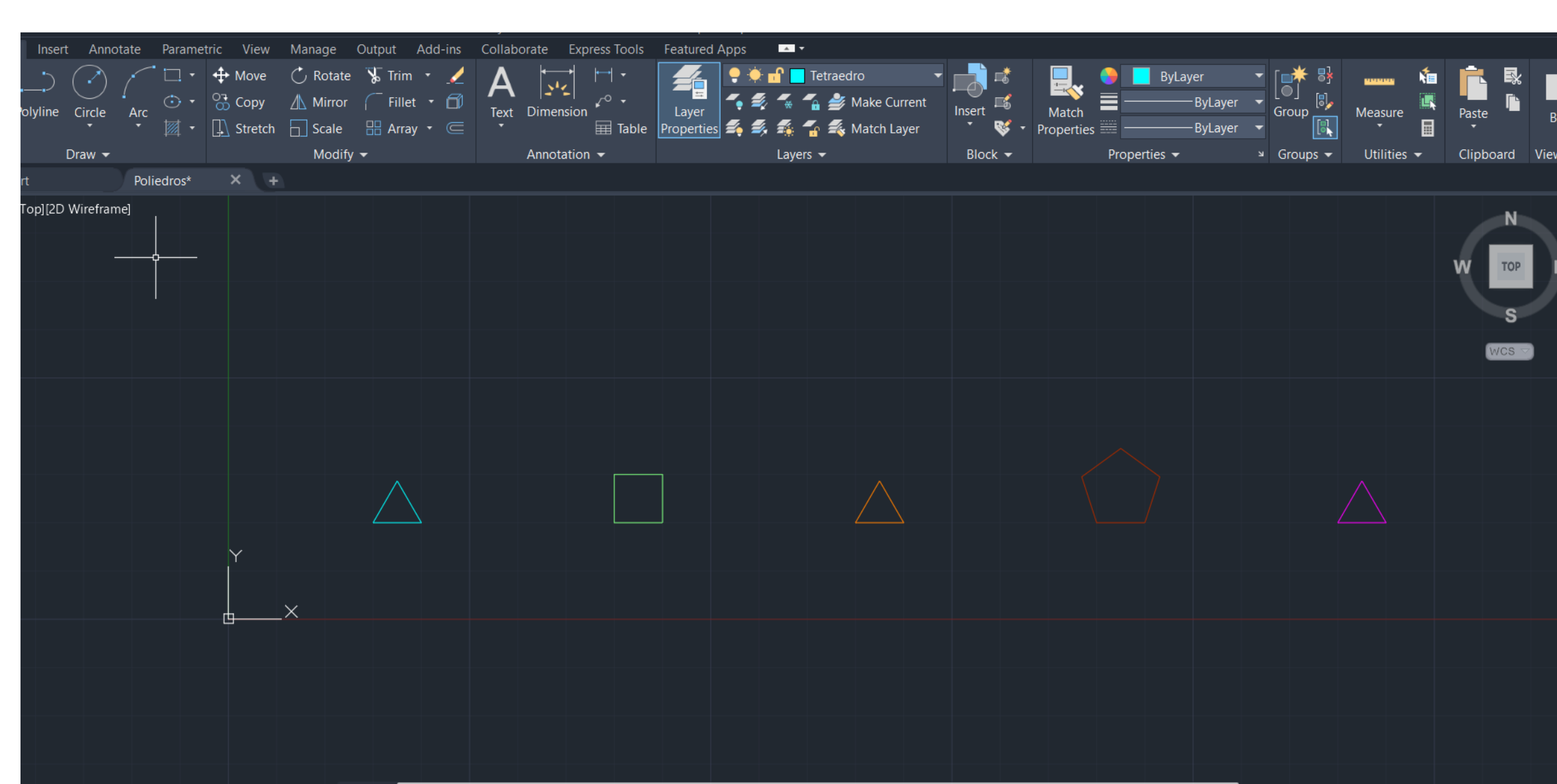
Semana 6

ReDig

Semana 7

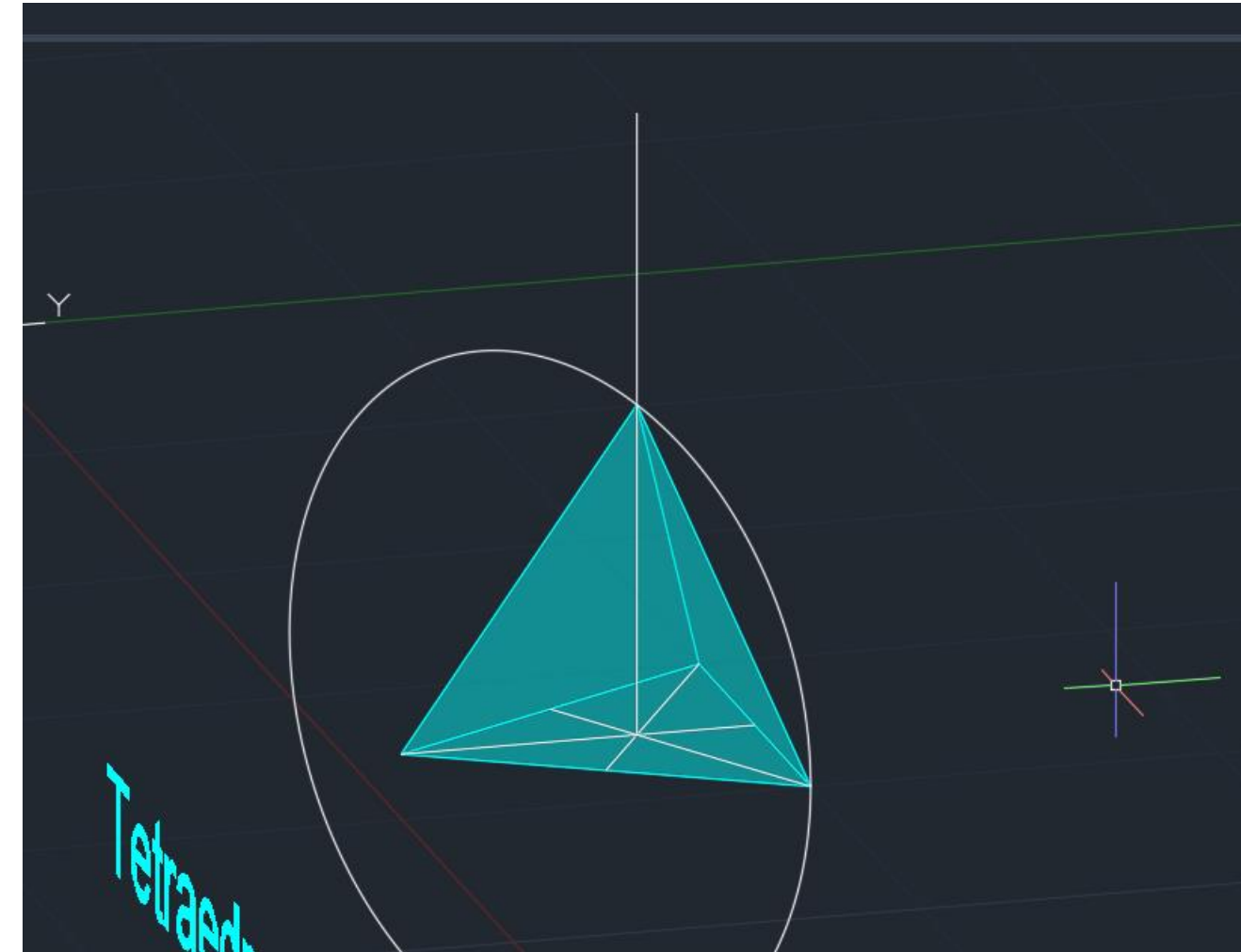
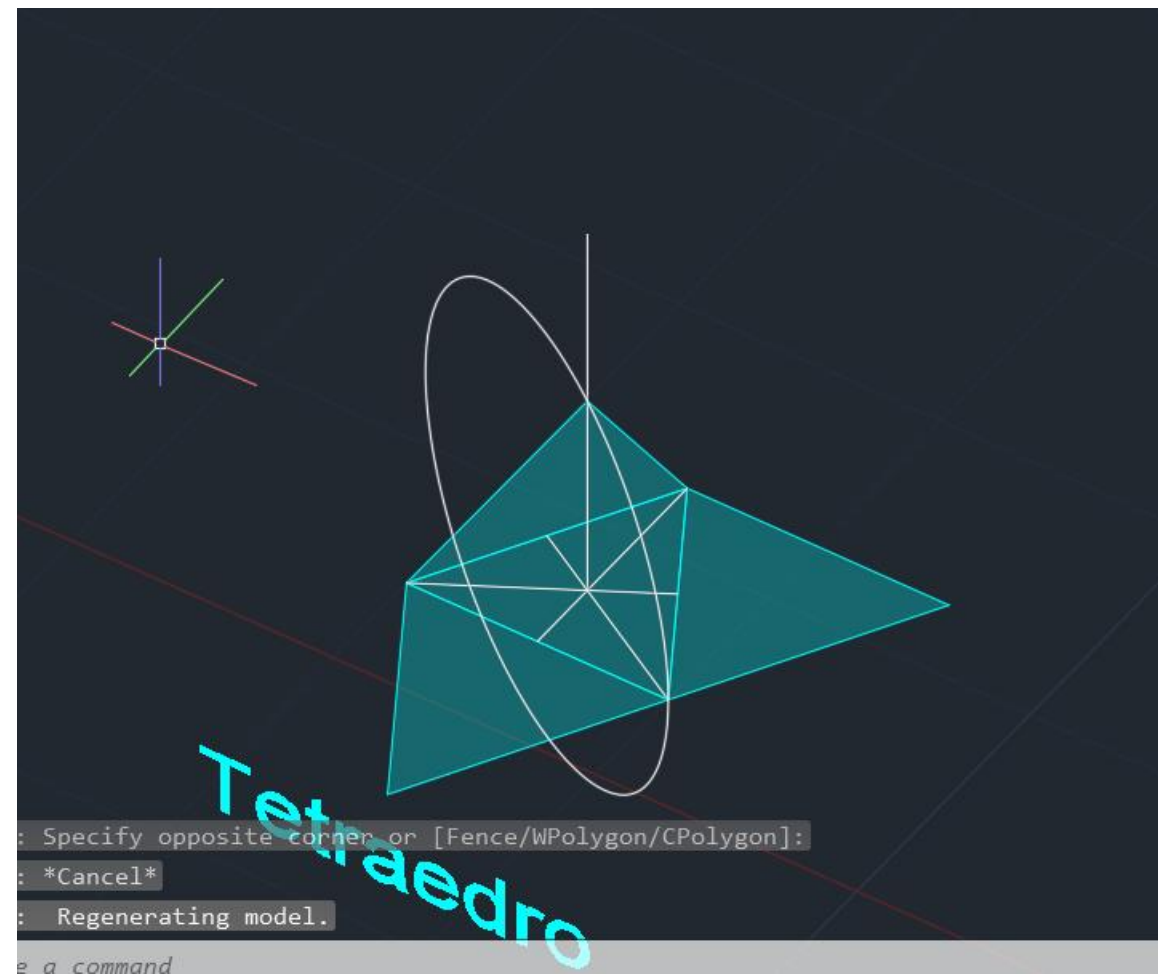
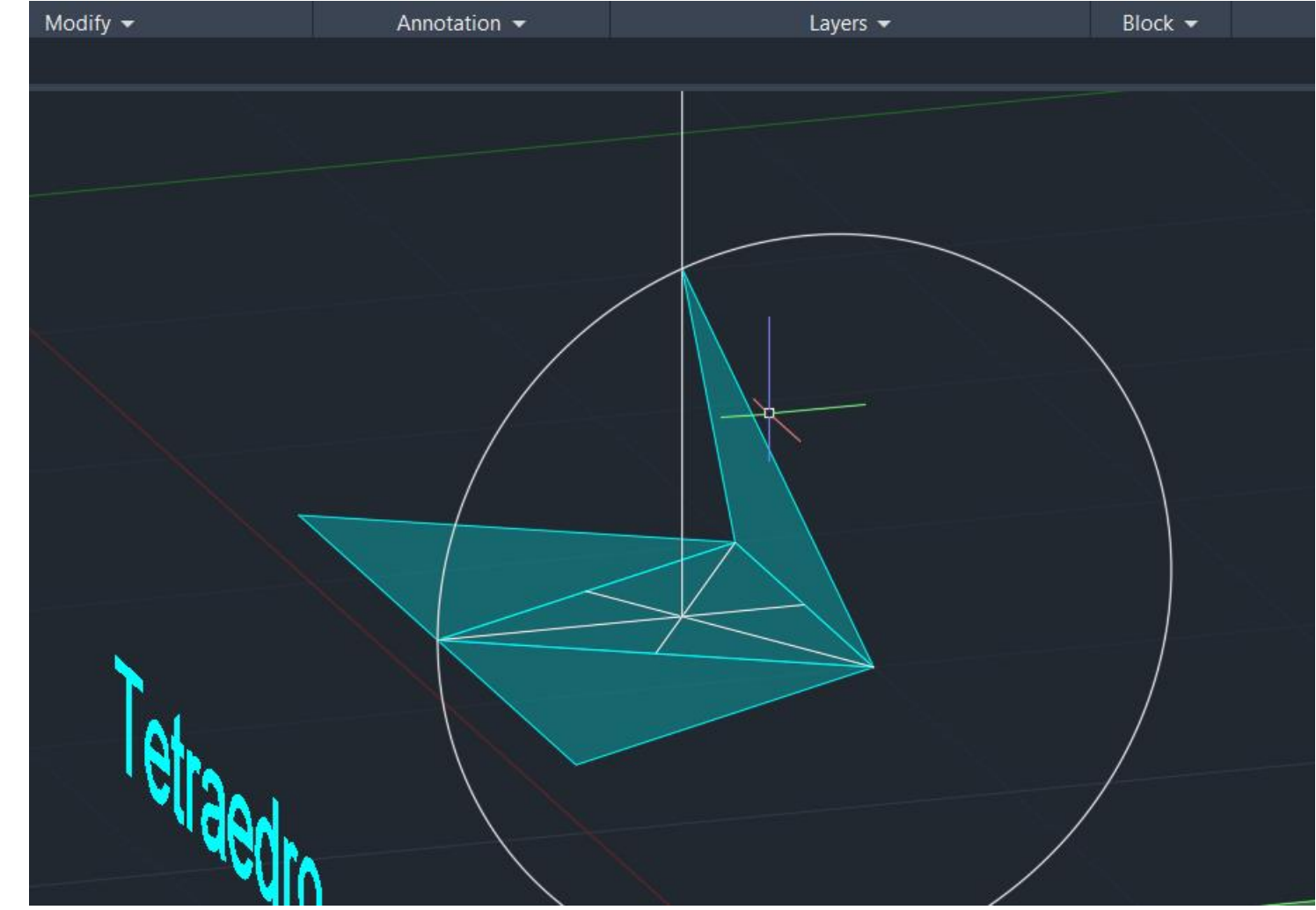
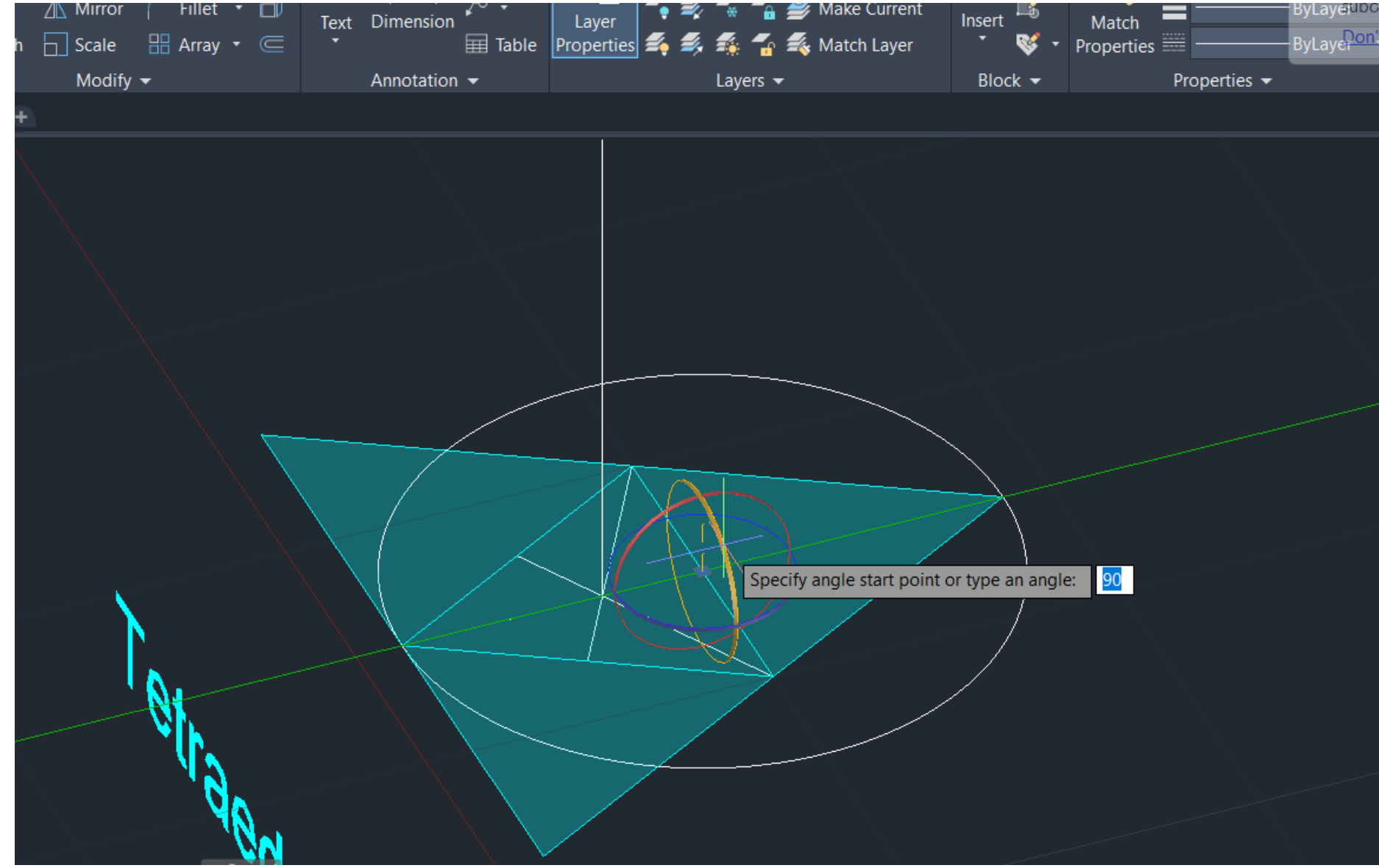
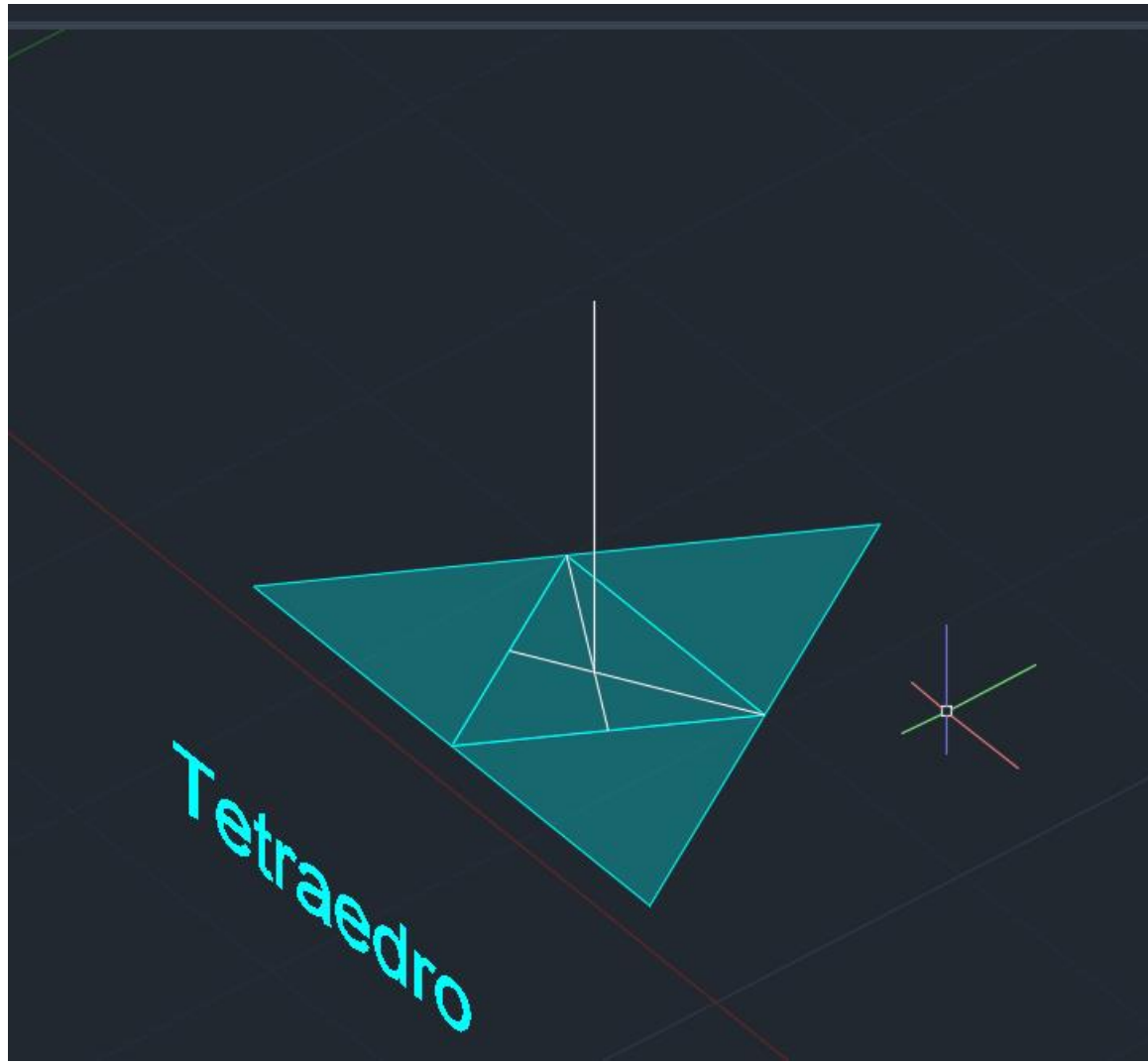
ReDig

Semana 8



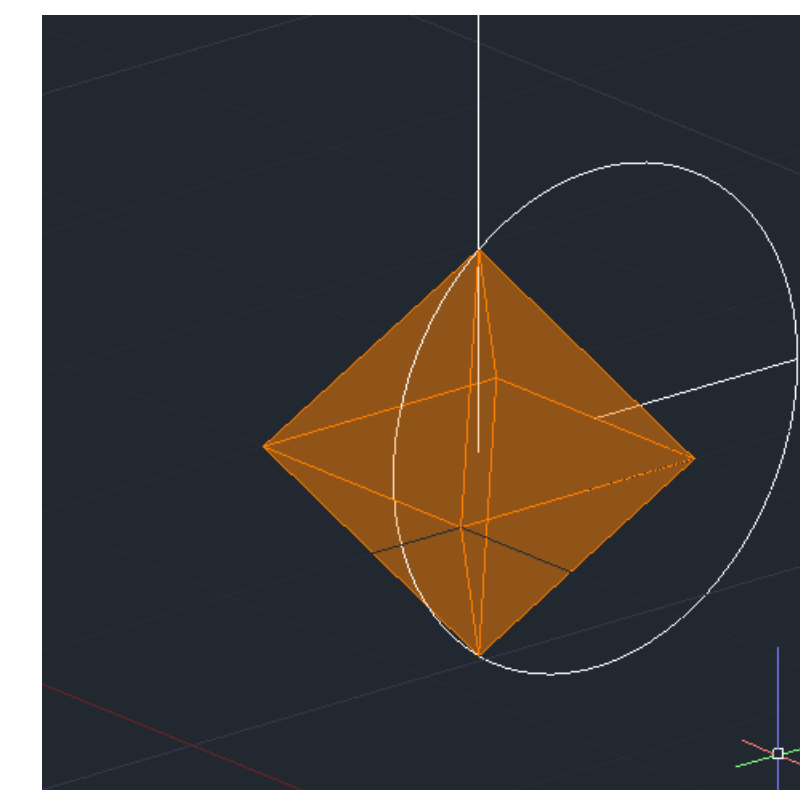
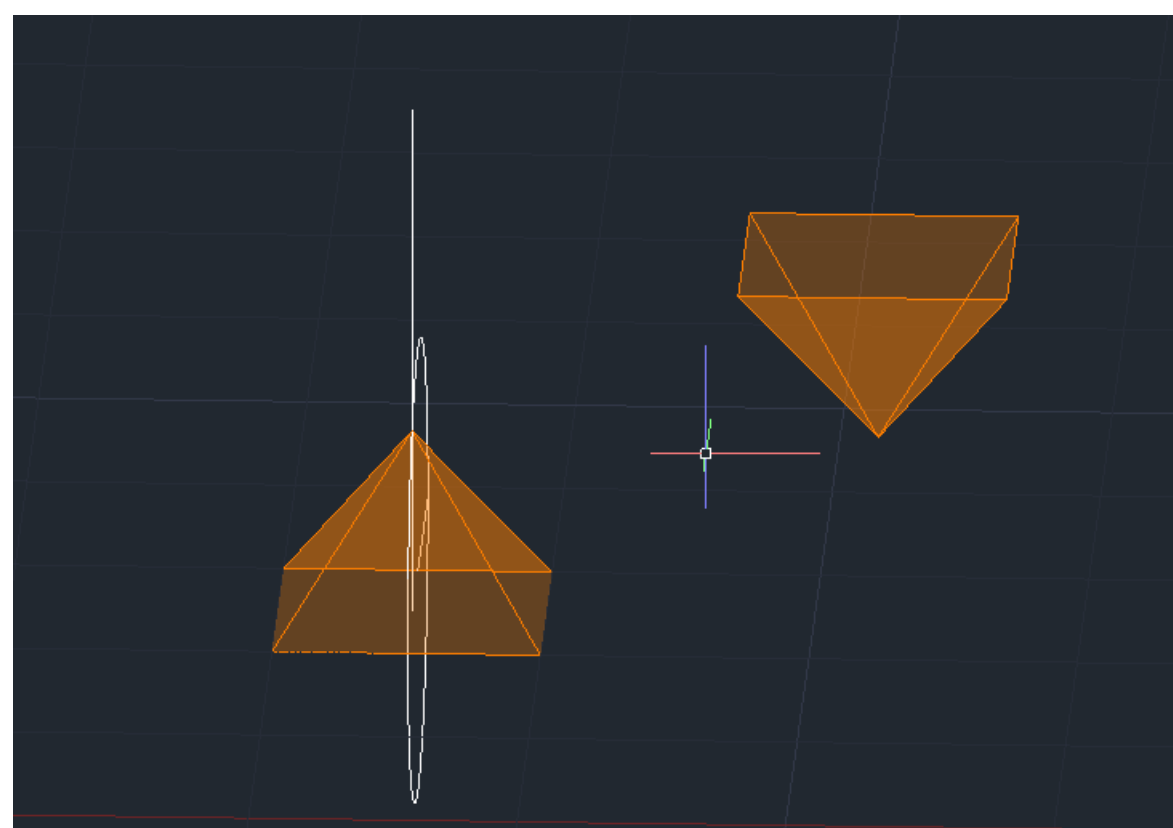
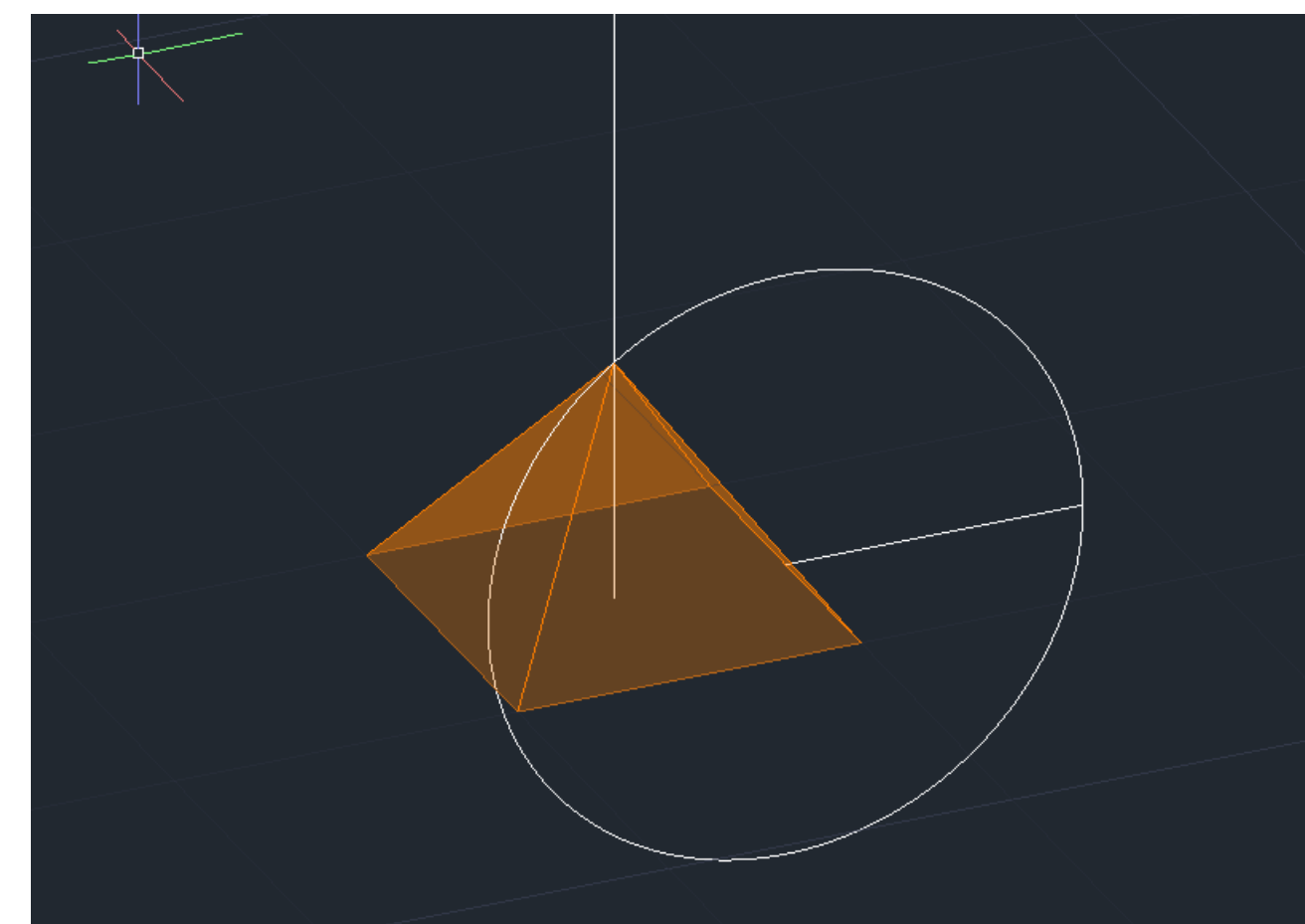
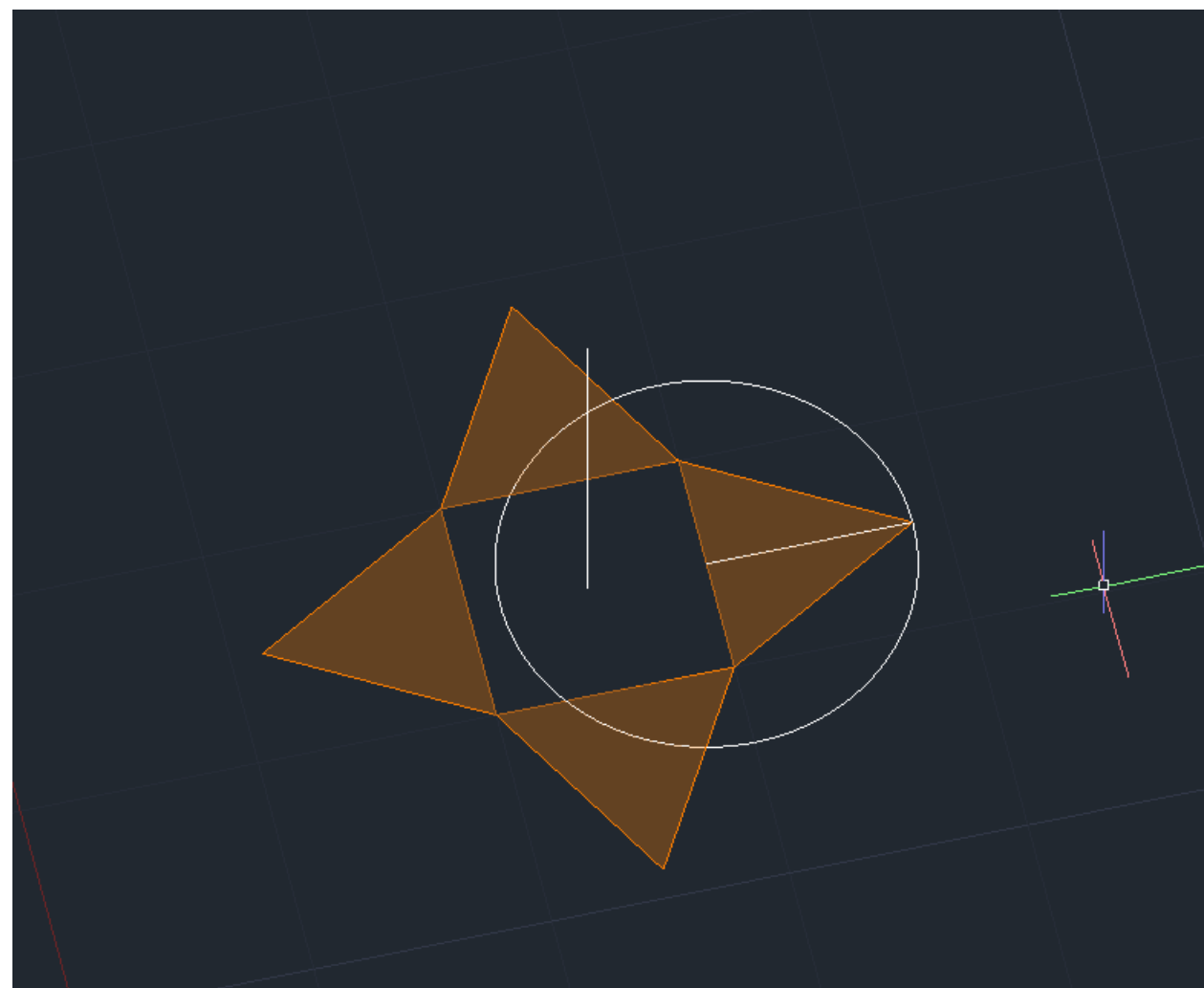
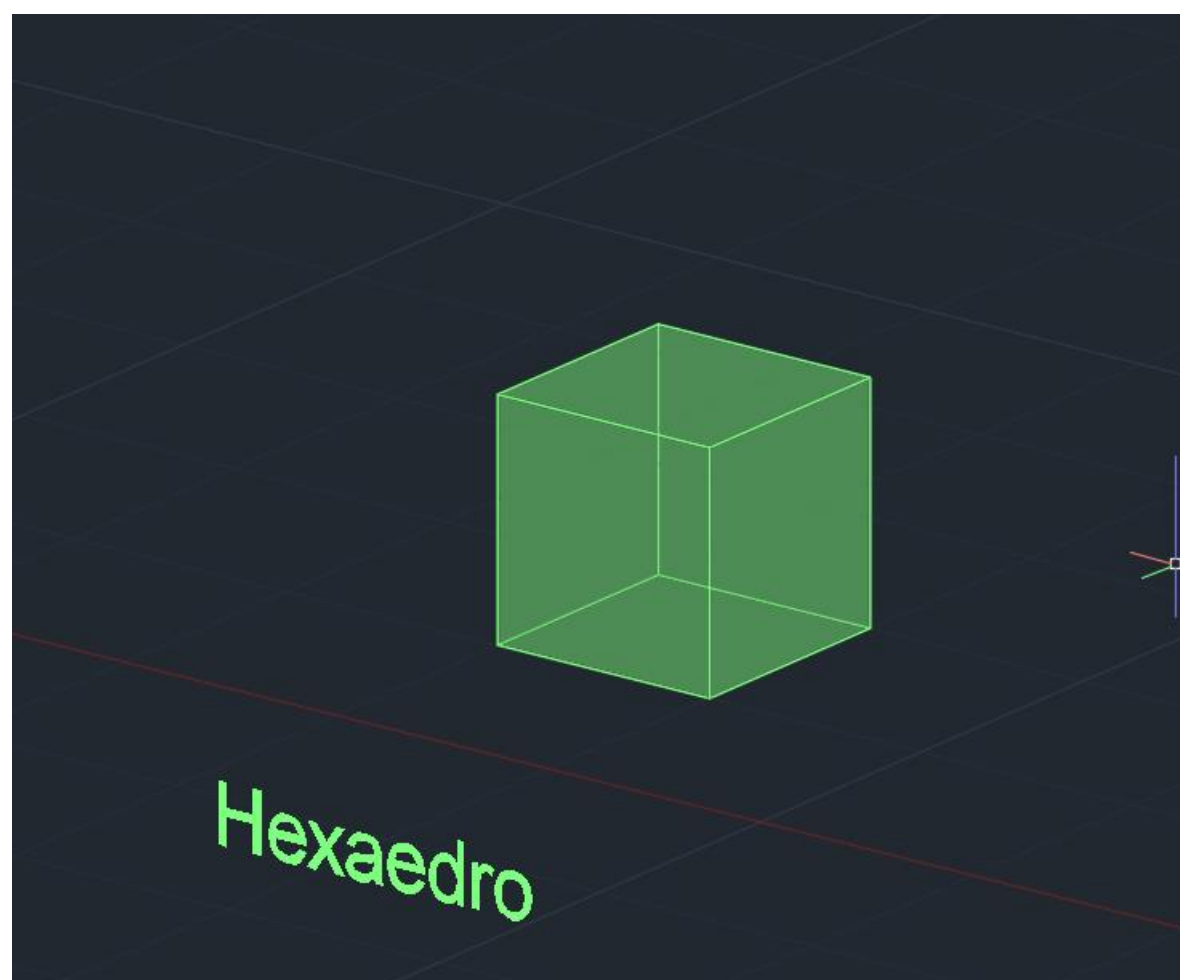
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Semana 9



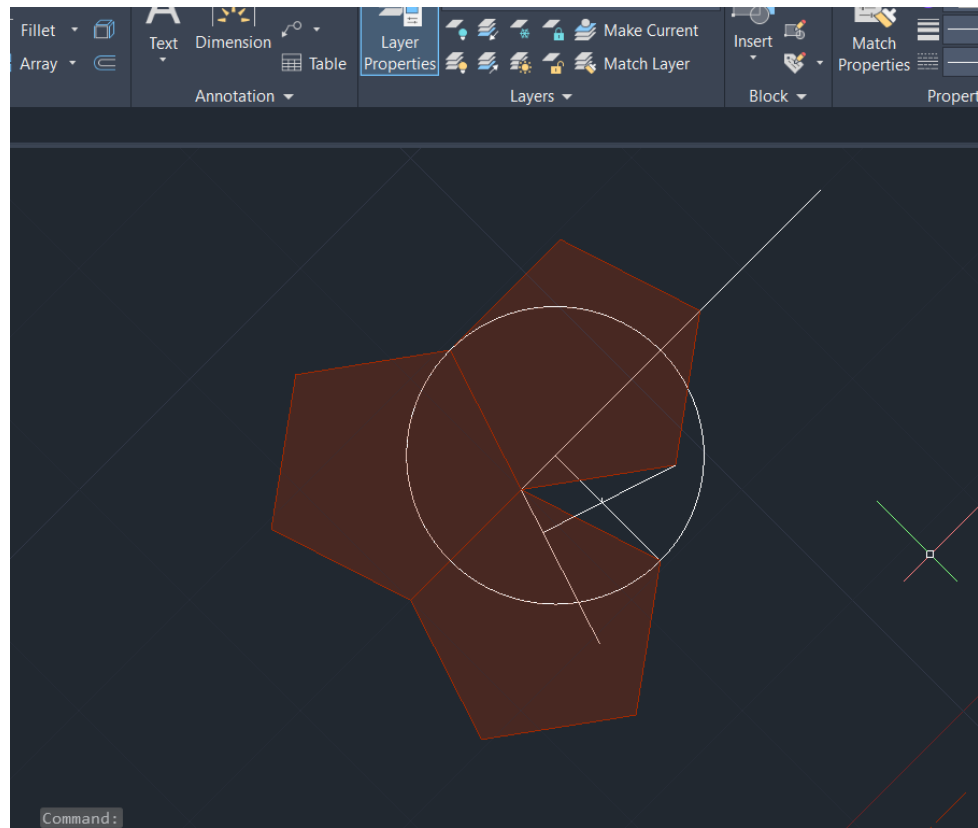
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Semana 9

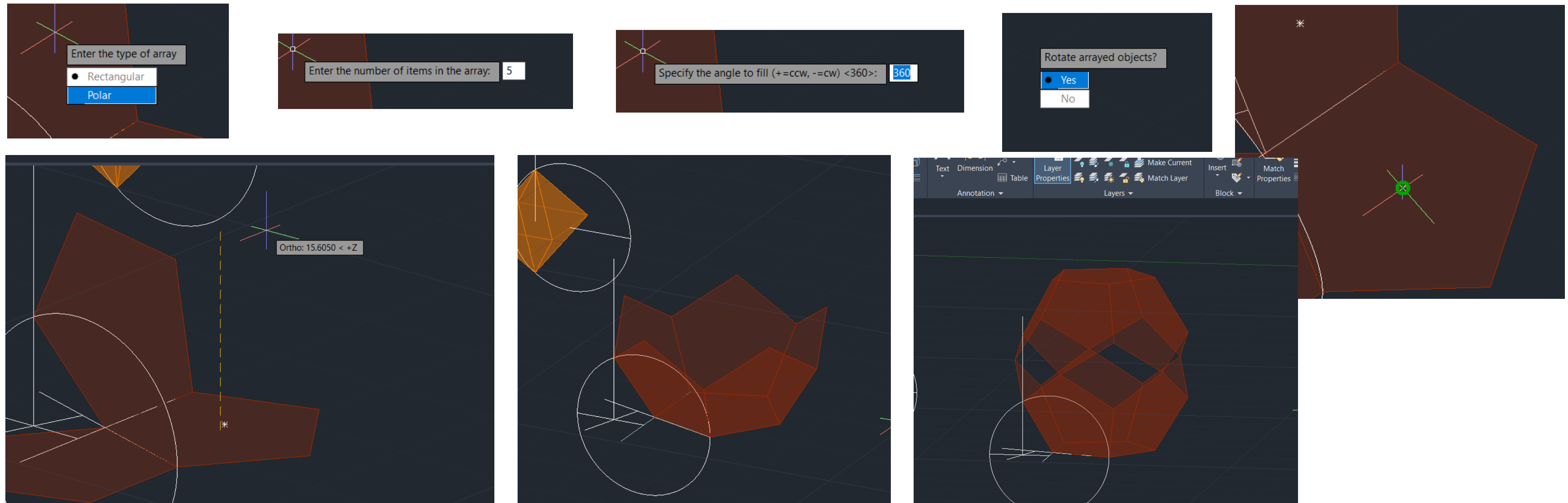
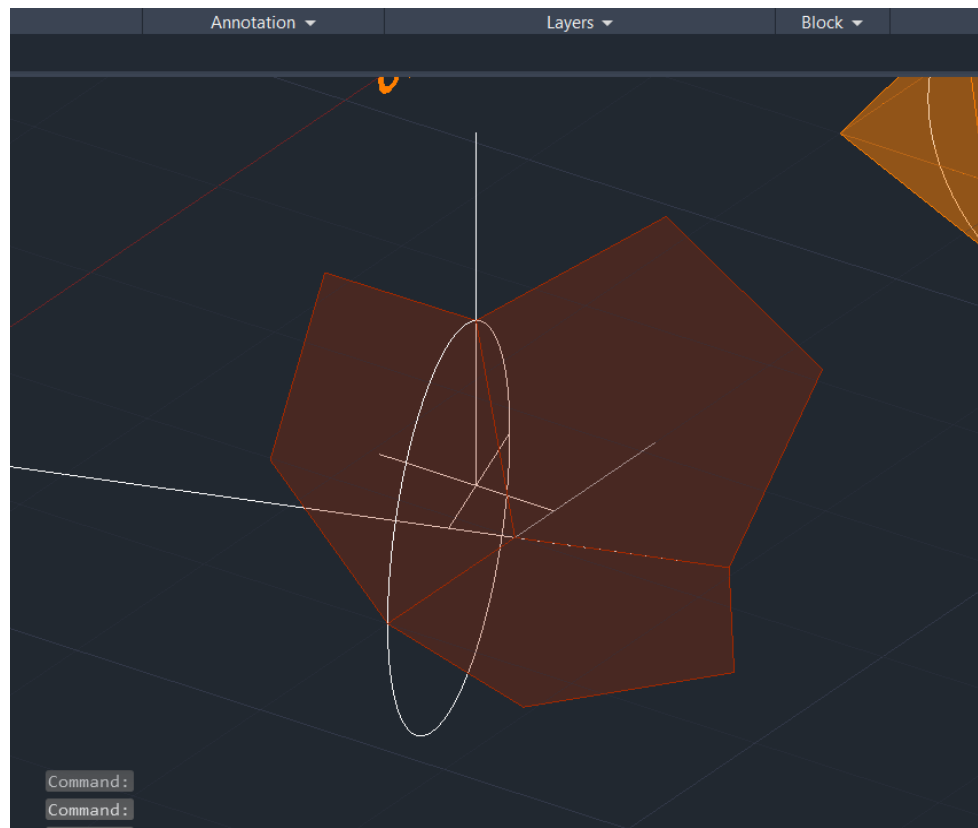
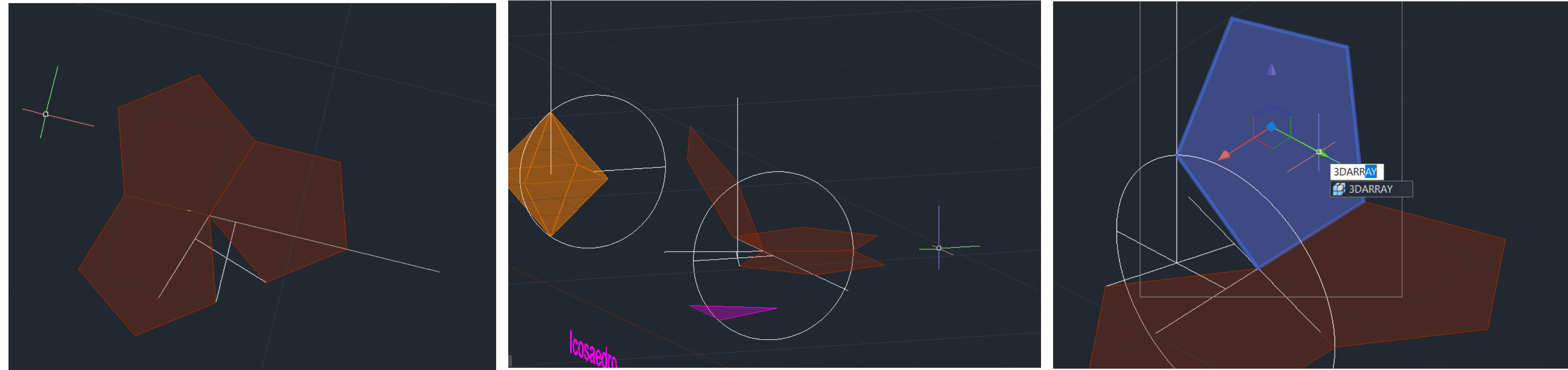


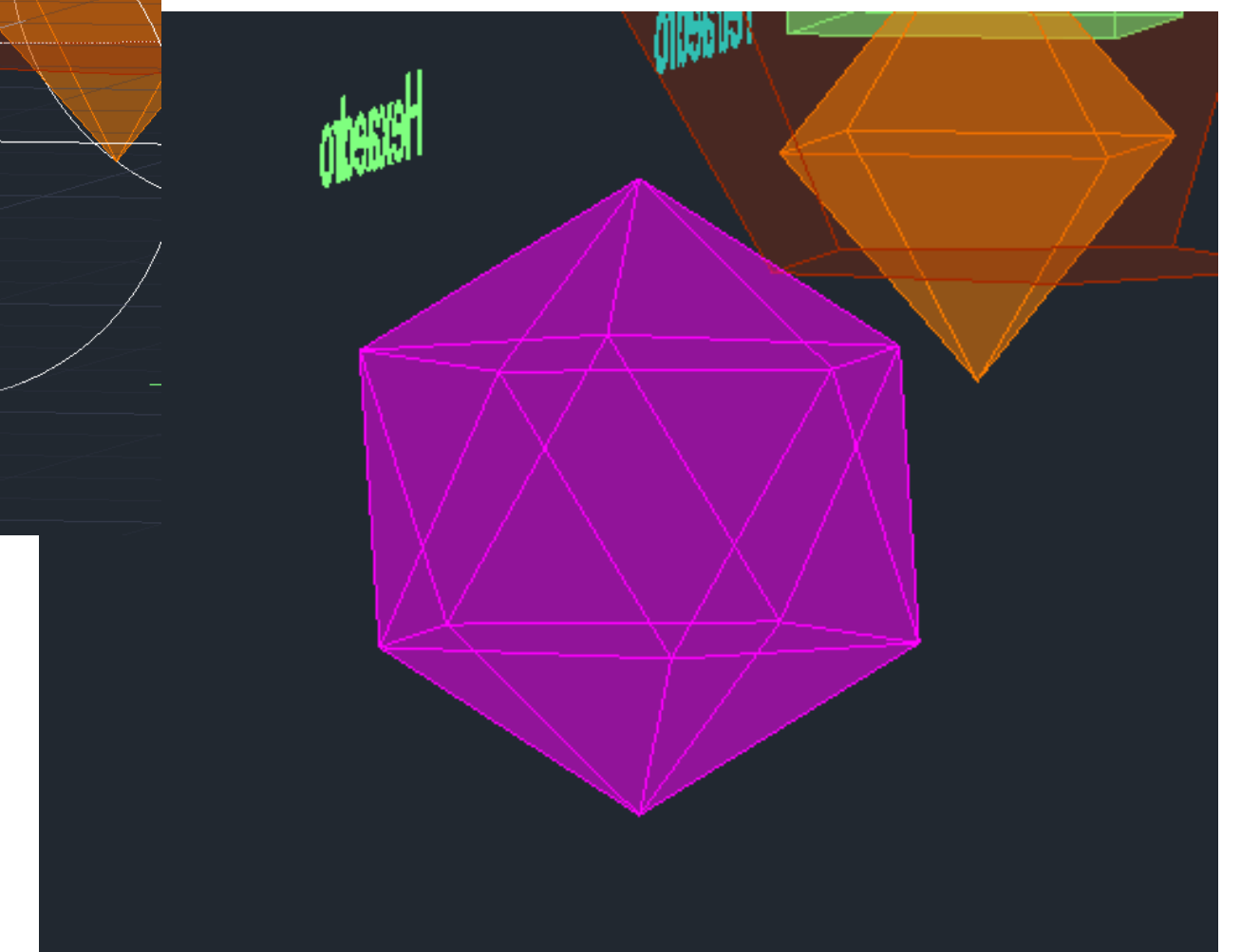
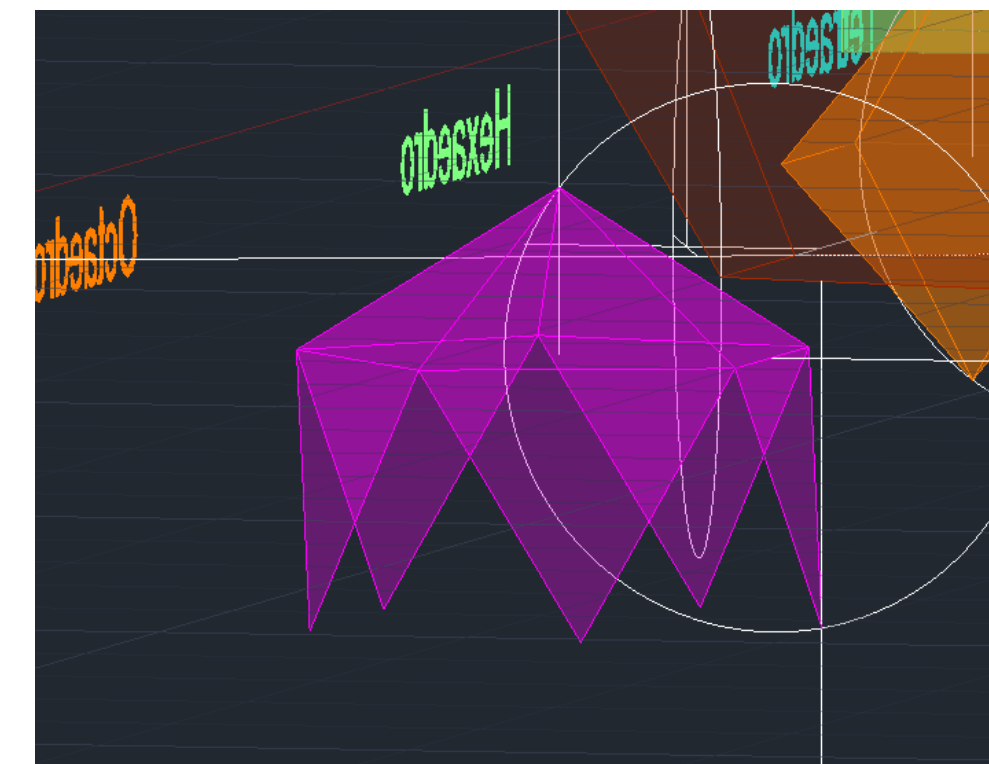
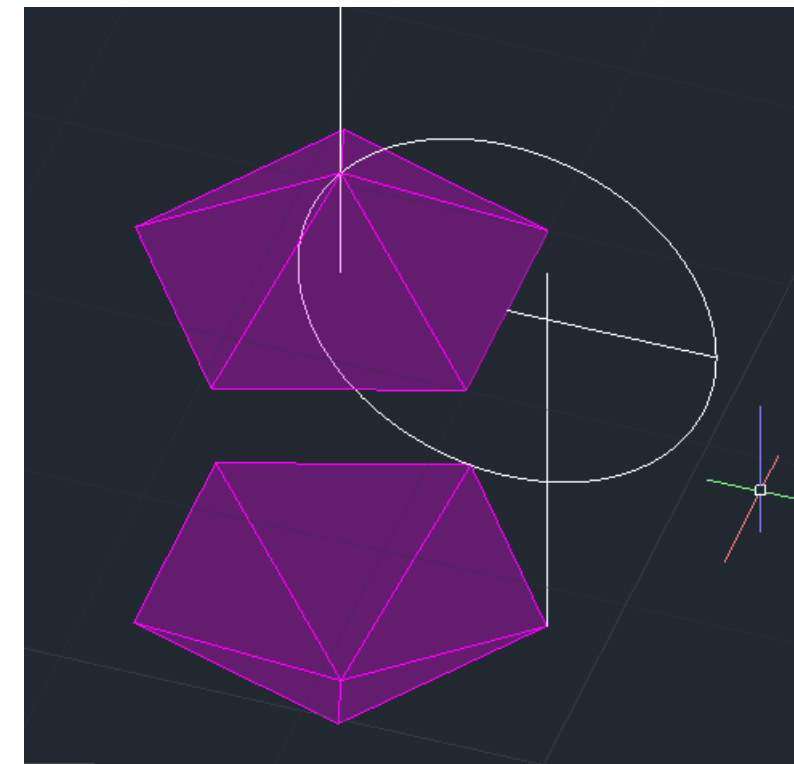
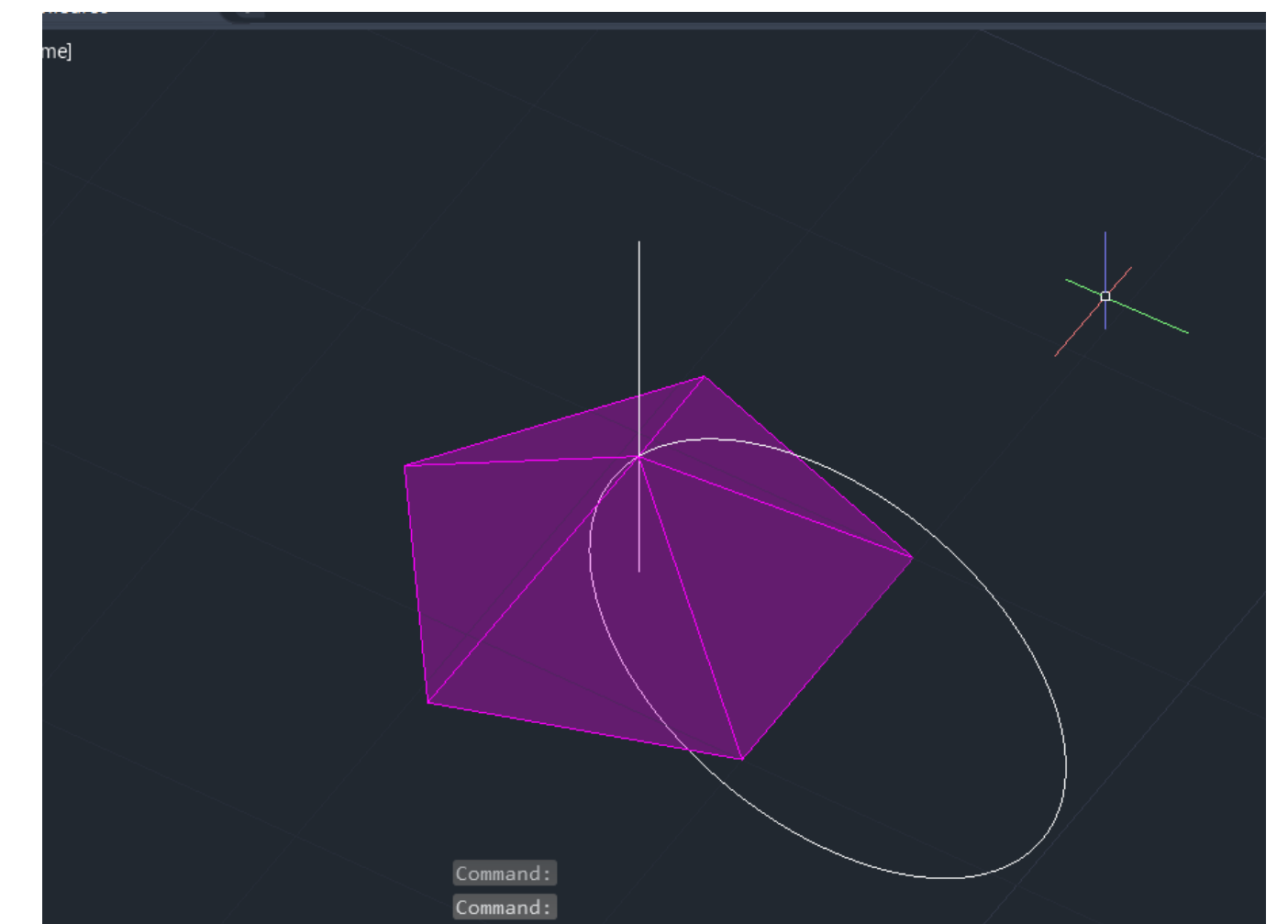
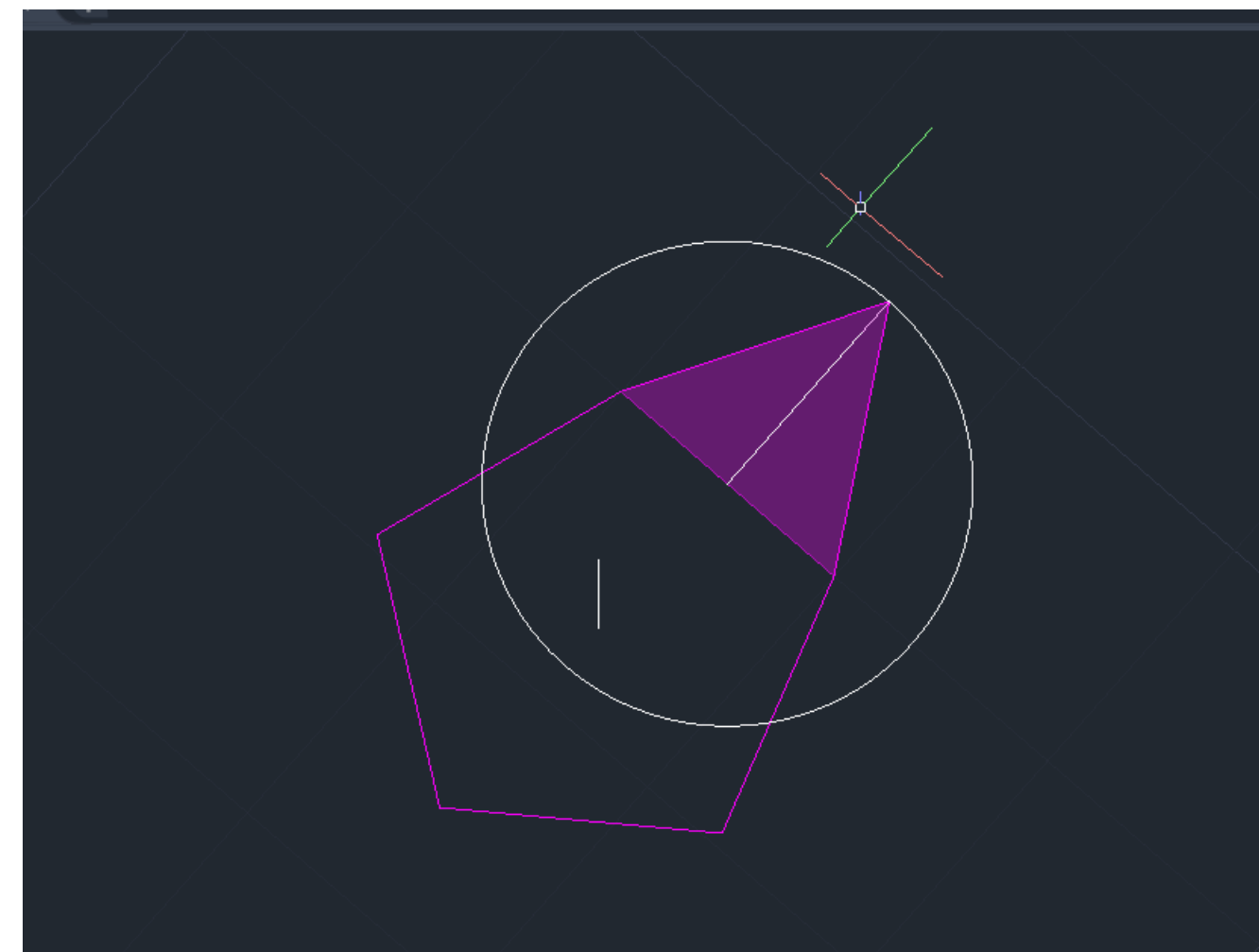
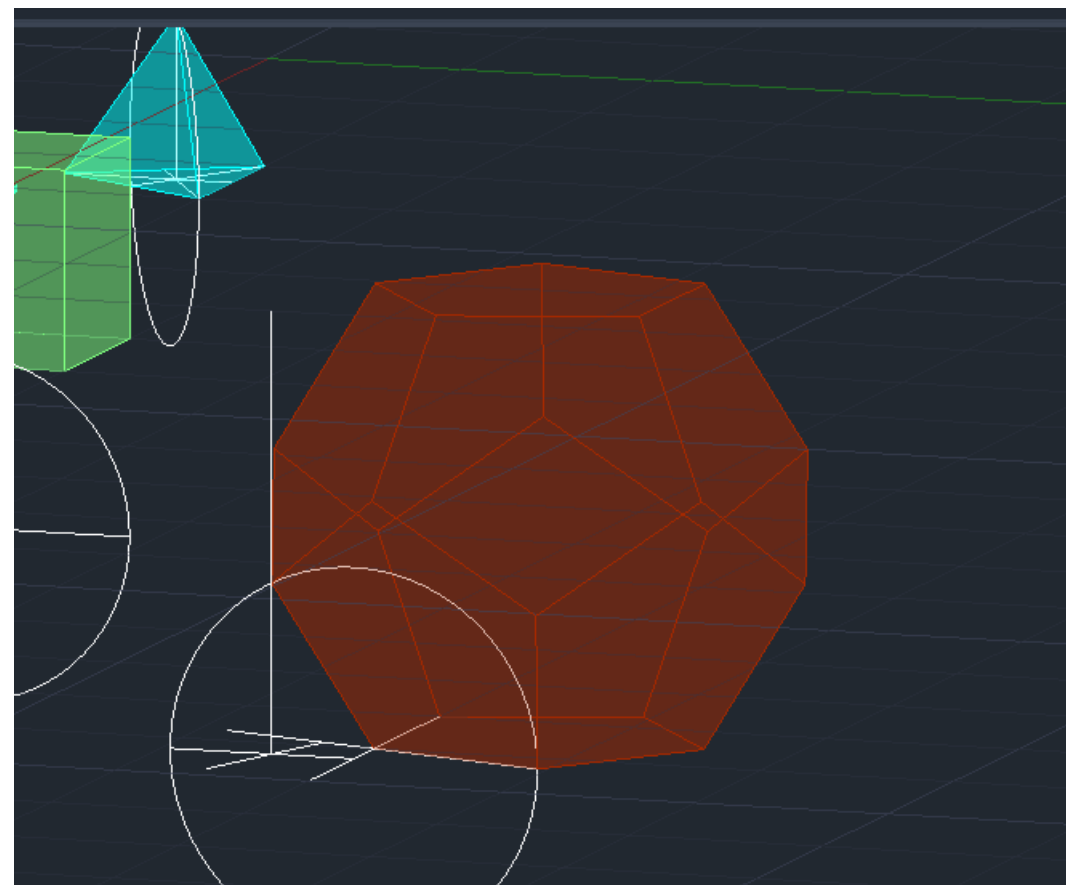


# 1ª Resolução



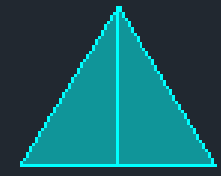
# 2ª Resolução





ReDig

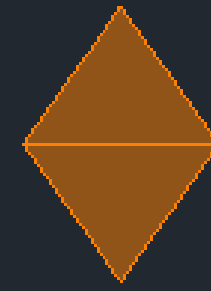
Semana 9



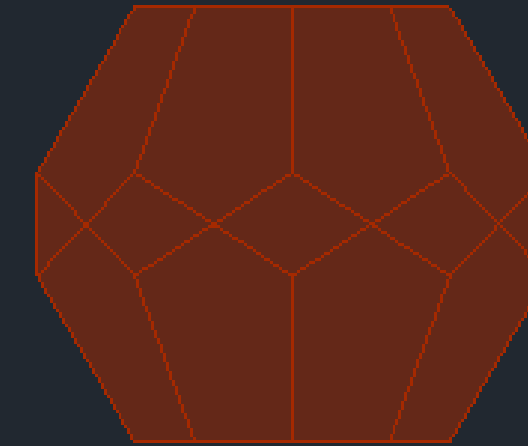
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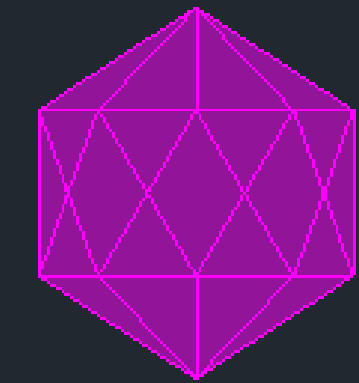
Hexaedro



Octaedro



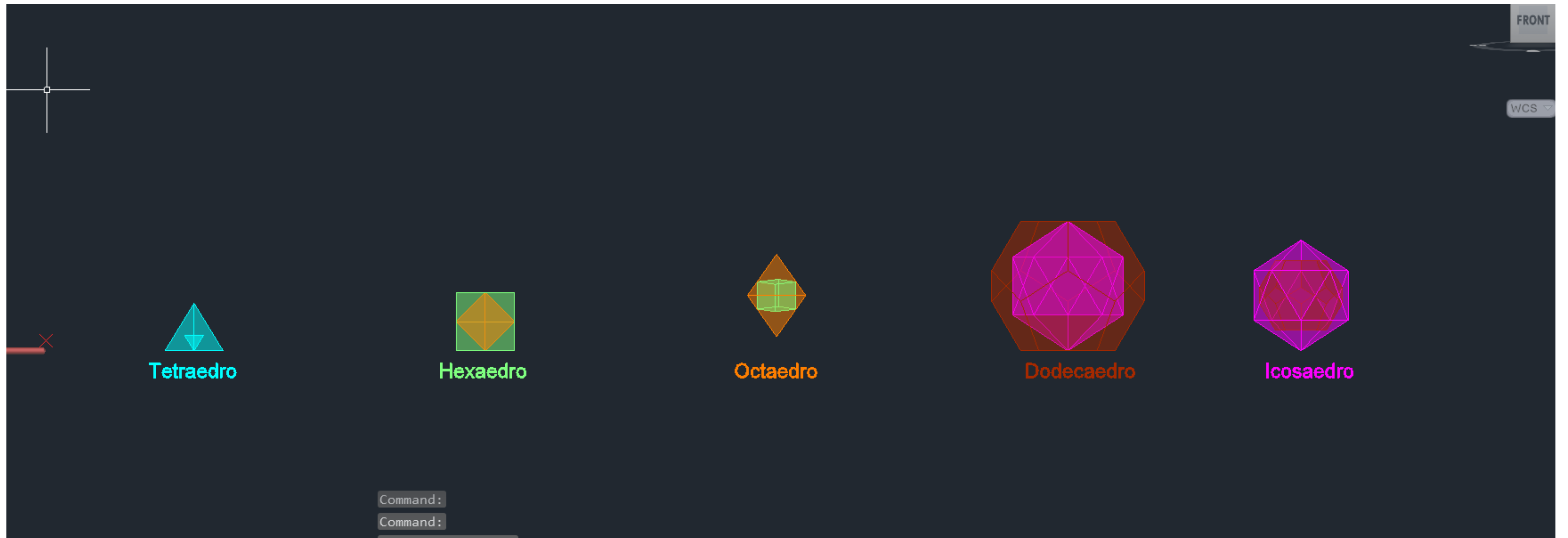
Dodecaedro



Icosaedro

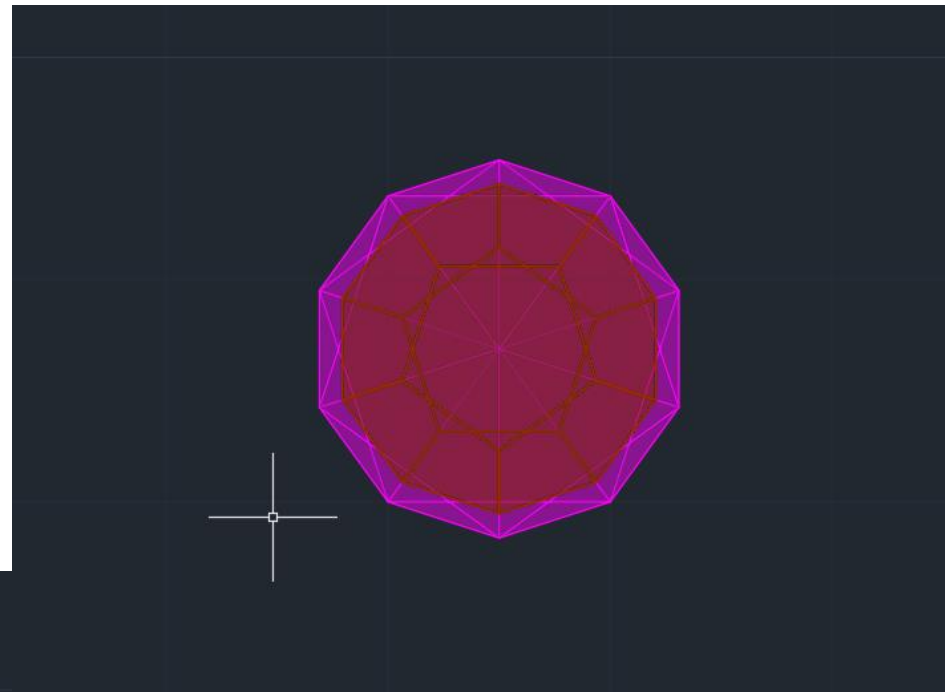
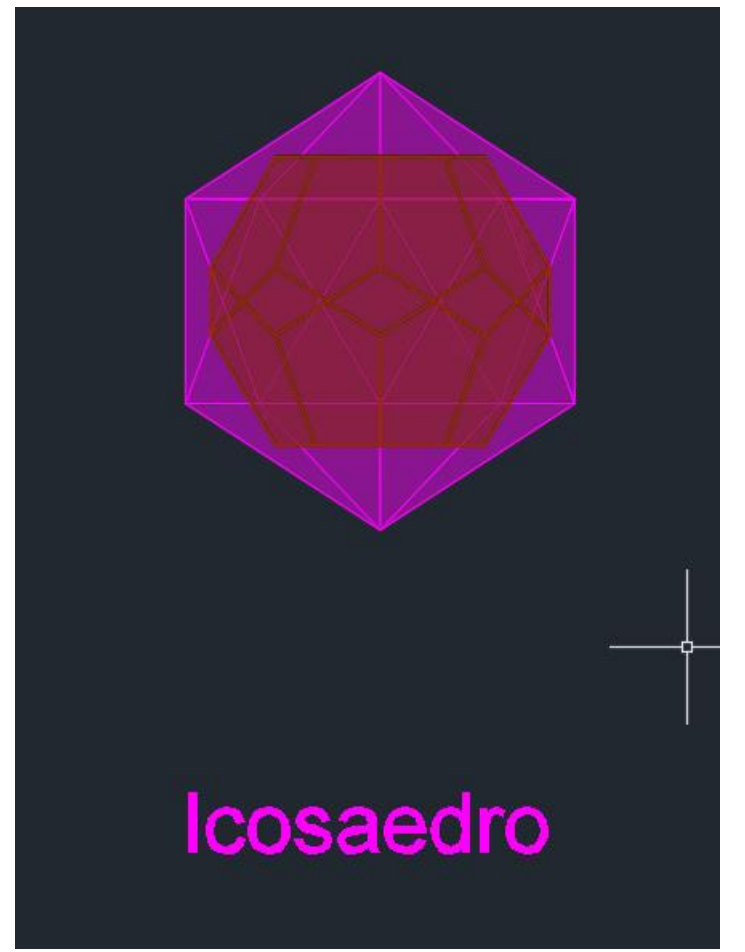
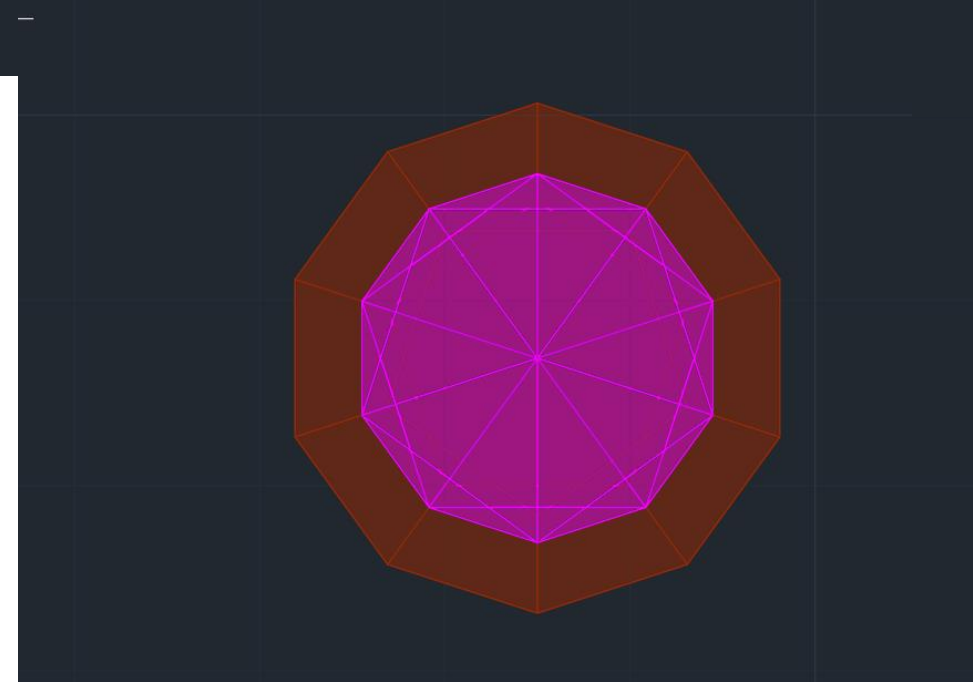
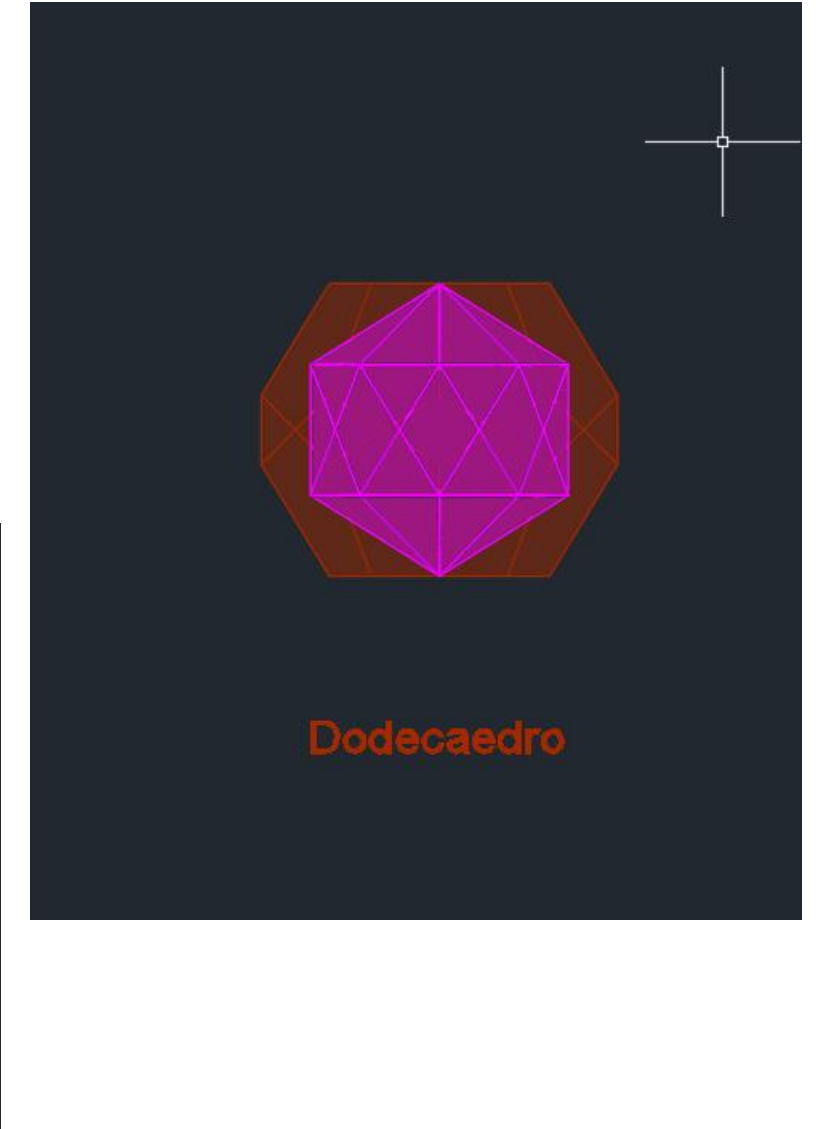
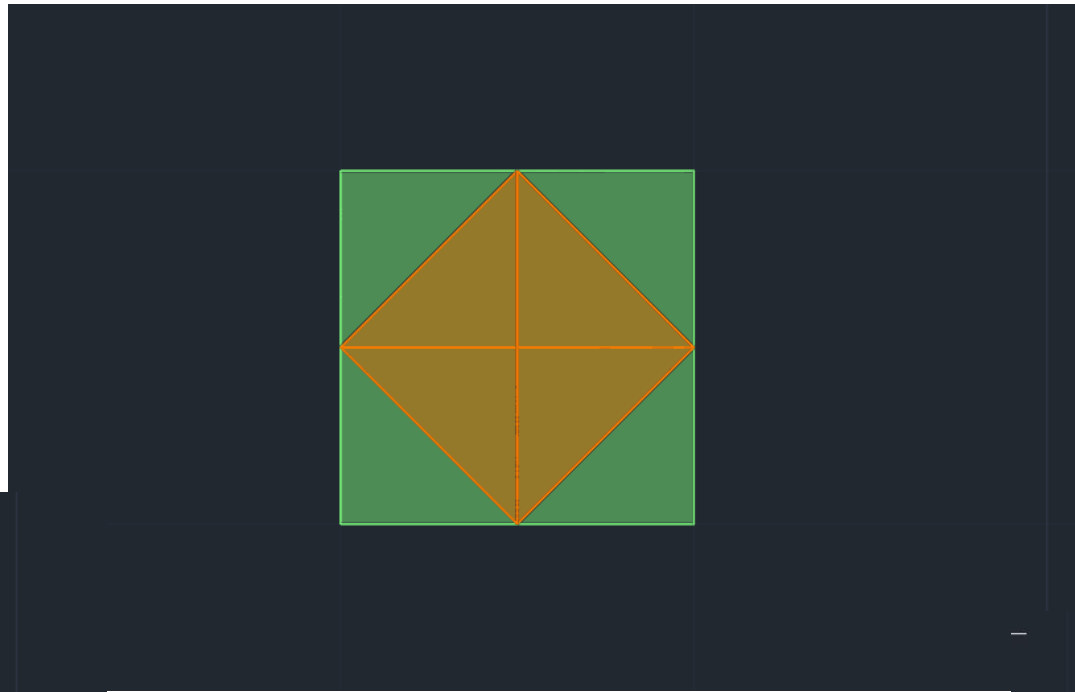
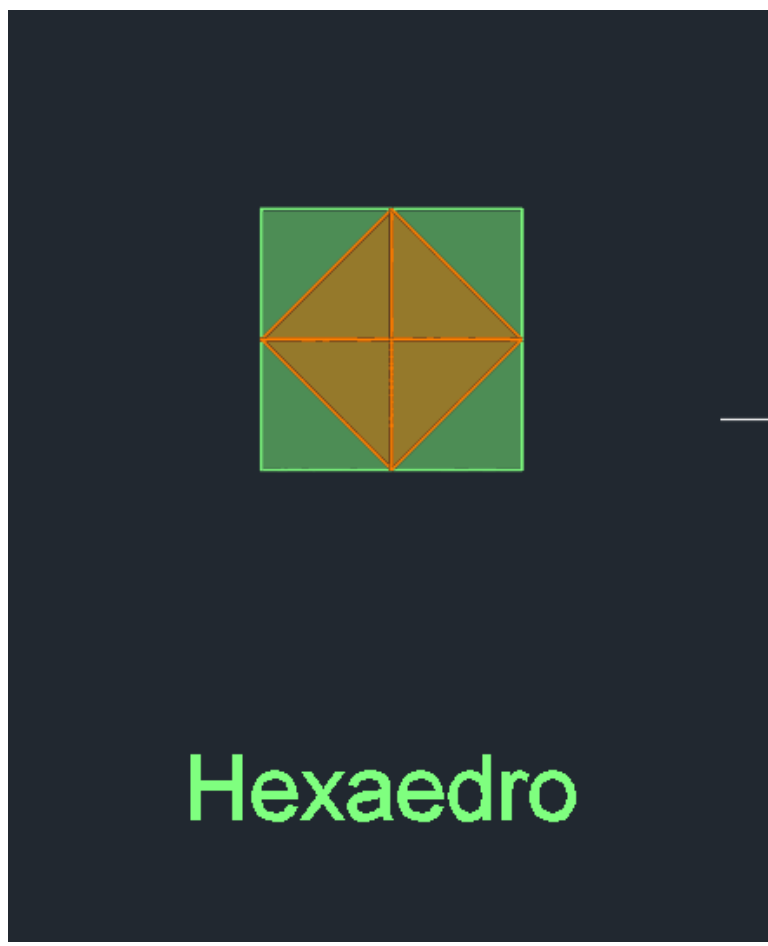
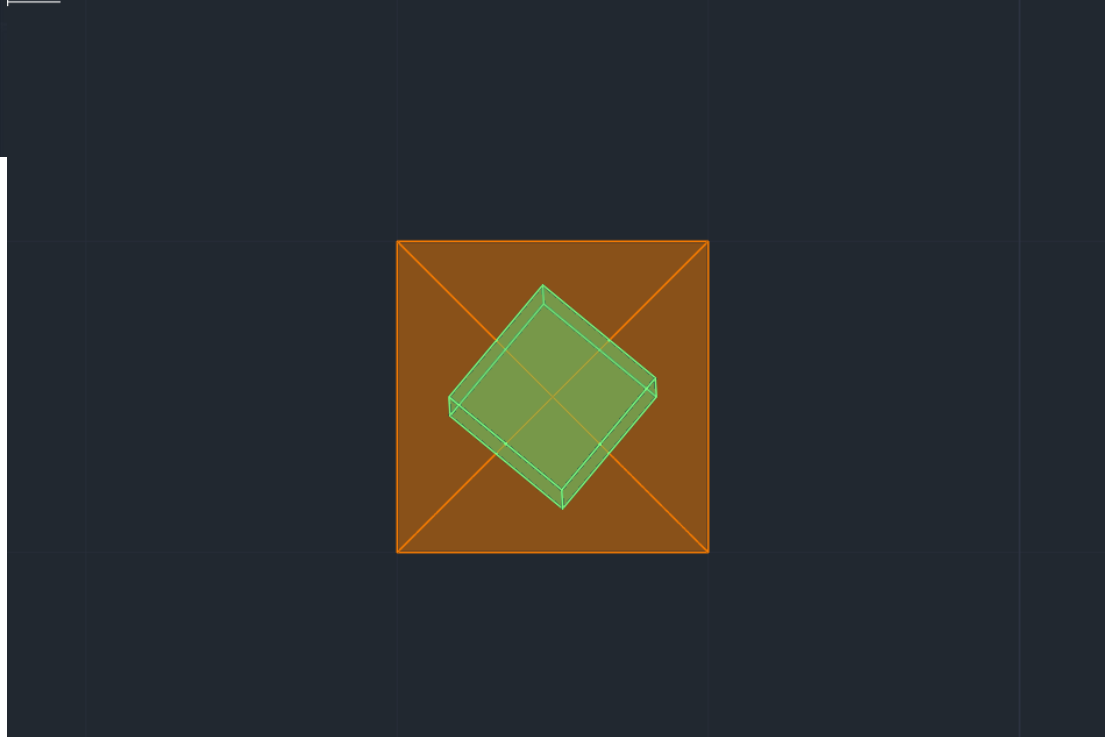
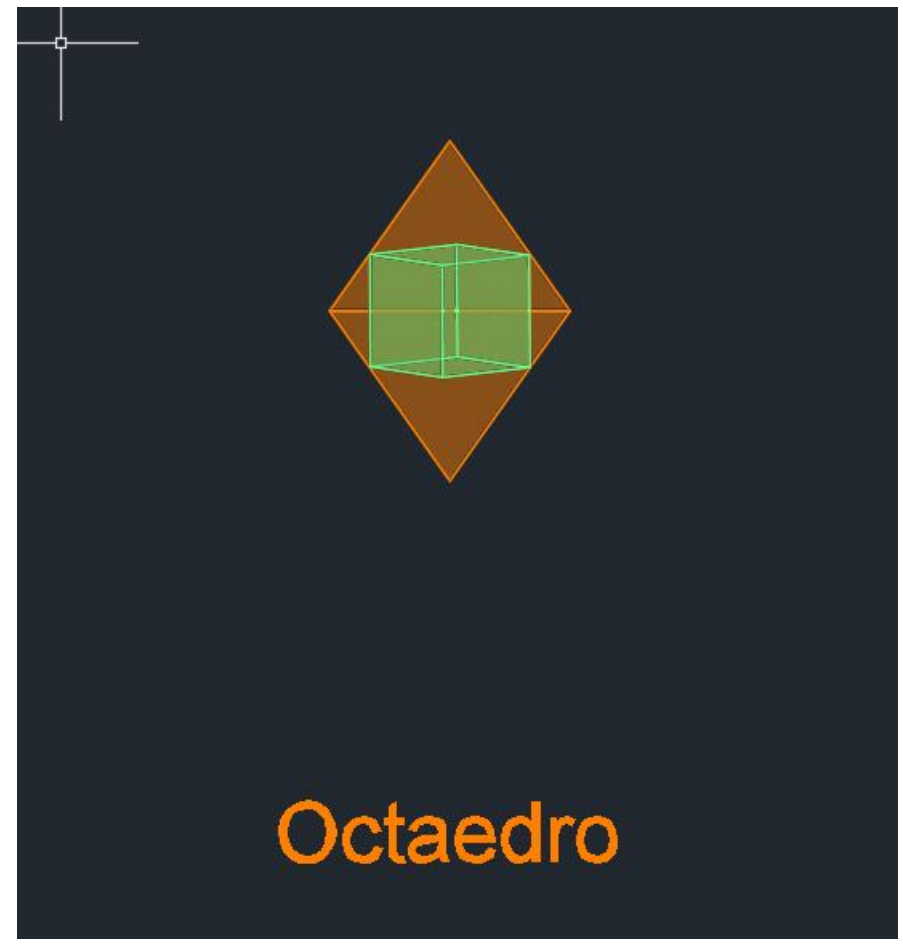
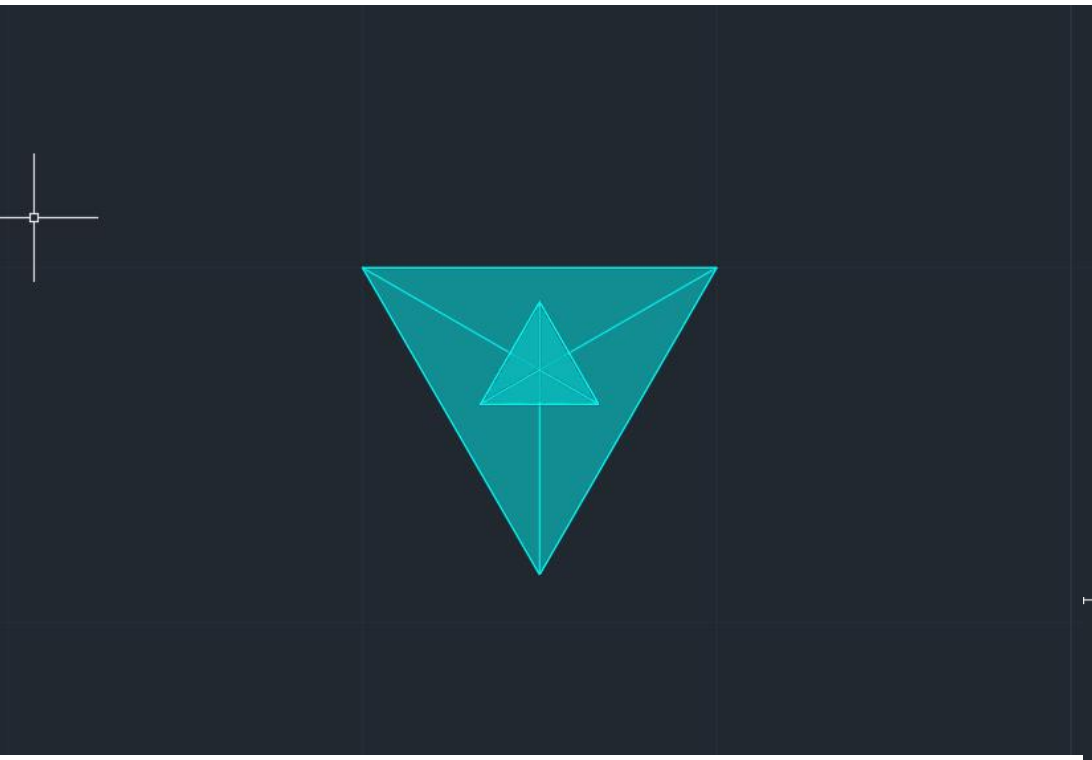
Command:

Command:



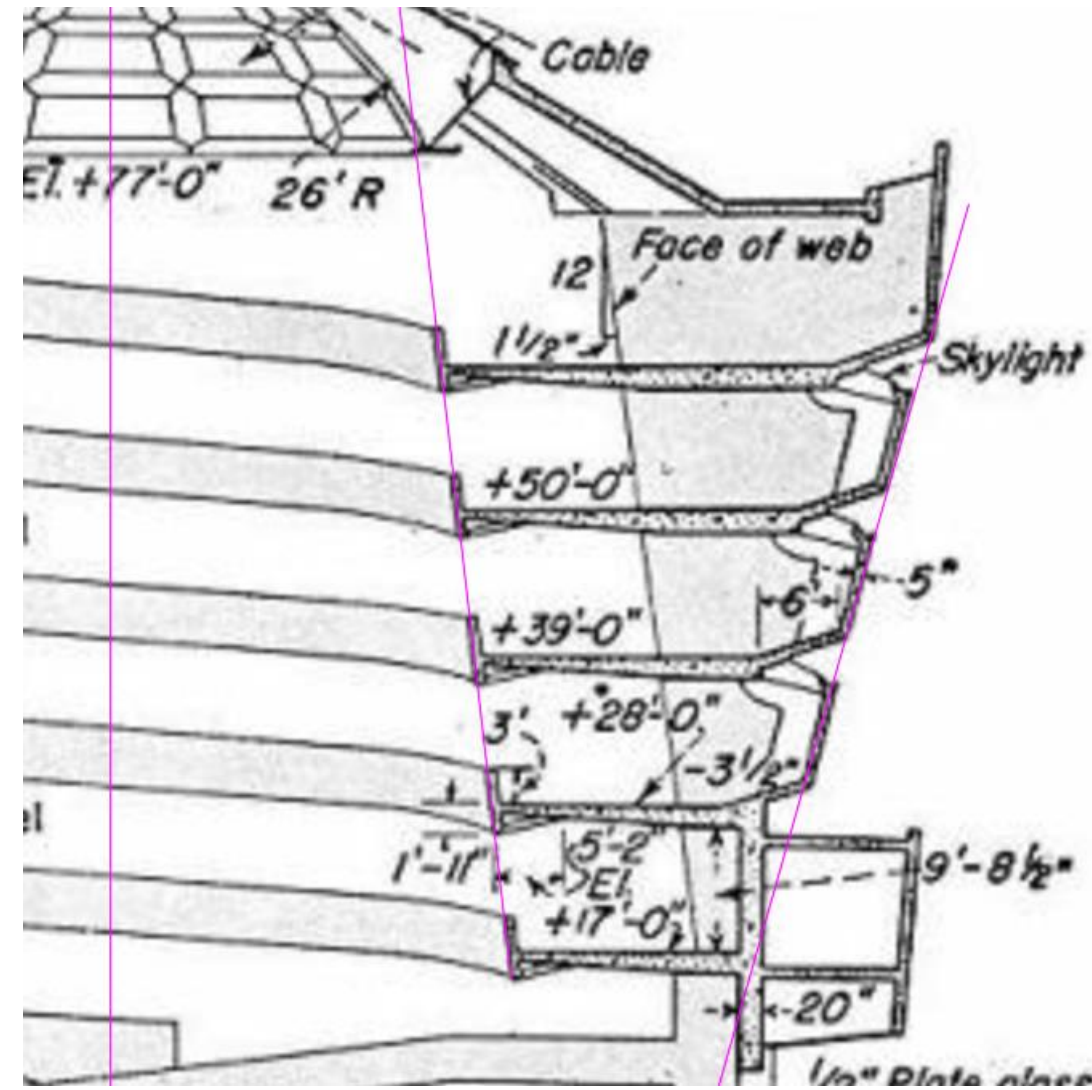
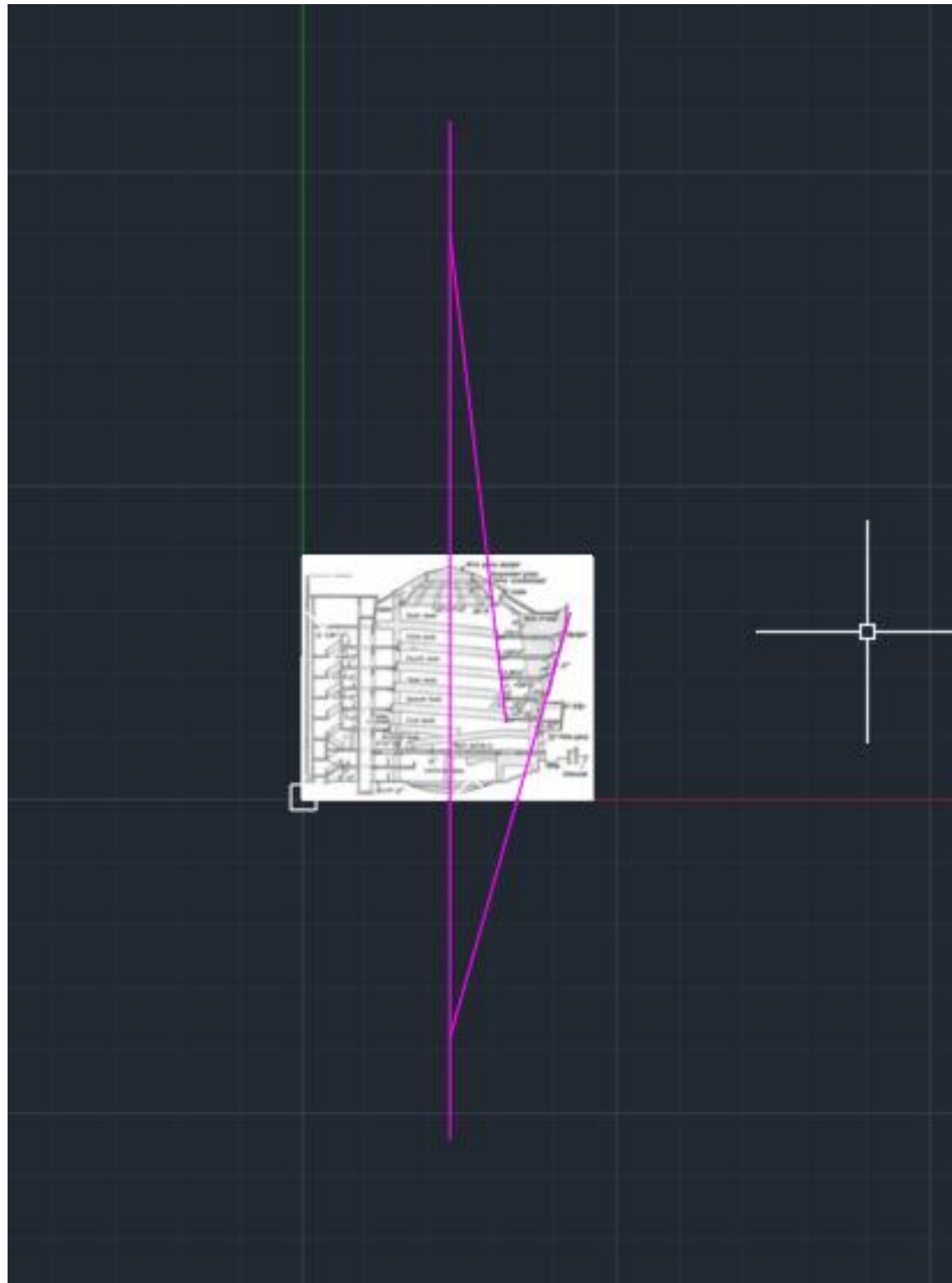
ReDig

EXERCICIO DUALIDADES

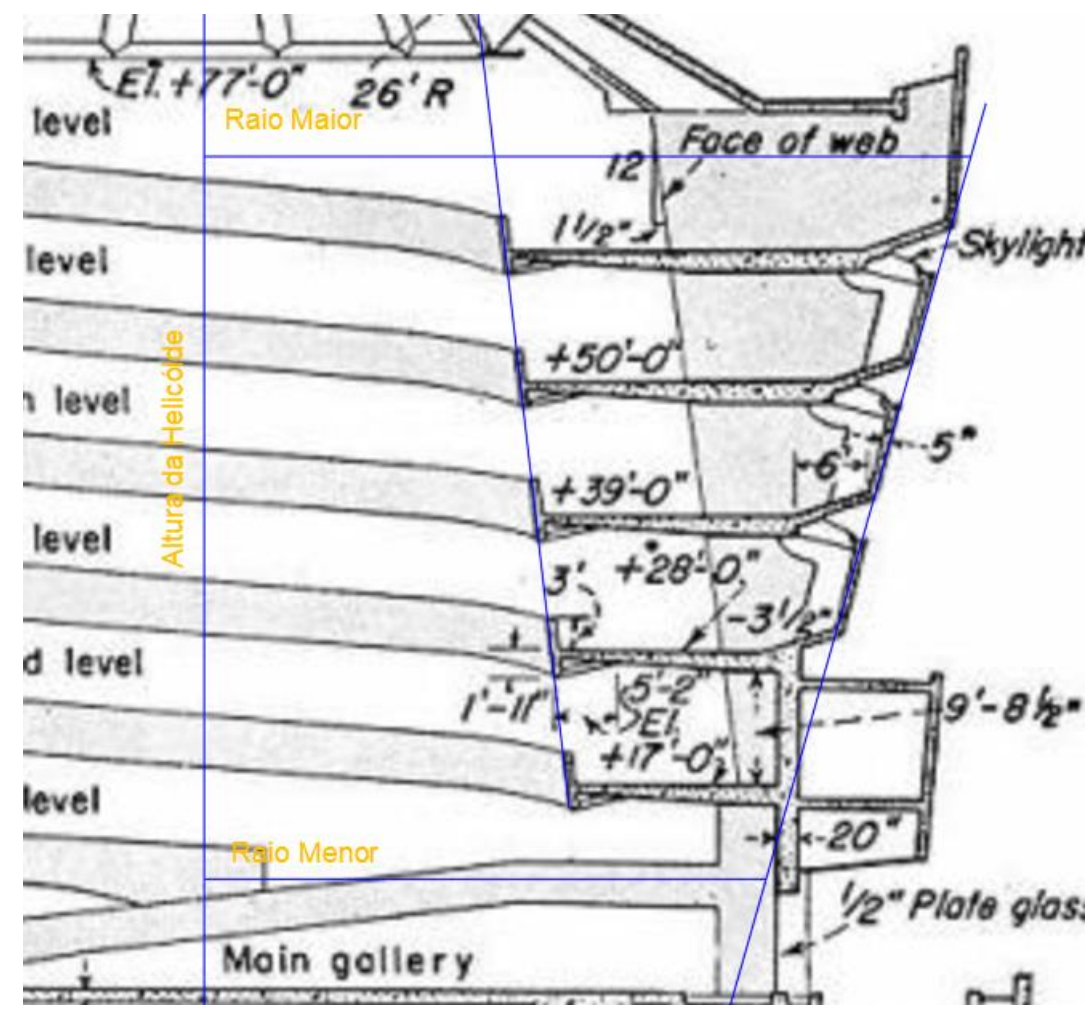
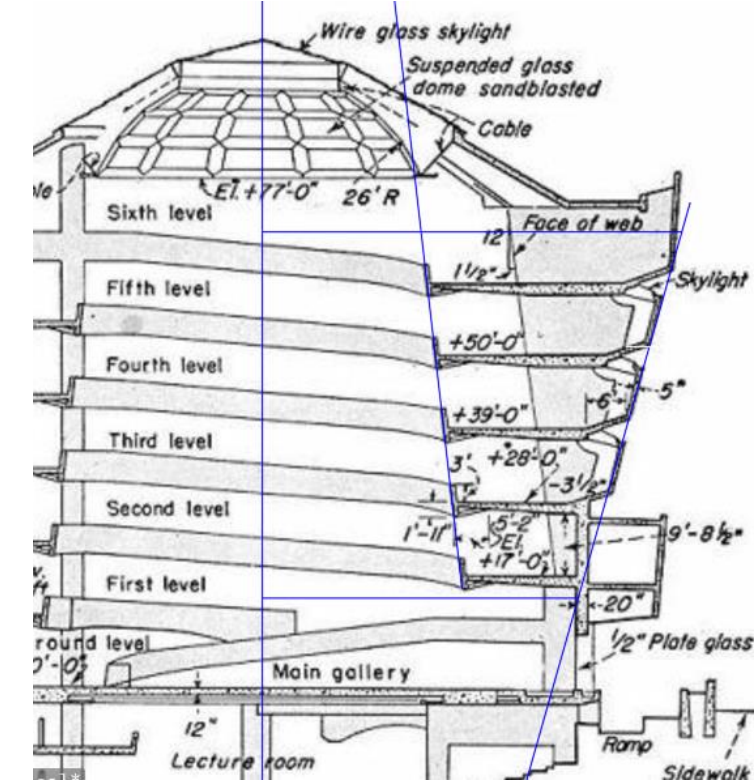


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EXERCICIO DUALIDADES

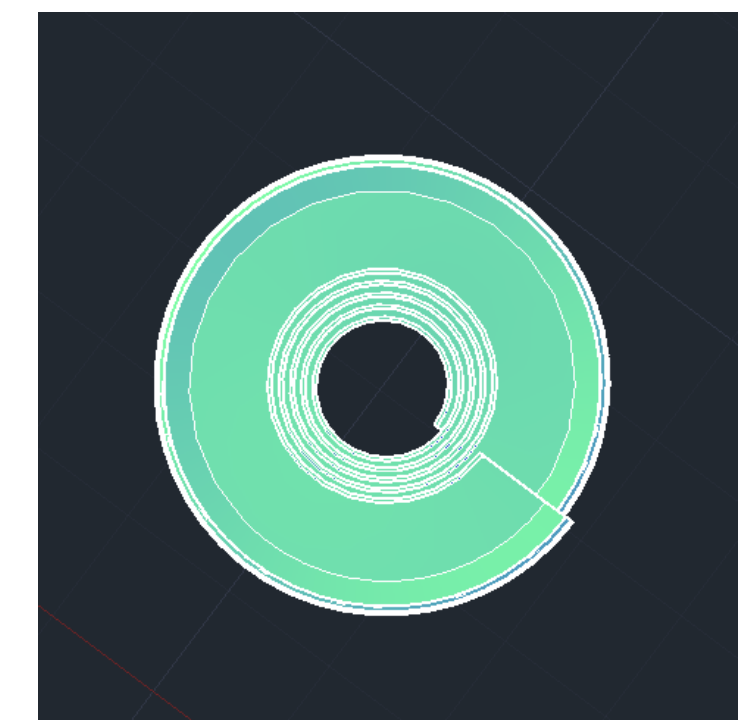
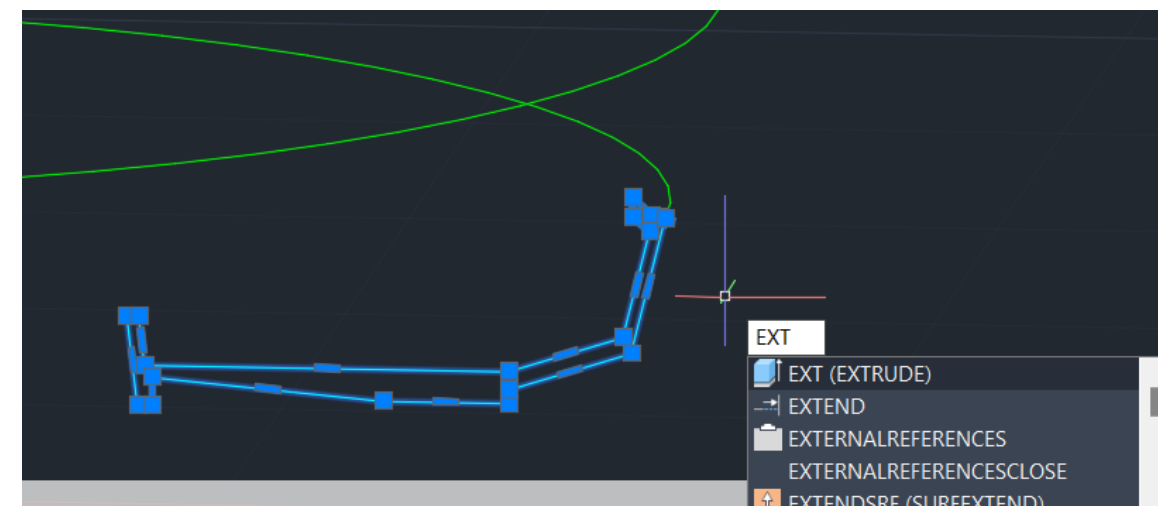
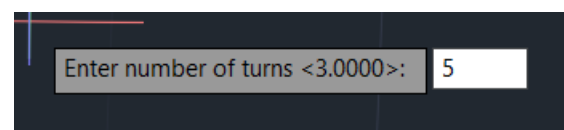
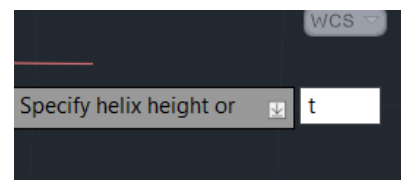
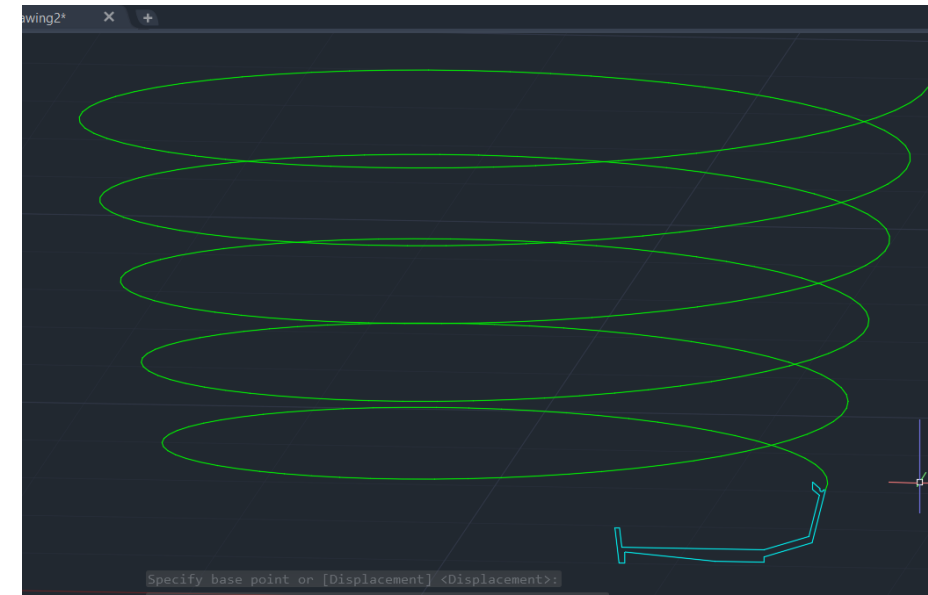
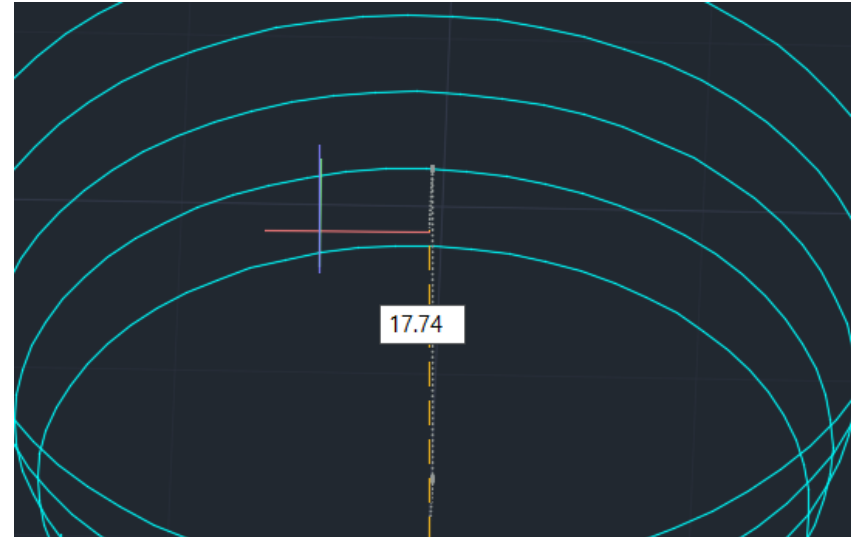
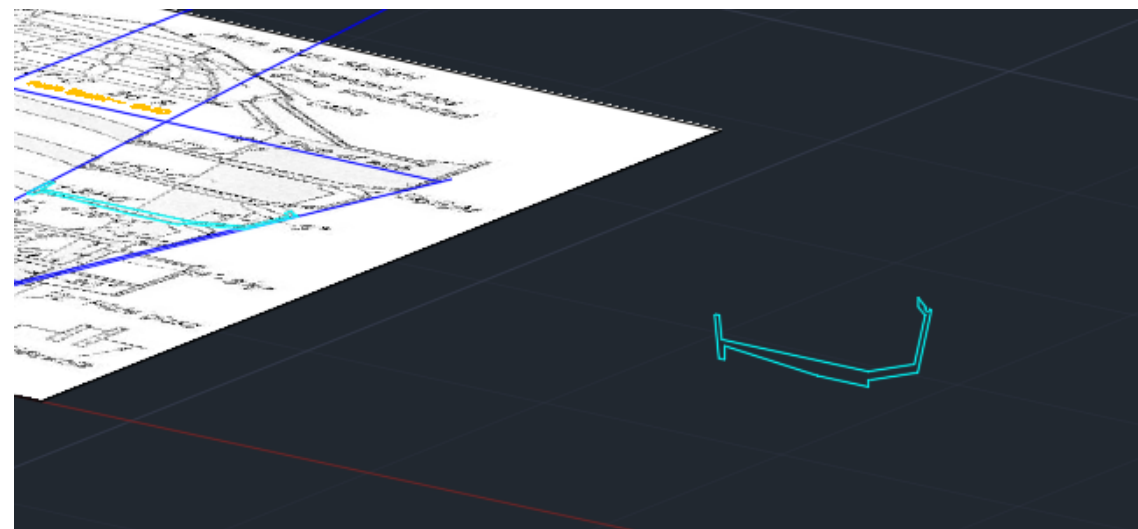
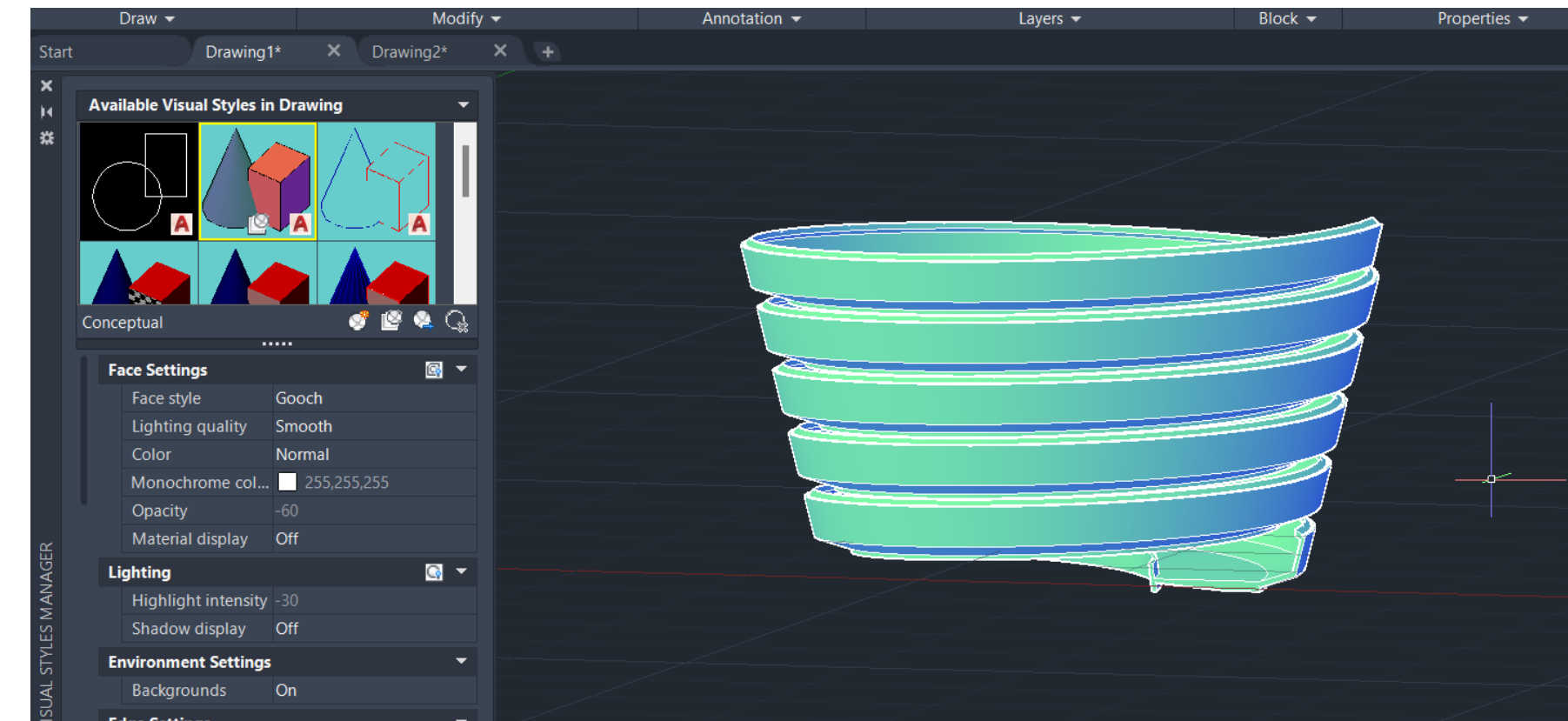
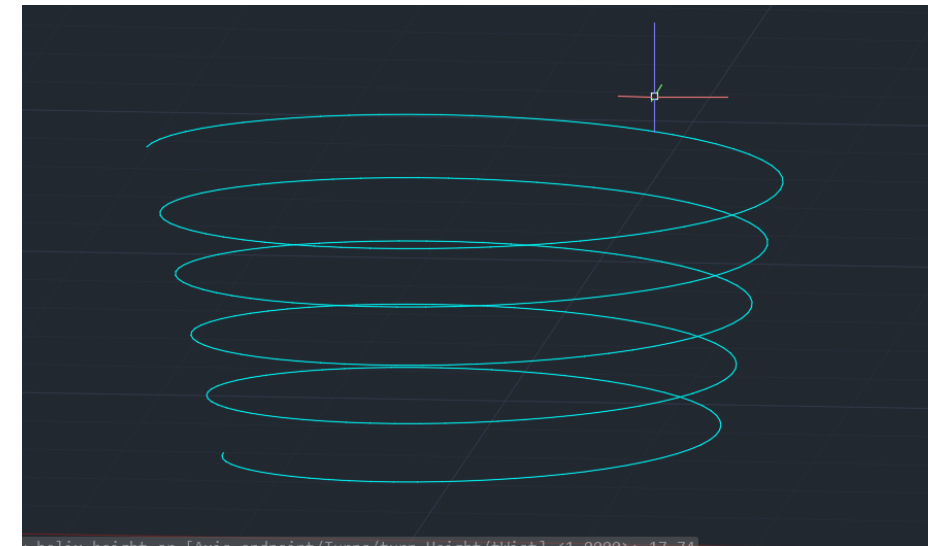
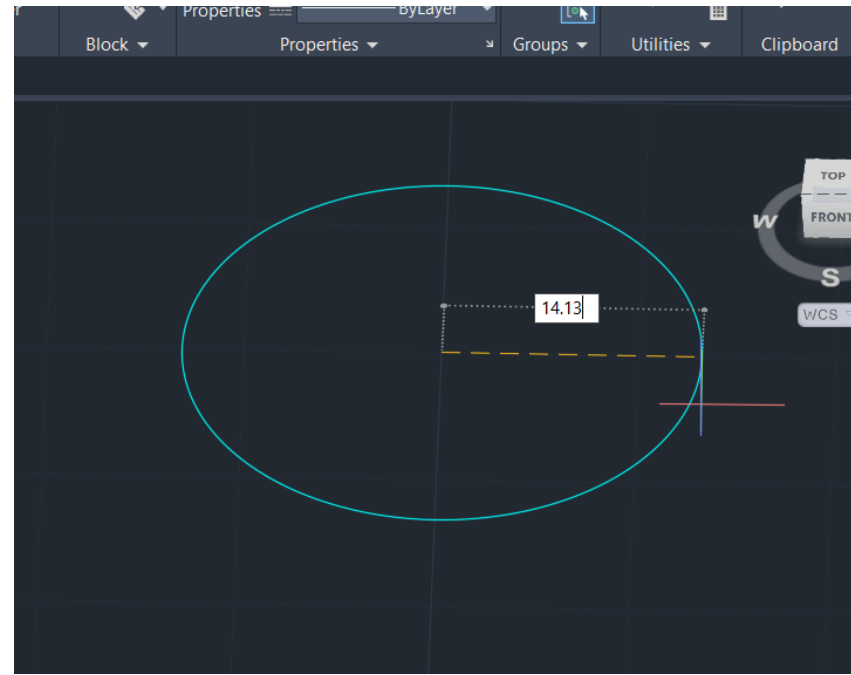
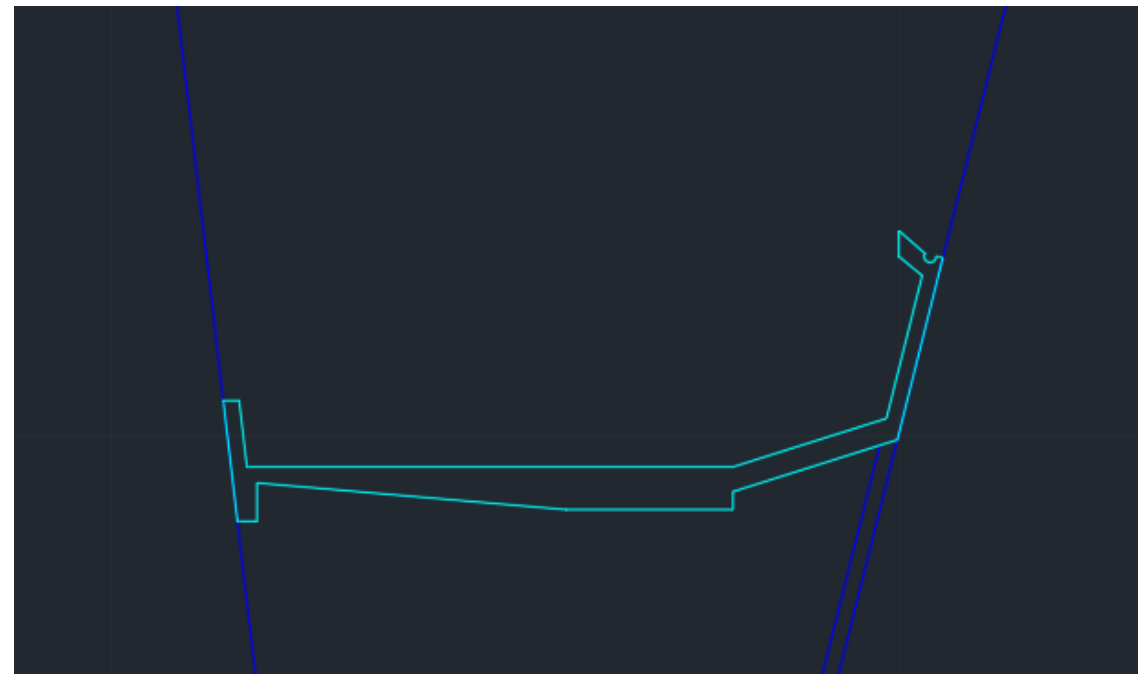
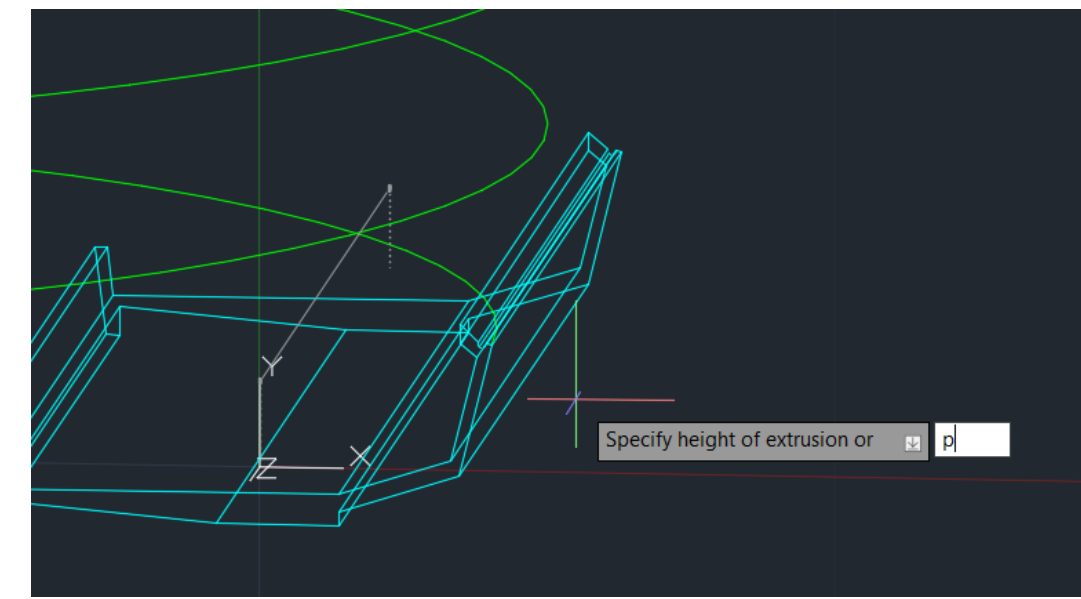
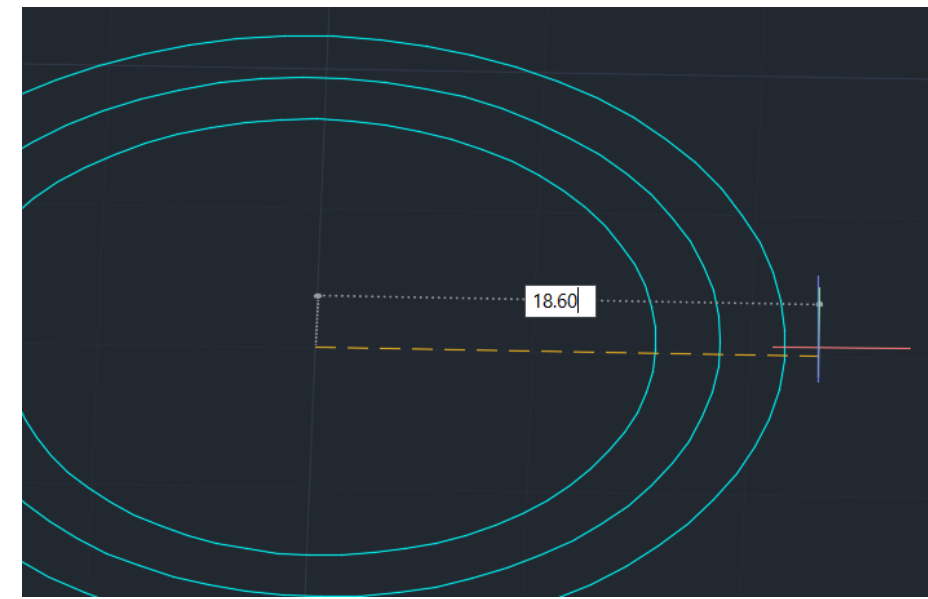
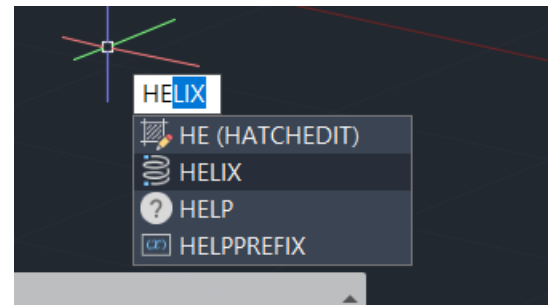


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ReDig

Semana 10



ReDig

Semana 10