Chapter 6

Orthographic Reading

TOPICS

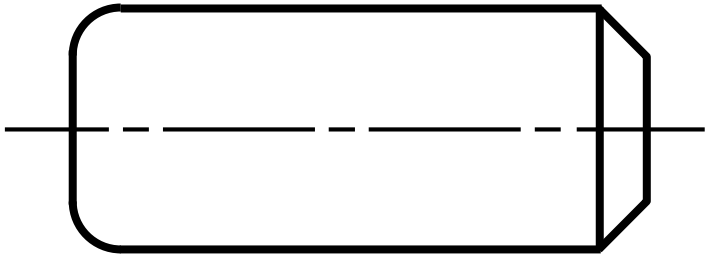
- Definition
- Orthographic Reading
  - Analysis by Solids
  - Analysis by Surfaces
- Missing View Problems
- Self Practice Problems

DEFINITION

Reading a drawing is the process of ***recognizing the shape of an object*** by interpreting the orthographic views.

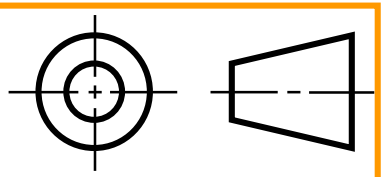
Orthographic Writing

Orthographic Reading



VIEWING DIRECTION

Given



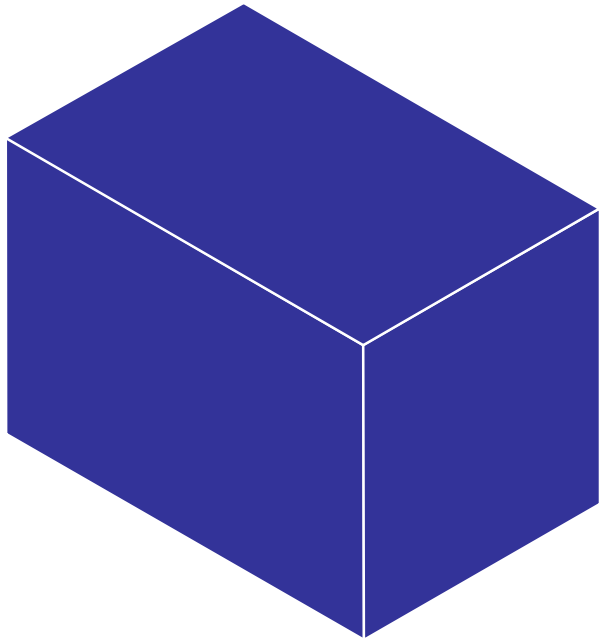
T.V.

L.S.V

F.V.

R.S.V

B.V.



ORTHOGRAPHIC READING

Analysis by Solids

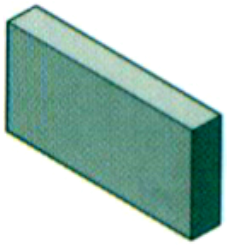


BASIC IDEA

- Objects are decomposed into solid geometric primitives.

Some of familiar solid objects

- Rectangular prism



- Cylinder

- Negative cylinder (Hole)

BASIC IDEA

- Objects are decomposed into solid geometric primitives.

Some of familiar solid objects

- Cone

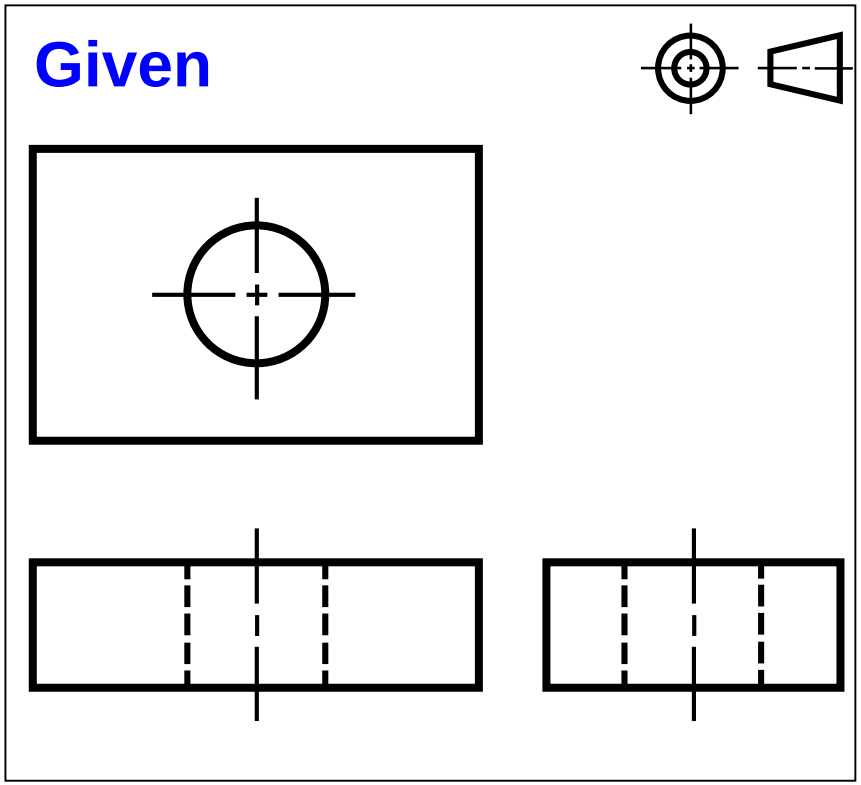
- Pyramid

- Sphere

READING STEPS

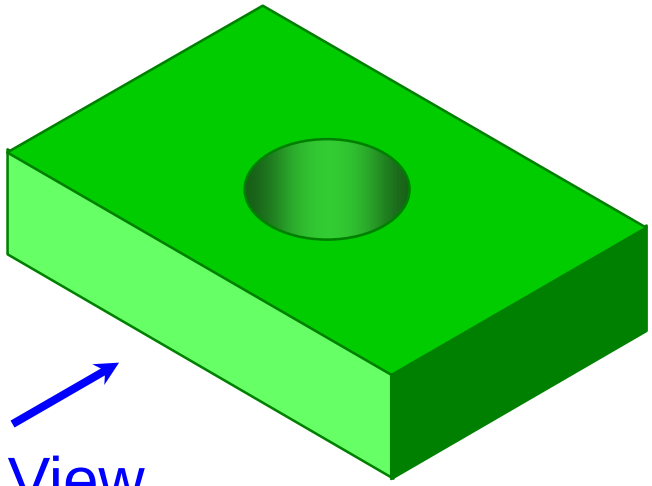
1. Orient yourself with the views given.
   (Choose the viewing direction.)
2. Read the individual surfaces that appeared in each view and related to each other.
3. Create a proper solid geometric primitive from each reading.
4. Assembly all of solid geometric primitive according to orthographic views.

EXAMPLE A



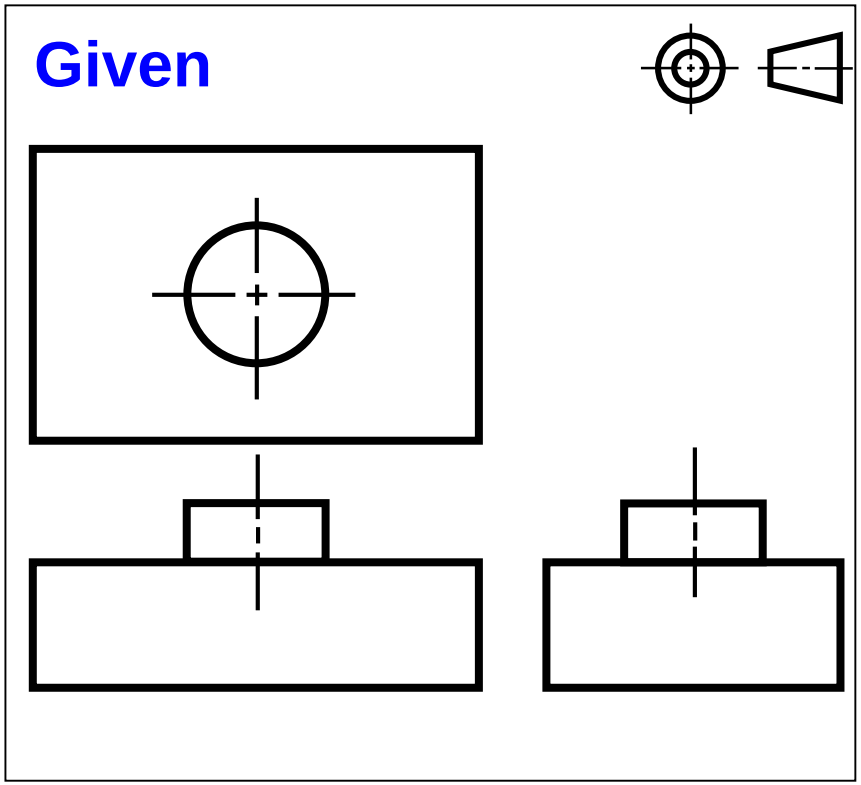
Composition

- Rectangular prism
- Hole



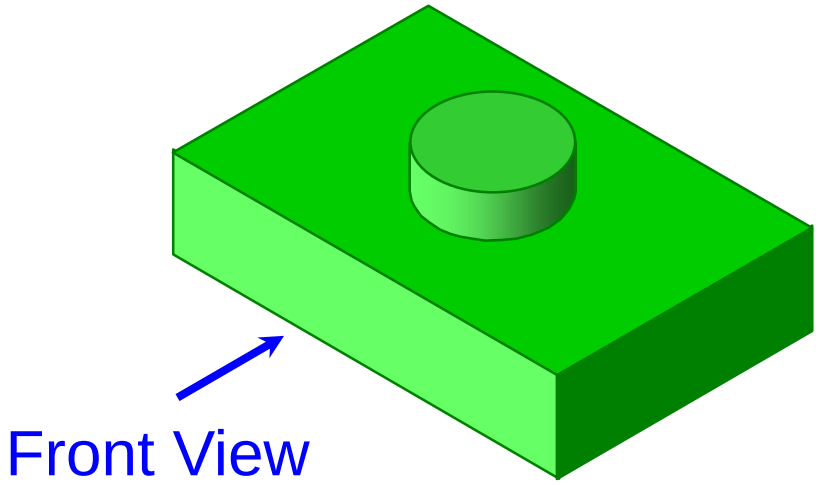
Front View

EXAMPLE B

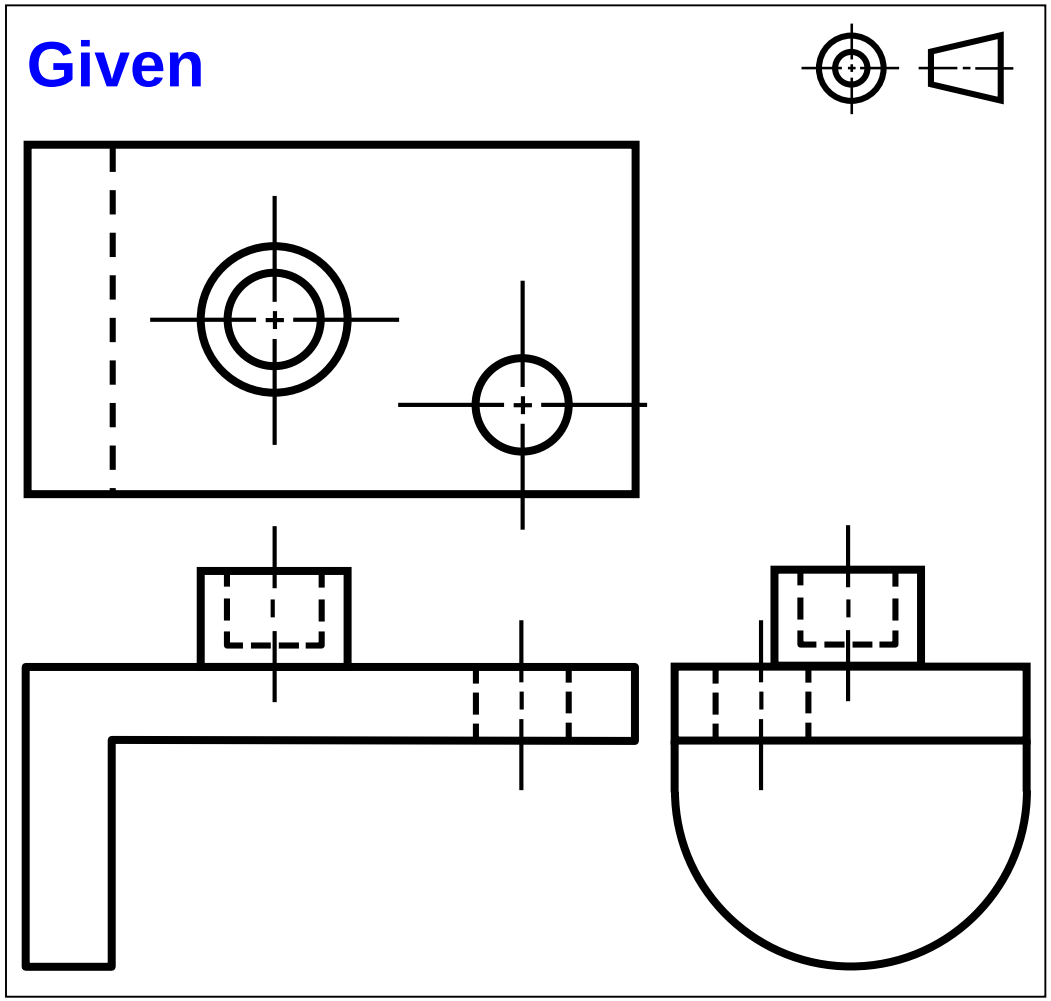


Composition

- Rectangular prism
- Cylinder

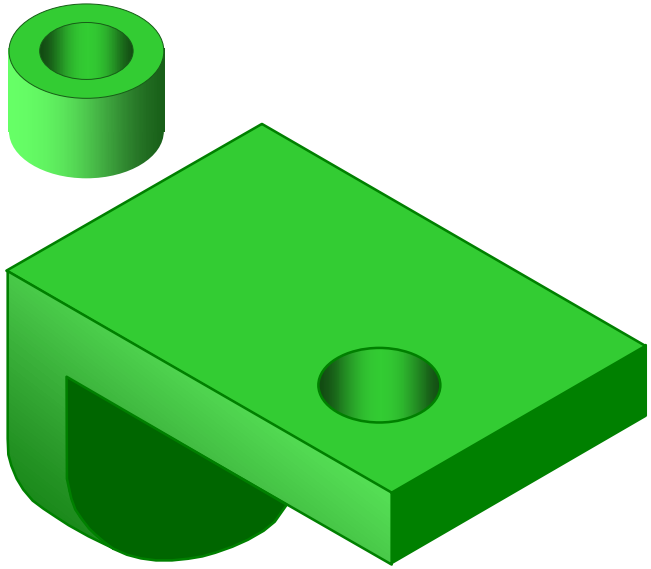


EXAMPLE C

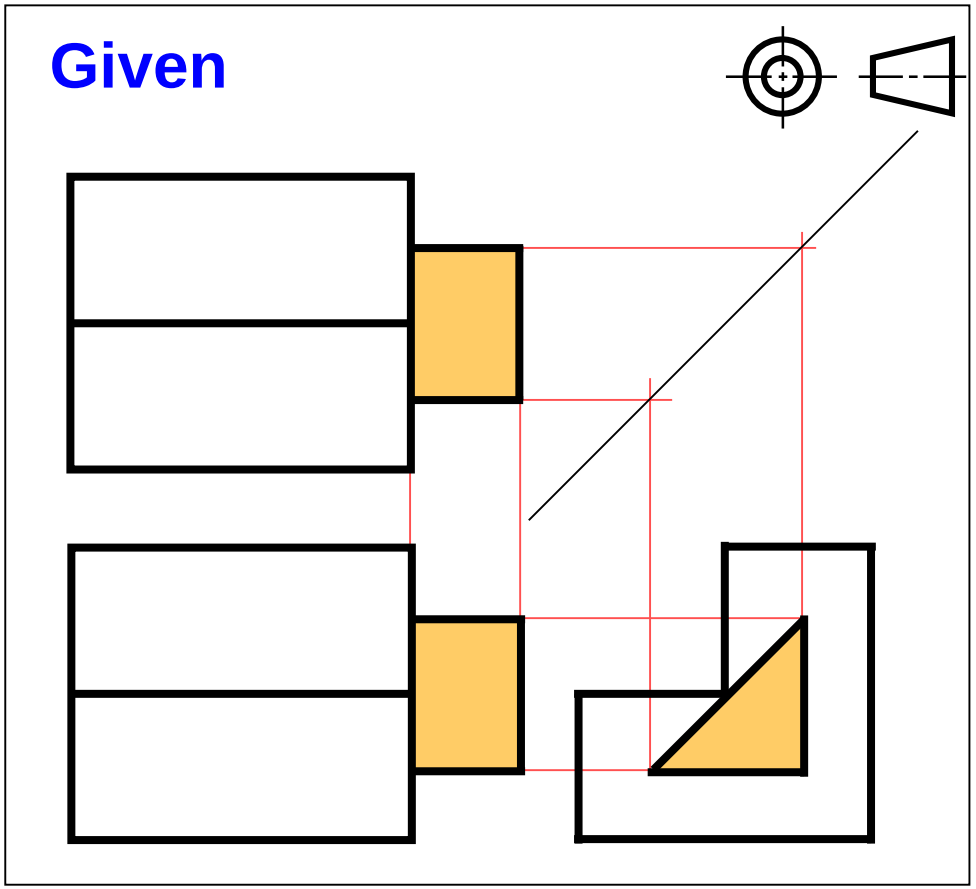


Composition

- Cylinder with a blind hole.
- L-shaped with round end
- Hole



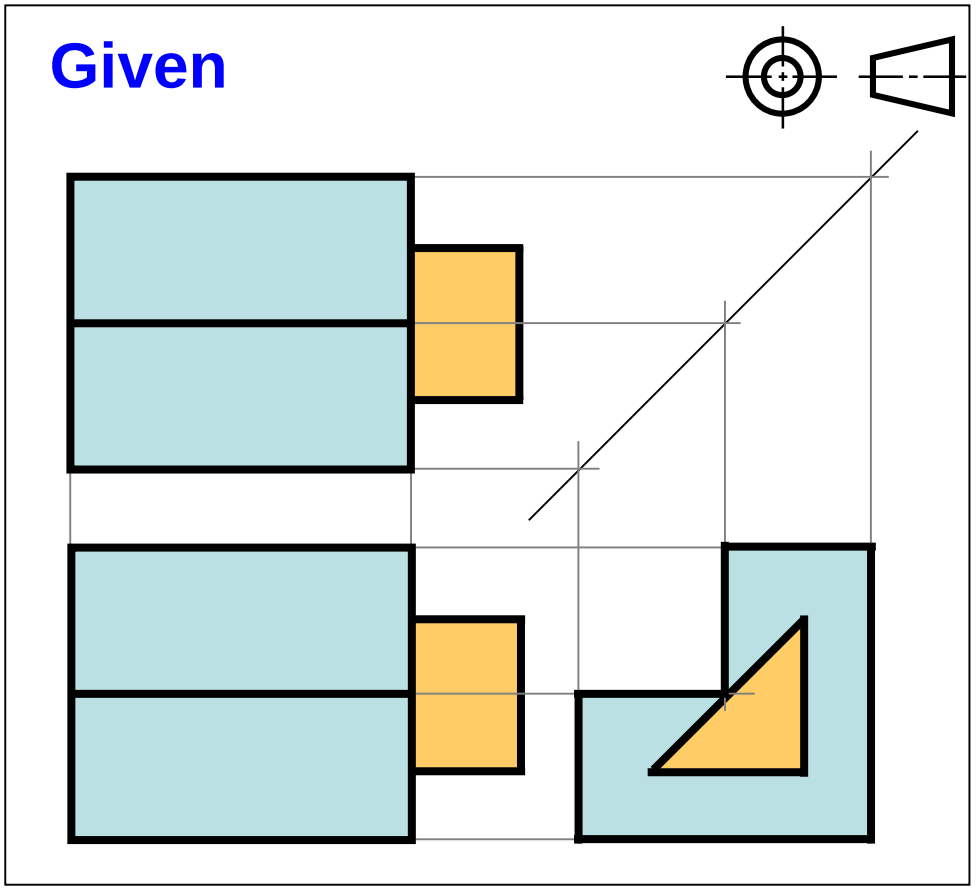
EXAMPLE D



Composition

- Wedge

EXAMPLE D



Composition

- Wedge
- L-shaped block

ORTHOGRAPHIC READING

Analysis by Surfaces



READING STEPS

1. Orient yourself with the views given.

2. Read the individual set of lines or surface that appeared in each view and related to each other.

An understanding in orthographic projection, i.e. **meaning of lines and surfaces** are almost important.

READING STEPS

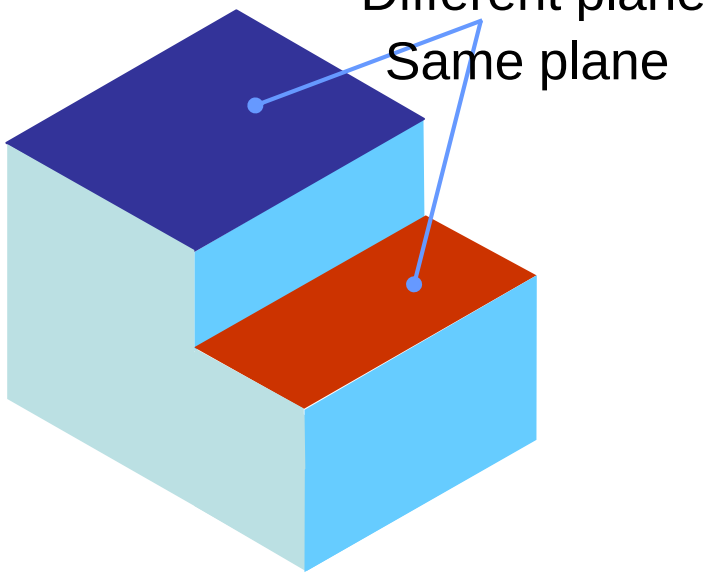
3. Mentally create and sketch a form of the surface that produce the same orthographic views as those at the beginning.

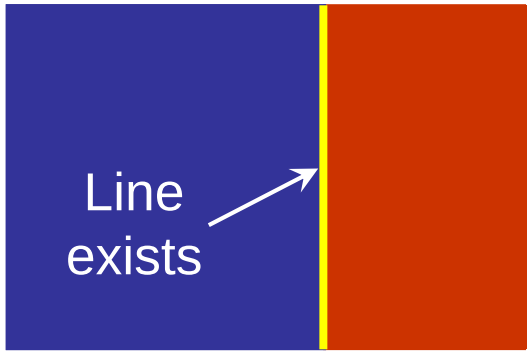
4. Repeat steps 2 and 3 until all surfaces are read.

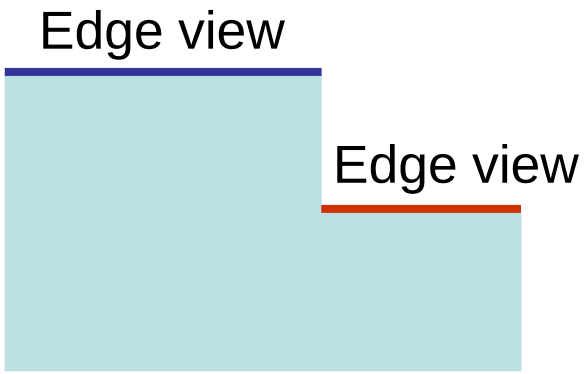
During this repeating process, the details of an object are added up until its completed shape is obtained.

GUIDANCE 1

- Adjacent areas that are not in the same plane must be separated by **lines**.

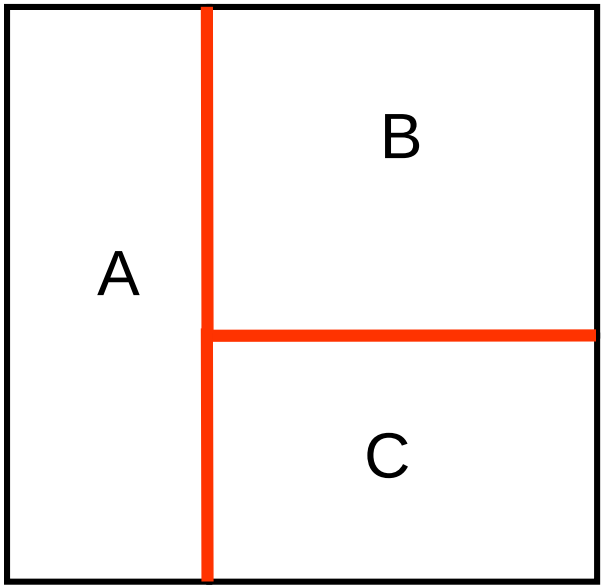






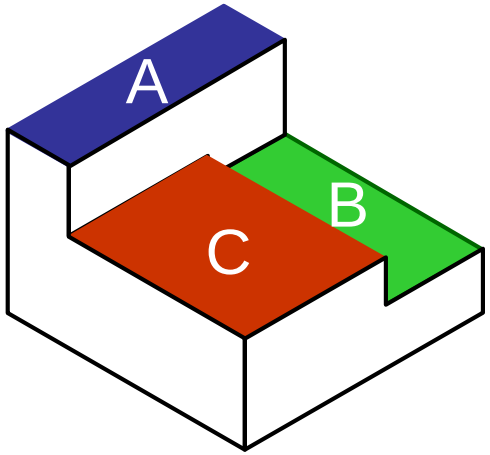
EXAMPLE

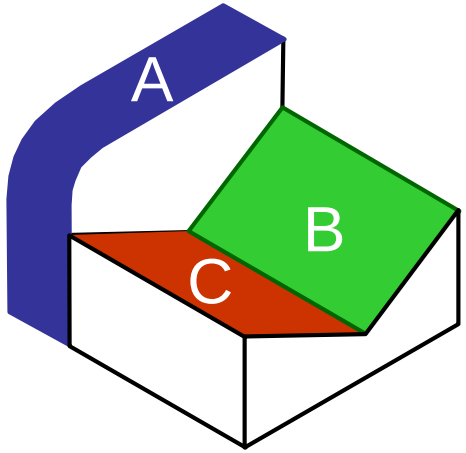
Top view

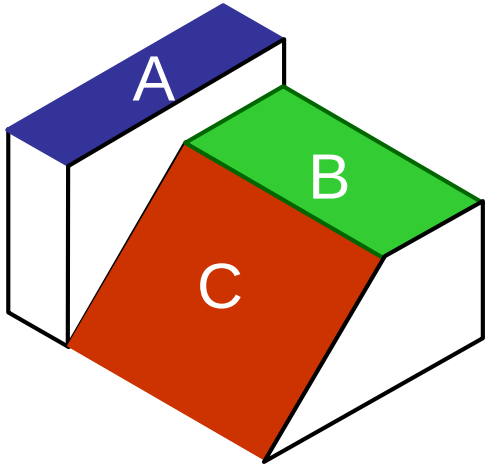


All surfaces A, B and C are **not** in the same plane.

Some of possible objects' shape.

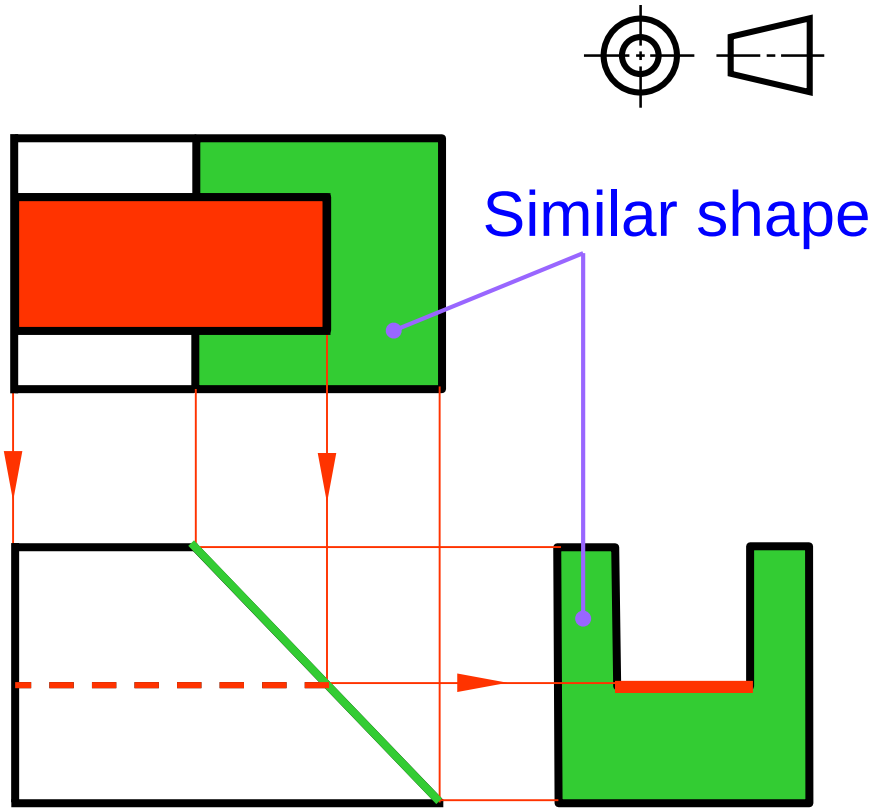


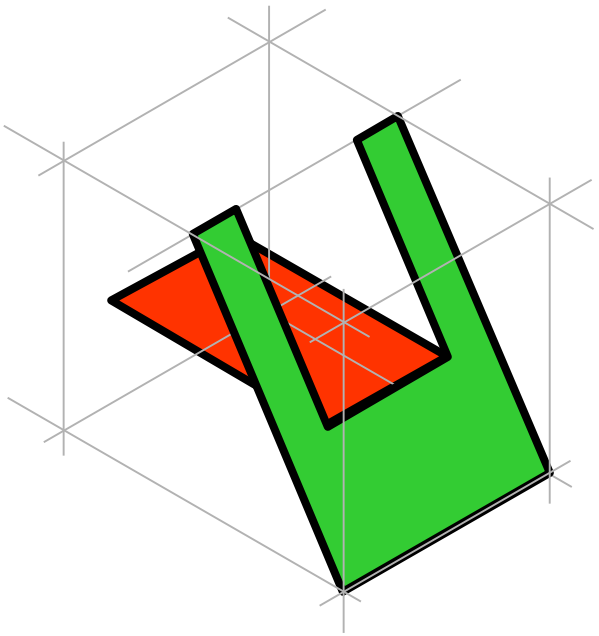




GUIDANCE 2

- Areas that show a similar shape in more than one view is the same surface.





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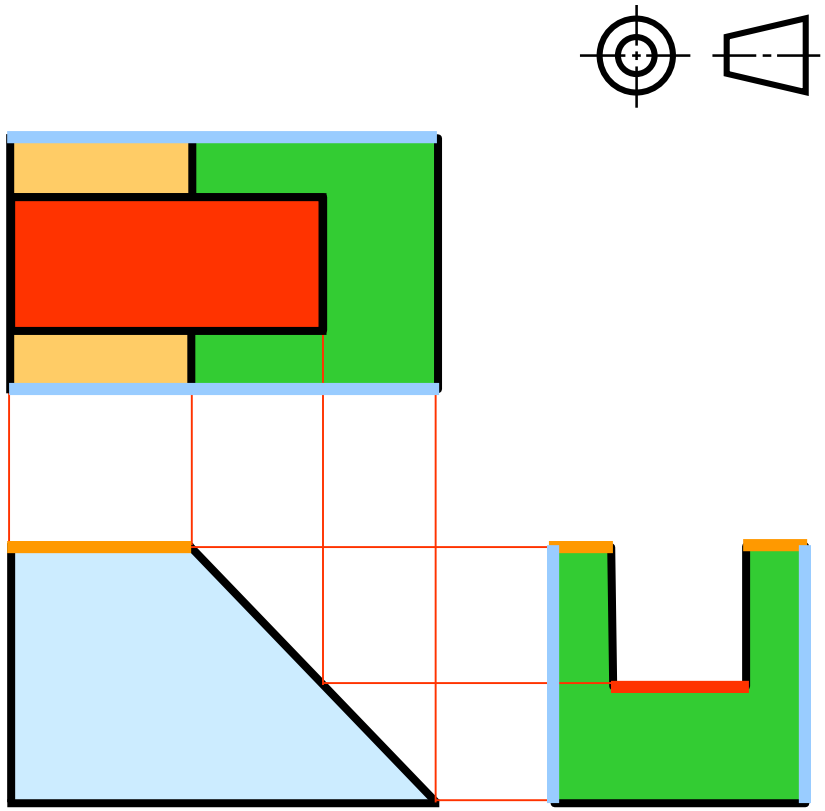

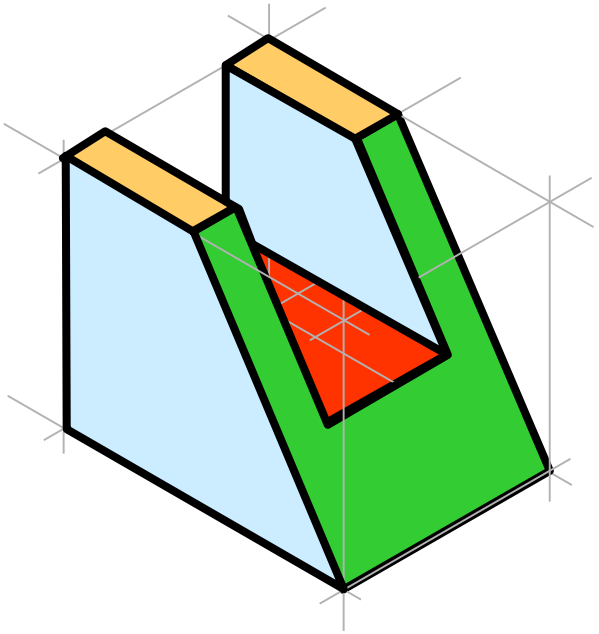

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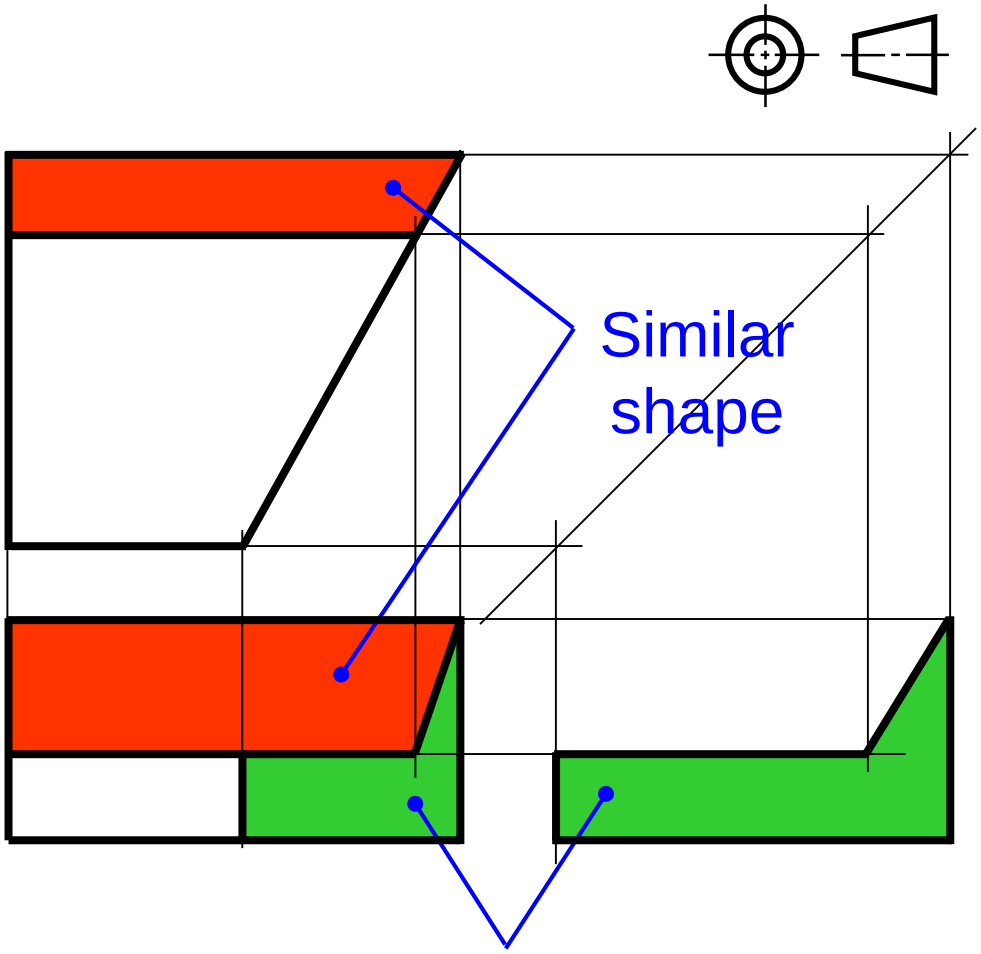
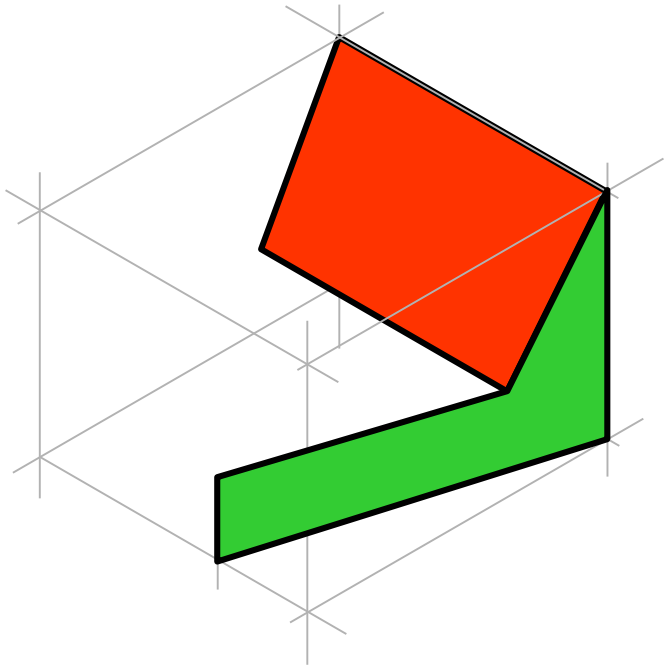
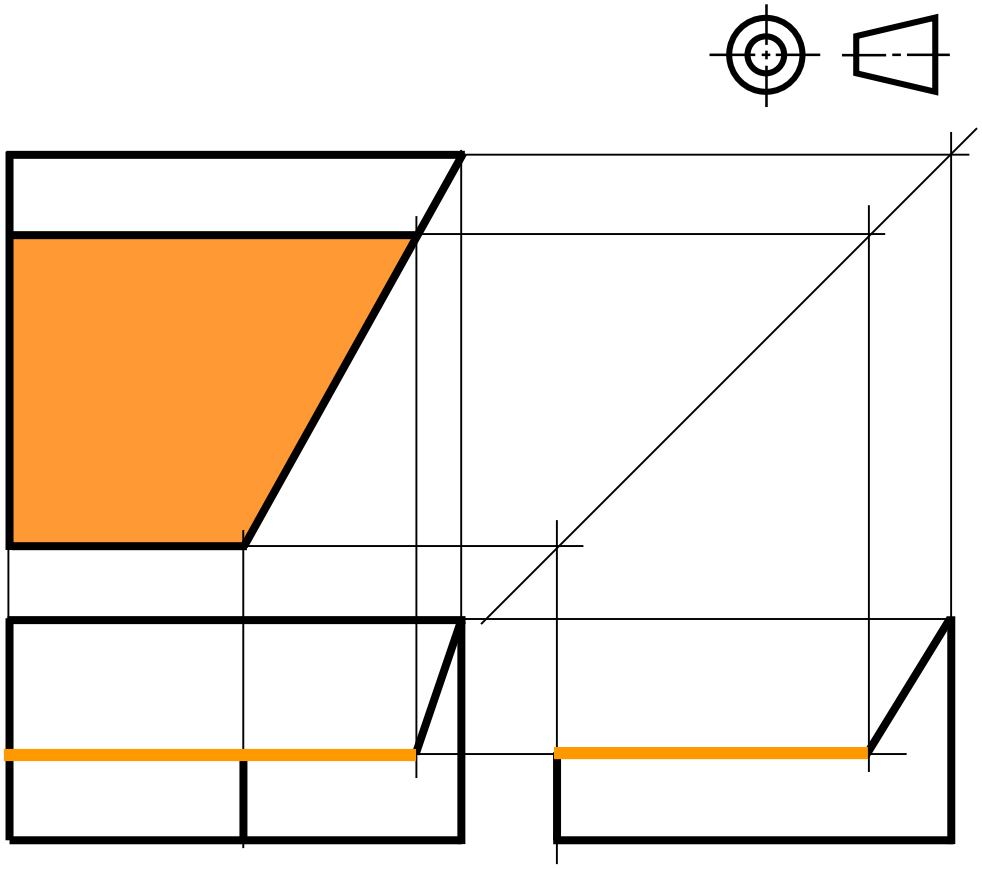
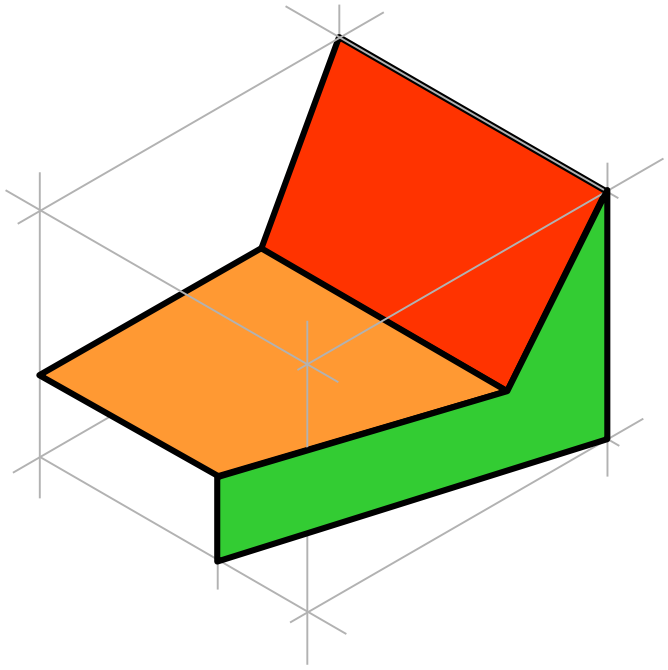




EXAMPLE A





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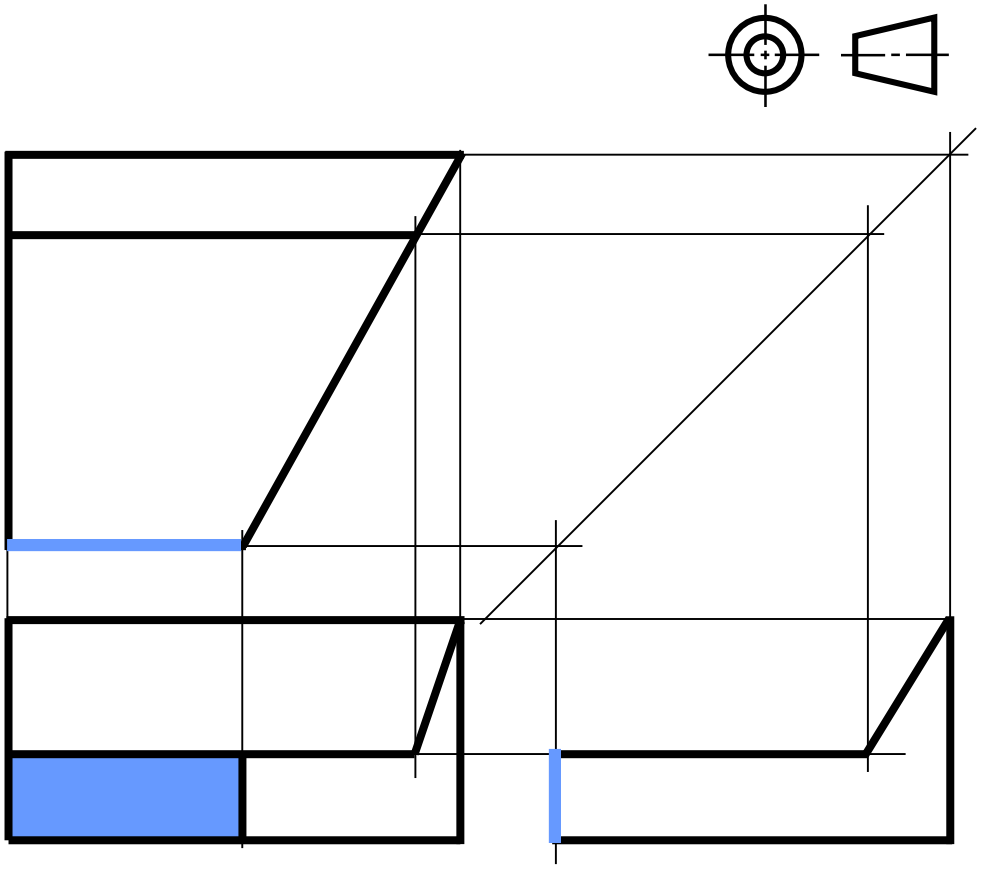

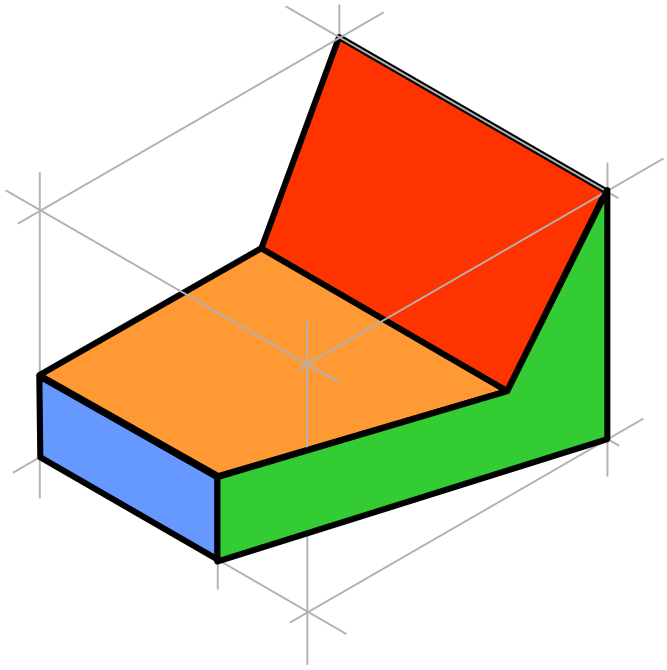

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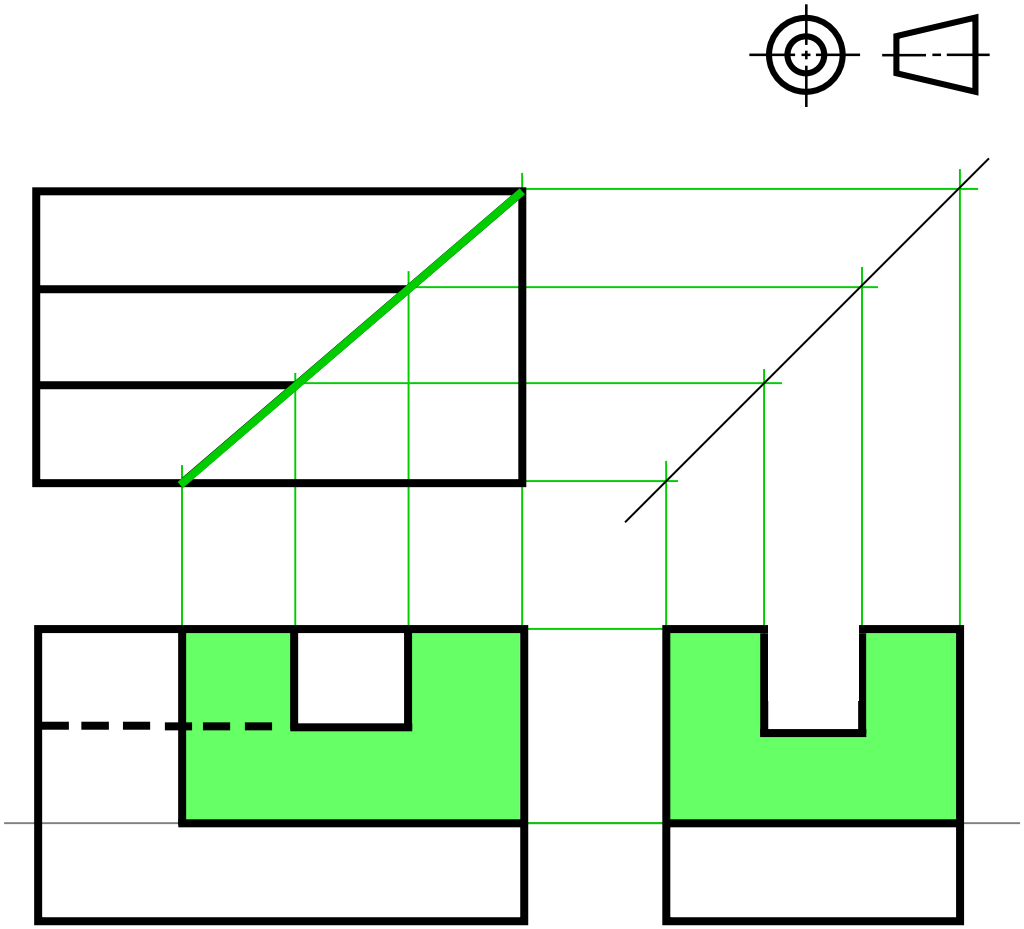

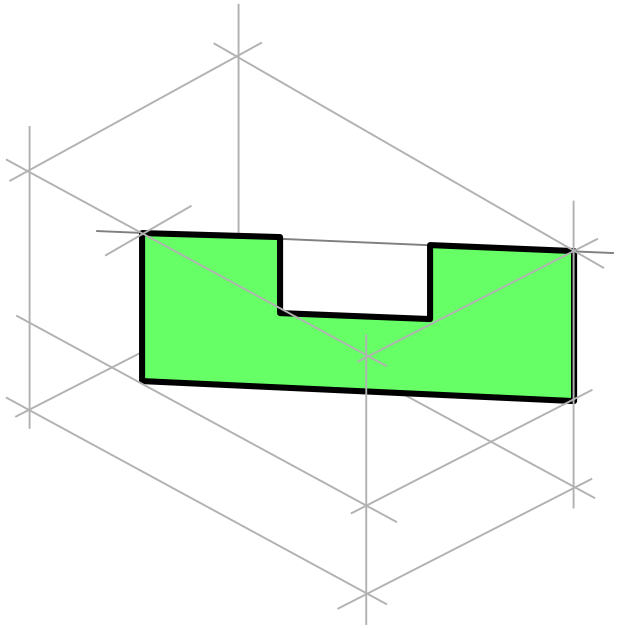

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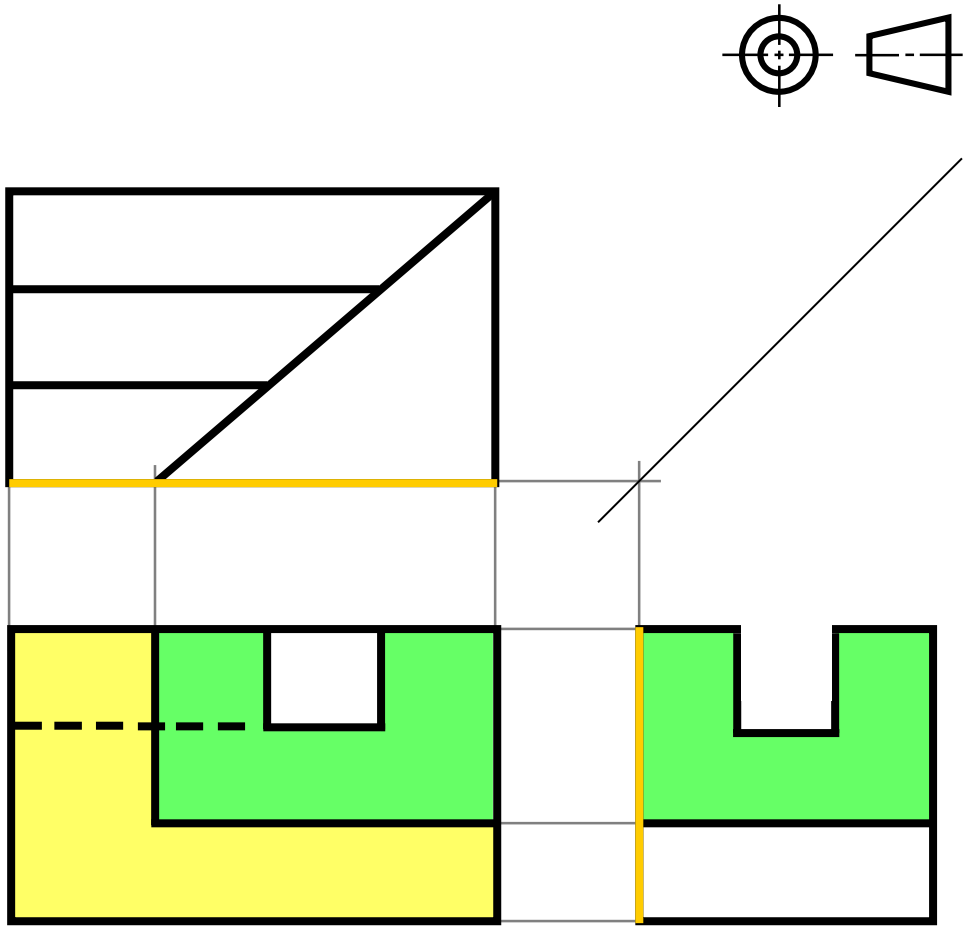

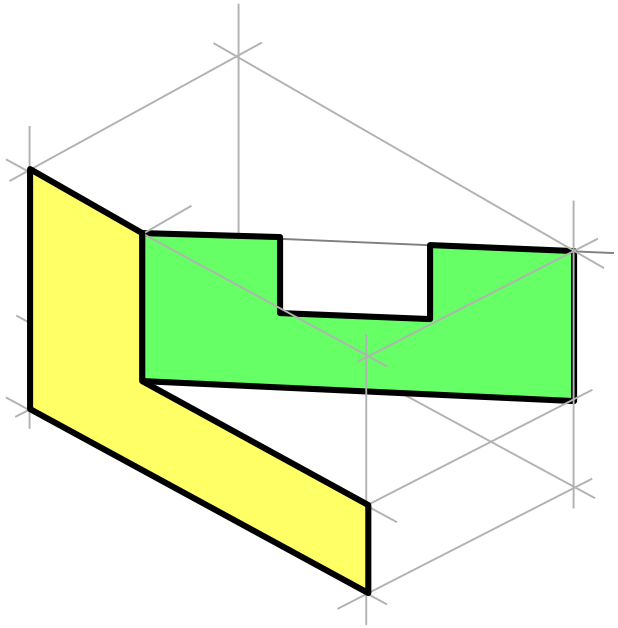

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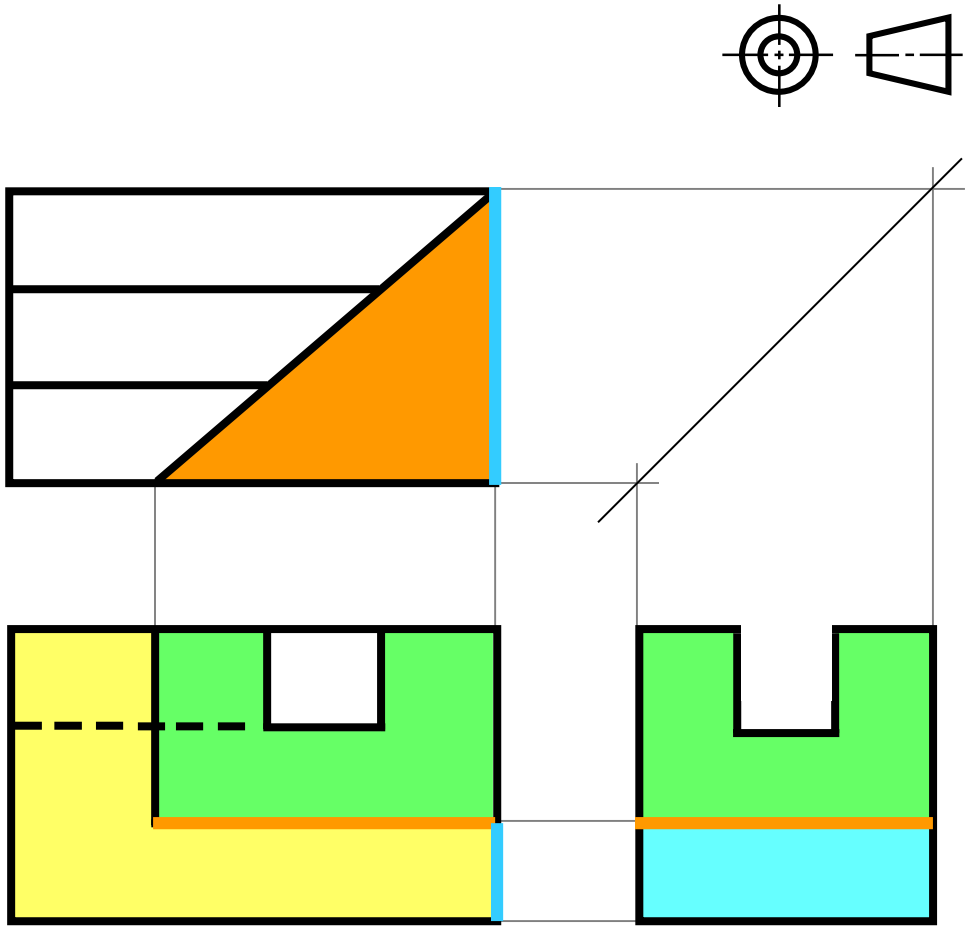

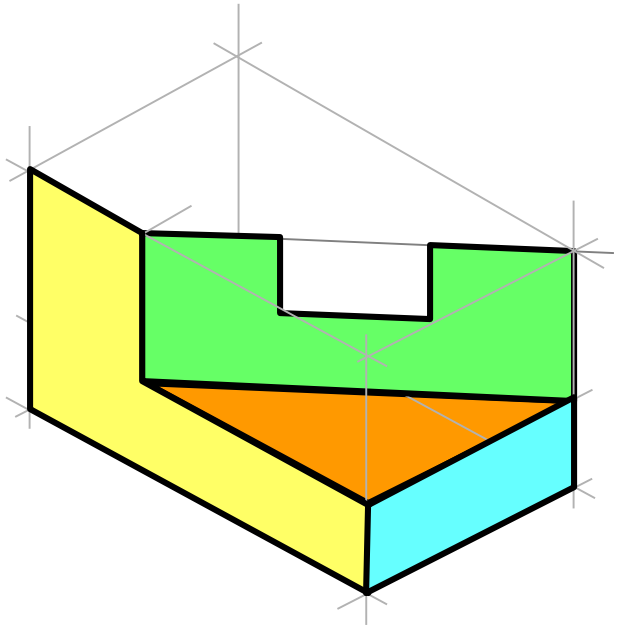

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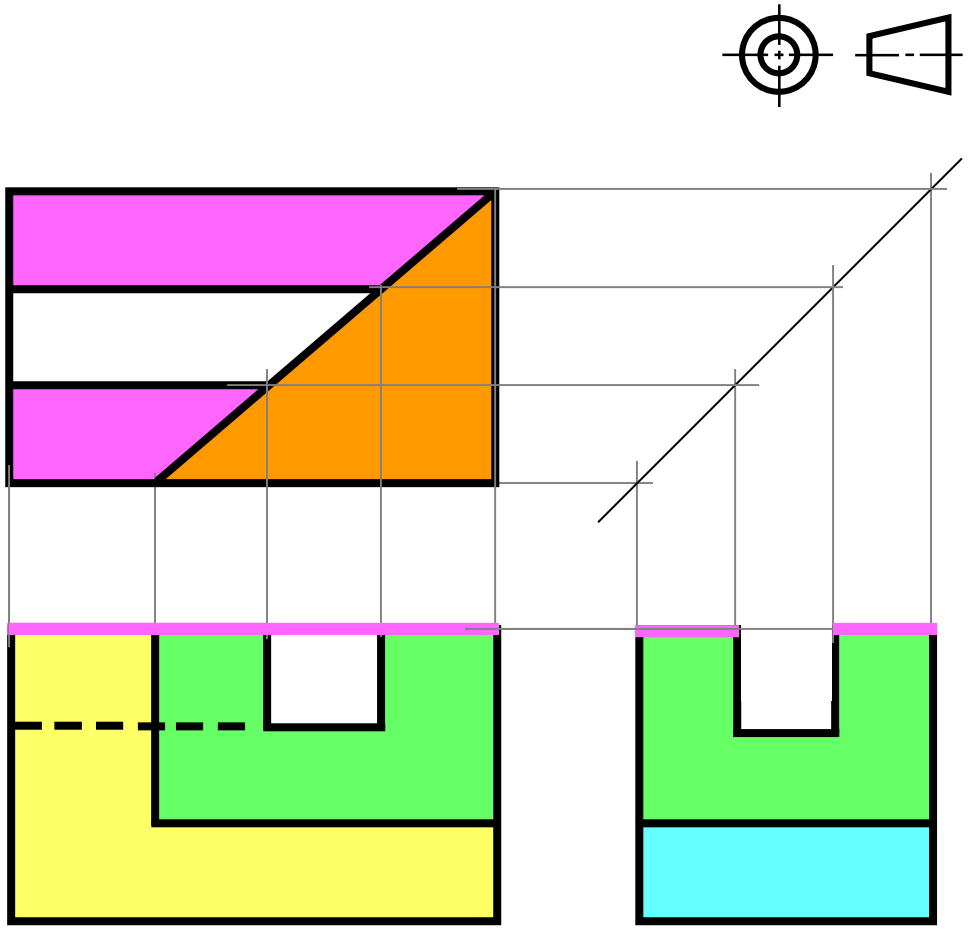

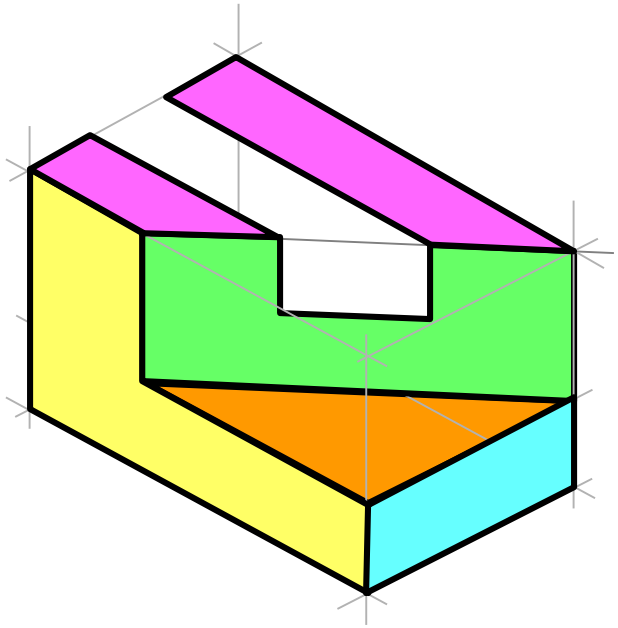

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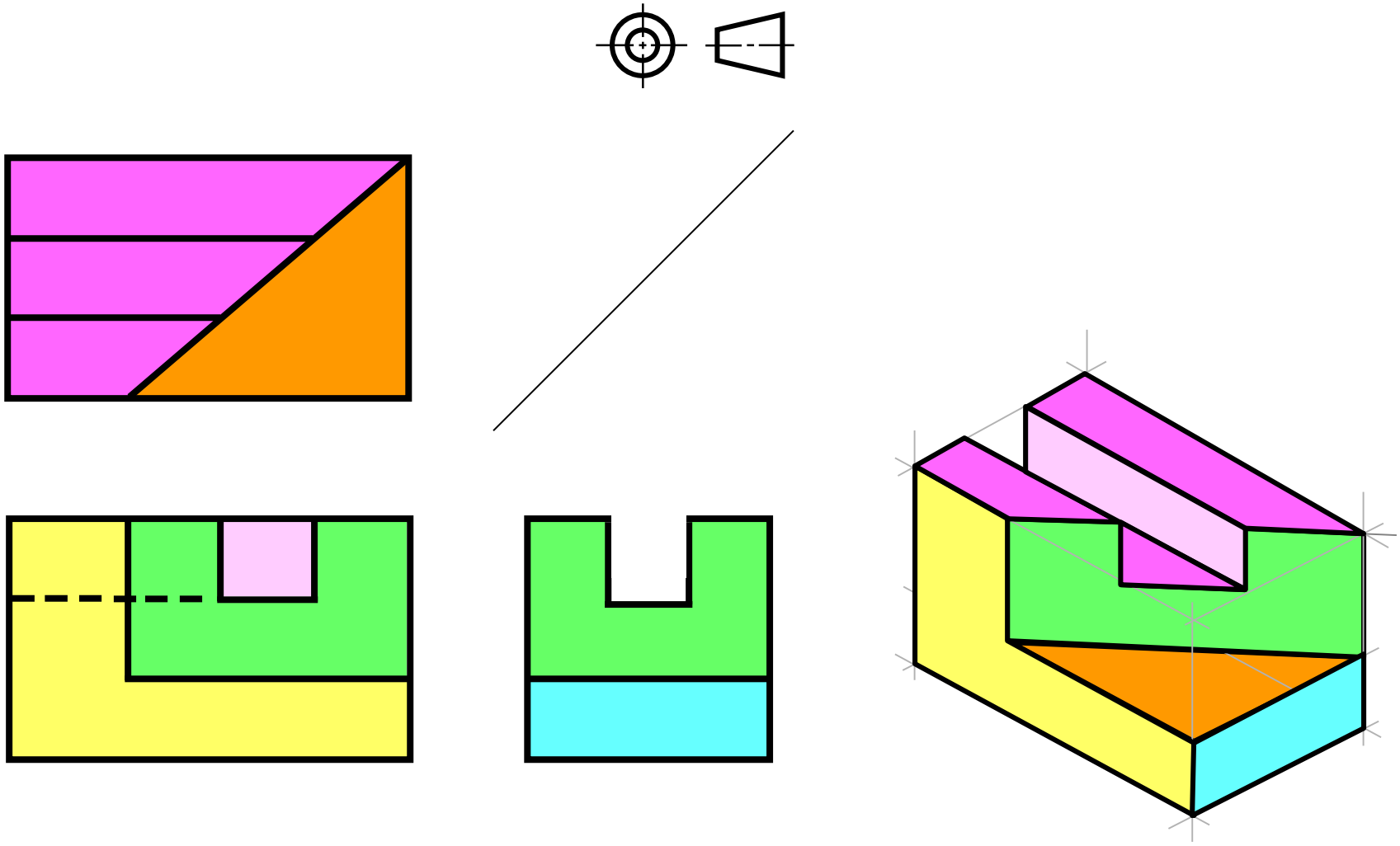
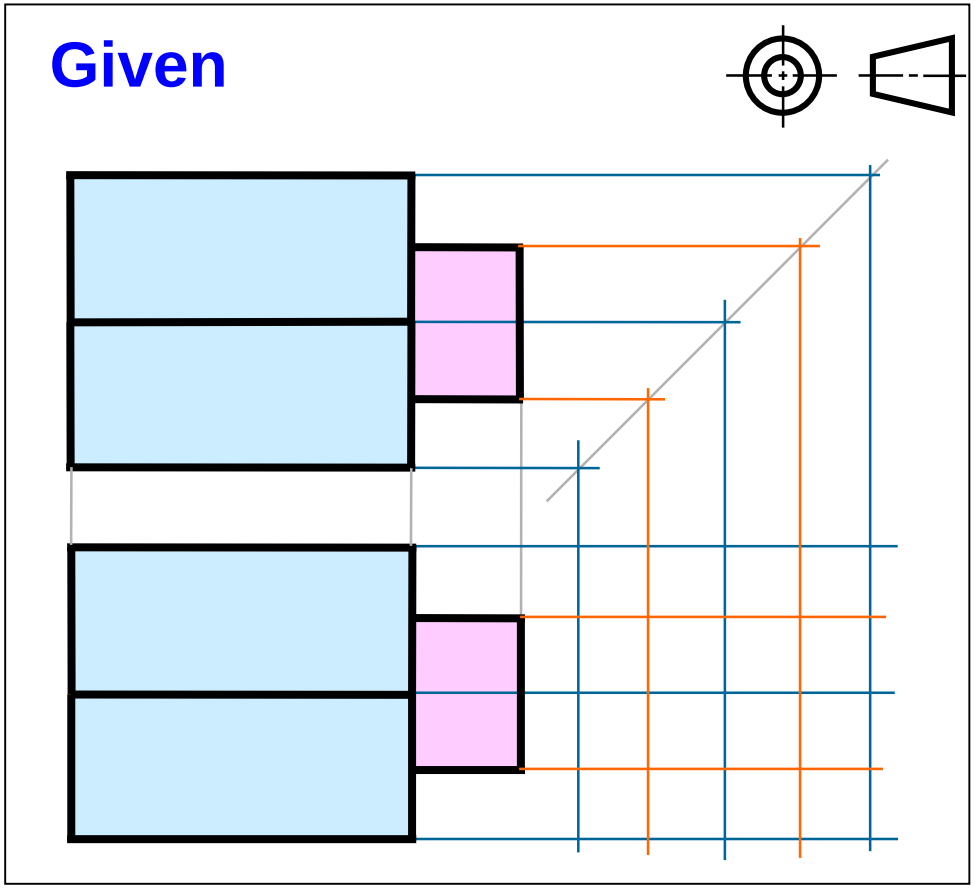
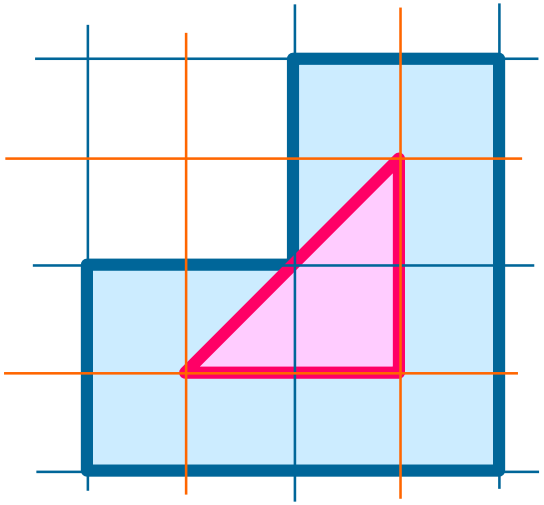


Missing View Problems

EXAMPLE A



Previous example



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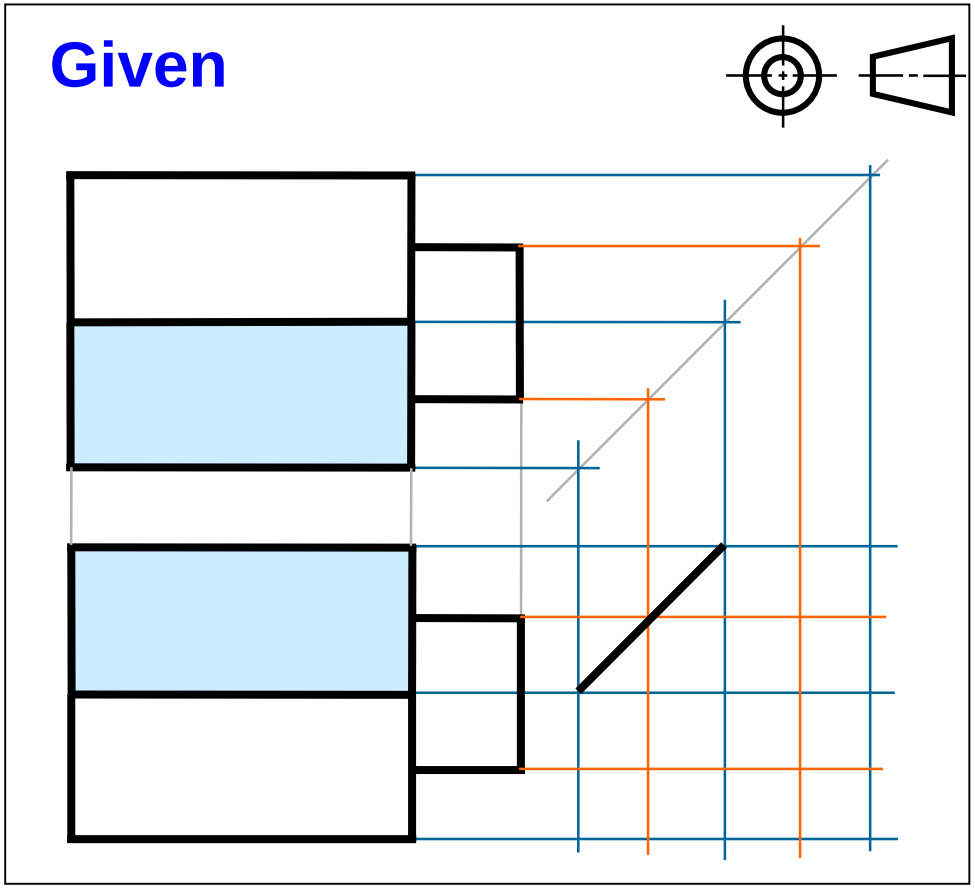
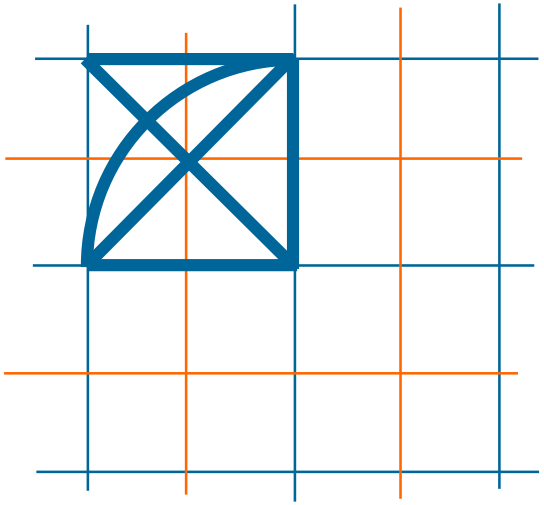


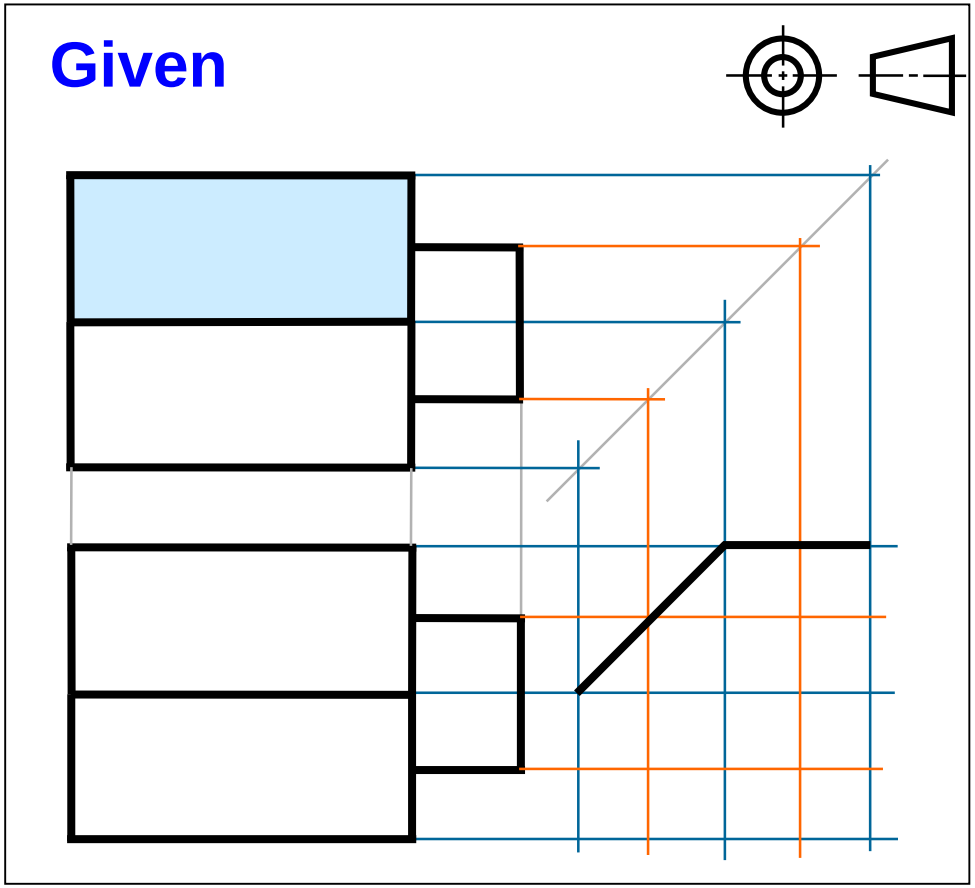
Possible

No

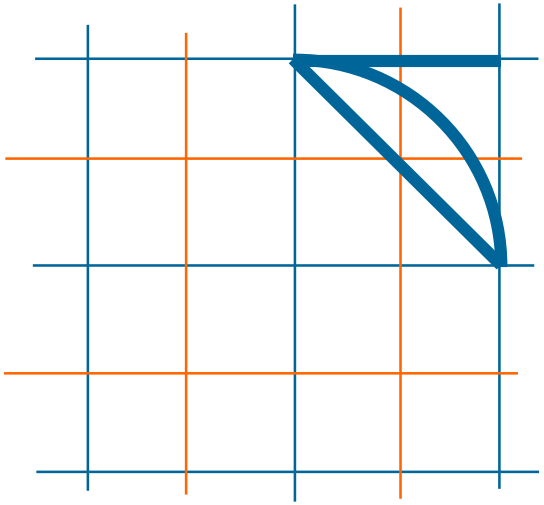


Select this line

EXAMPLE A



Possible



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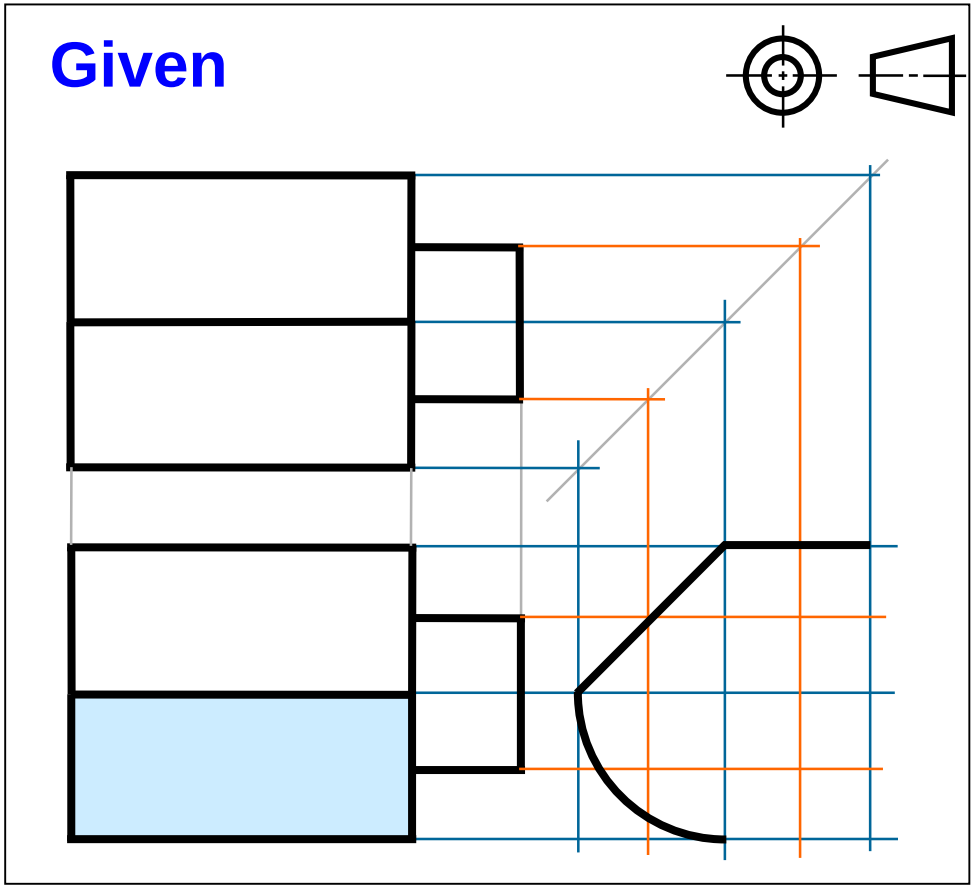
EXAMPLE A



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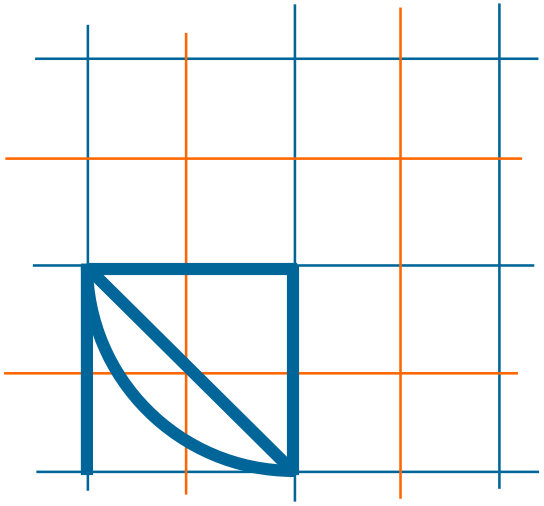

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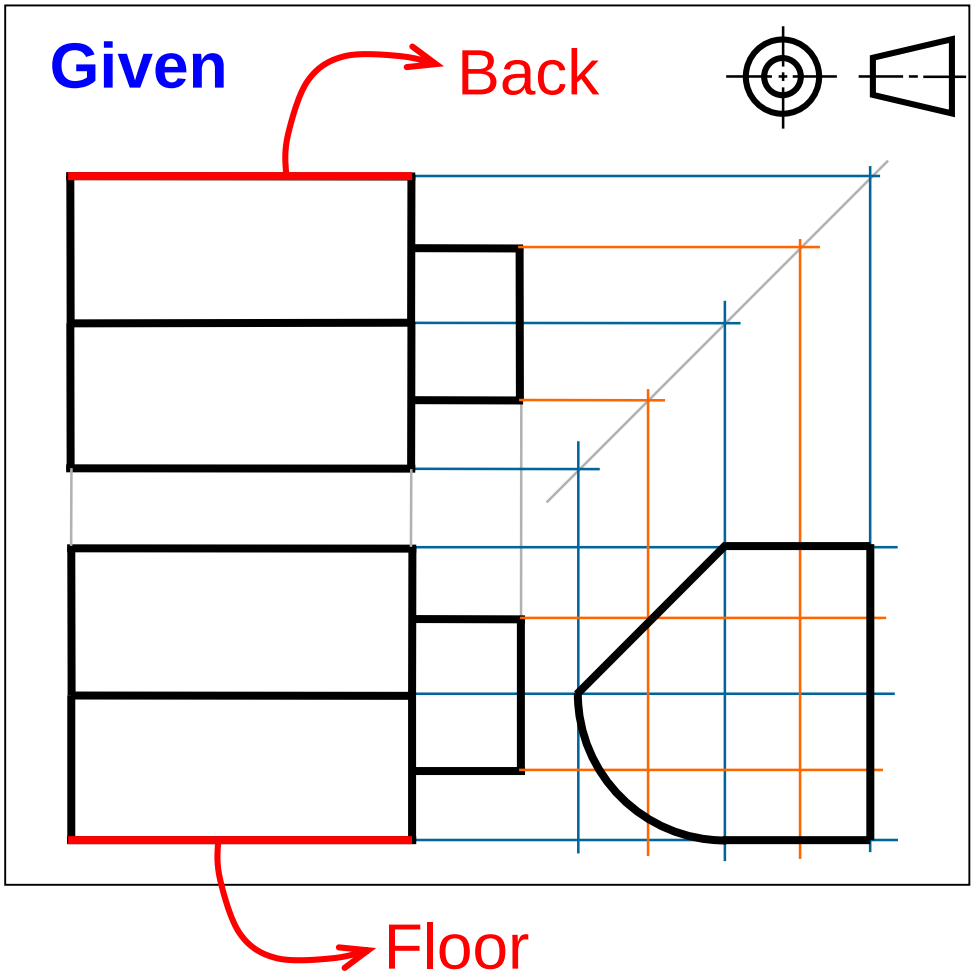
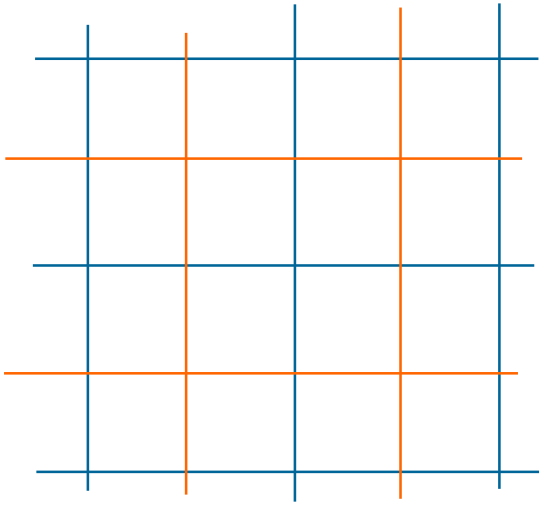
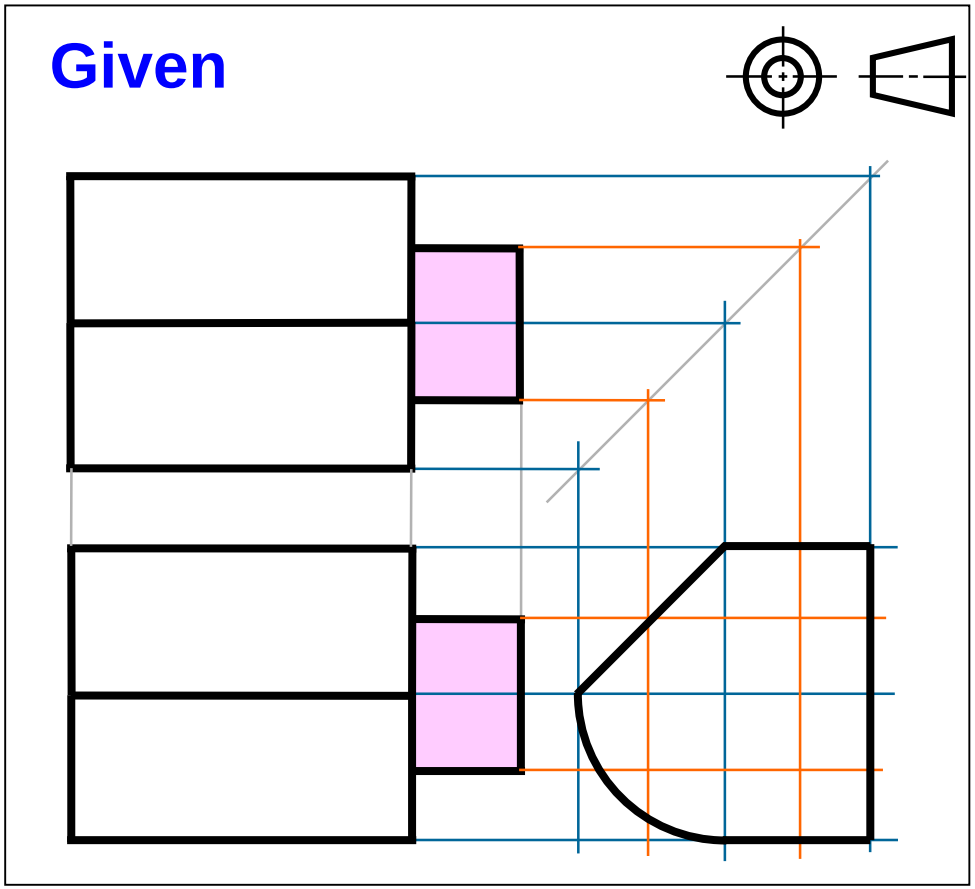
EXAMPLE A

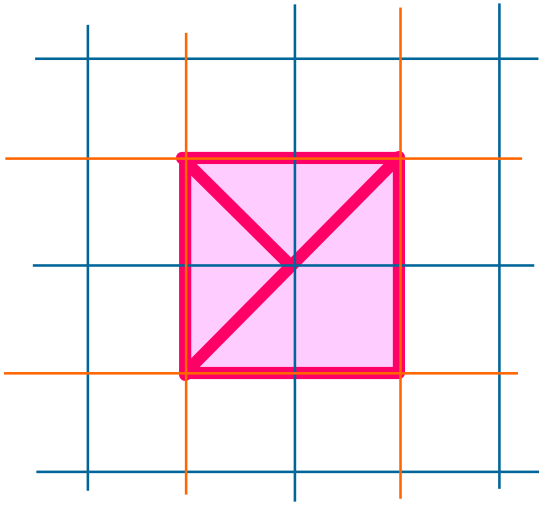




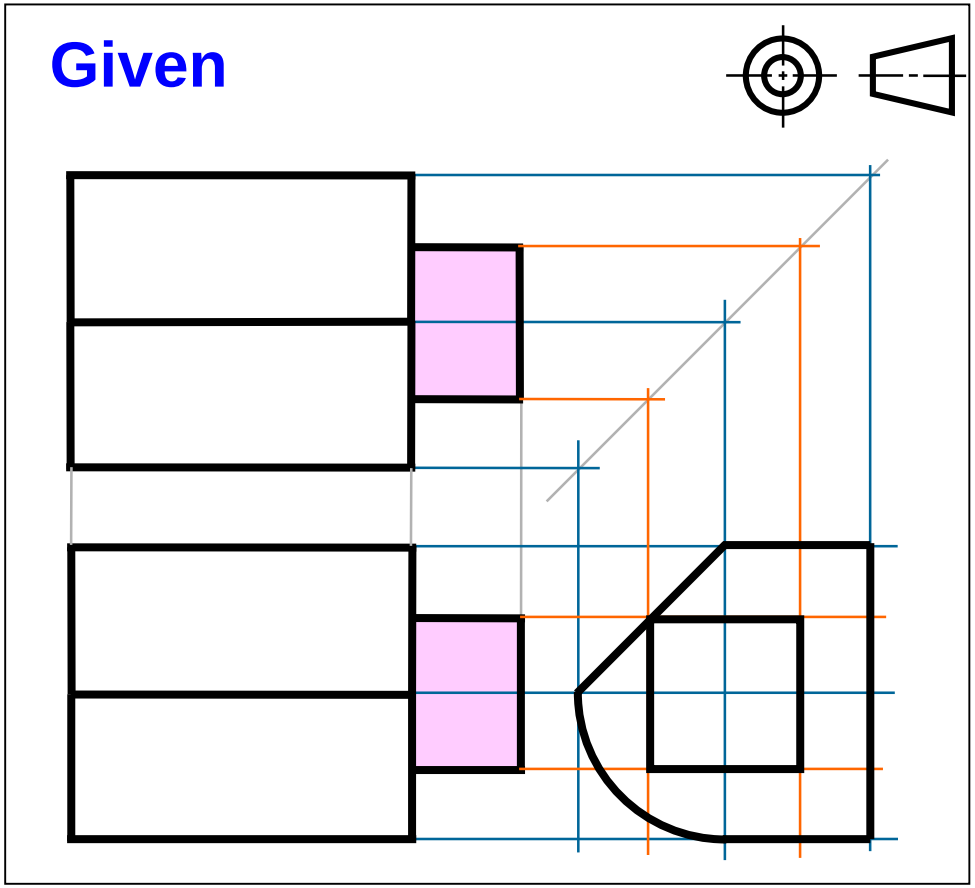
EXAMPLE A



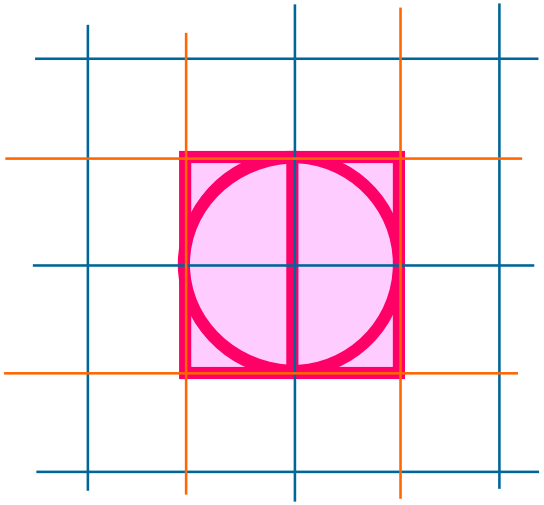
Possible



EXAMPLE A

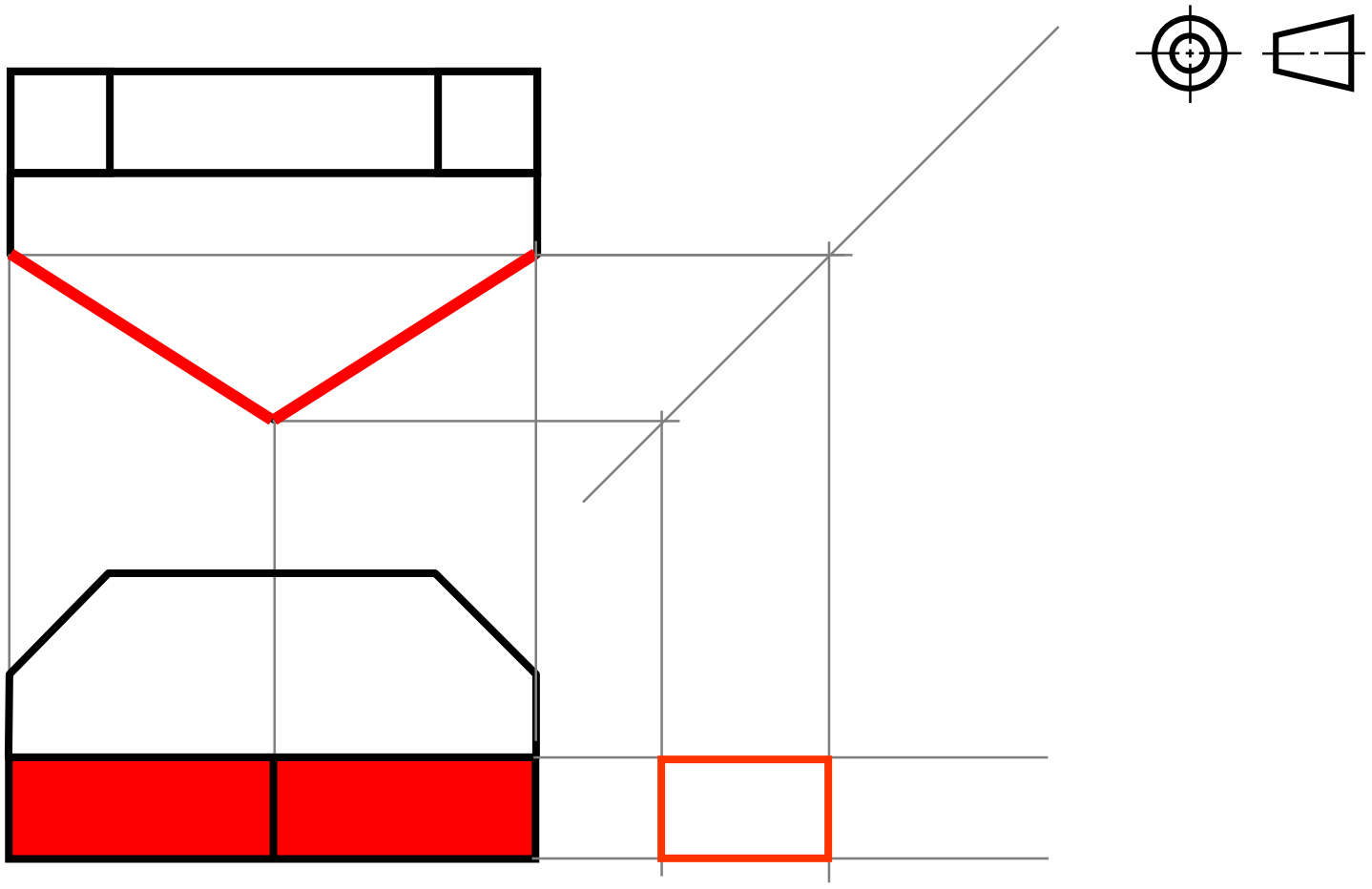


Possible

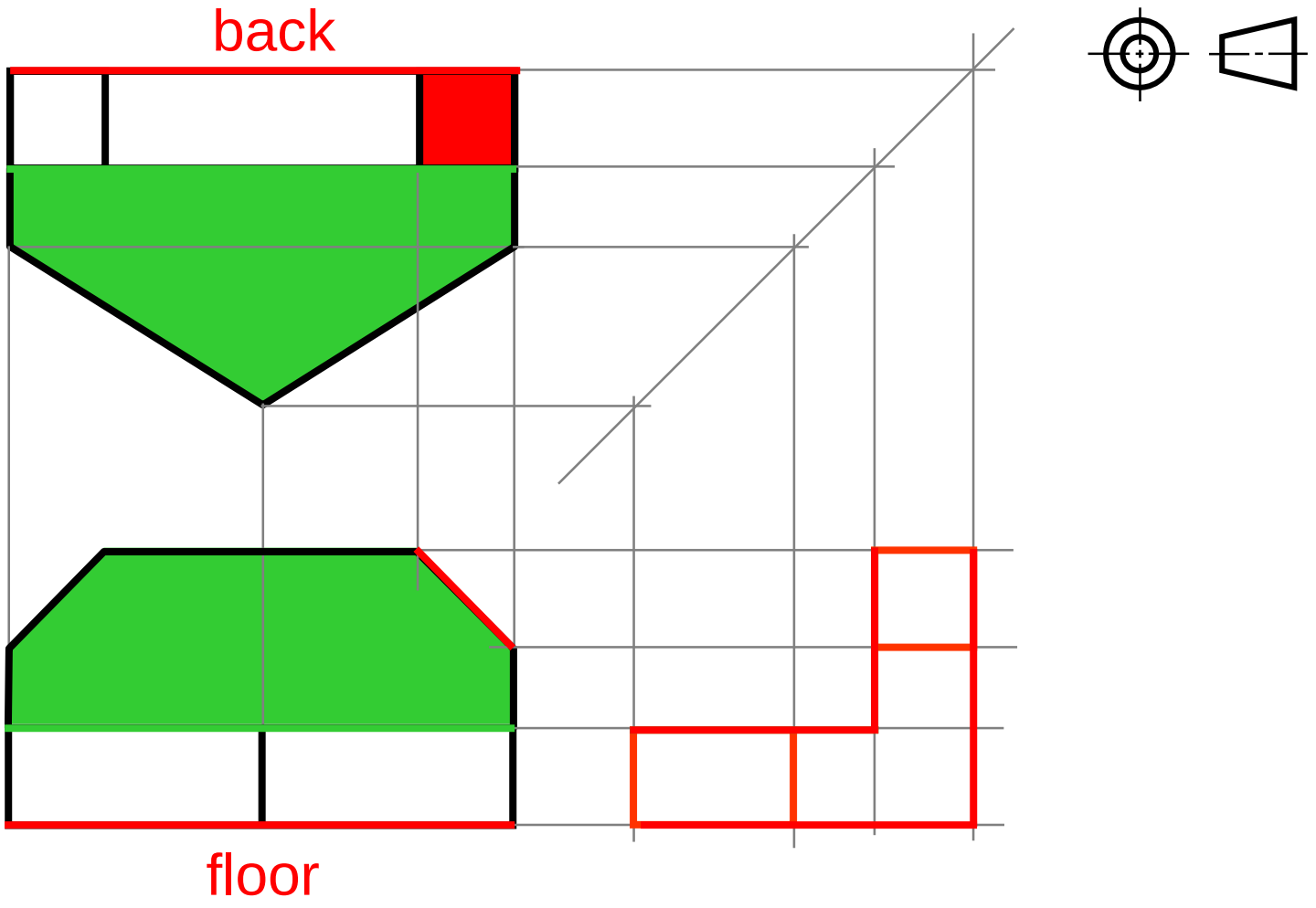


Select this type

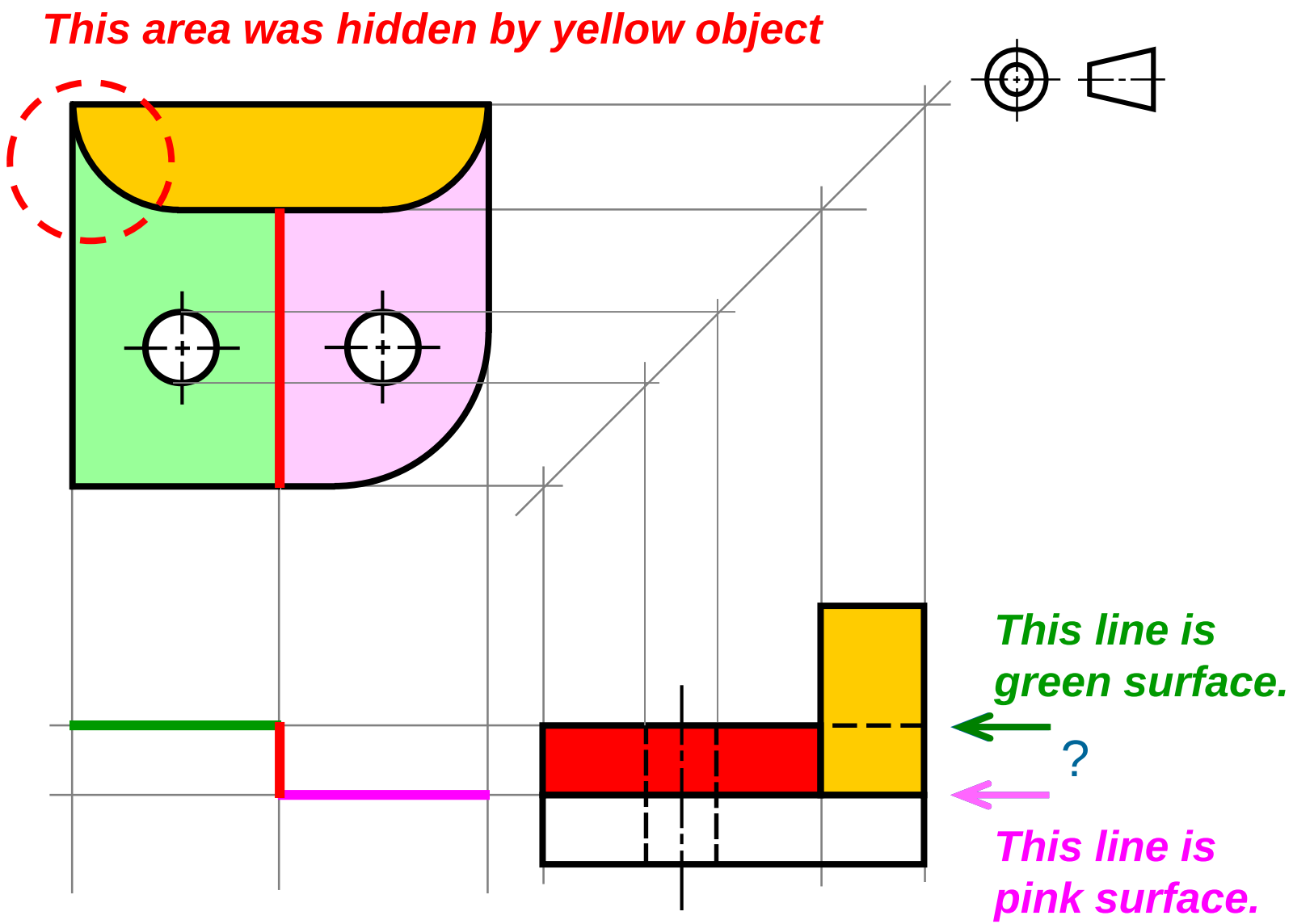
EXAMPLE B



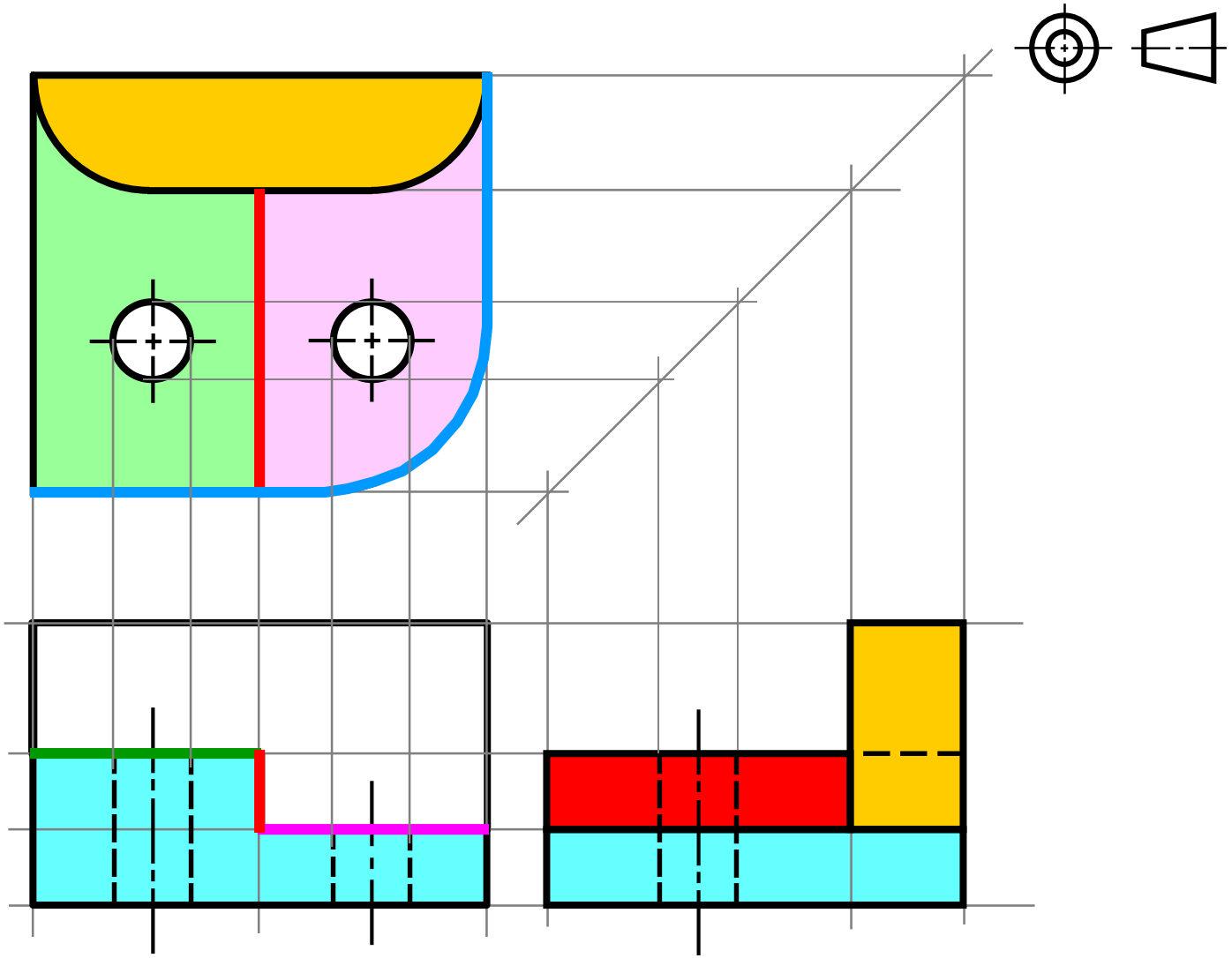
EXAMPLE B



EXAMPLE C


This area was hidden by yellow object
This line is green surface.
?
This line is pink surface.

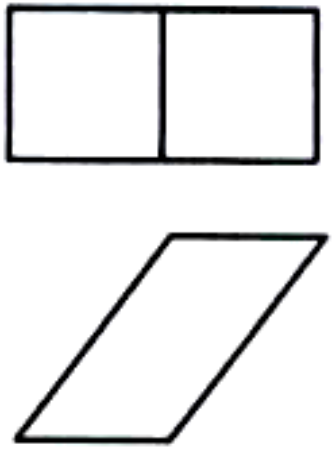
EXAMPLE C

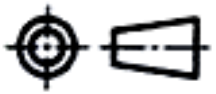


SELF PEACTICE

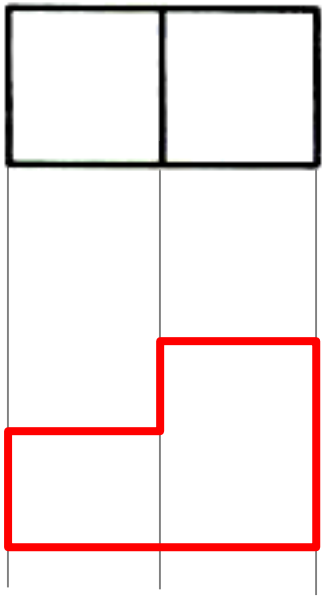
Given the top view of an object, sketch possible front views.

Example

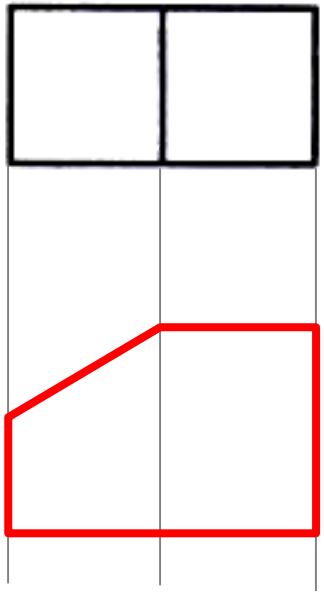




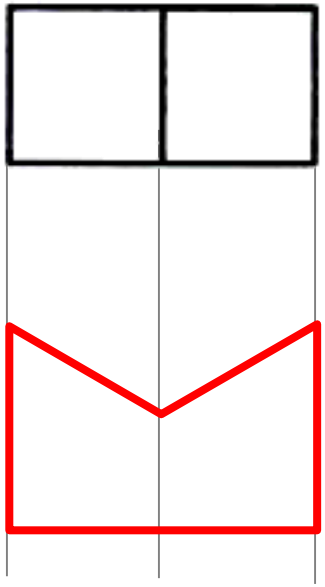
1)



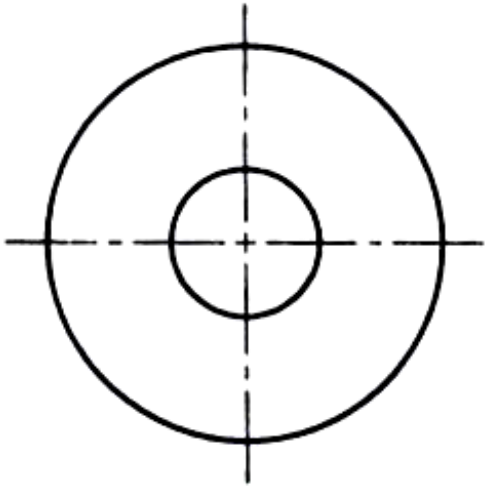
2)



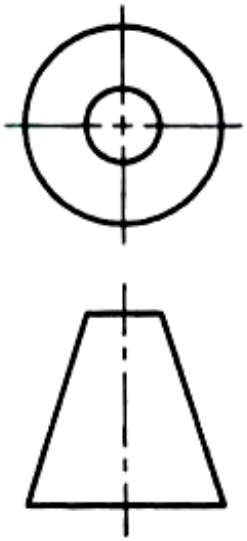
3)

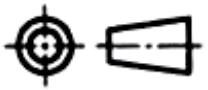


Given the top view of an object, sketch possible front views.

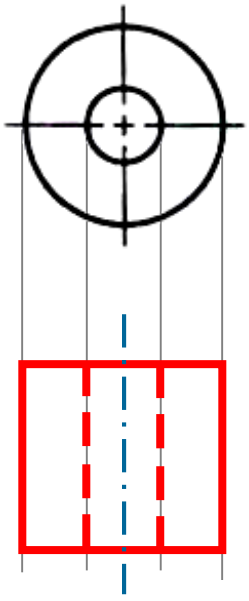


Example

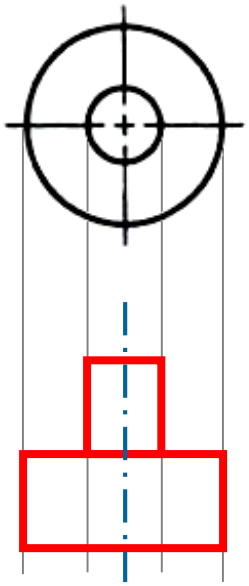




1)



2)



3)