



**MANIPAL INSTITUTE OF TECHNOLOGY**  
**MANIPAL**  
*(A constituent unit of MAHE, Manipal)*

**Department of Mechanical and Manufacturing Engineering**

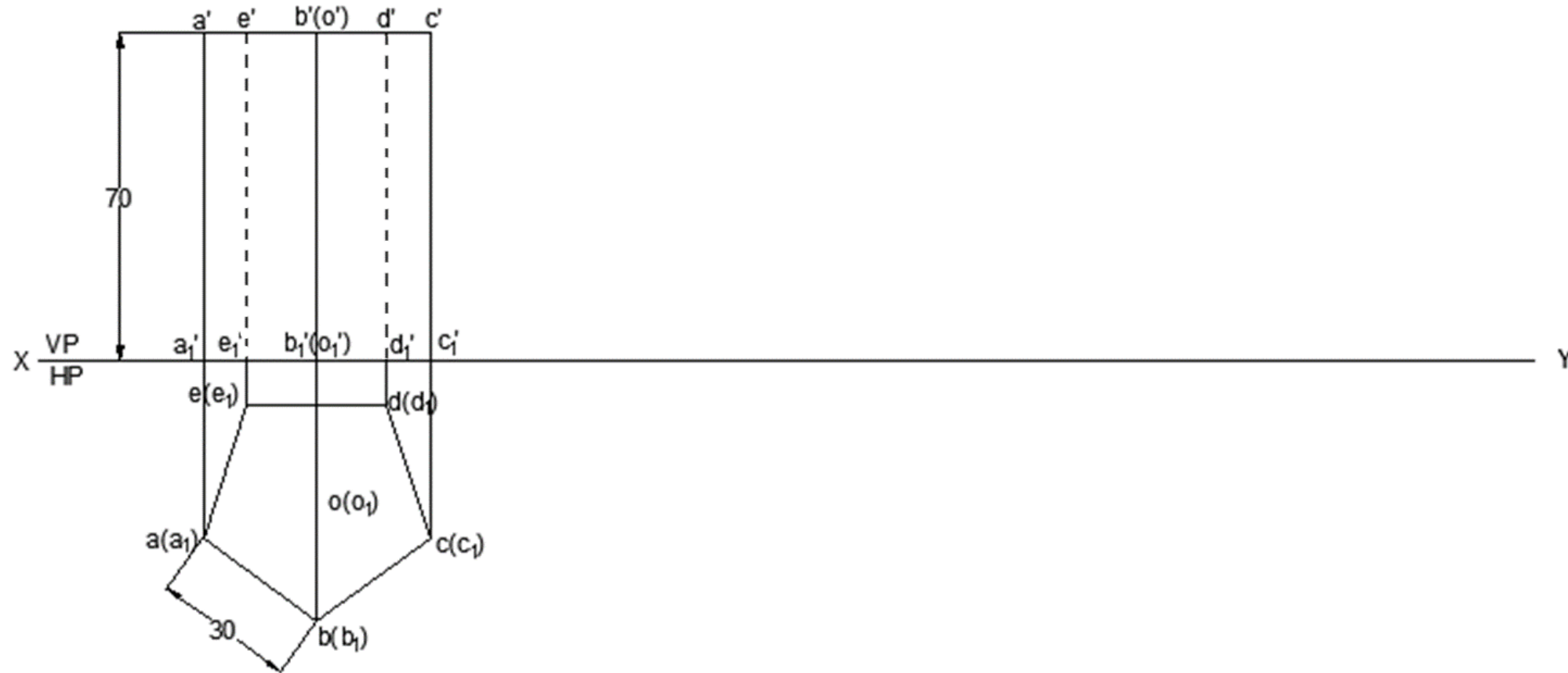
# **ENGINEERING GRAPHICS - II**

**CLASS 3: DEVELOPMENT OF SURFACES**

**(SHEET 3)**

## QUESTION BANK: DEVELOPMENT OF SURFACES PROBLEM 1

A pentagonal prism with side of base 30mm and axis 70mm long is resting on its base on HP such that one of the rectangular faces is parallel to VP and nearer to it. It is cut by an AIP inclined at  $45^\circ$  and passes through the axis at a distance of 20 mm from the top end. Draw the development of the lateral surfaces of the prism.



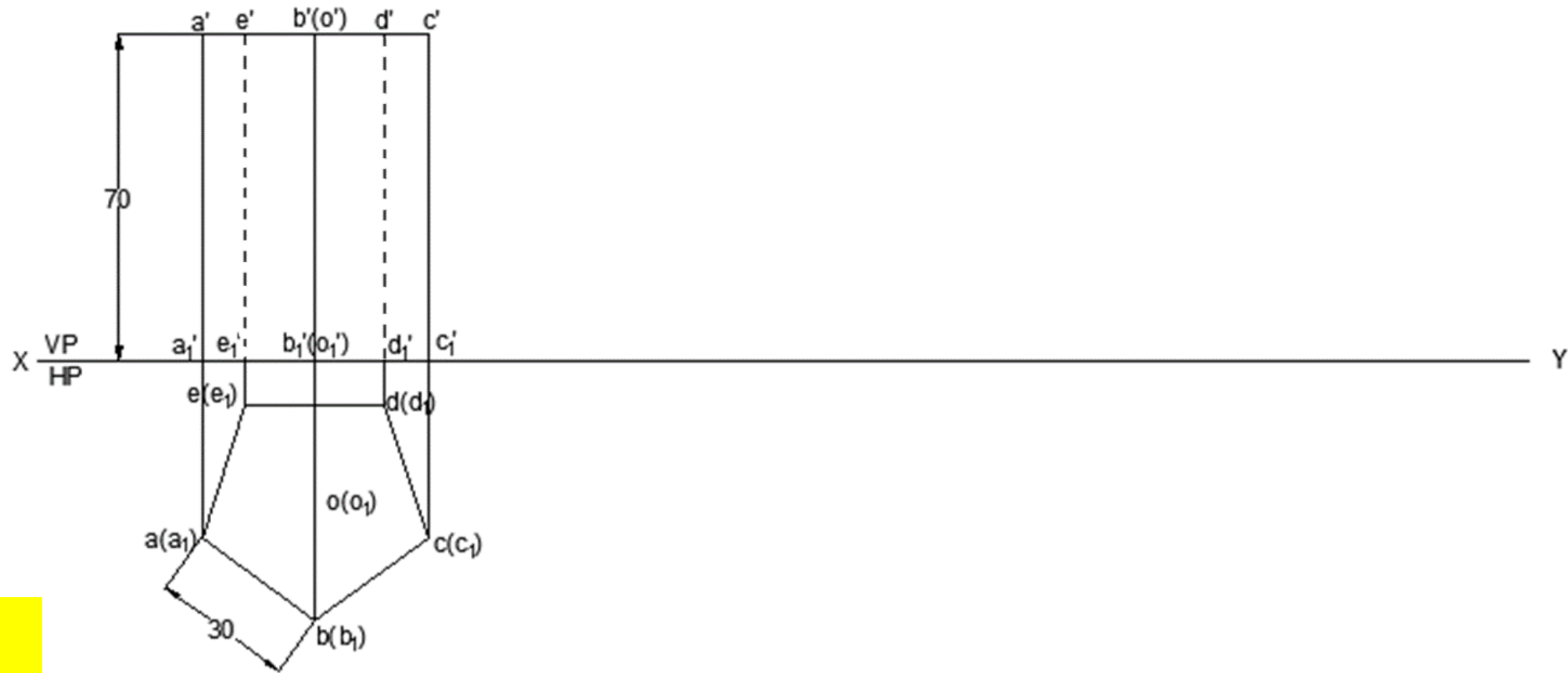
### Data

- Pentagonal prism.
- 30mm side & 70mm height.
- Resting with base on HP.
- With vertical lateral face parallel to VP and nearer to it.
- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.

A pentagonal prism with side of base 30mm and axis 70mm long is resting on its base on HP such that one of the rectangular faces is parallel to VP and nearer to it. It is cut by an AIP inclined at  $45^\circ$  and passes through the axis at a distance of 20 mm from the top end. Draw the development of the lateral surfaces of the prism.

### Steps Involved

- Draw the front & top views of the given solid



### Data

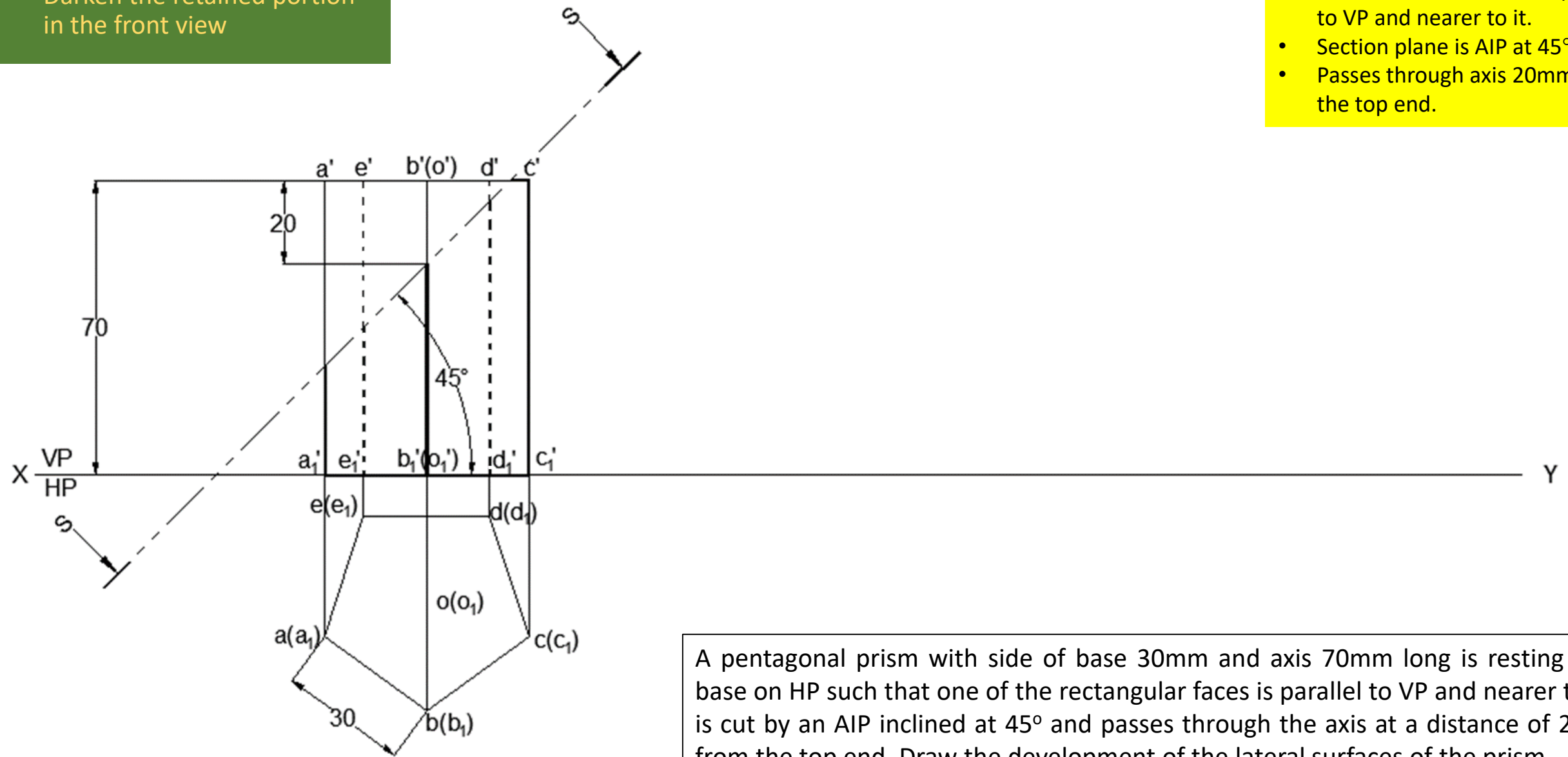
- Pentagonal prism.
- 30mm side & 70mm height.
- Resting with base on HP.
- With vertical lateral face parallel to VP and nearer to it.
- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.

## Steps Involved

- Draw the section line as per the given condition
- Darken the retained portion in the front view

## Data

- Pentagonal prism.
- 30mm side & 70mm height.
- Resting with base on HP.
- With vertical lateral face parallel to VP and nearer to it.
- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.



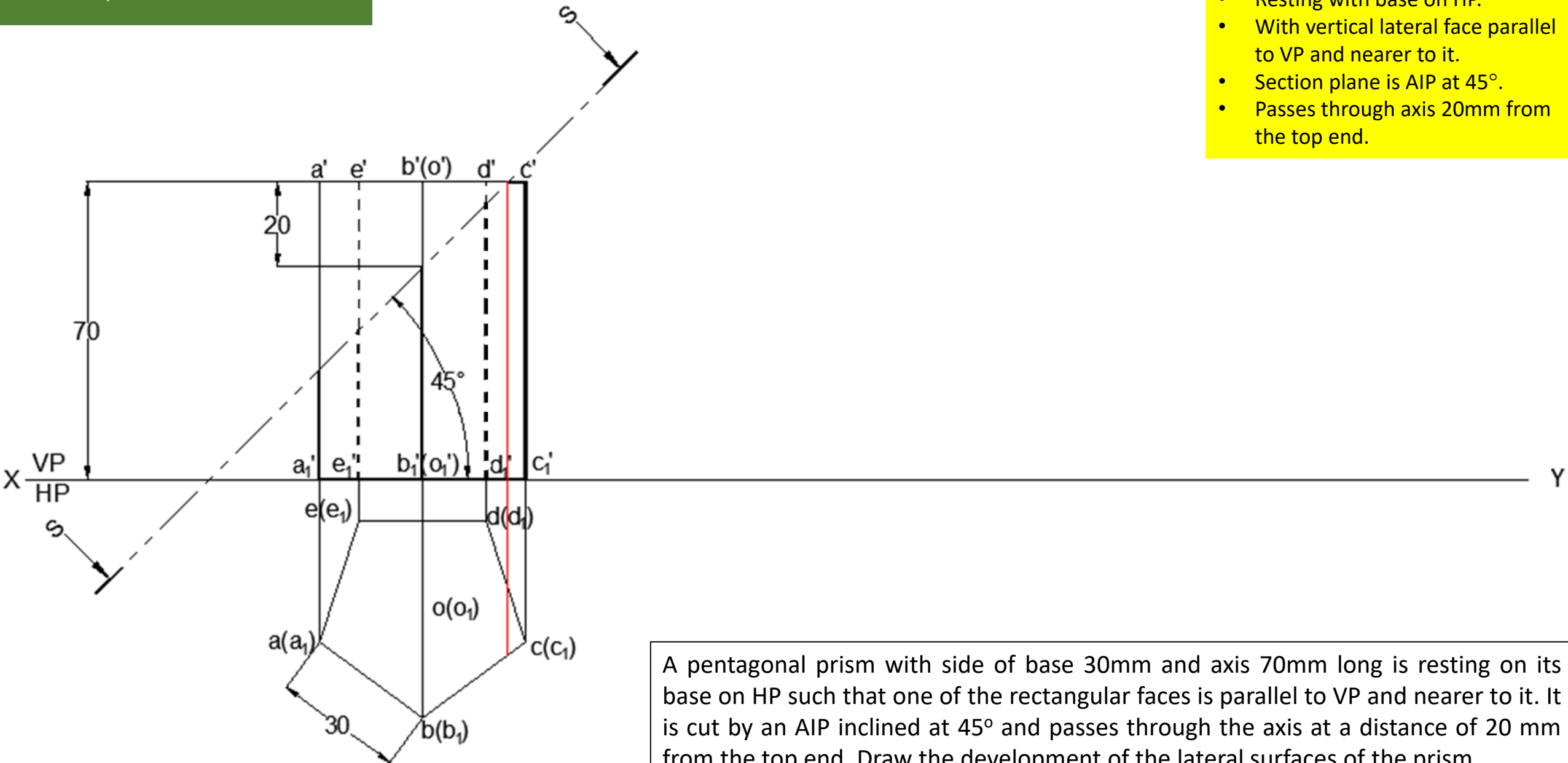
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## Steps Involved

- Identify the cutting points in the top view

## Data

- Pentagonal prism.
- 30mm side & 70mm height.
- Resting with base on HP.
- With vertical lateral face parallel to VP and nearer to it.
- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.



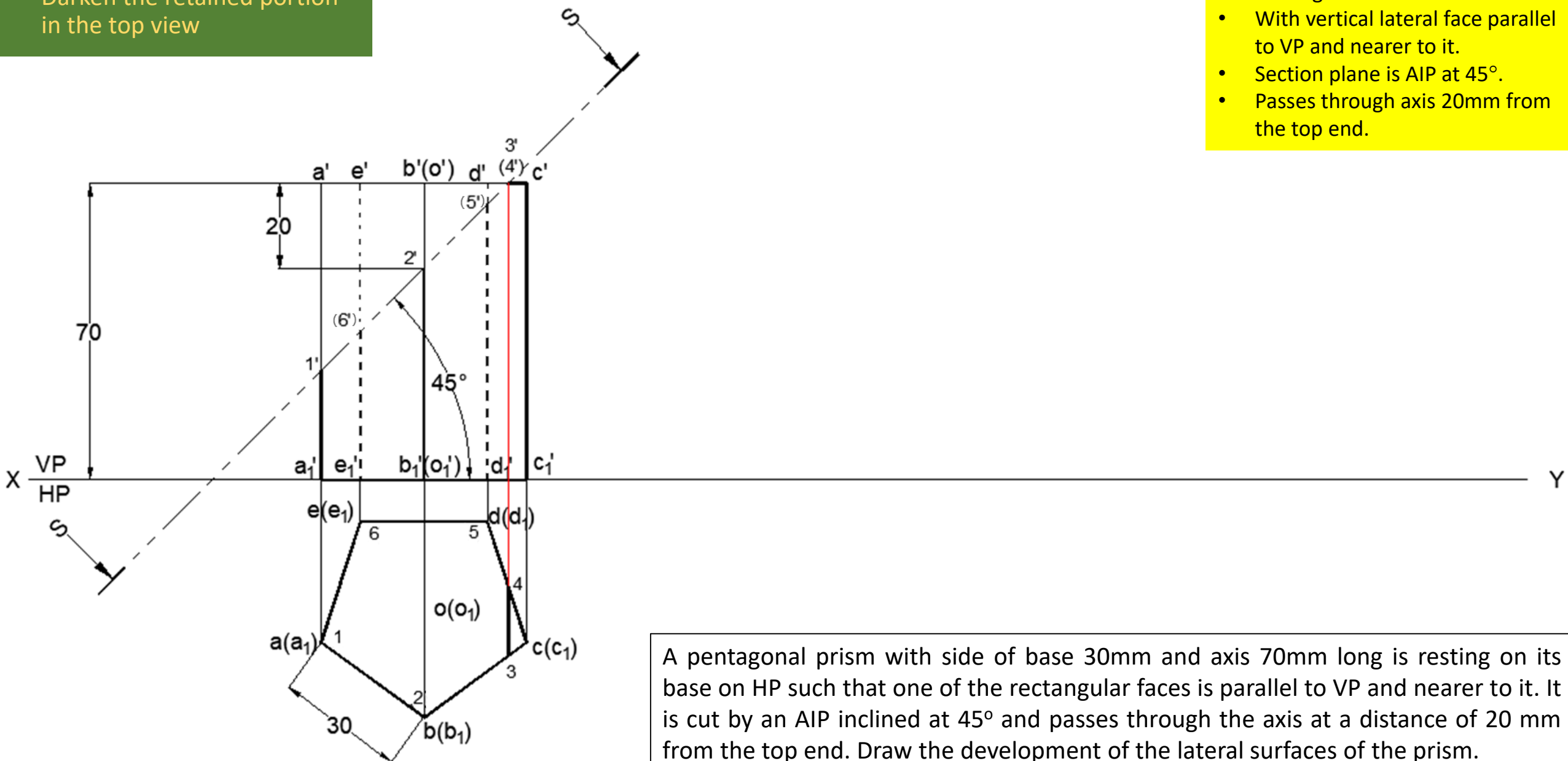
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## Steps Involved

- Mark all the cutting points
- Darken the retained portion in the top view

## Data

- Pentagonal prism.
- 30mm side & 70mm height.
- Resting with base on HP.
- With vertical lateral face parallel to VP and nearer to it.
- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.

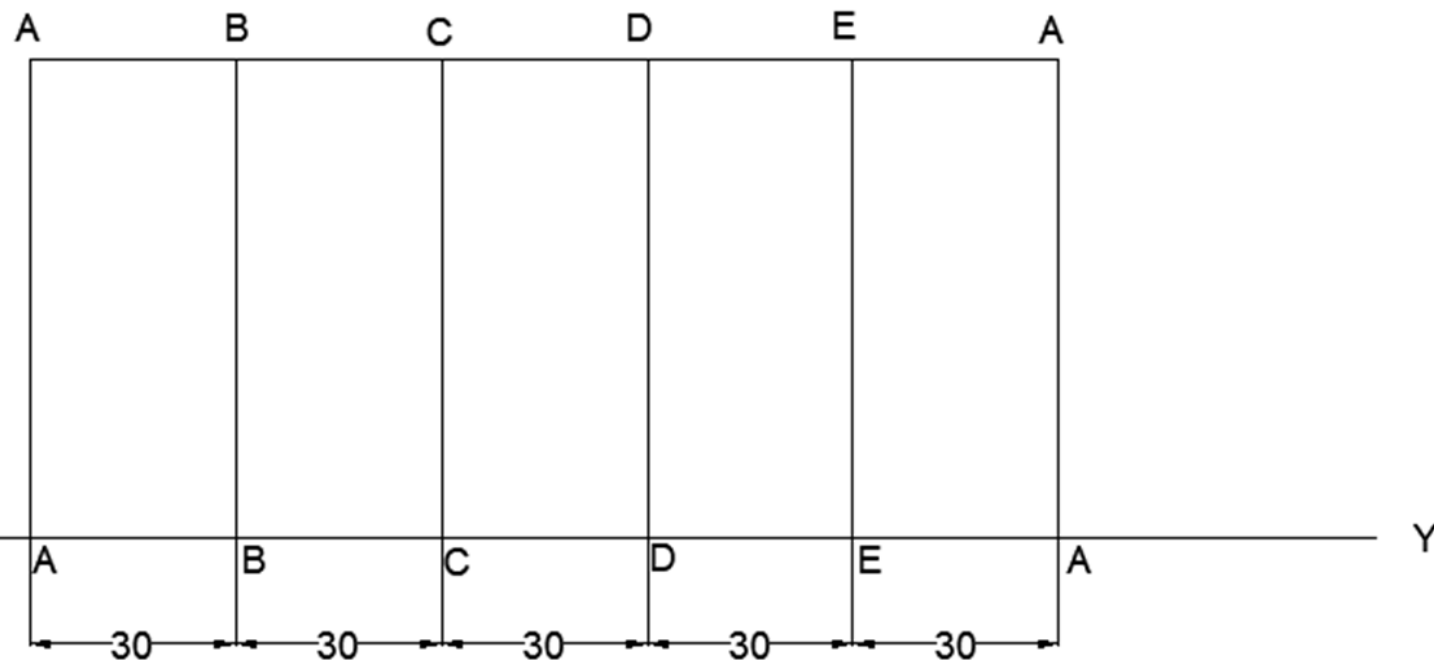
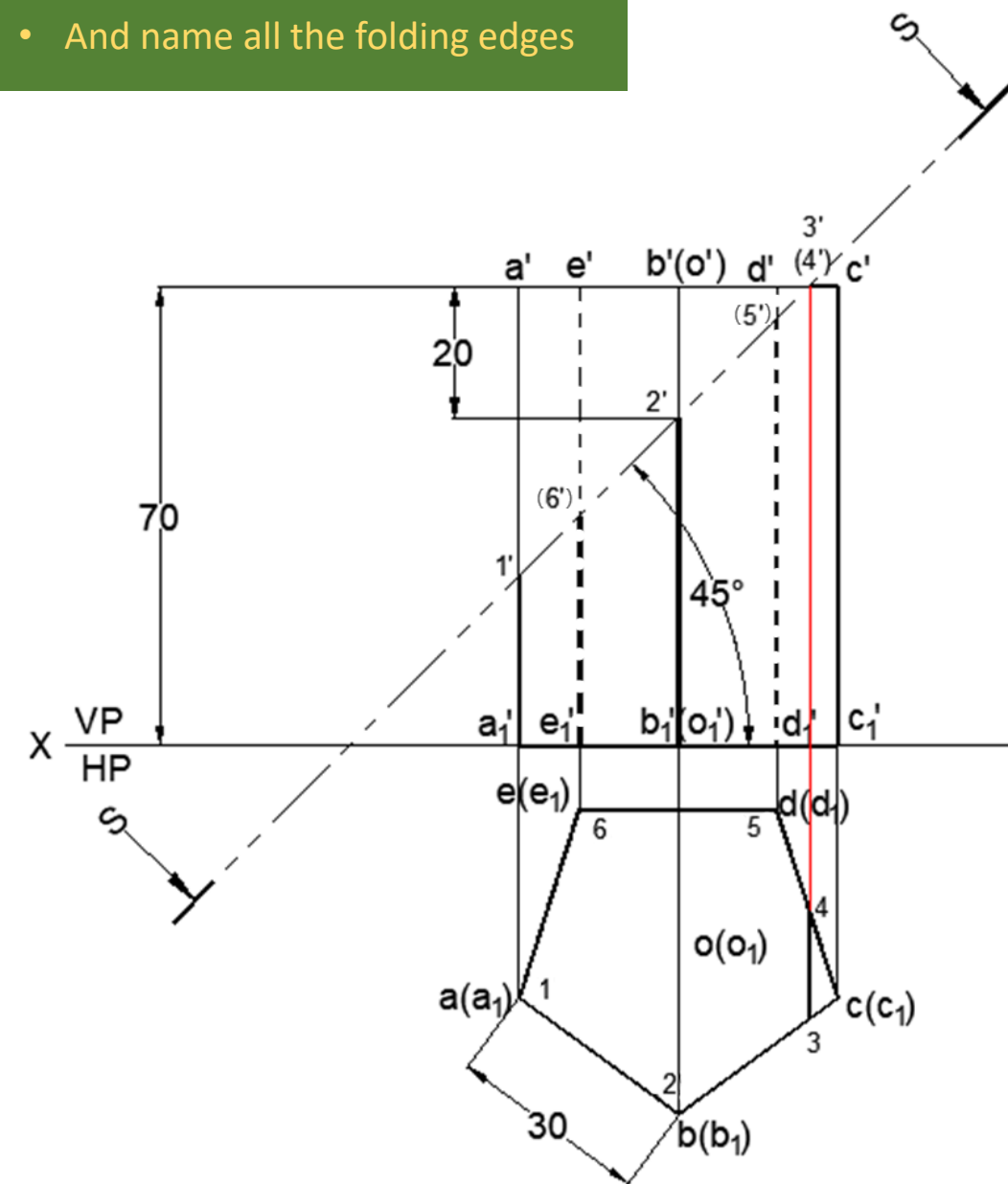


## Steps Involved

- Draw 5 lateral faces (development) as shown
- And name all the folding edges

## Data

- Pentagonal prism.
- 30mm side & 70mm height.
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- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.



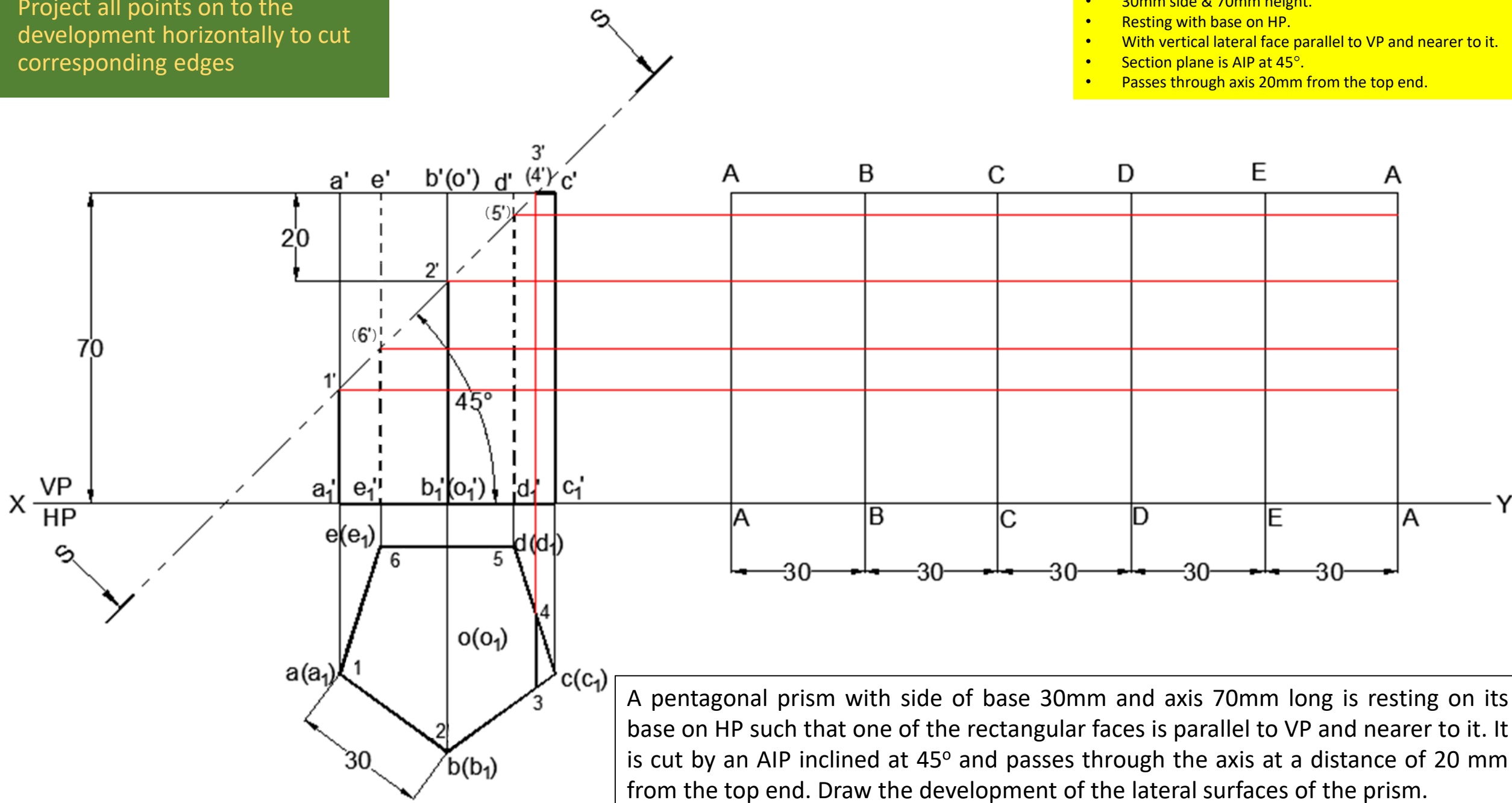
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# Steps Involved

- Project all points on to the development horizontally to cut corresponding edges

## Data

- Pentagonal prism.
- 30mm side & 70mm height.
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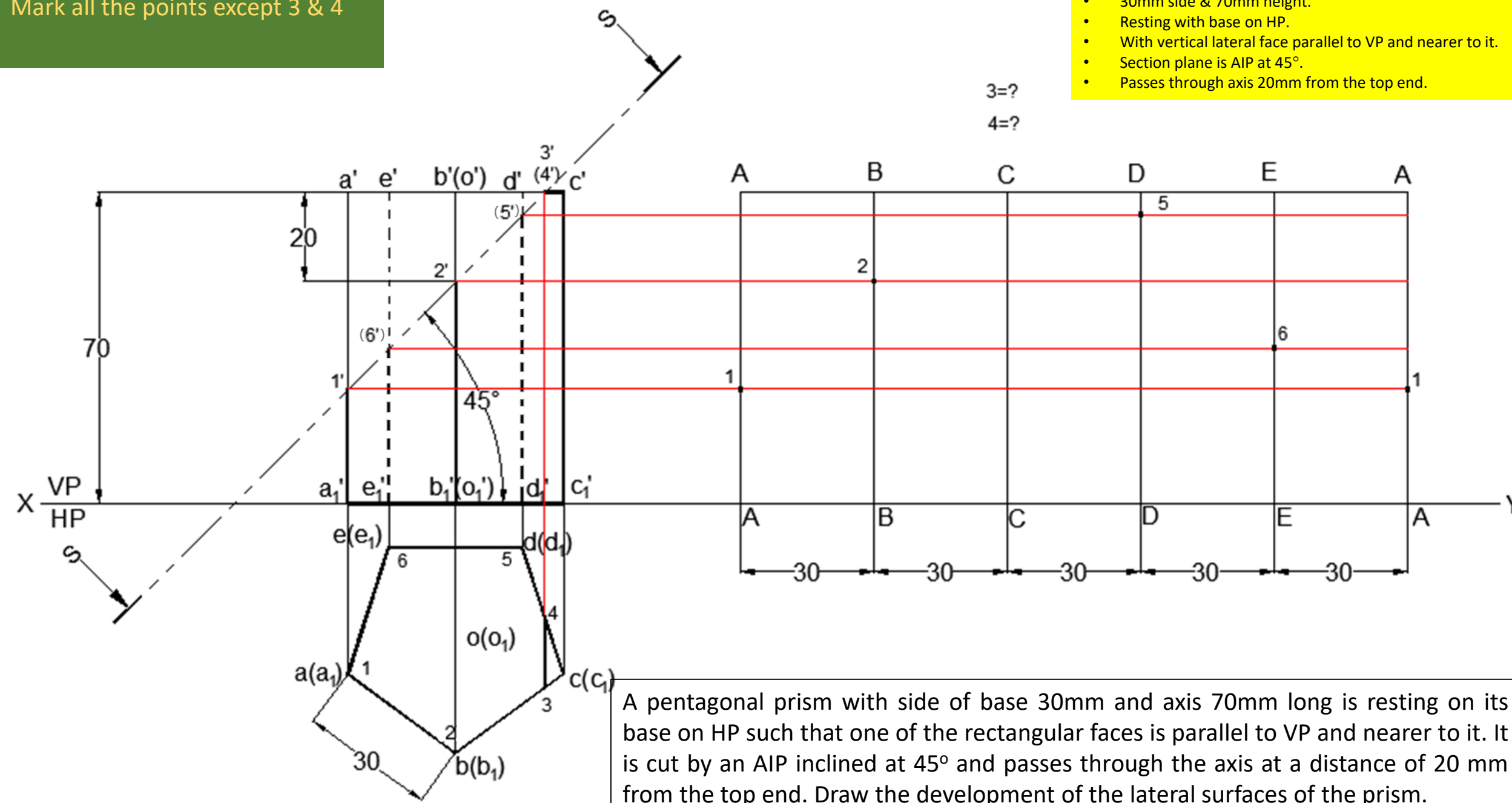


# Steps Involved

- Mark all the points except 3 & 4

## Data

- Pentagonal prism.
- 30mm side & 70mm height.
- Resting with base on HP.
- With vertical lateral face parallel to VP and nearer to it.
- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.

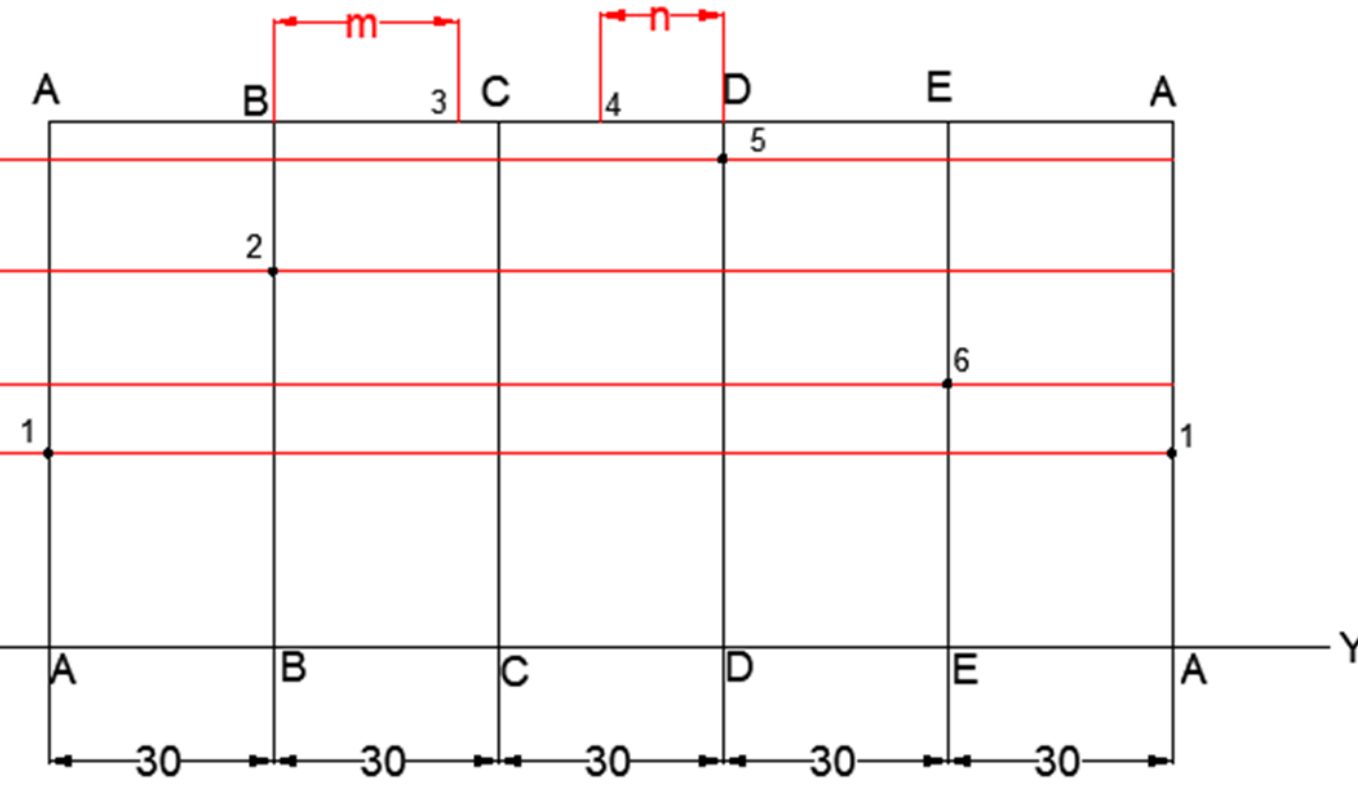
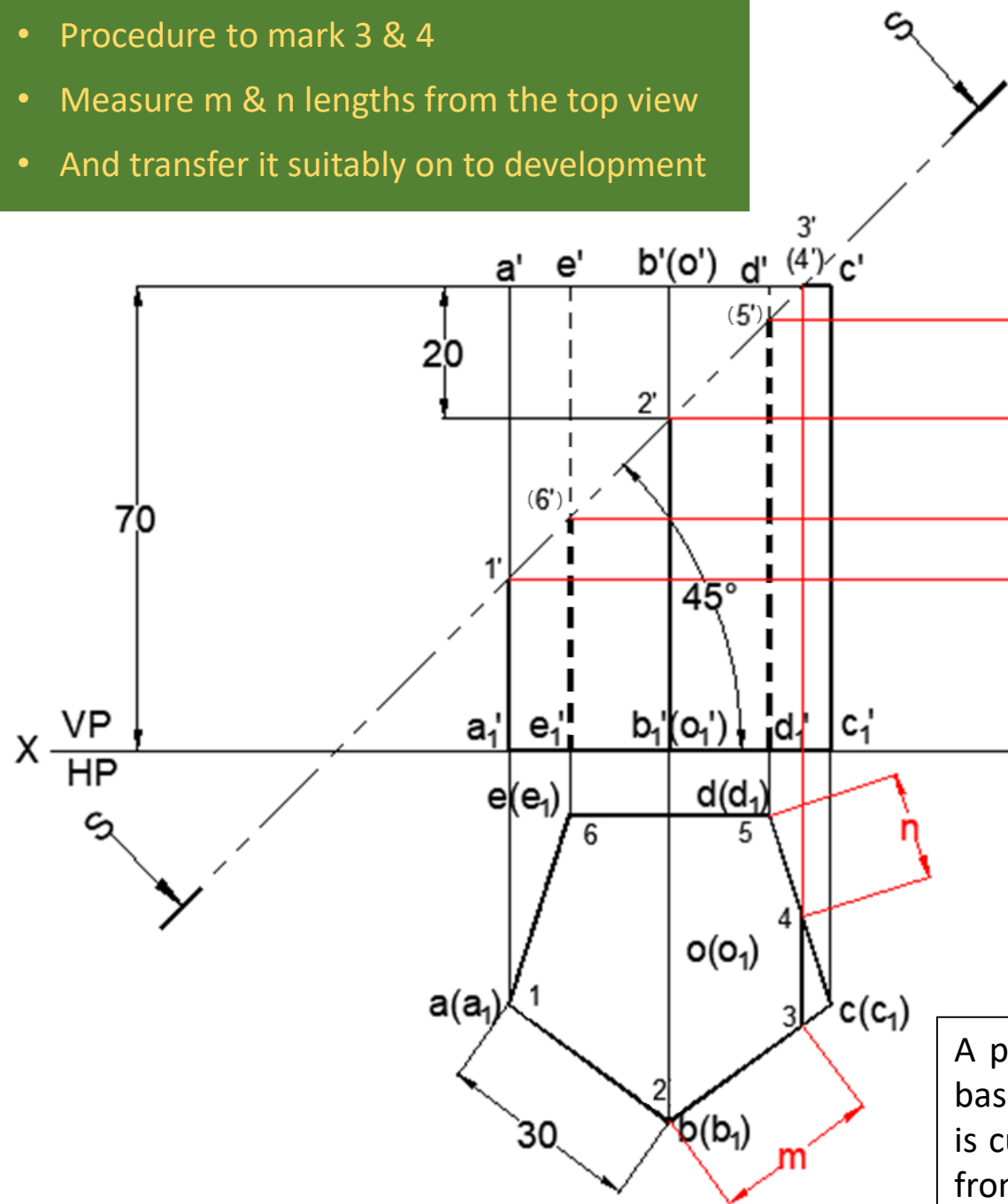


# Steps Involved

- Procedure to mark 3 & 4
- Measure m & n lengths from the top view
- And transfer it suitably on to development

## Data

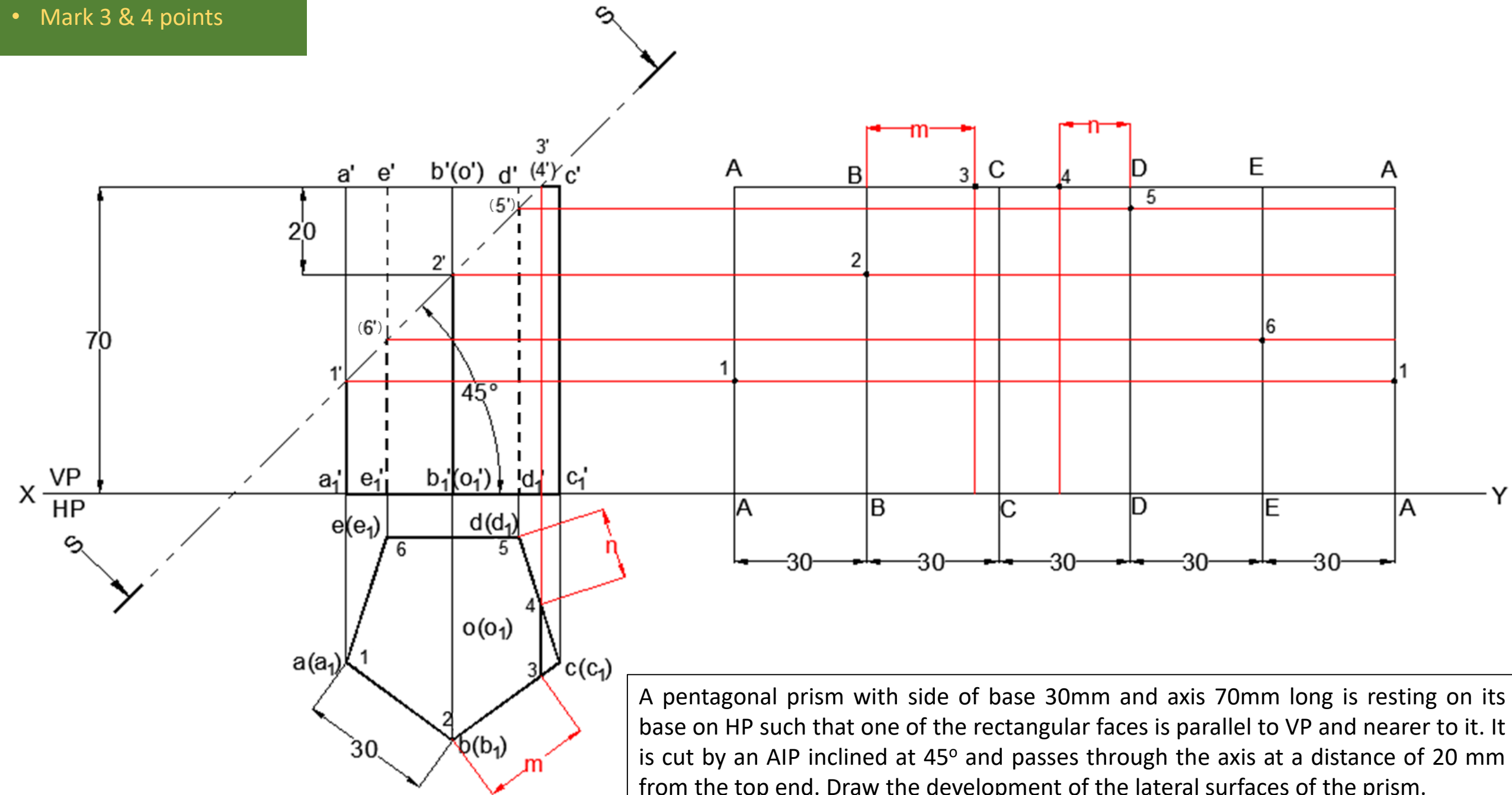
- Pentagonal prism.
- 30mm side & 70mm height.
- Resting with base on HP.
- With vertical lateral face parallel to VP and nearer to it.
- Section plane is AIP at  $45^\circ$ .
- Passes through axis 20mm from the top end.



A pentagonal prism with side of base 30mm and axis 70mm long is resting on its base on HP such that one of the rectangular faces is parallel to VP and nearer to it. It is cut by an AIP inclined at  $45^\circ$  and passes through the axis at a distance of 20 mm from the top end. Draw the development of the lateral surfaces of the prism.

## Steps Involved

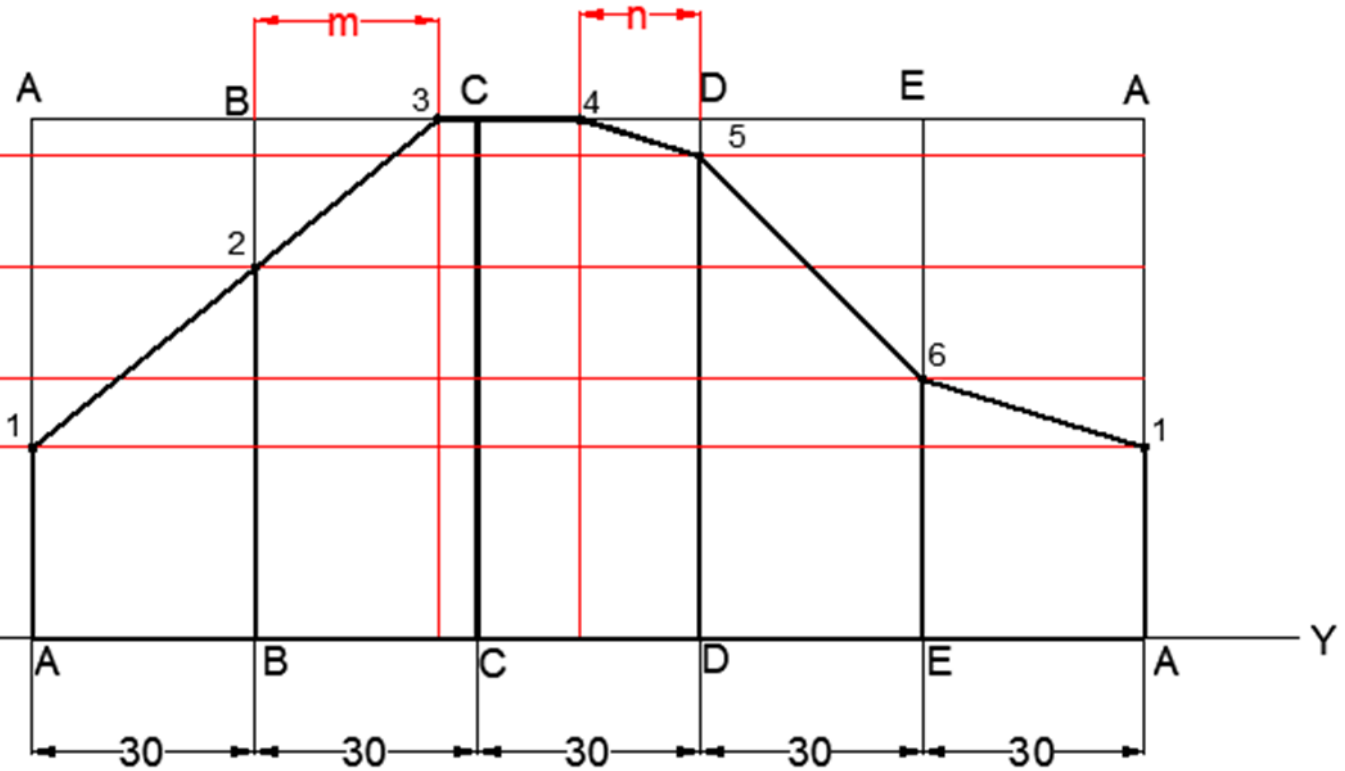
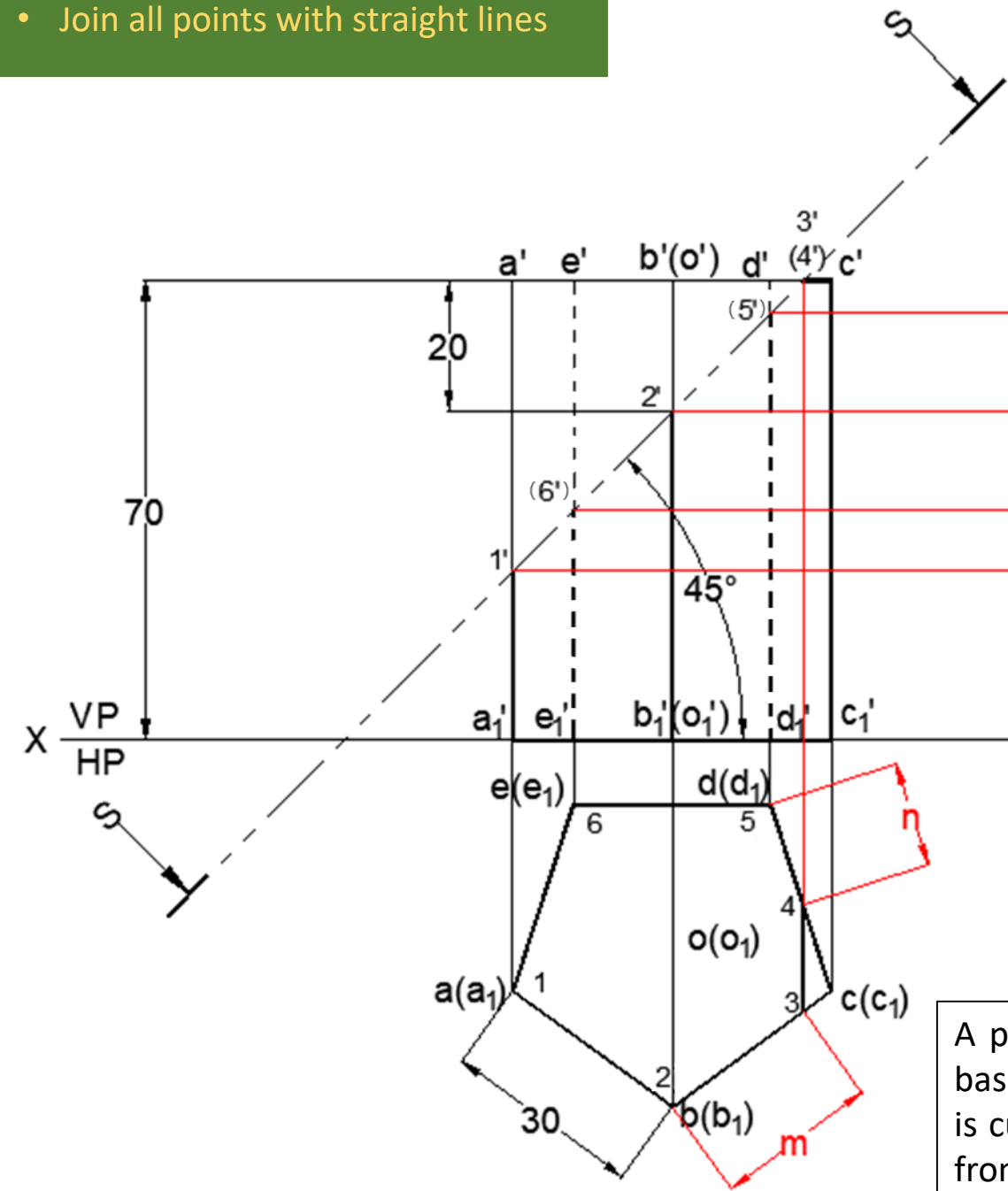
- Mark 3 & 4 points



# Steps Involved

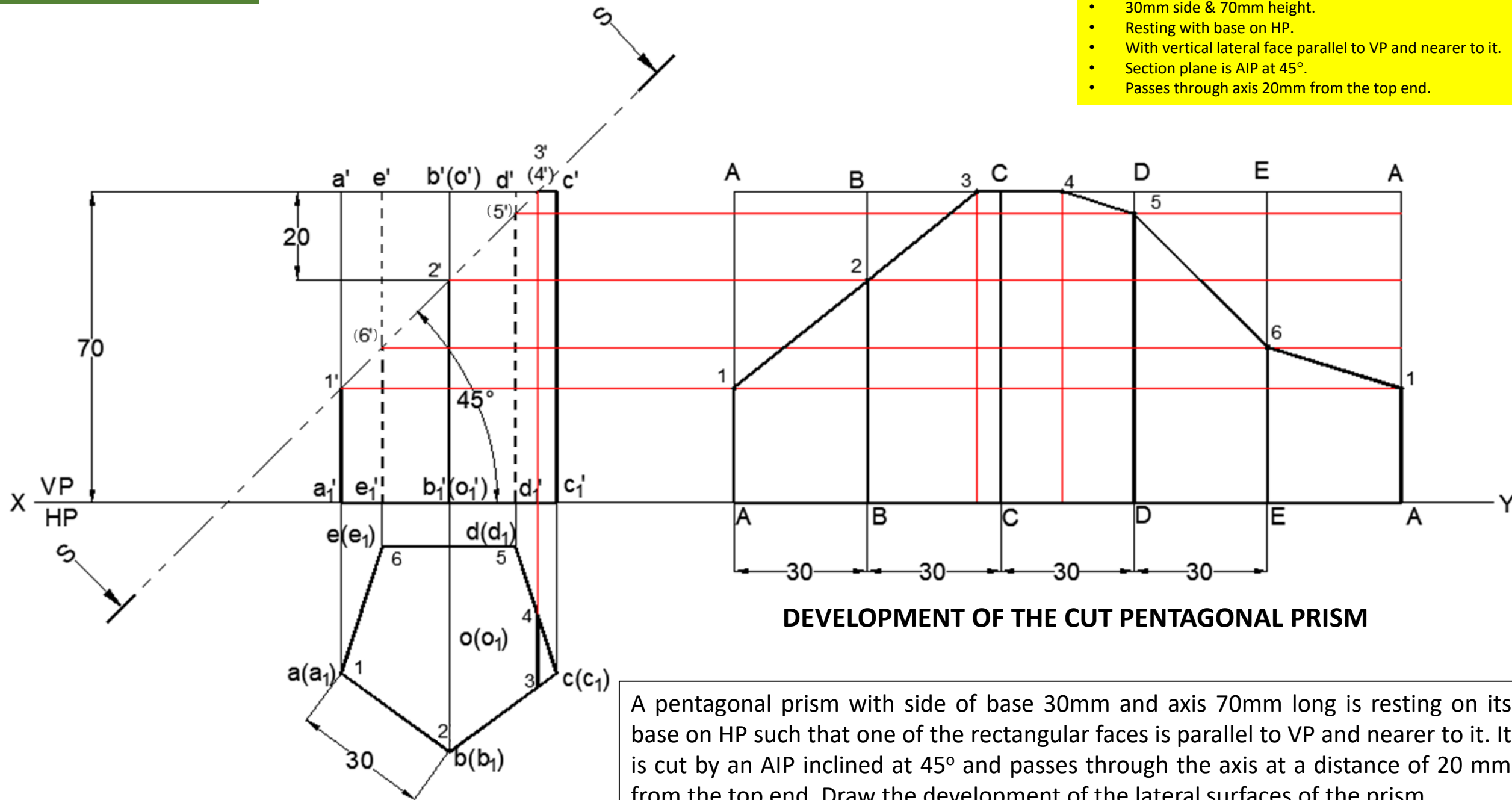
- Join all points with straight lines

- Data**
- Pentagonal prism.
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  - Resting with base on HP.
  - With vertical lateral face parallel to VP and nearer to it.
  - Section plane is AIP at  $45^\circ$ .
  - Passes through axis 20mm from the top end.



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