

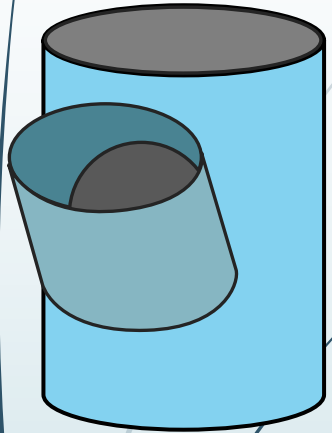
# Interpenetrations & Development

EGD Grade 11 & 12

Developed by: PC Viljoen  
Senior Educational Specialist for  
Engineering Graphics and Design

Free State Province

# Interpenetrations



## Question 2: Interpenetration

### Given:

- \* The incomplete front view and top view of a cylinder at  $45^\circ$  that has to fit around another cylinder. The axes of both cylinders lie in a common vertical plane.
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### Instructions:

Draw, to scale 1:1, the following:

1. The given top view.
2. The complete front view clearly showing the curve of interpenetration.
3. The complete left view.
3. Develop the main cylinder and to show the interpenetration clearly.
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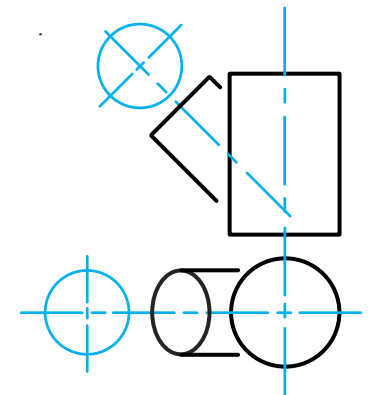
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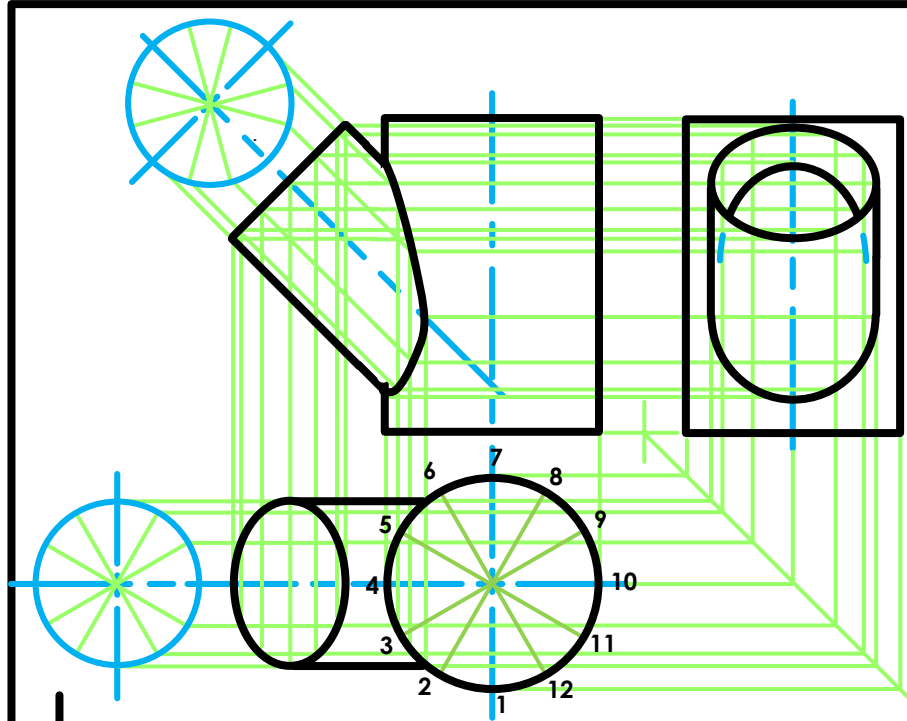
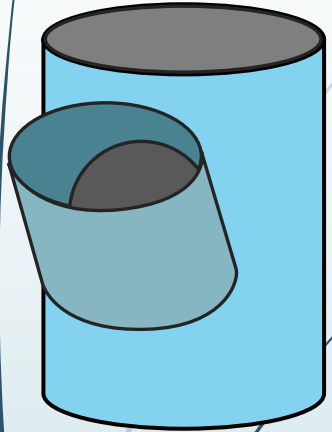
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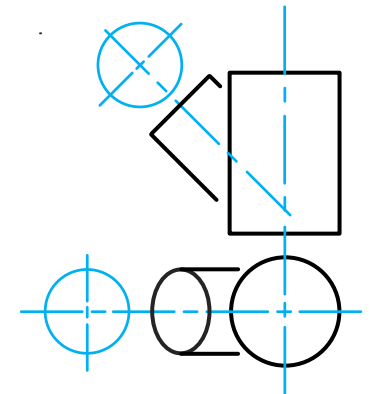
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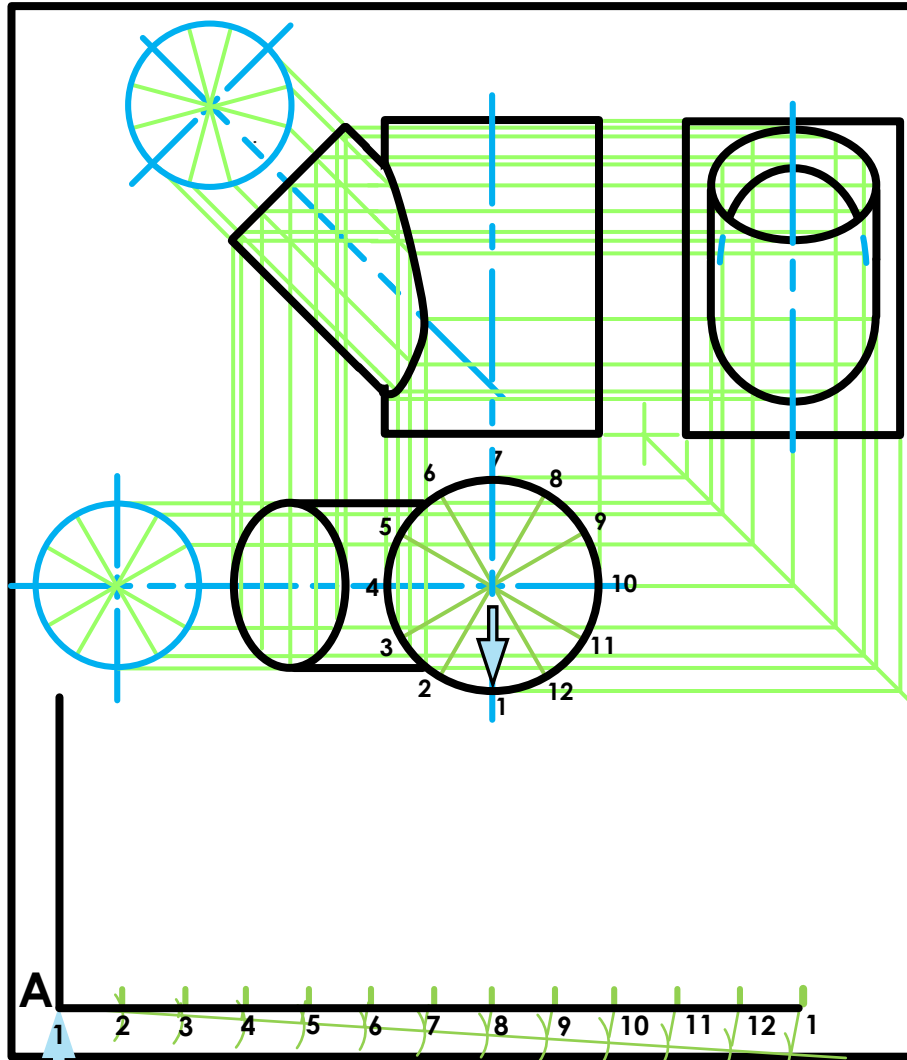
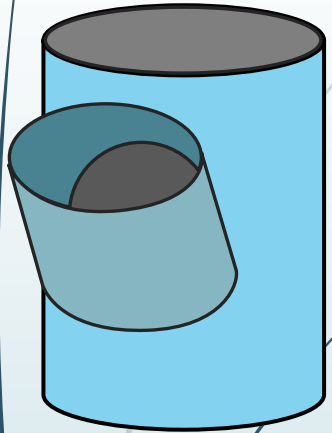
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education

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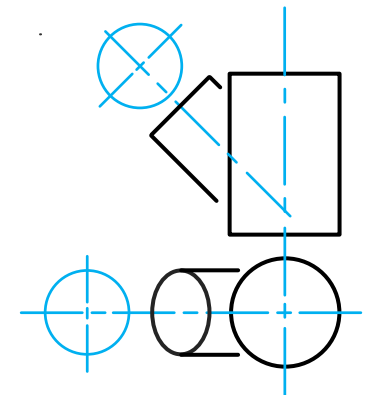
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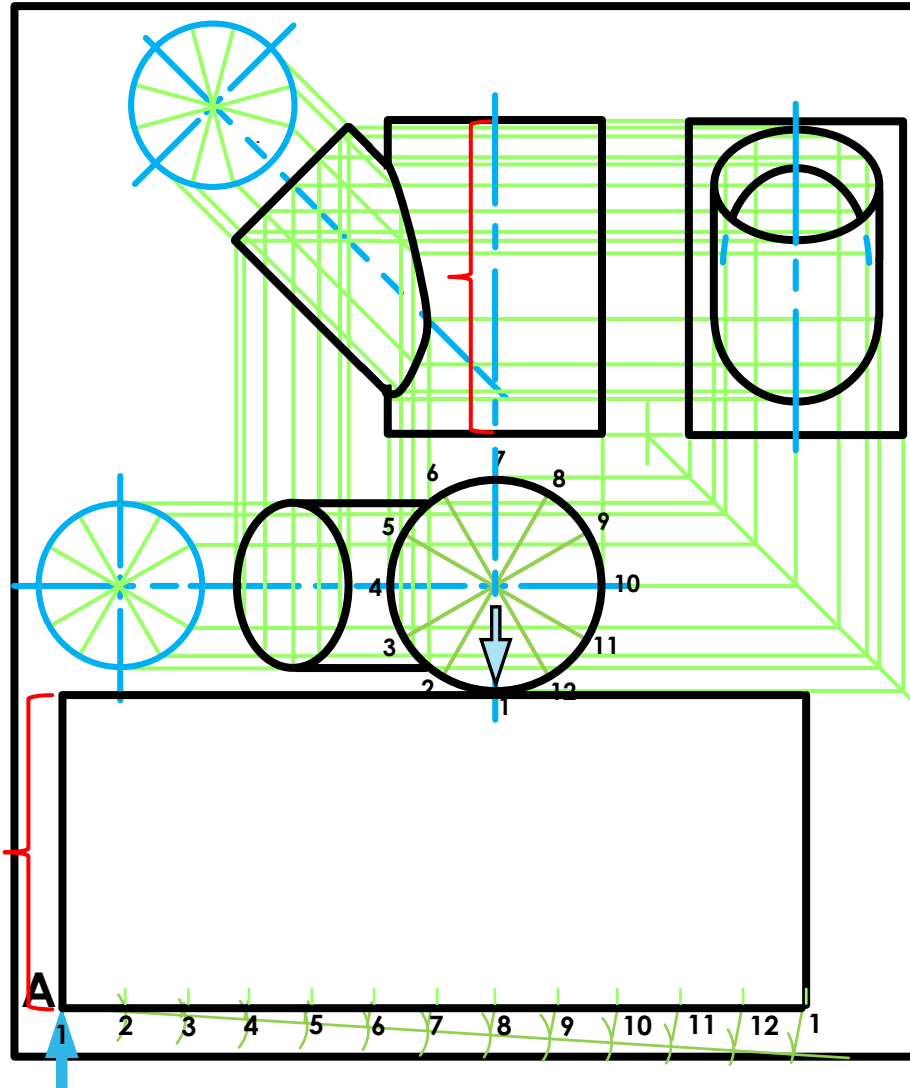
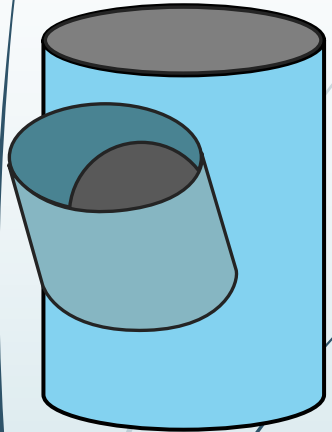
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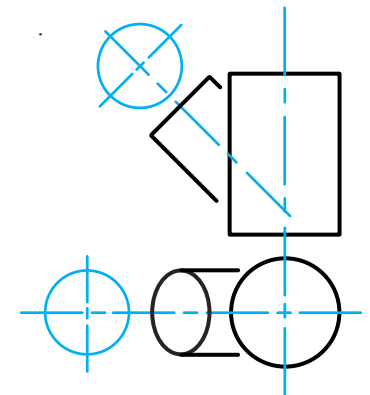
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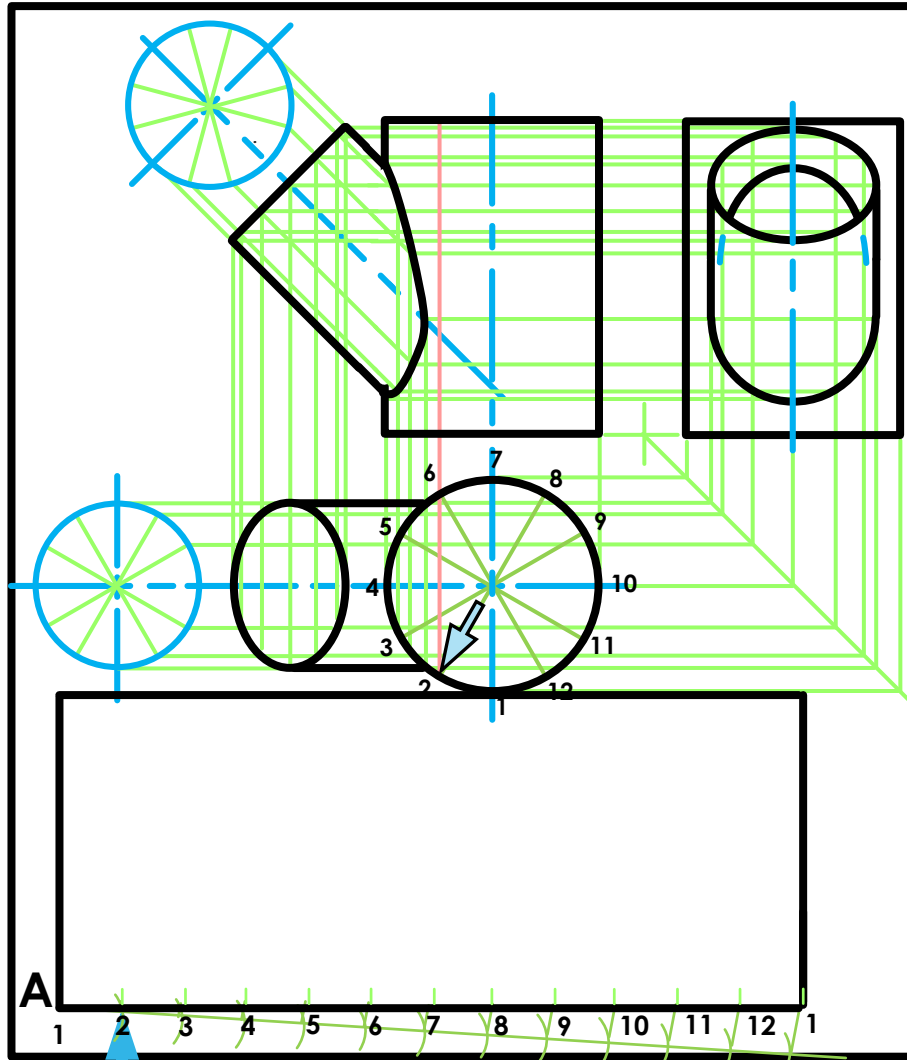
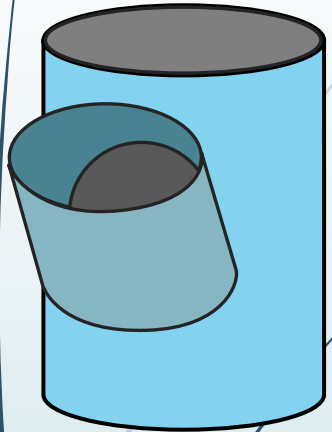
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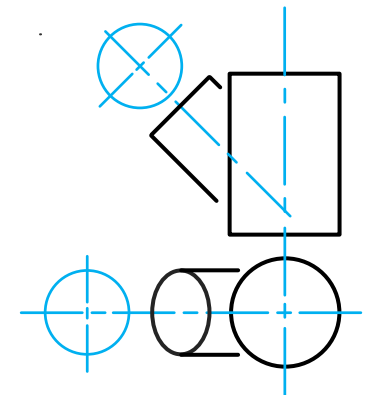
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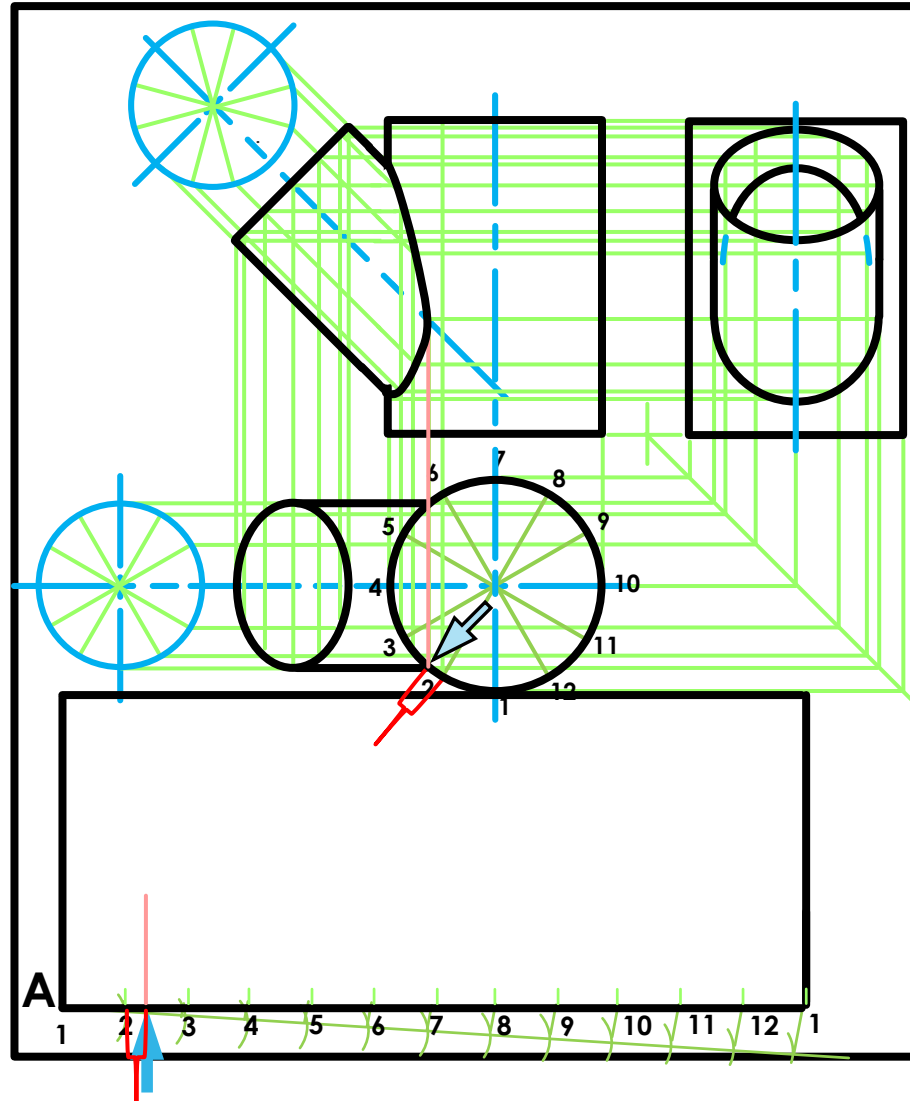
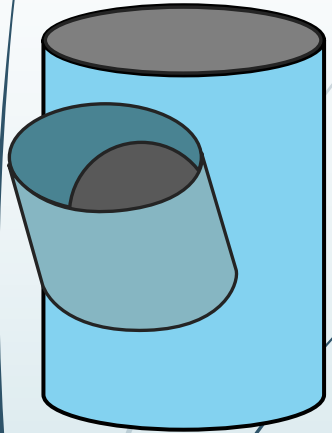
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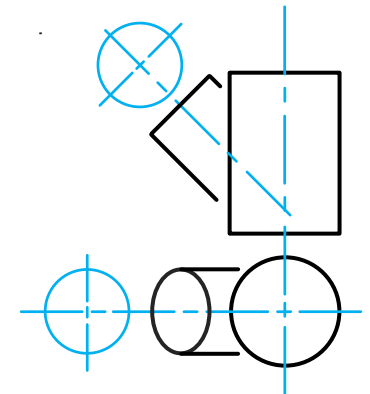
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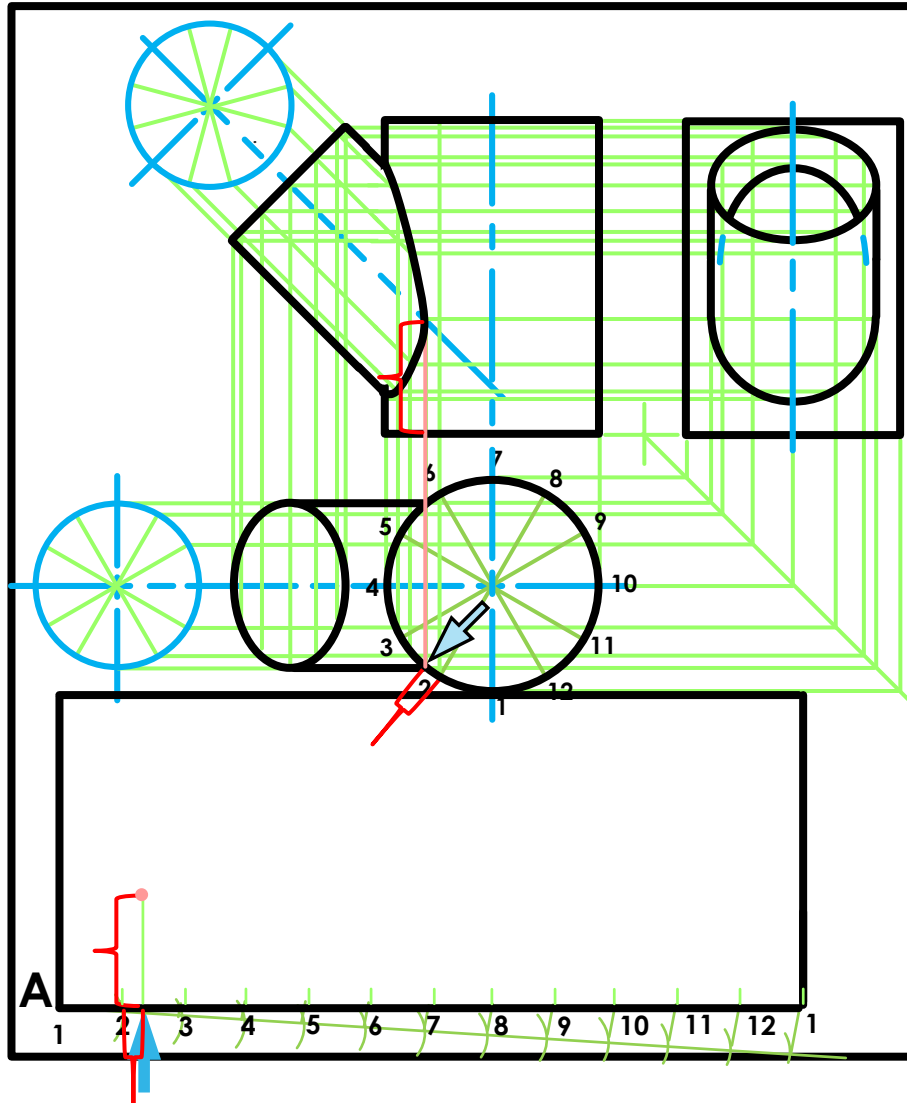
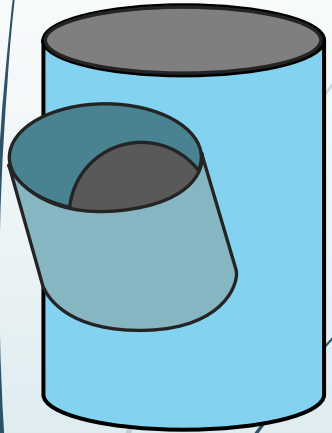
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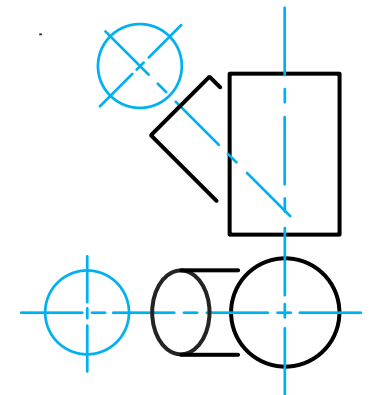
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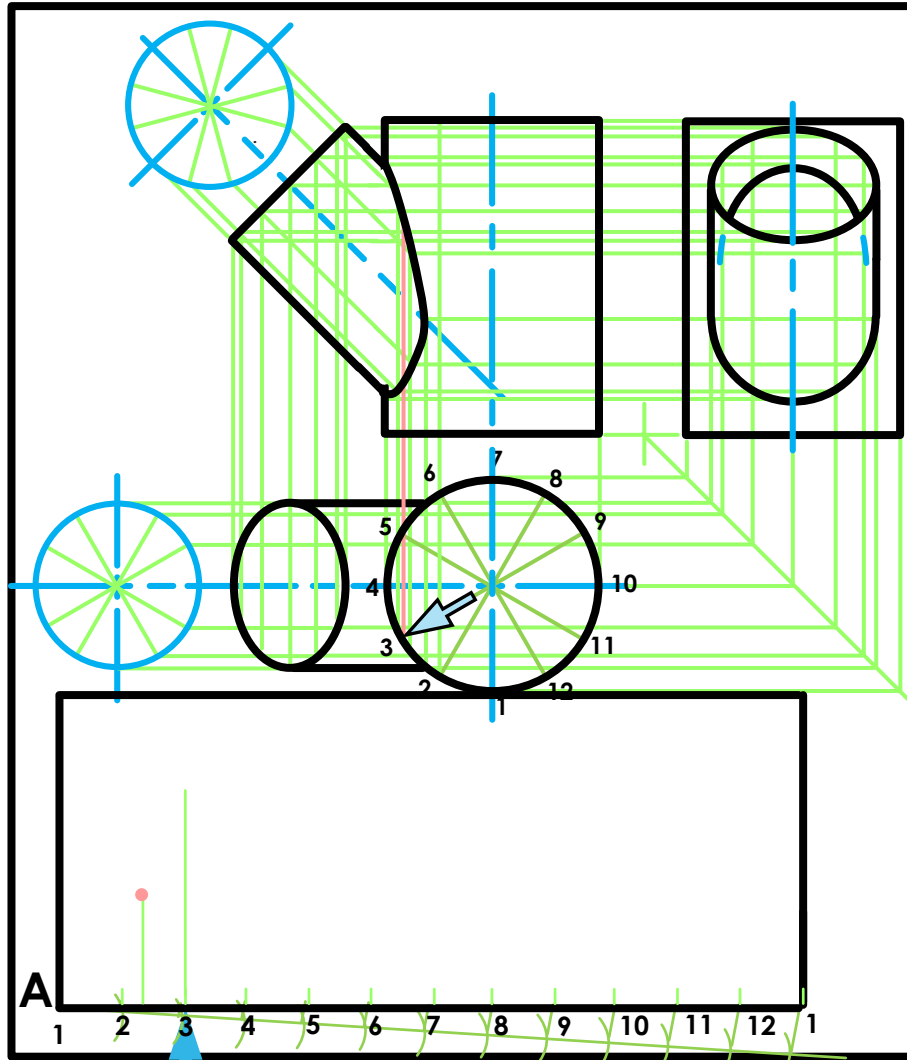
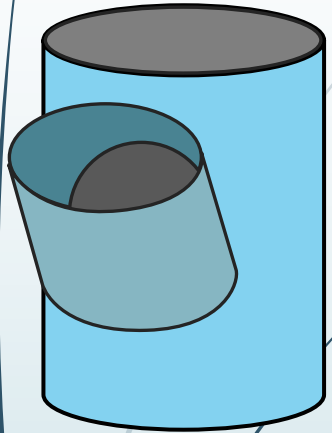
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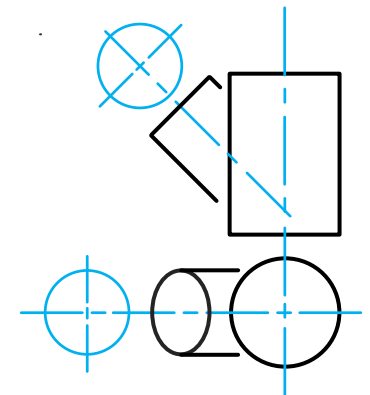
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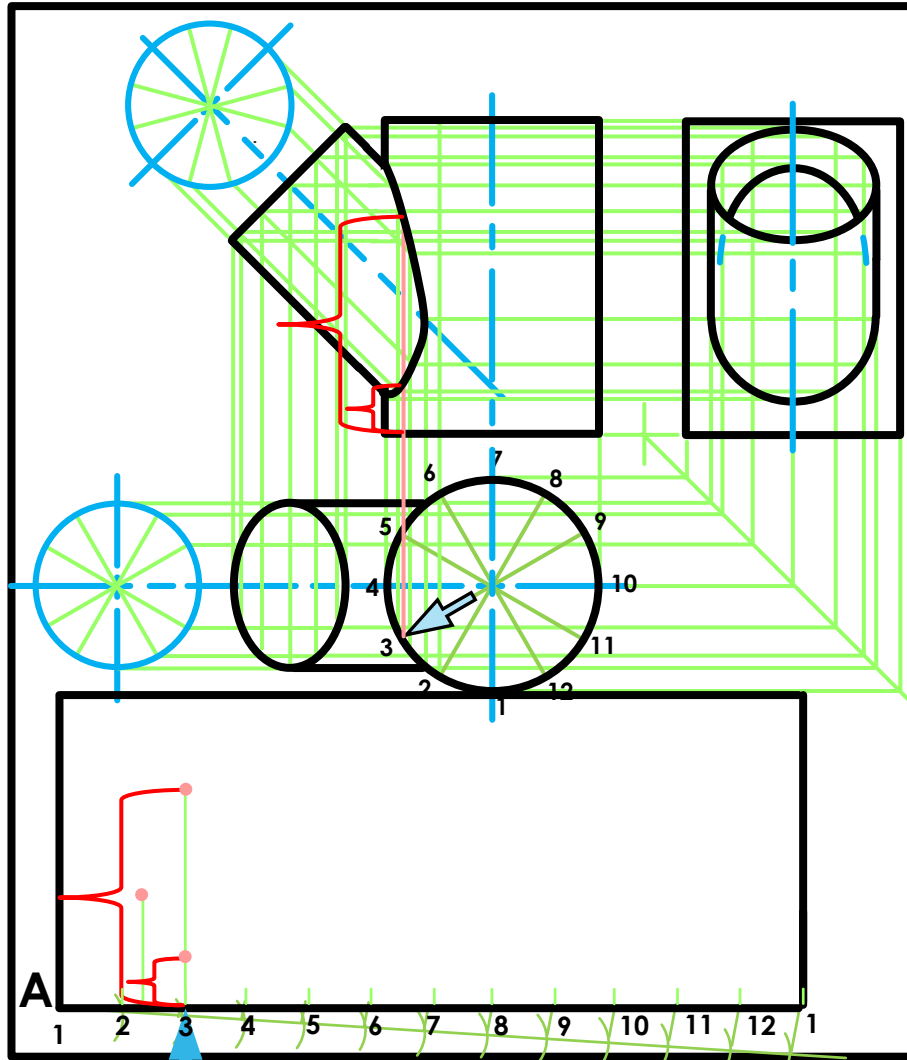
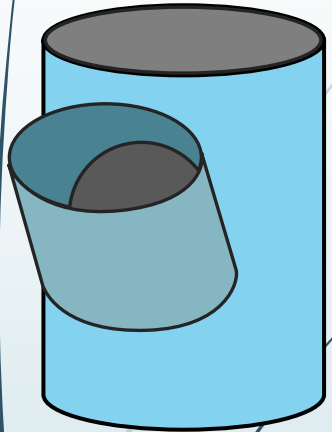
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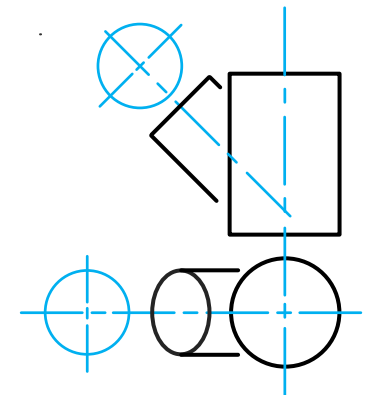
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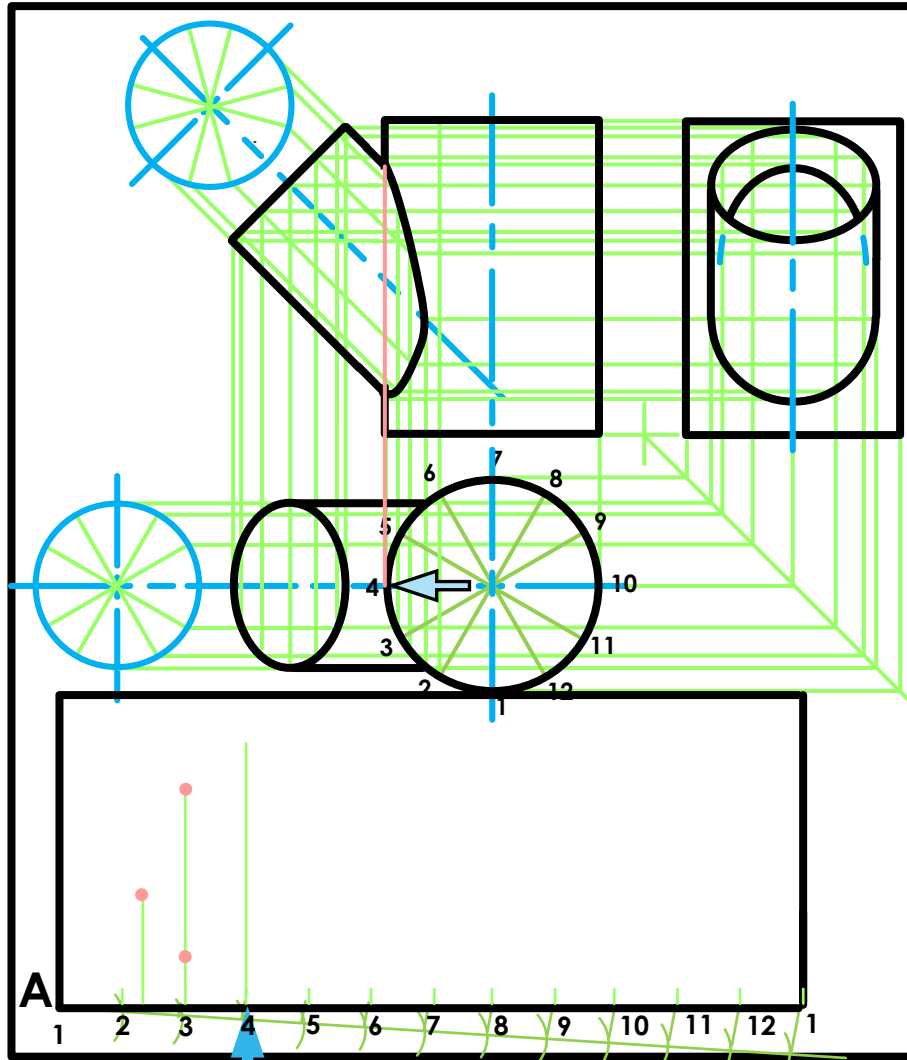
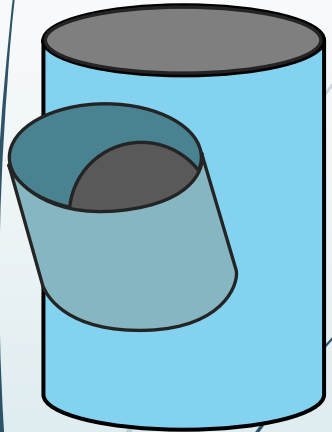
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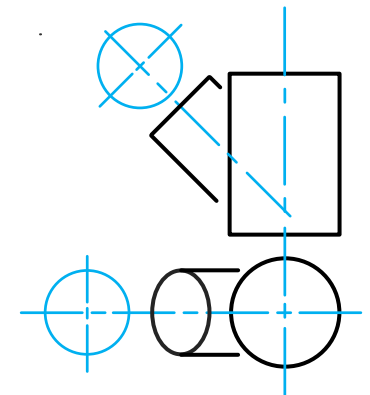
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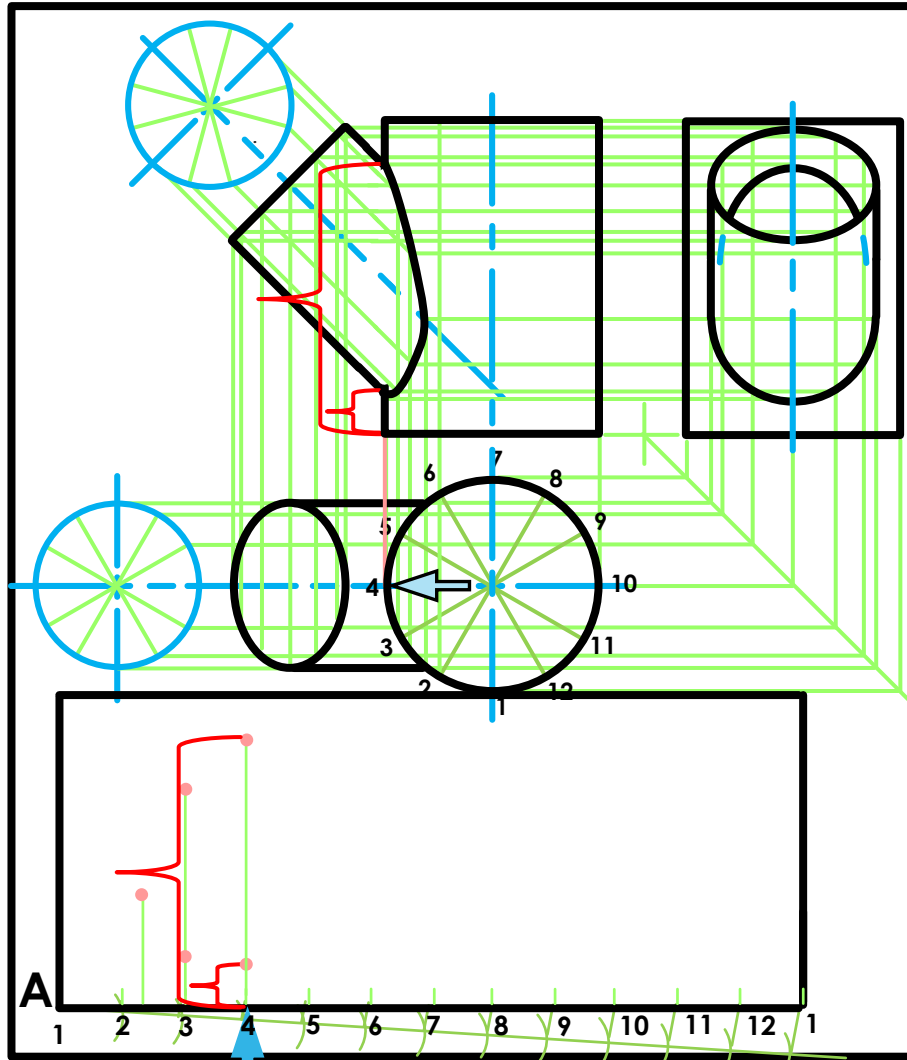
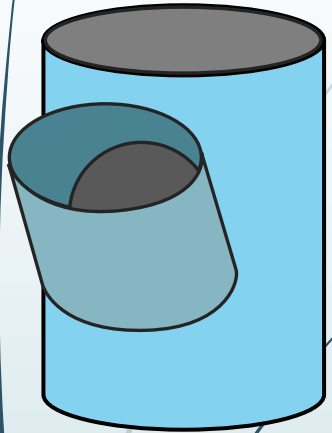
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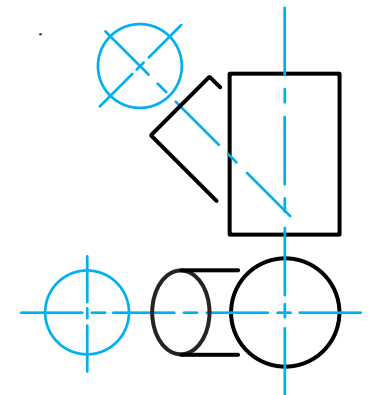
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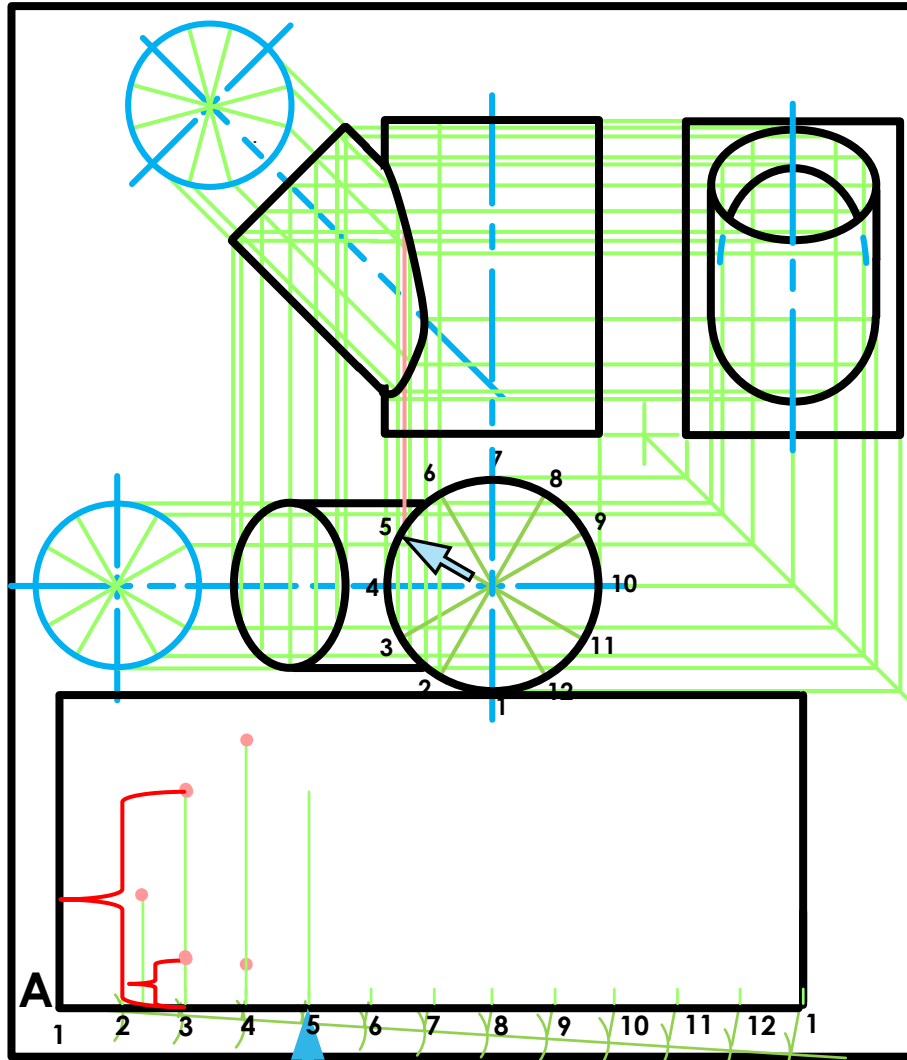
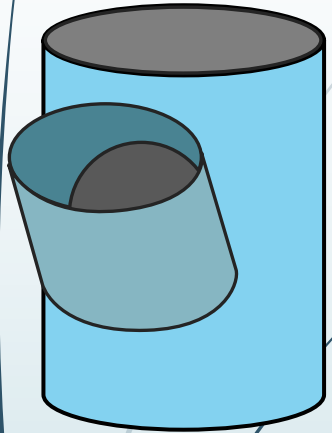
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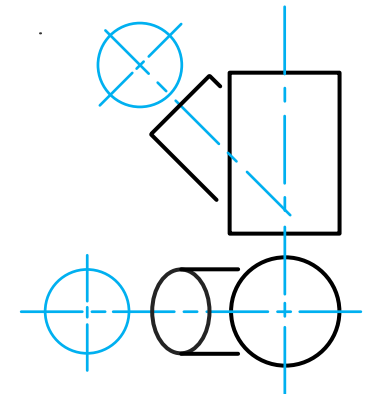
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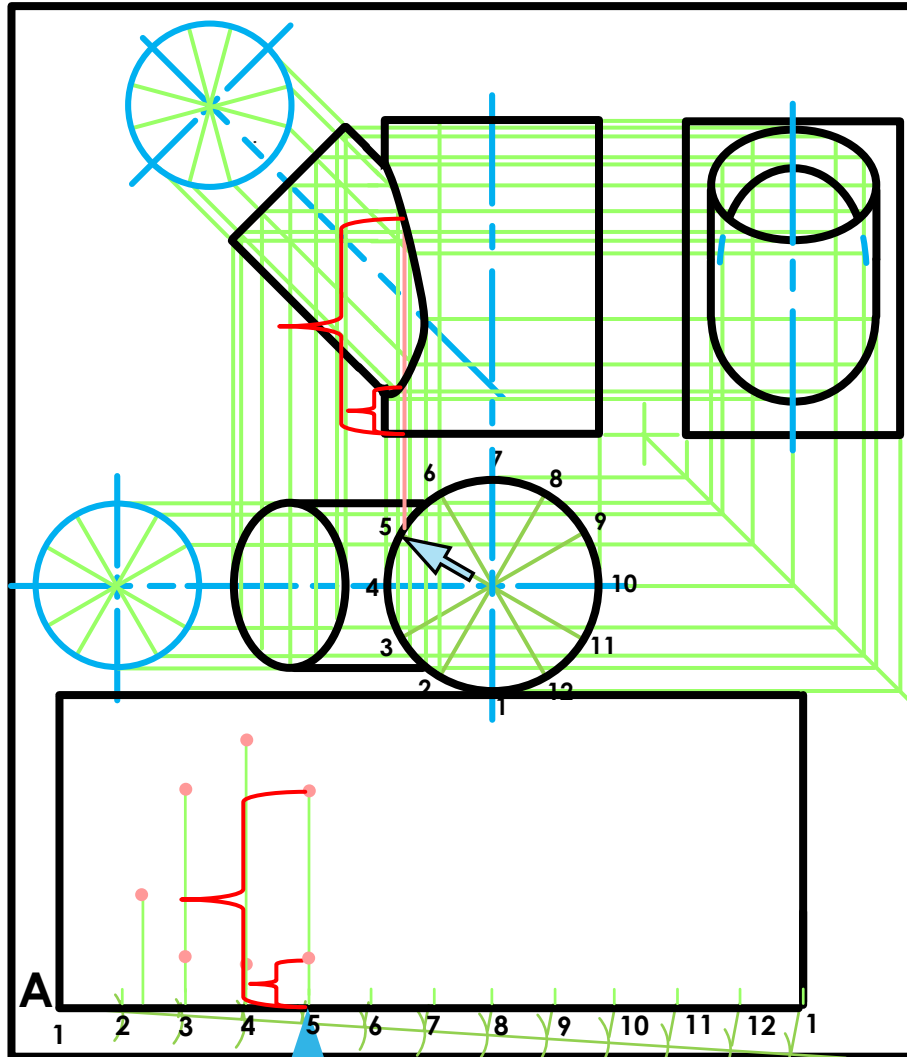
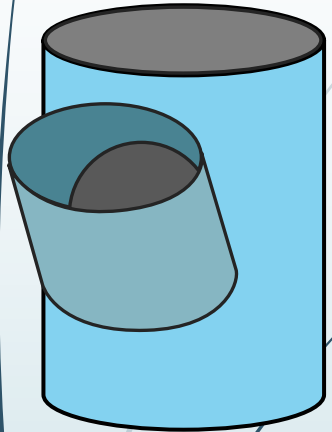
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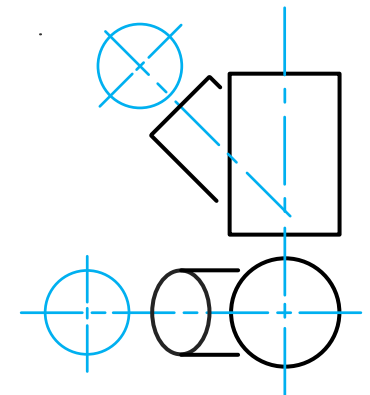
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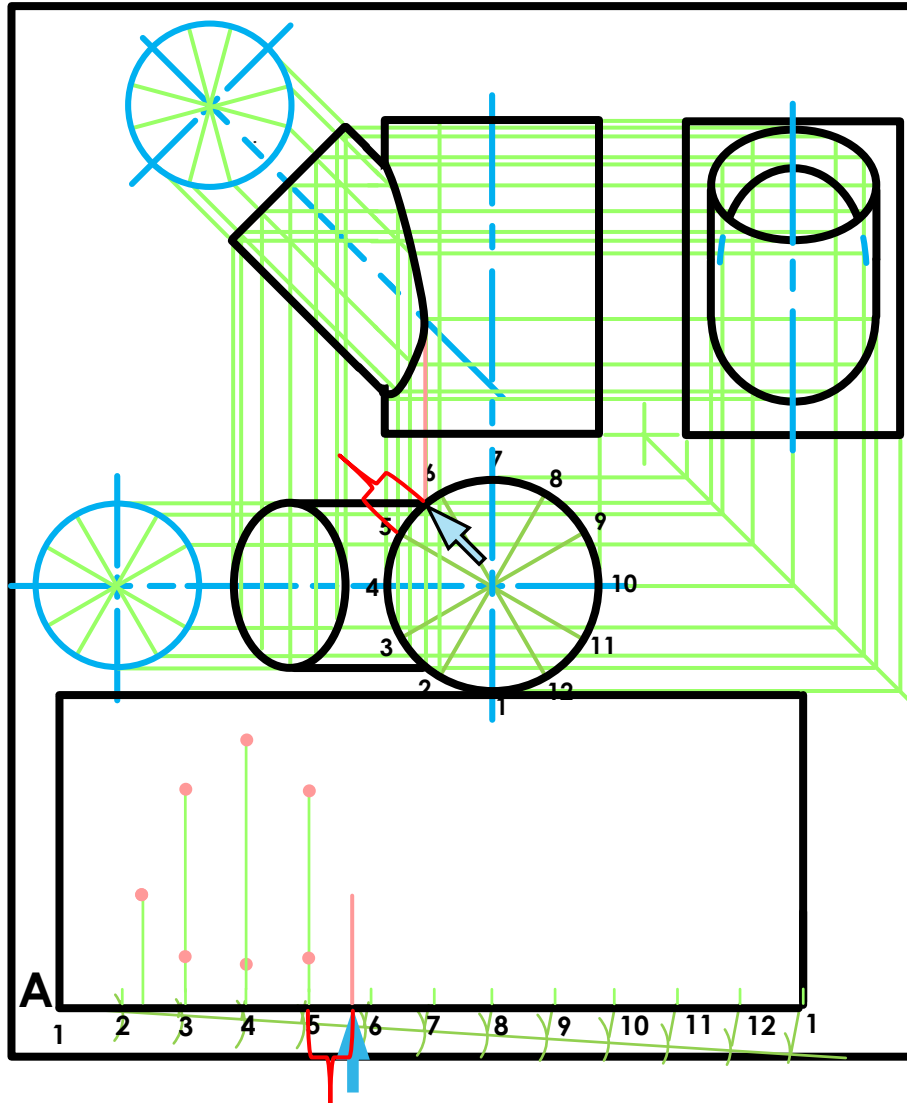
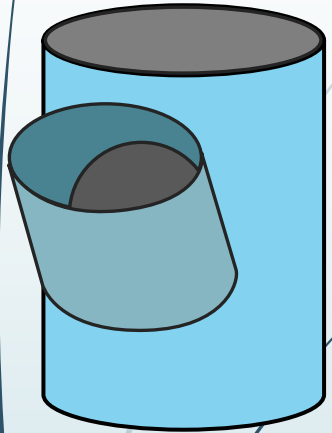
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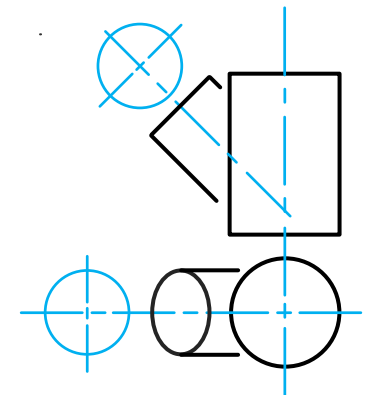
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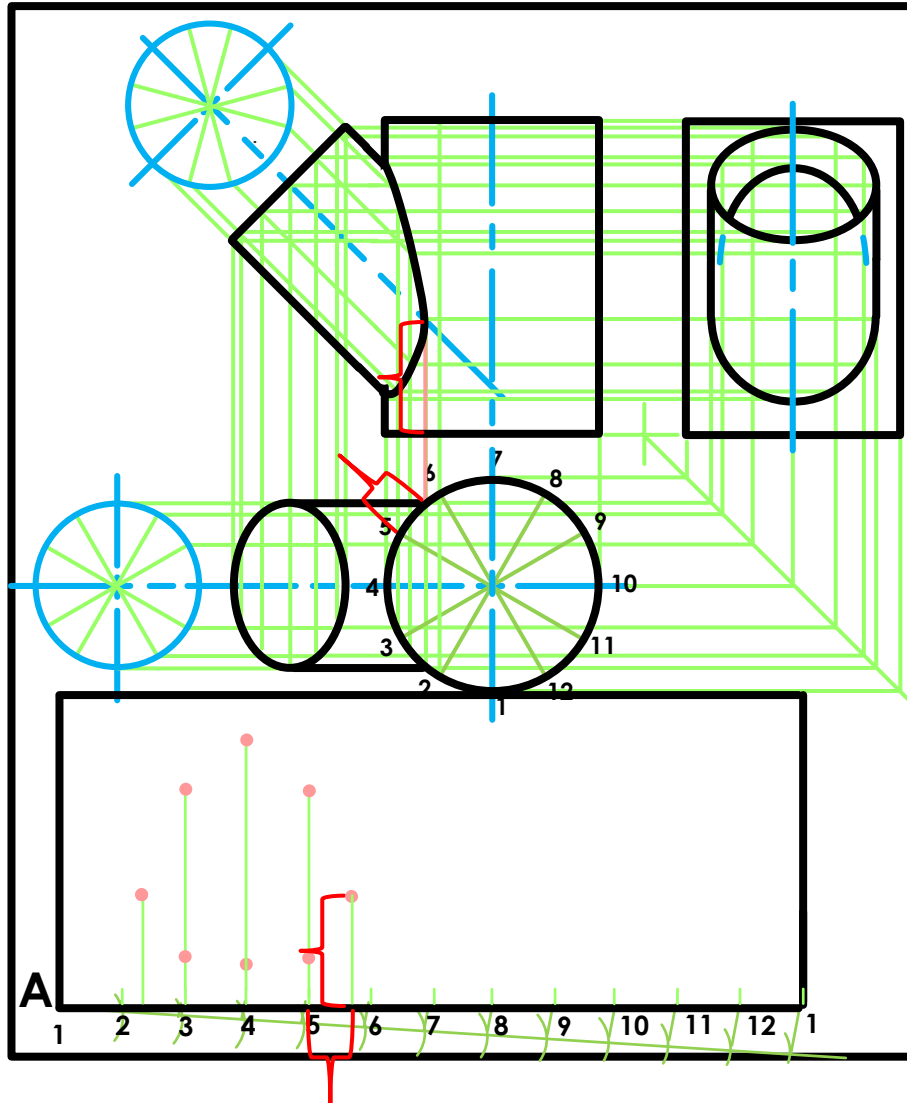
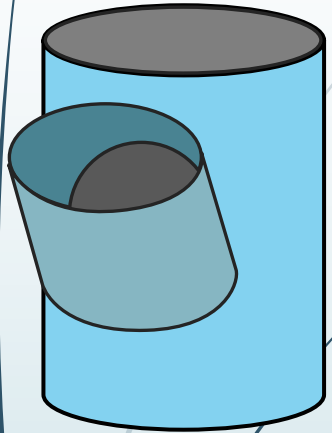
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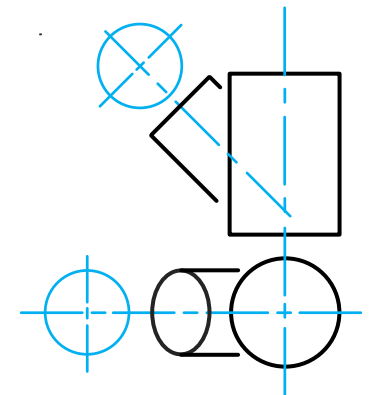
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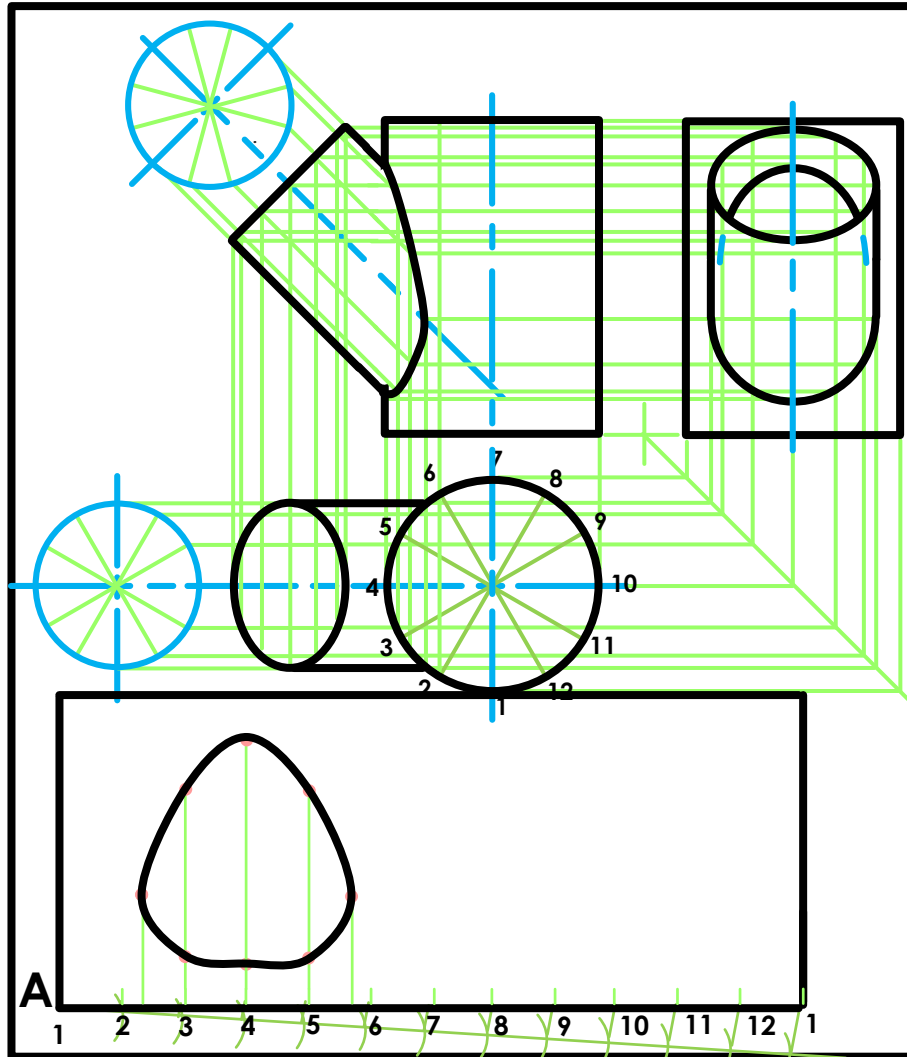
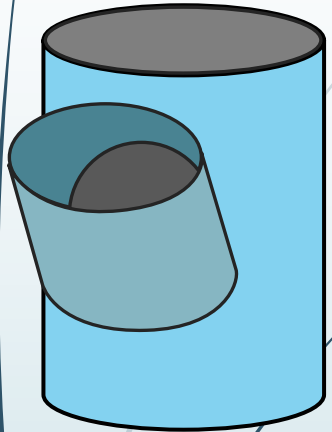
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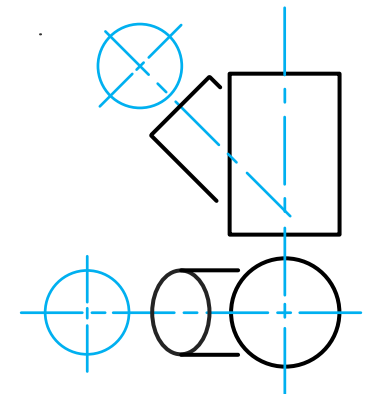
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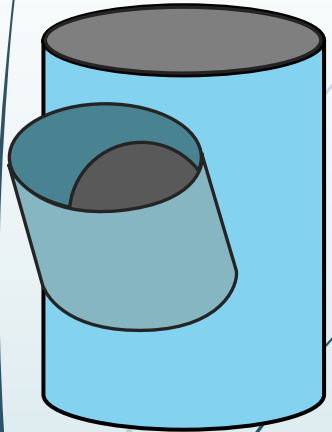
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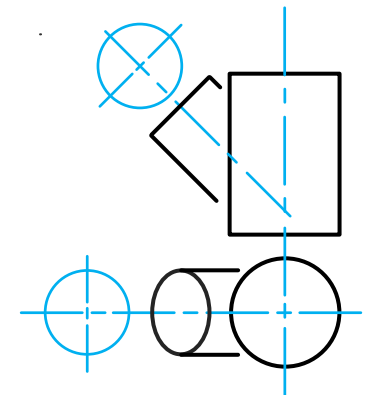
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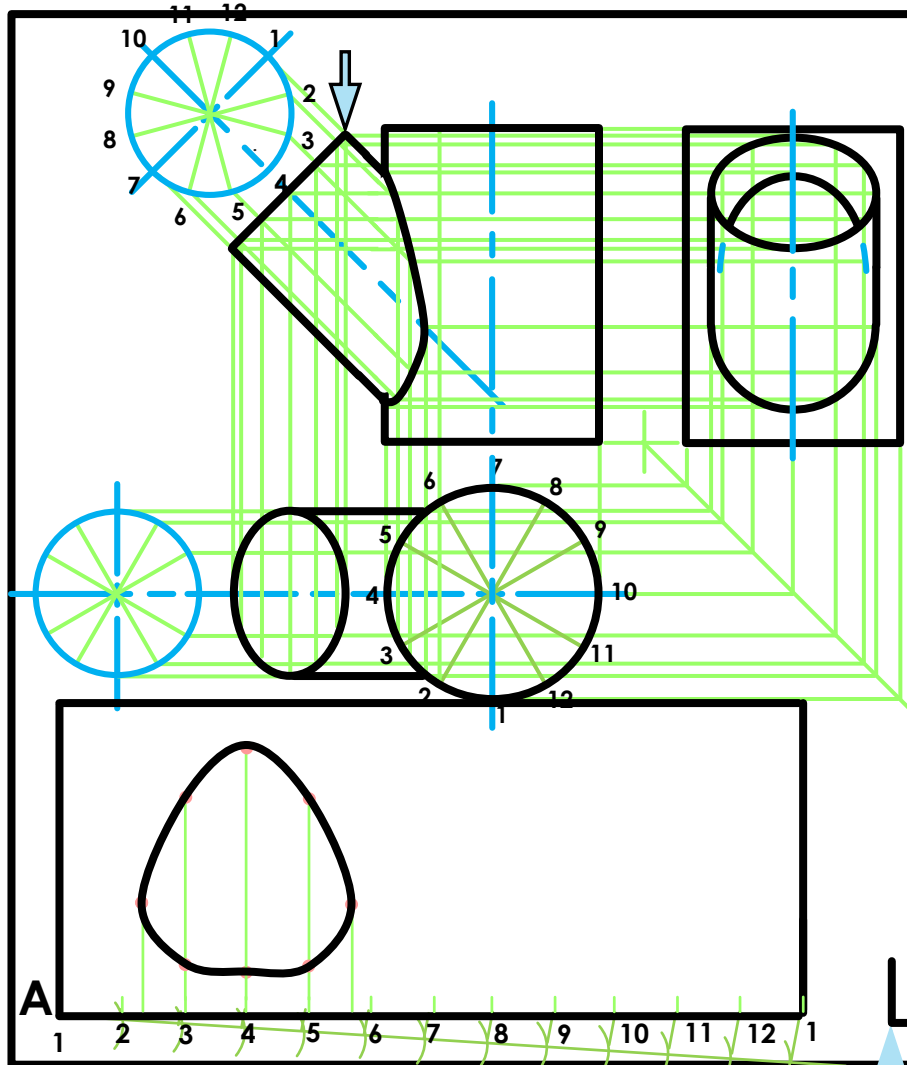
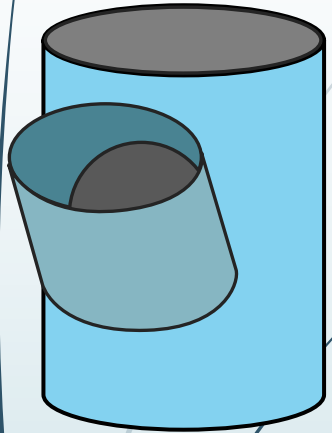
1. The given top view.
2. The complete front view clearly showing the curve of interpenetration.
2. The complete left view.
3. Develop the main cylinder and to show the interpenetration clearly. Develop the branch cylinder.

\* Show ALL hidden detail.

\* Show ALL necessary construction.



# Interpenetrations



$$\begin{aligned}
 A &= 2\pi r \\
 &= 2 \times 3,141592654 \times 25 \\
 &= 157 \text{ mm} \\
 &= \frac{157}{12} \\
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 \end{aligned}$$

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## Question 2: Interpenetration

### Given:

- \* The incomplete front view and top view of a cylinder at 45° that has to fit around another cylinder. The axes of both cylinders lie in a common vertical plane.
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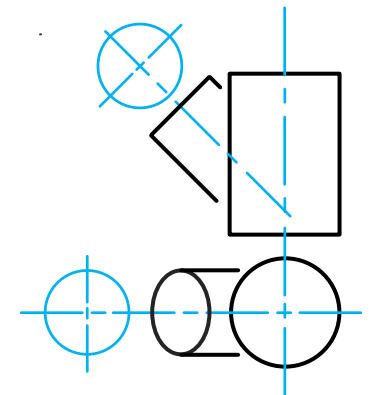
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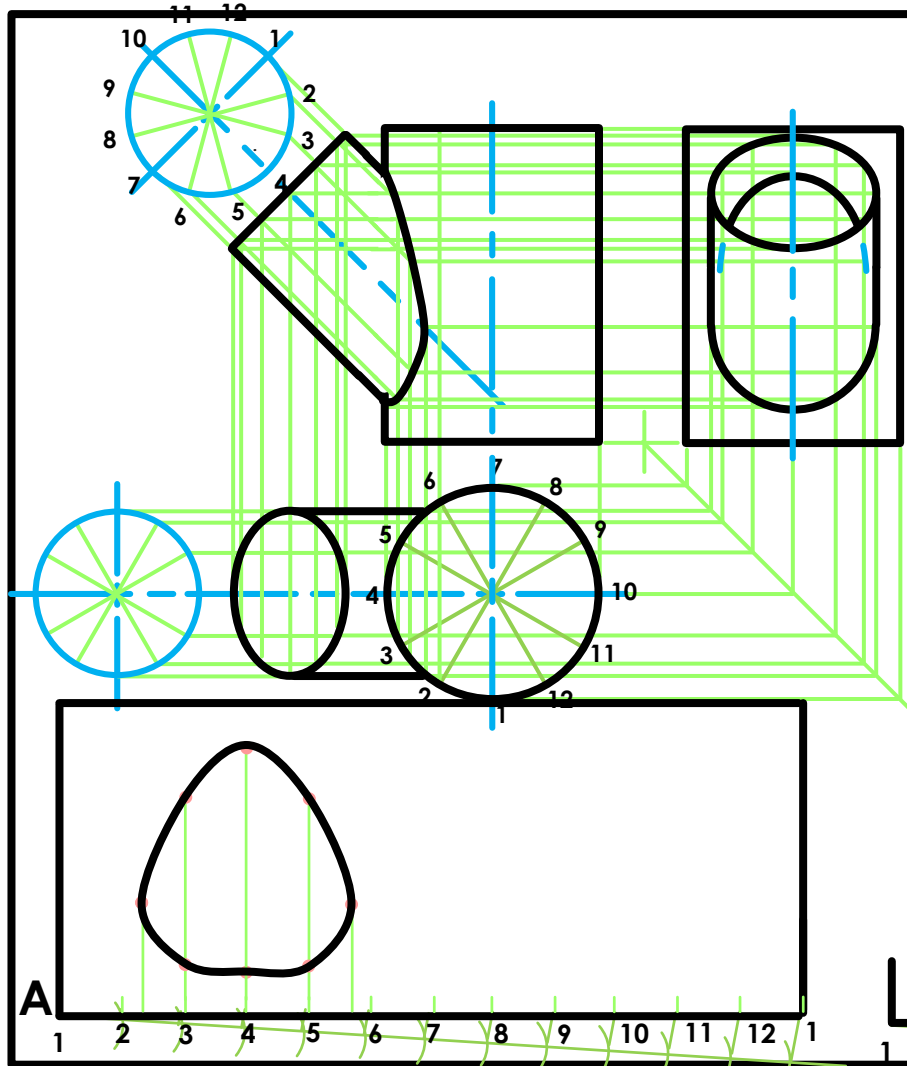
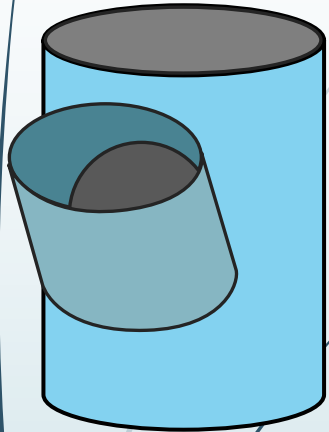
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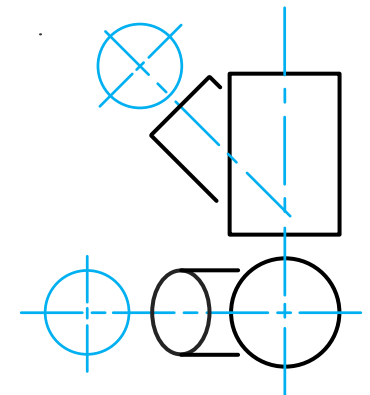
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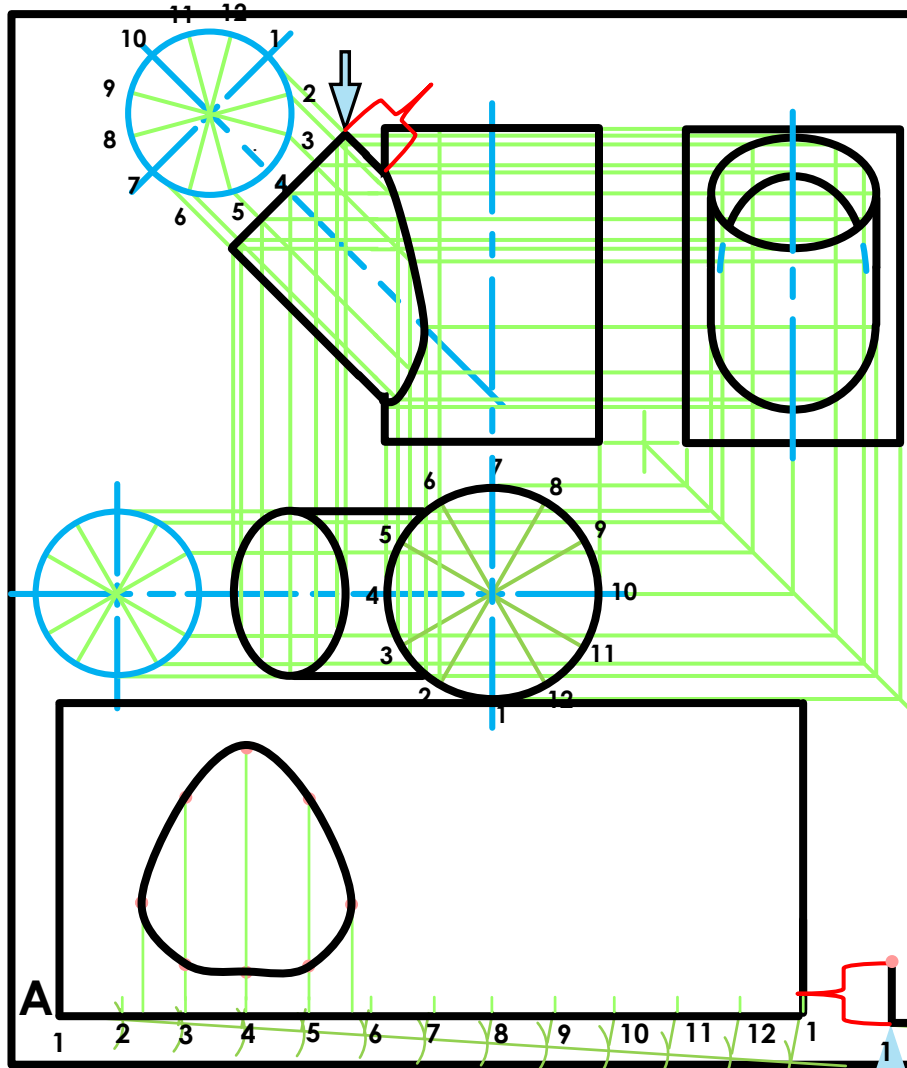
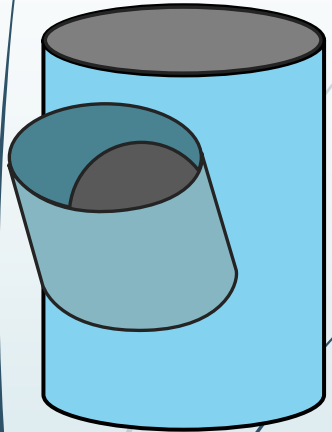
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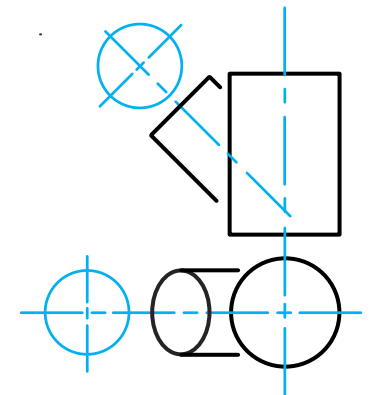
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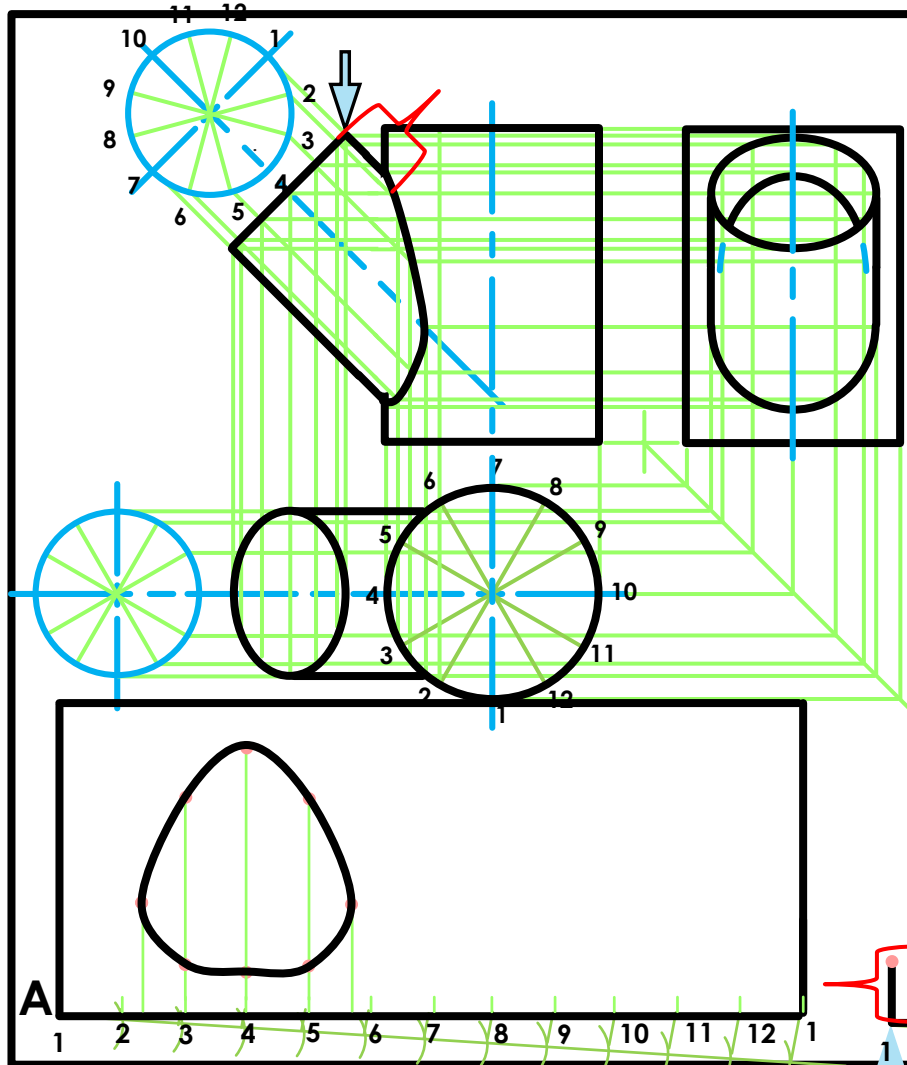
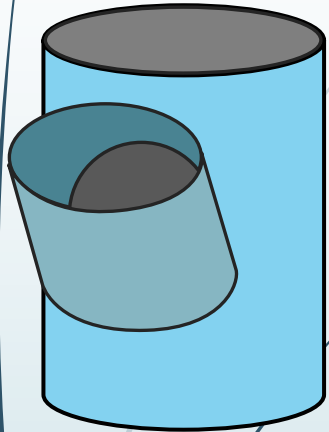
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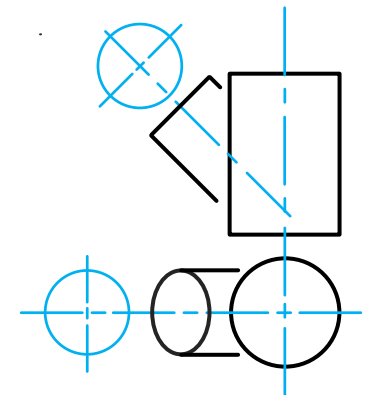
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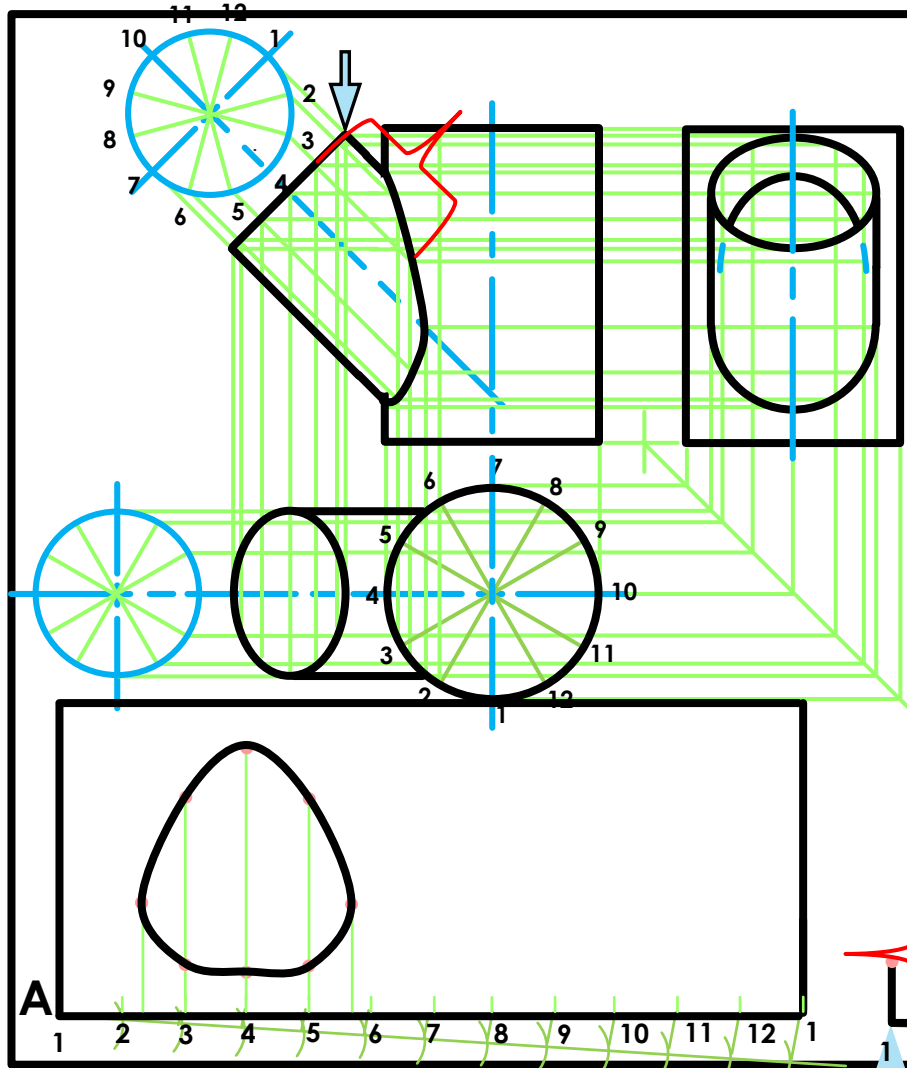
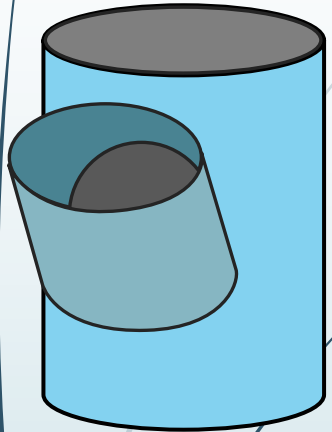
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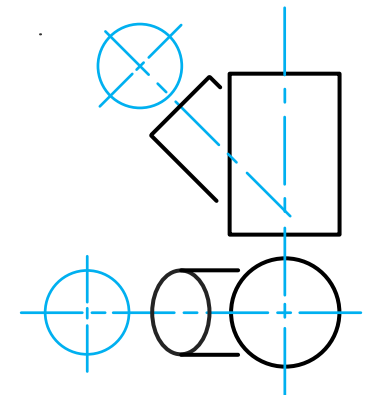
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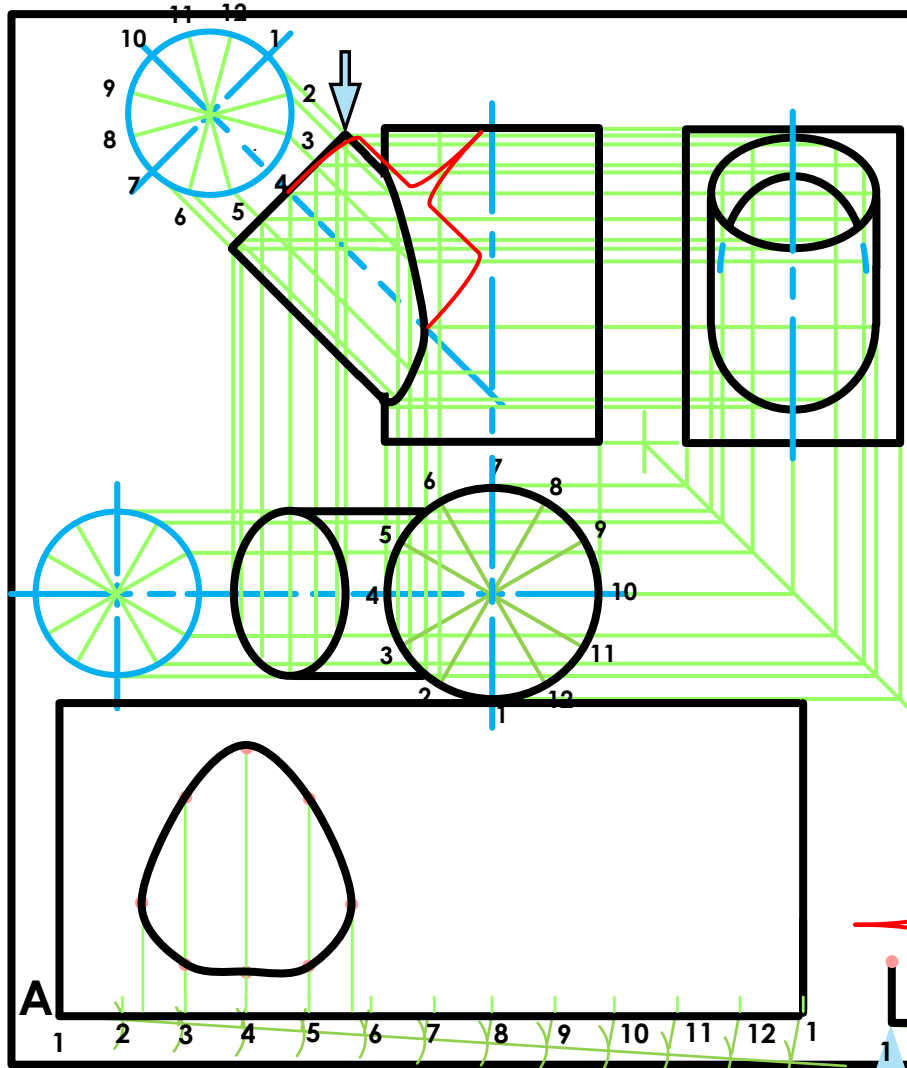
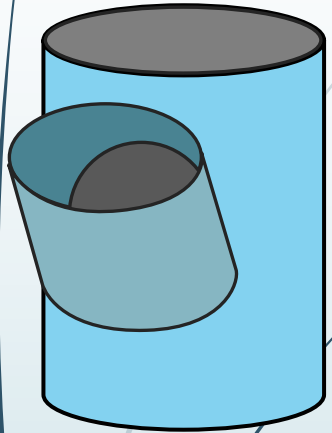
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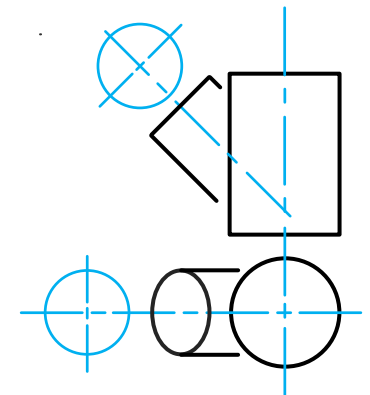
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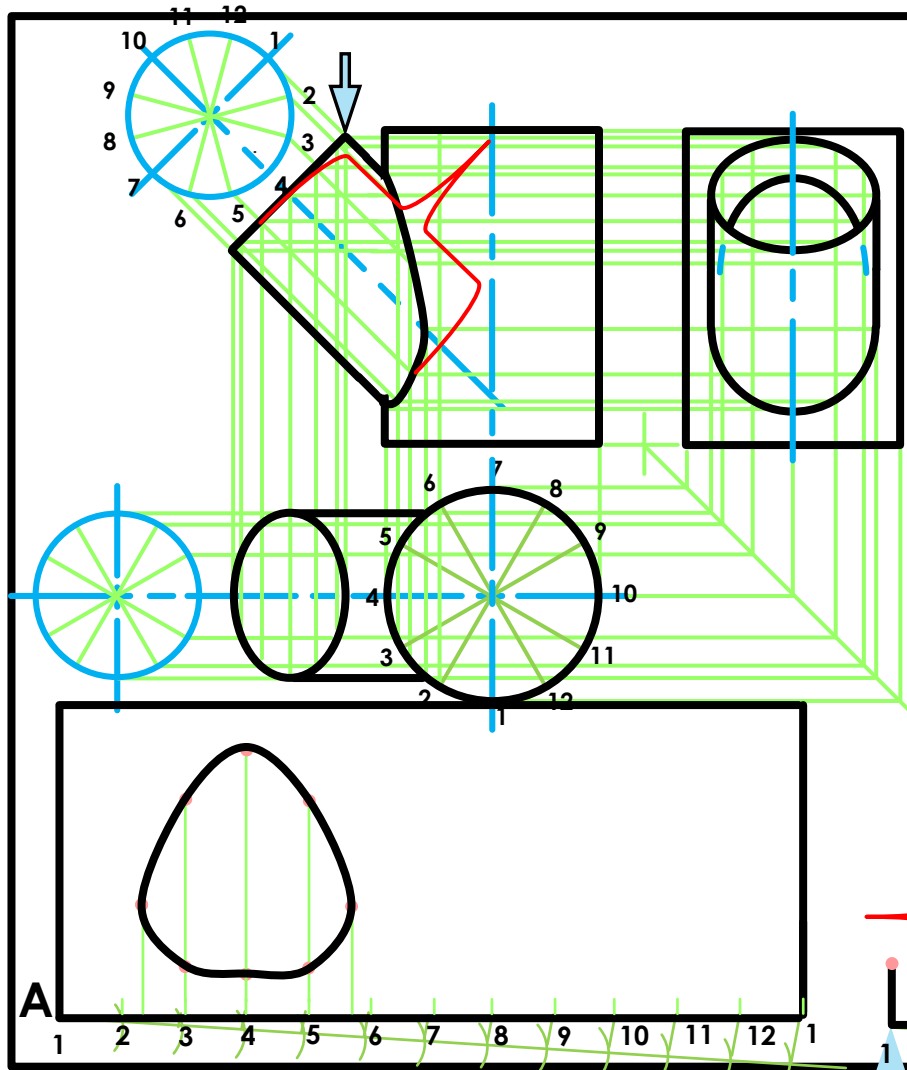
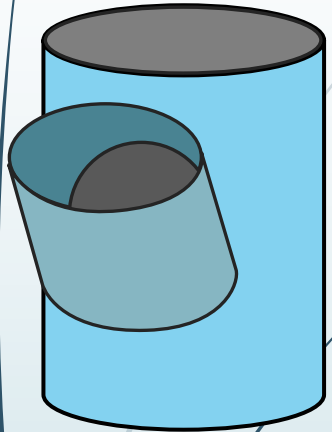
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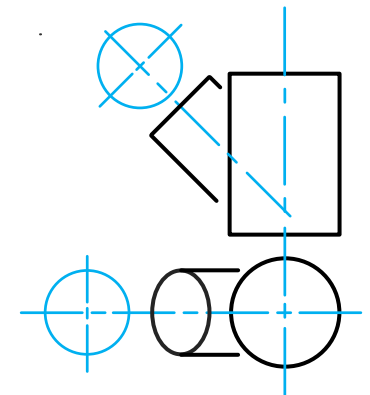
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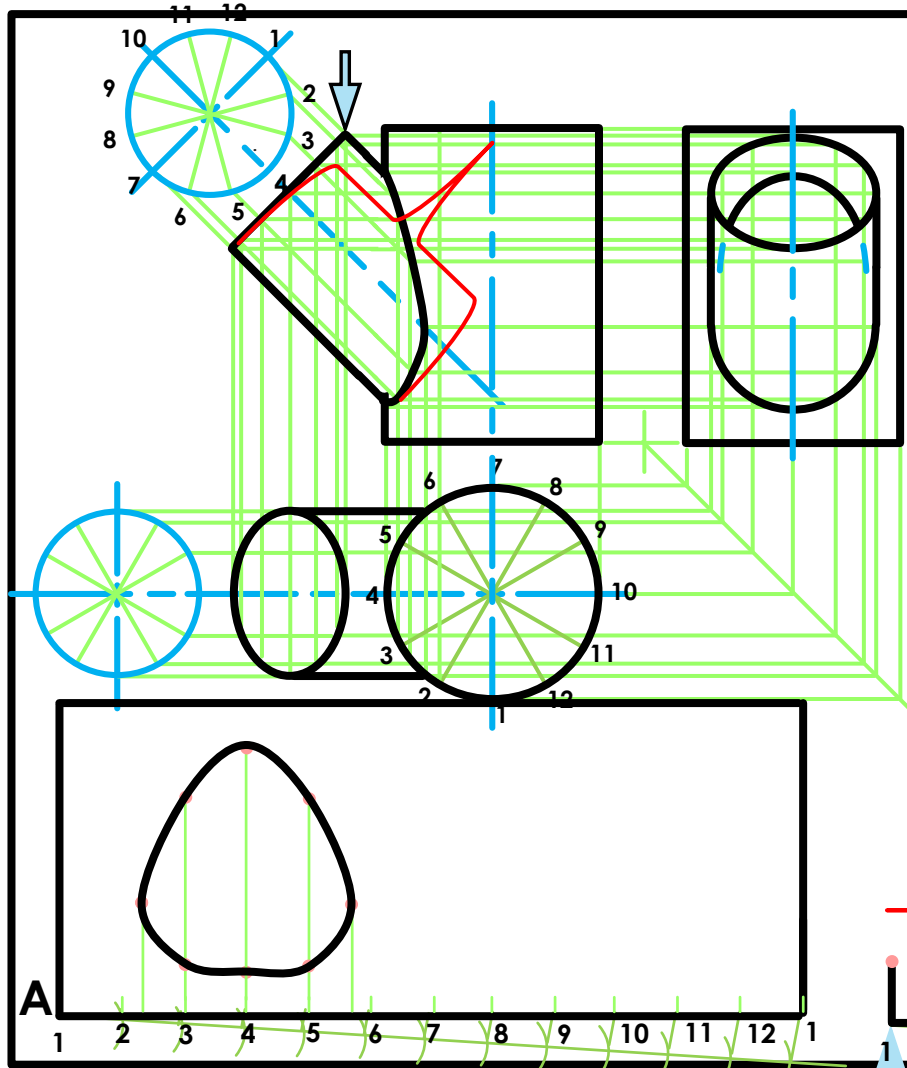
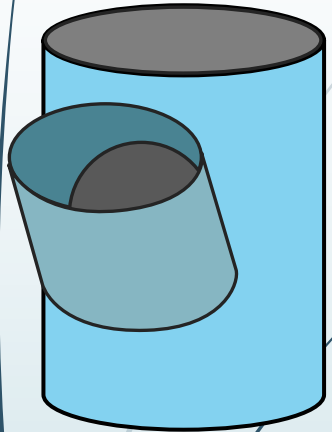
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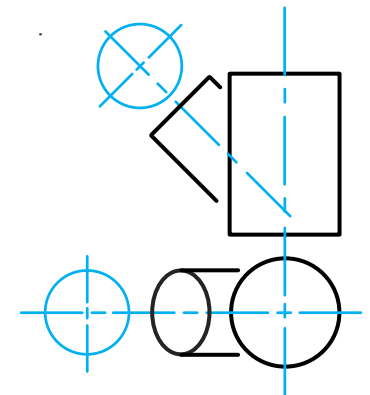
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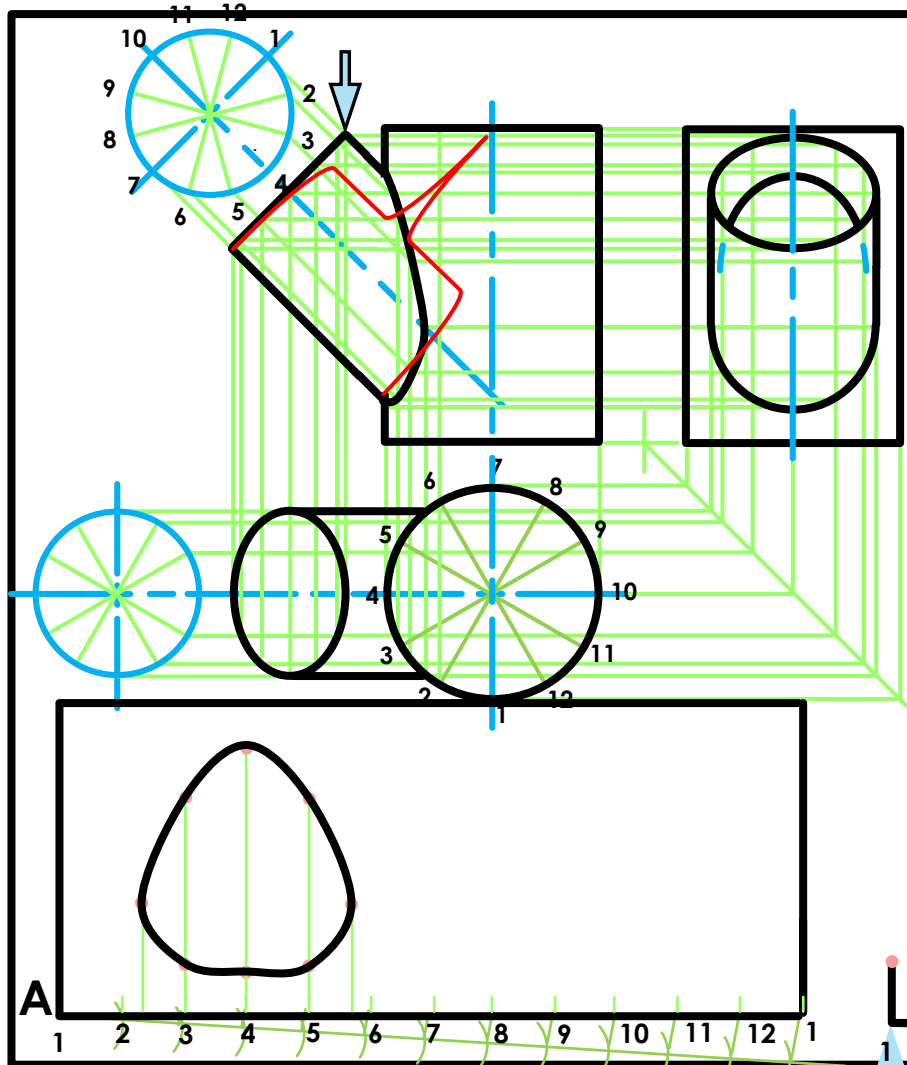
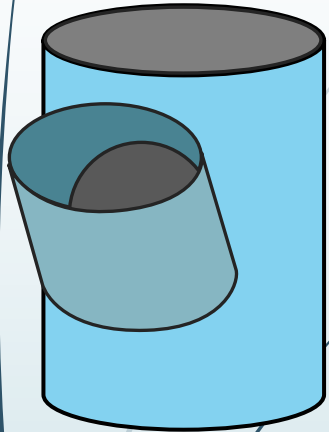
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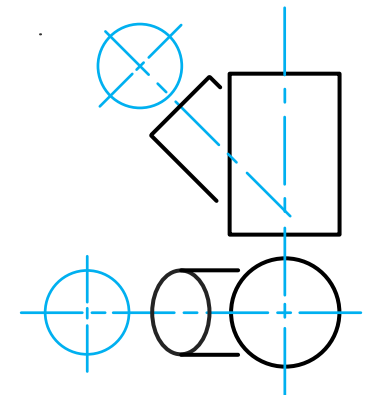
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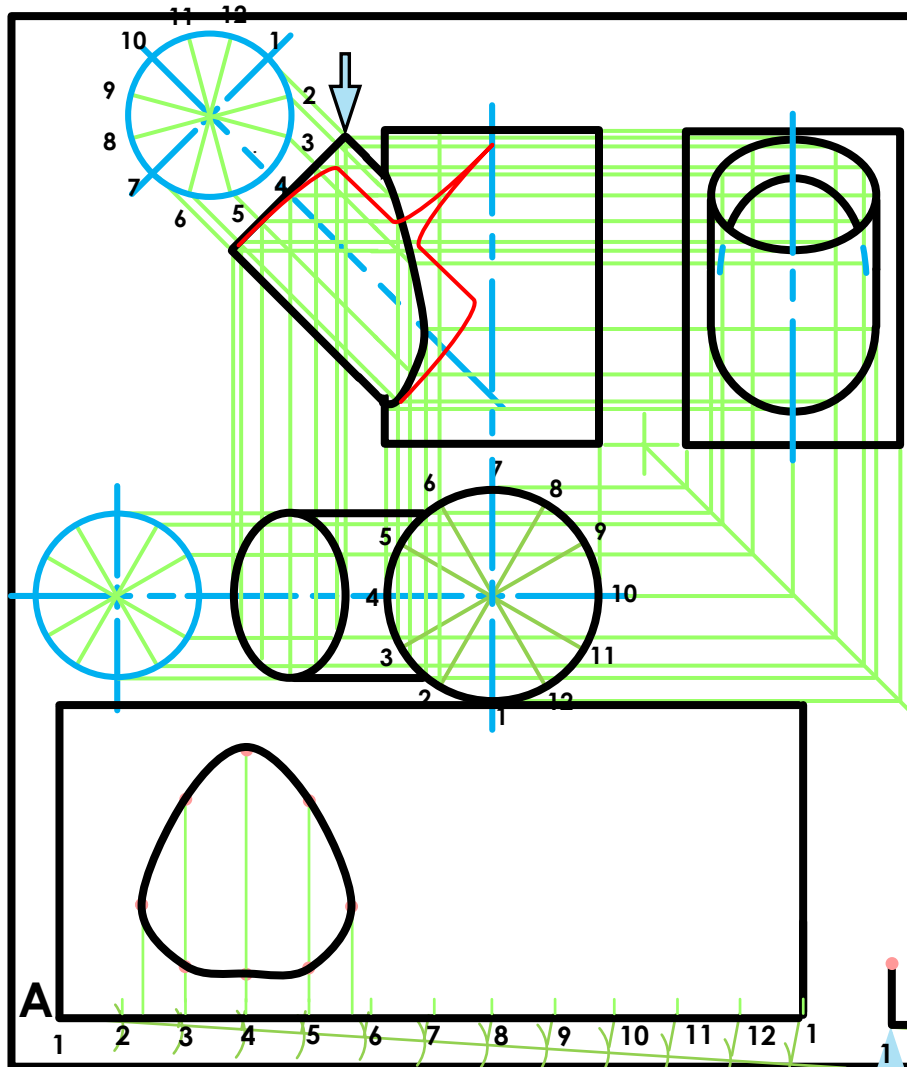
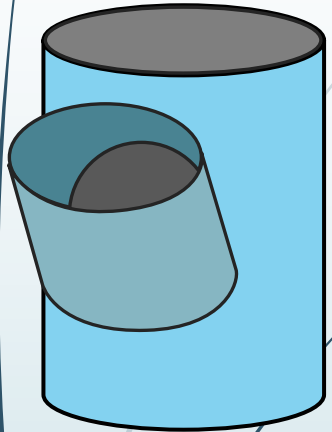
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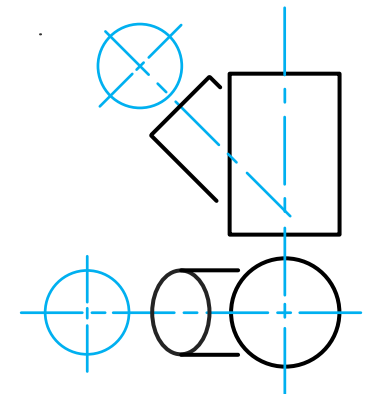
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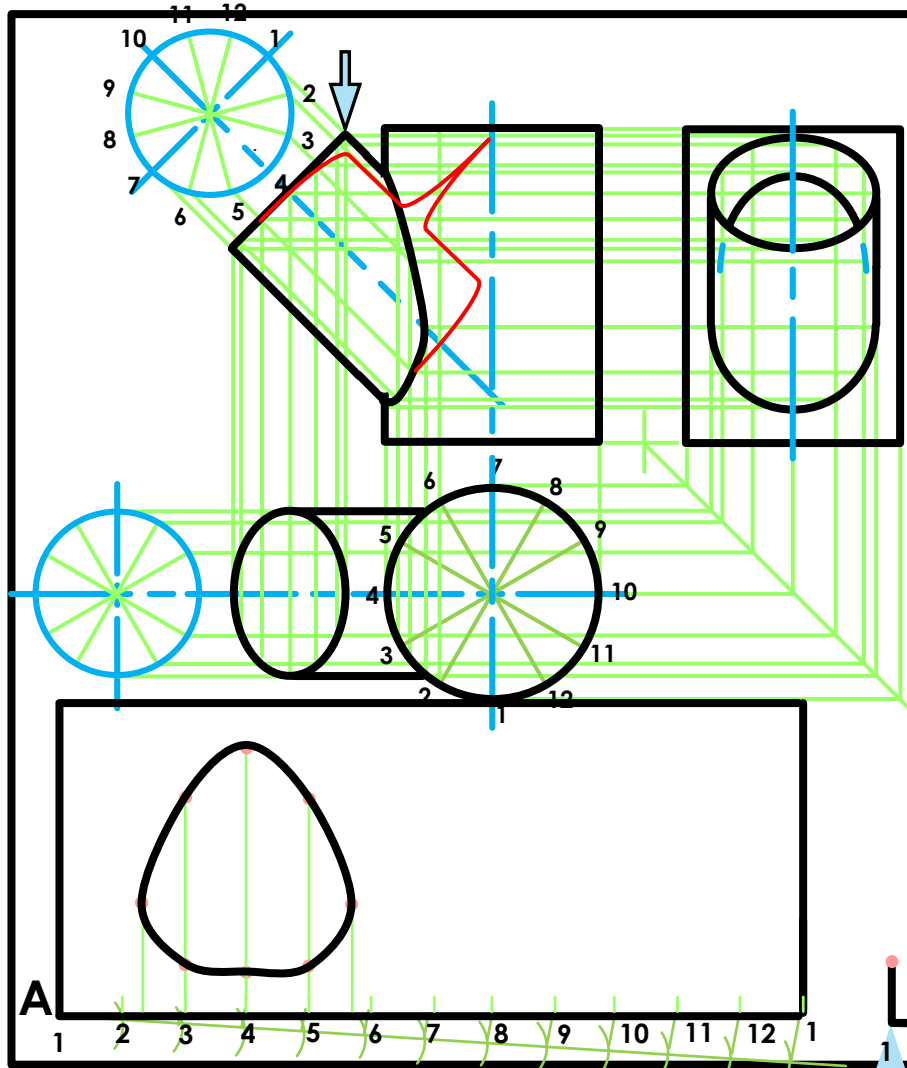
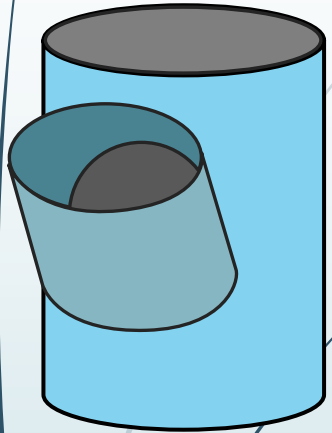
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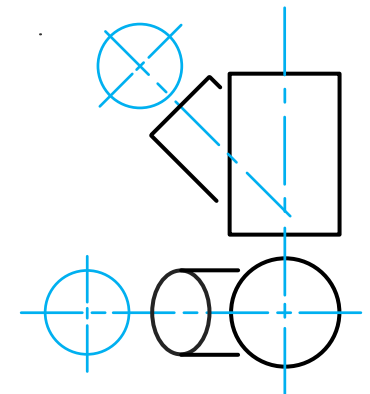
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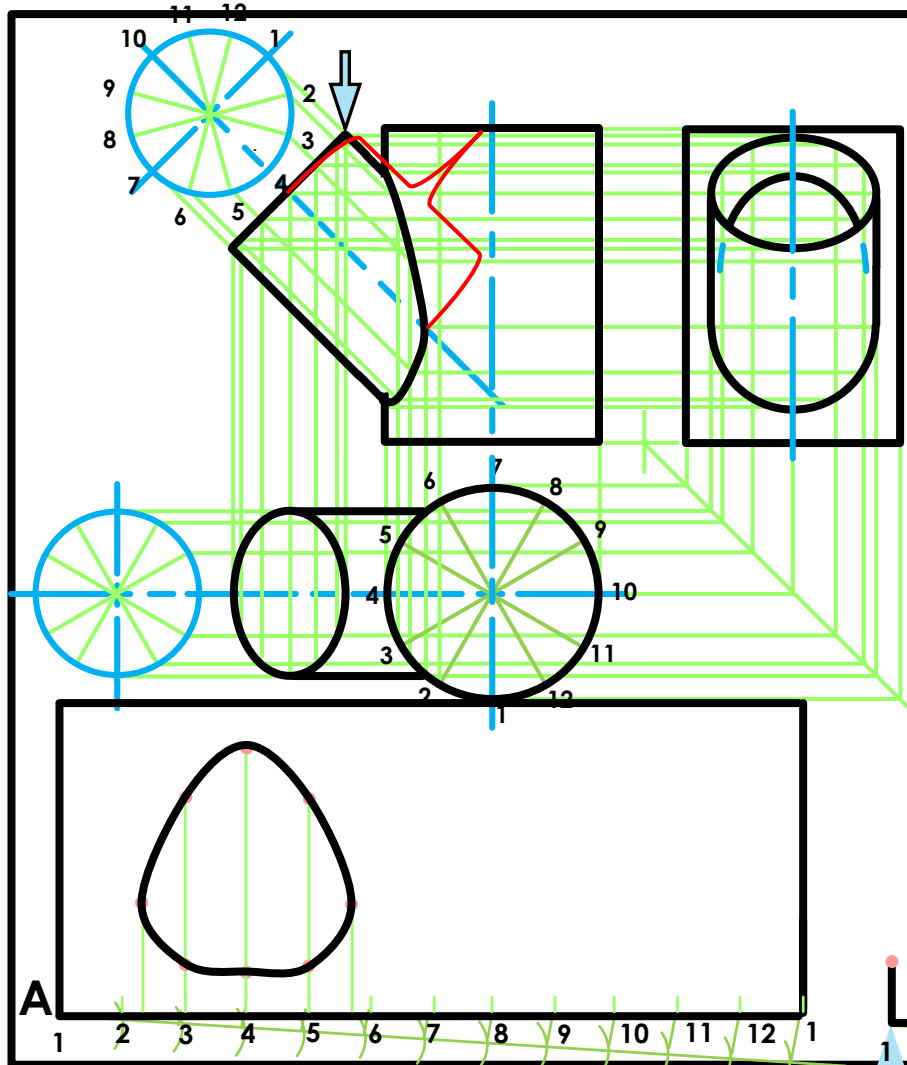
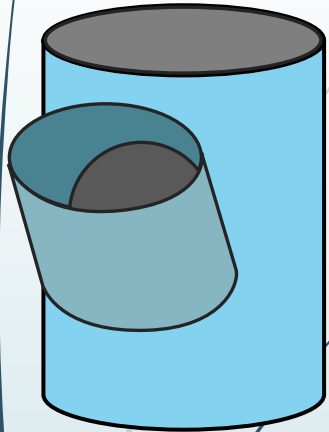
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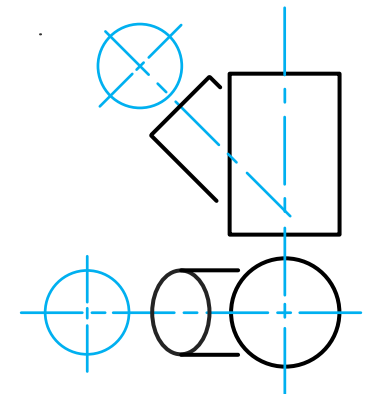
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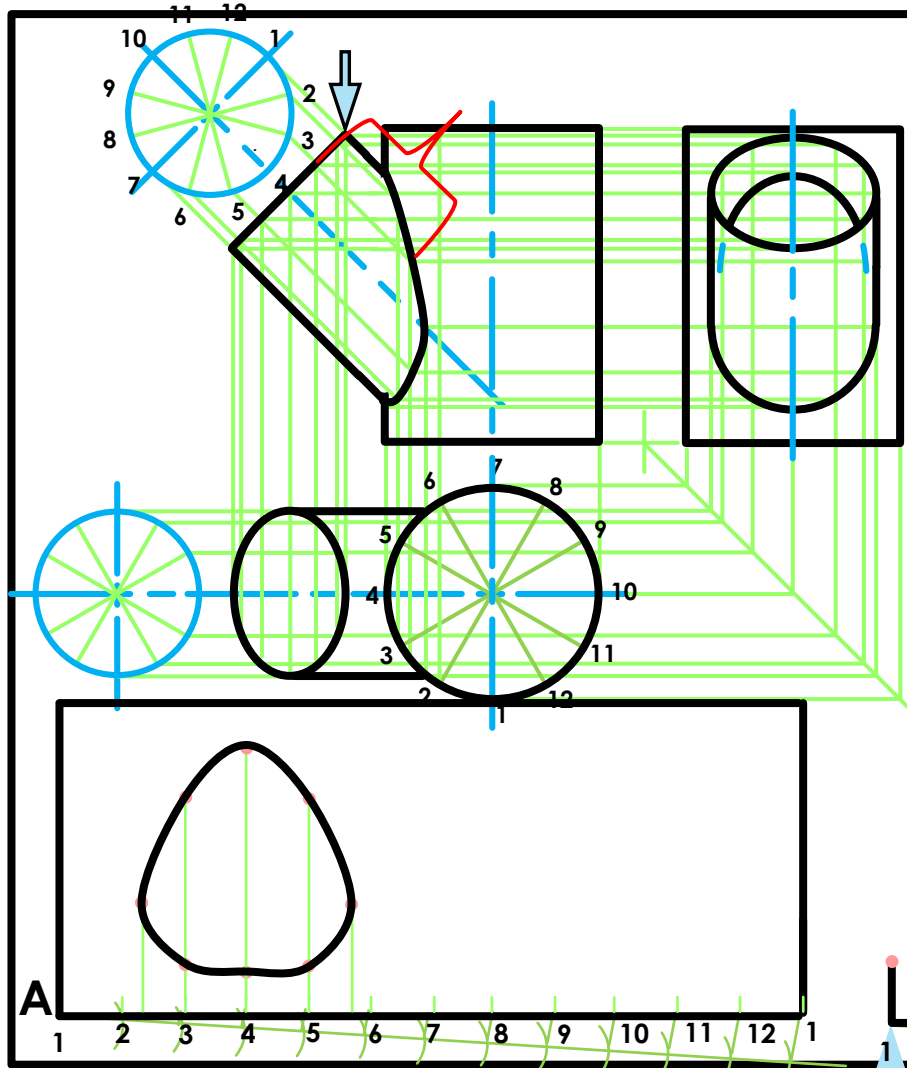
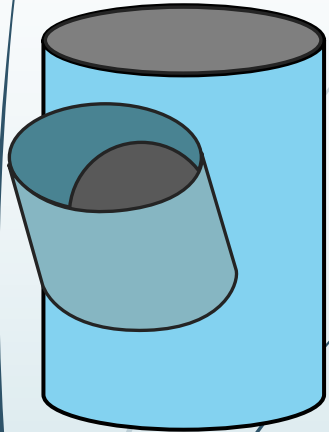
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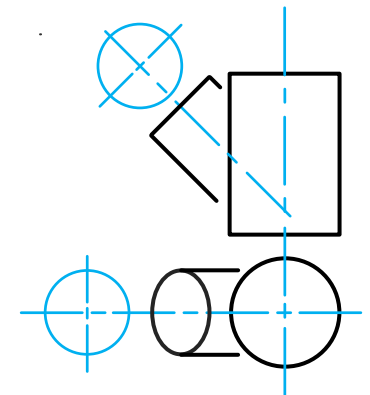
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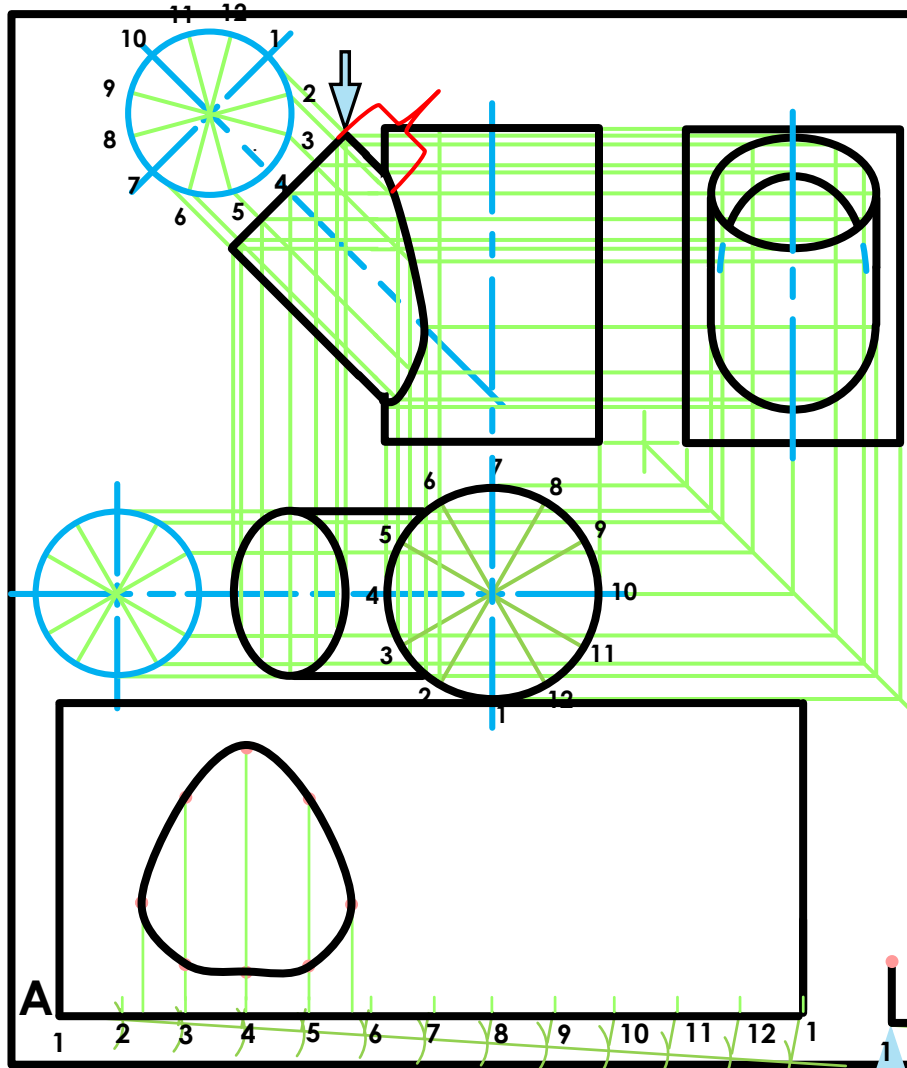
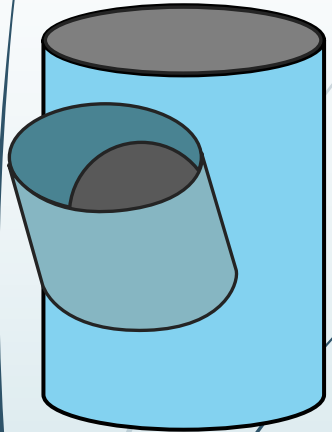
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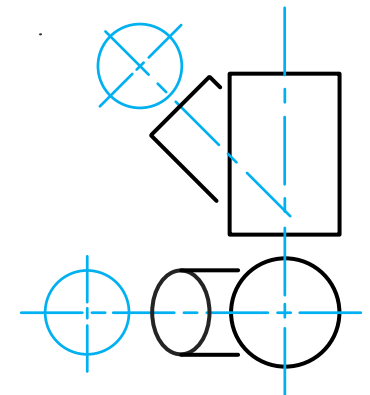
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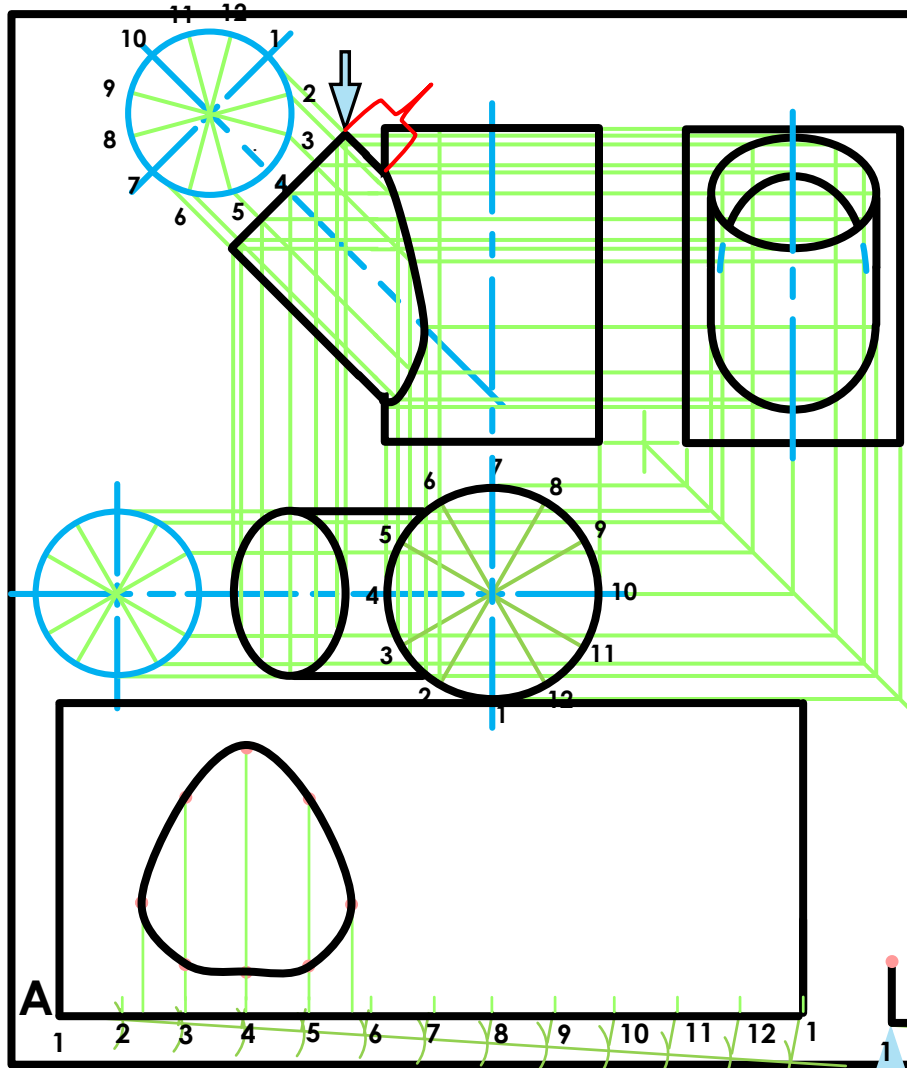
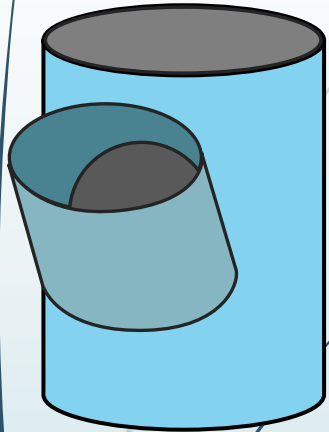
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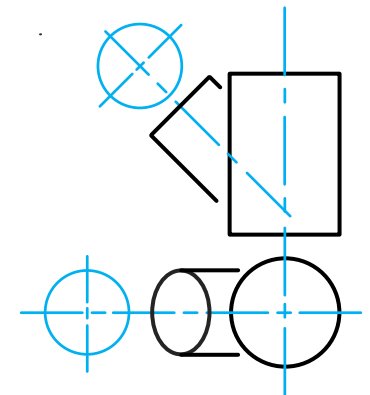
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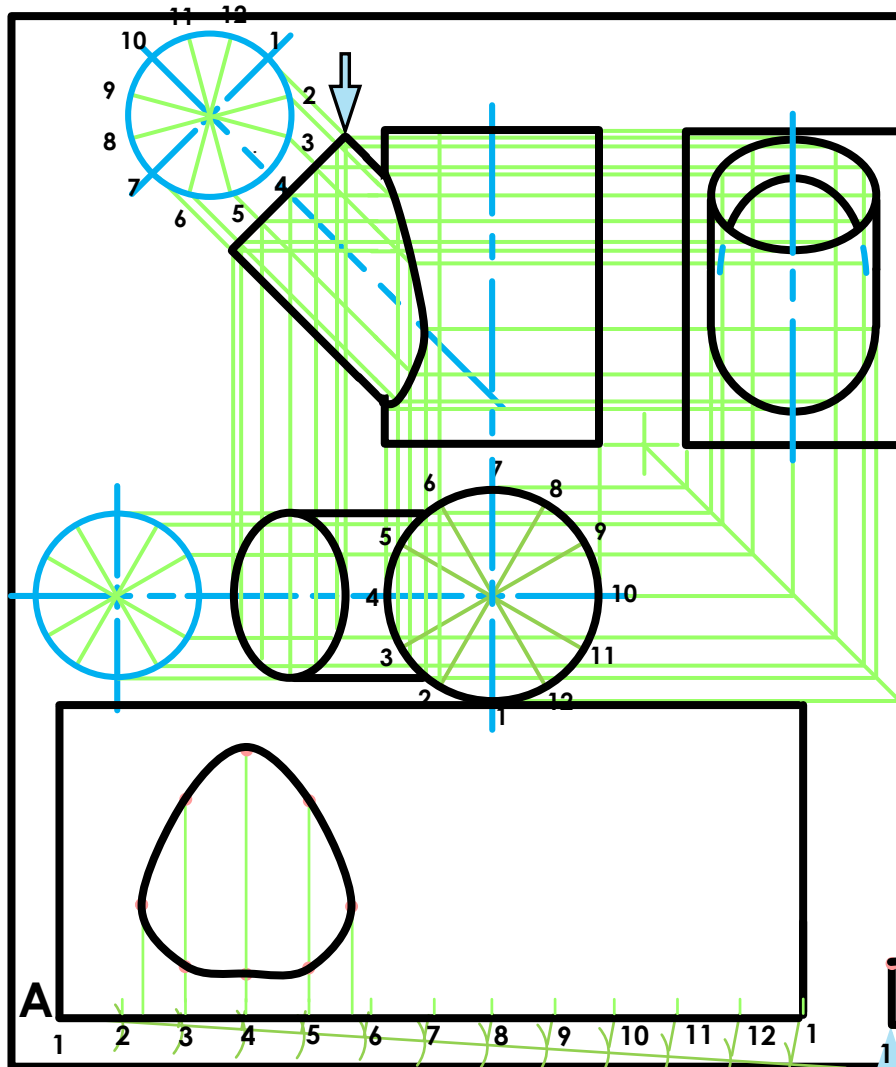
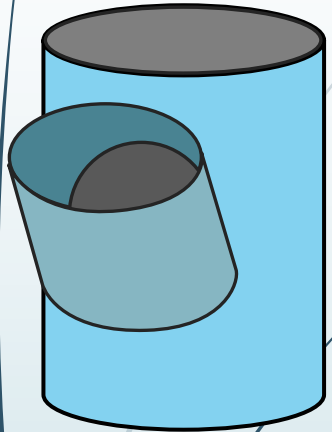
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\* Show ALL hidden detail.

\* Show ALL necessary construction.



# Interpenetrations



$$\begin{aligned}
 A &= 2\pi r \\
 &= 2 \times 3,141592654 \times 25 \\
 &= 157 \text{ mm} \\
 &= \frac{157}{12} \\
 &= 13
 \end{aligned}$$

$$\begin{aligned}
 B &= 2\pi r \\
 &= 2 \times 3,141592654 \times 20 \\
 &= 126 \text{ mm} \\
 &= \frac{126}{12} \\
 &= 11
 \end{aligned}$$

## Question 2: Interpenetration

### Given:

- \* The incomplete front view and top view of a cylinder at 45° that has to fit around another cylinder. The axes of both cylinders lie in a common vertical plane.
- \* Auxiliary view of the branch cylinder.

### Instructions:

Draw, to scale 1:1, the following:

1. The given top view.
2. The complete front view clearly showing the curve of interpenetration.
3. The complete left view.

\* Show ALL hidden detail.

\* Show ALL necessary construction.

