

# Informatika alapjai 2

# Műszaki ábrázolás

**RENDEZETT VETÜLETEK**

# A vetületek általános jellemzése

# A vetületek fogalma

A vetület a tárgy képe — adott méretarányban  
— a vetítési szabályok szerint

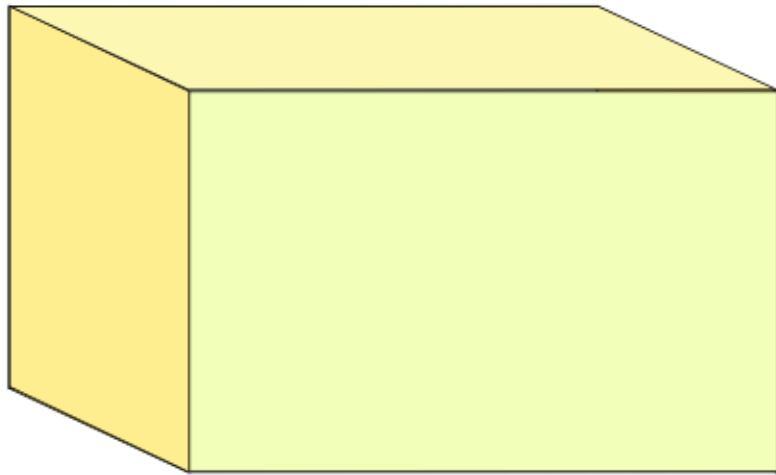
## A vetületek fajtái

**Nézet:** a tárgy látható felületeinek, éleinek vetülete

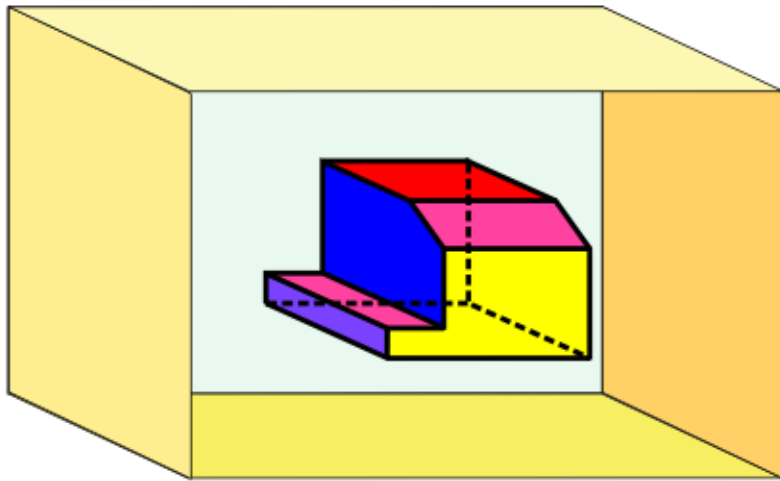
**Metszet:** a metszősíkkal képzeletben elvágott tárgy felülete

# **A rendezett vetületek származtatása**

# „Dobozt” alkotó képsíkok felvétele

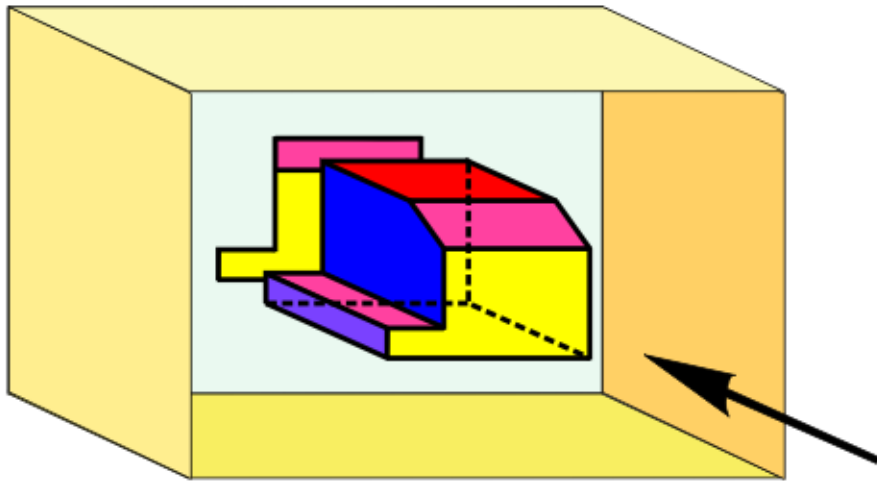


# Az alkatrész (képzeletbeli) elhelyezése a „dobozban”

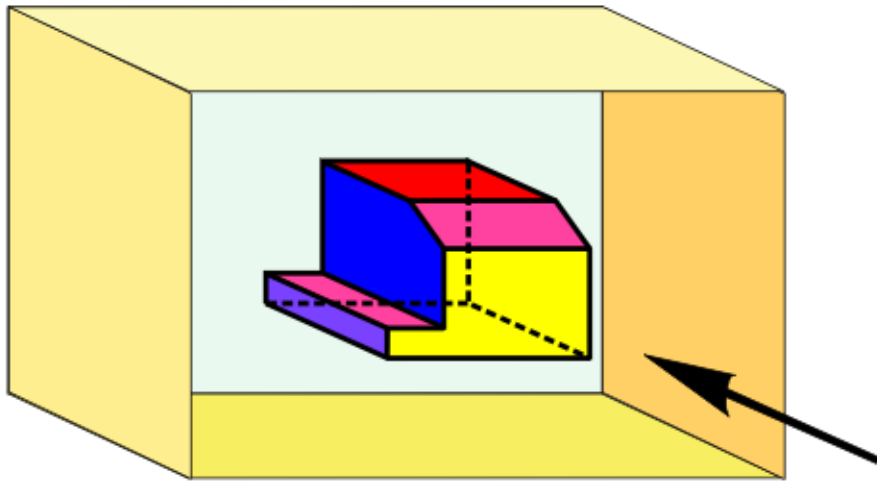




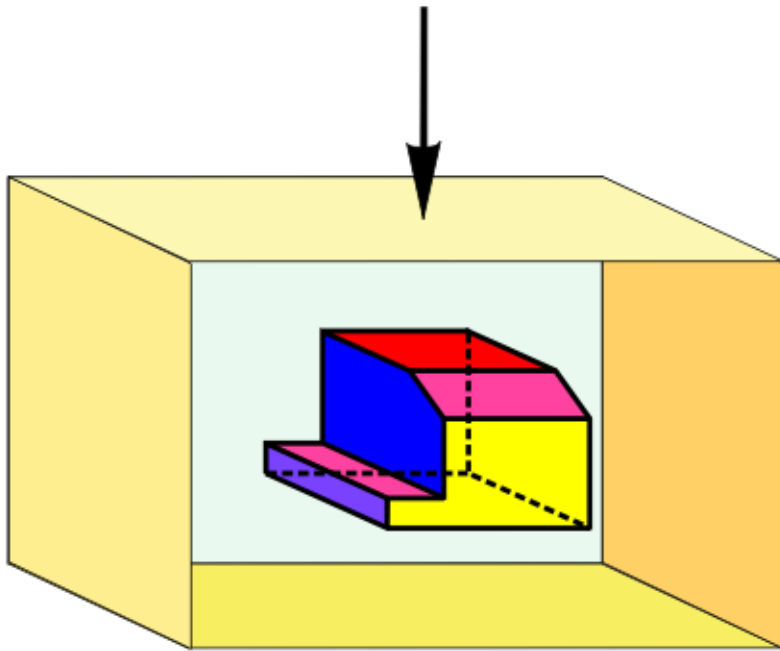
# Vetítés előről→előlnézet



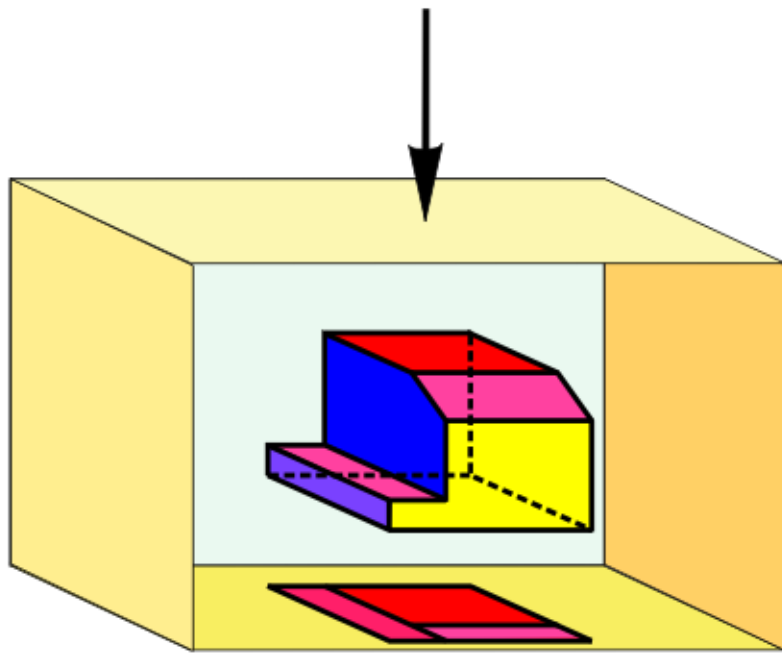
# Vetítés előről→előlnézet



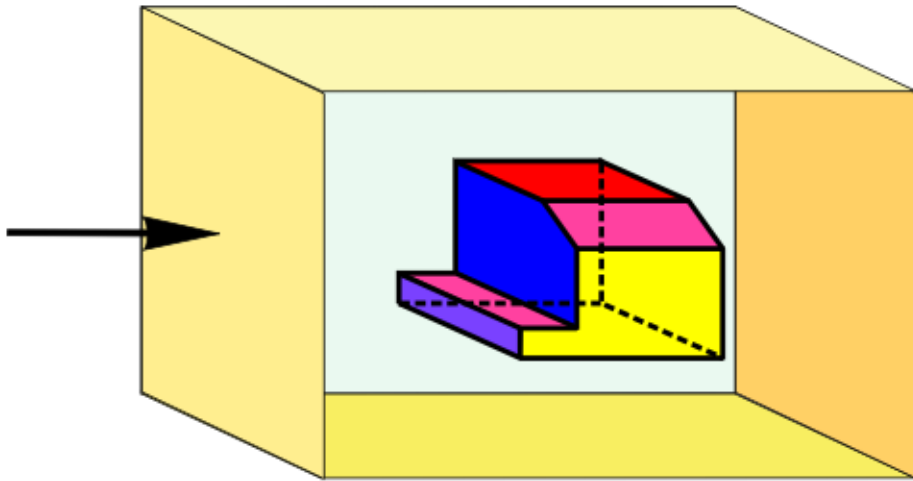
# Vetítés felülről→felülnézet



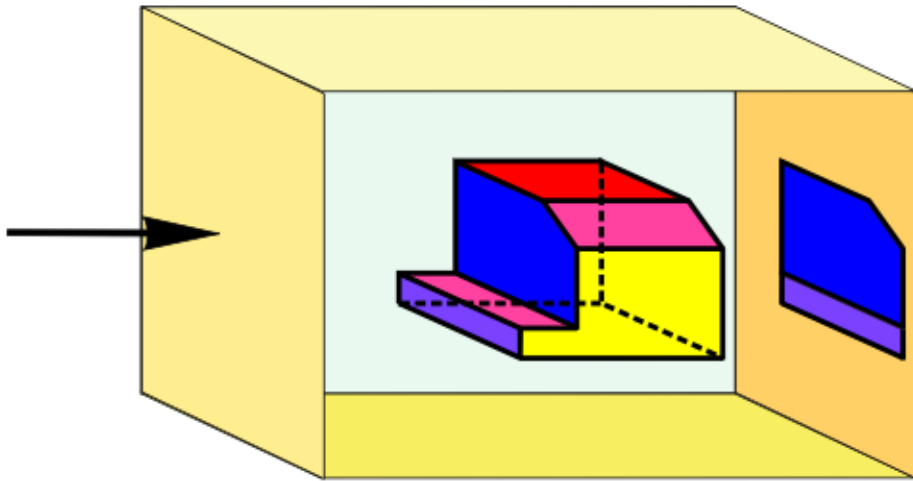
# Vetítés felülről→felülnézet



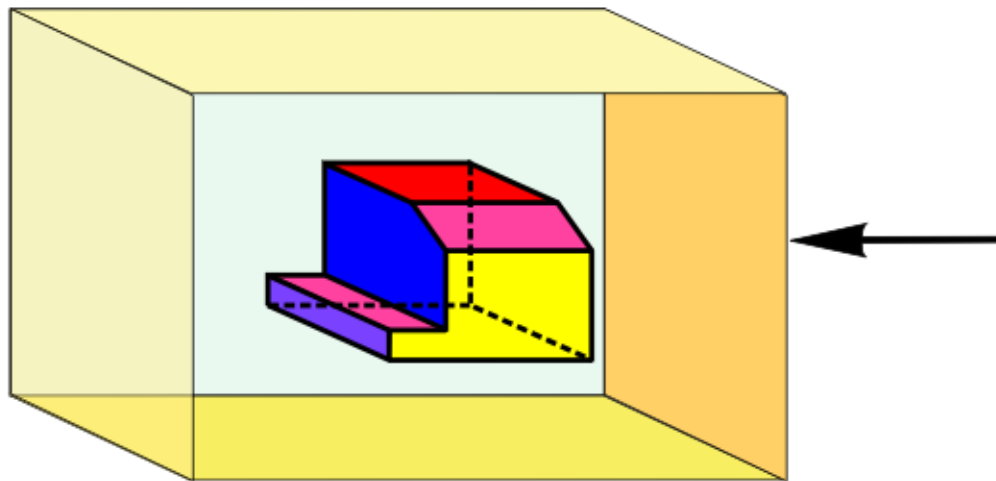
# Vetítés balról→balnézet



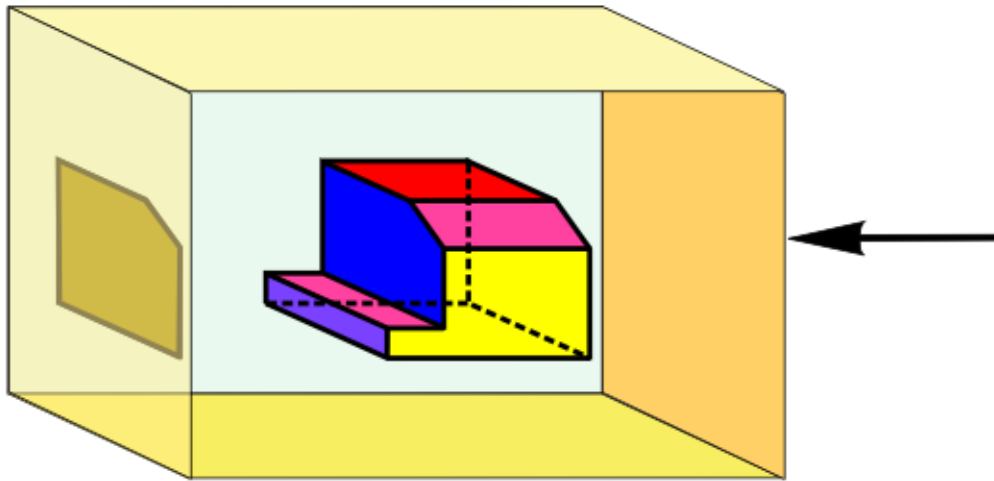
# Vetítés balról→balnézet



# Vetítés jobbról→jobb nézet

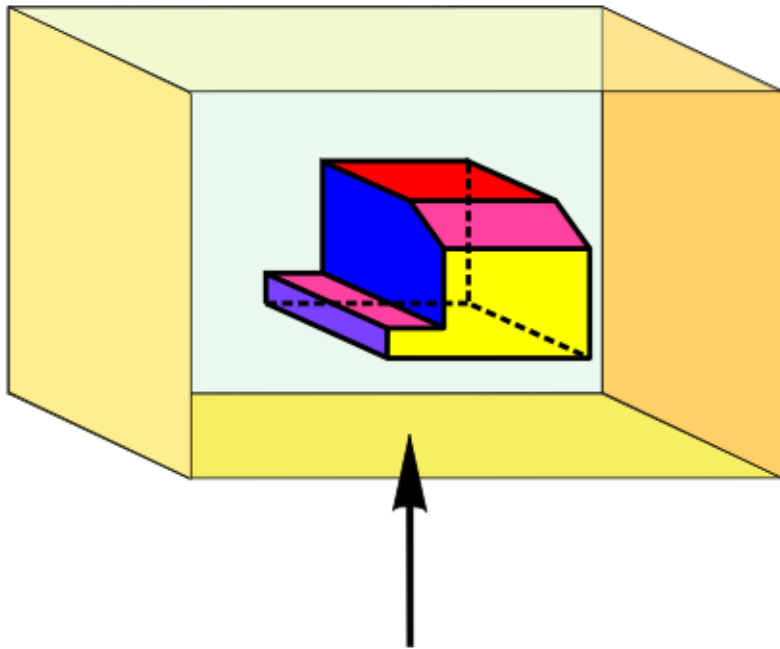


# Vetítés jobbról→jobb nézet

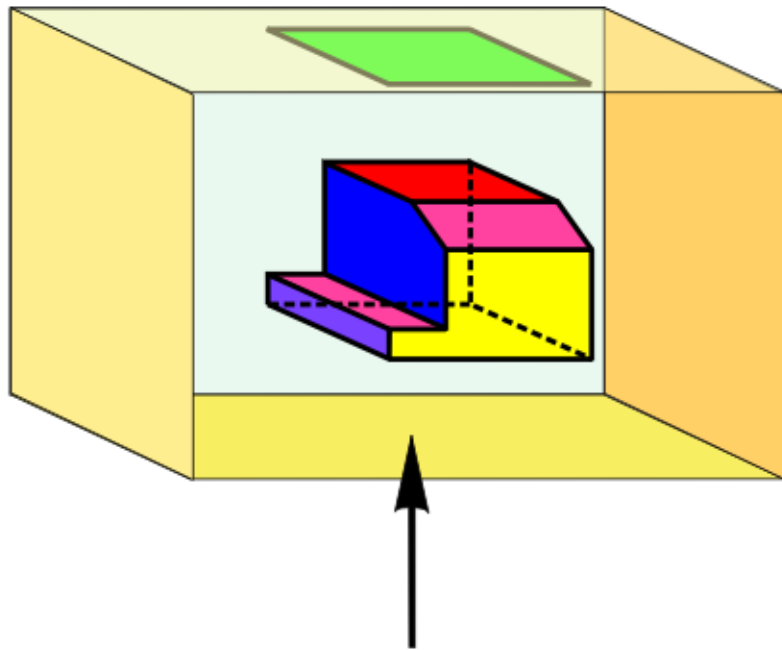




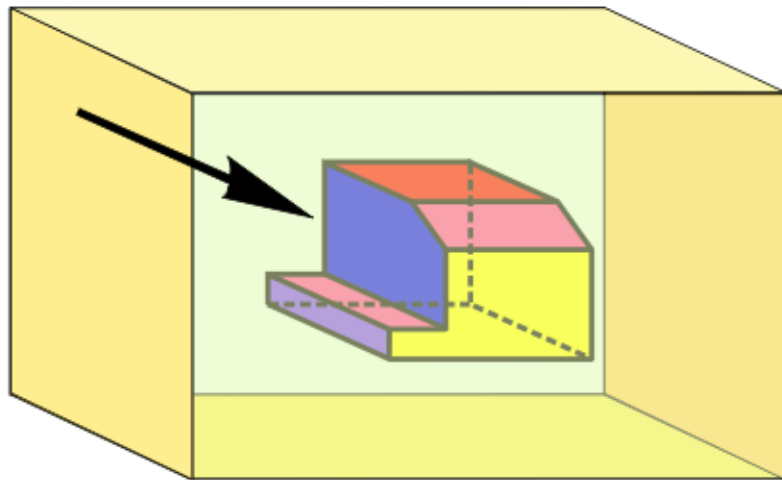
# Vetítés alulról→alulnézet



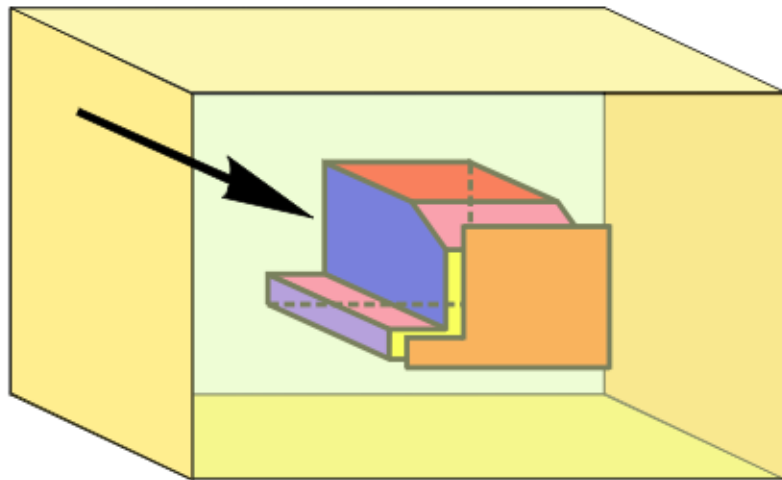
# Vetítés alulról→alulnézet



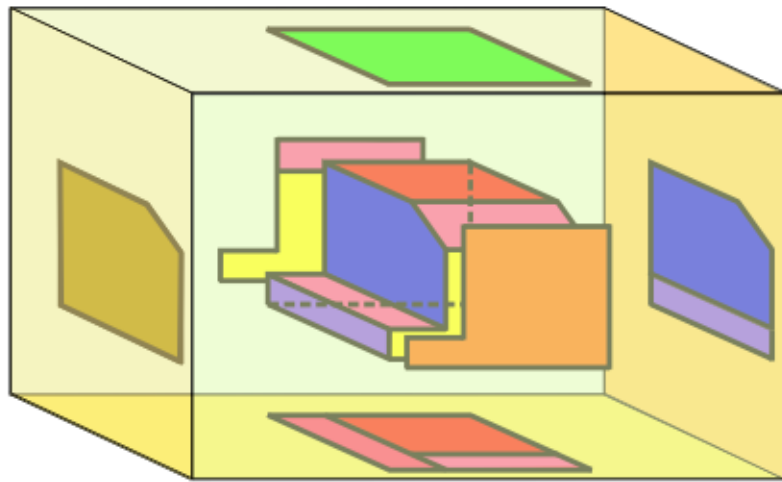
# Vetítés hátról→hátnézet



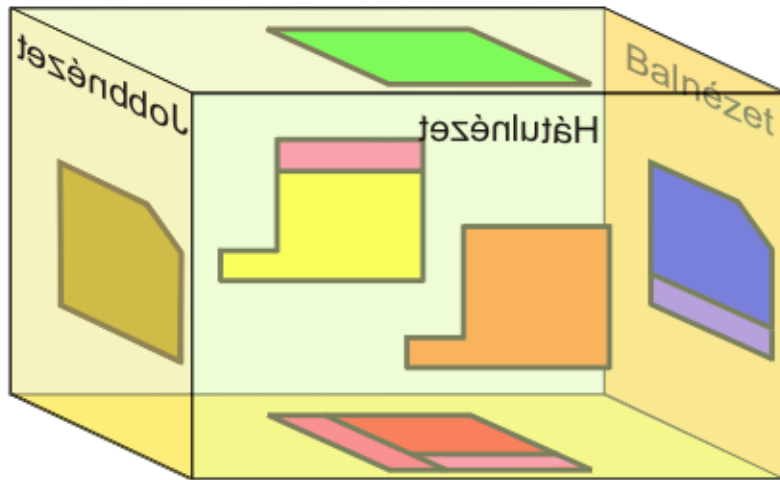
# Vetítés hátulról→hátnézet



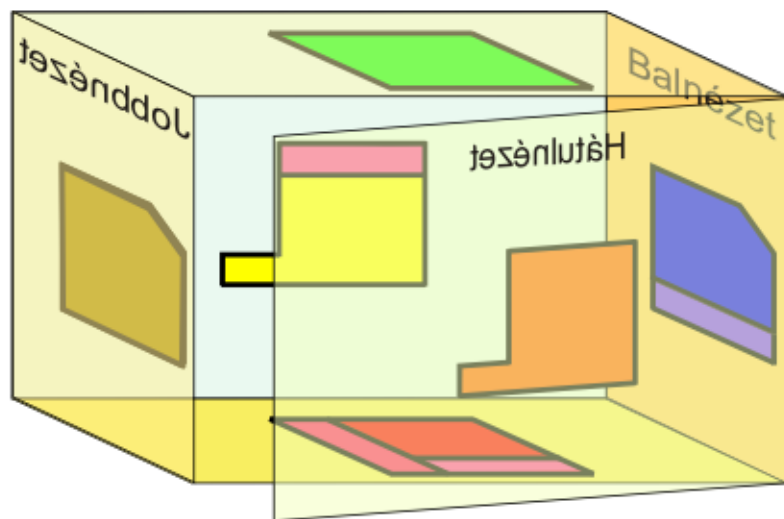
# A „doboz” oldalai a rajta kialakult „fényképekkel”



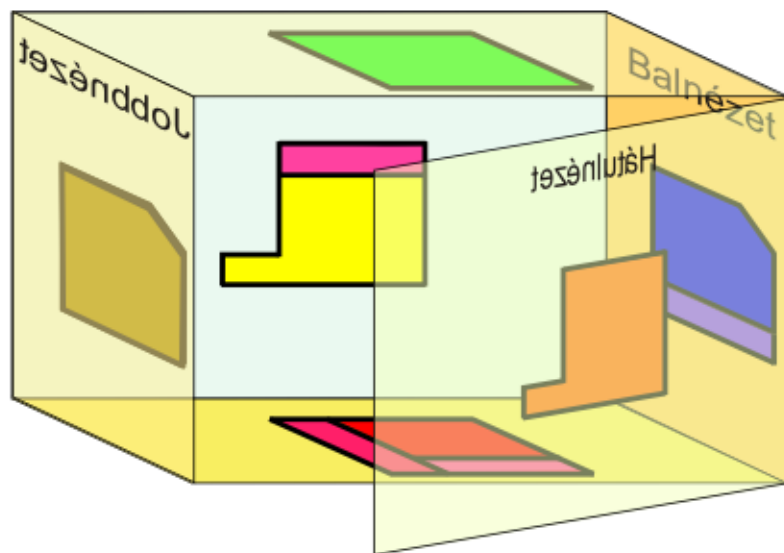
# Az alkatrész (képzeltbeli) eltávolítása a dobozból



# A „doboz” kiterítése

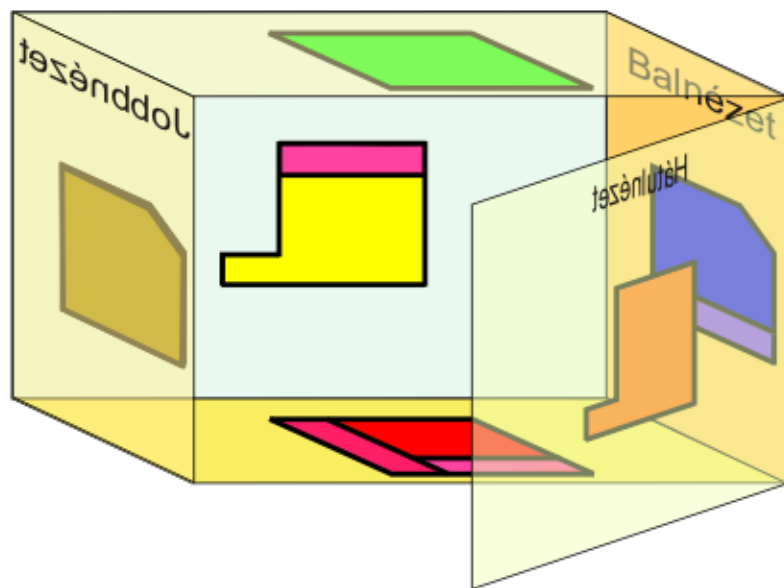


# A „doboz” kiterítése

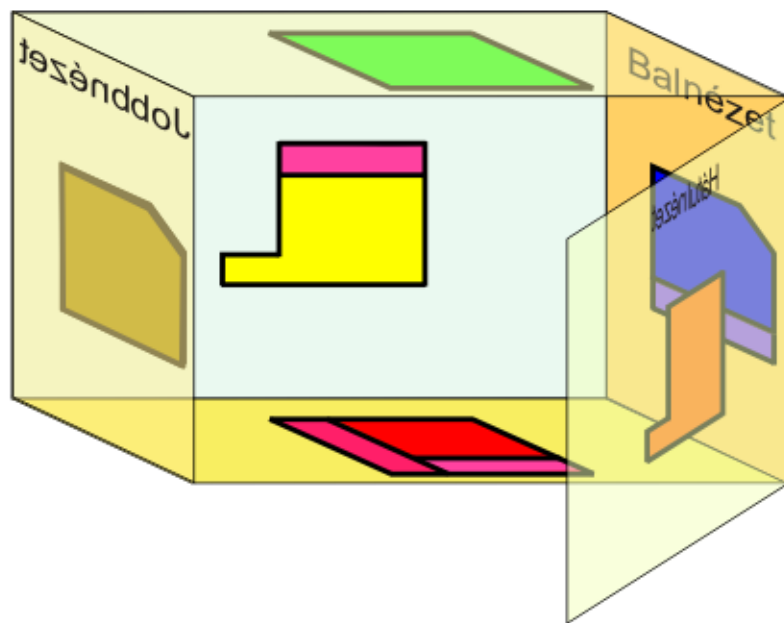




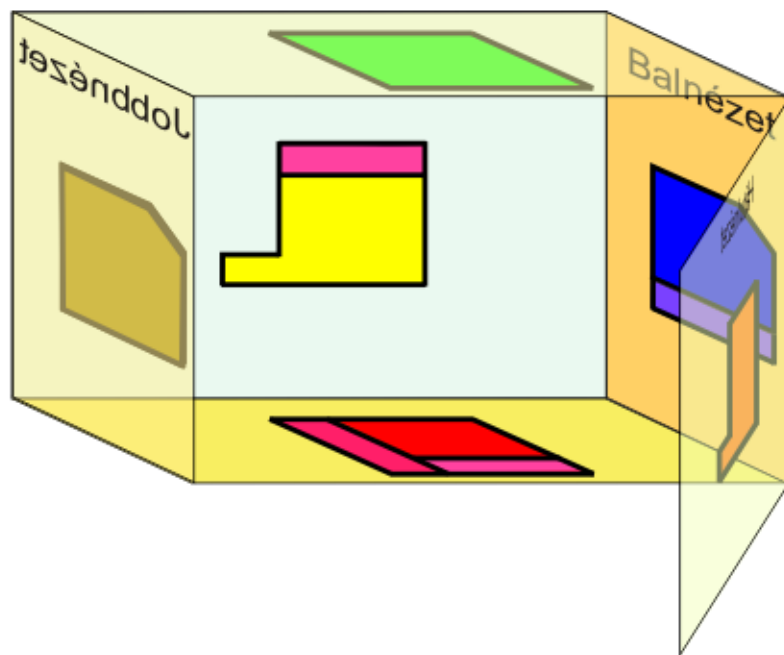
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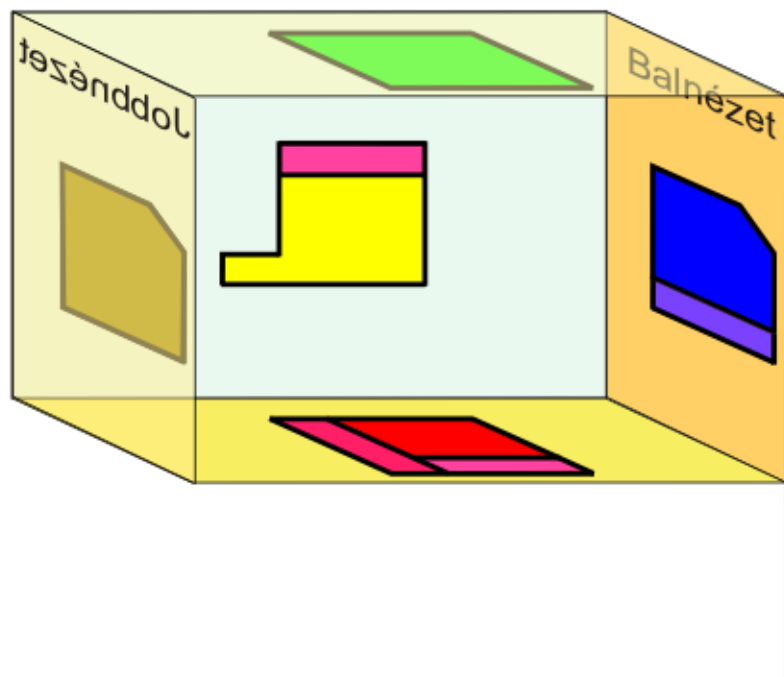
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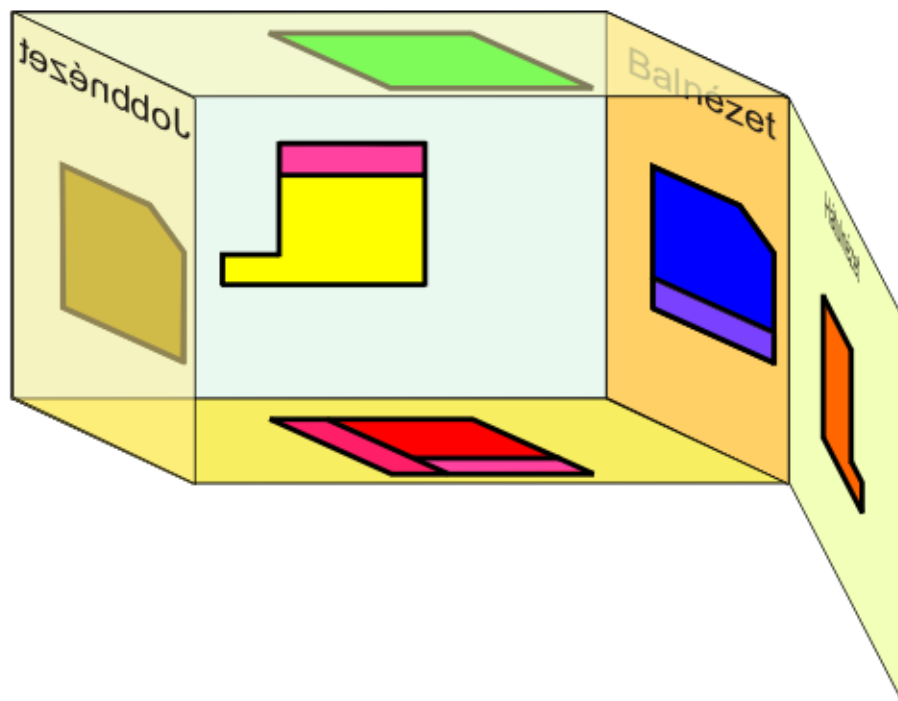
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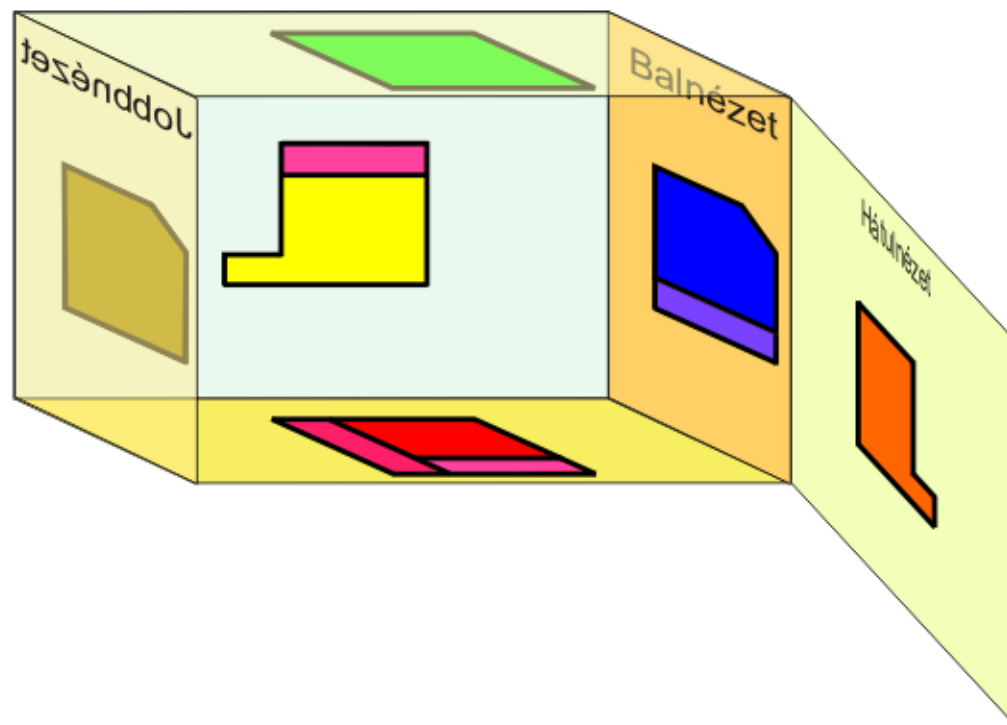
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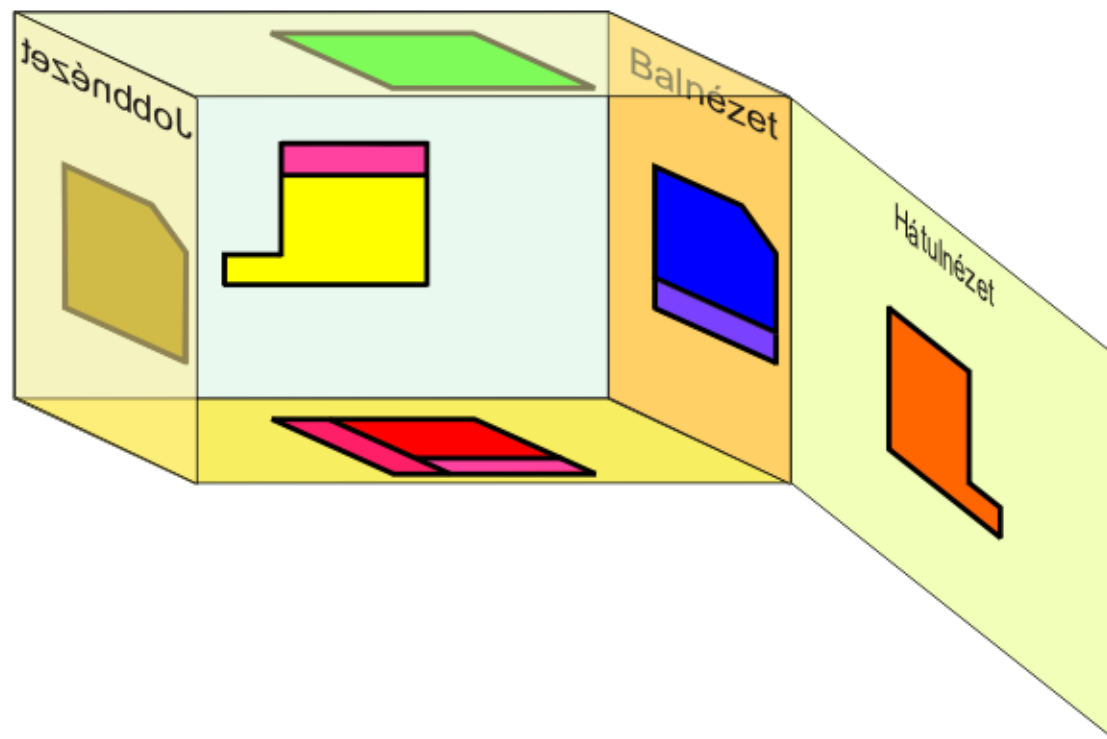
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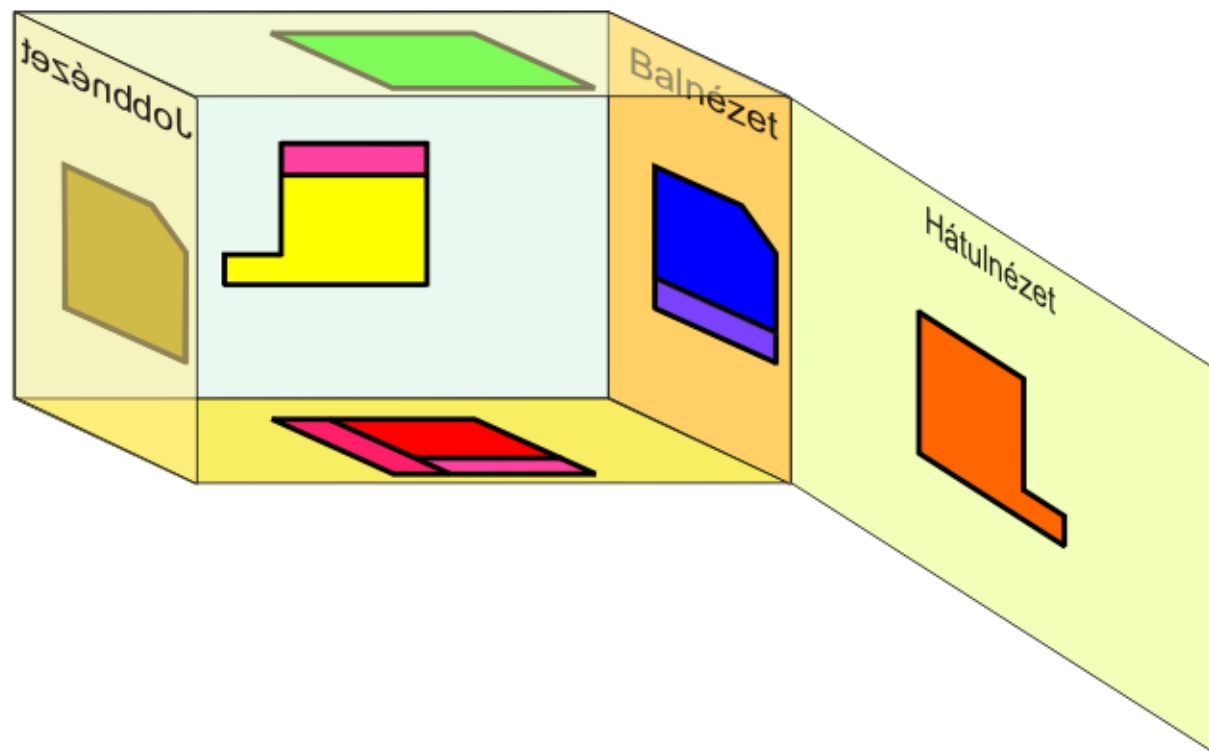
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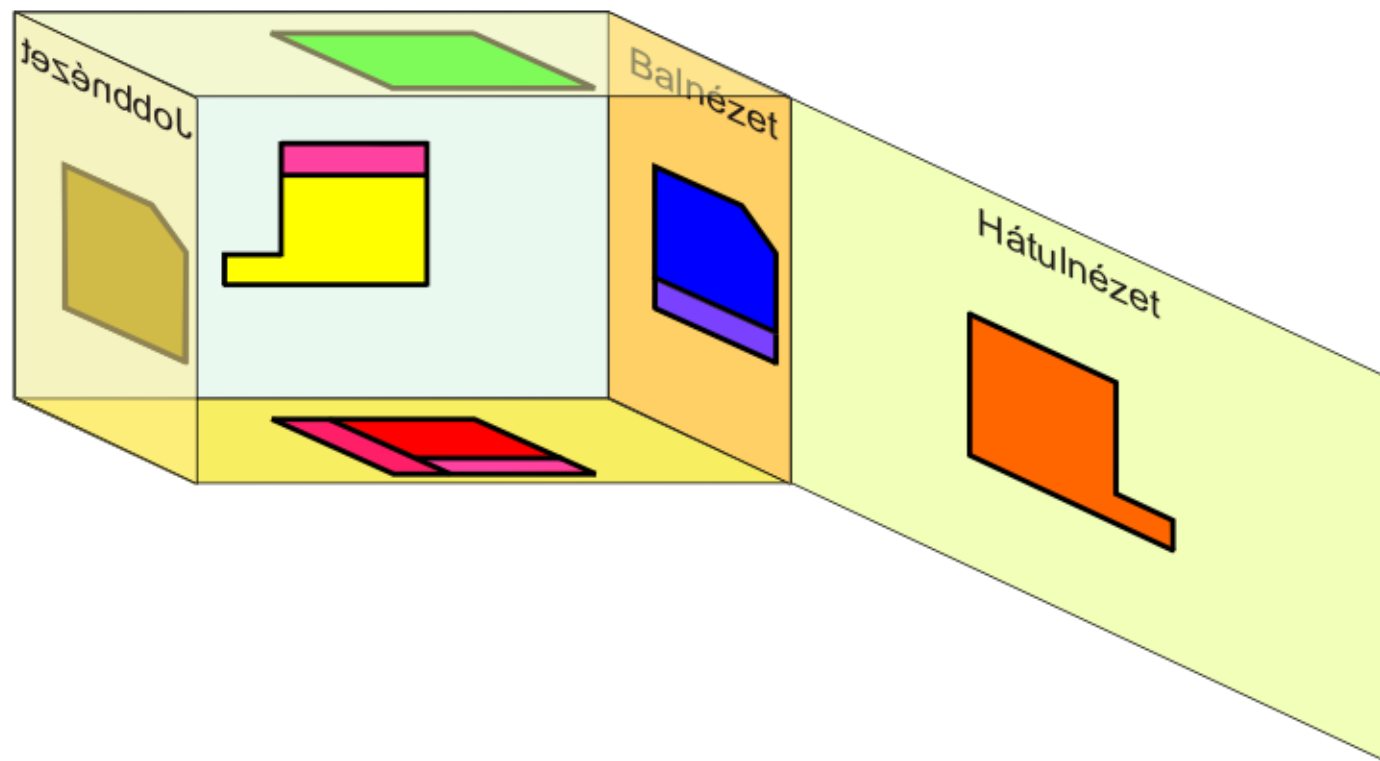


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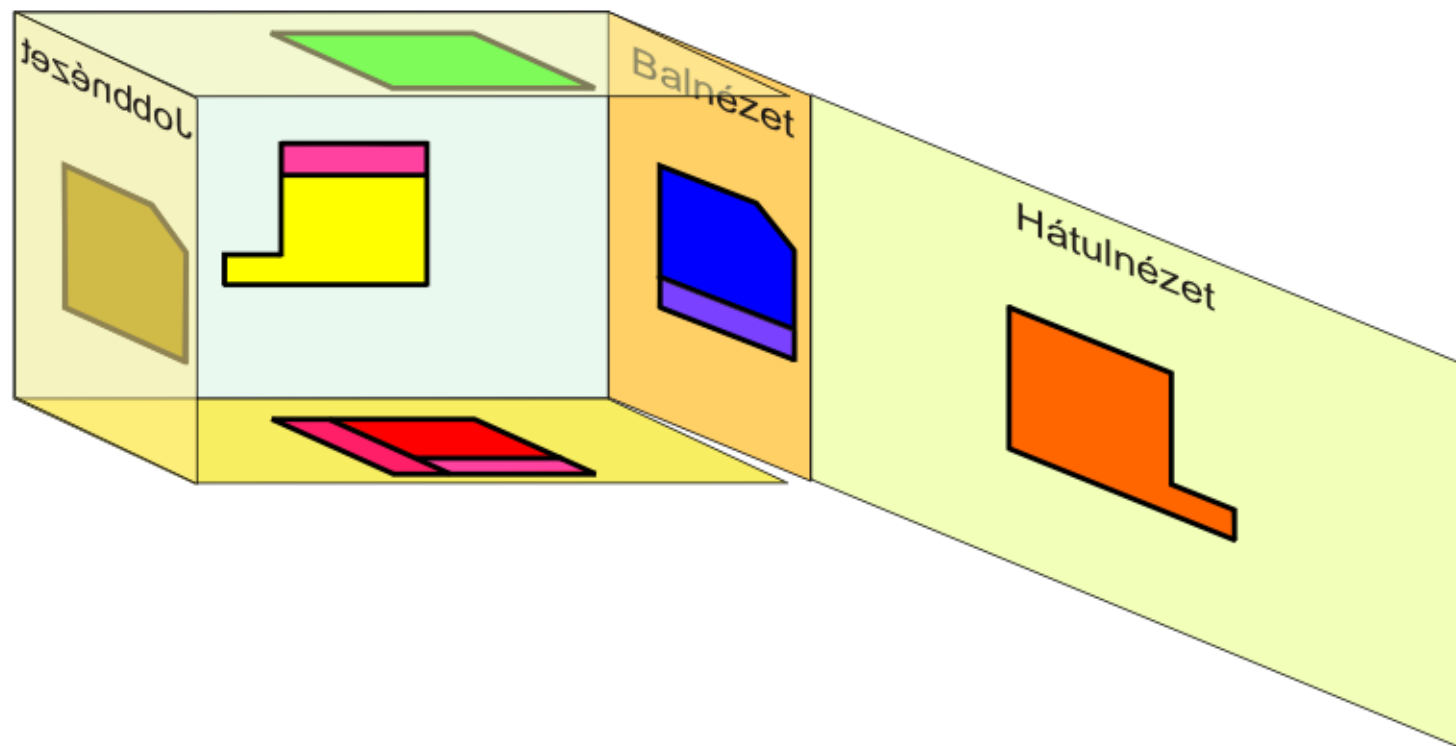




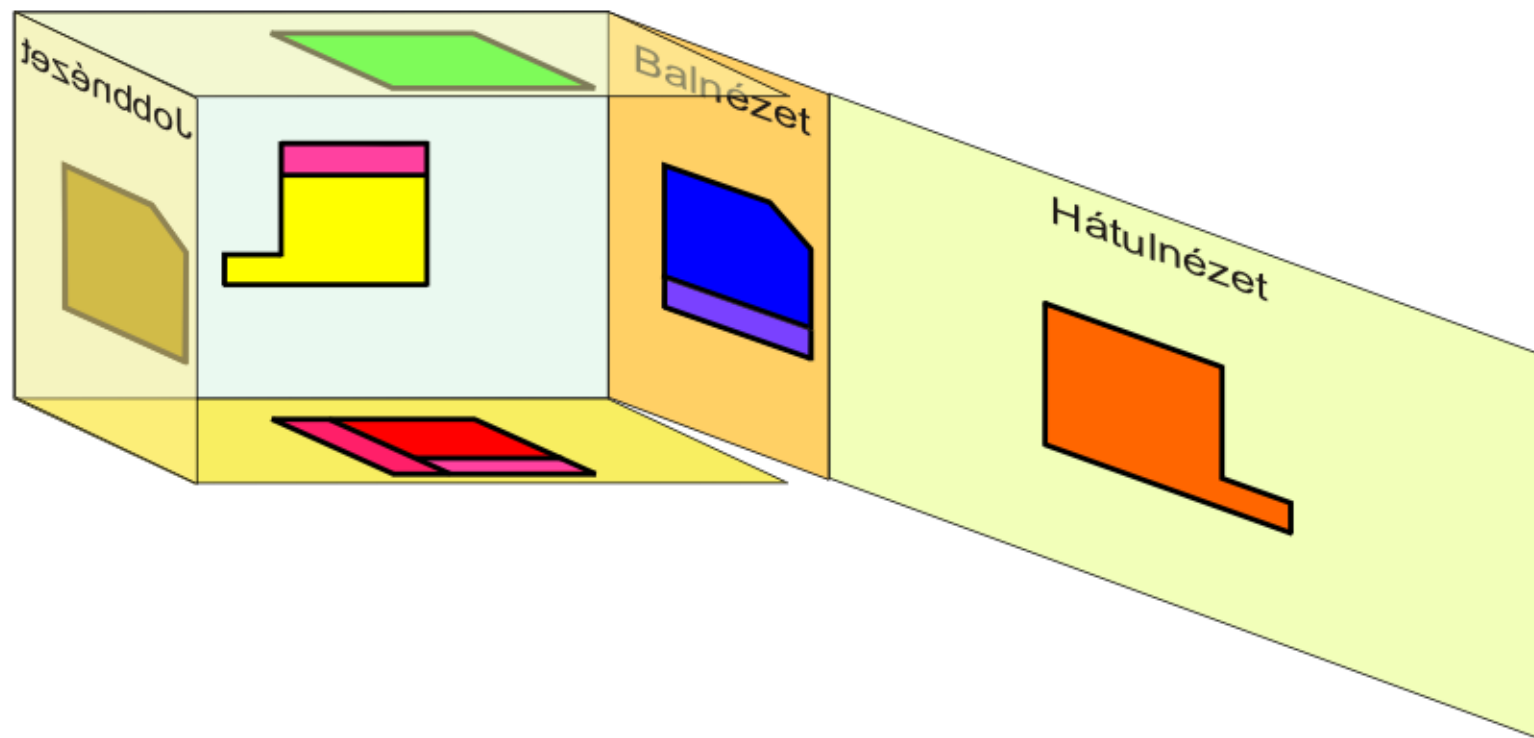
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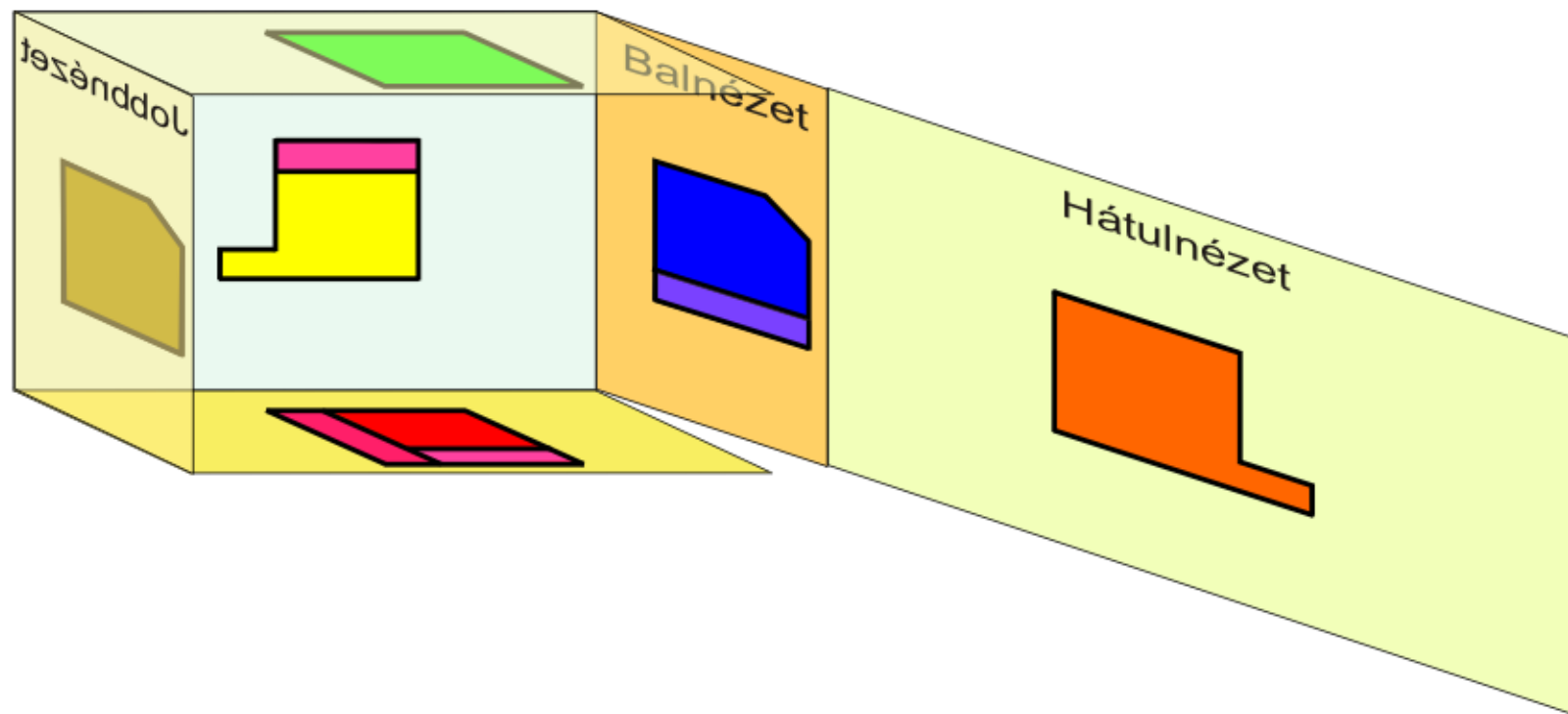
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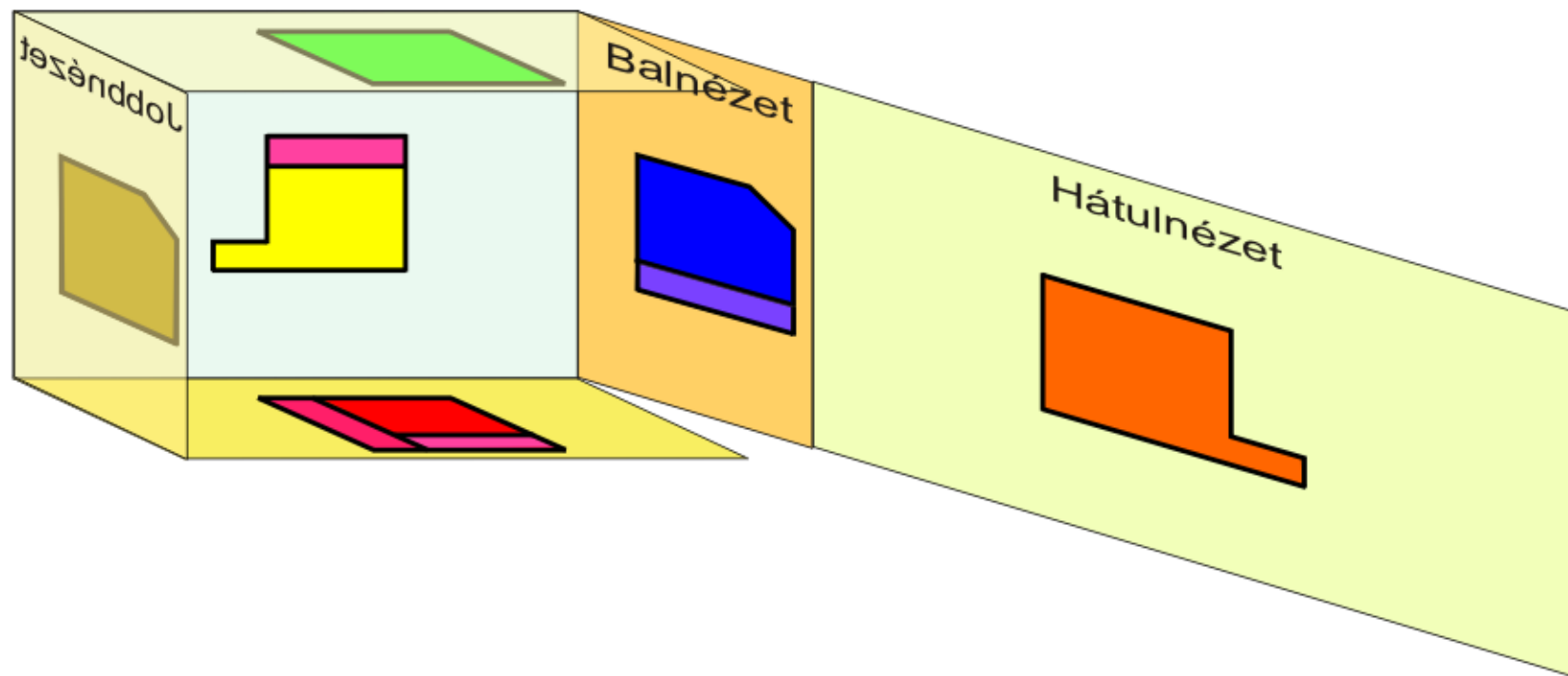
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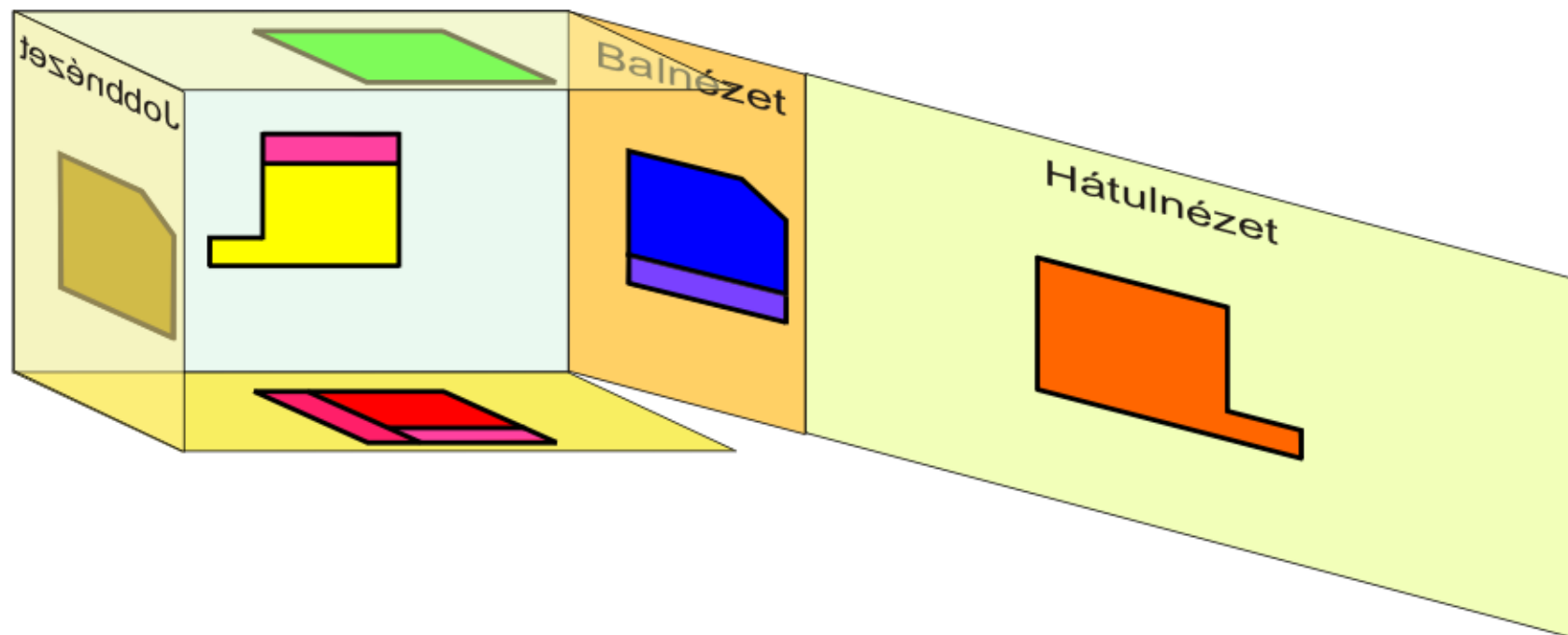
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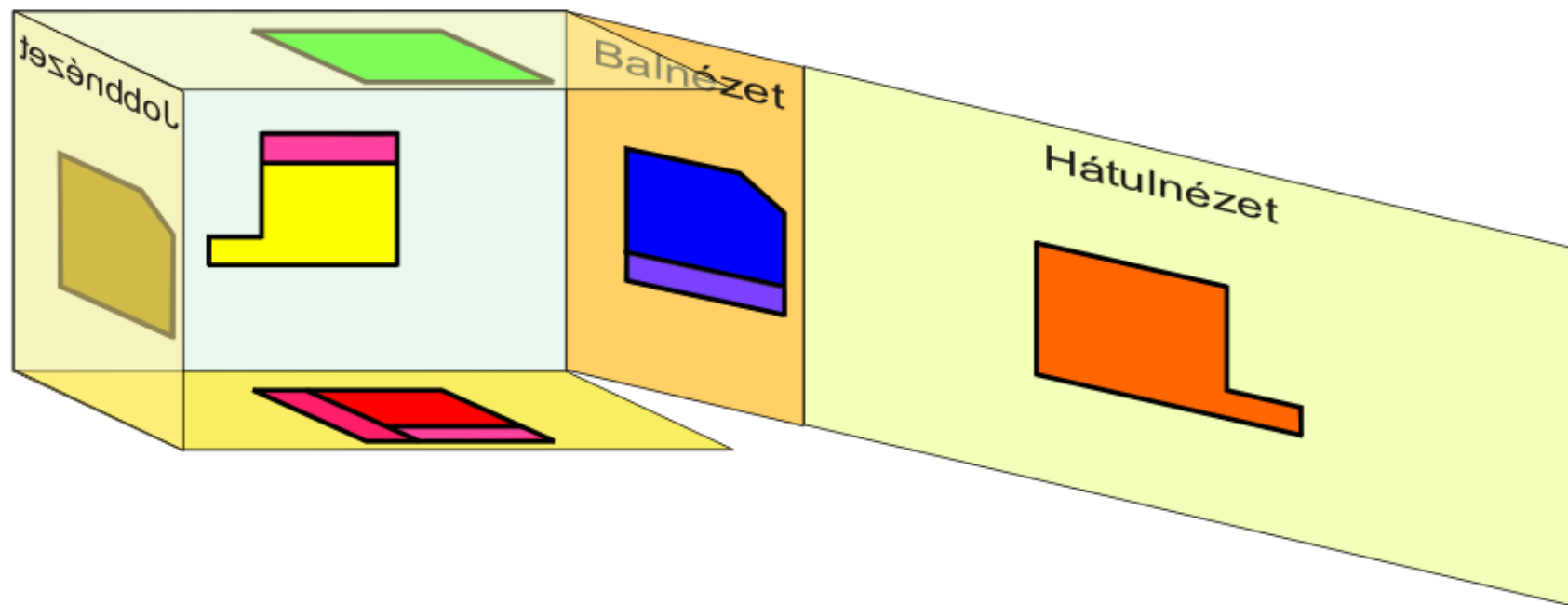
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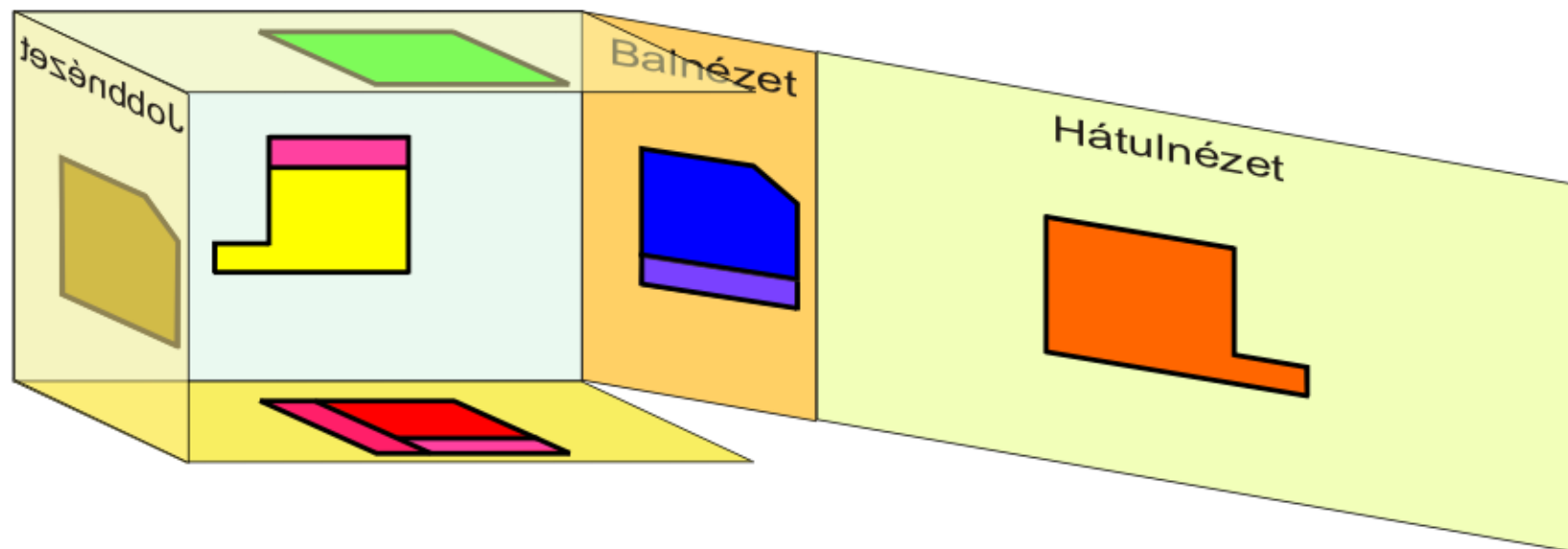
# A „doboz” kiterítése



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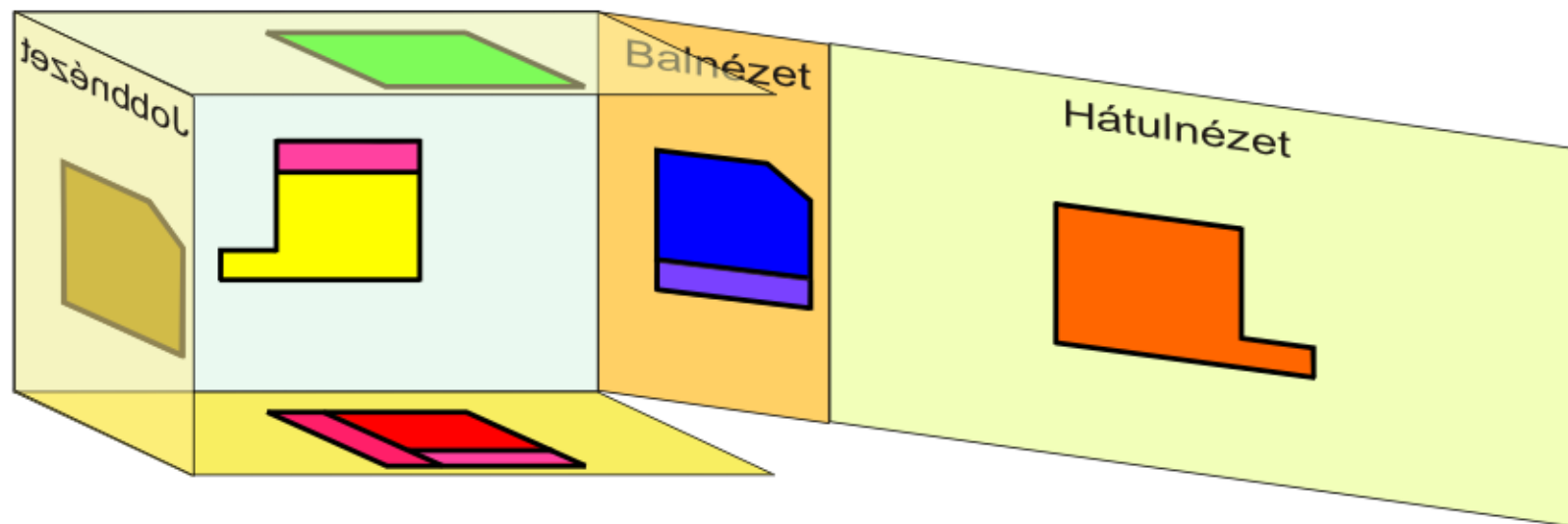


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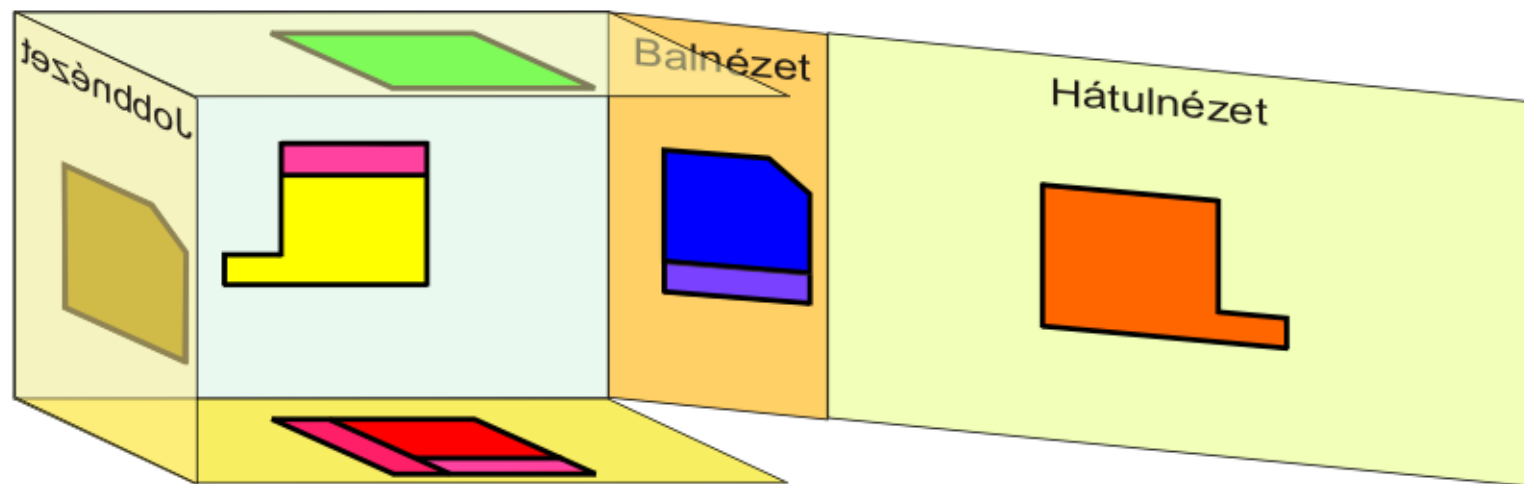




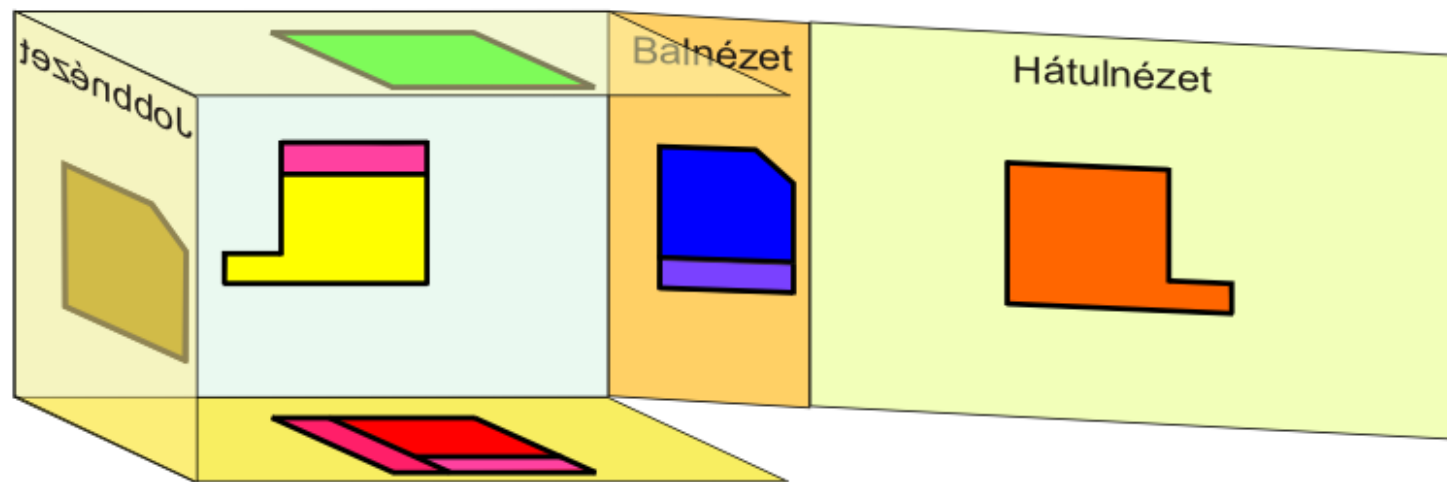
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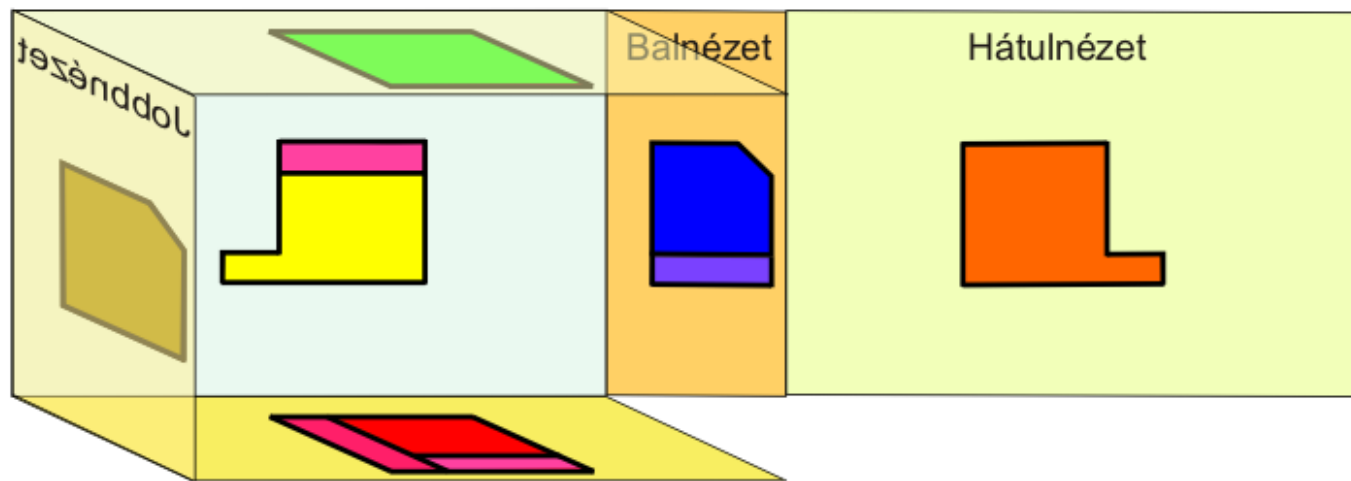
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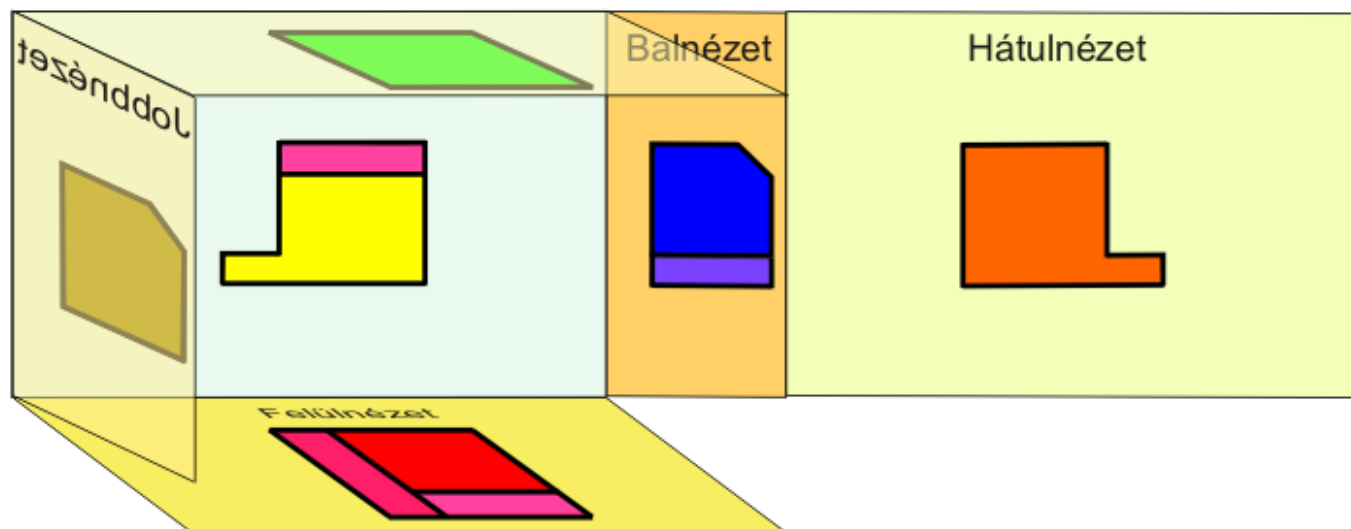
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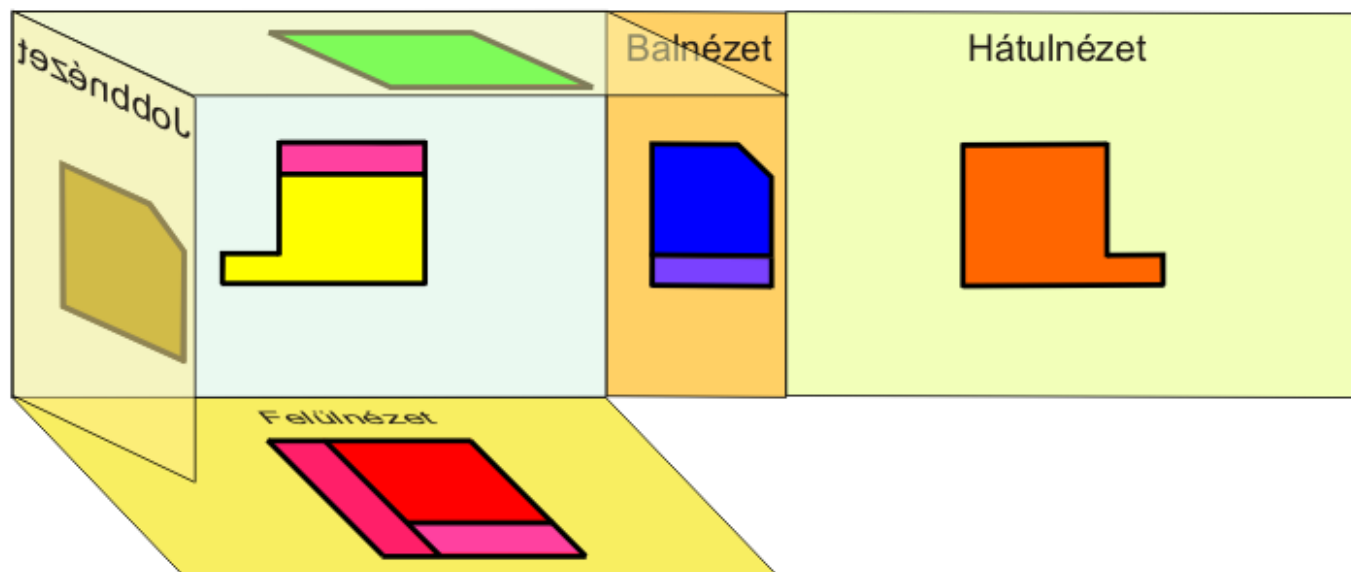
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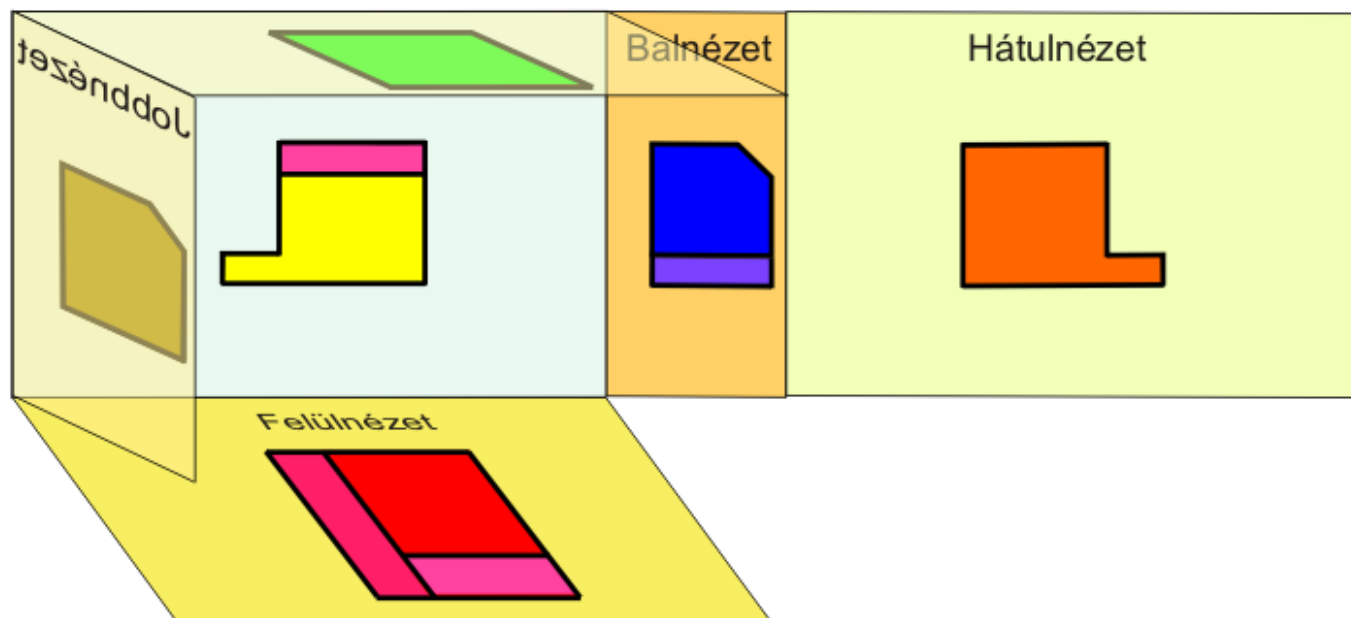
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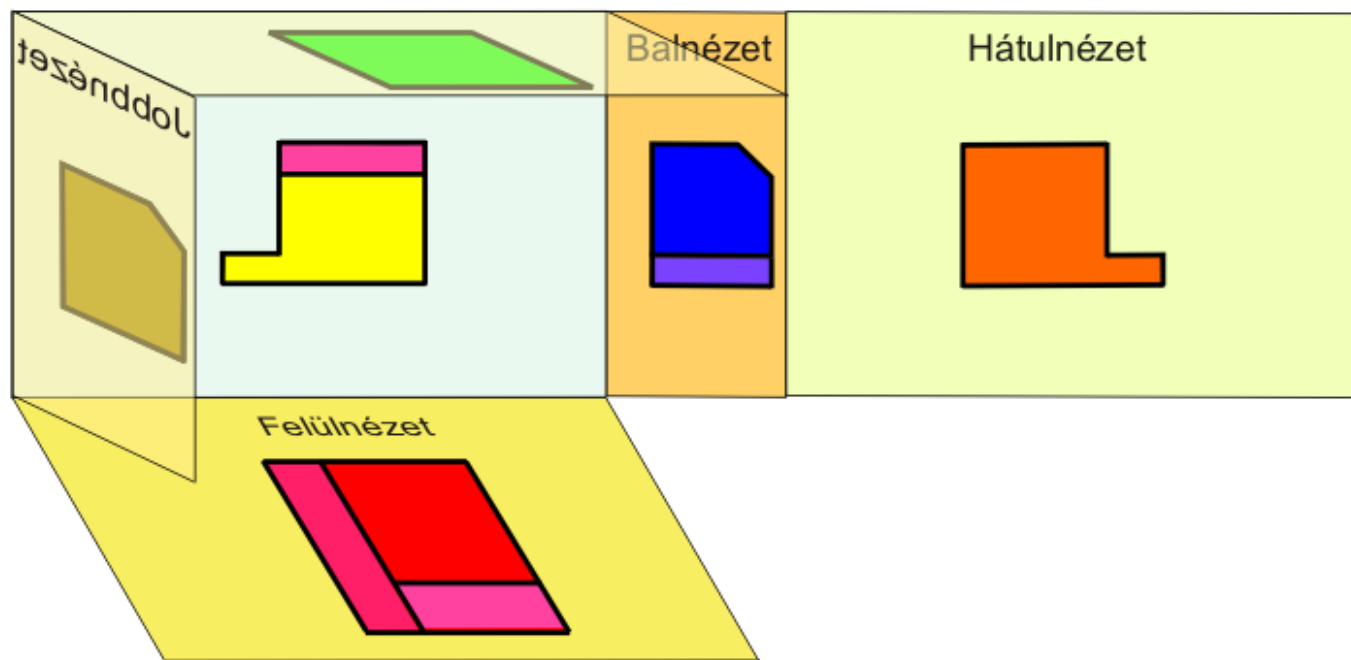
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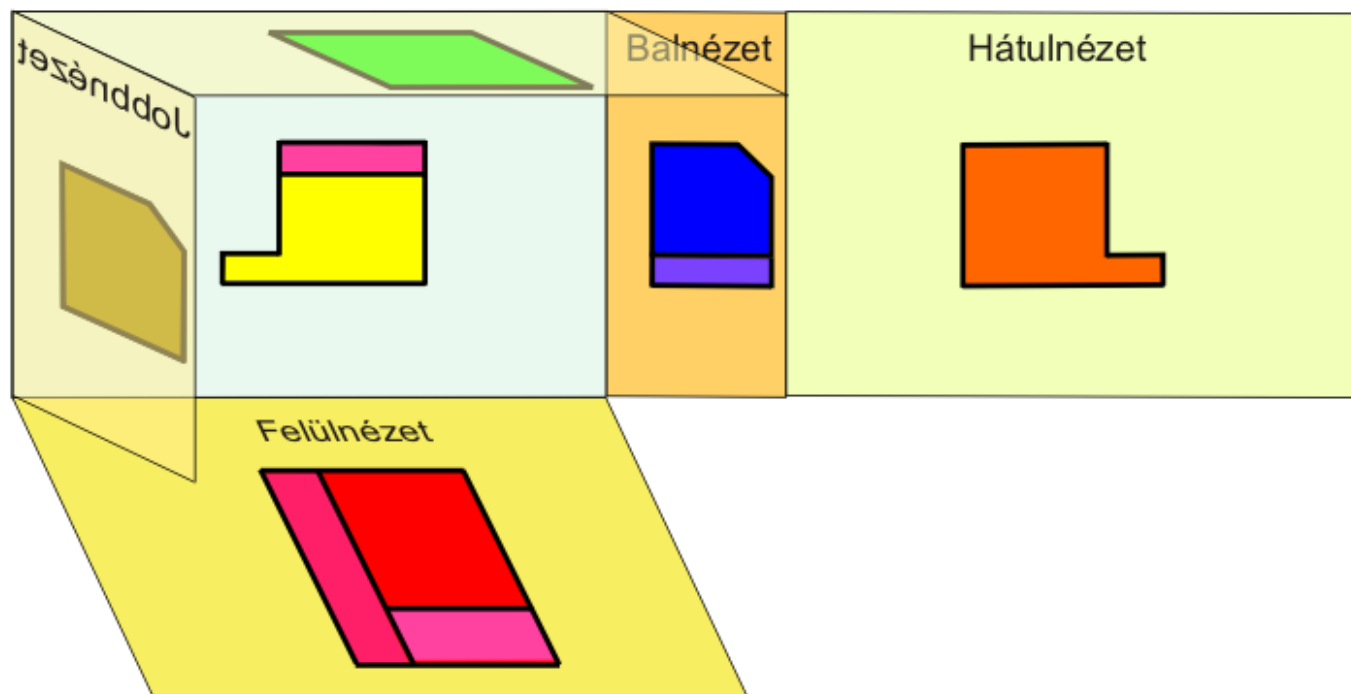


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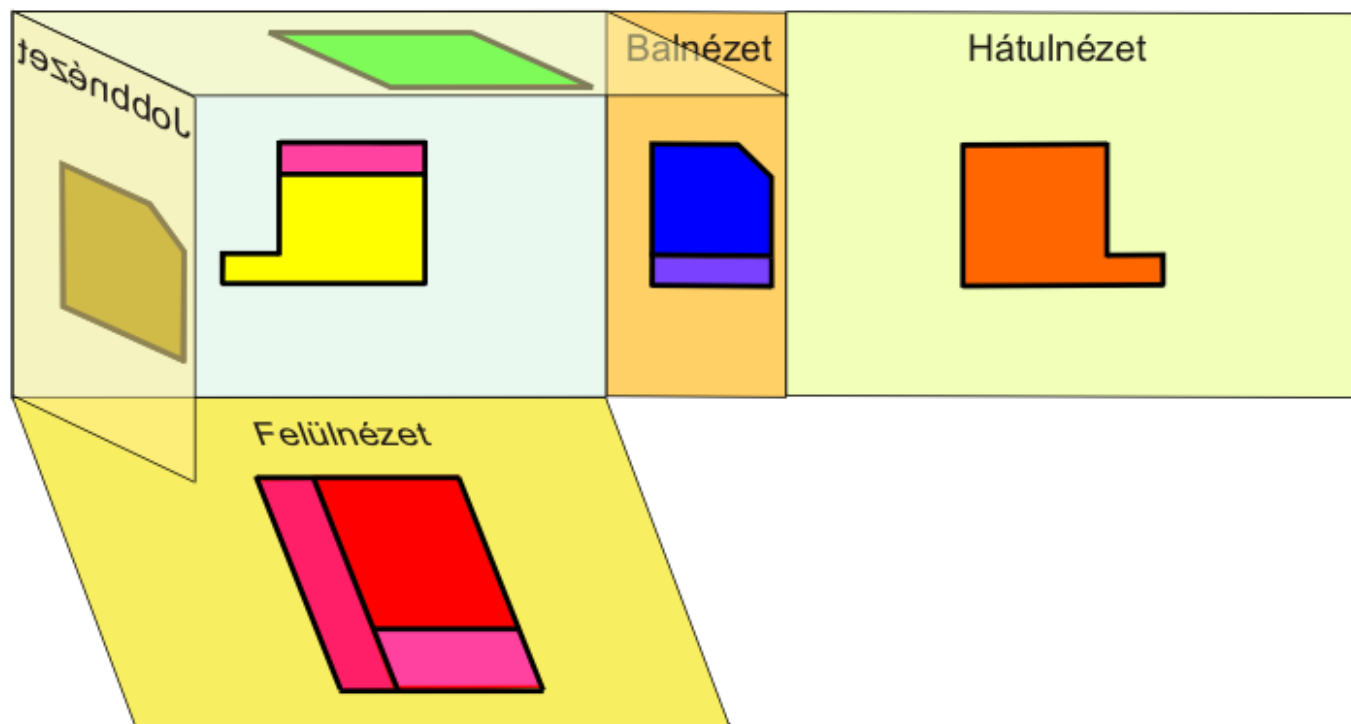




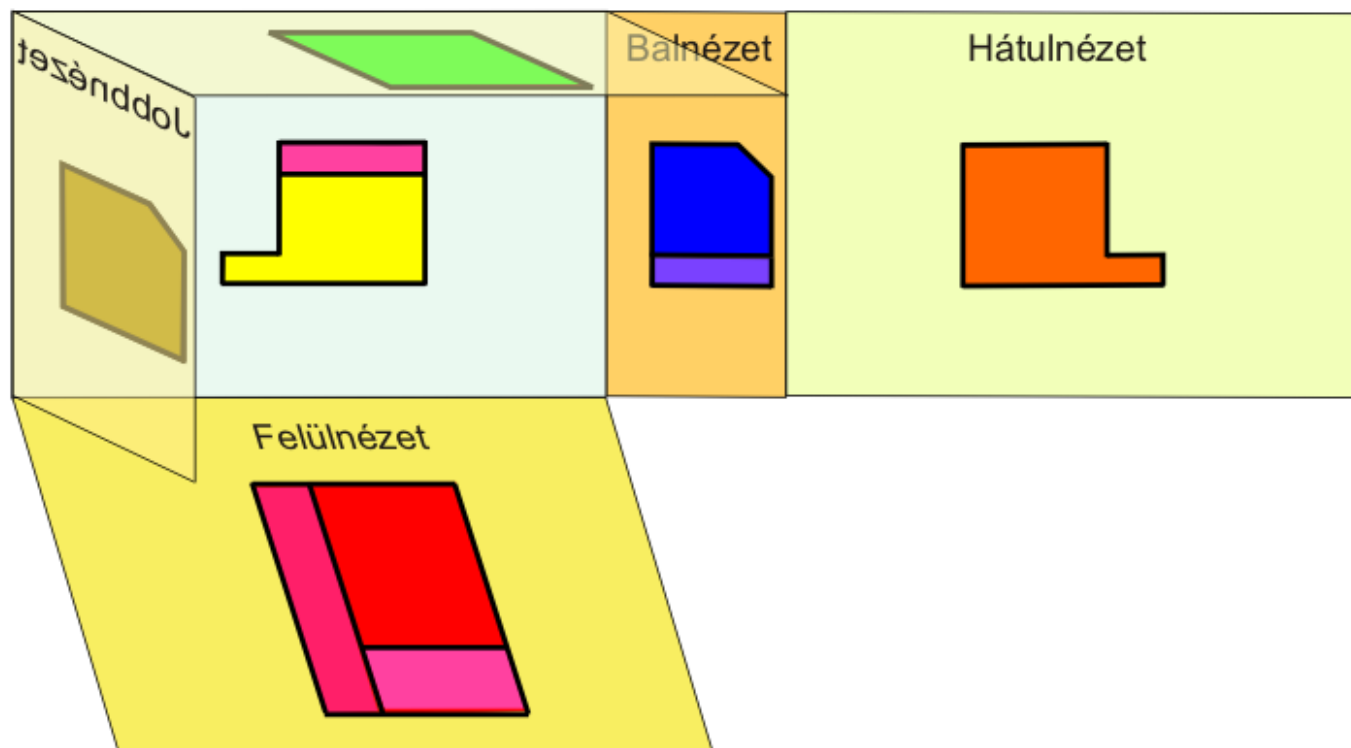
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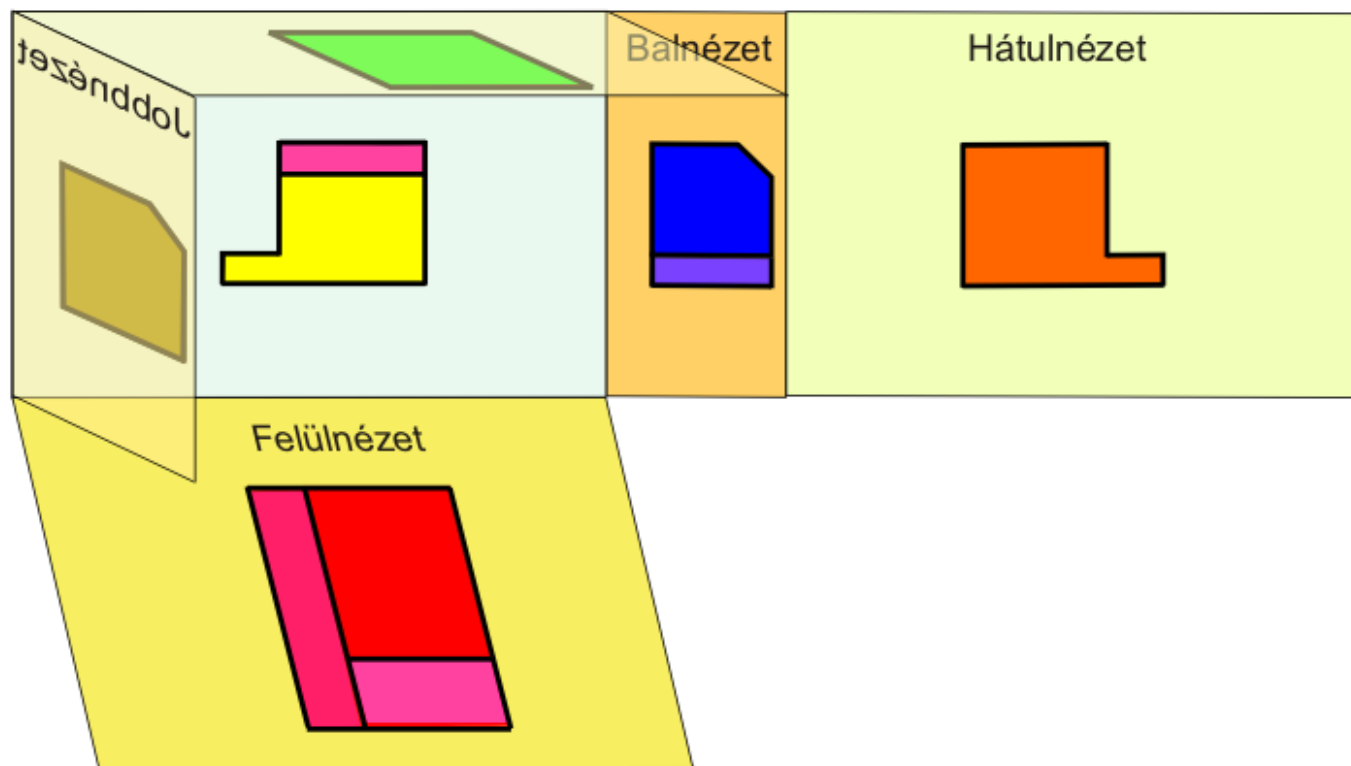
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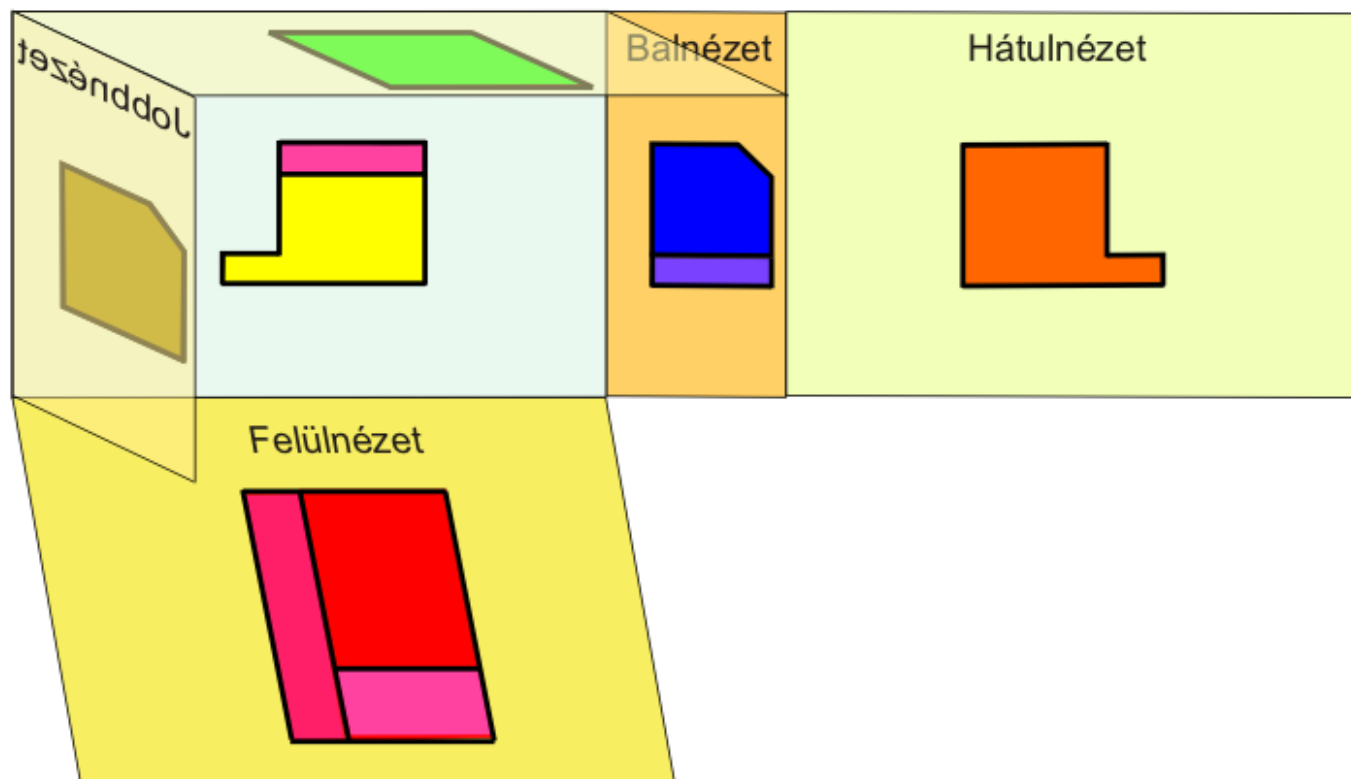
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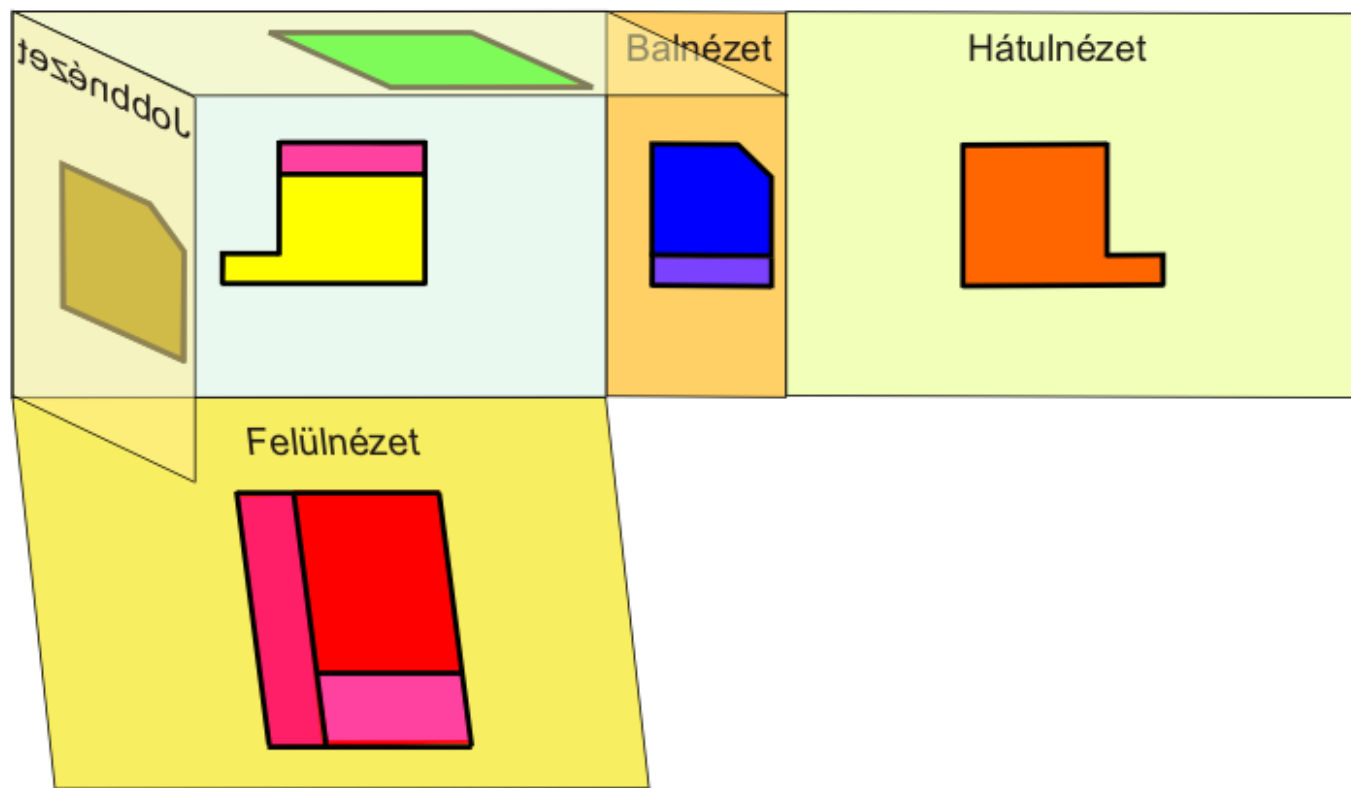
# A „doboz” kiterítése



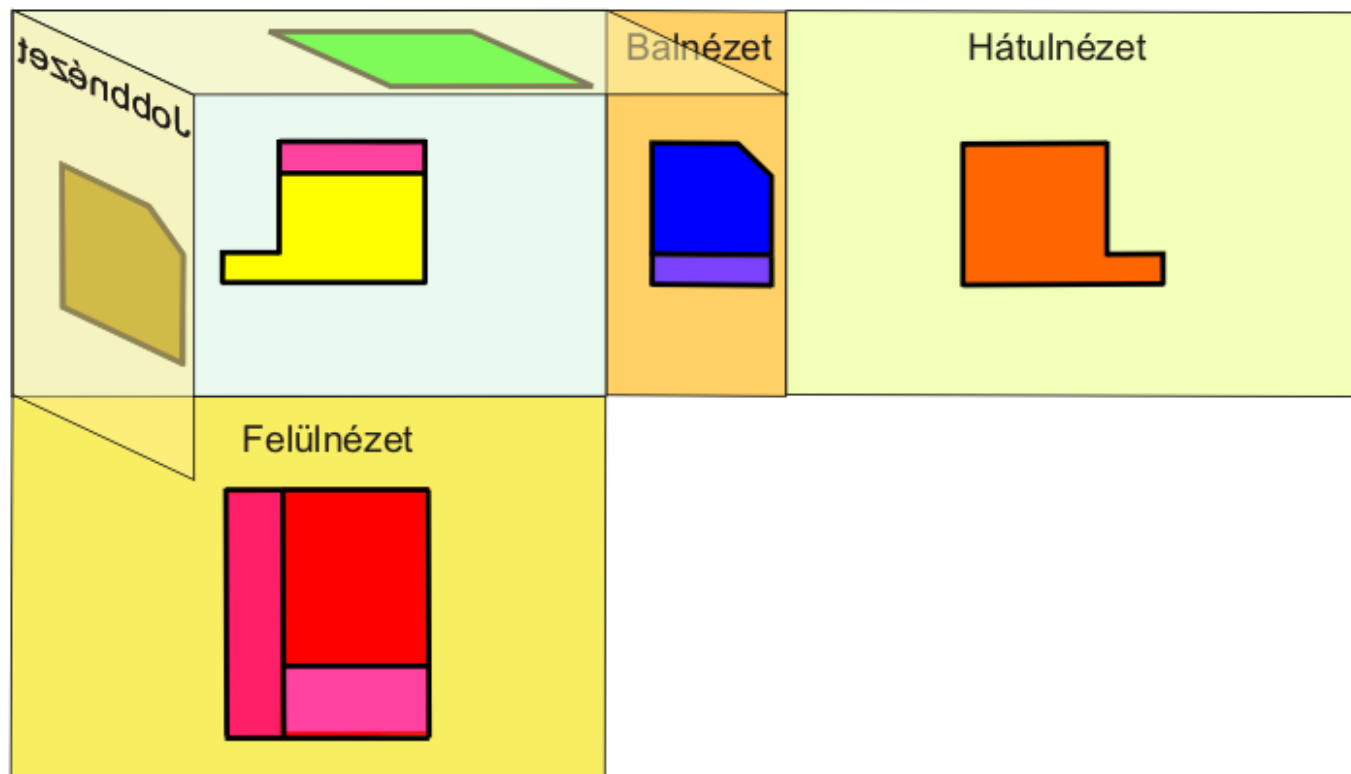
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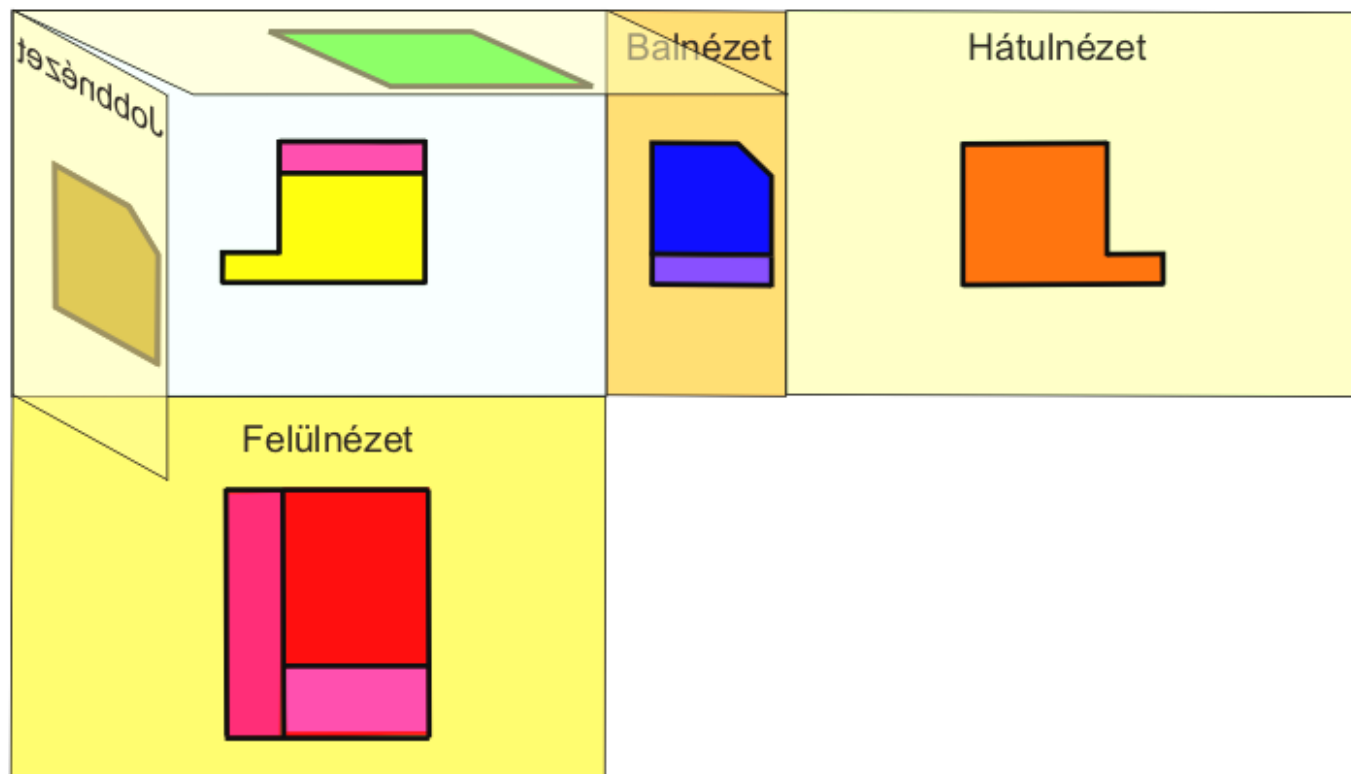
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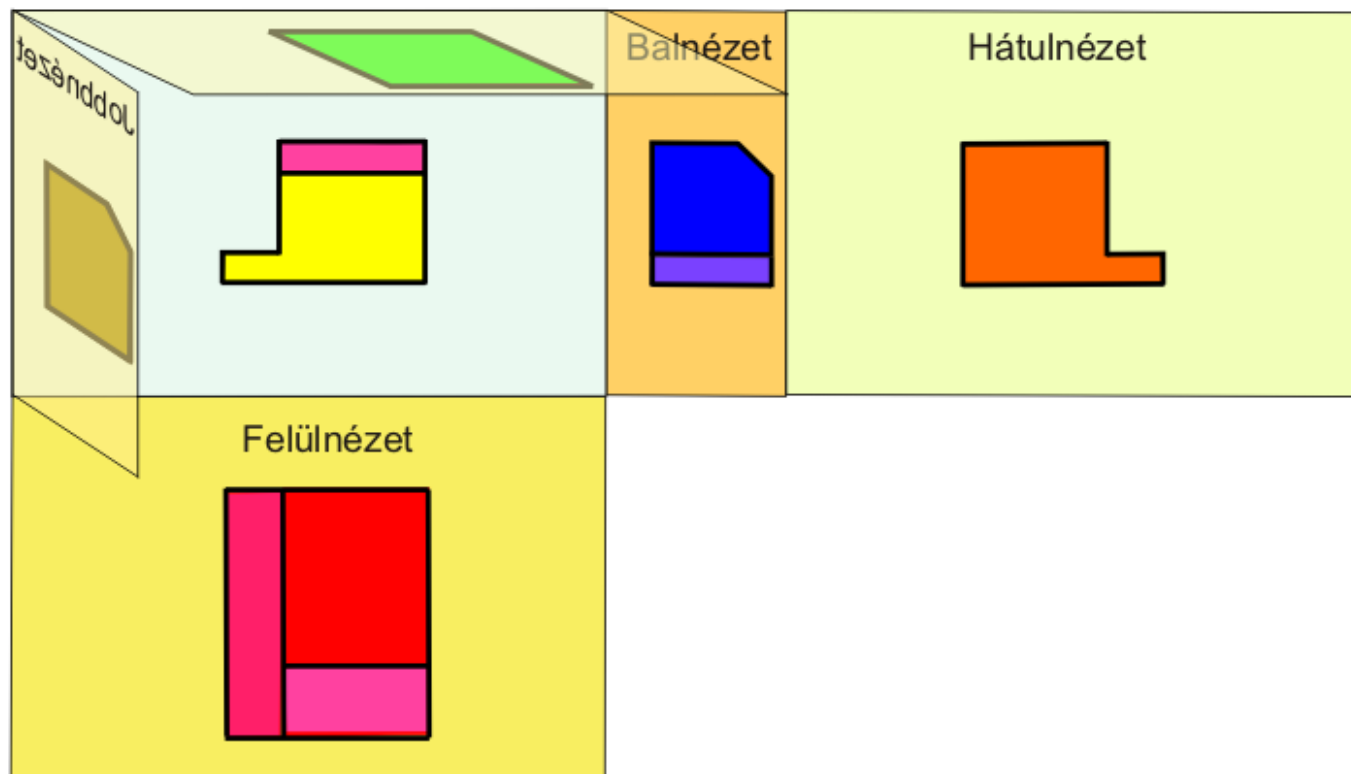


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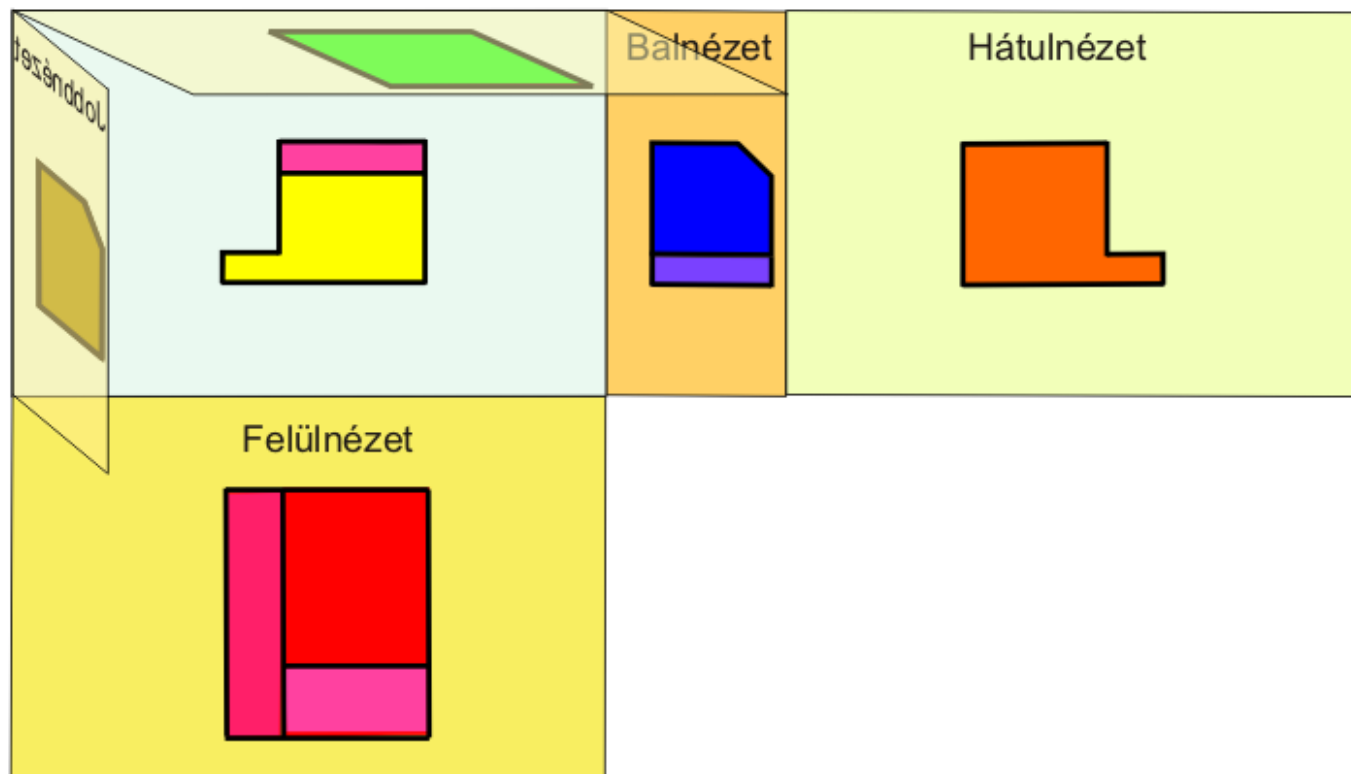




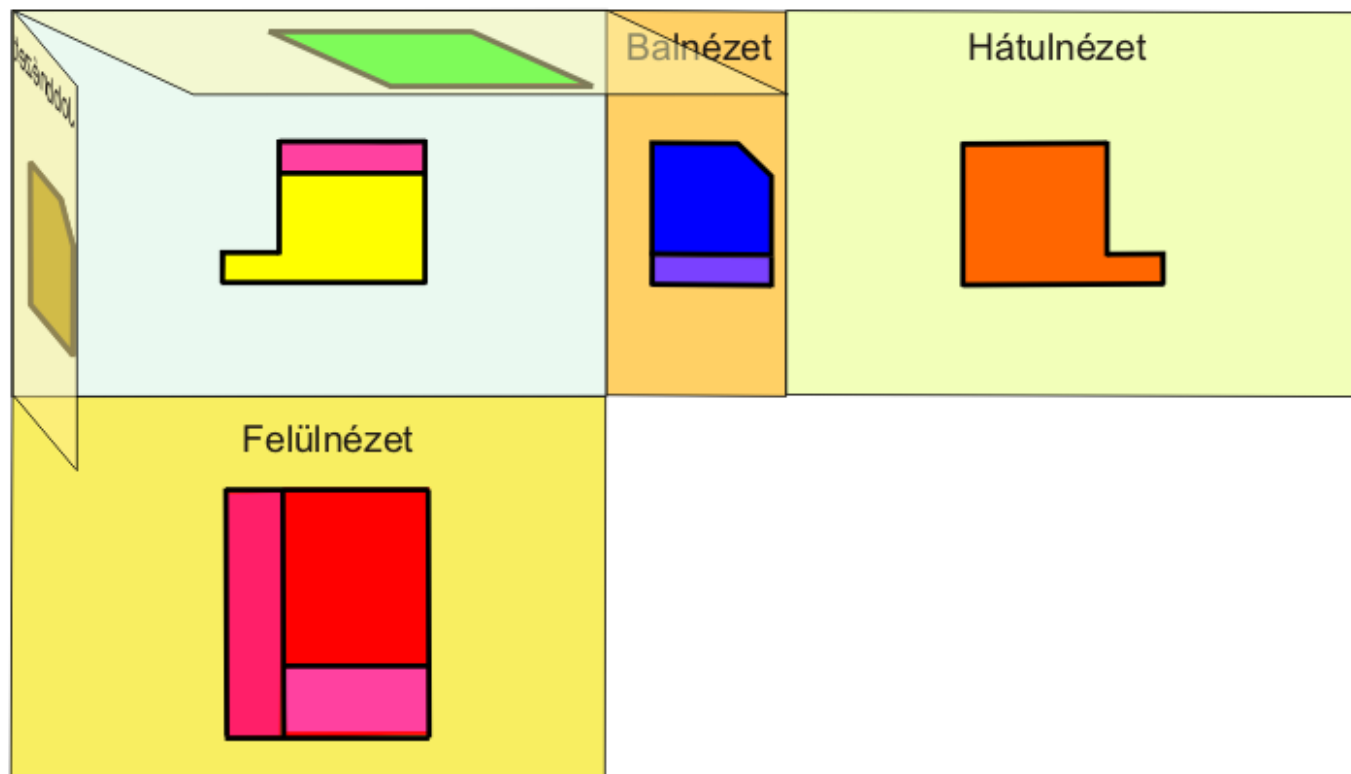
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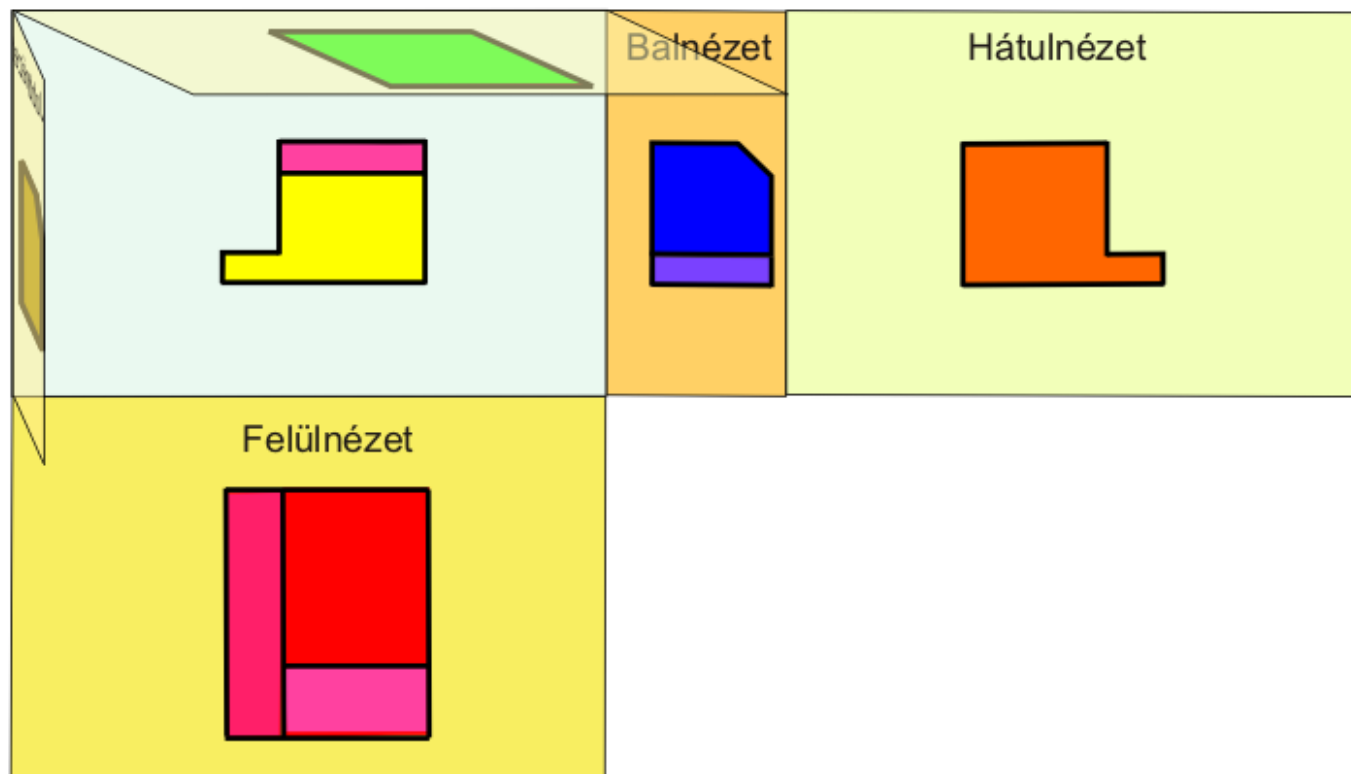
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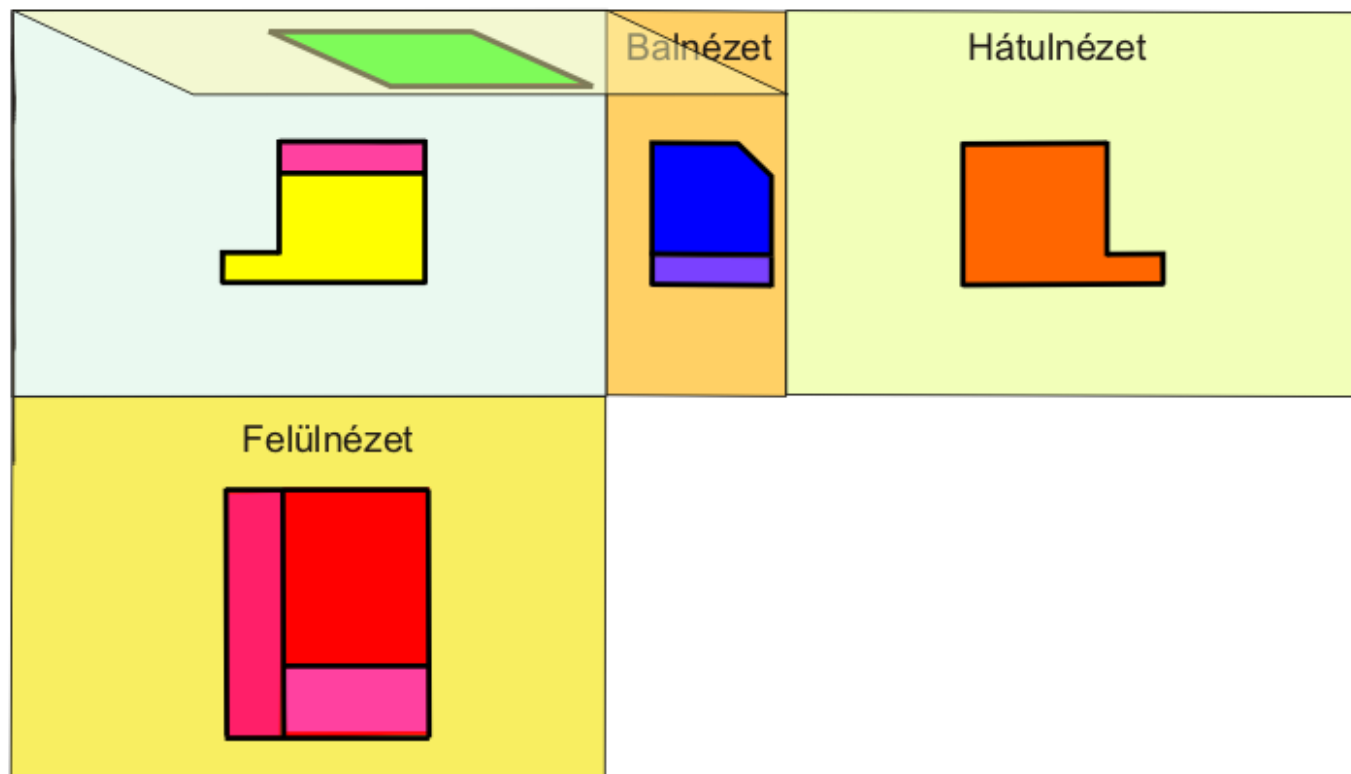
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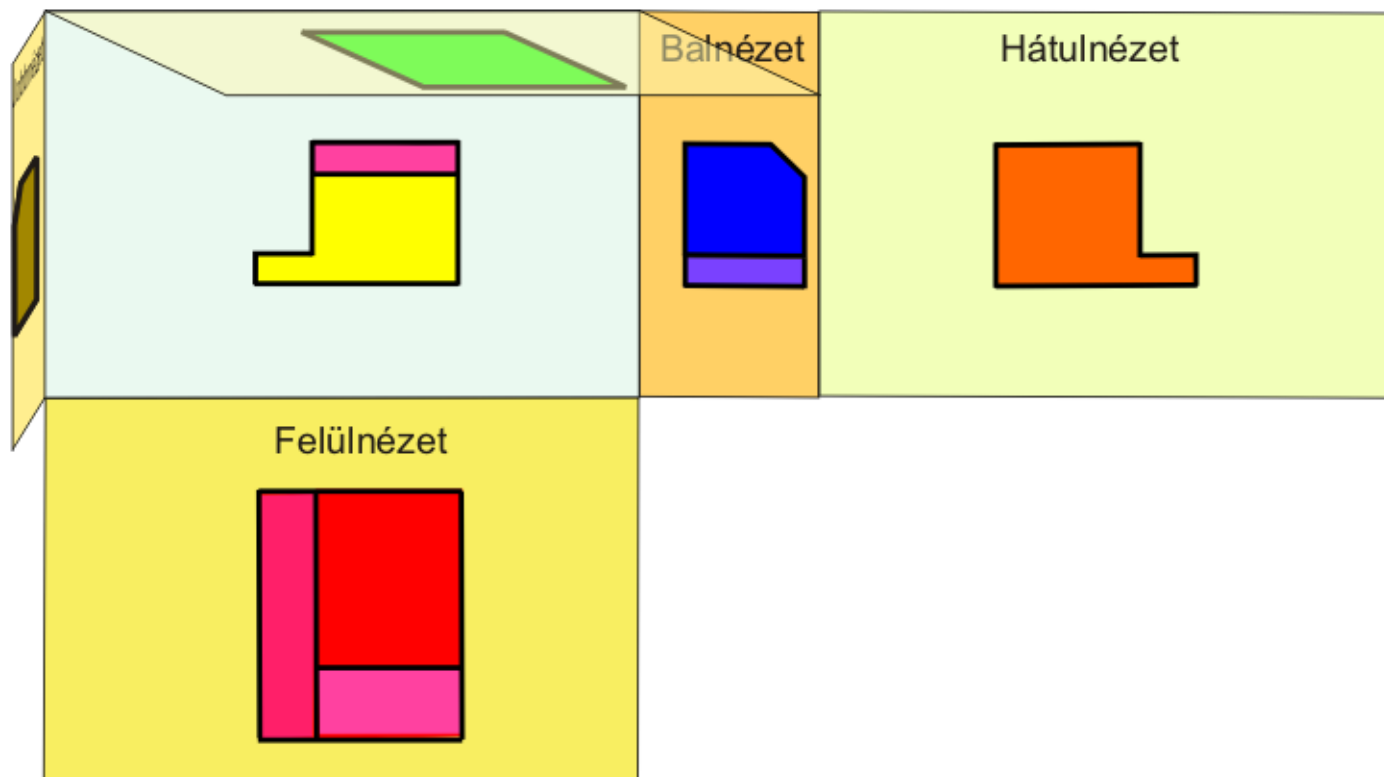
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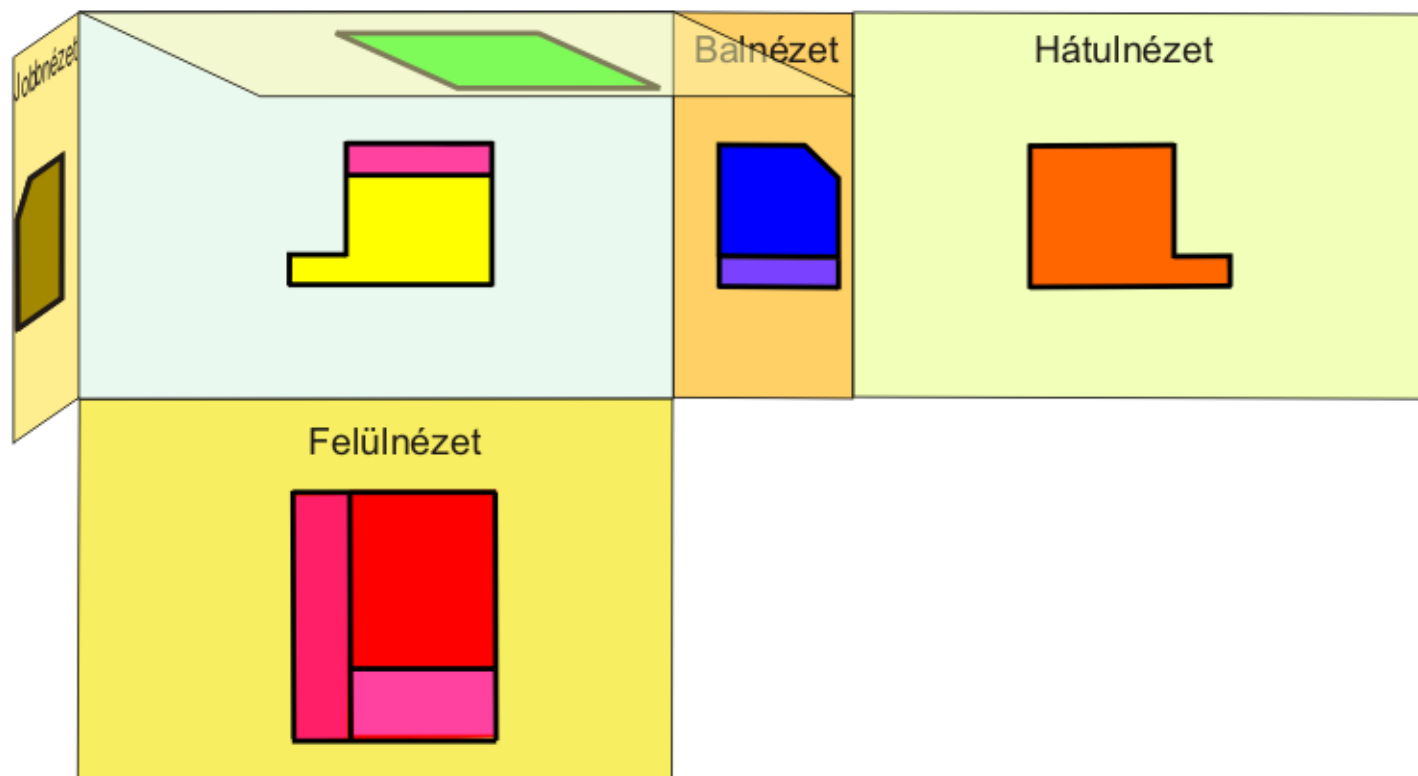
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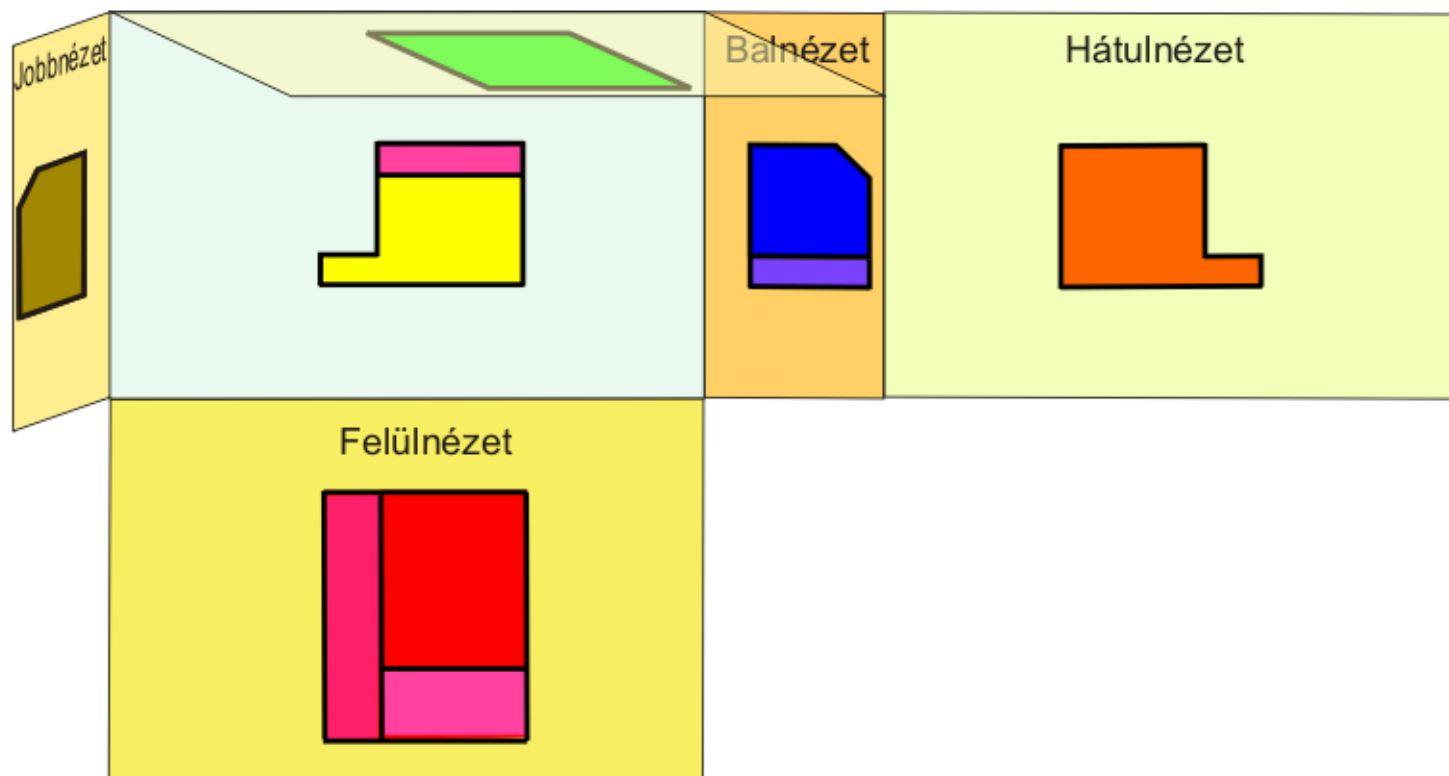
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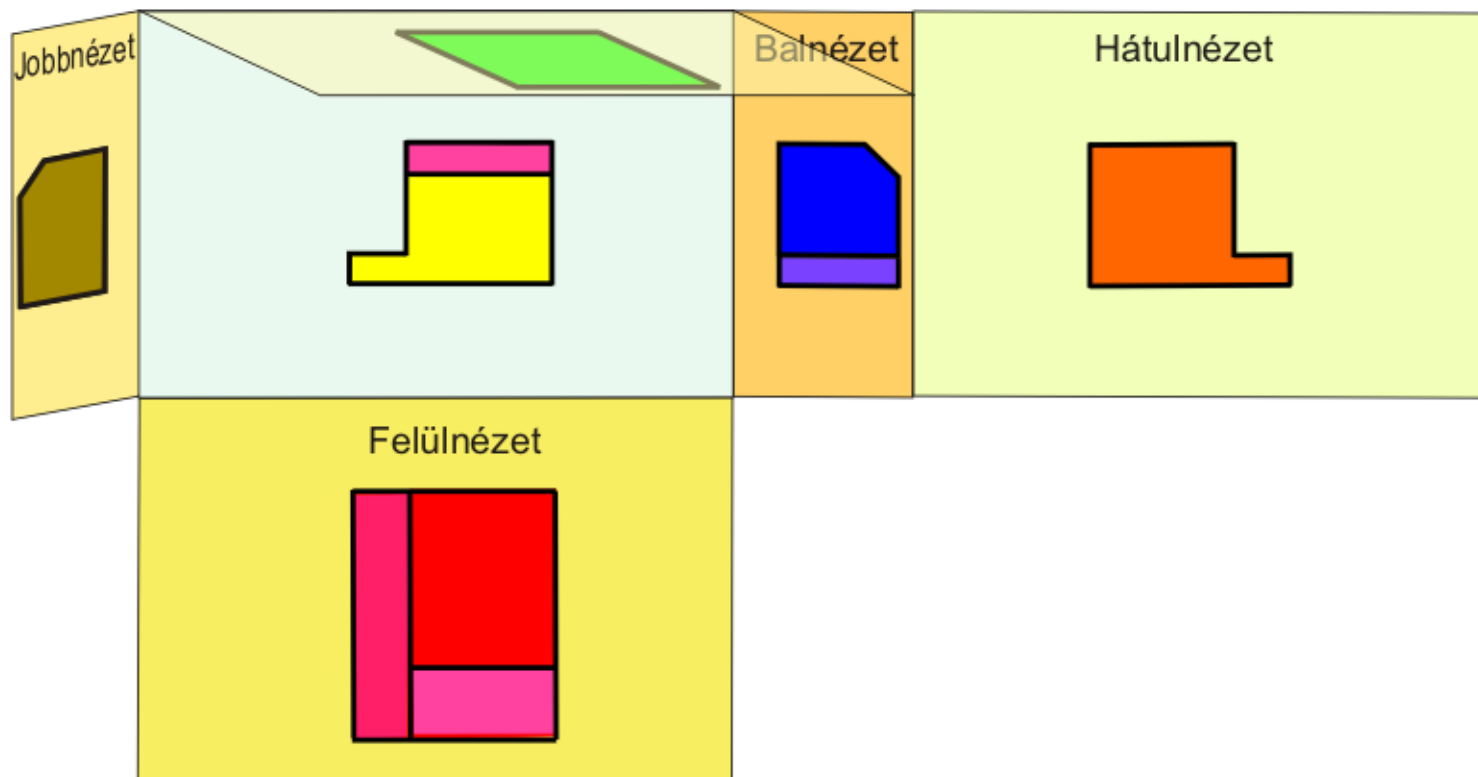


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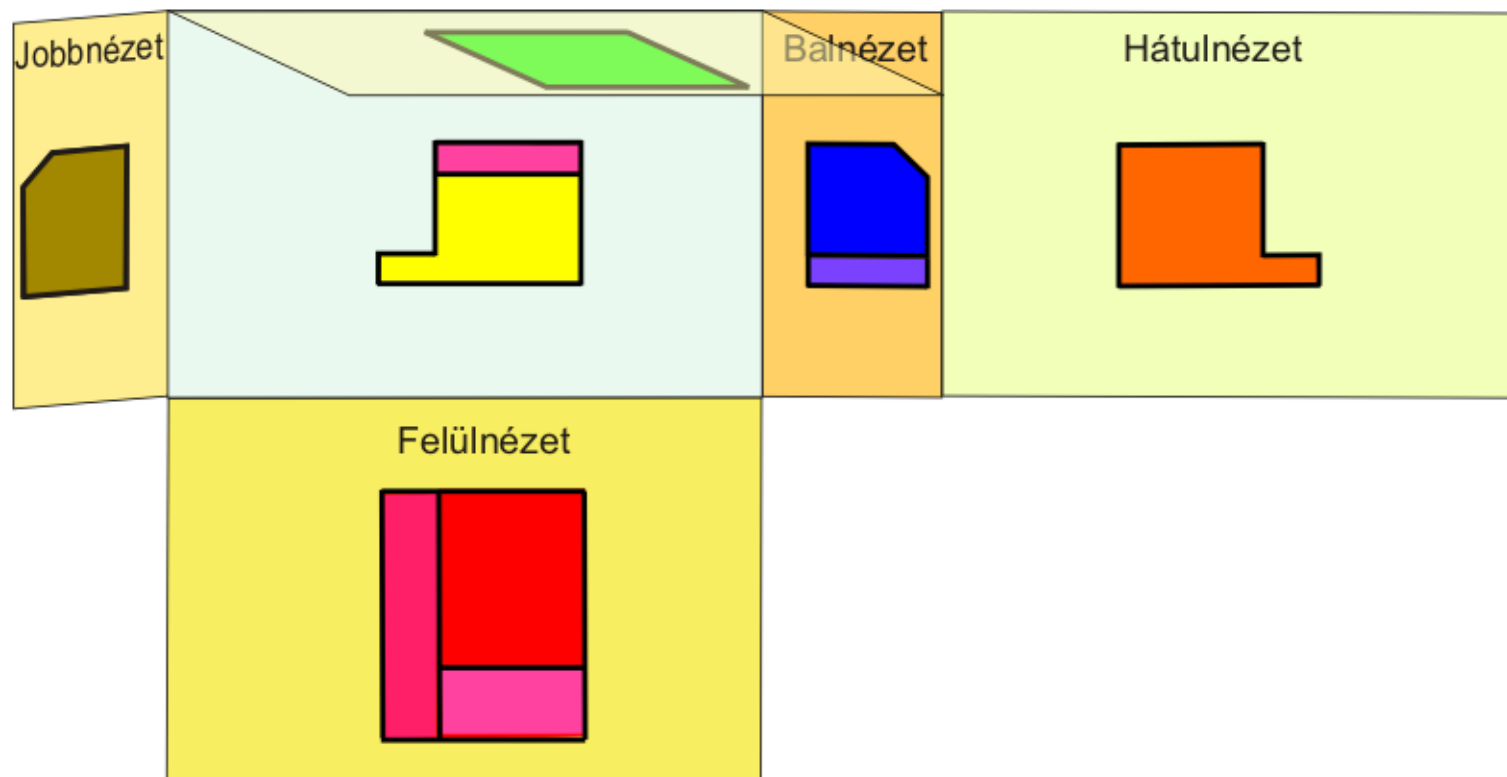




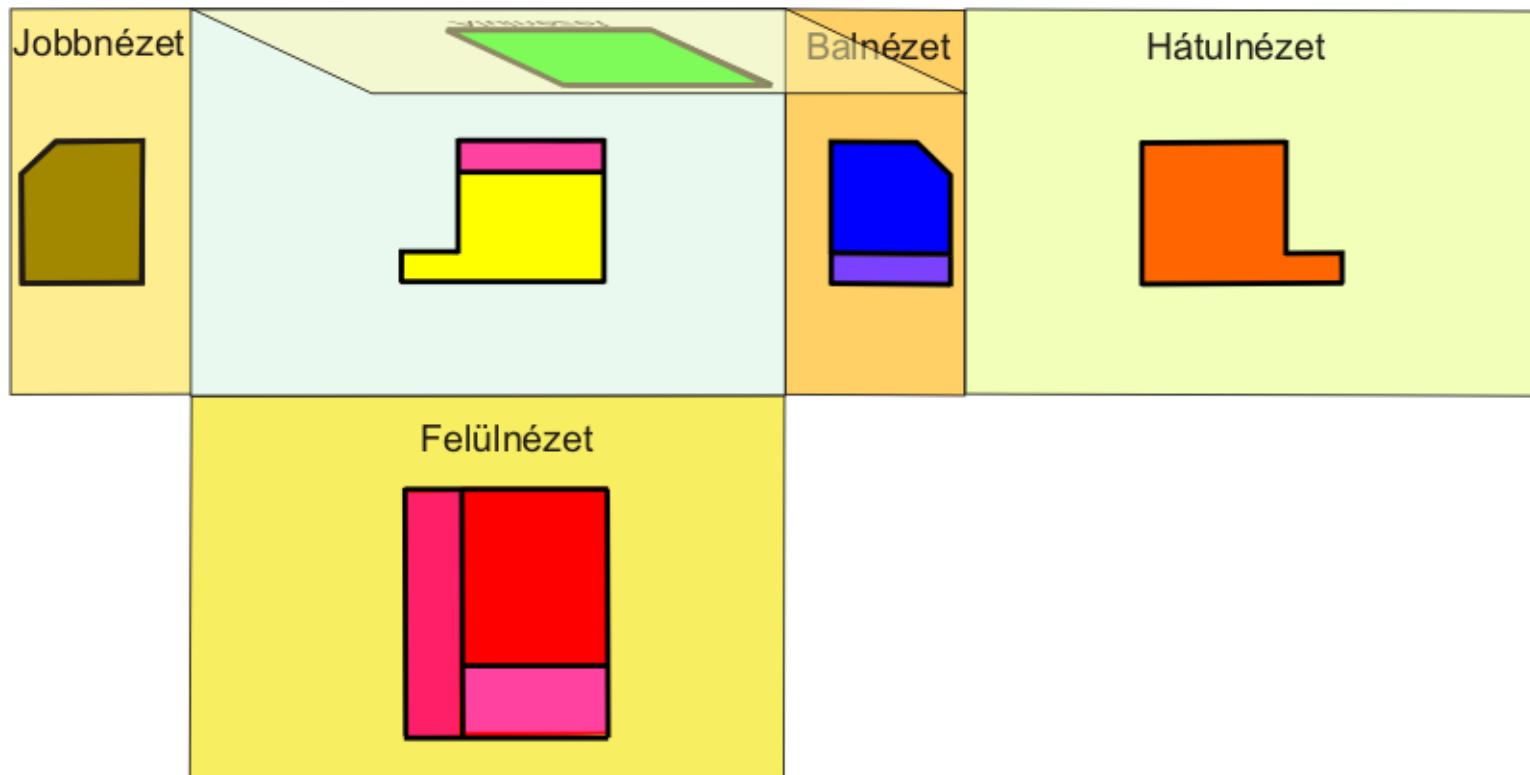
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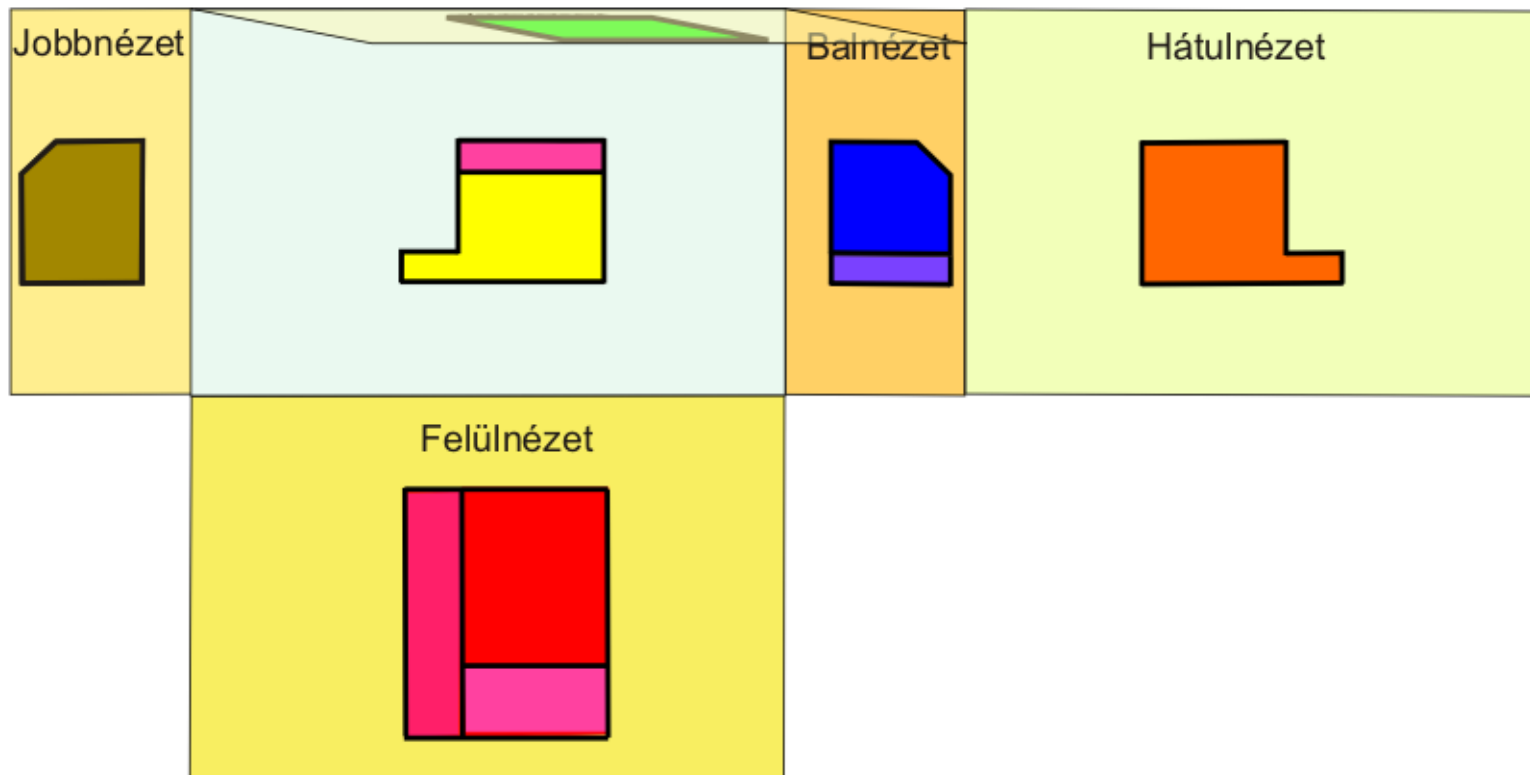
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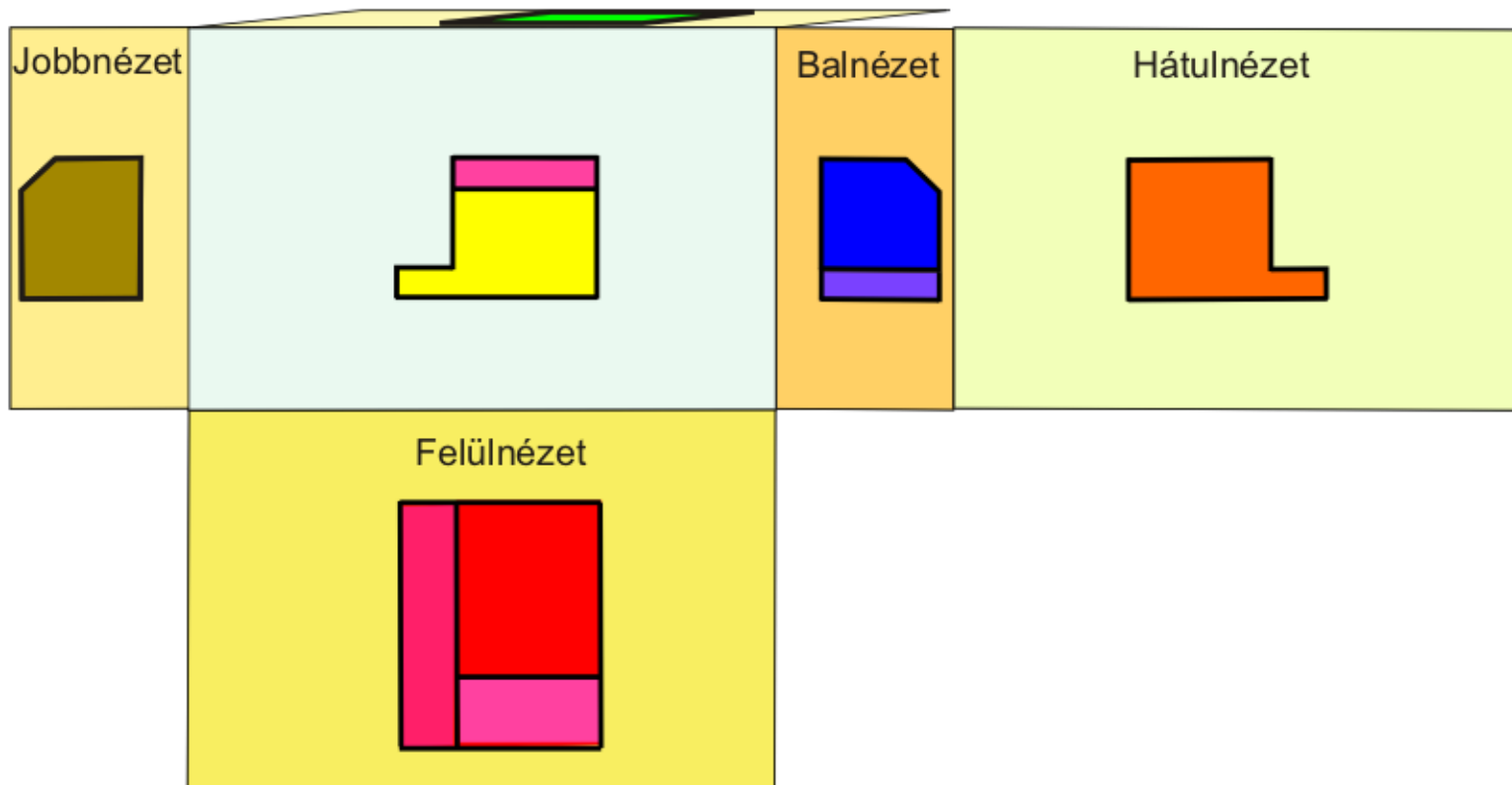
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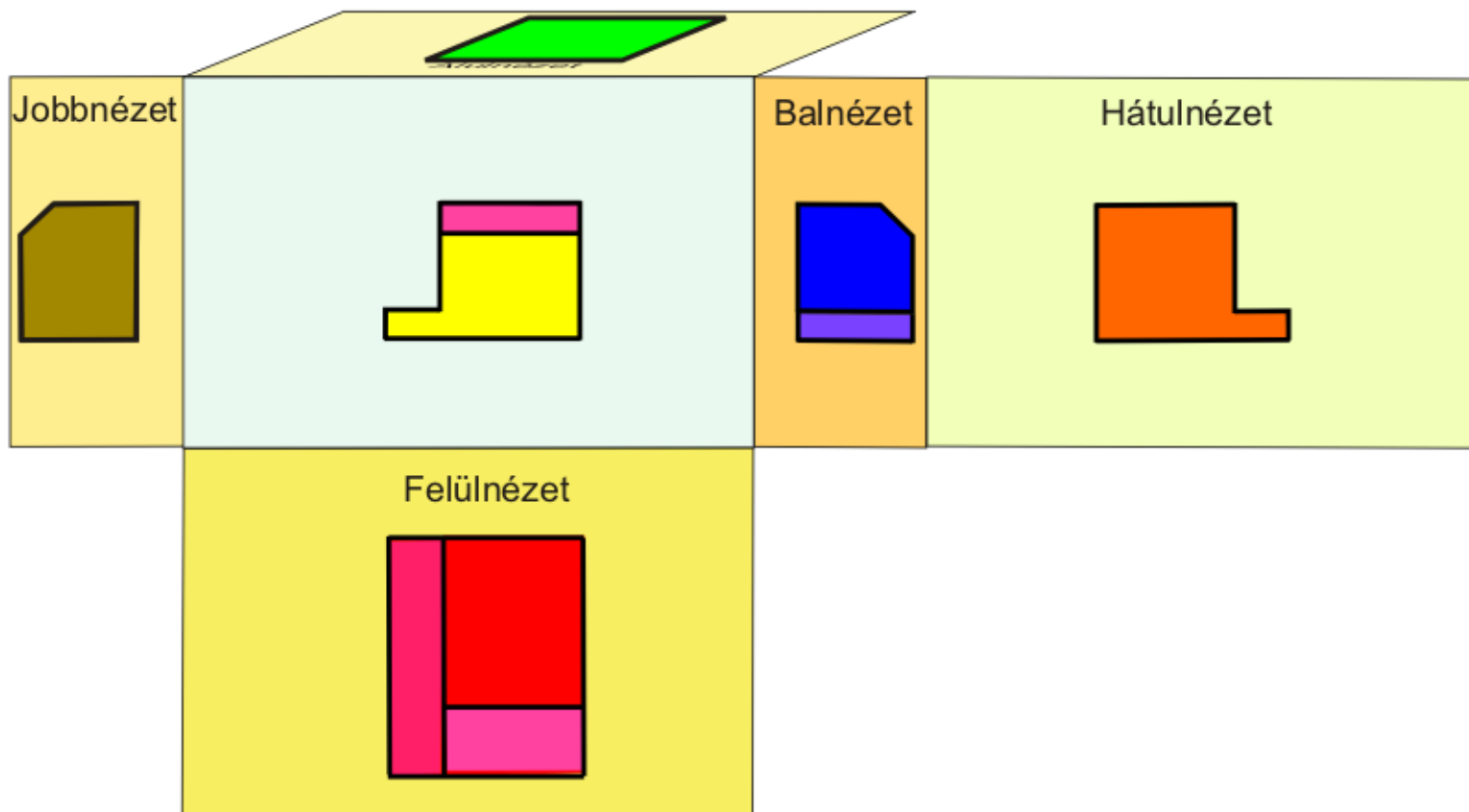
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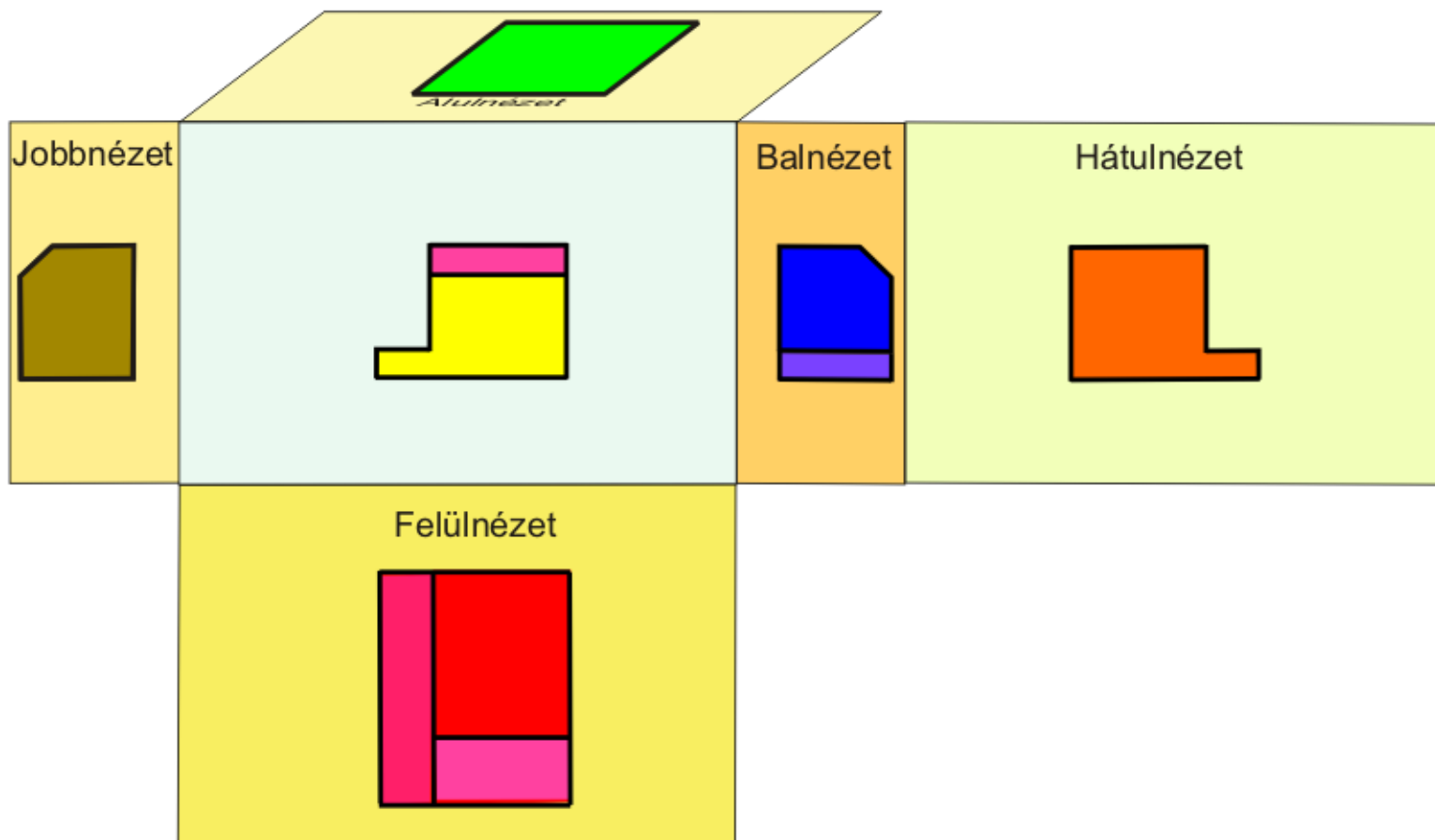
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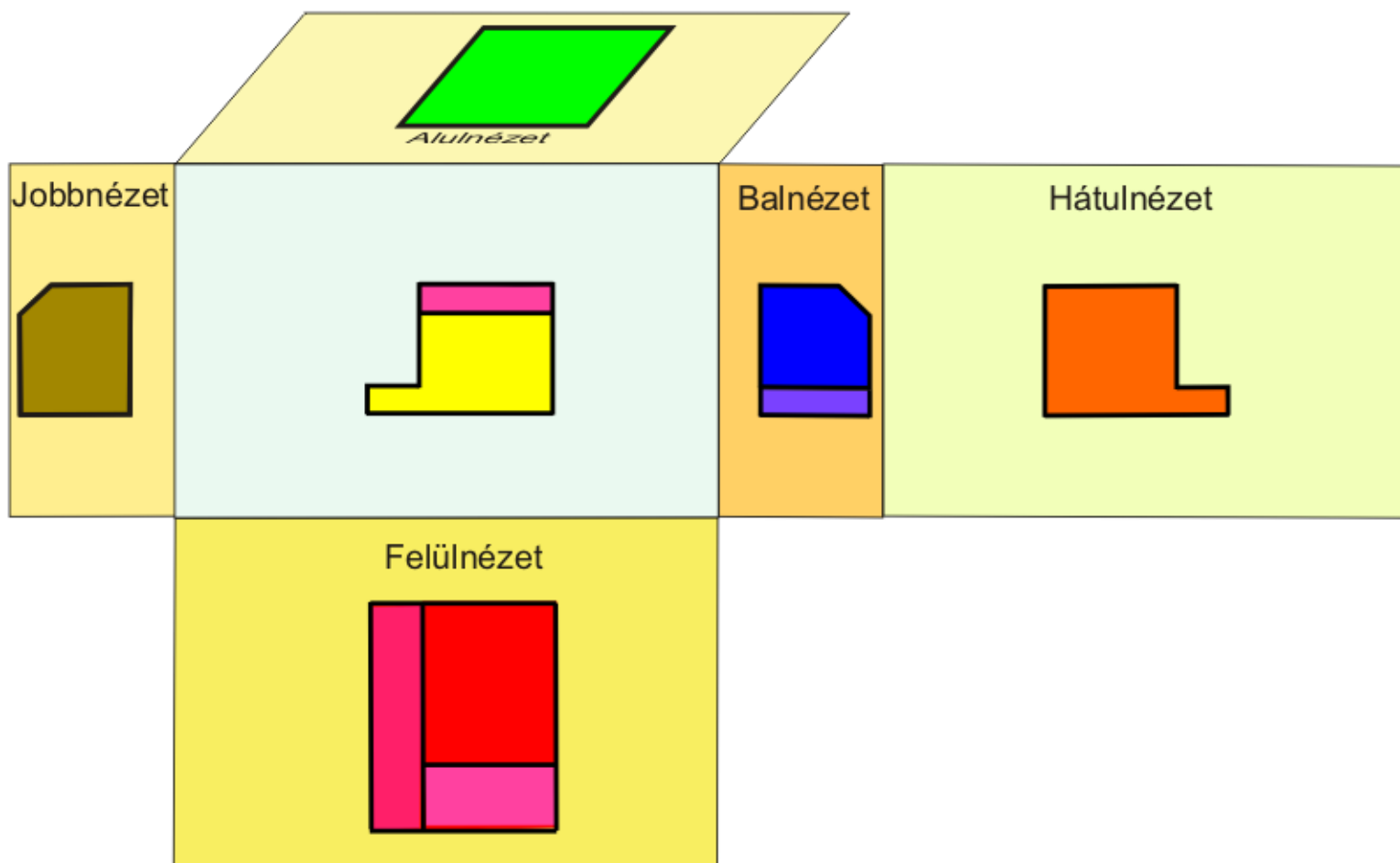
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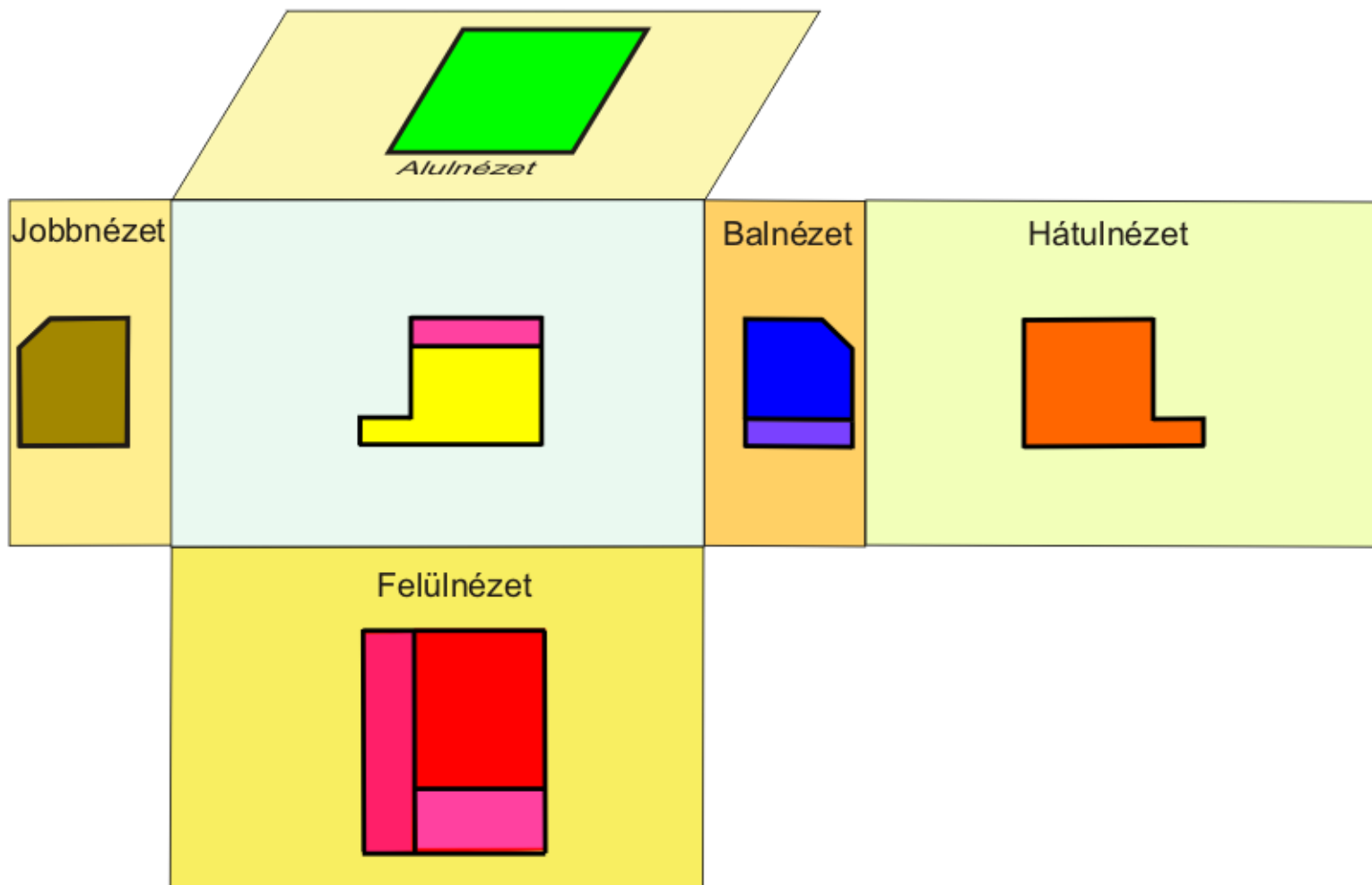


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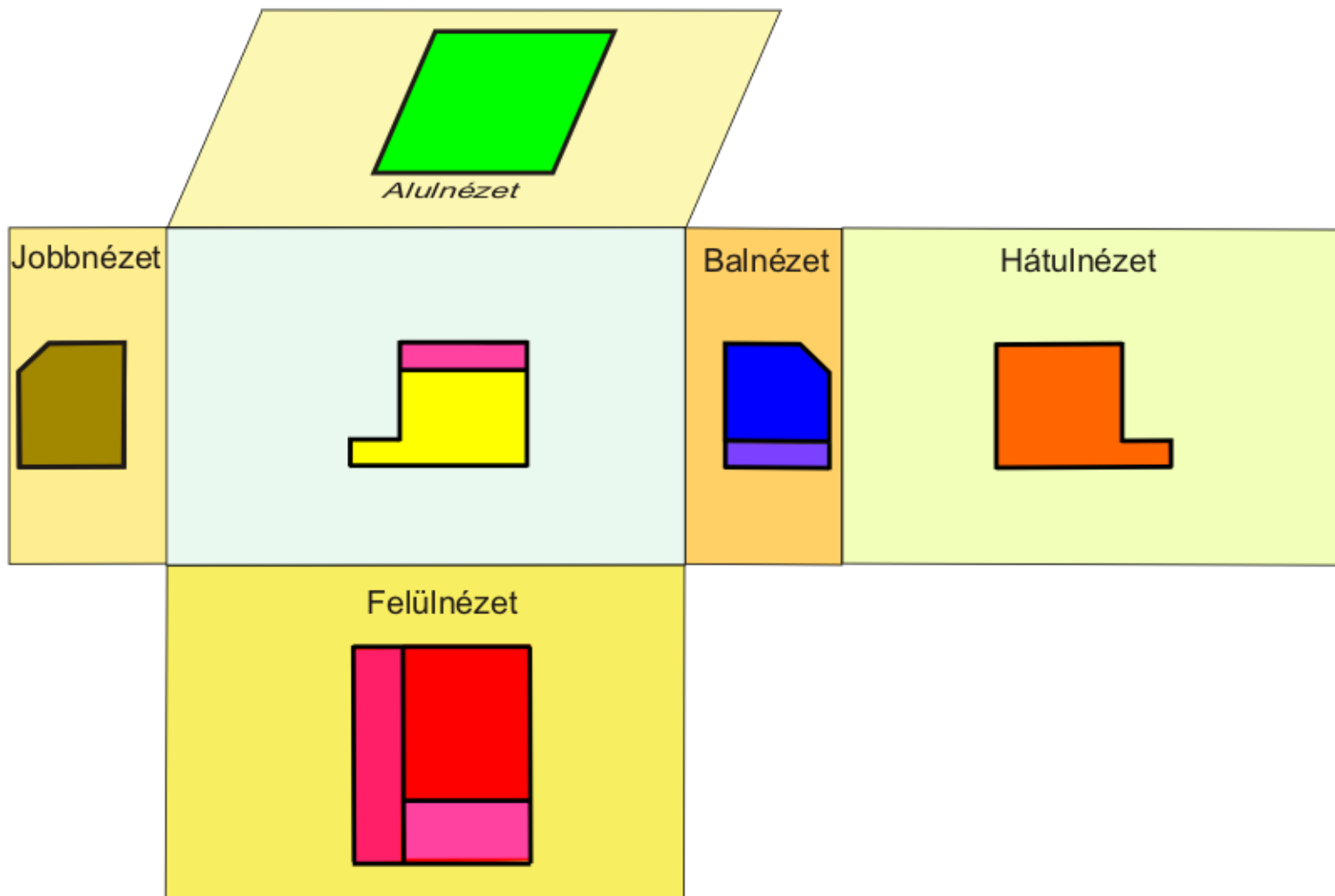




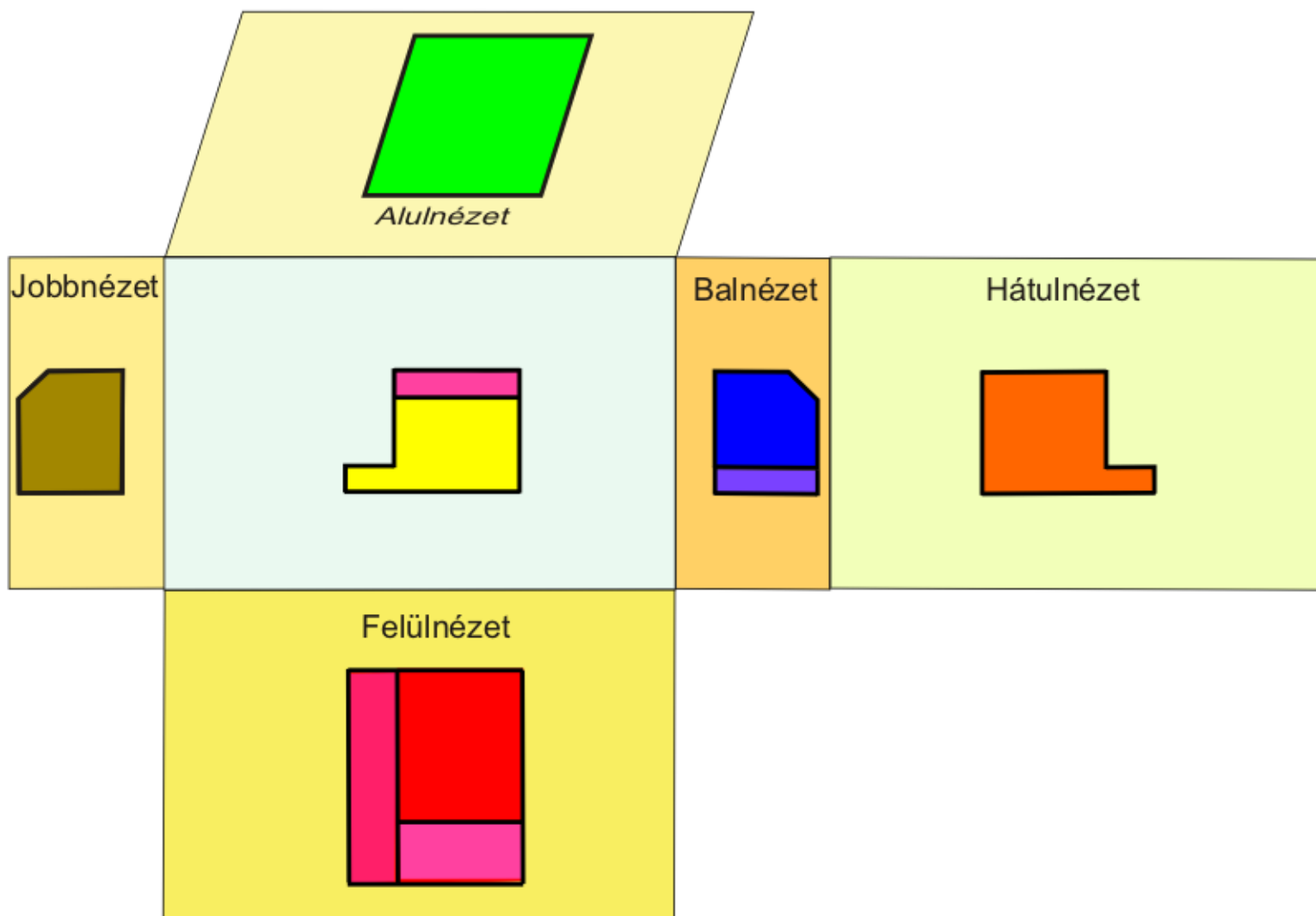
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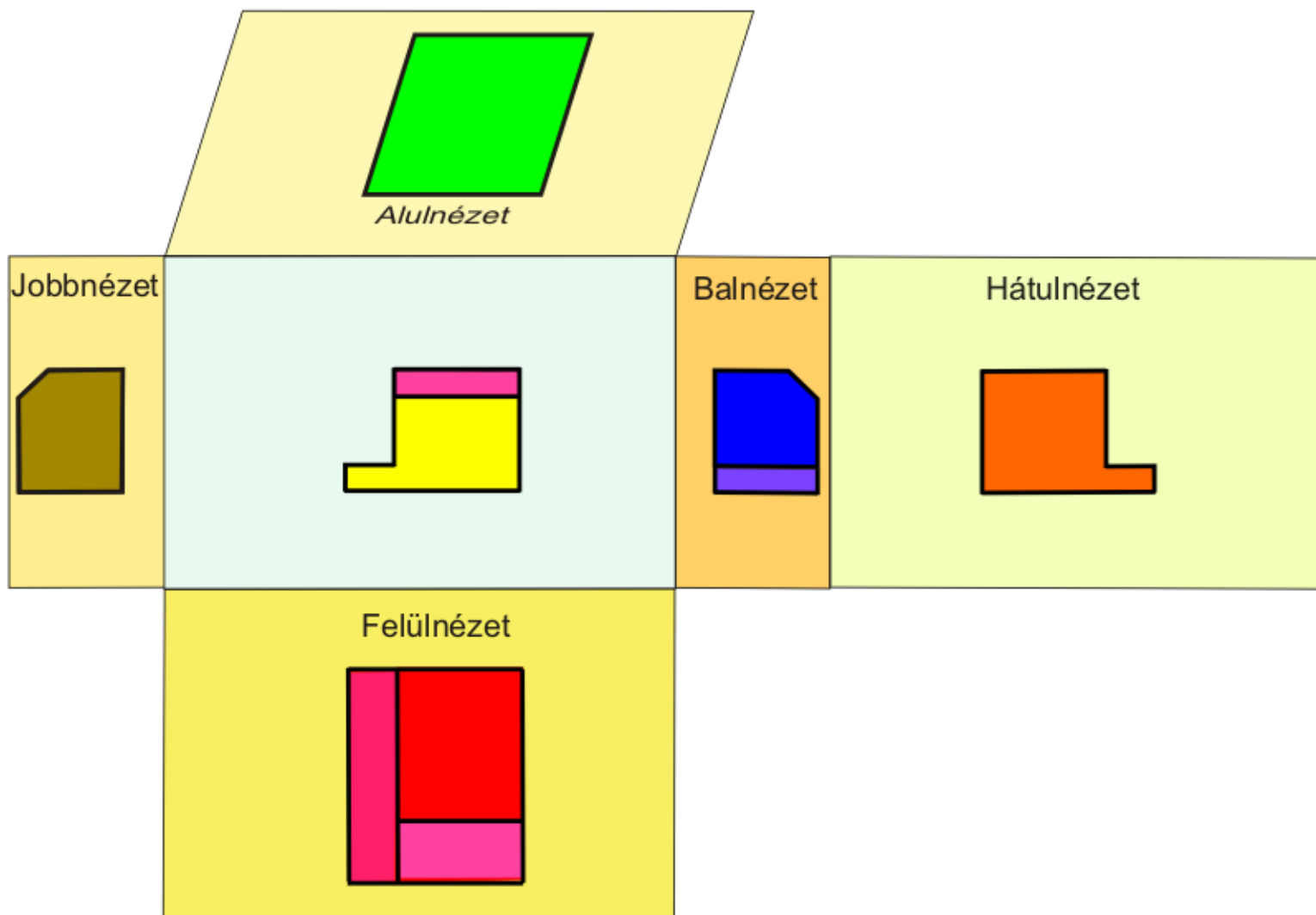
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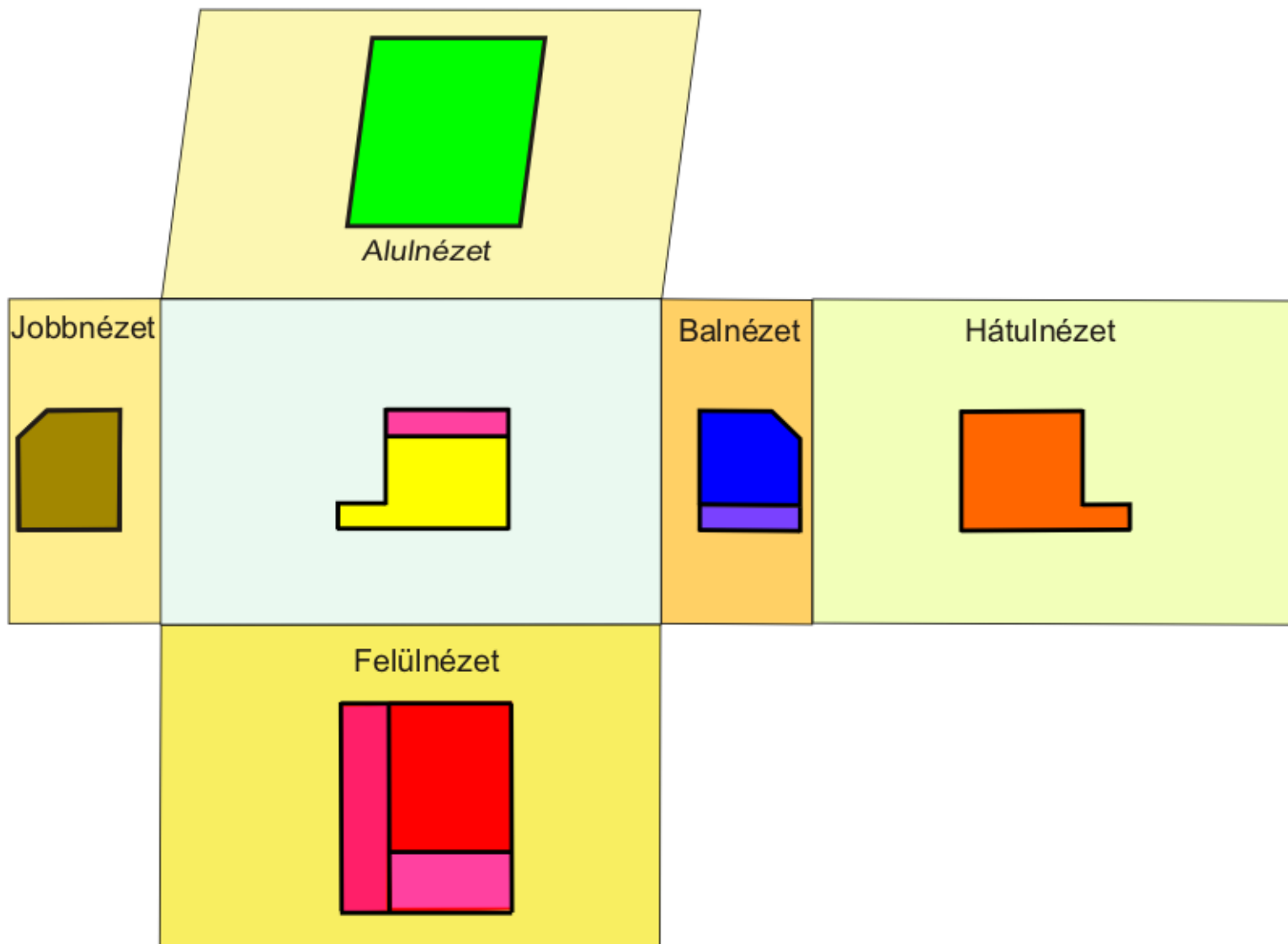
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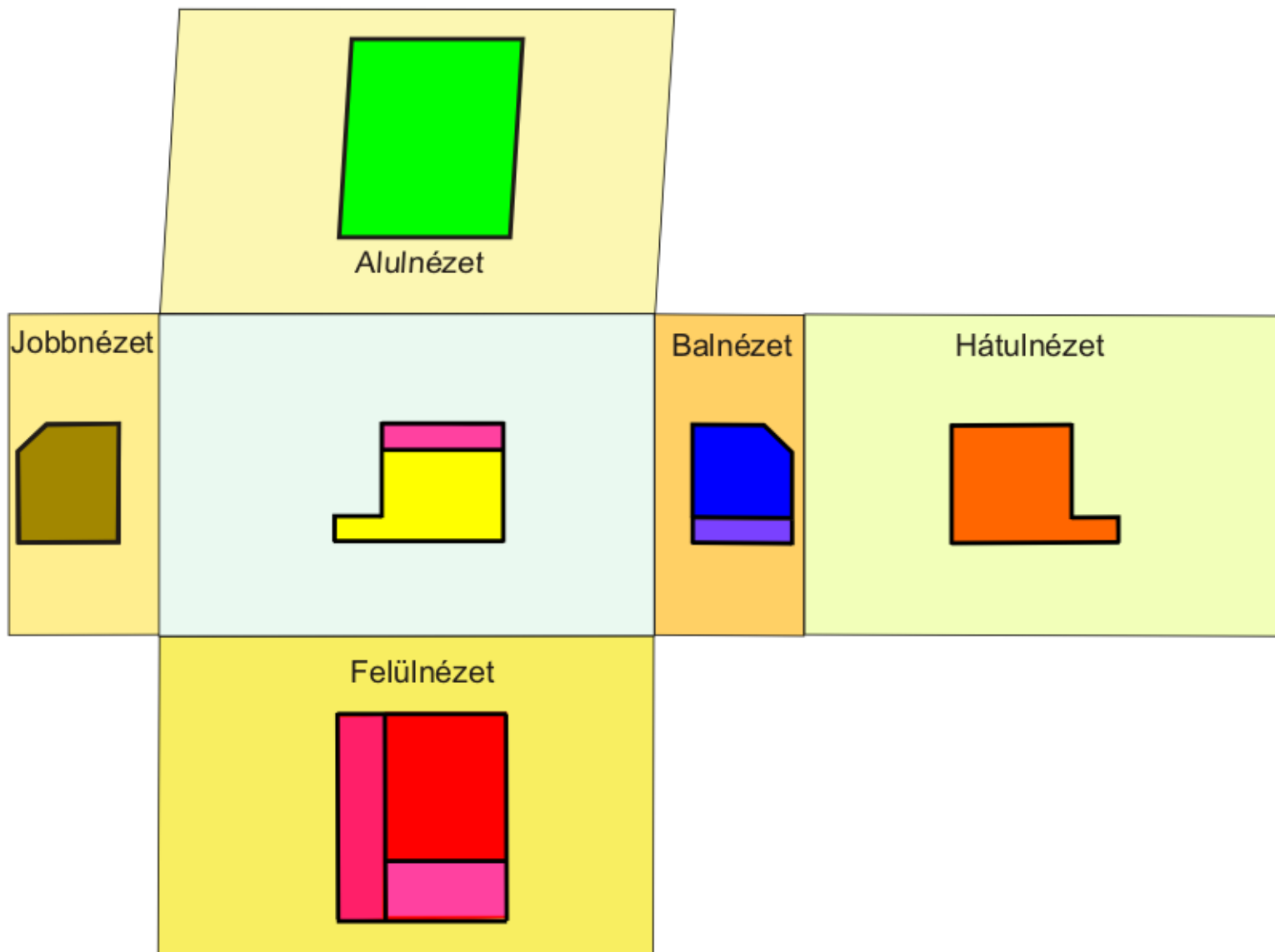
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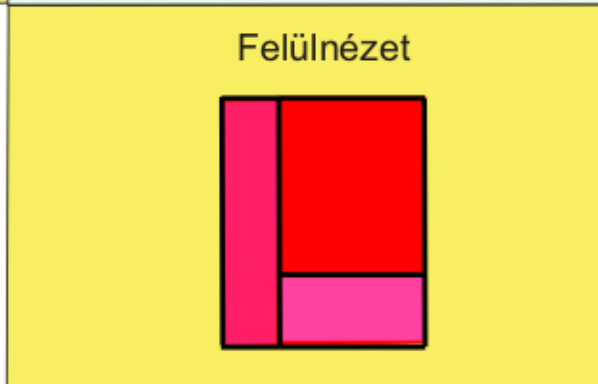
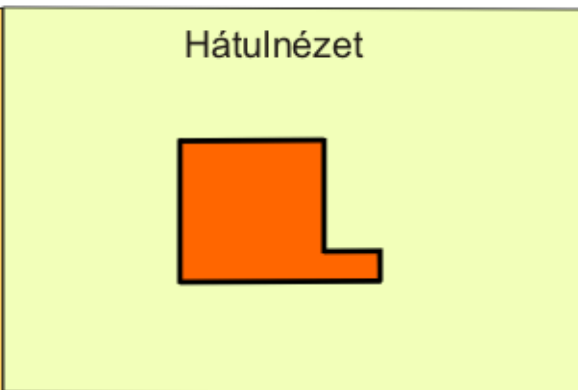
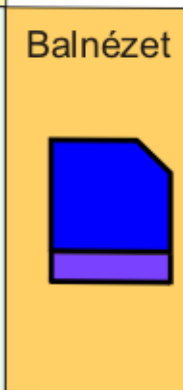
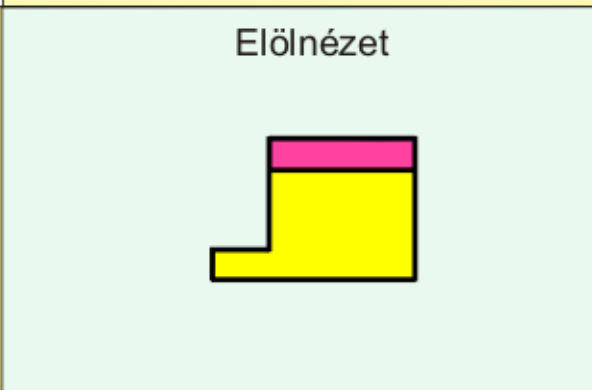
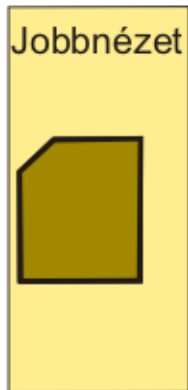
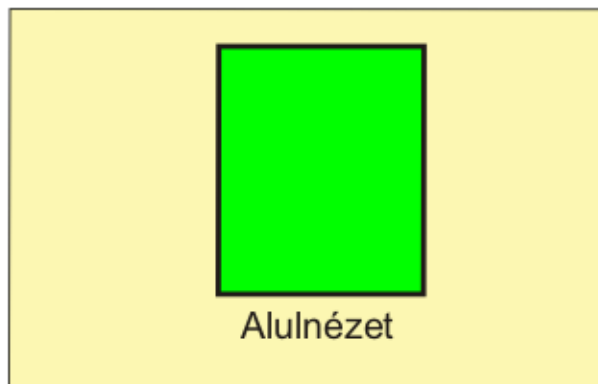
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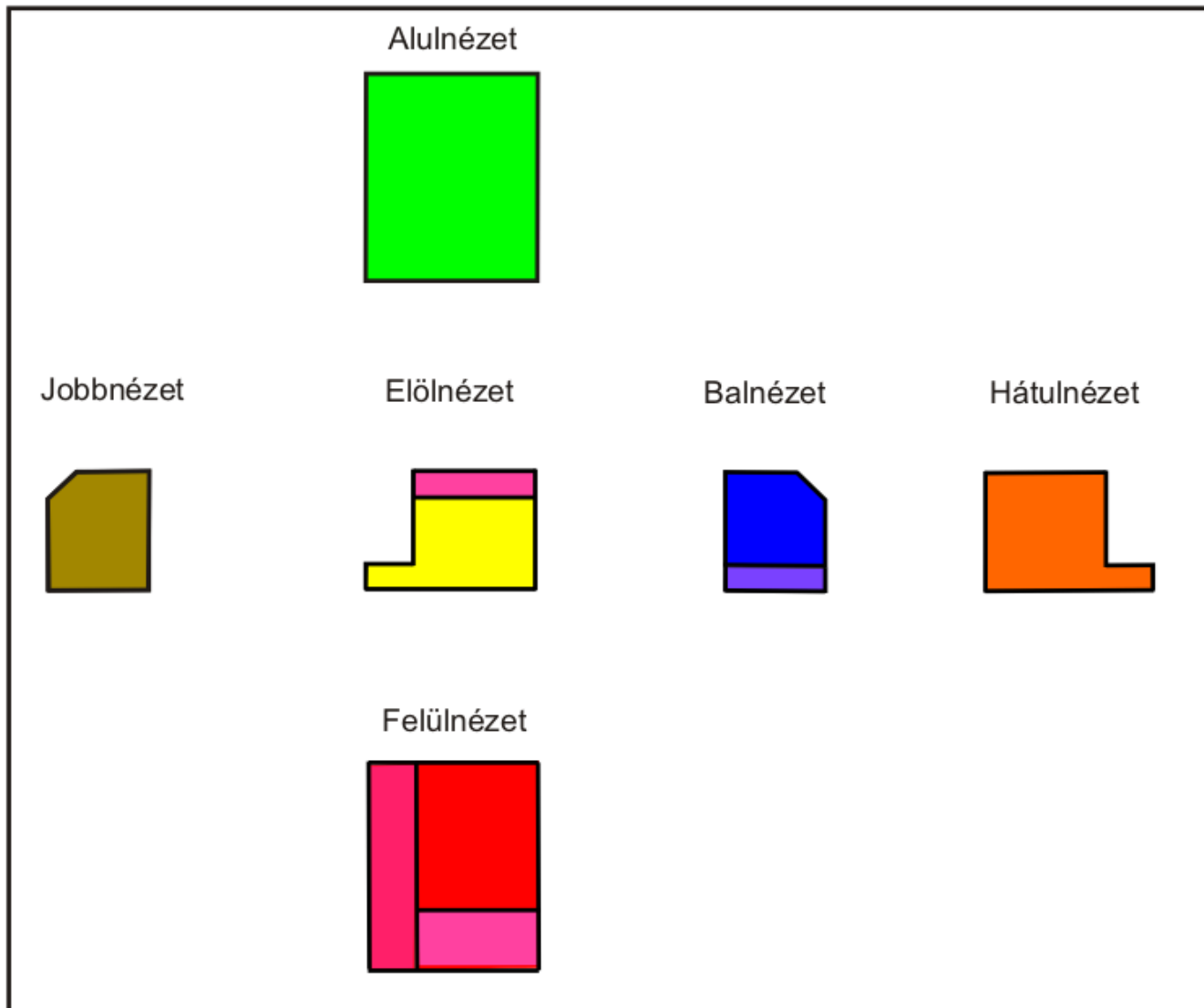
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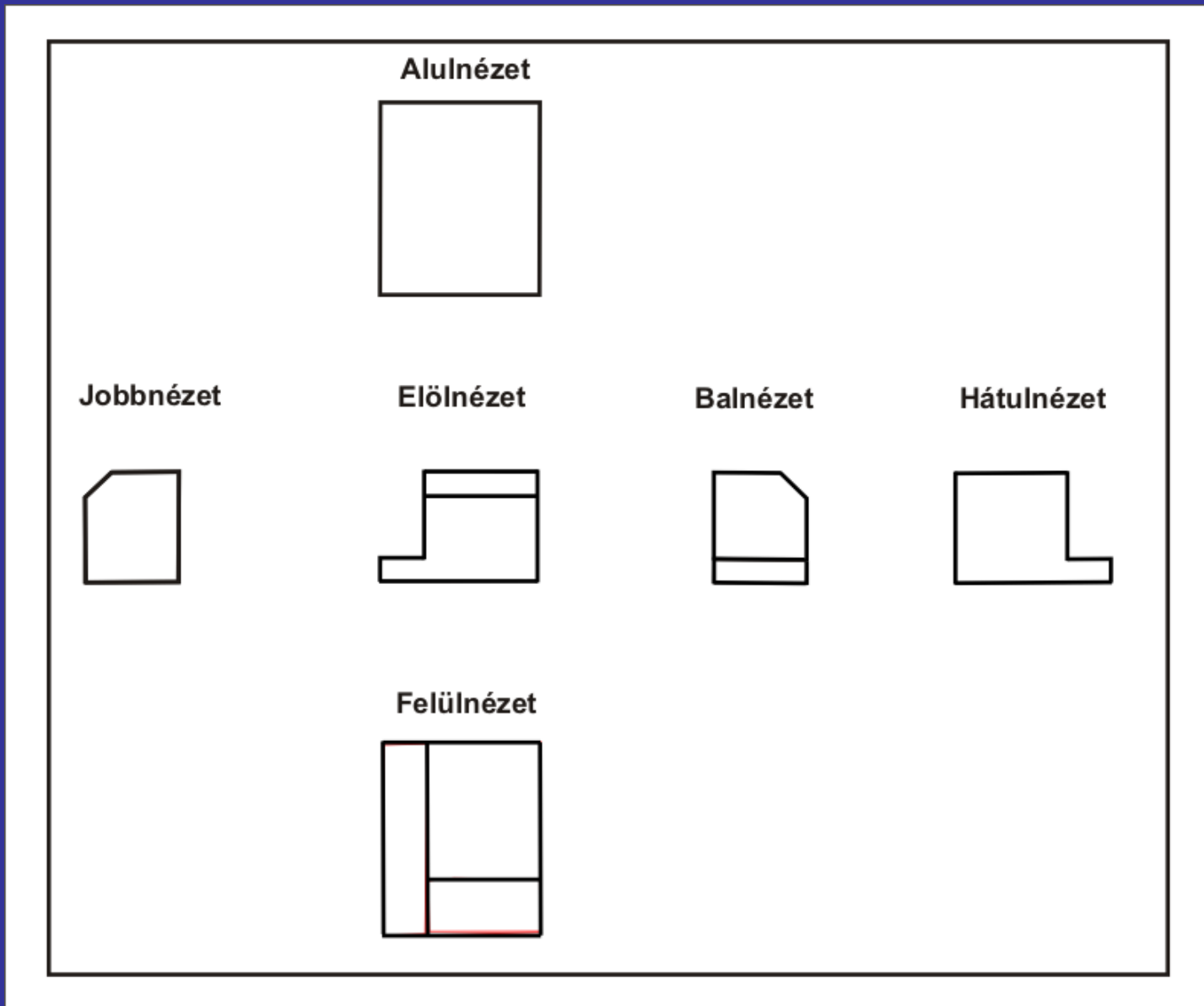


# A kiterített „doboz” a rajzlapon





# A vetületek szabványos elhelyezése (rendezett vetületek)



# A vetületképzés szempontjai

# Az alkatrész beállítása a képsíkokhoz képest

- Lehetőleg az előlnézet adja a legtöbb információt (a rajz főnézete általában az alkatrész előlnézete)
- Az alkatrész lehetőleg a végleges beépítési helyzetben legyen
- Az alkatrész szimmetriatengelyei a képsíkokkal párhuzamosak vagy rájuk merőlegesek legyenek
- Az alkatrész sík felületei a képsíkokkal párhuzamosak vagy rájuk merőlegesek legyenek

## A szükséges vetületek száma

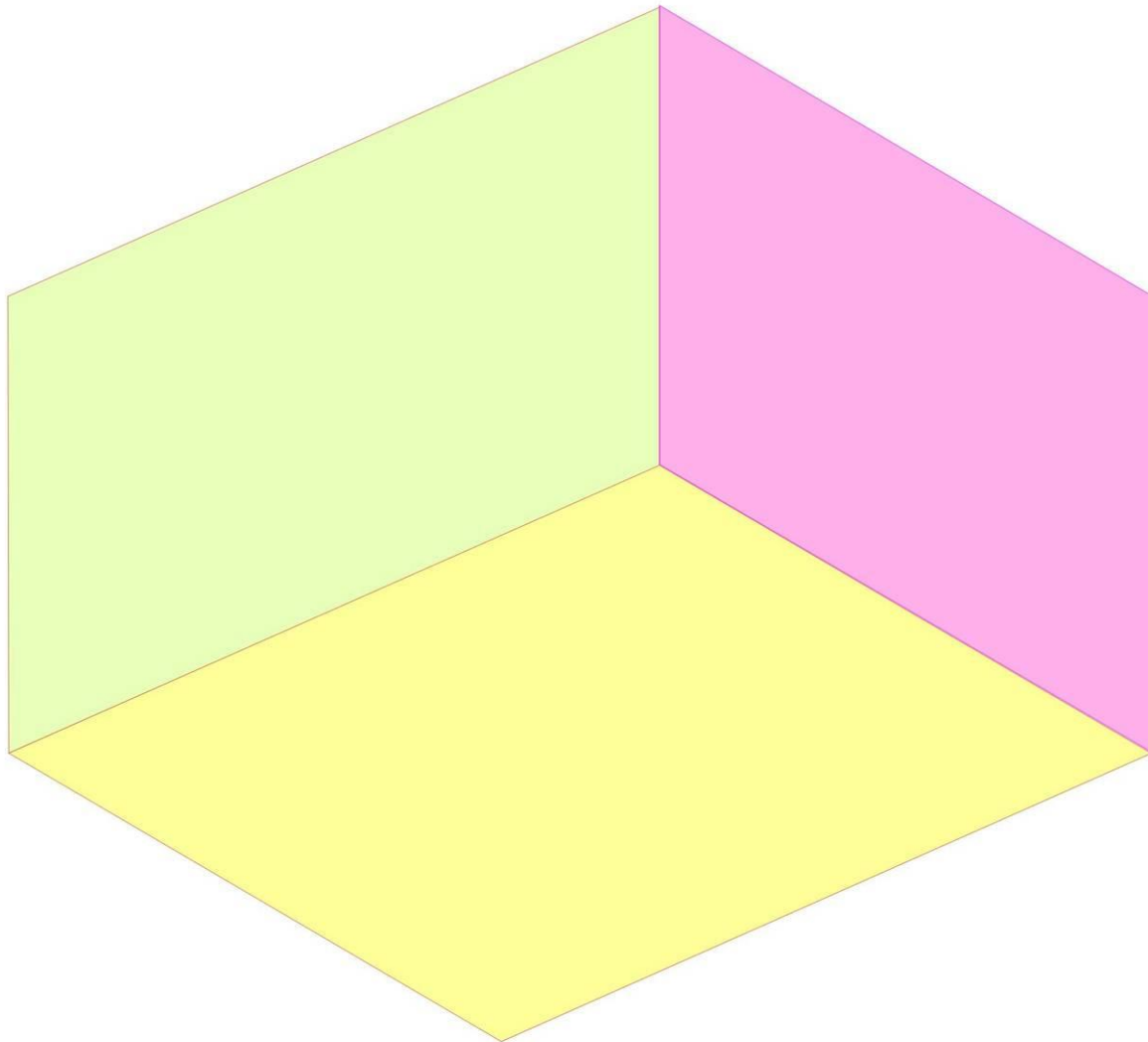
- Maximálisan annyi vetület kell, amennyi az alkatrész egyértelmű ábrázolásához éppen szükséges
- Minél kevesebb, annál jobb

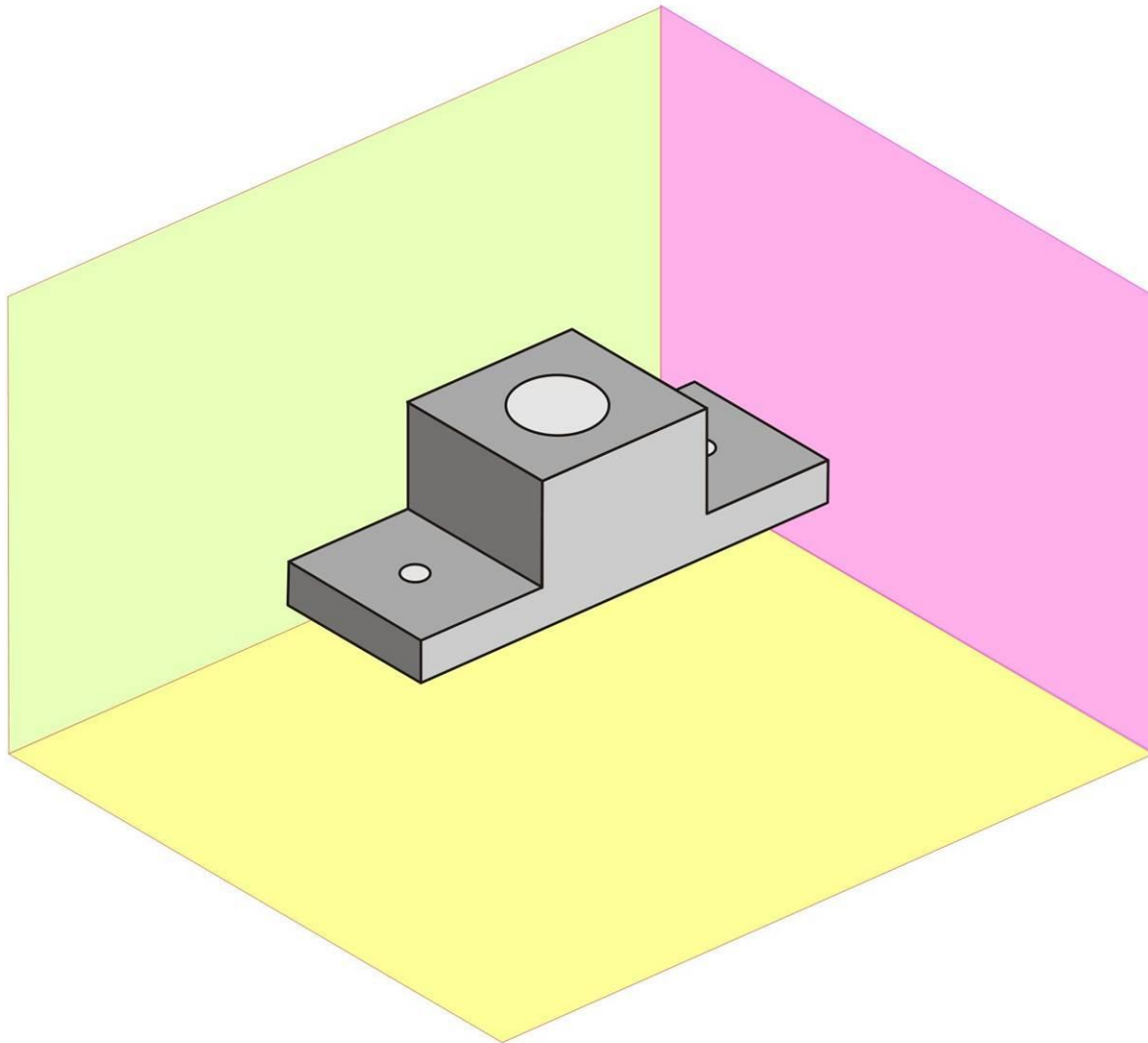
**NÉZETEK**

# A nézetkészítés célja

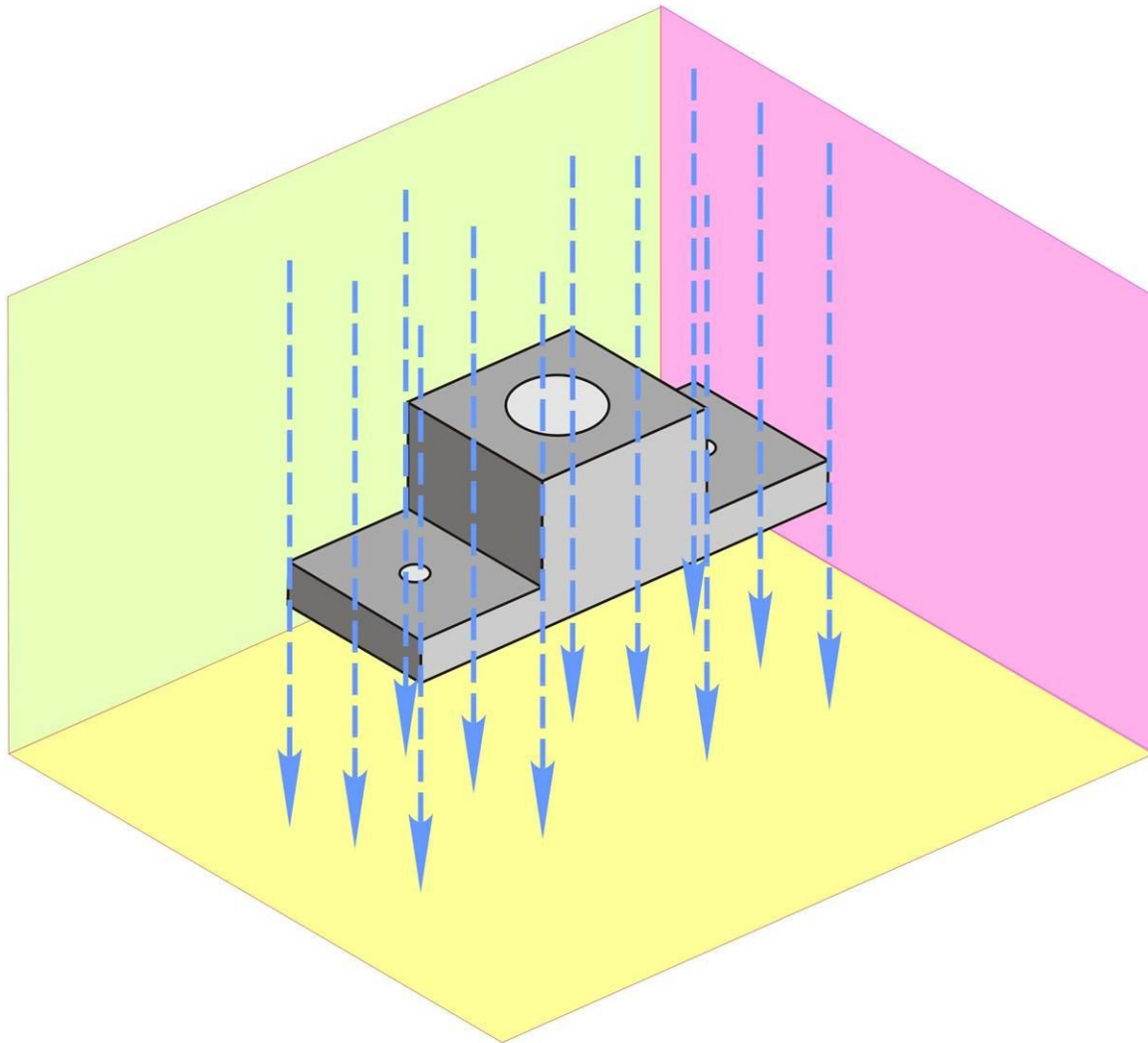
az alkatrész külső formájának egyértelmű megjelenítése

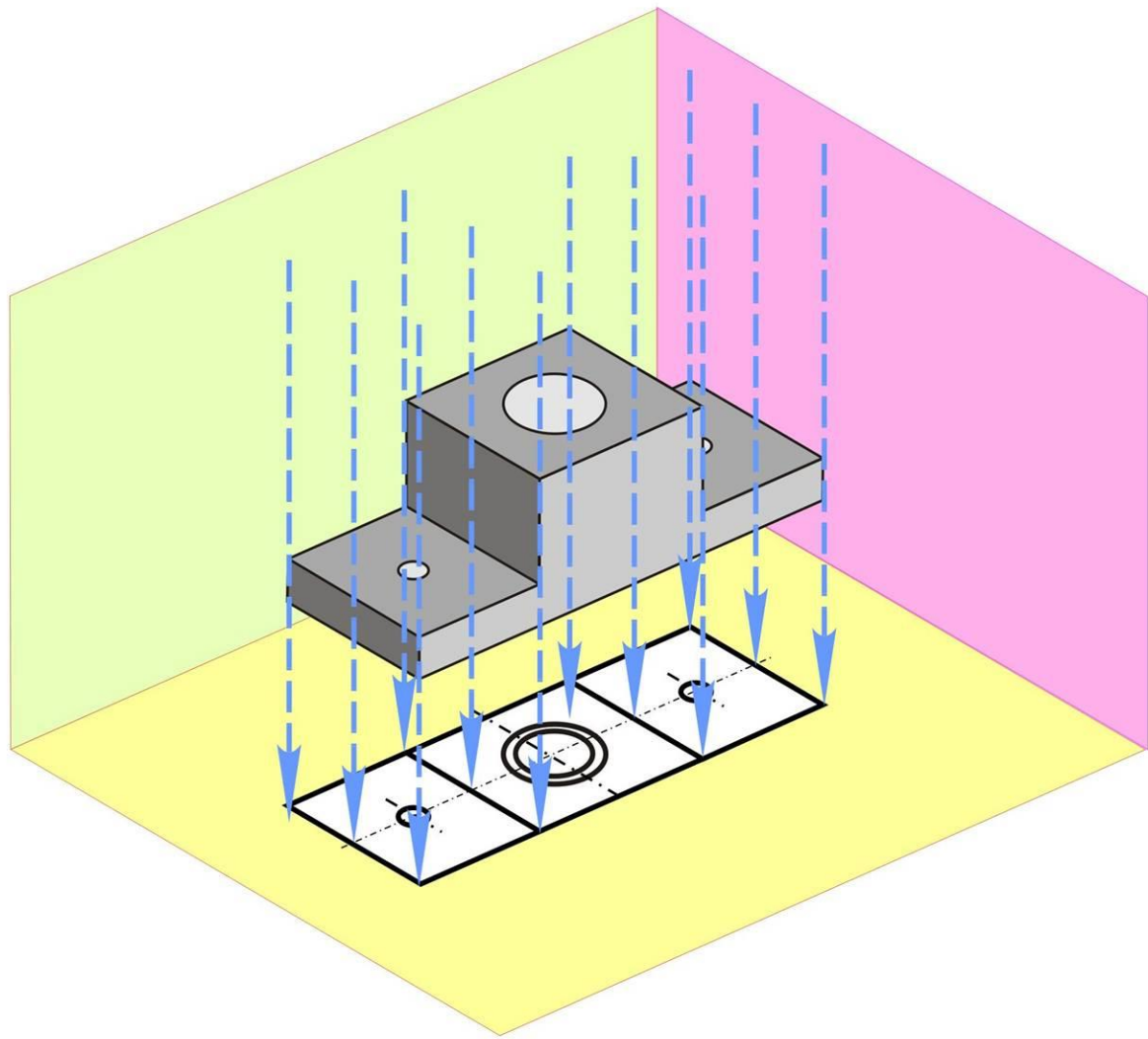
# A NÉZETEK SZÁRMAZTATÁSA

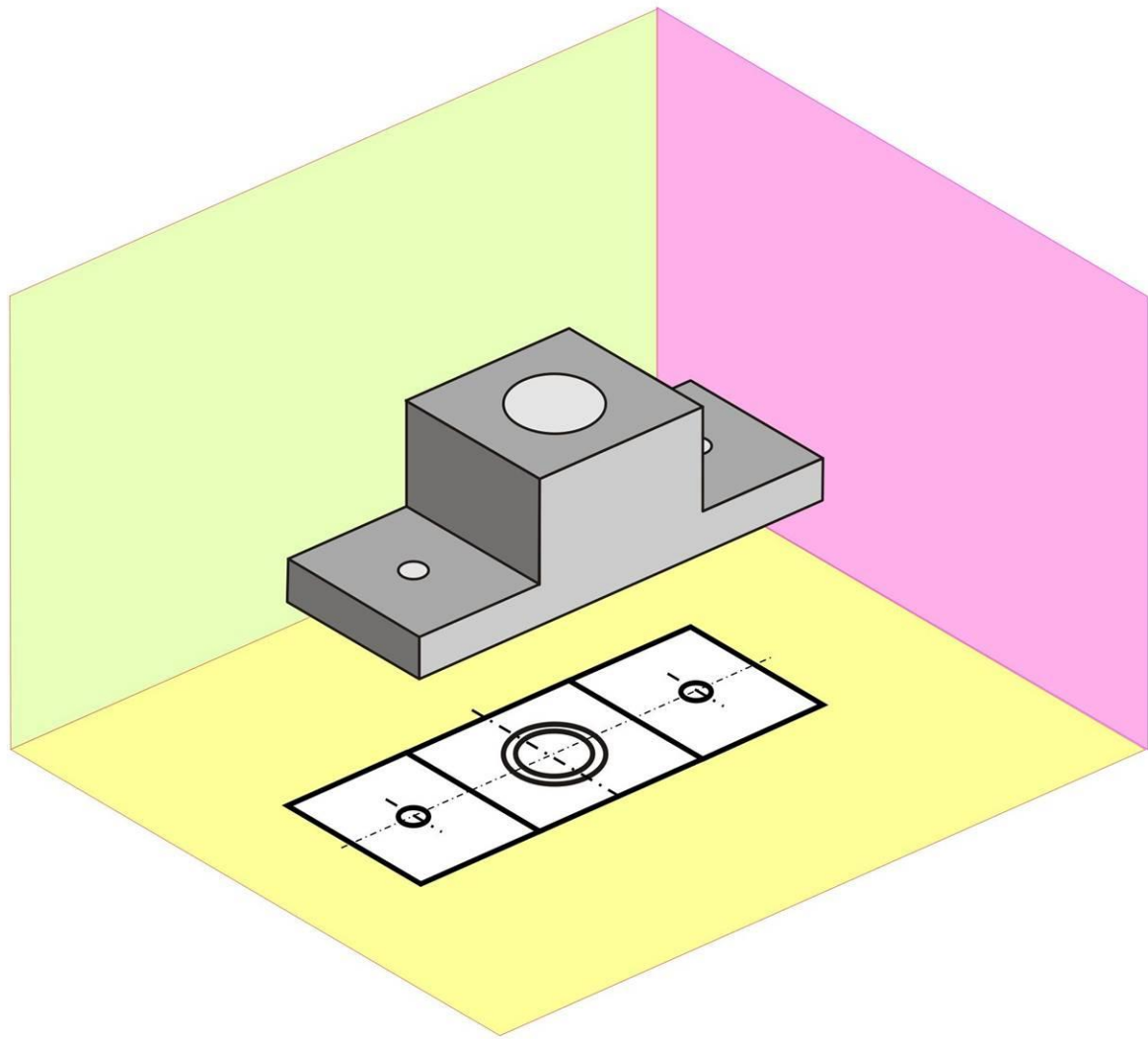


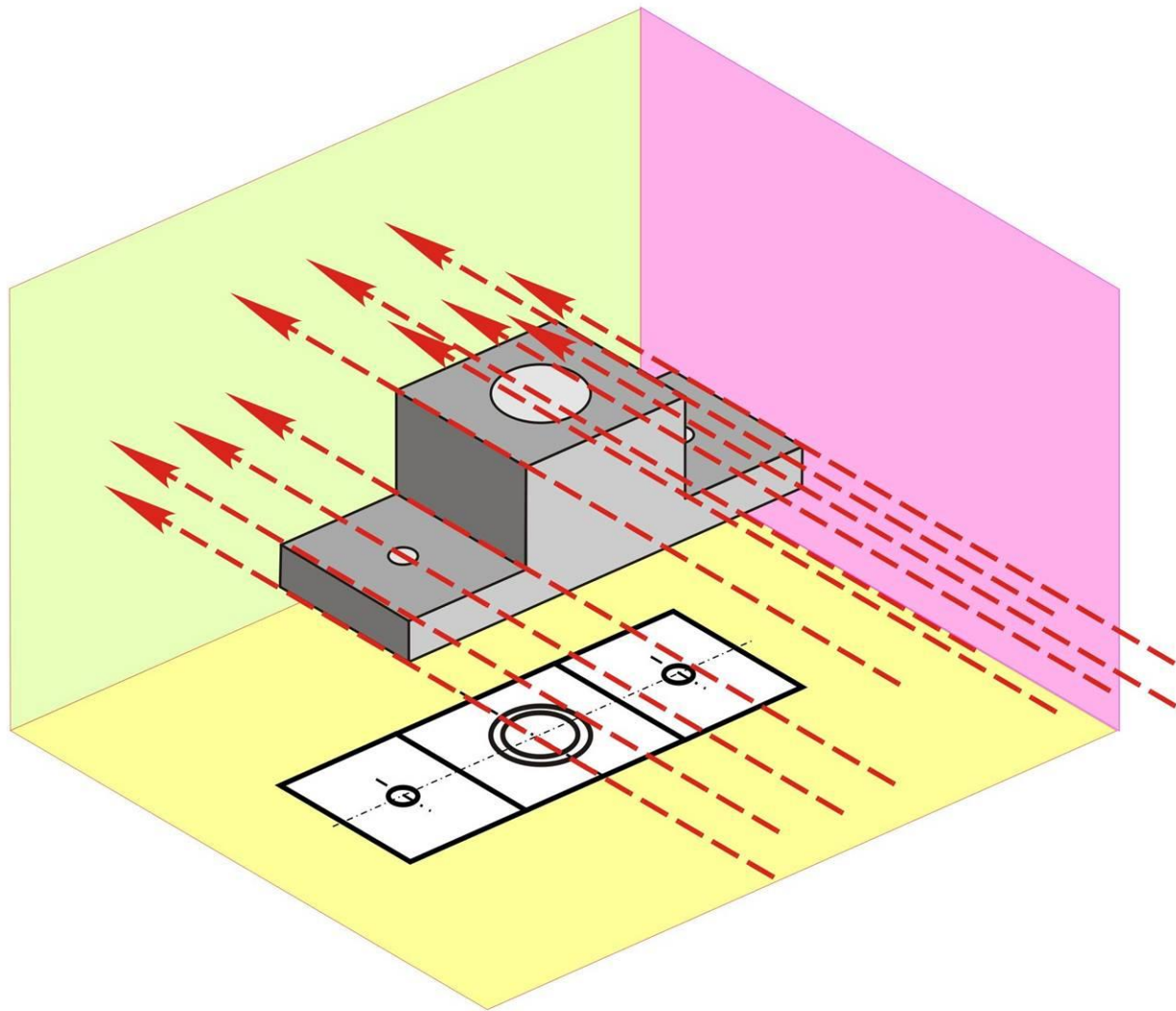


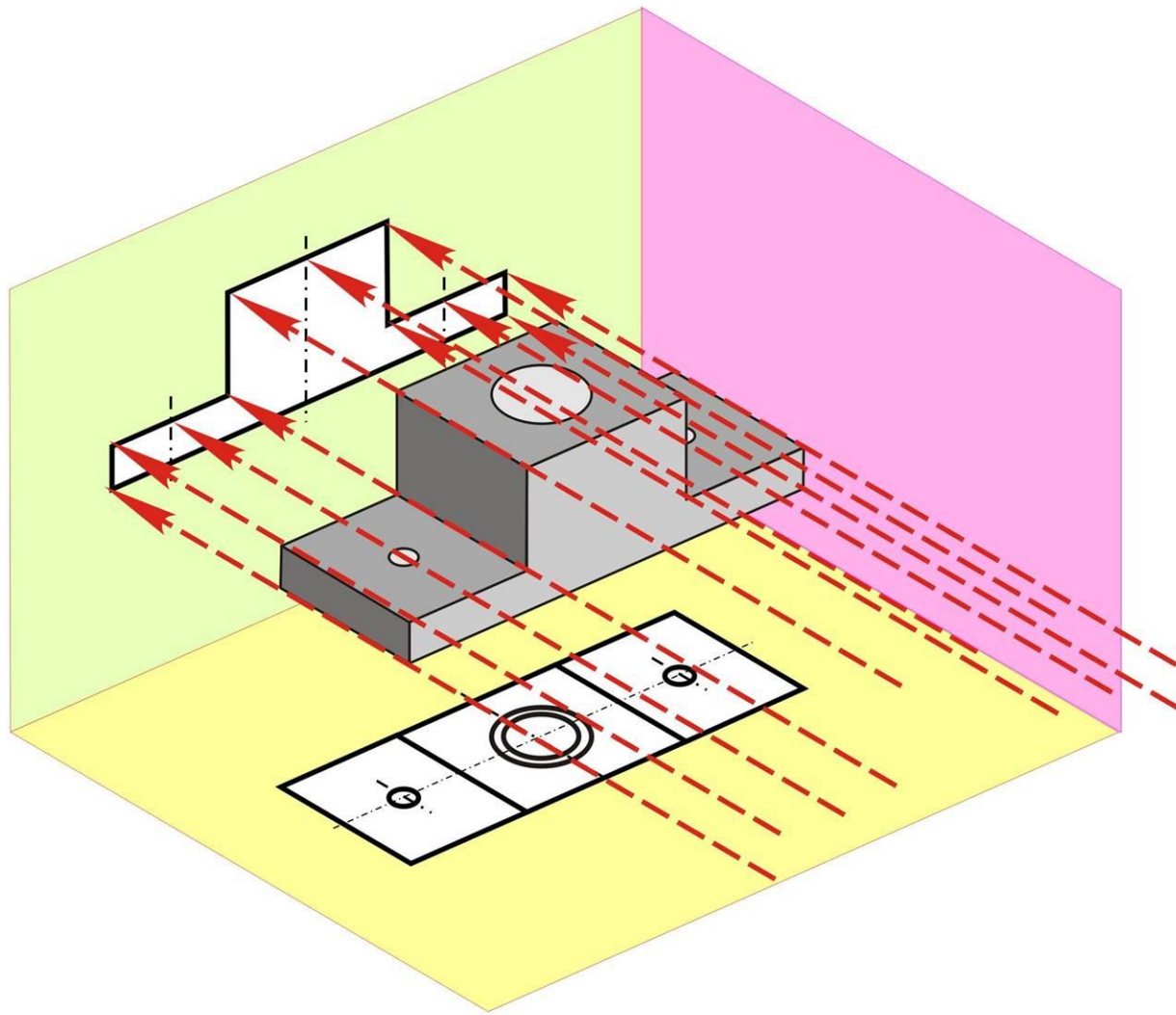


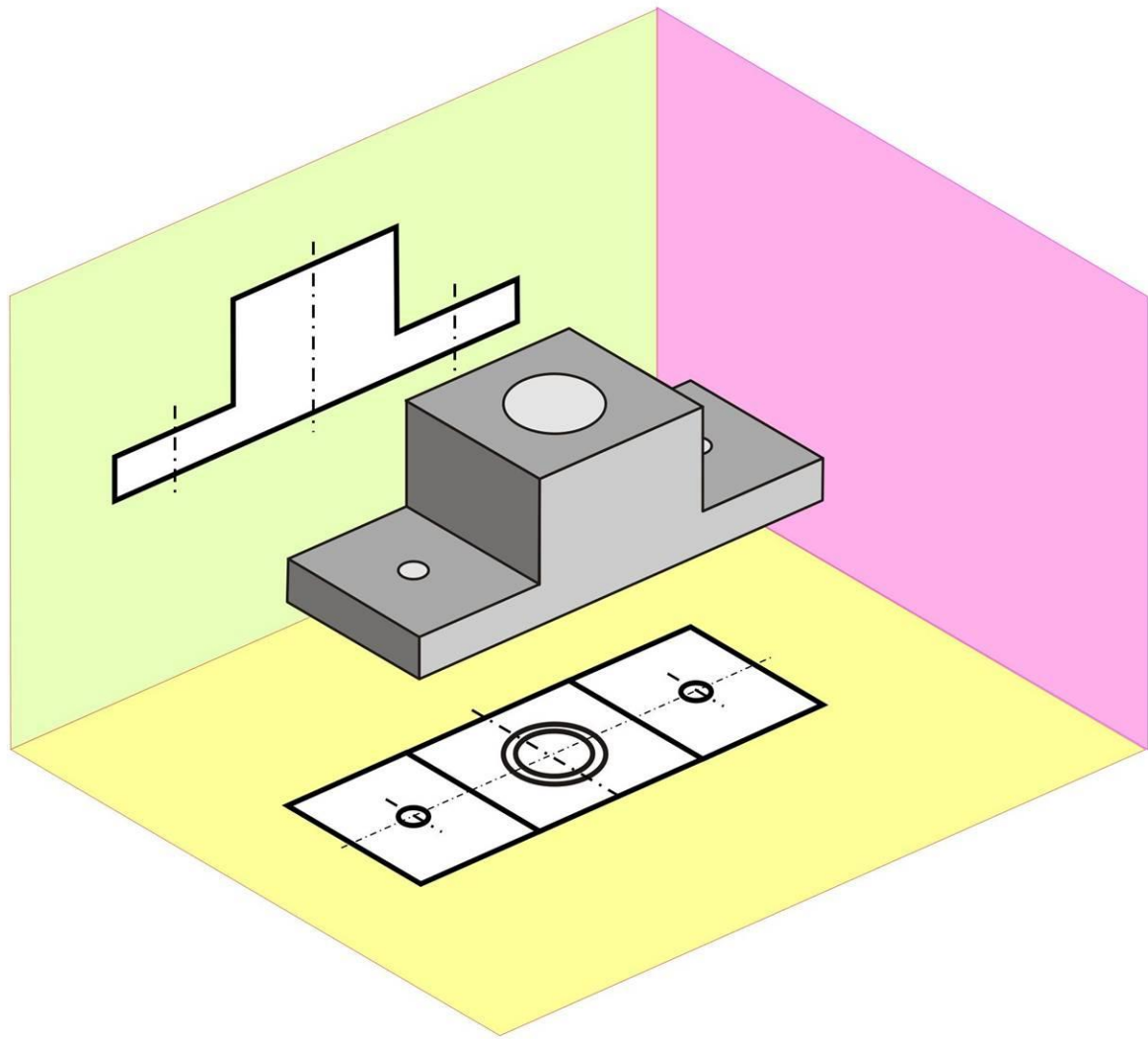


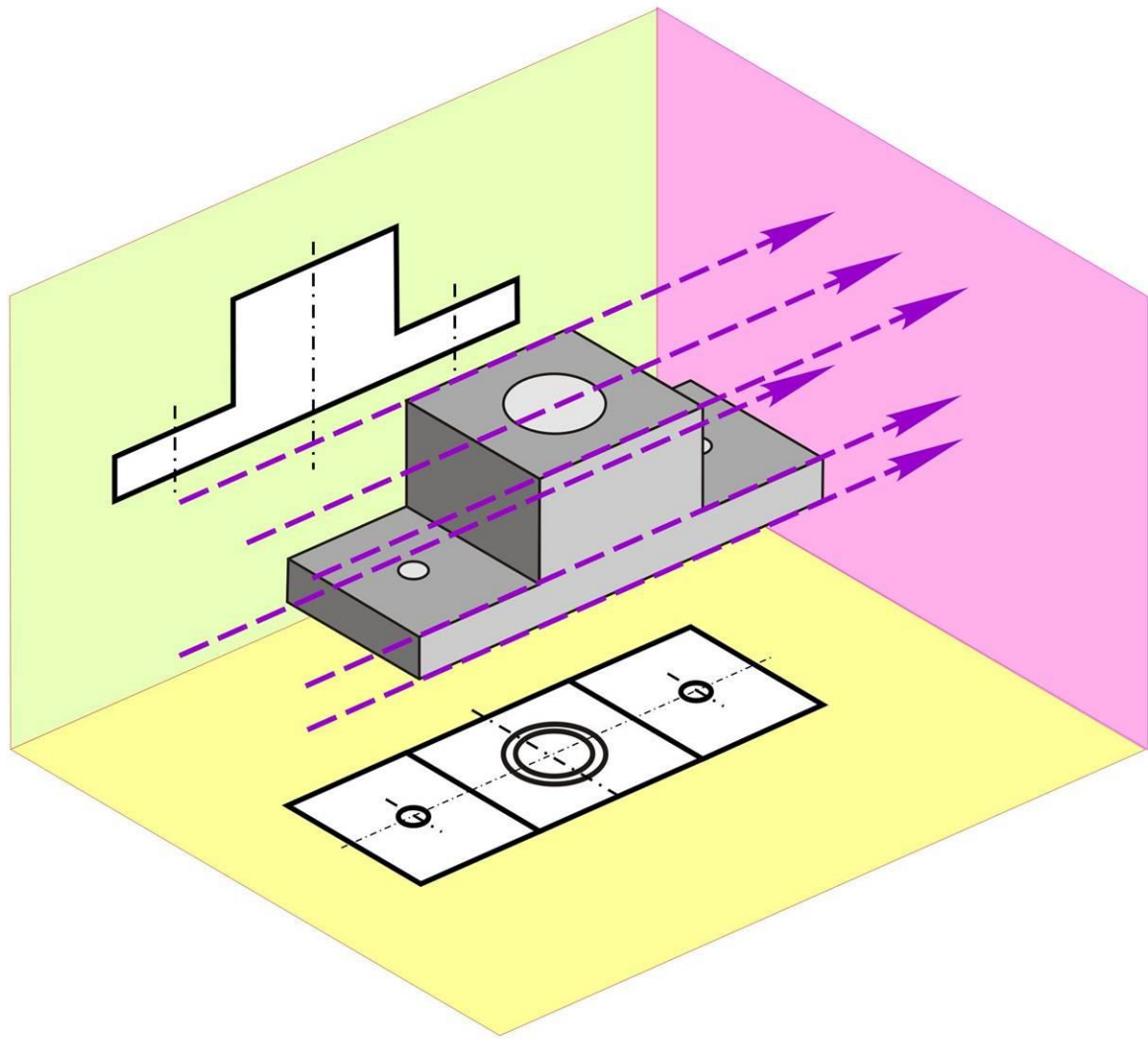


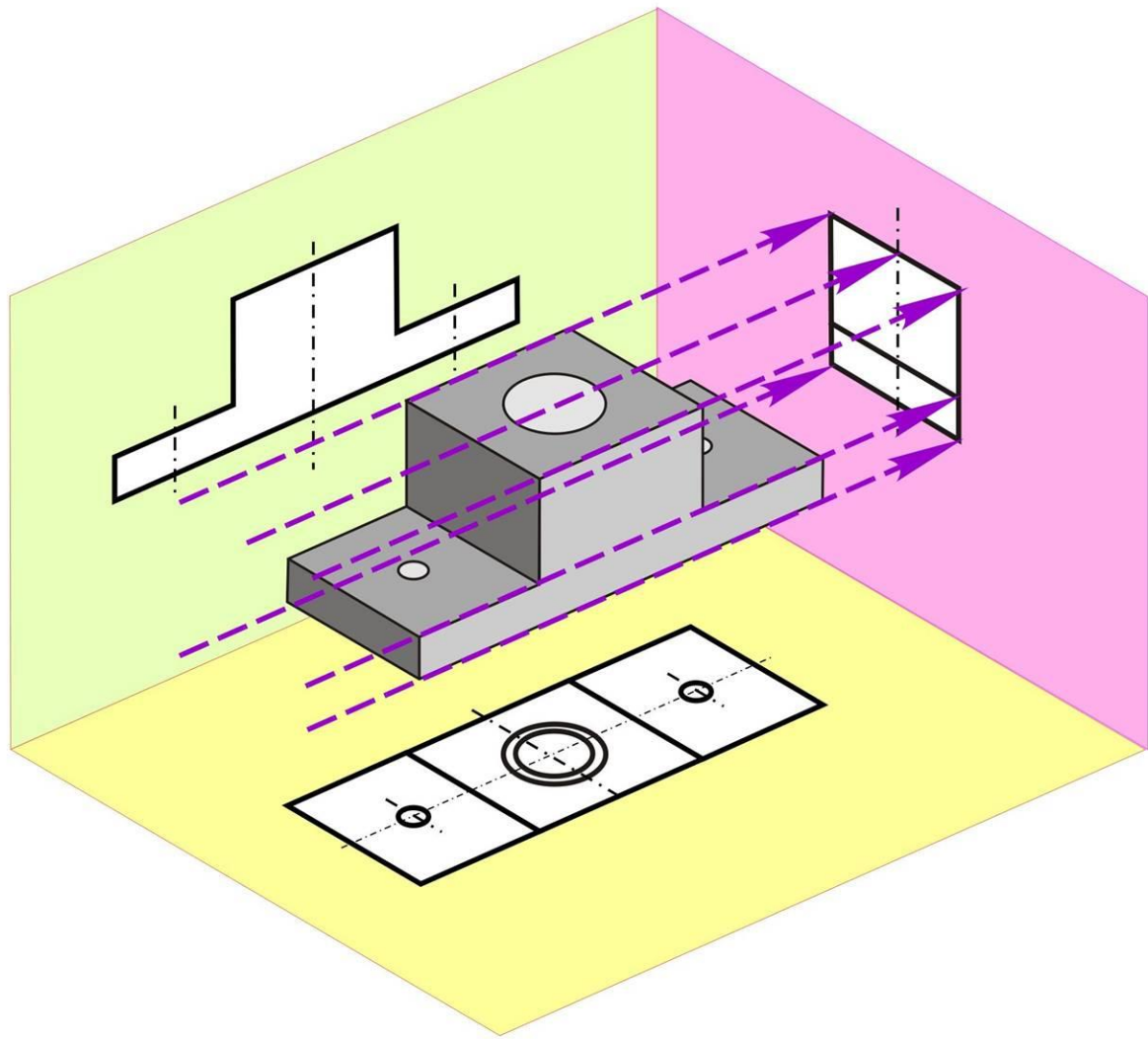




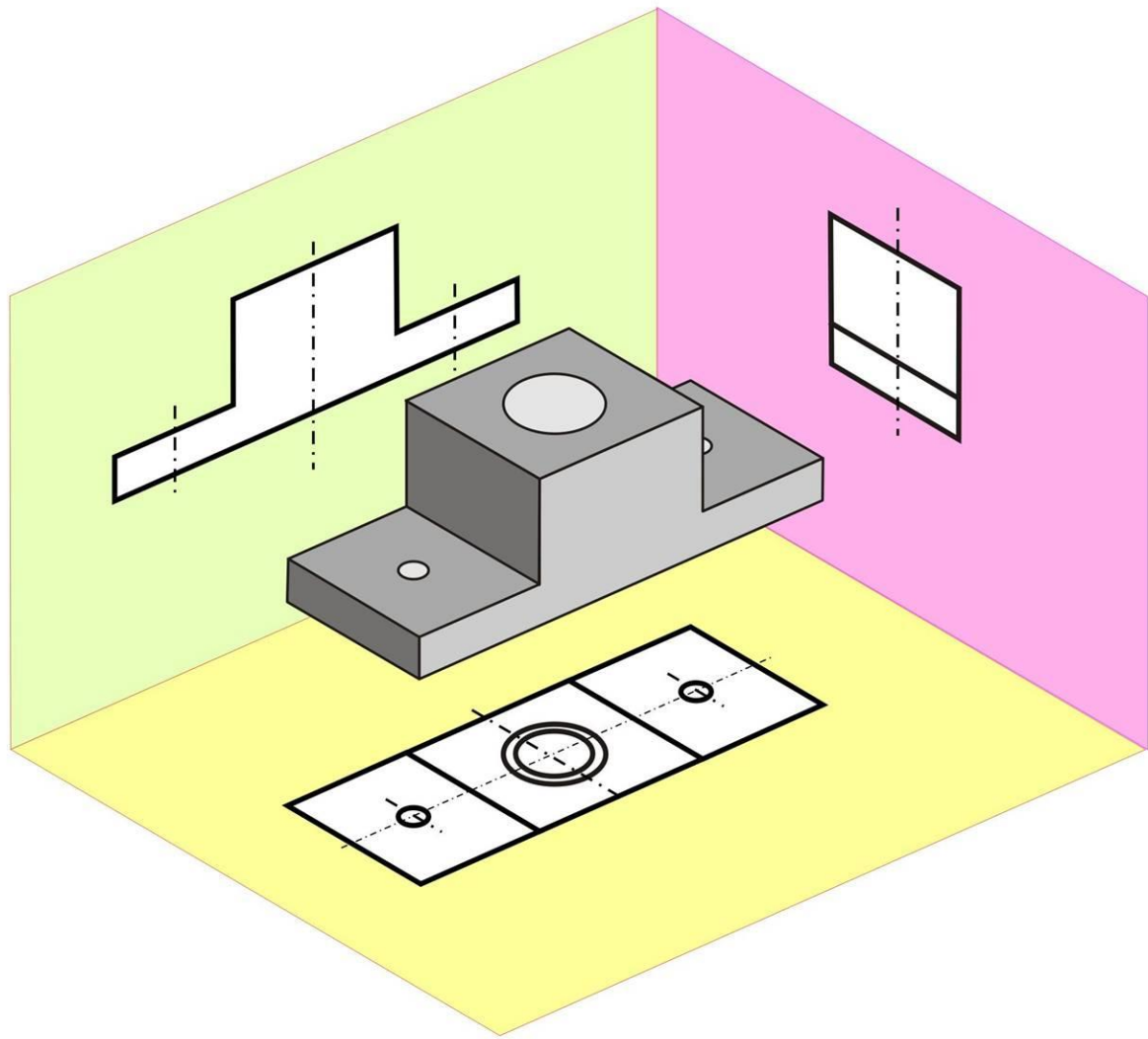


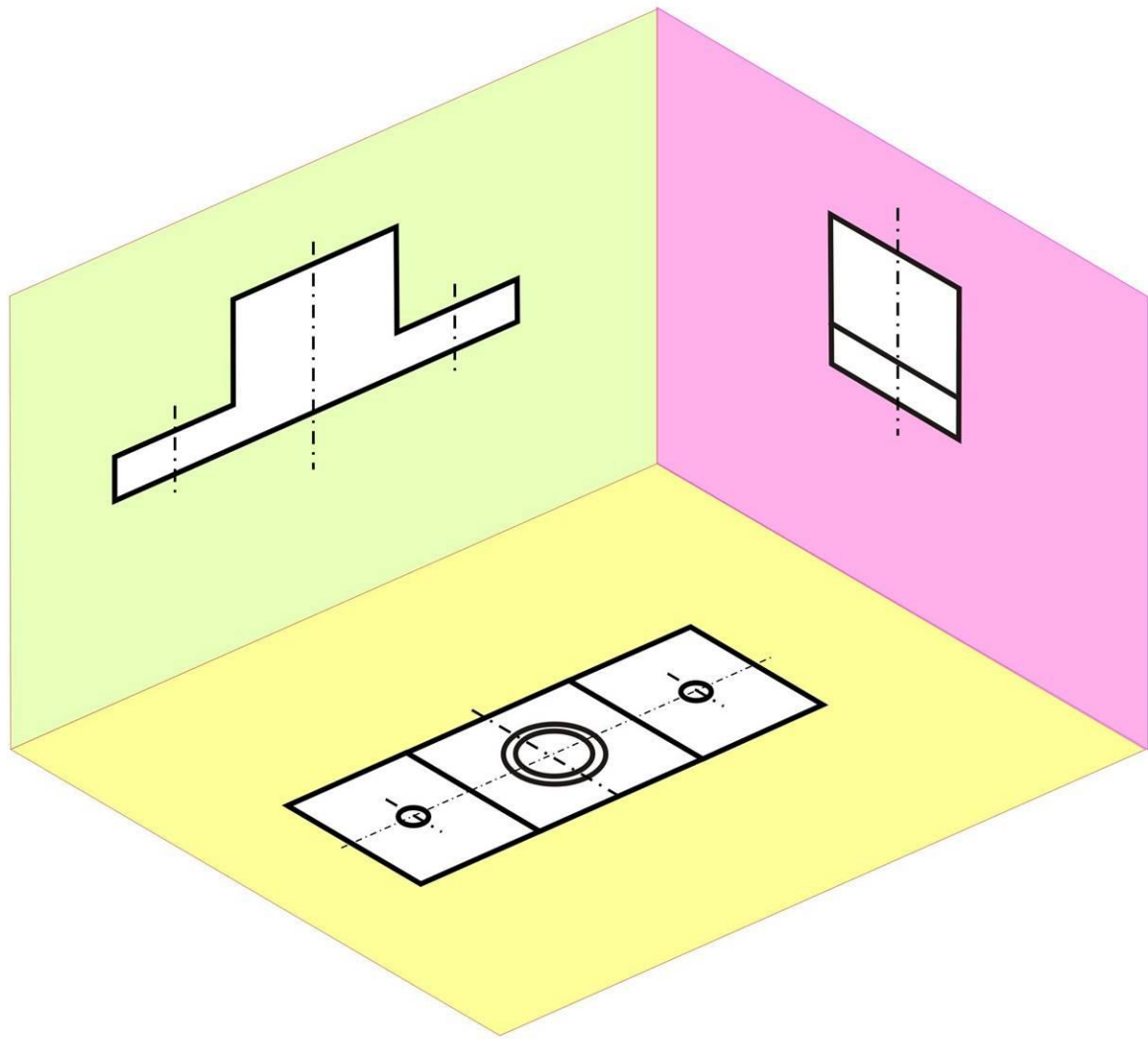


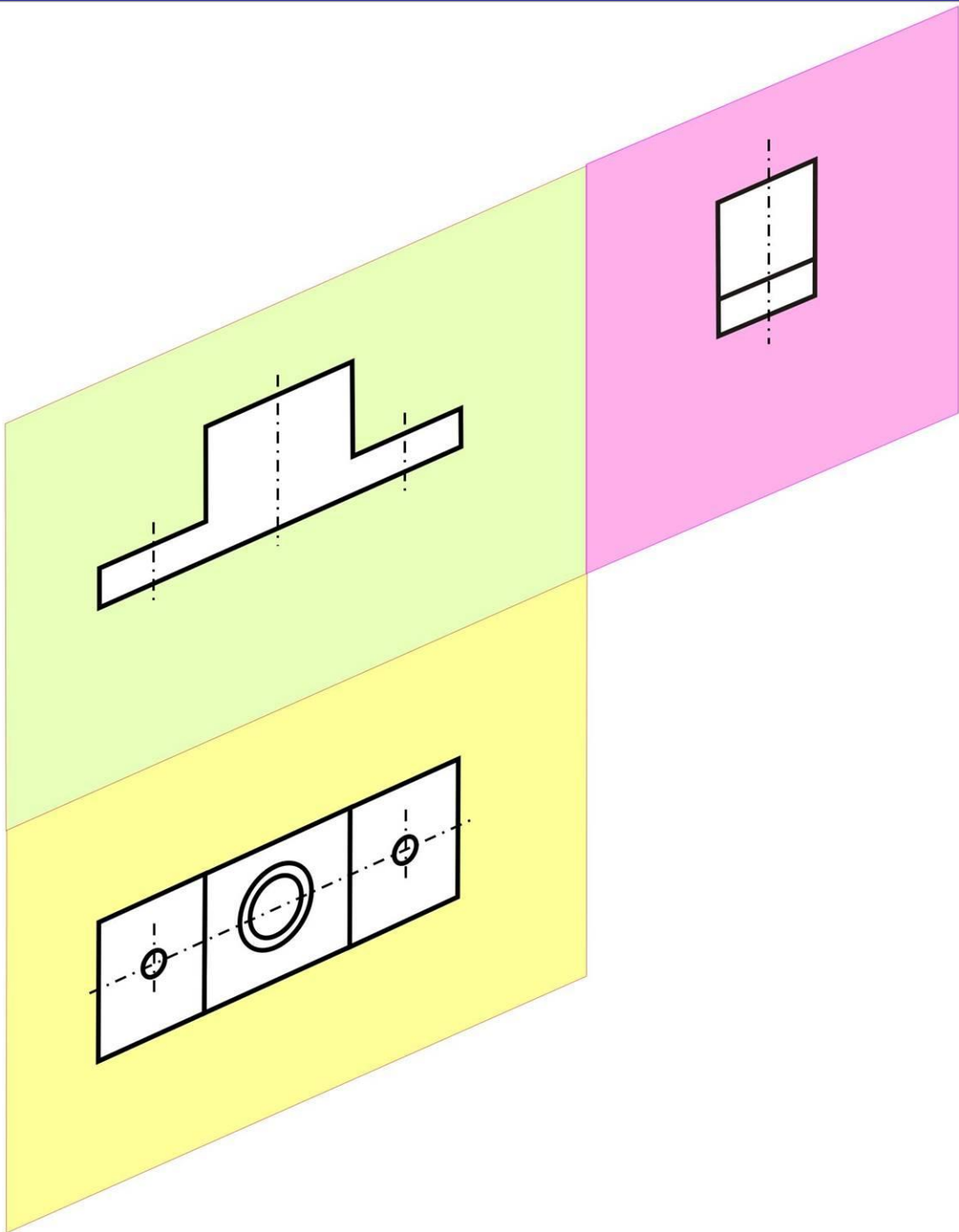


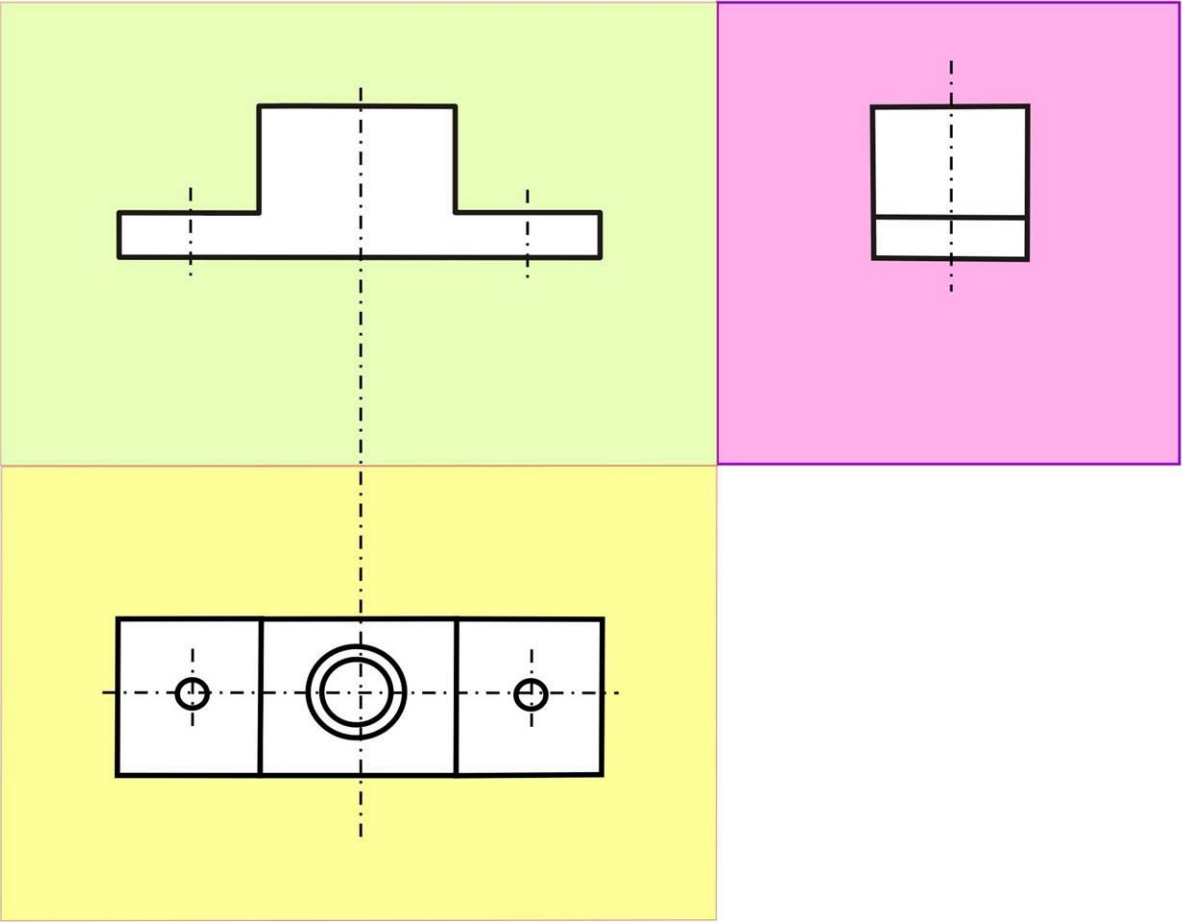


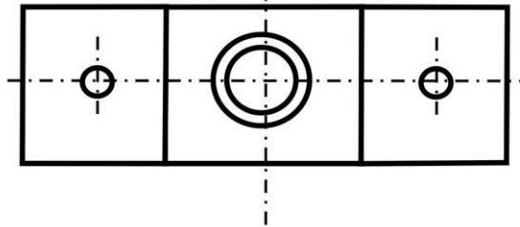
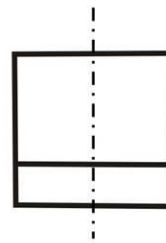
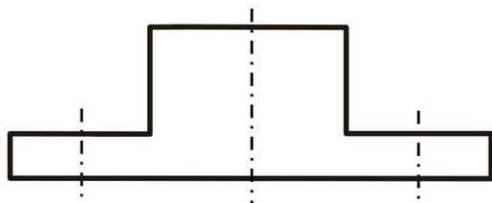












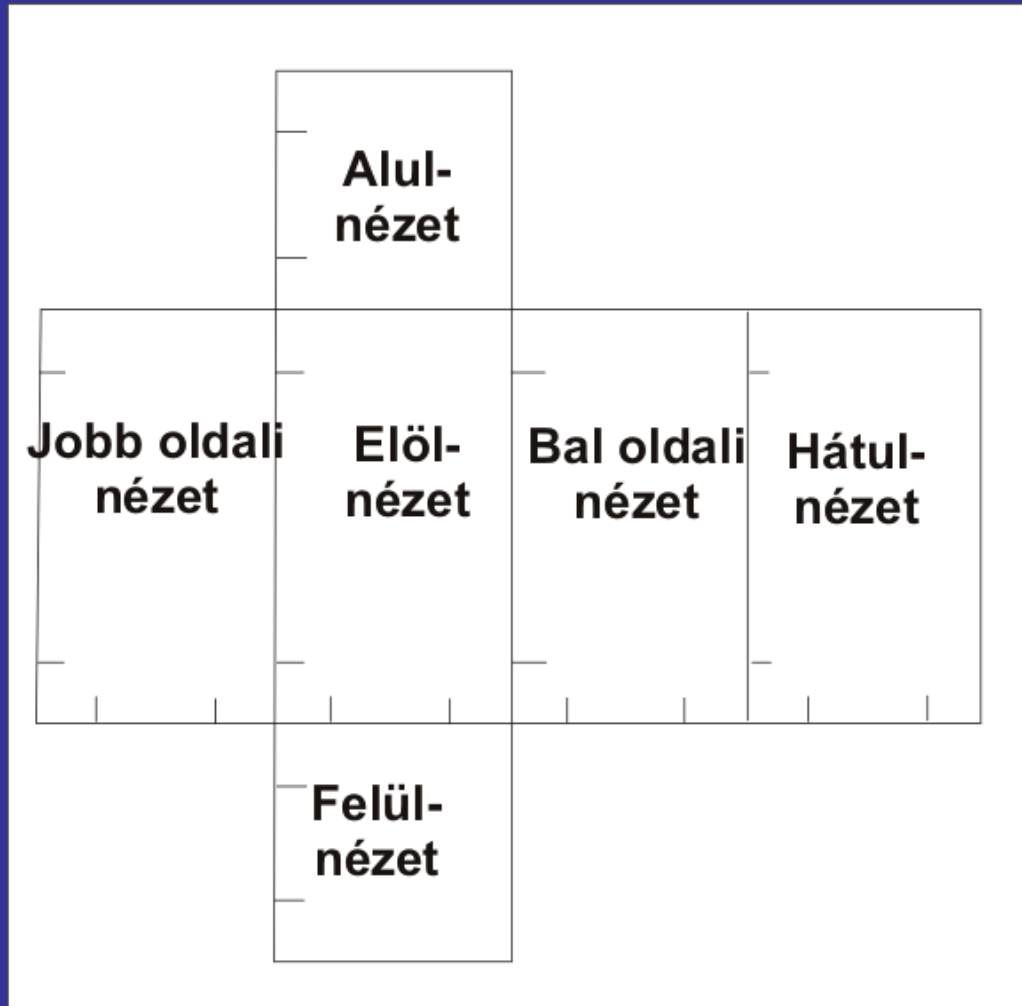
# A nézetek tartalma

az alkatrész valódi alakjának vetületei

# A NÉZETEK ELHELYEZÉSI RENDJE

# Rendezett nézetek

Nem kell külön jelölni a nézet helyét





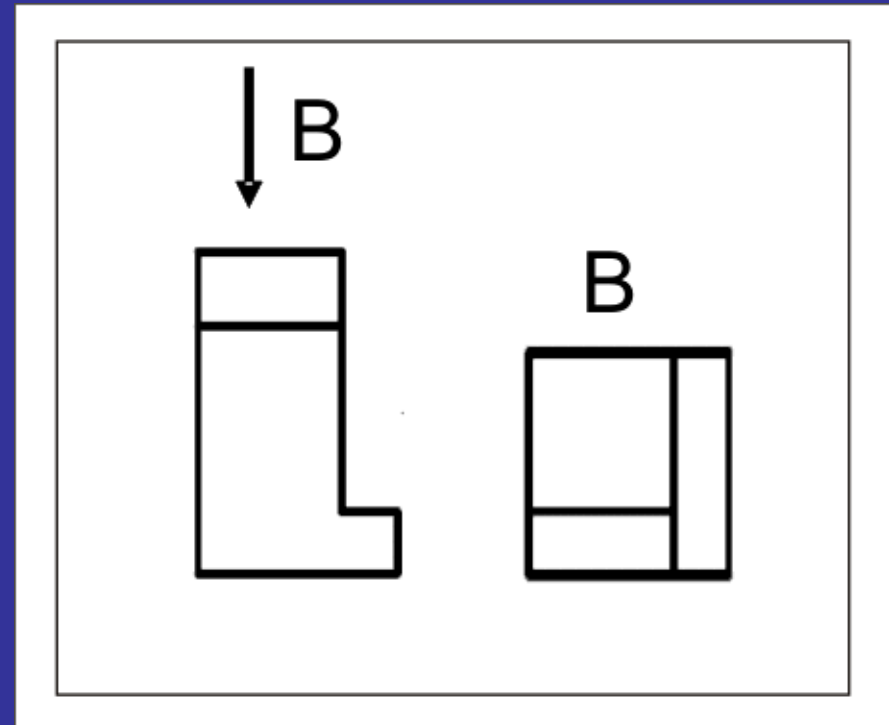
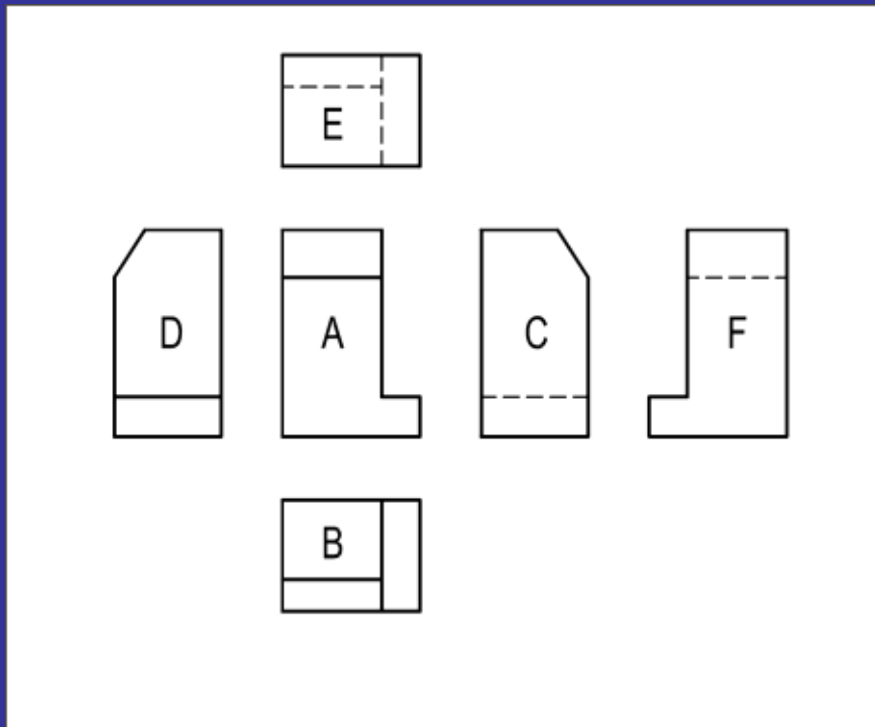
**KÜLÖNLEGES NÉZETEK**

# A rendezett vetületektől eltérő nézetelhelyezés

**Célja:** a rajz áttekinthetőbb összképének kialakítása

**Indoka:** nincs hely ott, ahova tenni kellene

**Jelölése:** nézési irány megadásával

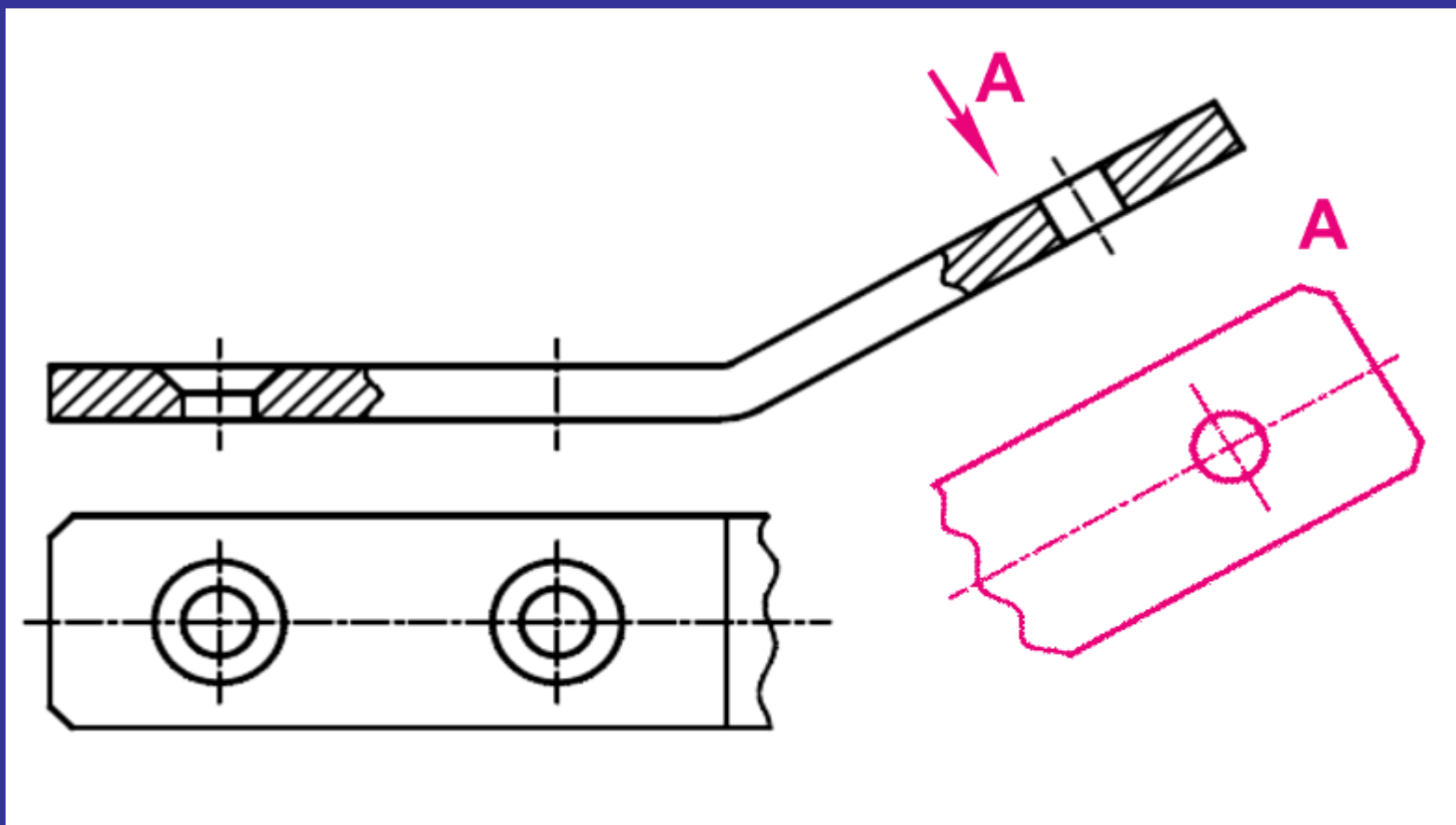


# Résznézet

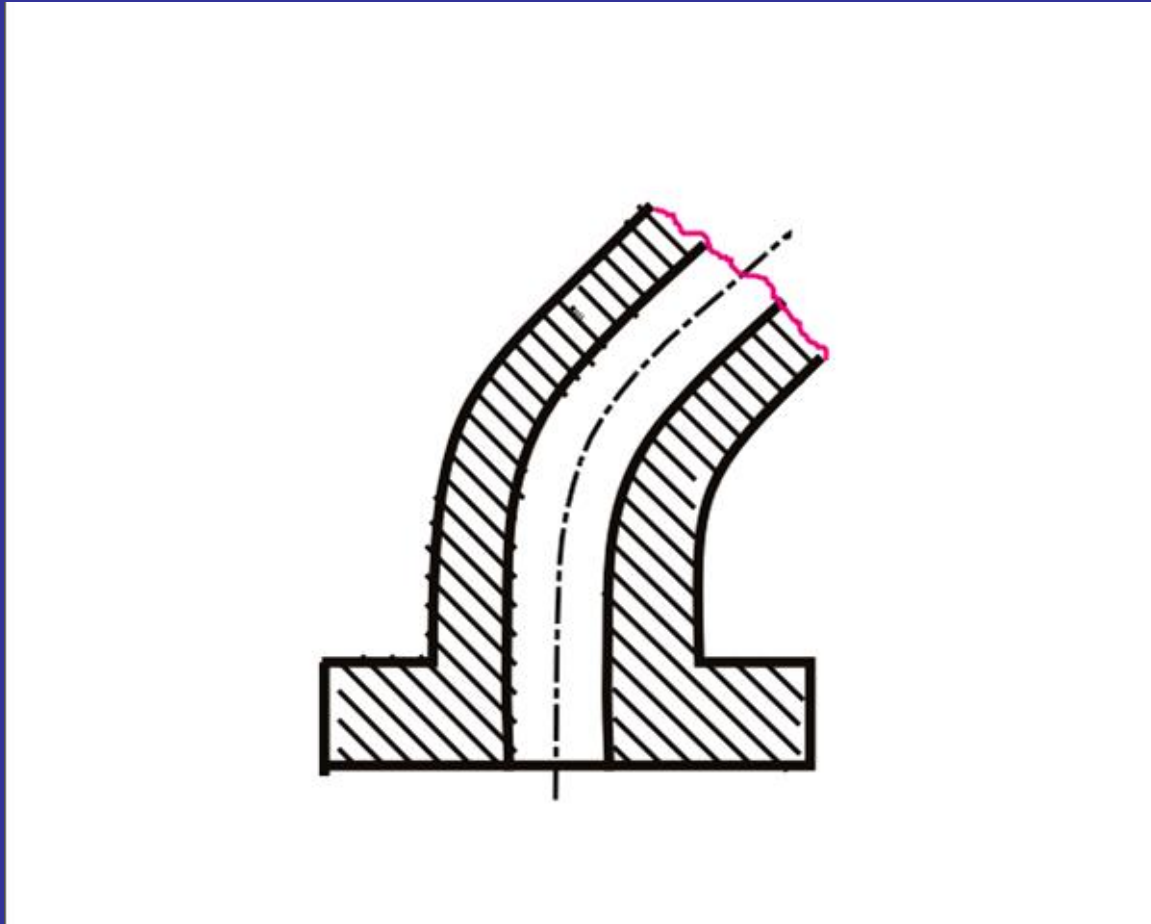
**Célja:** valamely részlet torzulásmentes ábrázolása

**Elhelyezése:** a nézetrendtől eltérően (a tárgyészlet IV. képe)

**Jelölése:** nézési irány megadásával

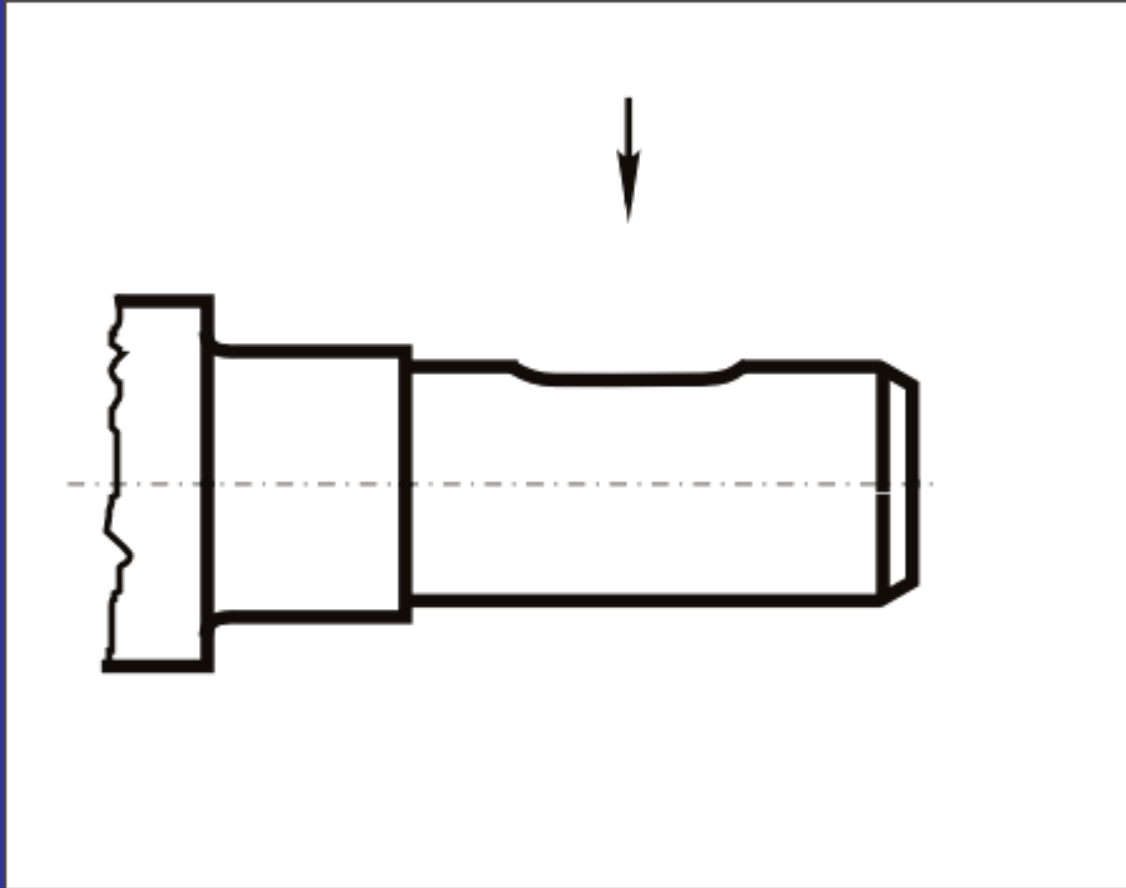


# Részvetület (az érdektelen részletet elhagyjuk)

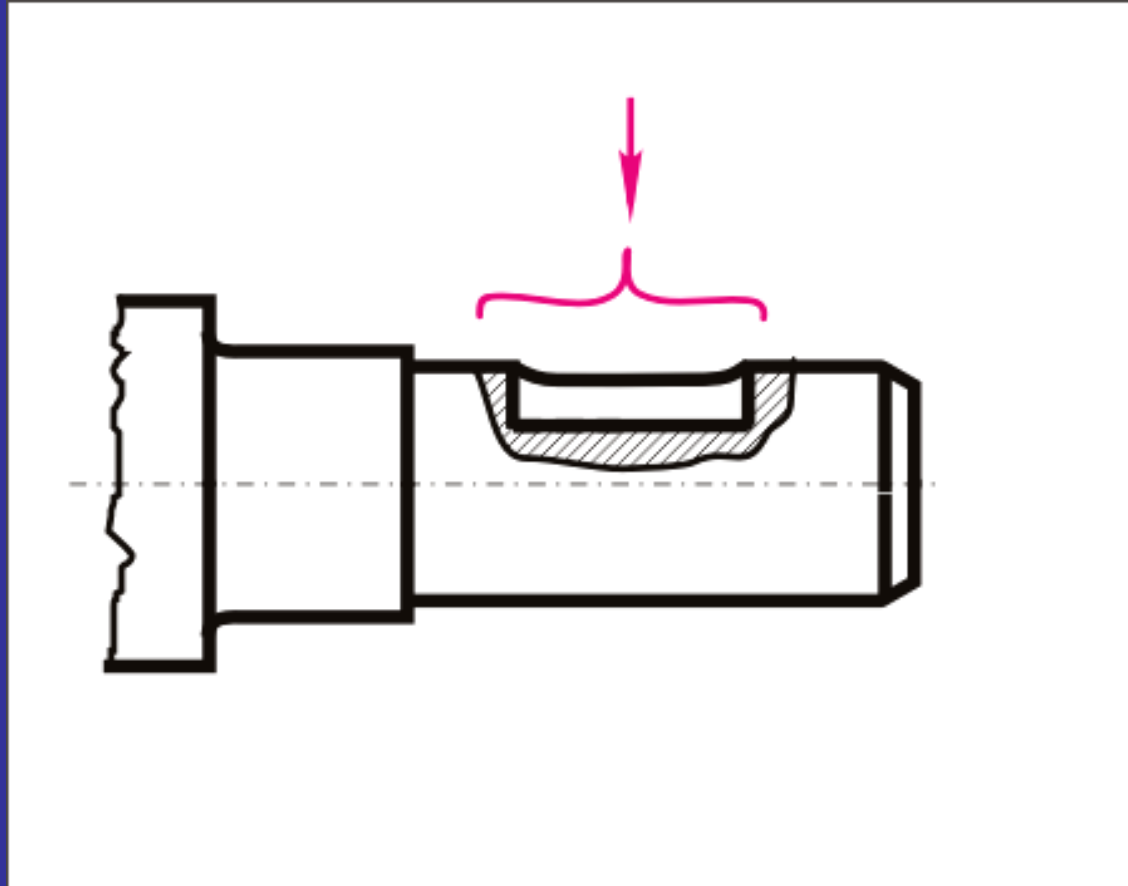


# Helyi nézet

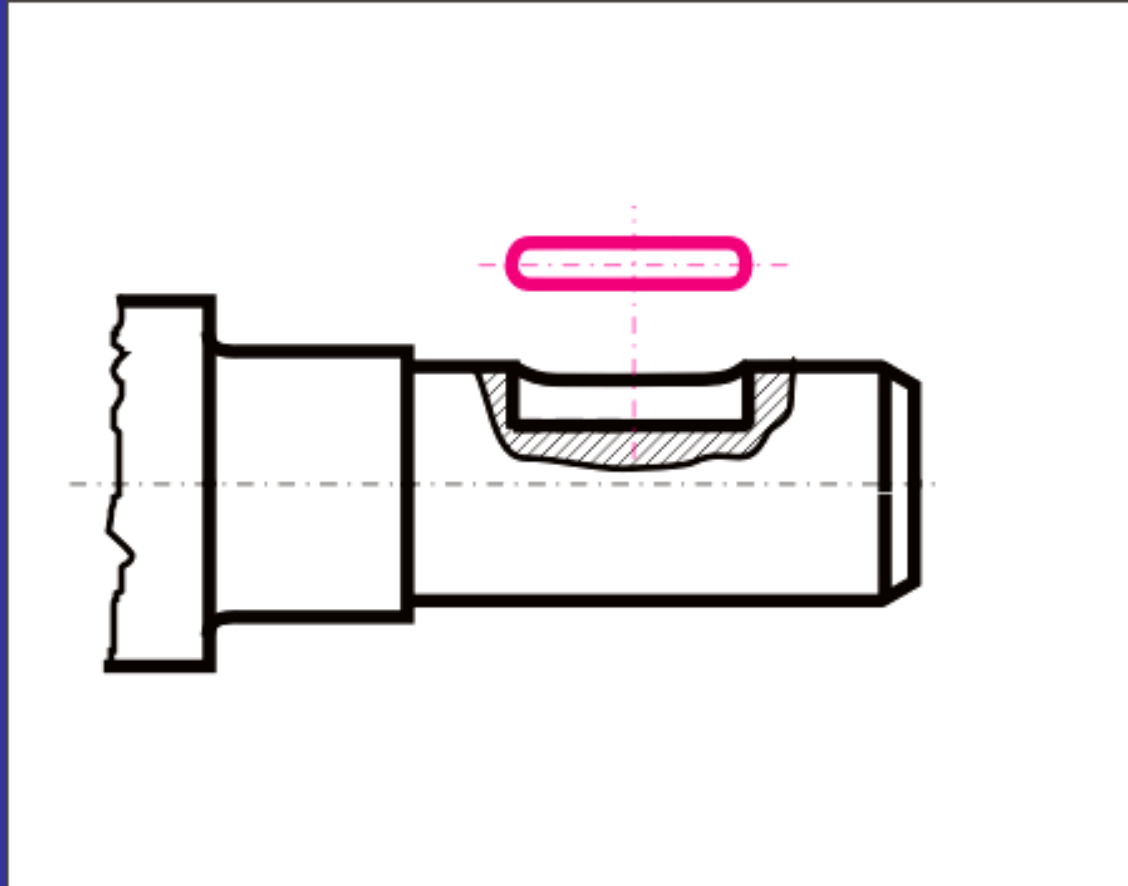
**Célja:** valamely részlet „kiegészítő” magyarázata



# Helyi nézet

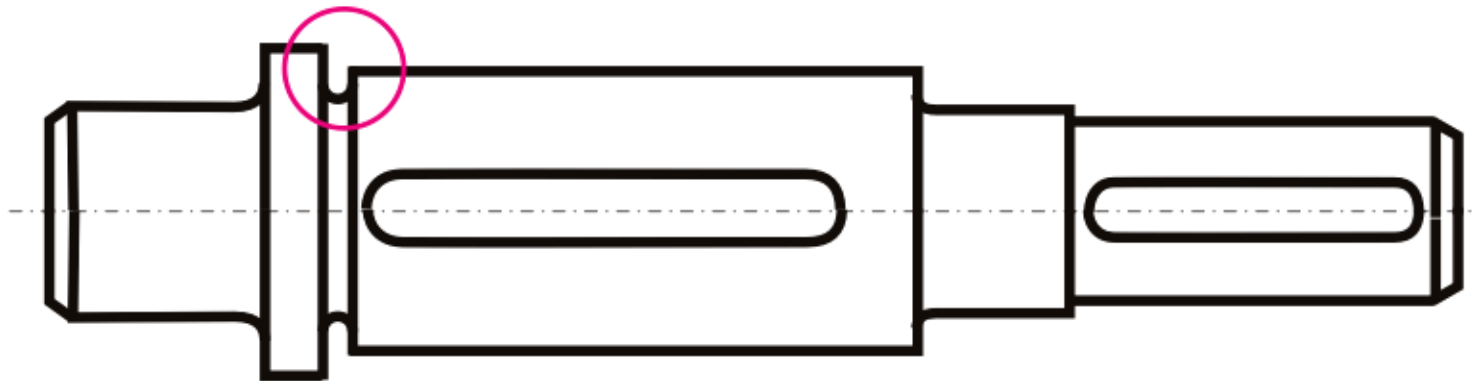


# Helyi nézet



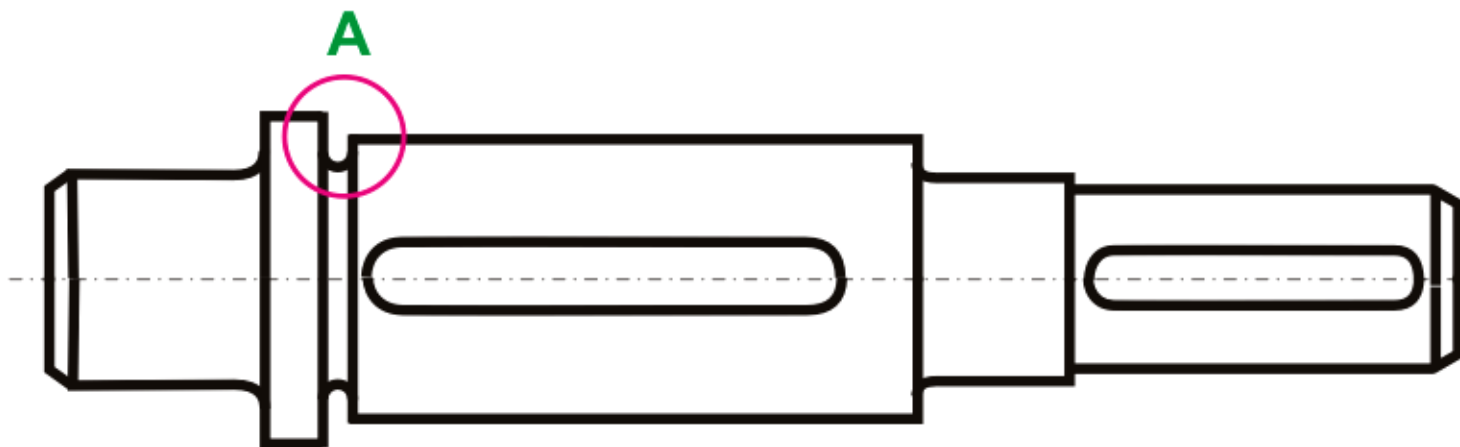
# Kiemelt részlet

Célja: valamely a részlet kinagyítása





# Kiemelt részlet



A (2:1)

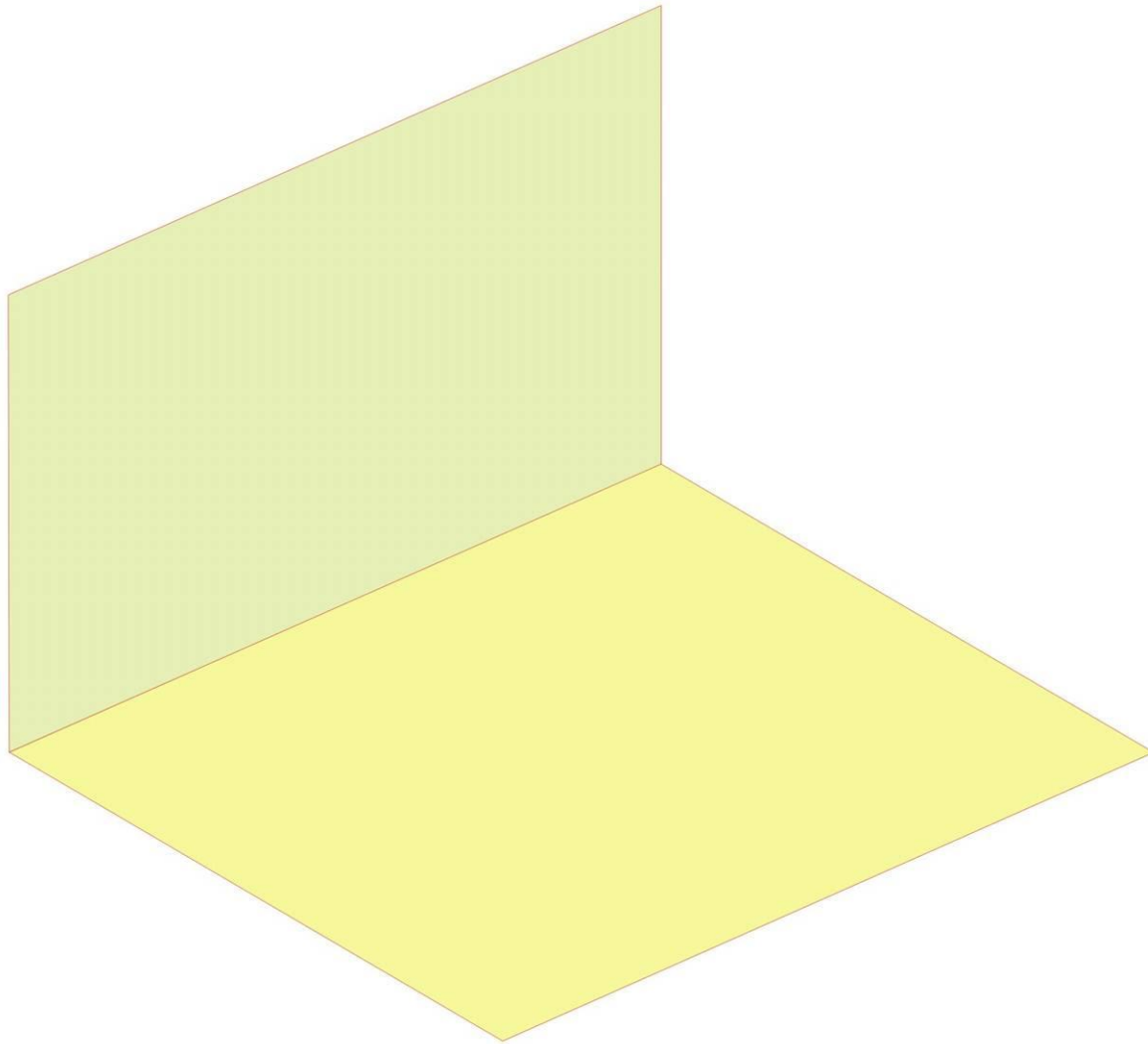


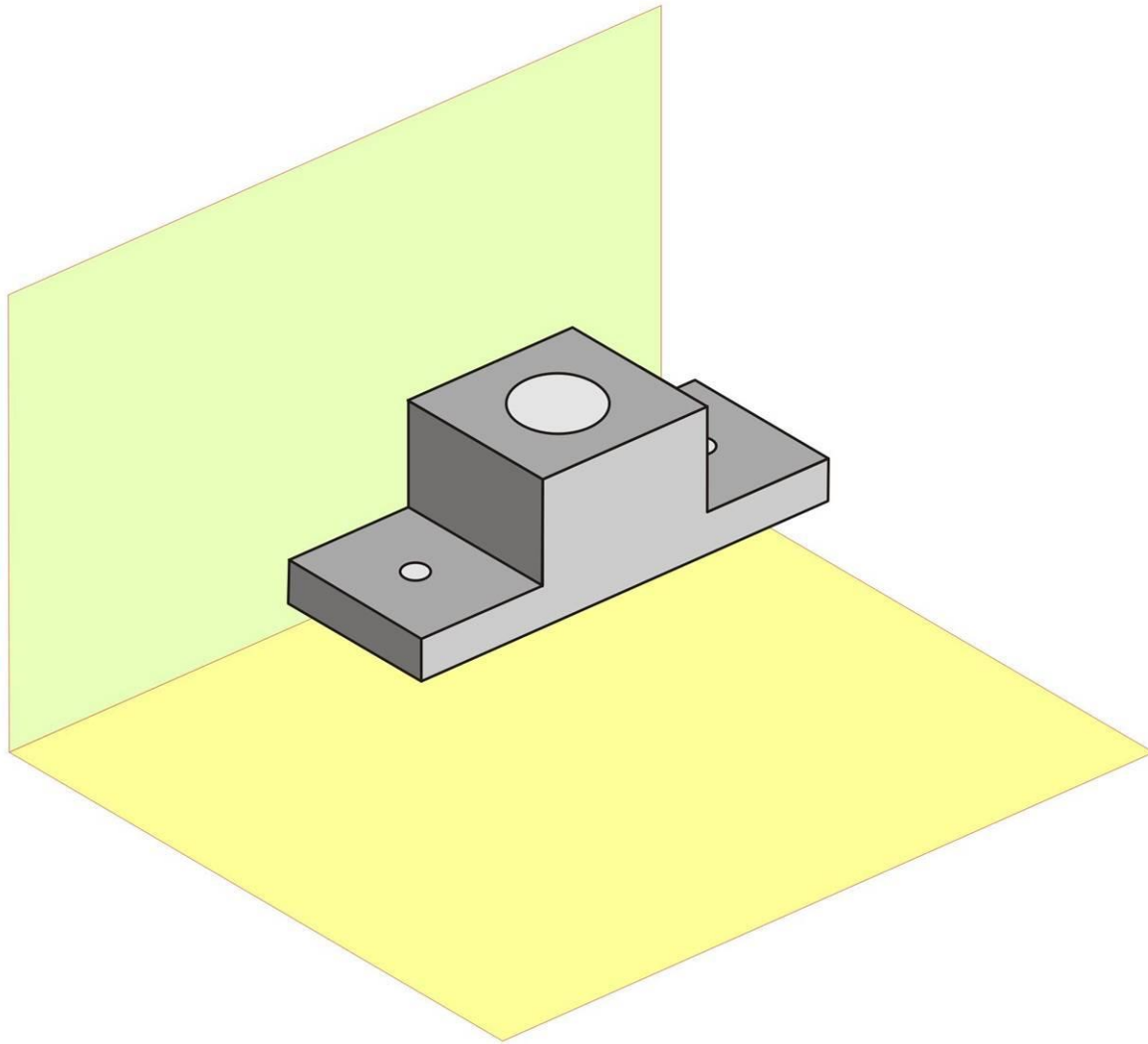
# A METSZETEK

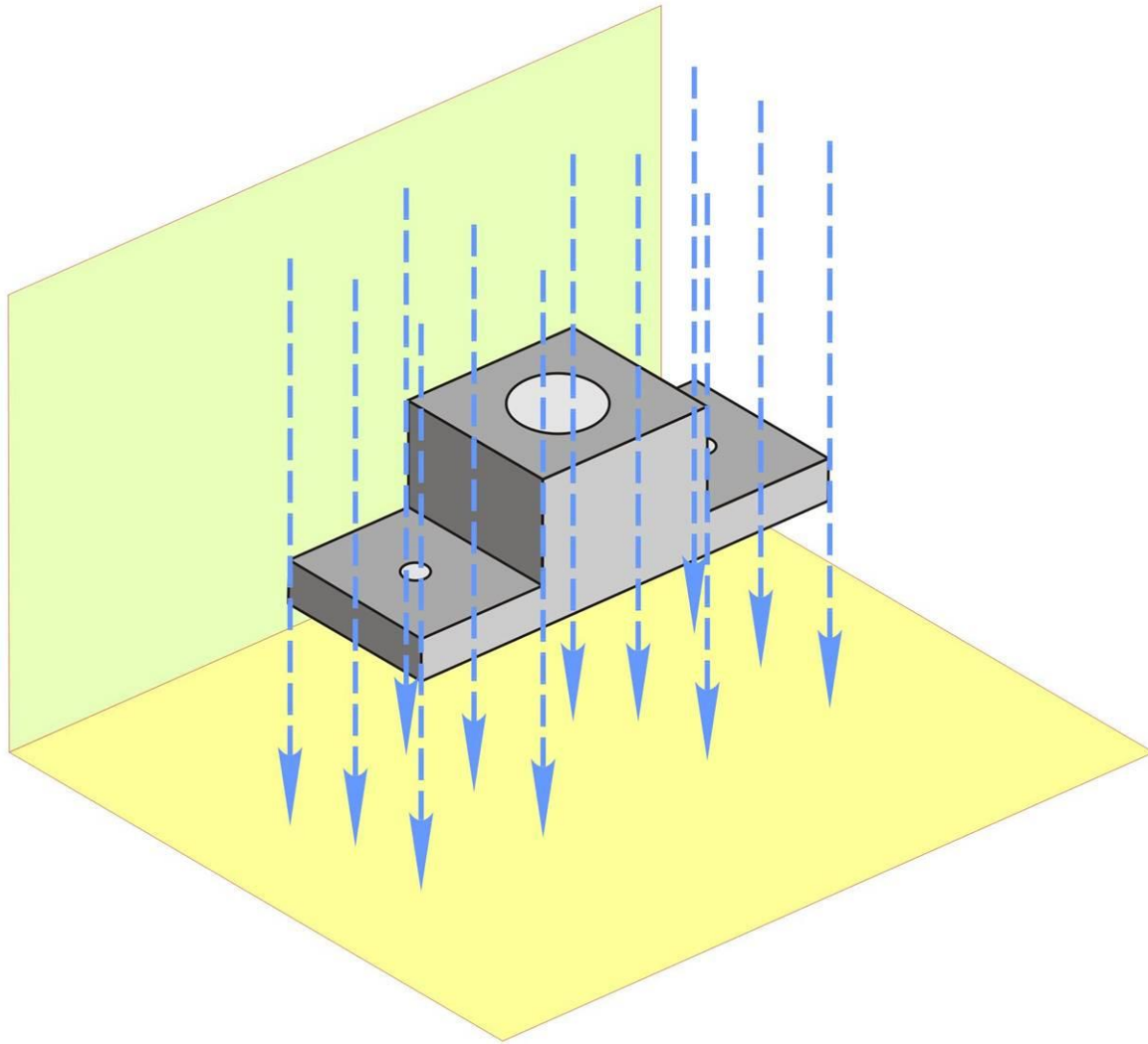
# A metszetkészítés célja

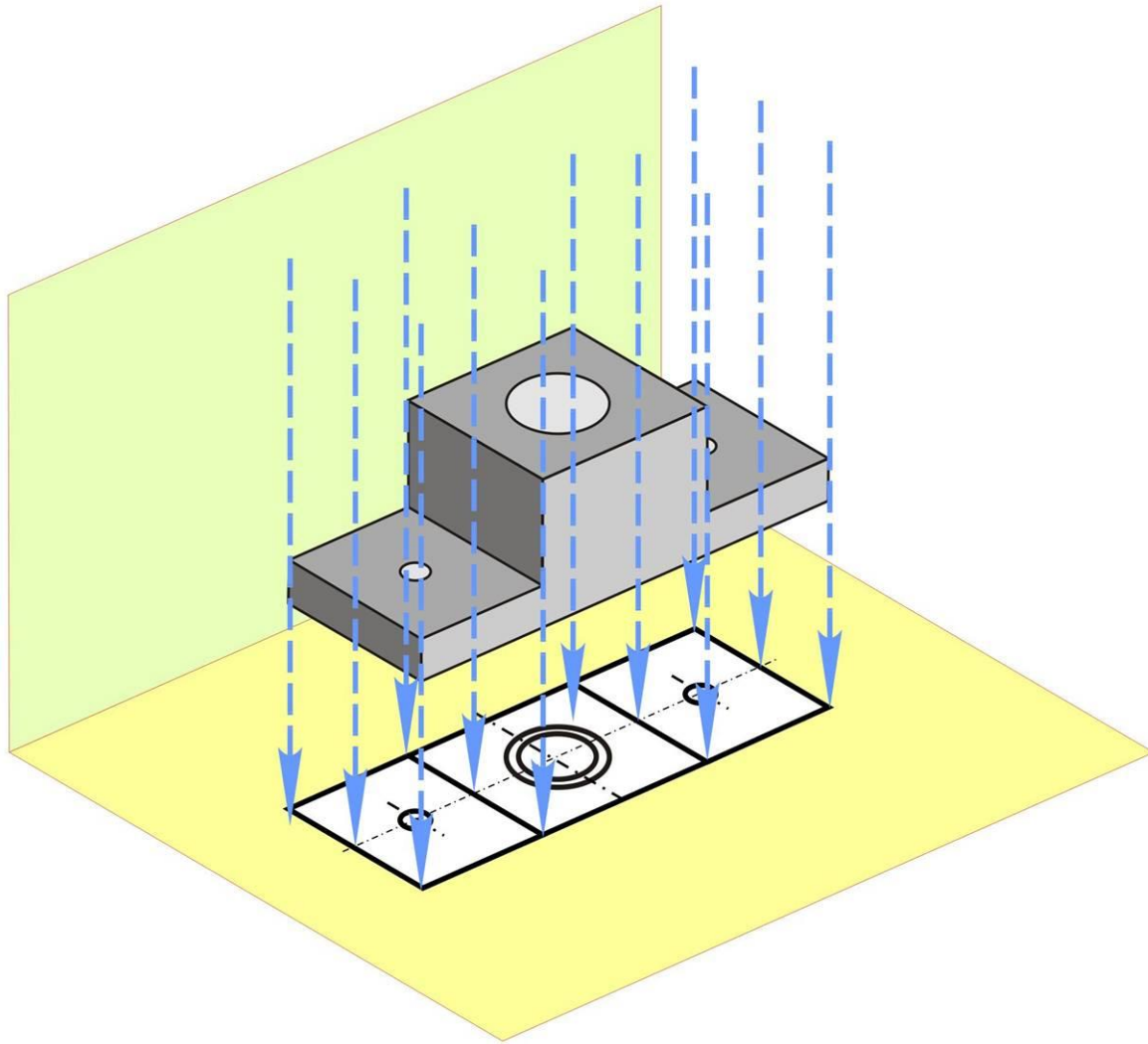
üreges alkatrészek belsejének  
megjelenítése

# A METSZETEK SZÁRMAZTATÁSA

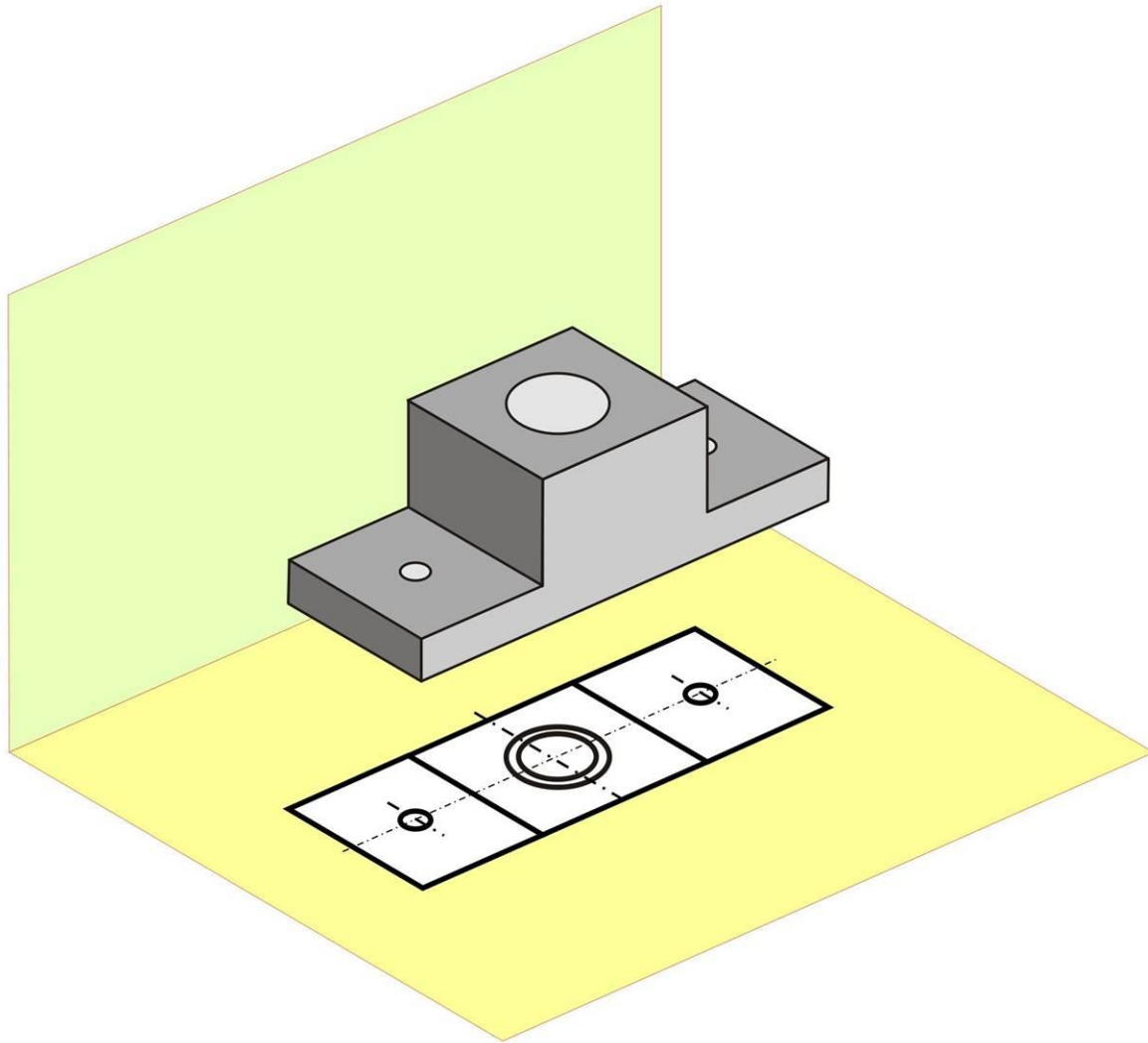


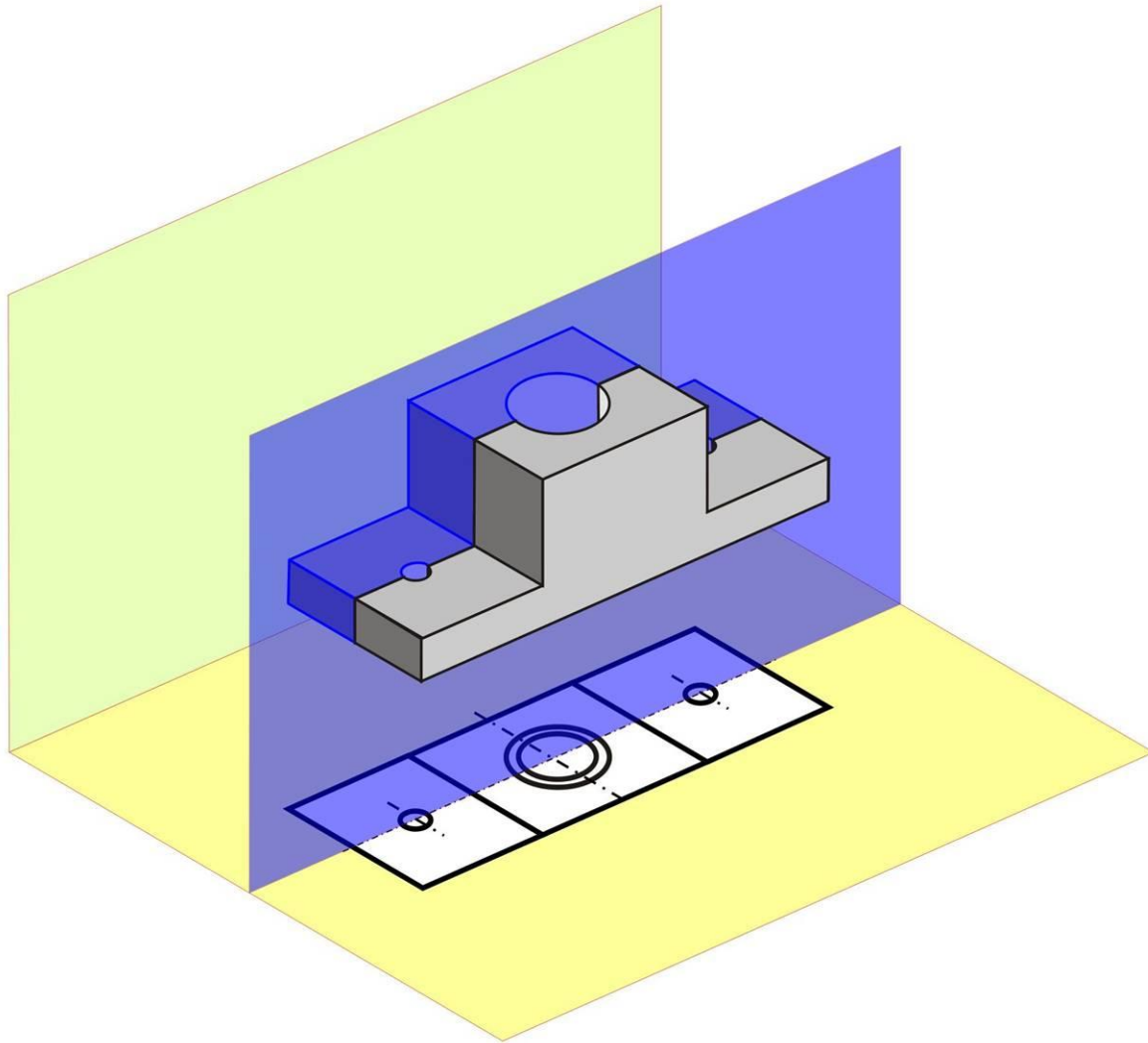


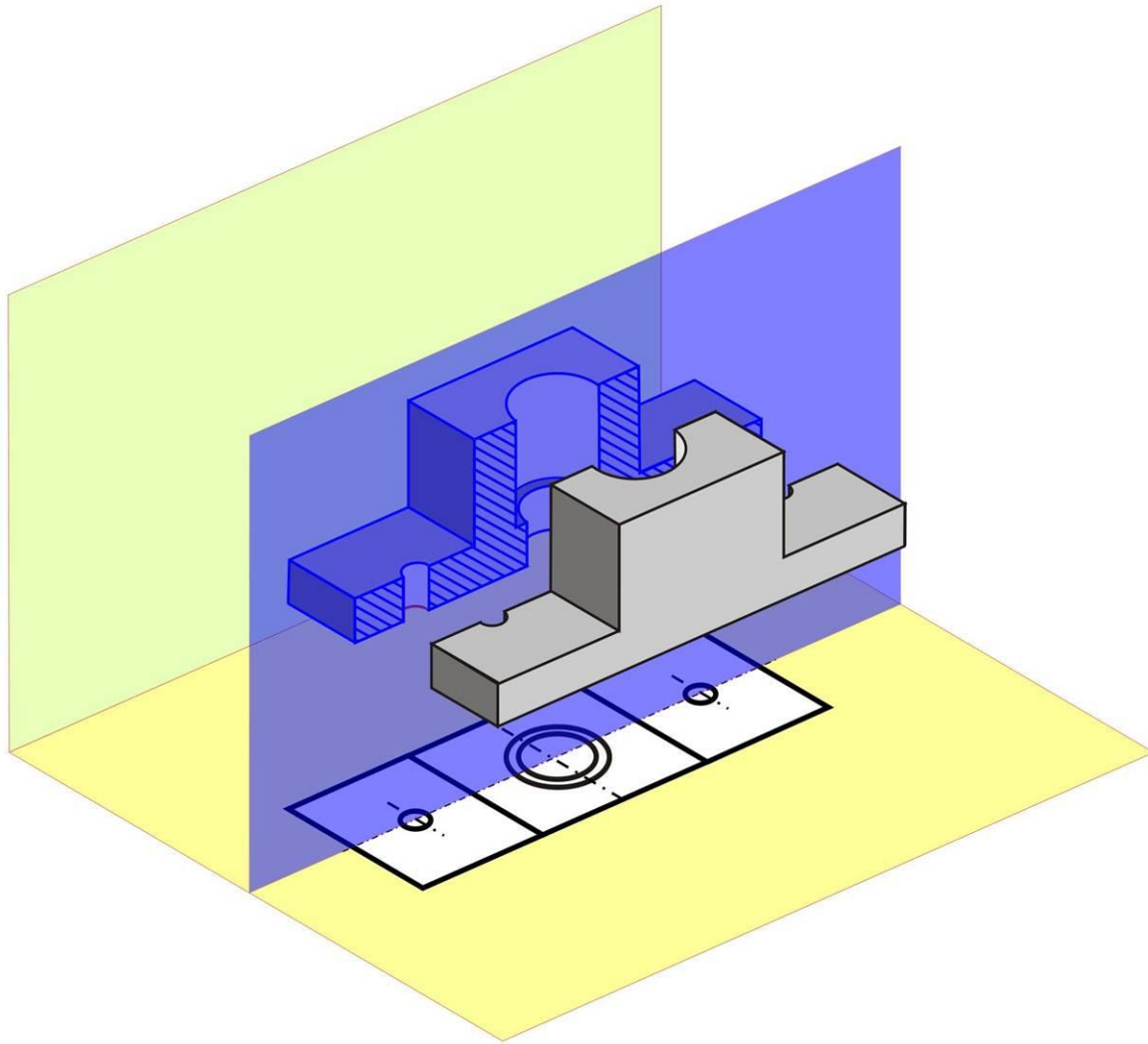


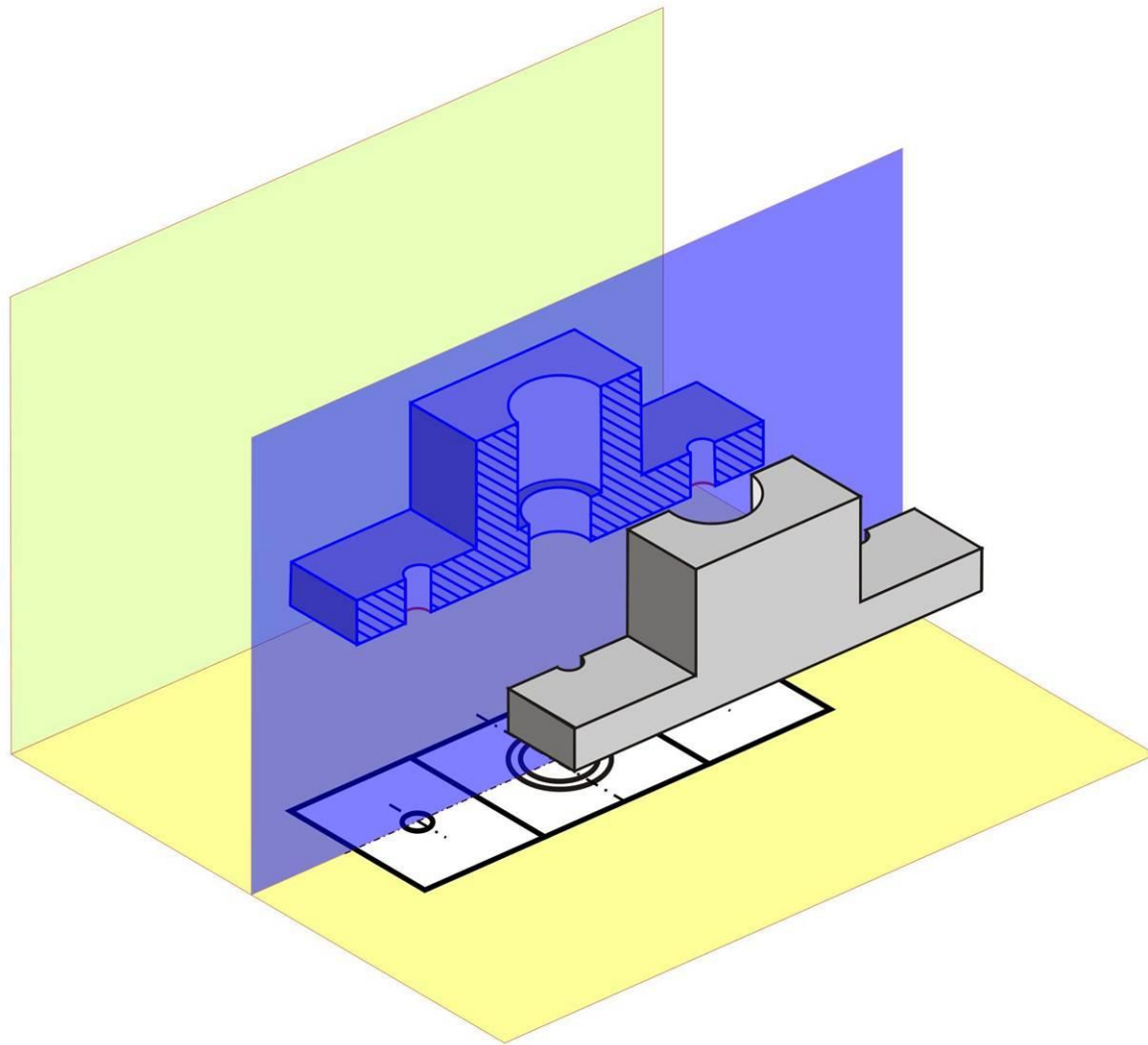


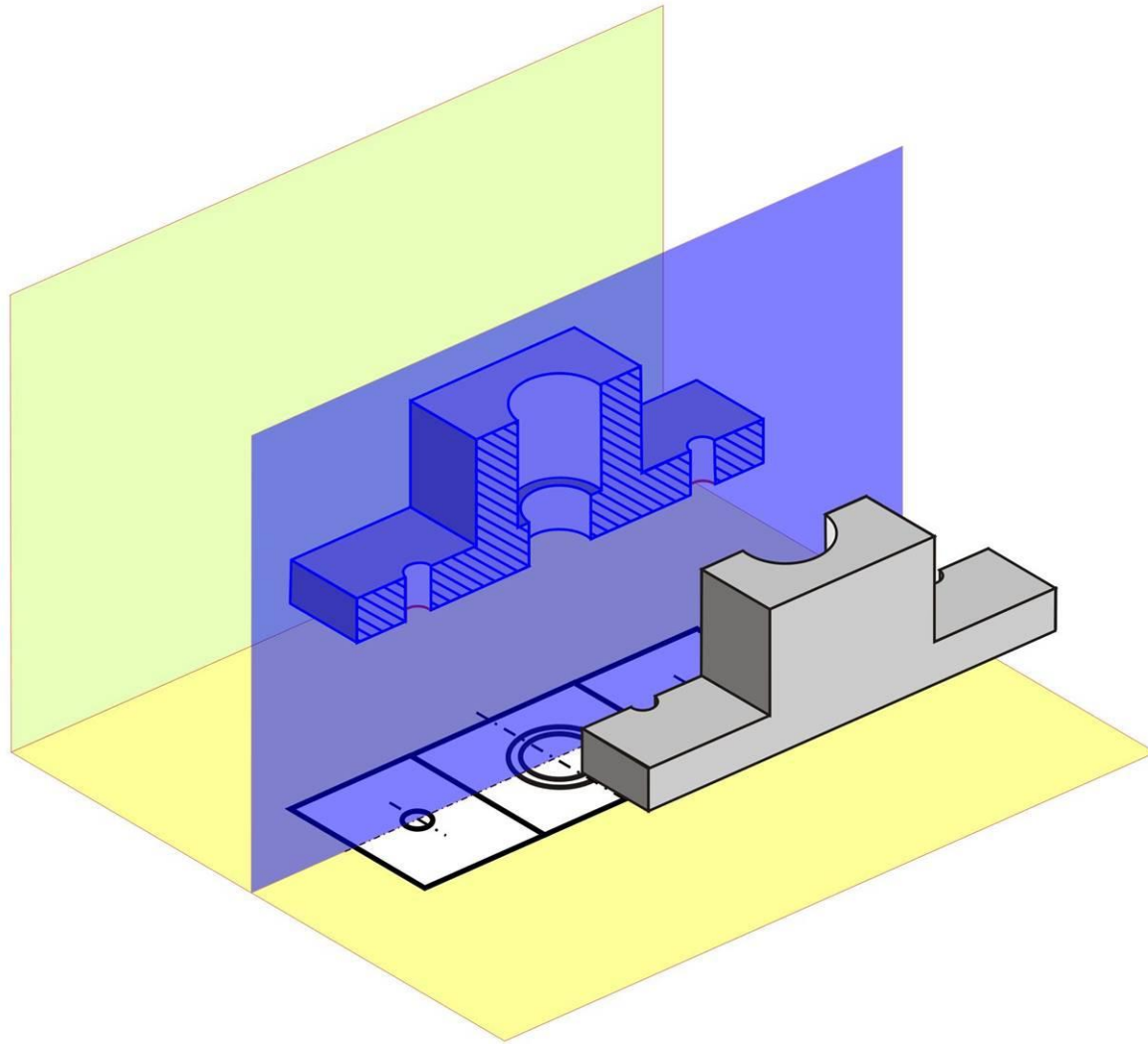


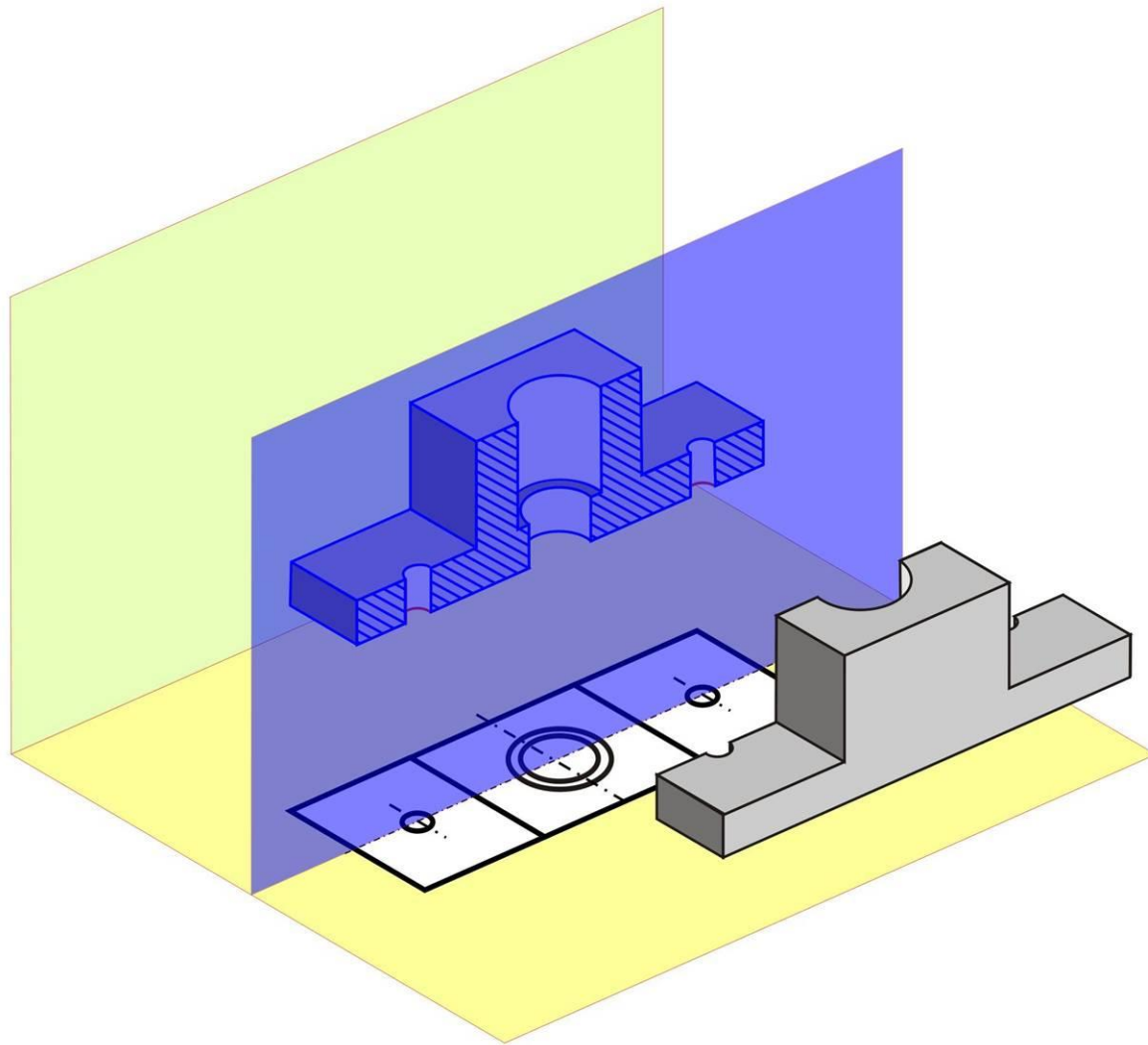


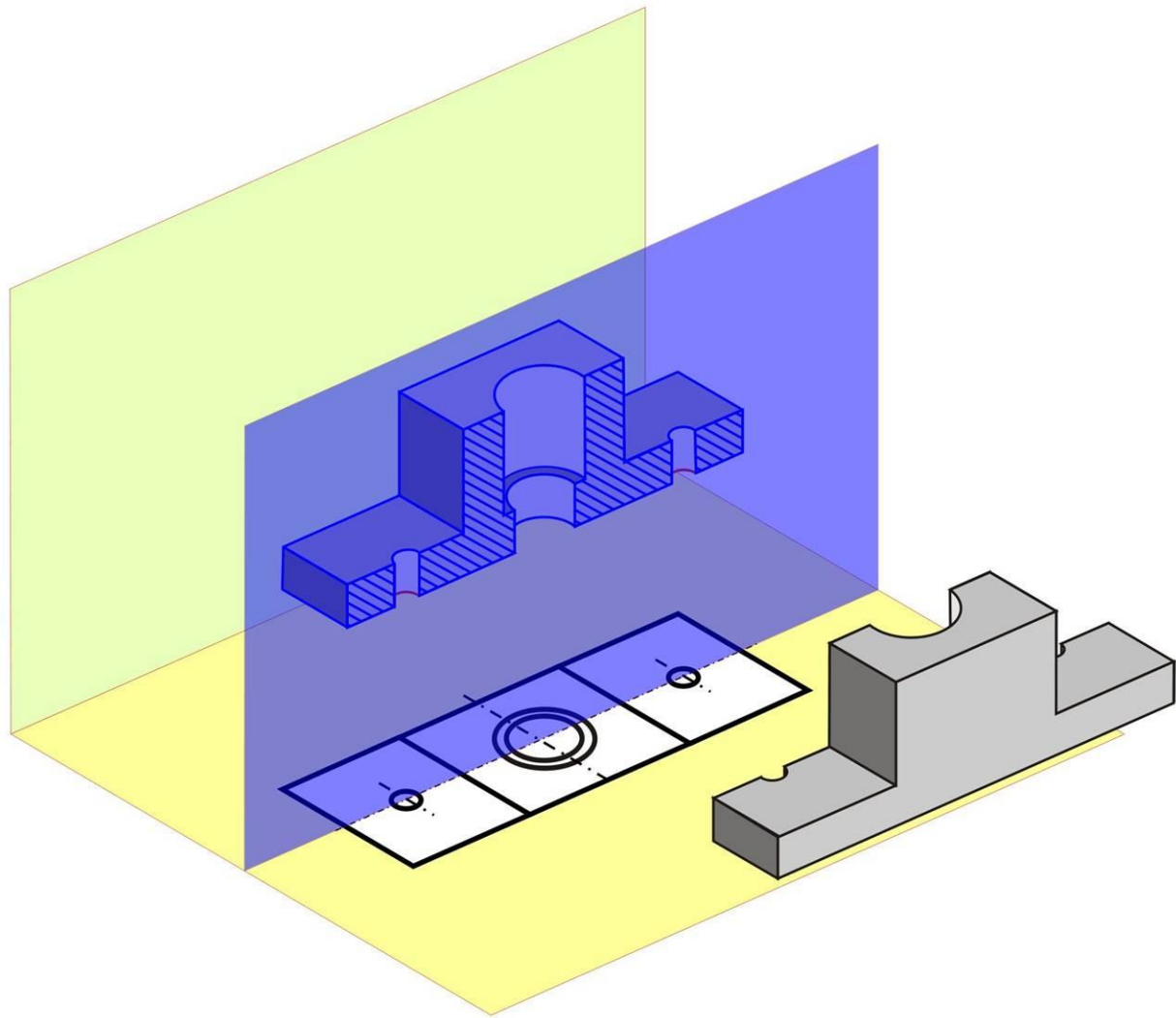


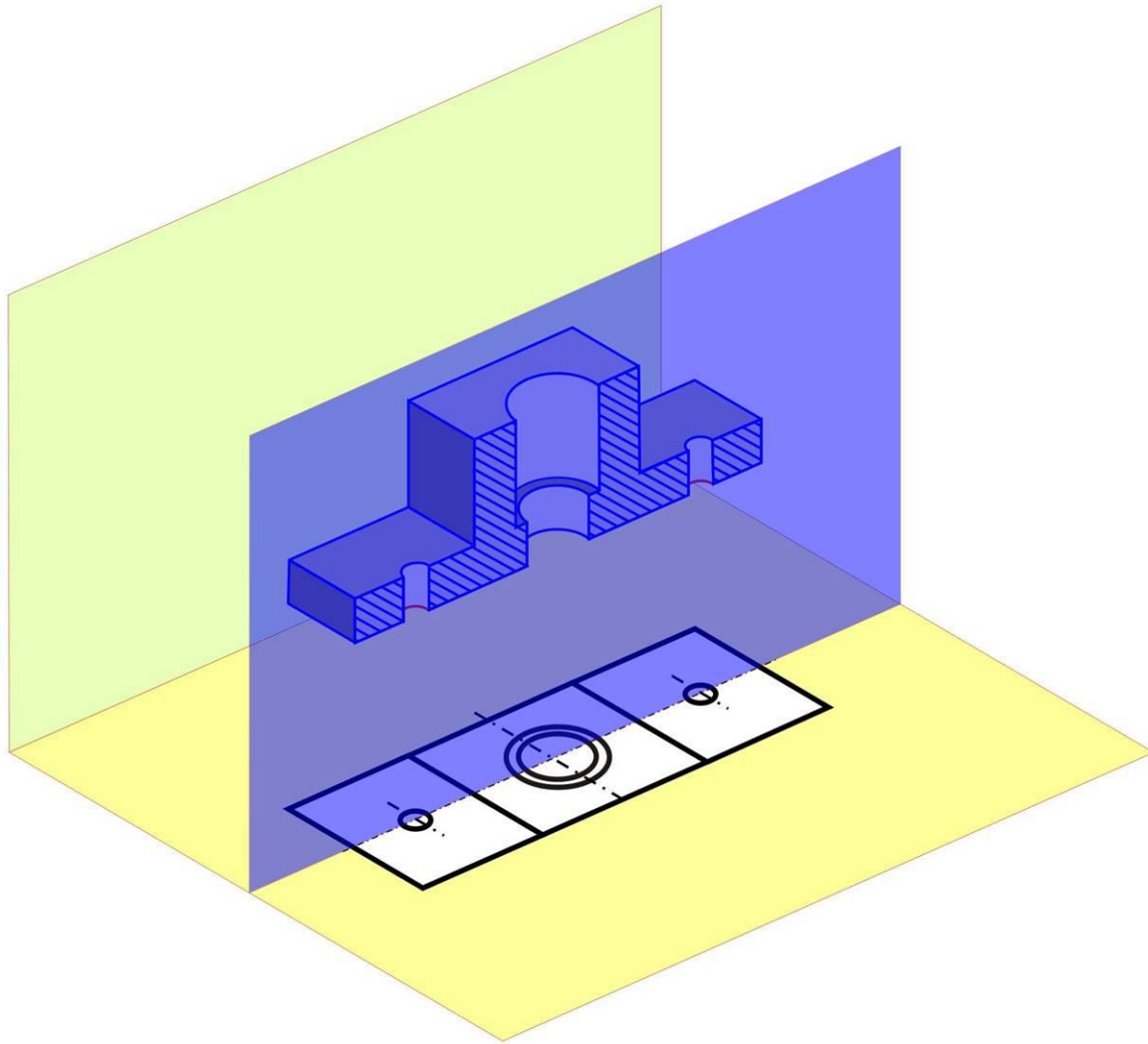




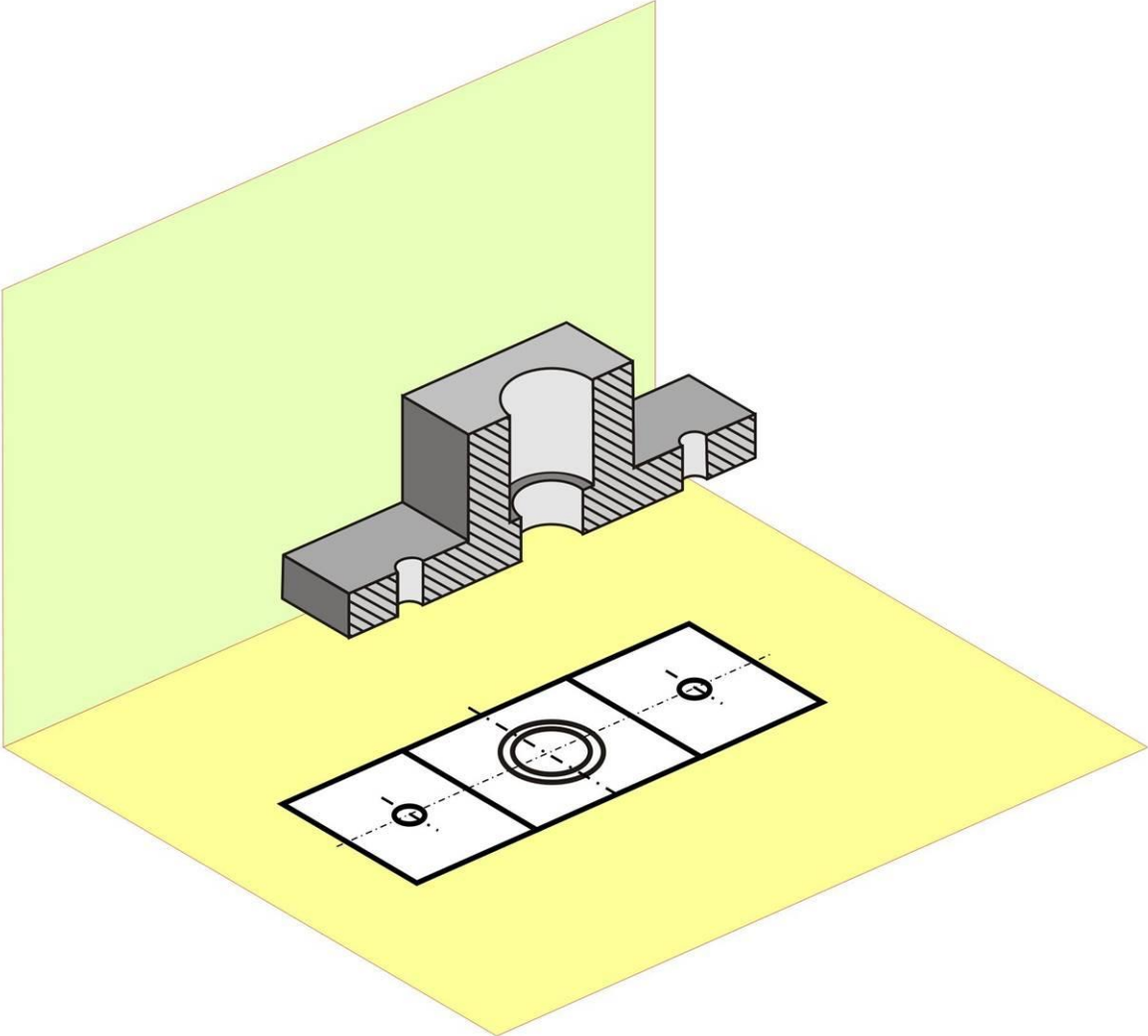


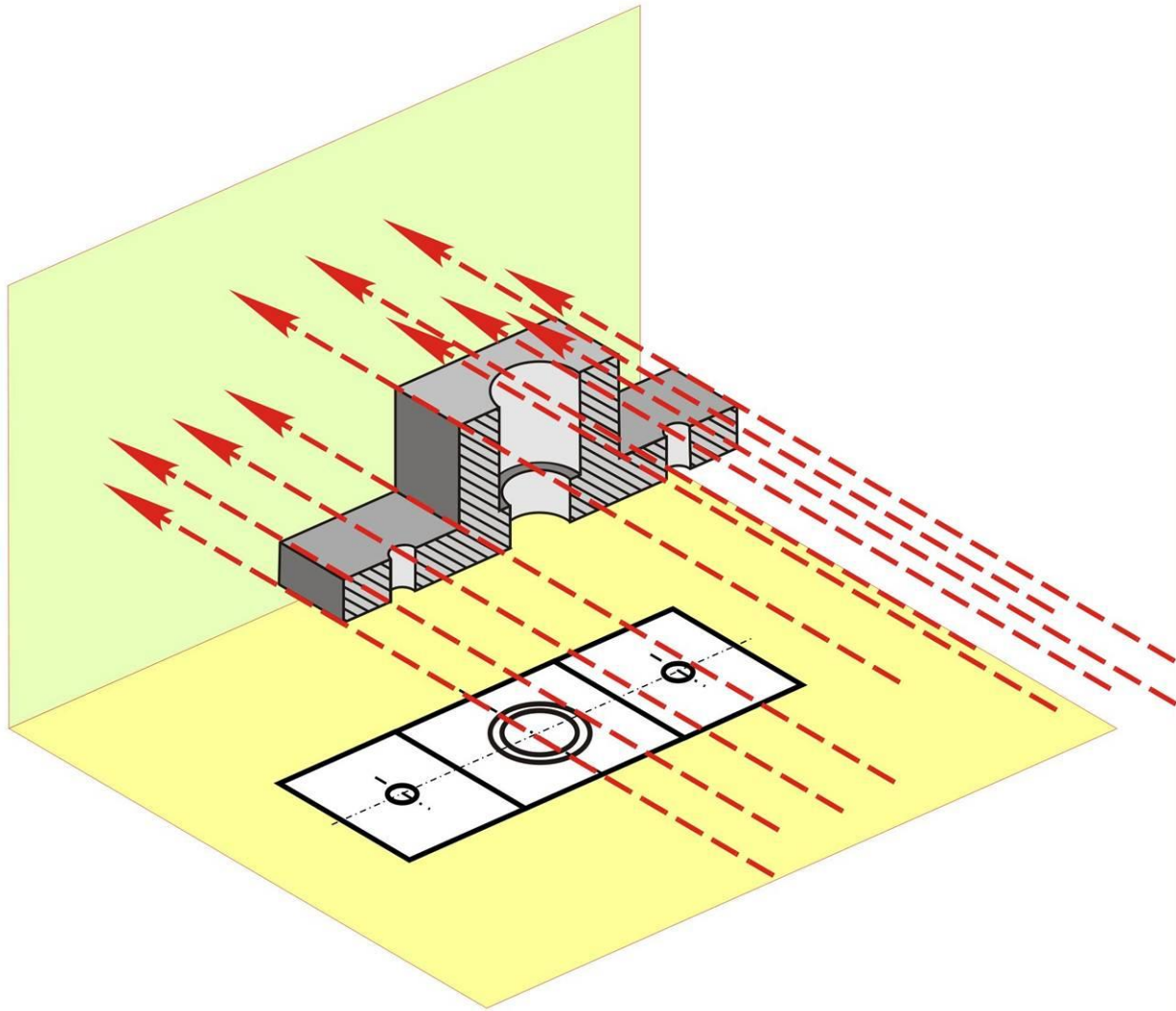


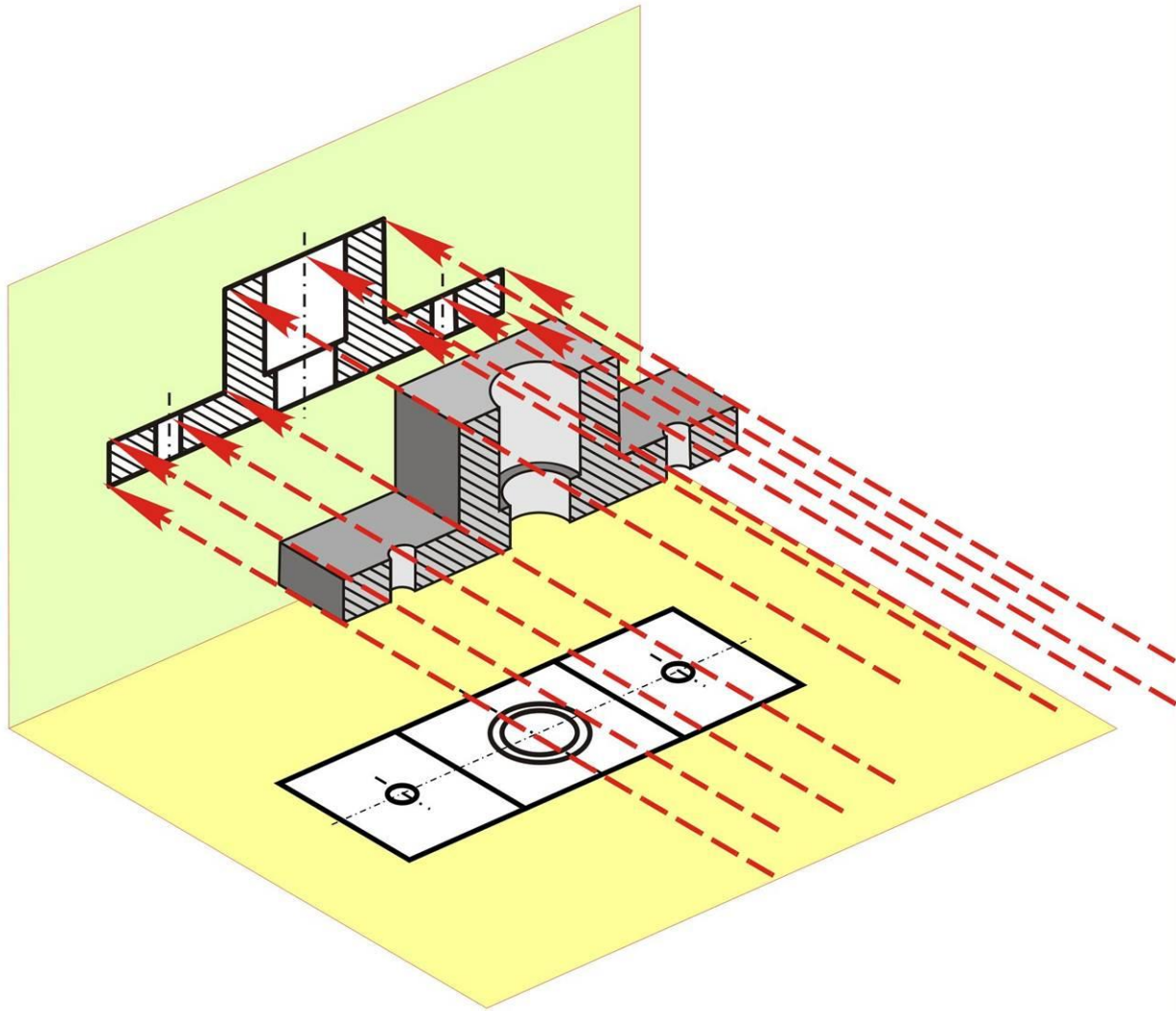


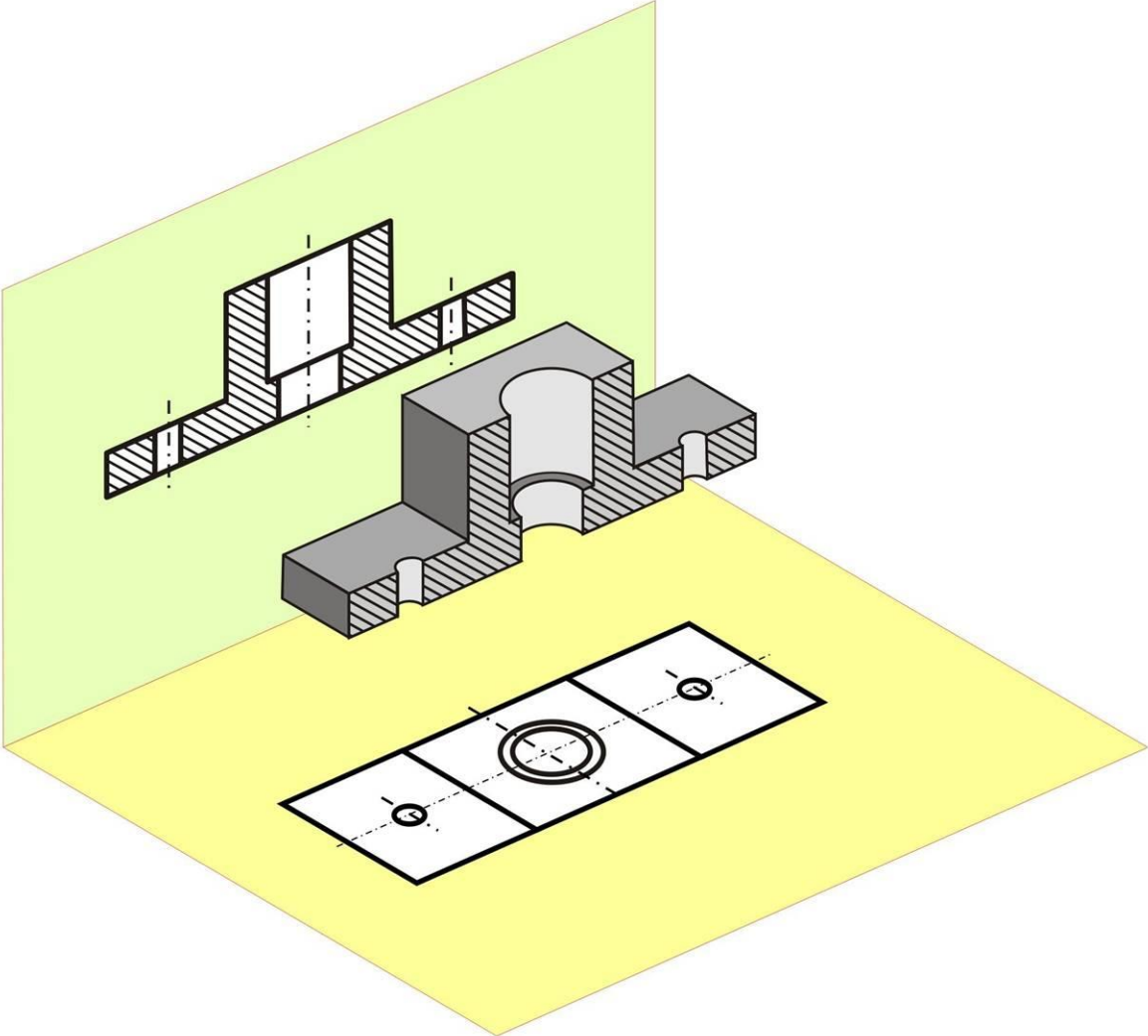


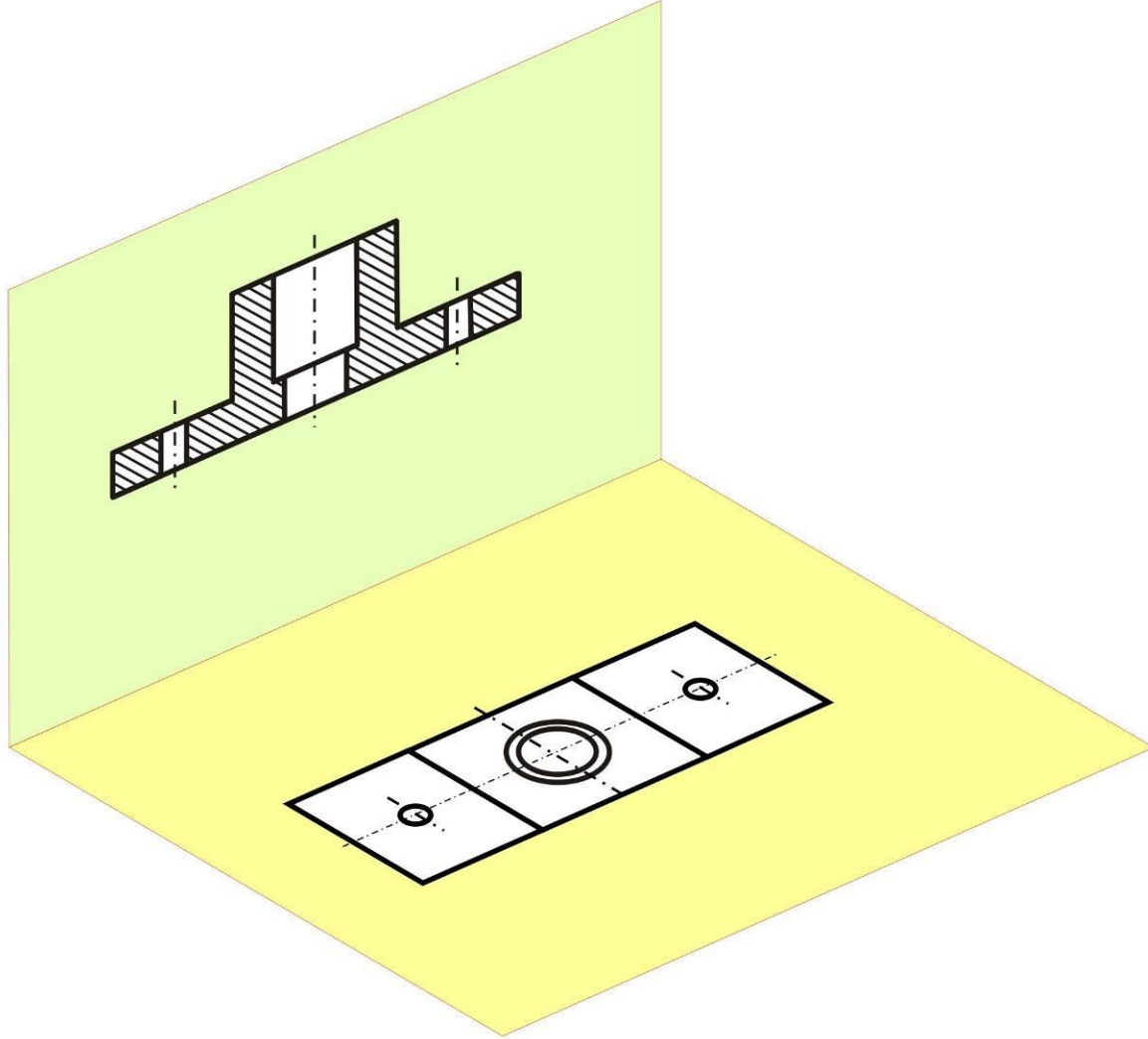


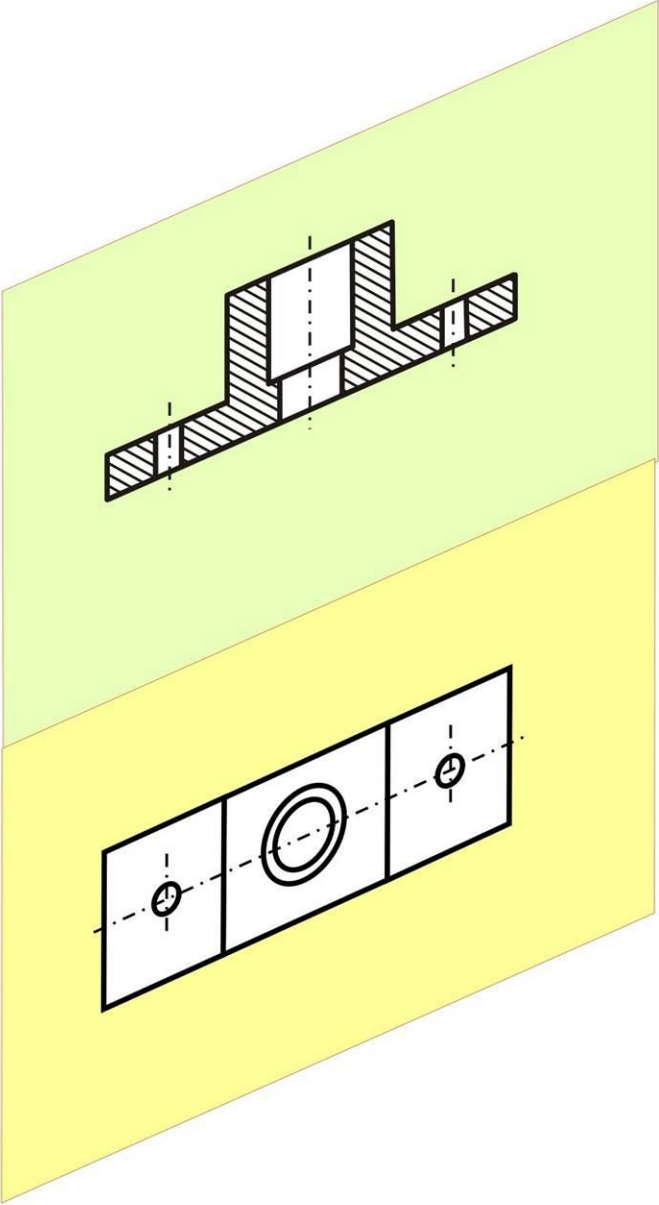


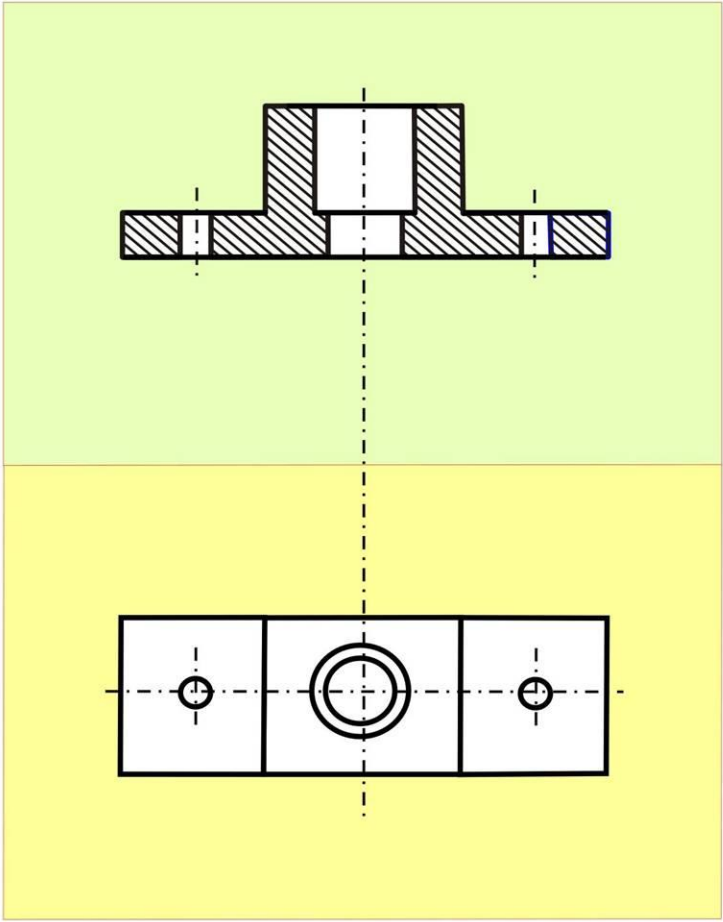


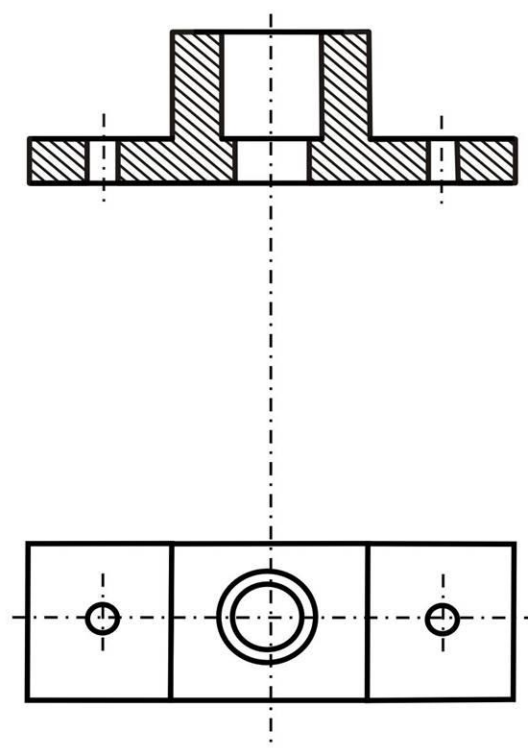














# A metszetkészítés lépései

1. Az alkatrész képzeletbeli elmetszése a metszősík mentén
2. Az elülső (nézőhöz közelebb álló) rész képzeletbeli elhagyása
3. A maradék rész ábrázolása nézetként
4. Az elmetszett anyag jelölése

# AZ ELMETSZETT TEST ANYAGMINŐSÉGÉNEK JELÖLÉSE

Fémes anyag



Üveg, plexi, átlátszó anyag



Szemcsés anyag



Folyadék



Műanyag, gumi



Fa keresztmetszete (bütü)



Fa hosszmetzete



Beton



# A SRAFFOZÁS SZABÁLYAI

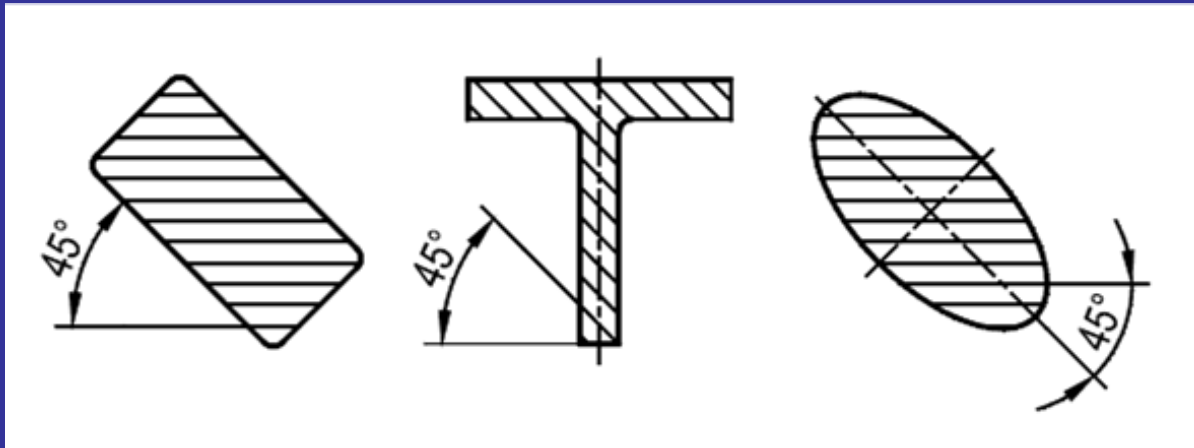
# A sraffozás rajzolási szabályai

**Vonalvastagság:** Vékony (0,35 mm)

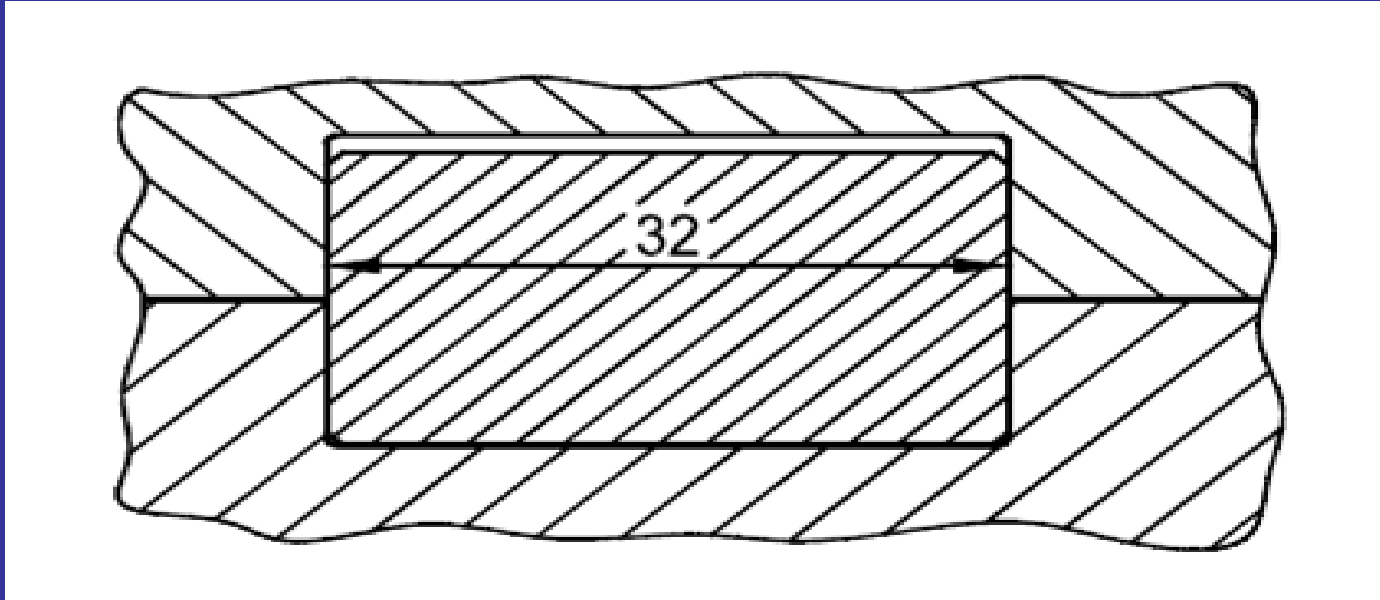
**Dőlésszög:** a kontúrhoz képest  $45^\circ$

**Vonalak sűrűsége:** 1-10 mm , a vastagvonalnak legalább kétszerese)

Egy alkatrész metszetei azonosan sraffozandók



# Több látható alkatrész sraffozása



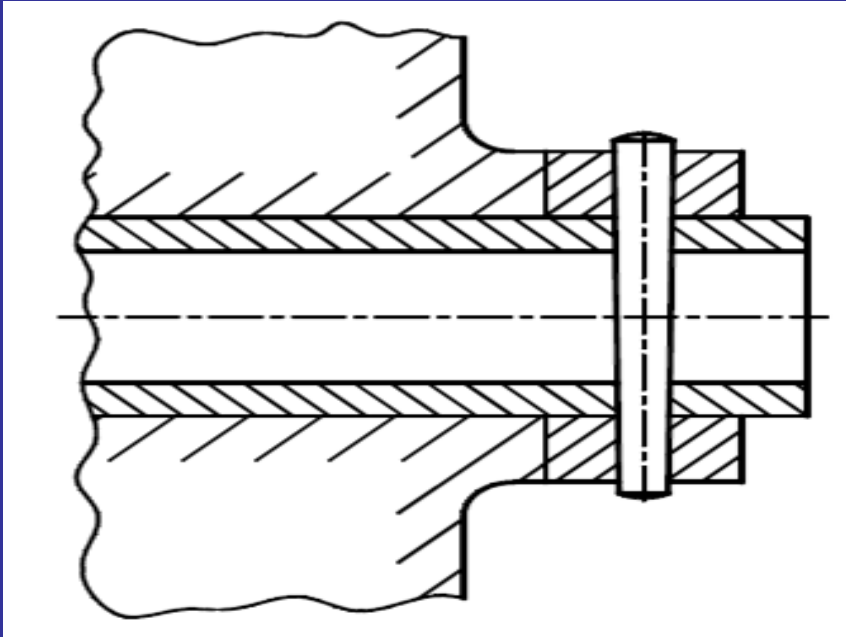
Csatlakozó alkatrészek vonalkázása:

különböző irányú

különböző sűrűségű

# Sraffozási egyszerűsítések

Nagy felületeket elegendő a kontúrvonal mentén vonalkázni



Vékony keresztmetszeteket feketíteni kell. (Köztük 0,7 mm-es rés hagyandó)

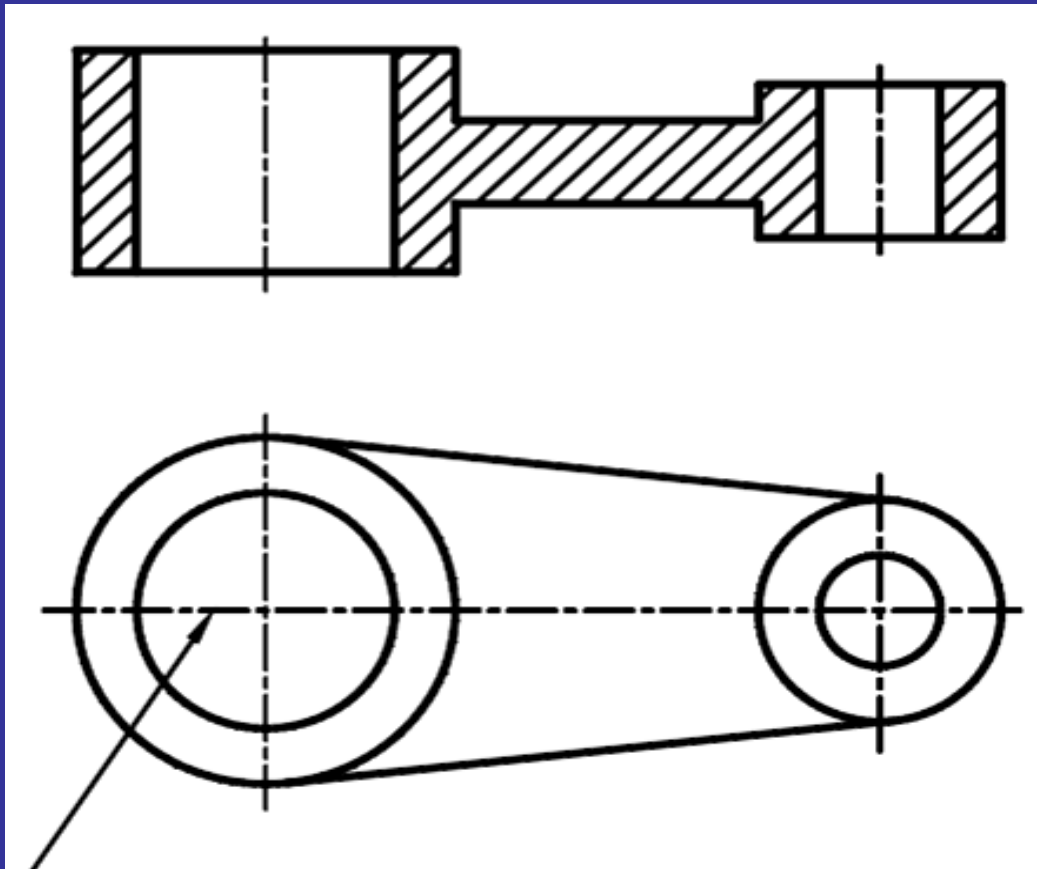


# A METSZETEK HELYÉNEK JELÖLÉSE



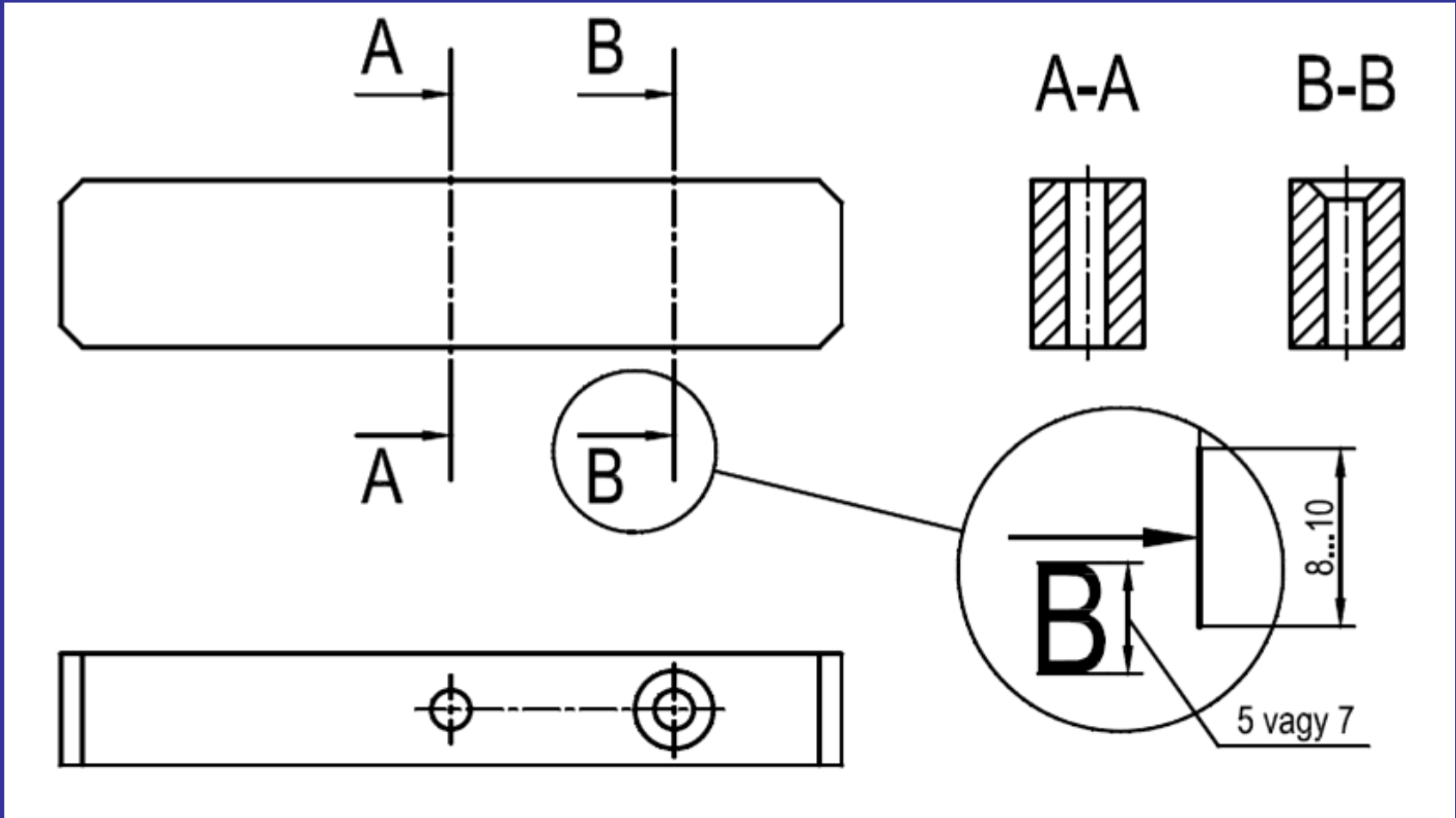
# Nem kell jelölni a nyomvonalat, ha

- a metszősík szimmetriasík,
- csak egy metszet készül a tárgyról,
- a metszetet a vetületrendnek megfelelően helyezzük el.



# Jelölni kell a nyomvonalat, ha

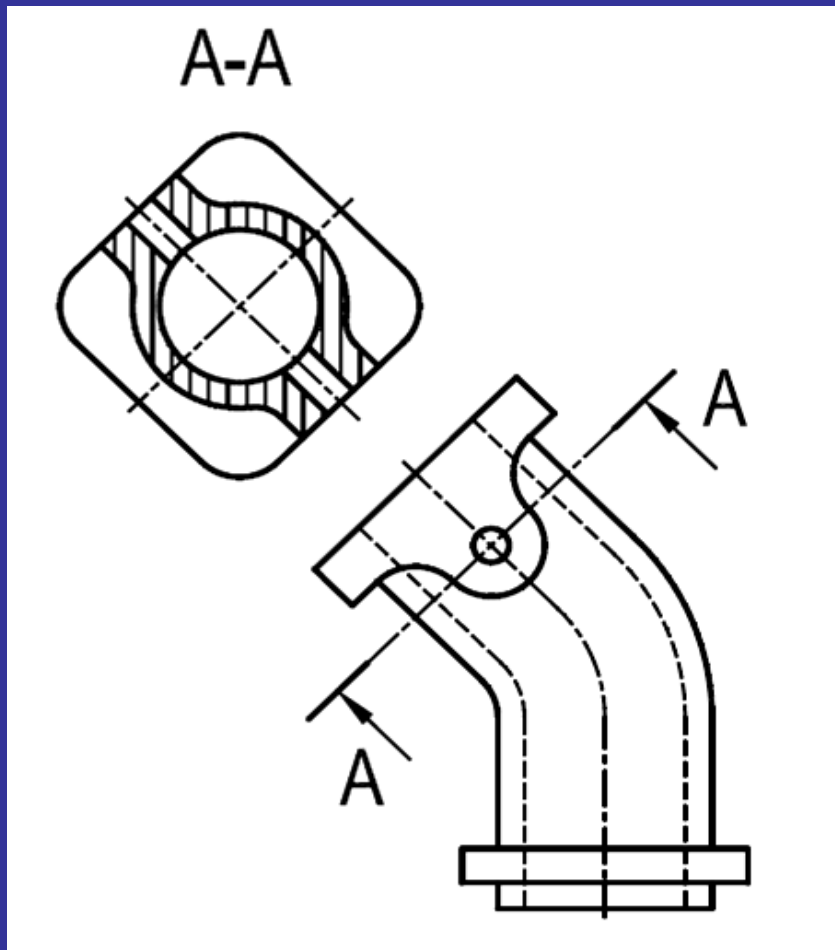
- a metszősík helye nem egyértelmű, vagy
- több metszősík van.



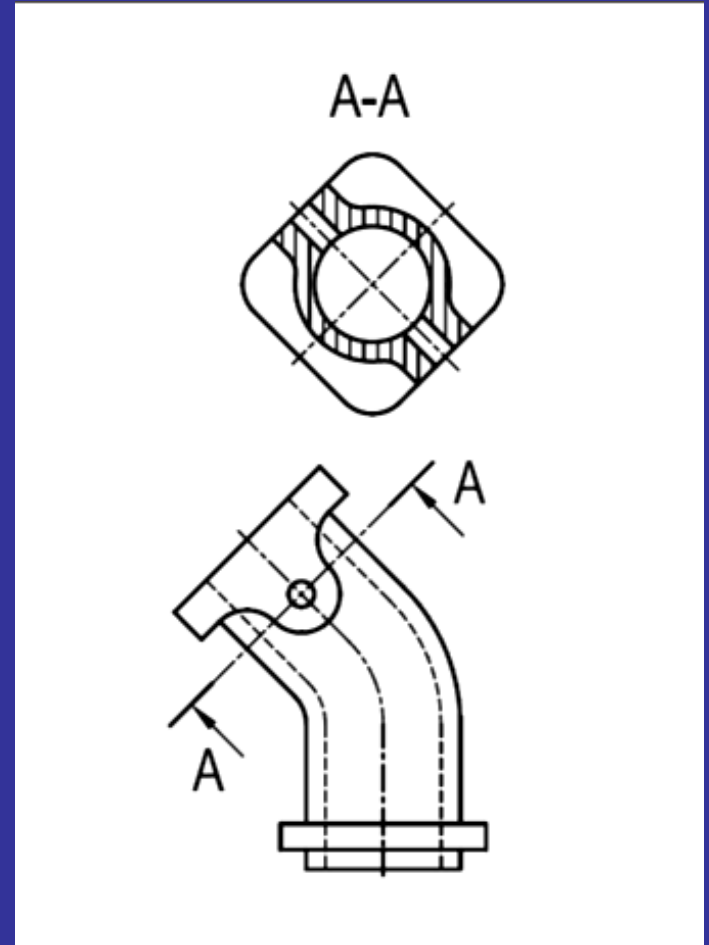
# A METSZETEK FAJTÁI

# Teljes metszet

Vetítési irányban elhelyezett metszet

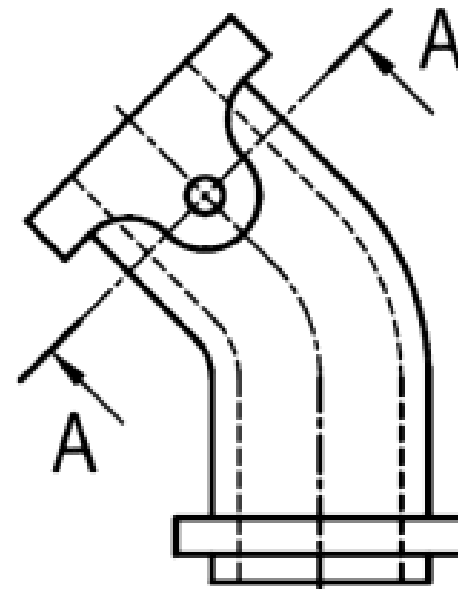
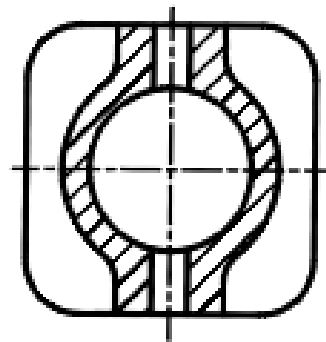


Nem vetítési irányban elhelyezett metszet

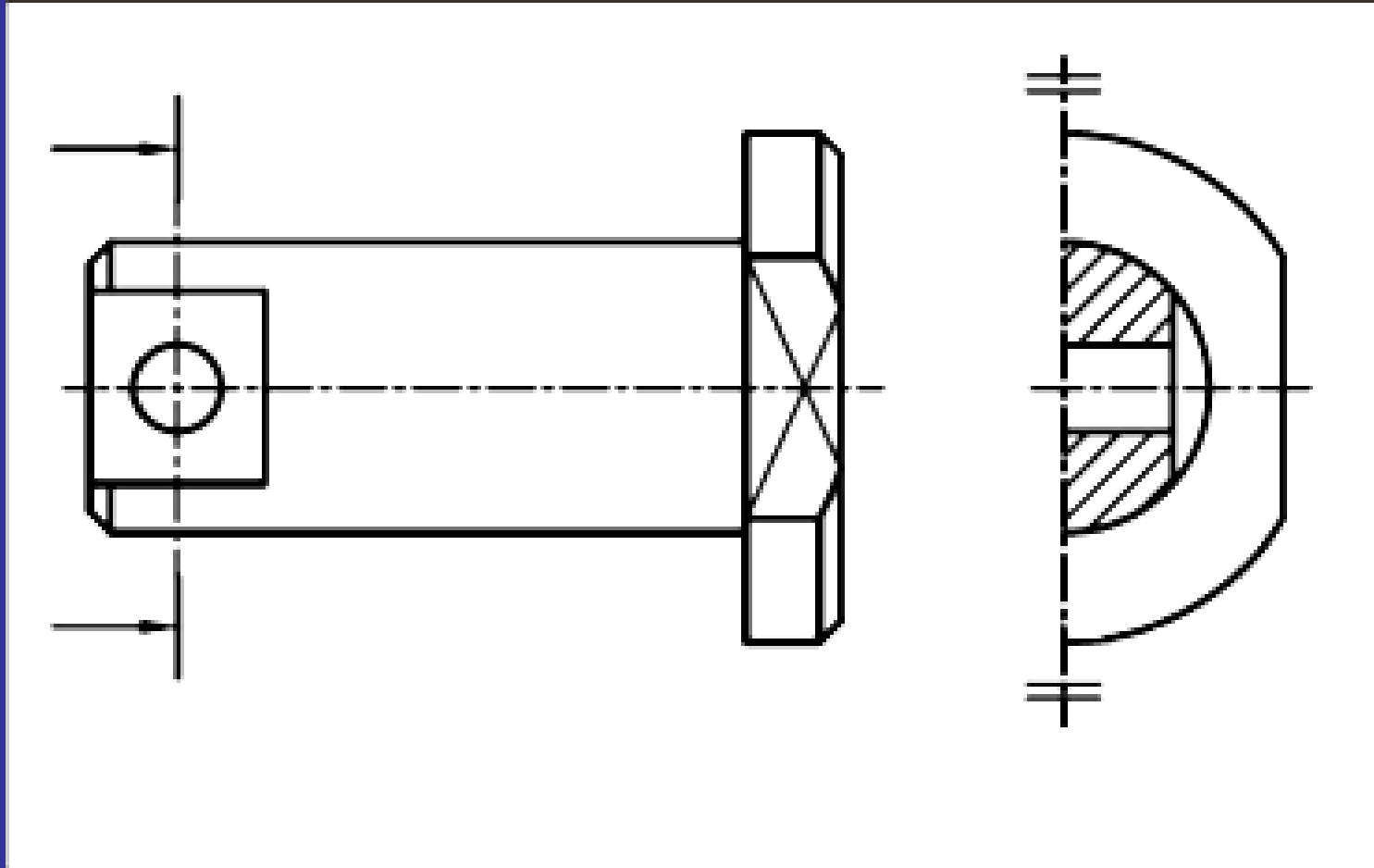


# Teljes metszet elforgatva

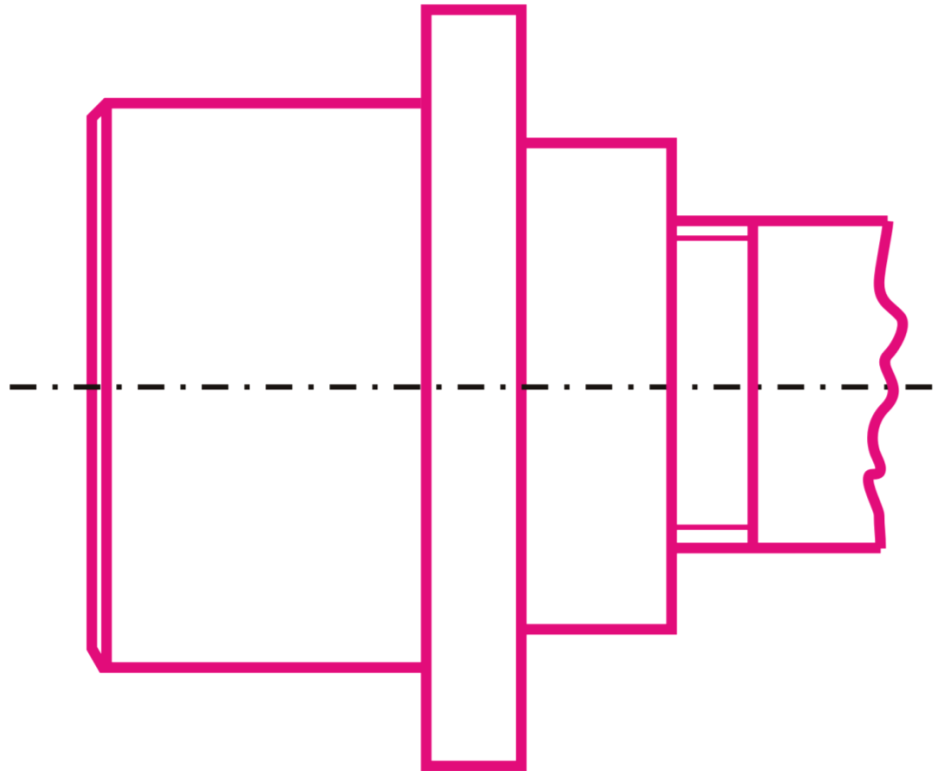
A-A



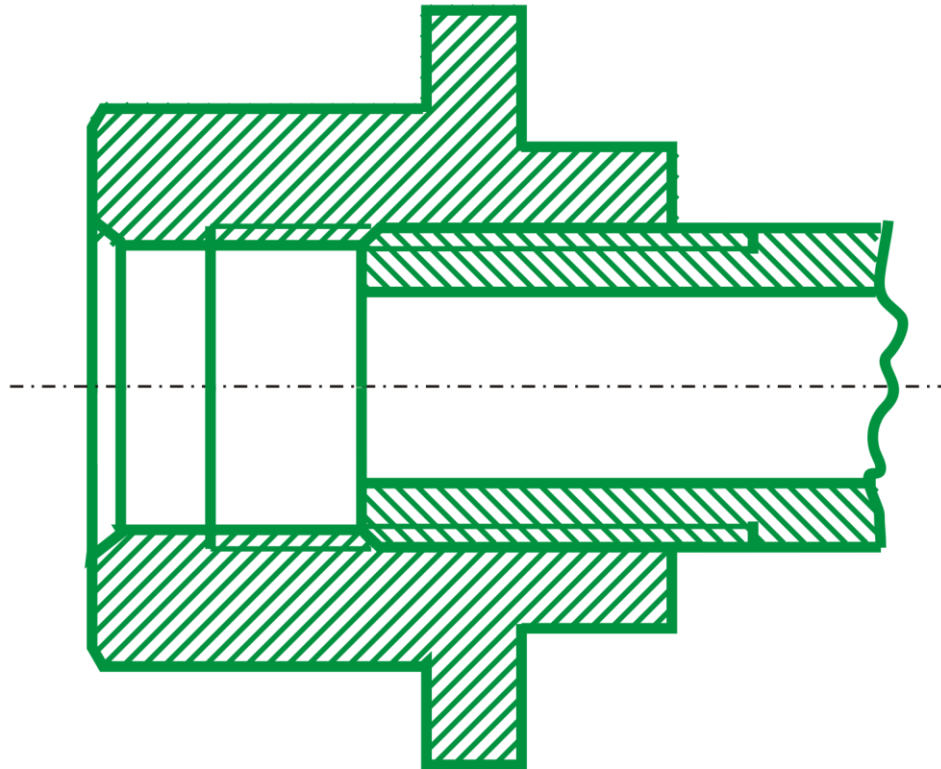
# Félmetszet



# Félnézet-félmetszet

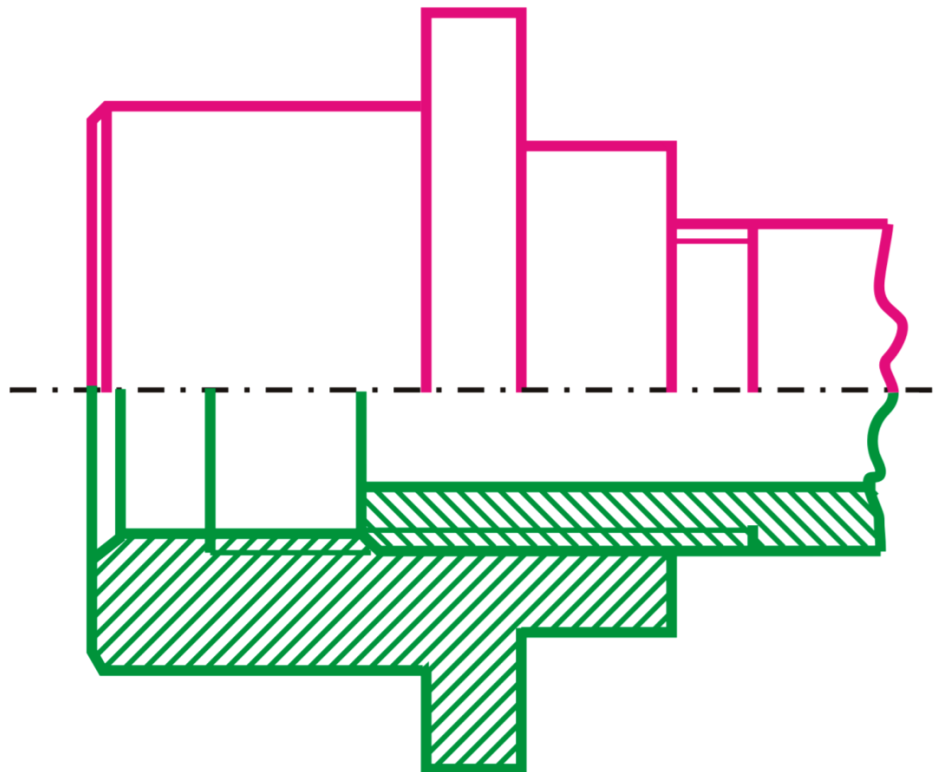


# Félnézet-félmetszet

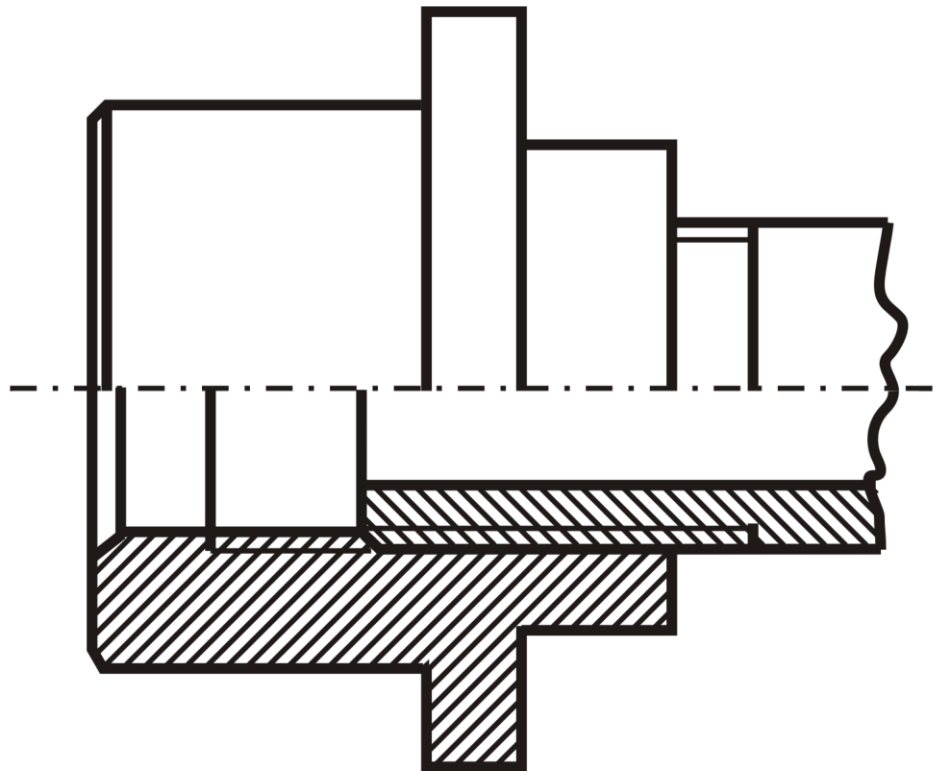




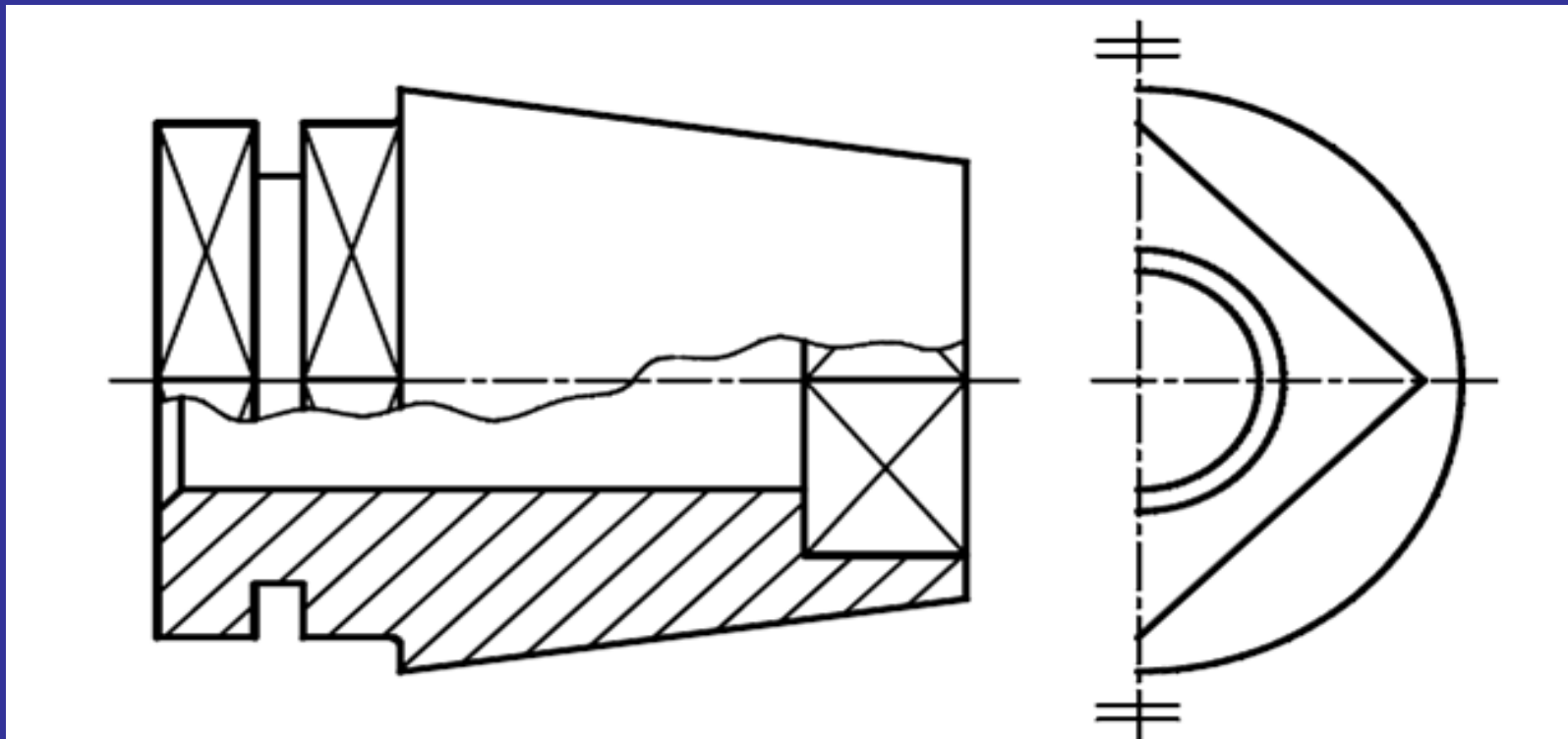
# Félnézet-félmetszet



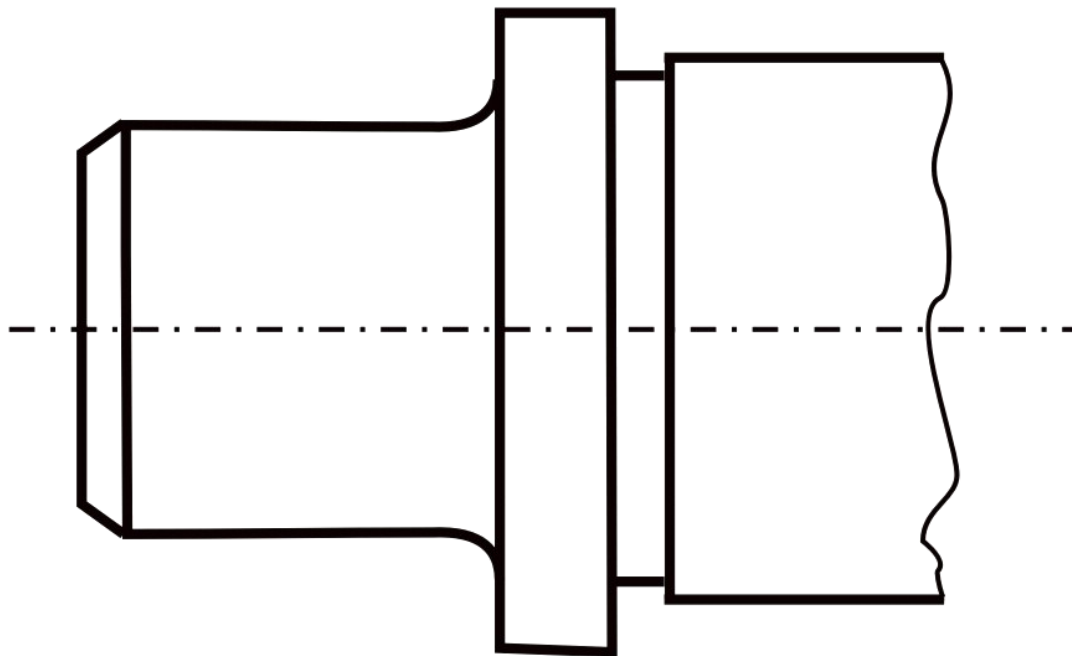
# Félnézet-félmetszet



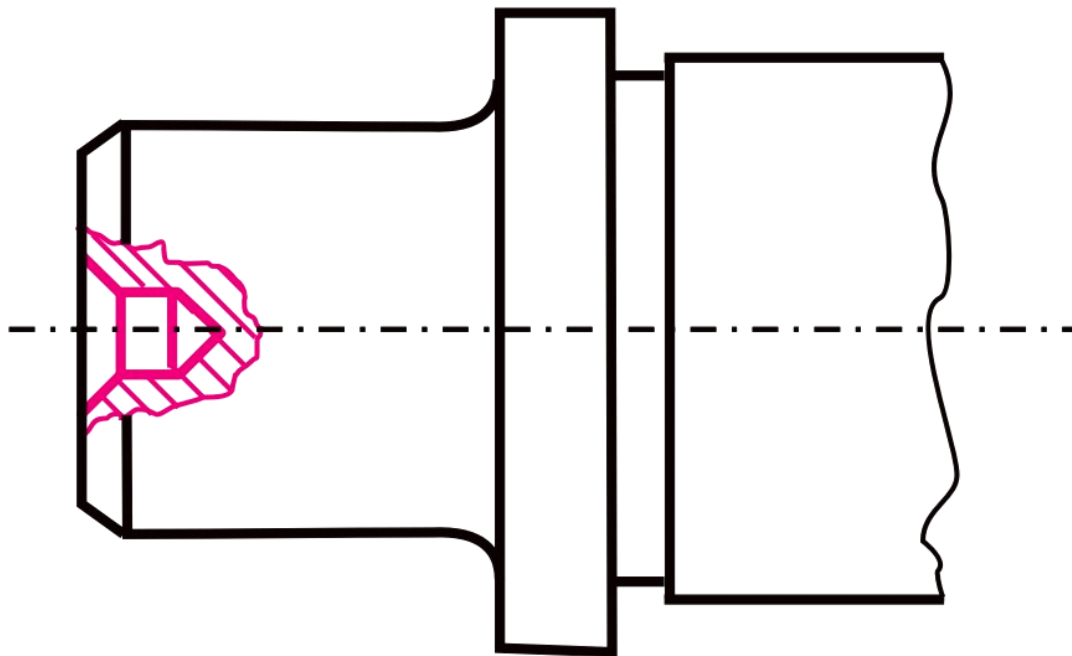
# Metszetkészítés, ha a szimmetriatengelyre látható él esik



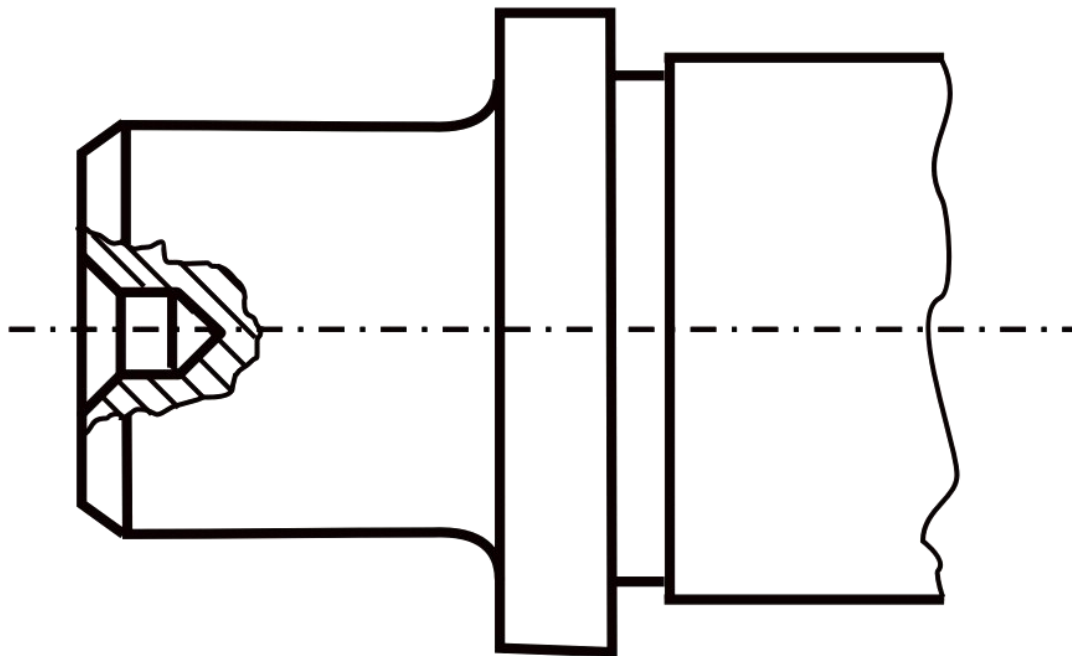
# Kitörés



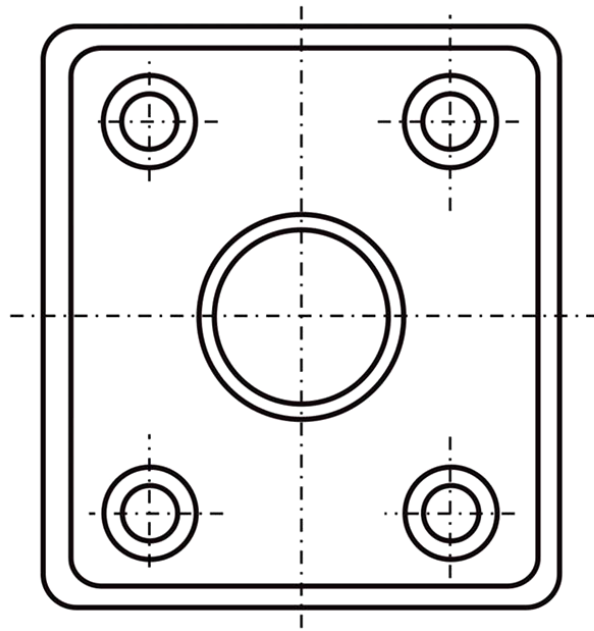
# Kitörés



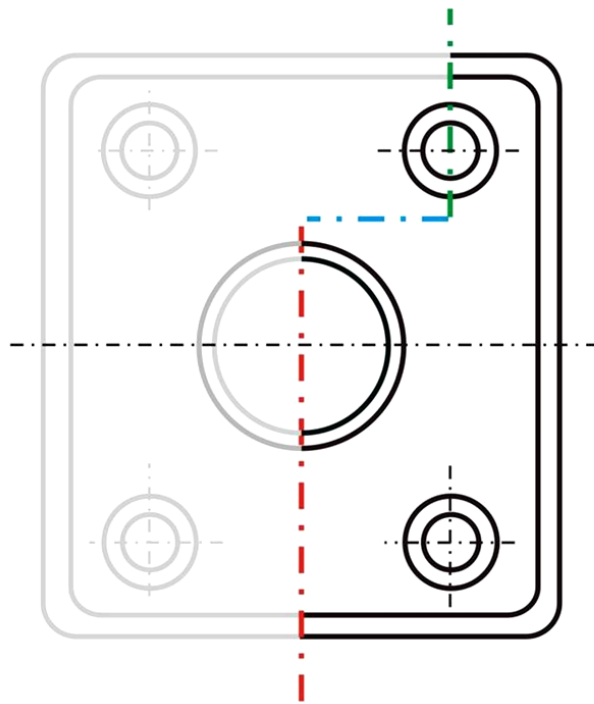
# Kitörés



# Lépcsős metszet

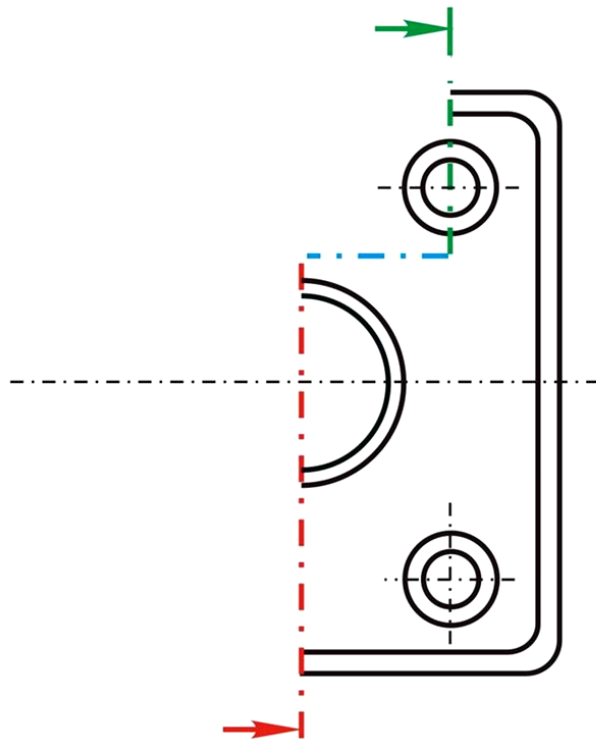


# Lépcsős metszet

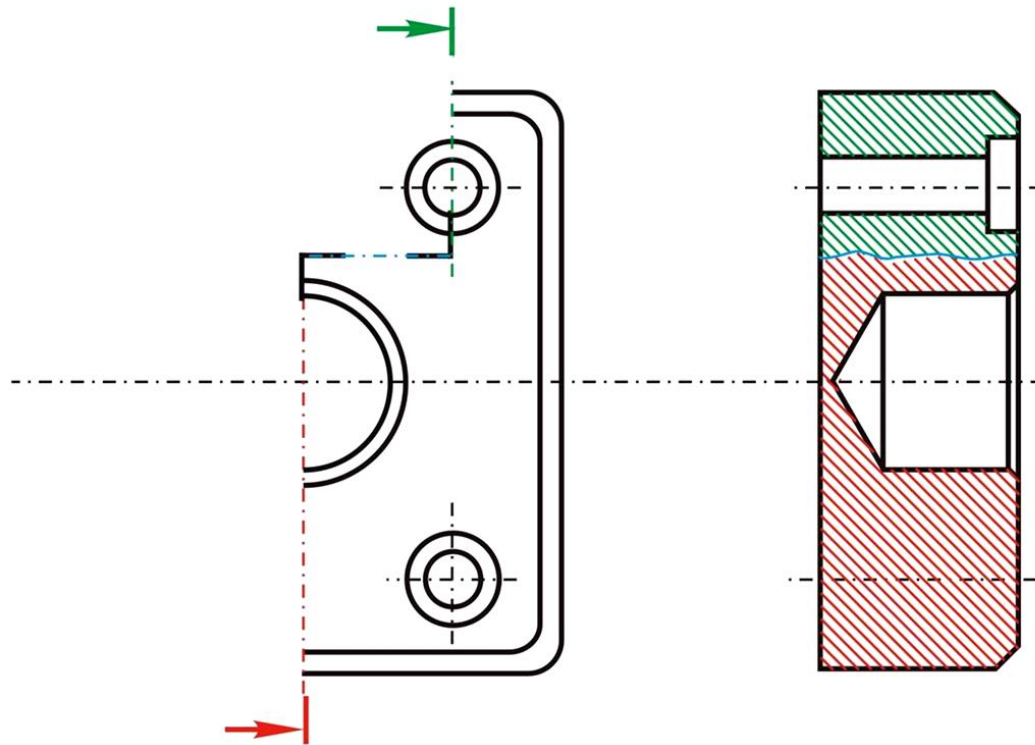




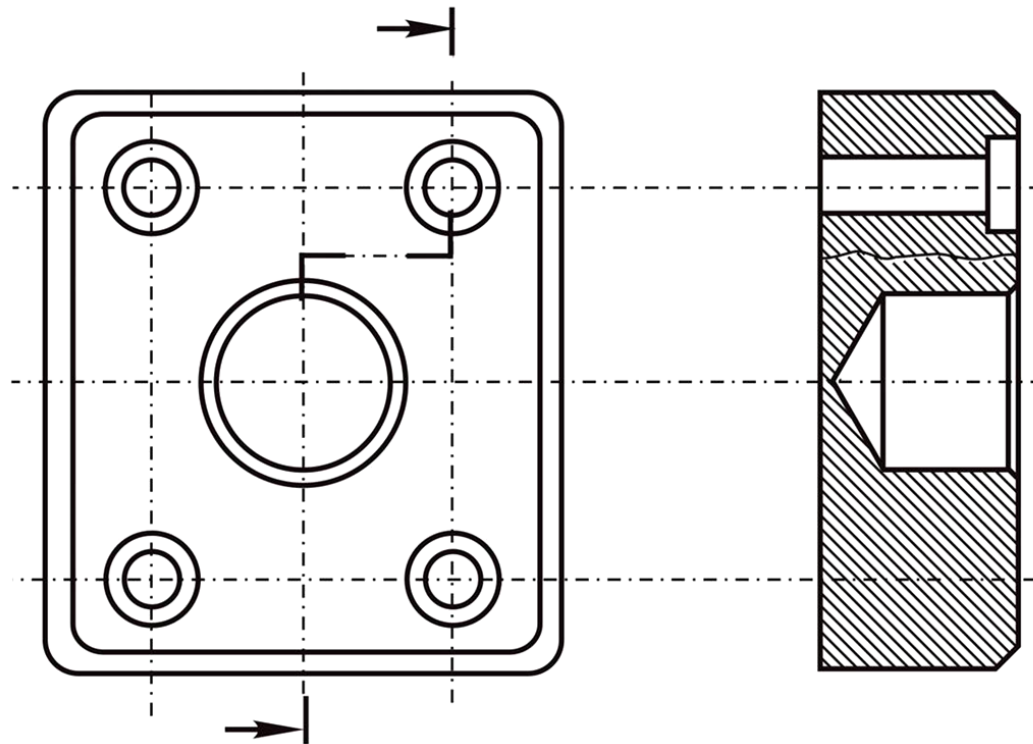
# Lépcsős metszet



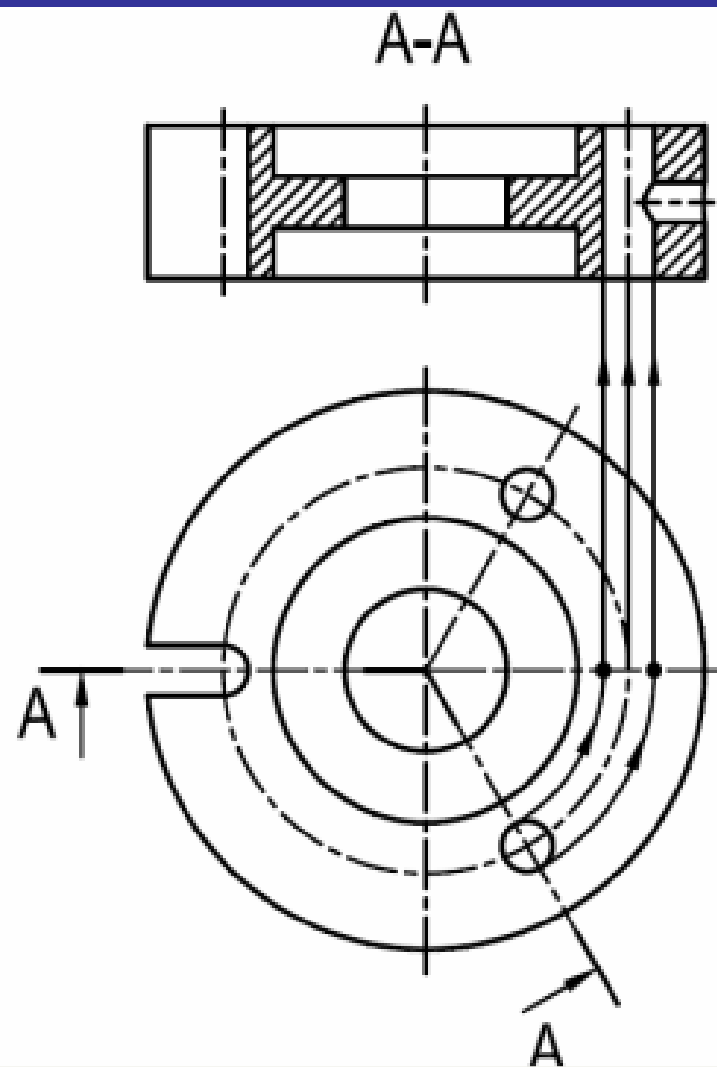
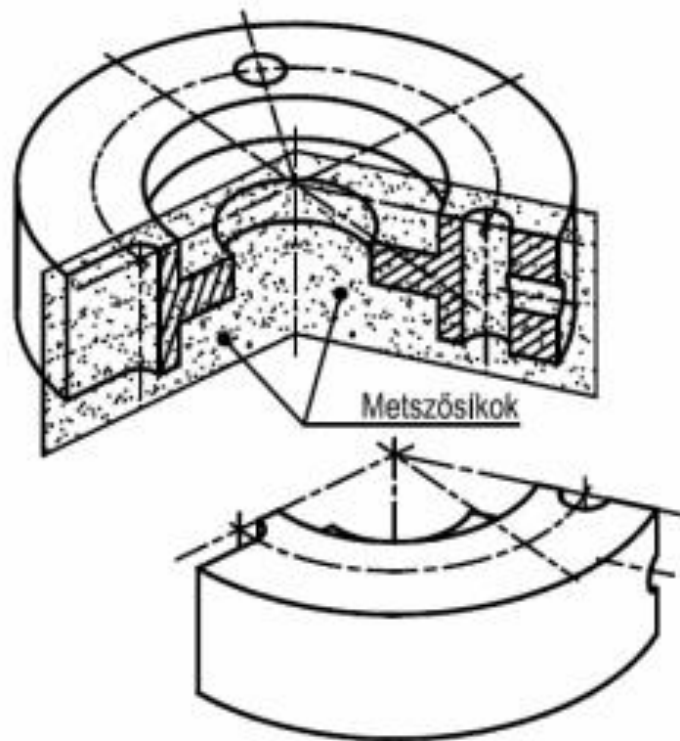
# Lépcsős metszet



# Lépcsős metszet



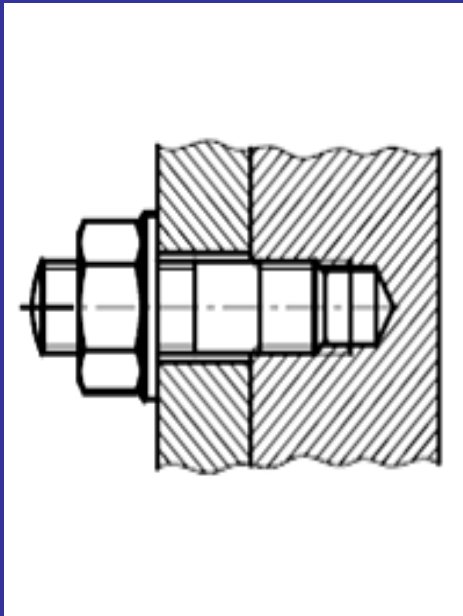
# Beforgatott metszet



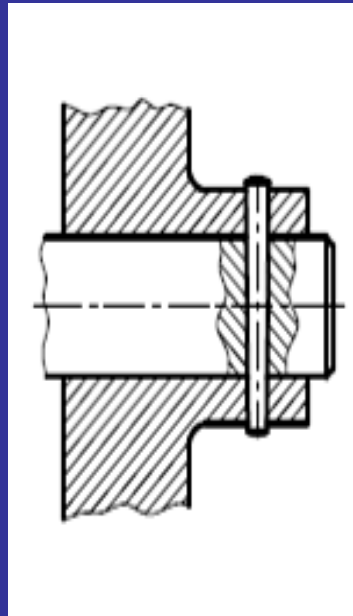
# METSZÉSI TILALMAK

# Hossztengelyükkel párhuzamosan nem metszhető alkatrészek

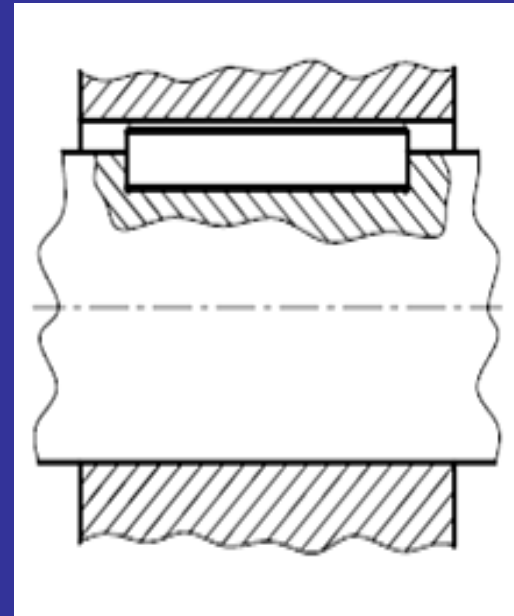
Csavar



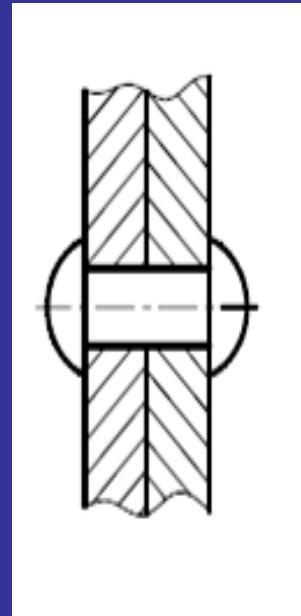
Csapszeg



Ék, retesz



Szegecs



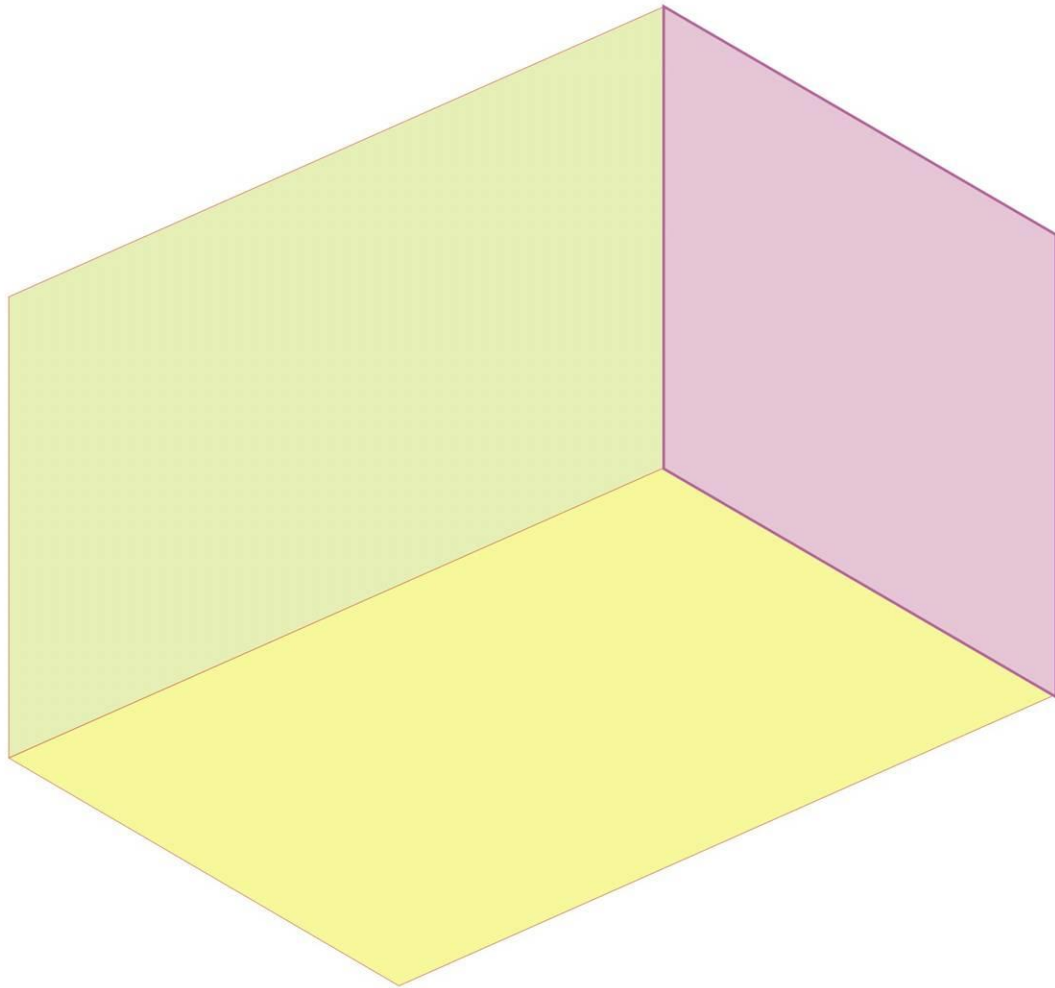
# SZELVÉNYEK

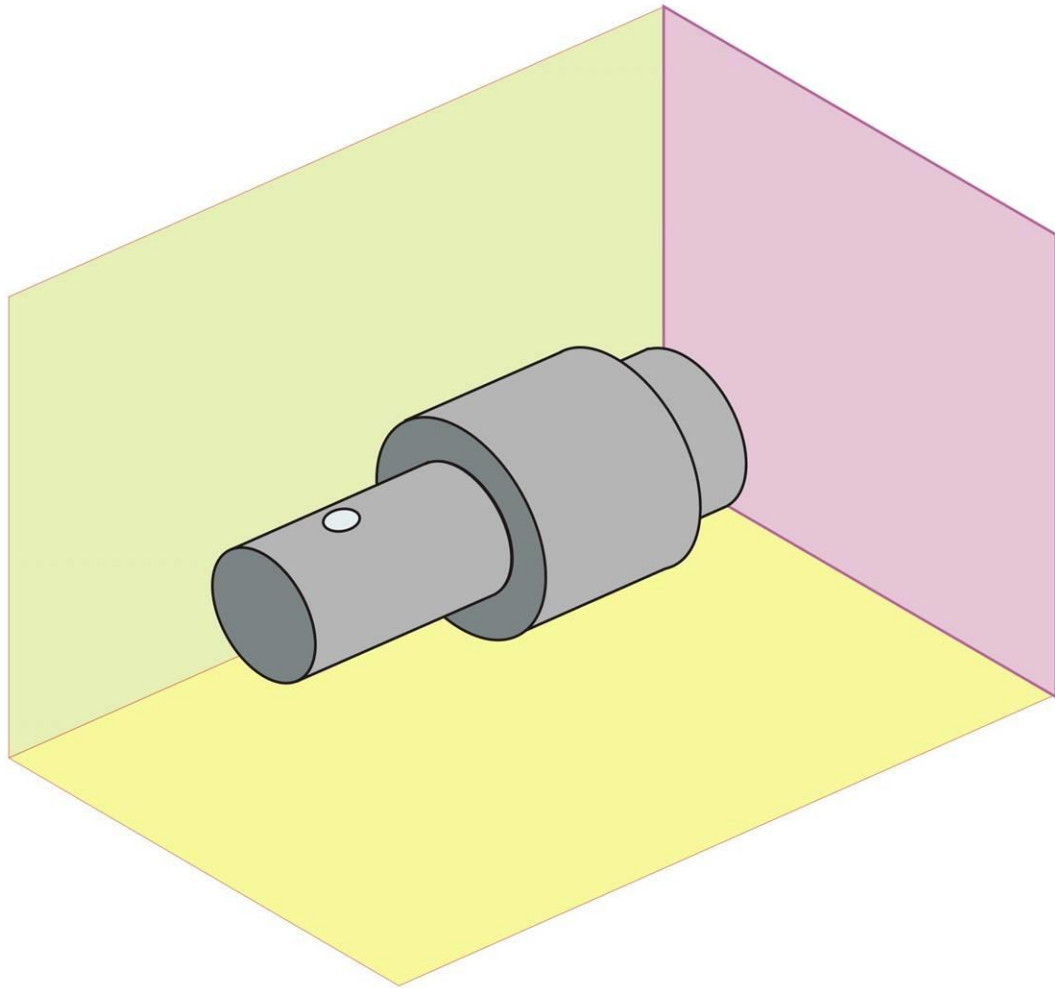
# A szelvénykészítés célja:

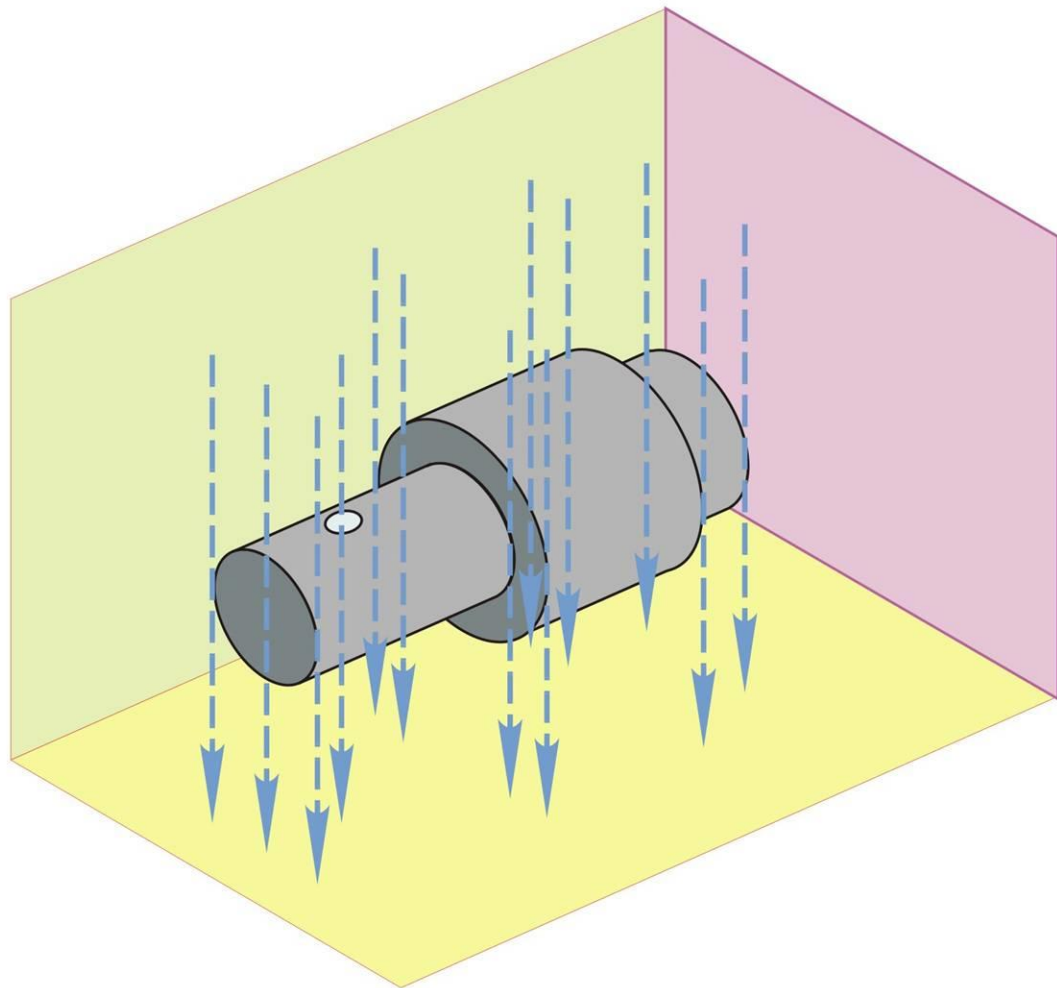
az alkatrész metszősíkra eső geometriai alakjának ábrázolása

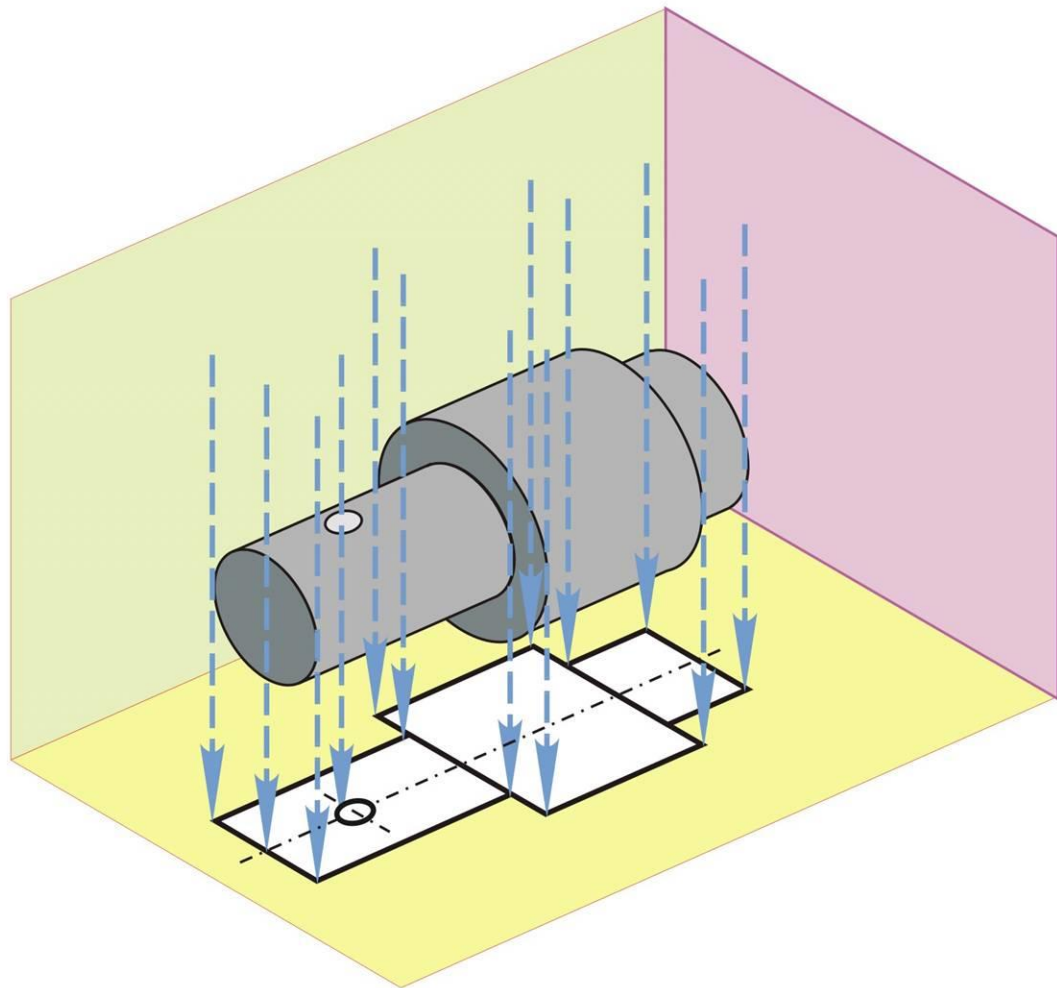


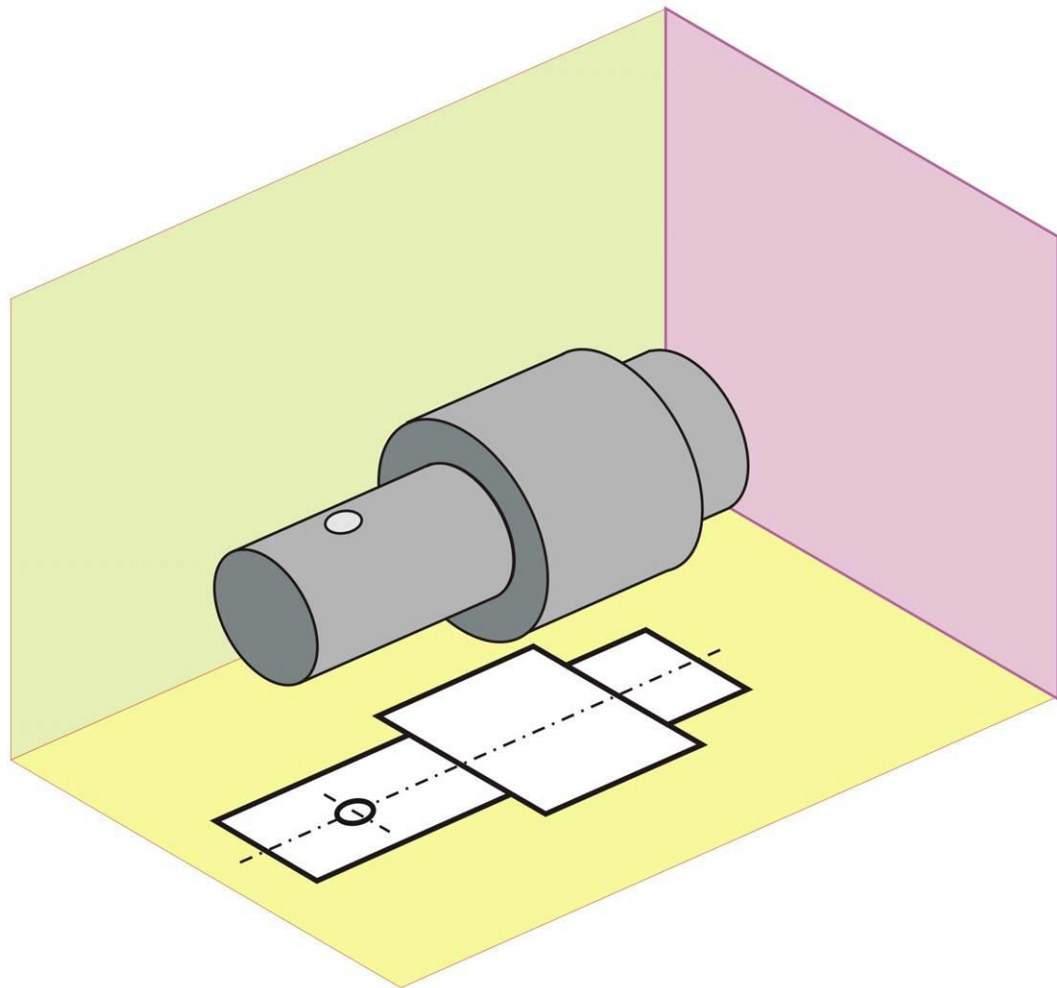
# A SZELVÉNYEK SZÁRMAZTATÁSA

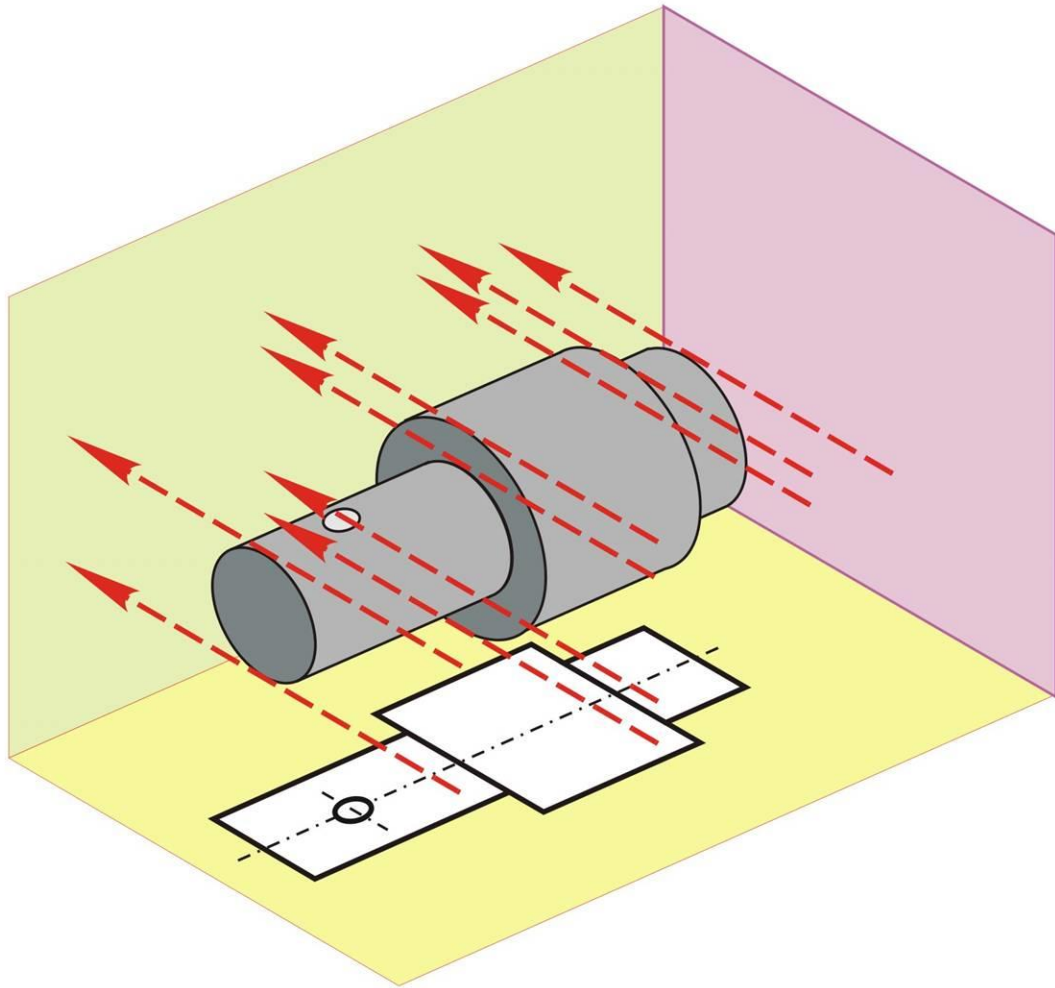


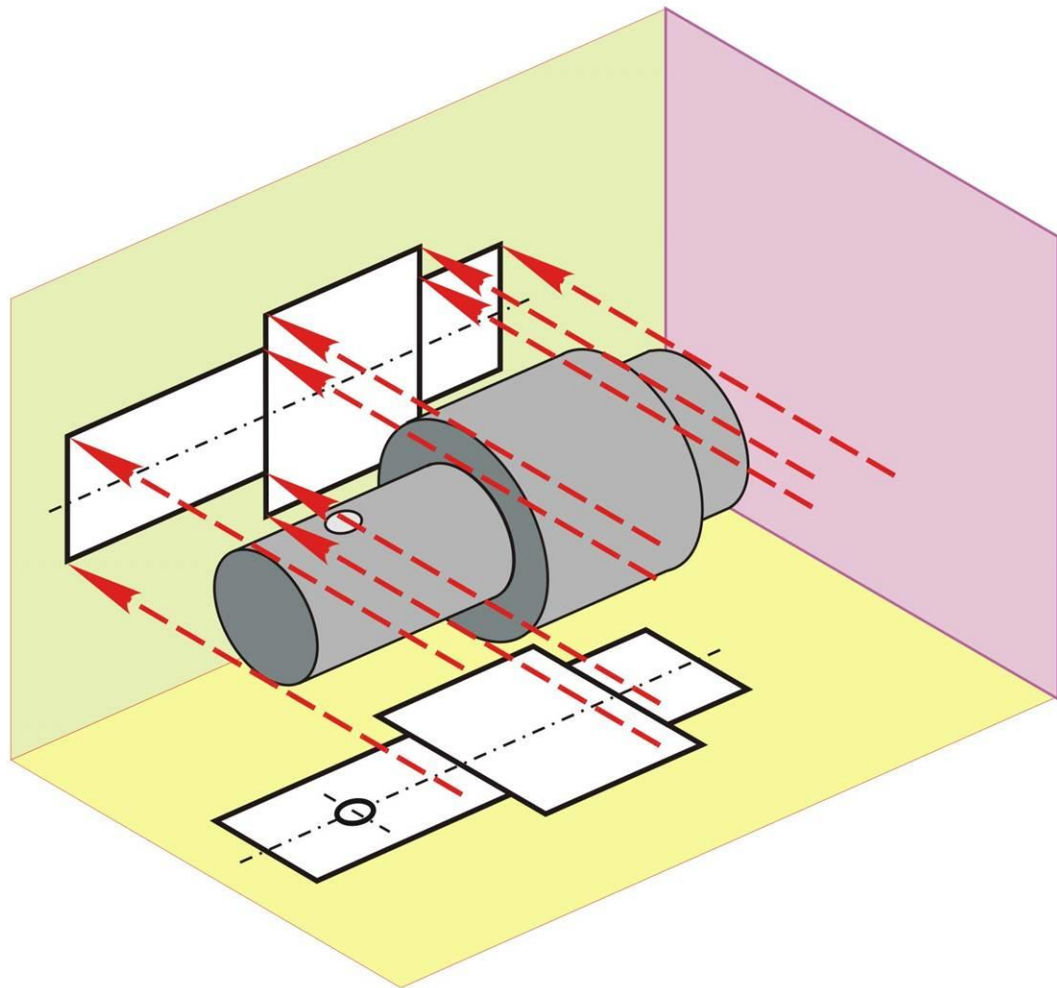




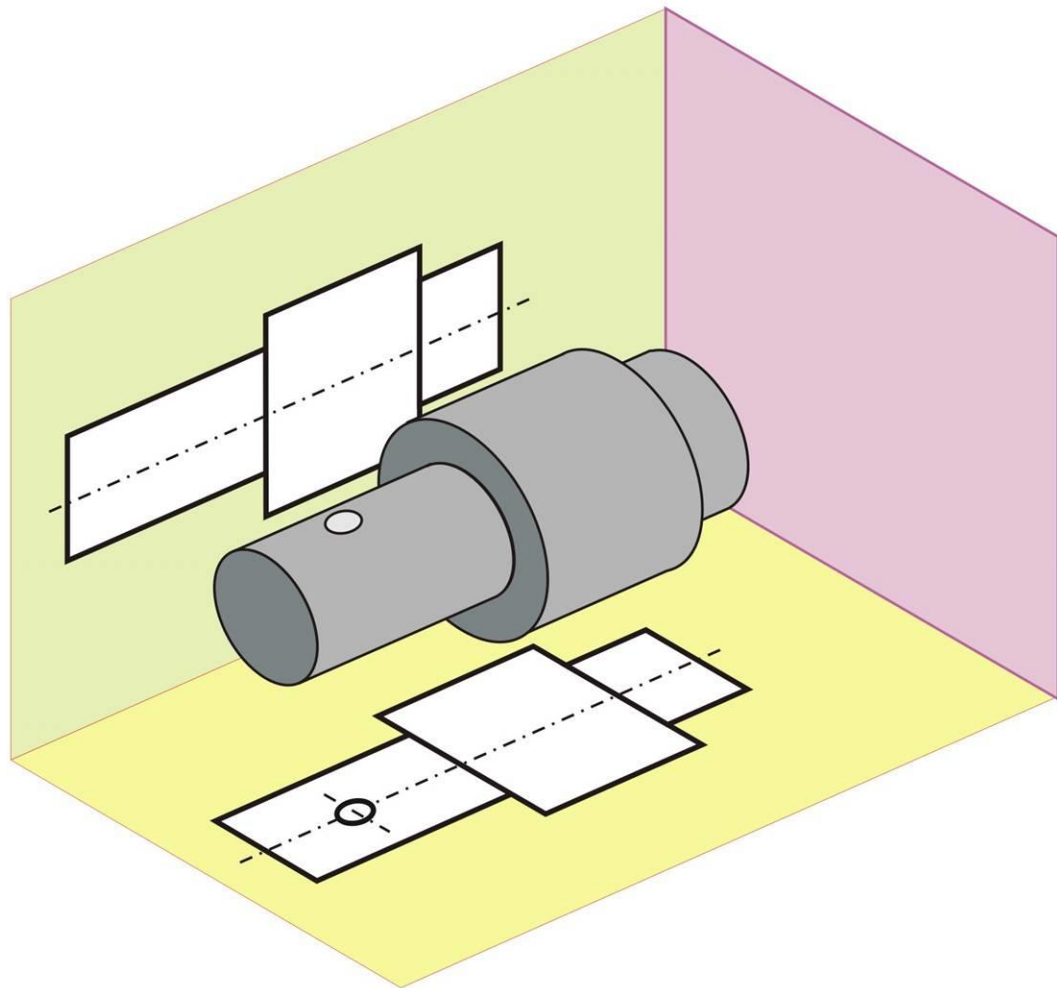


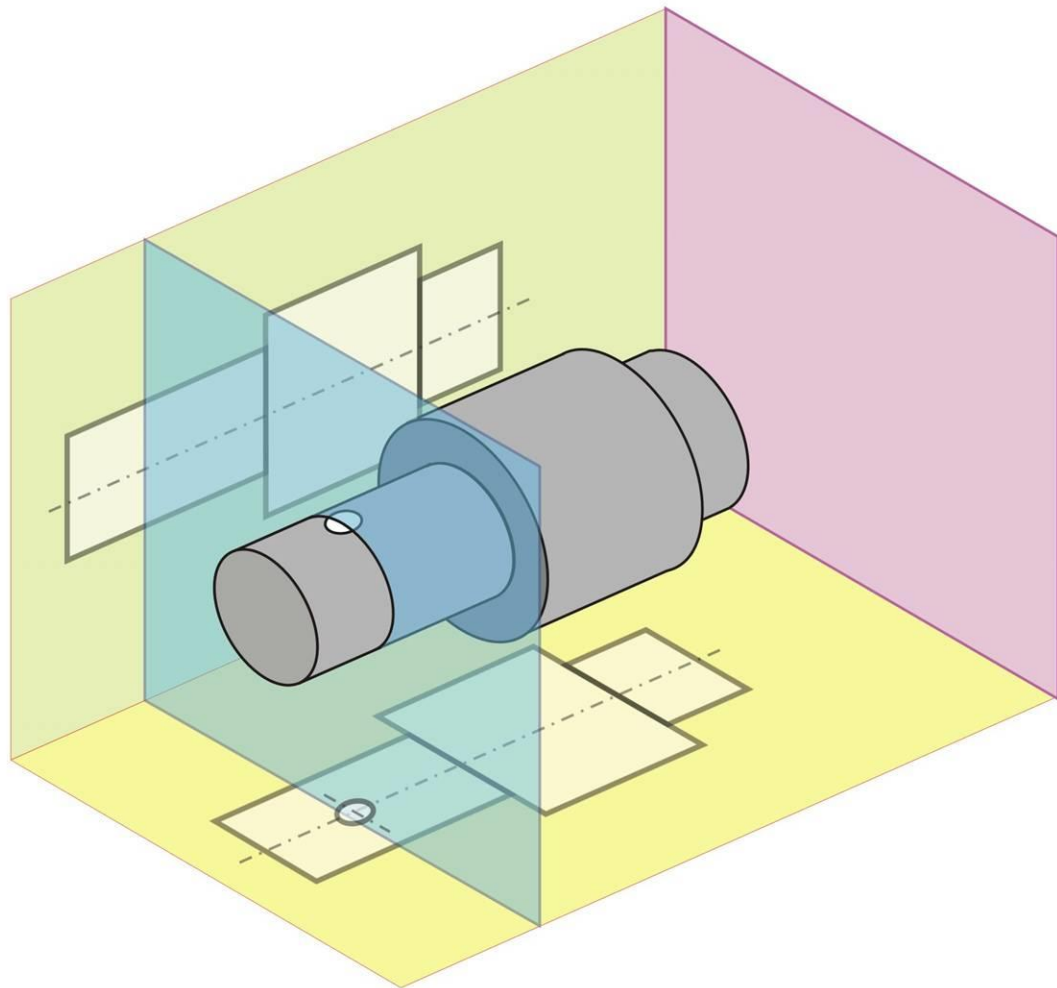


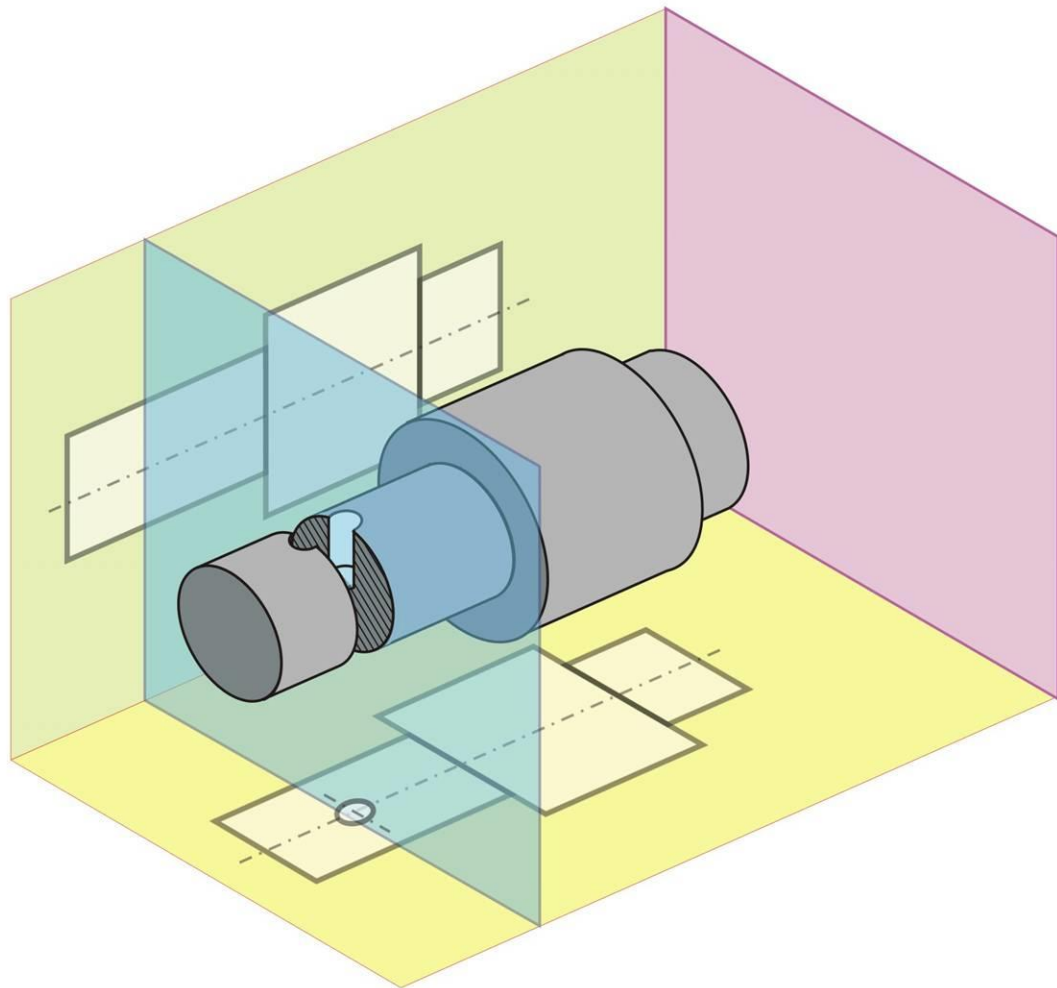


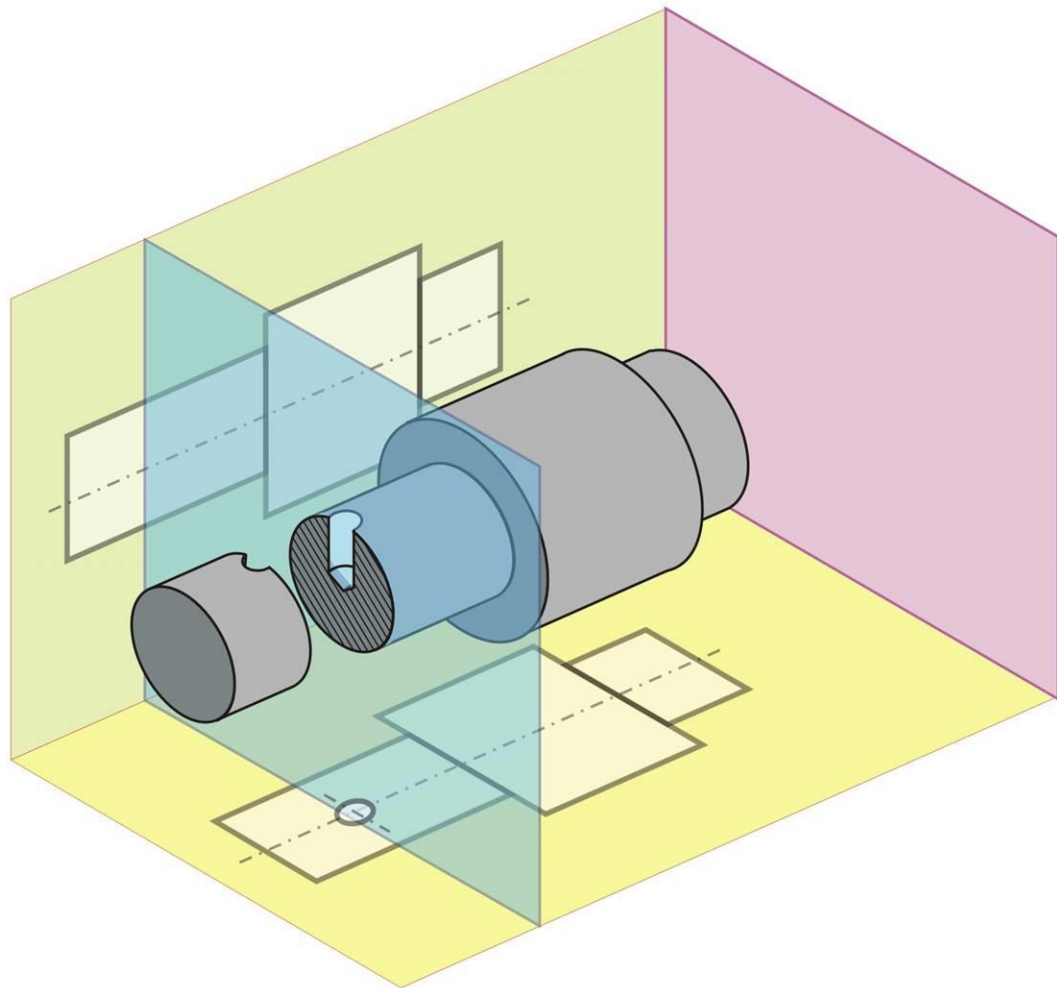


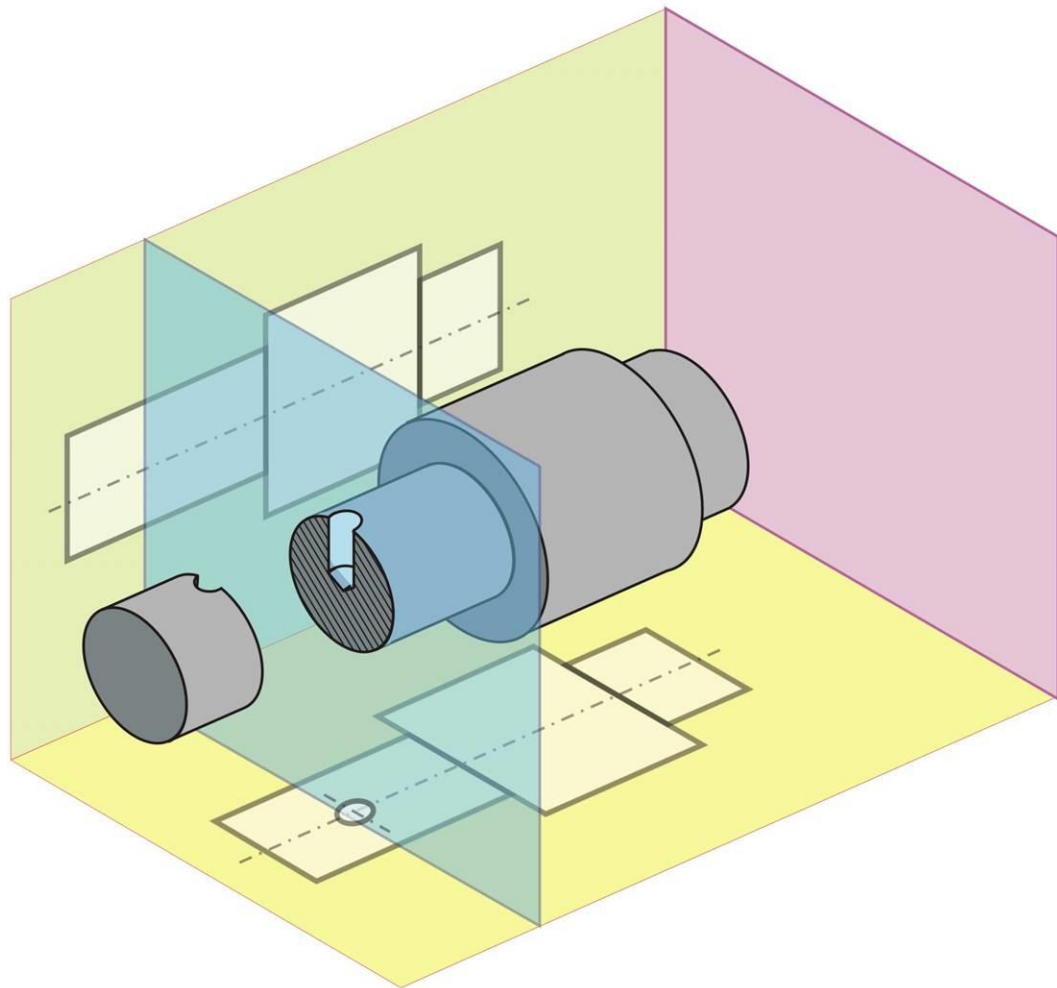


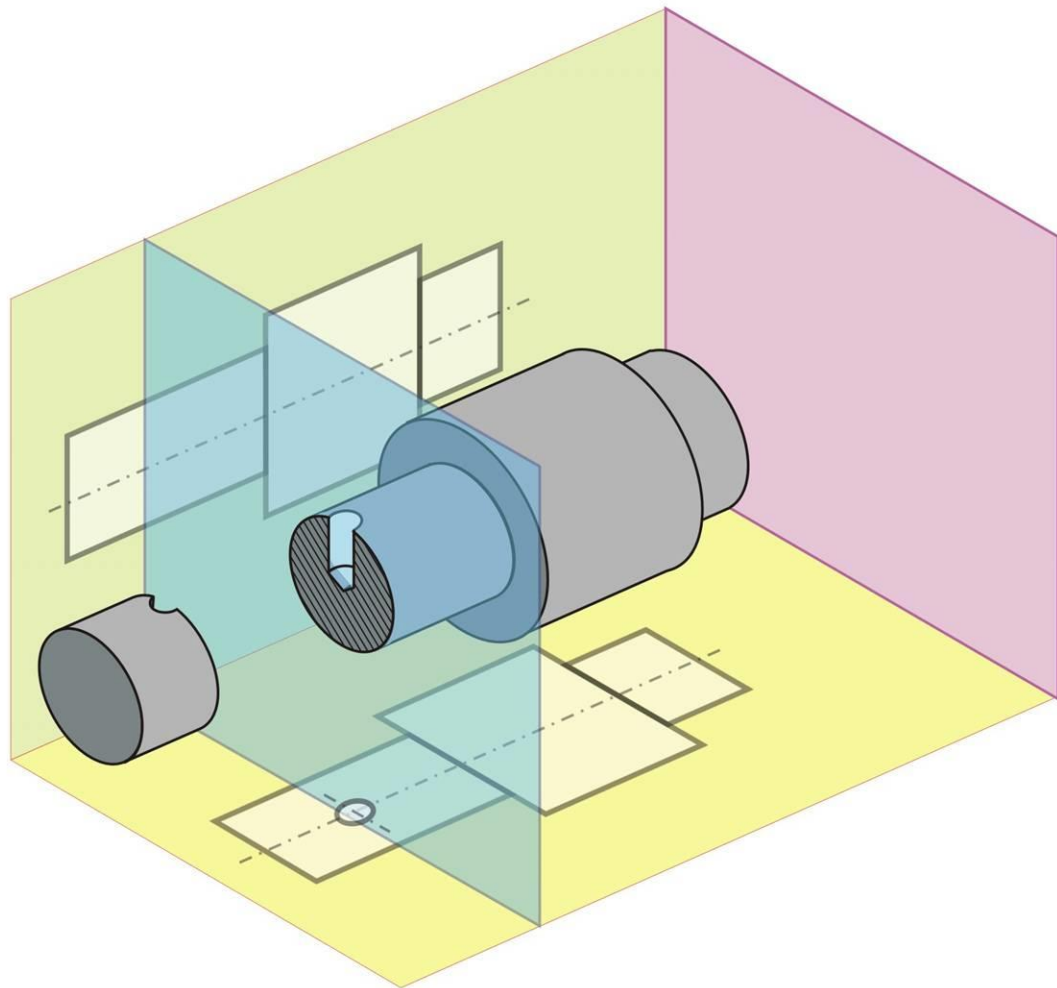


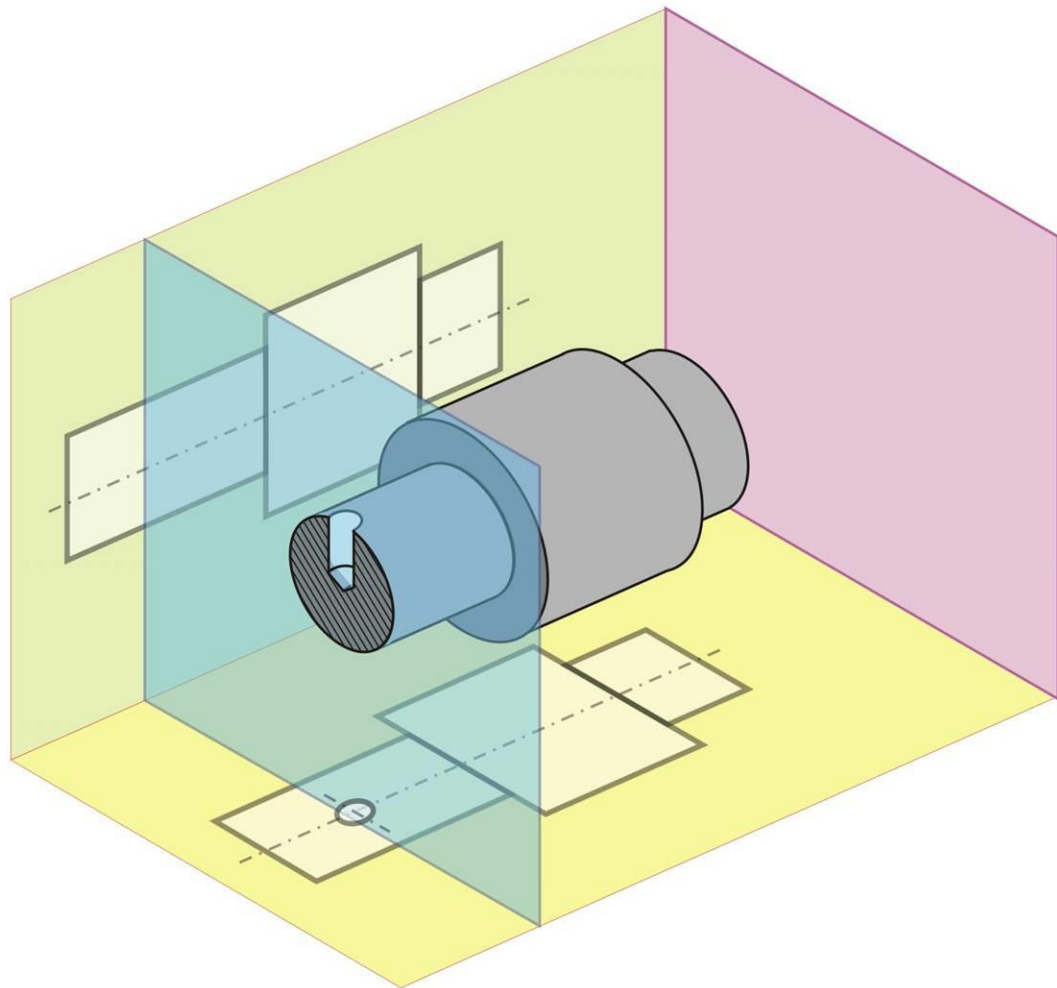


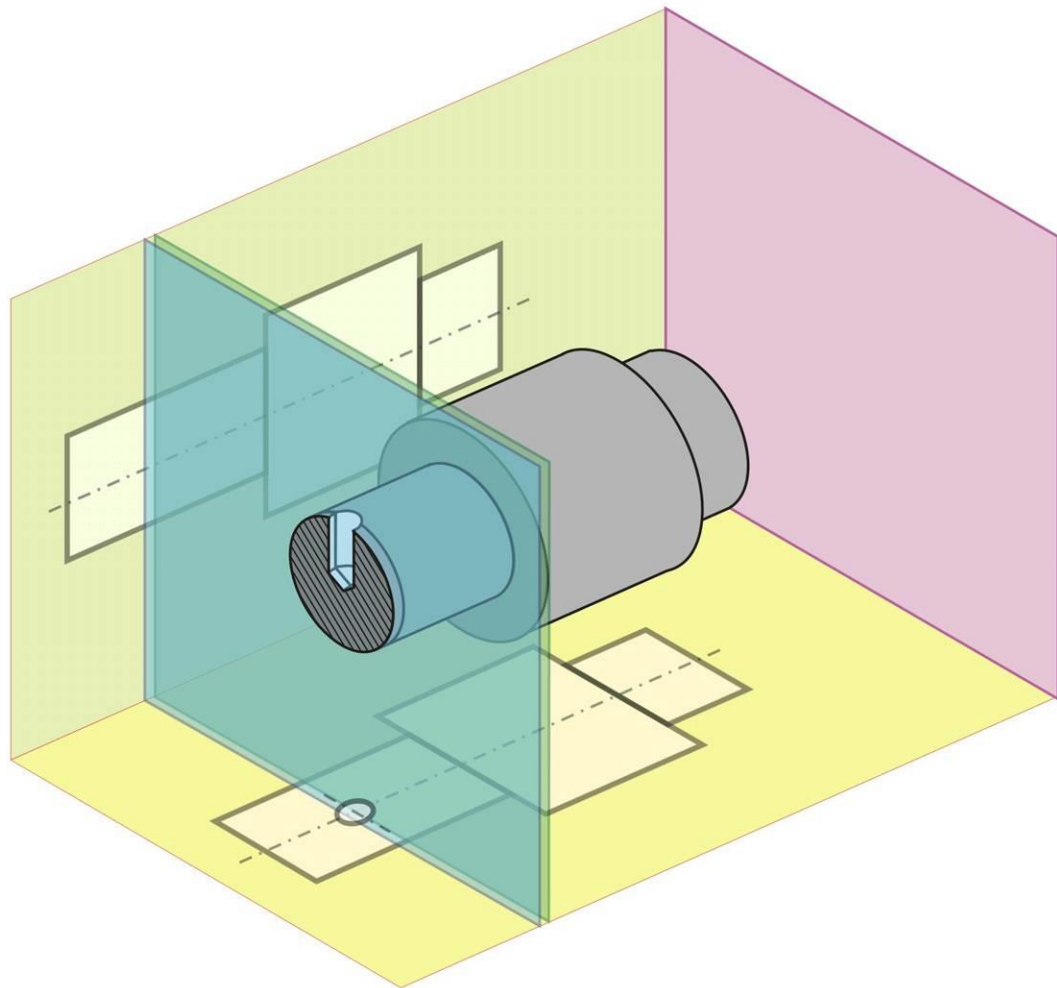




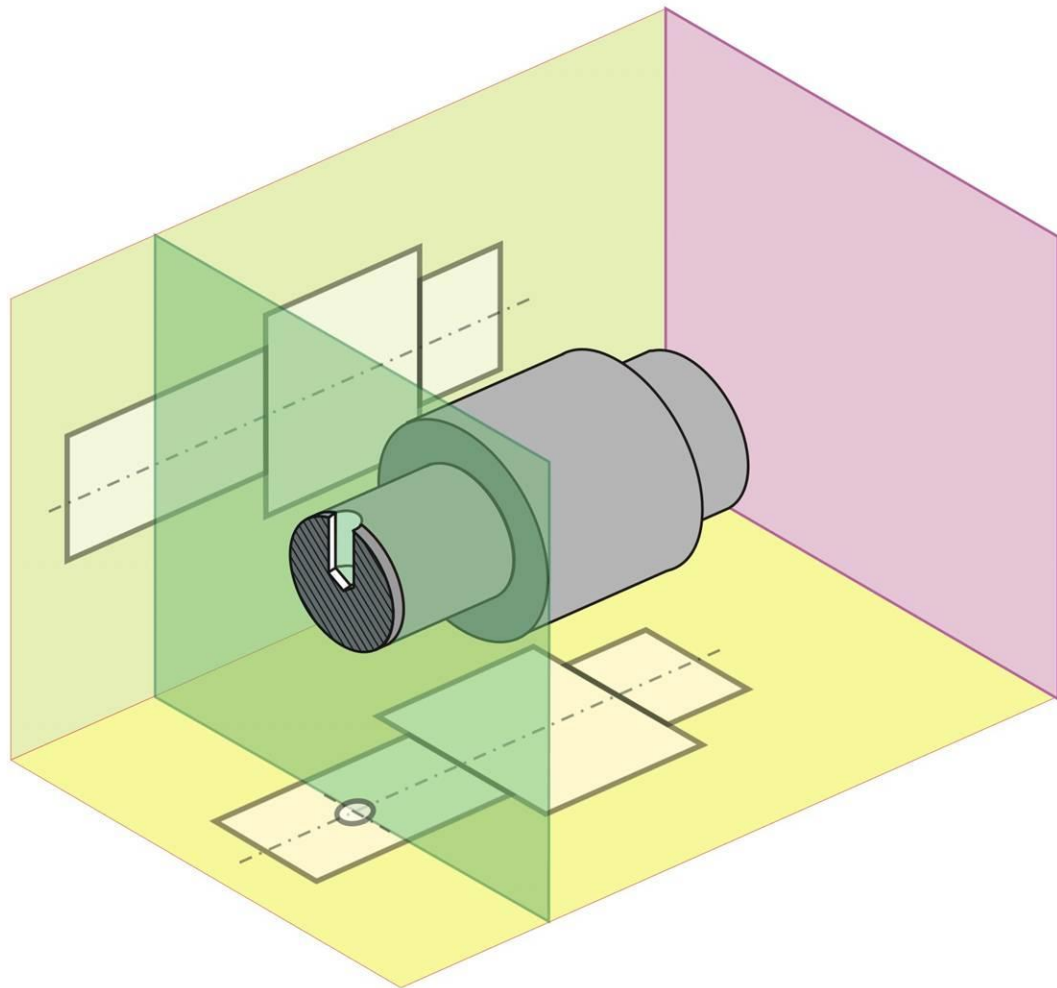


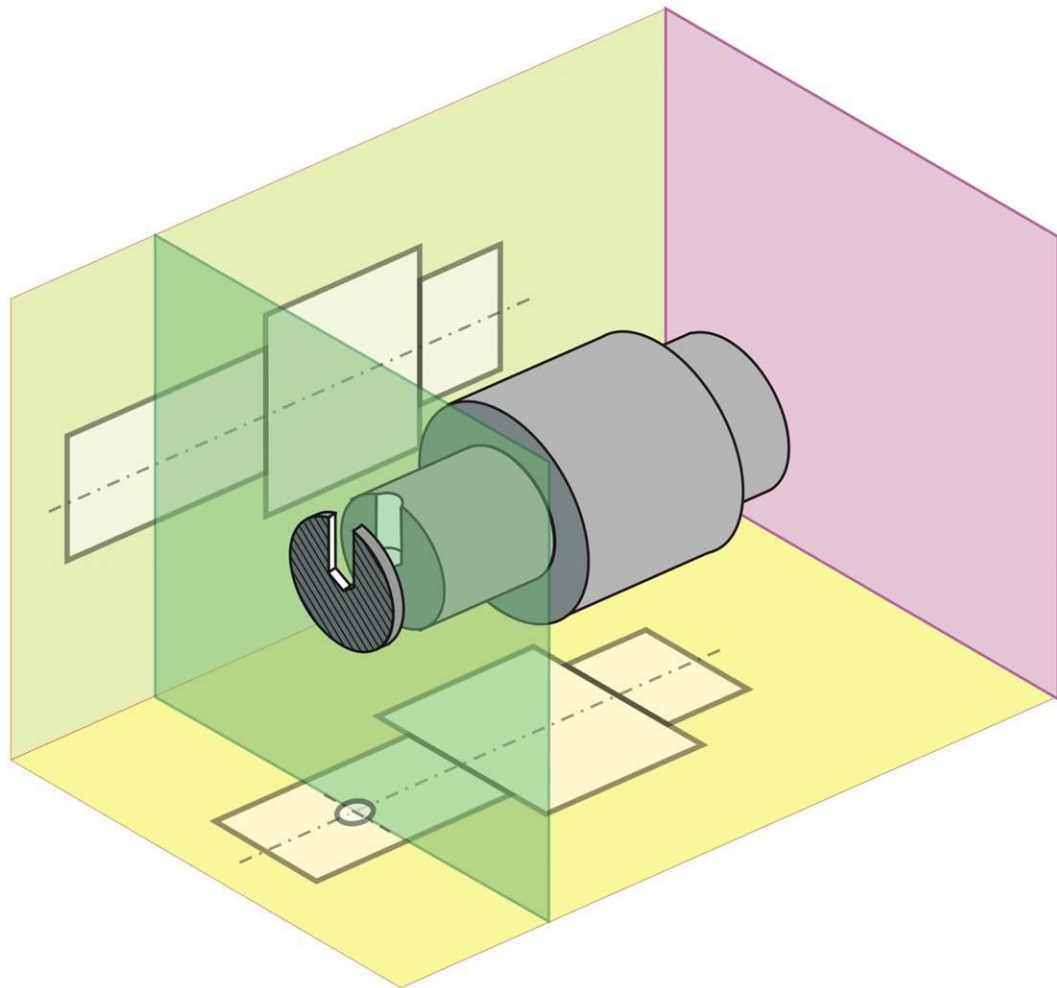


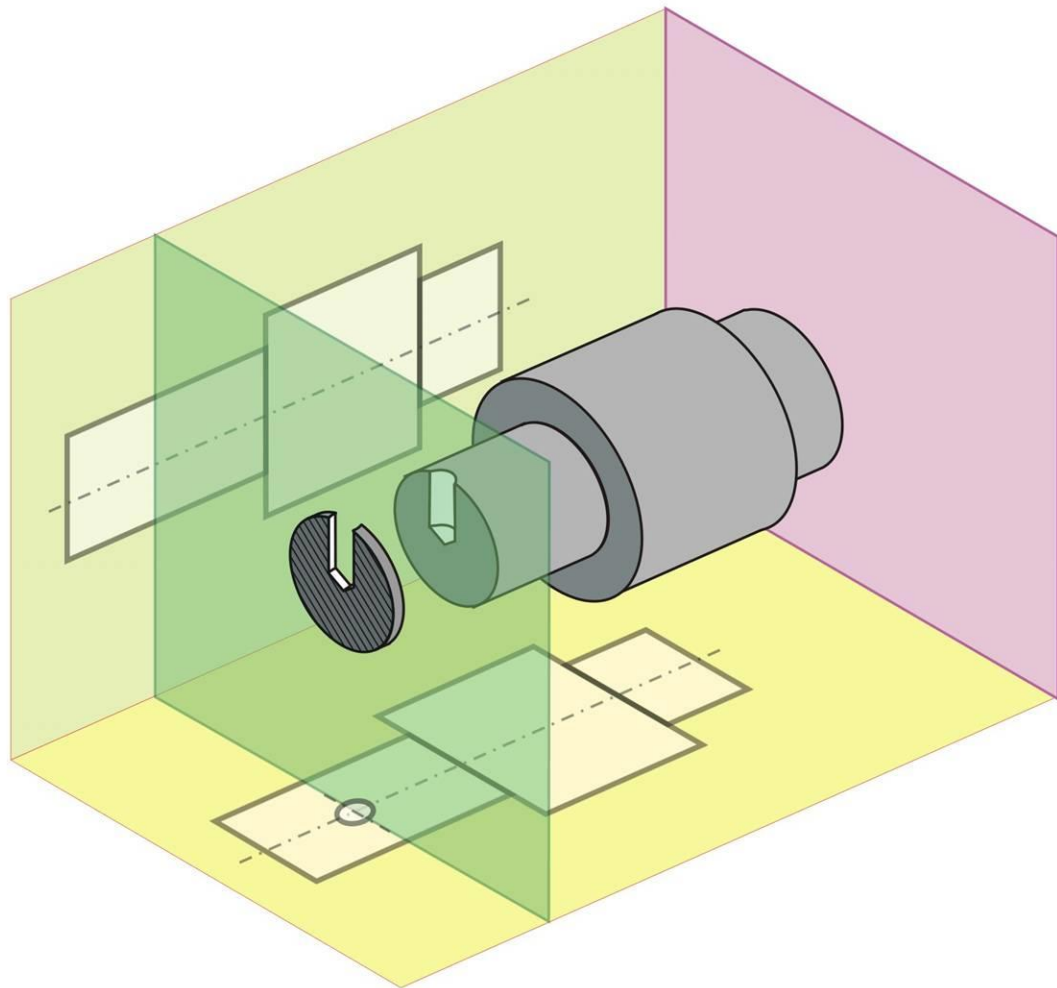


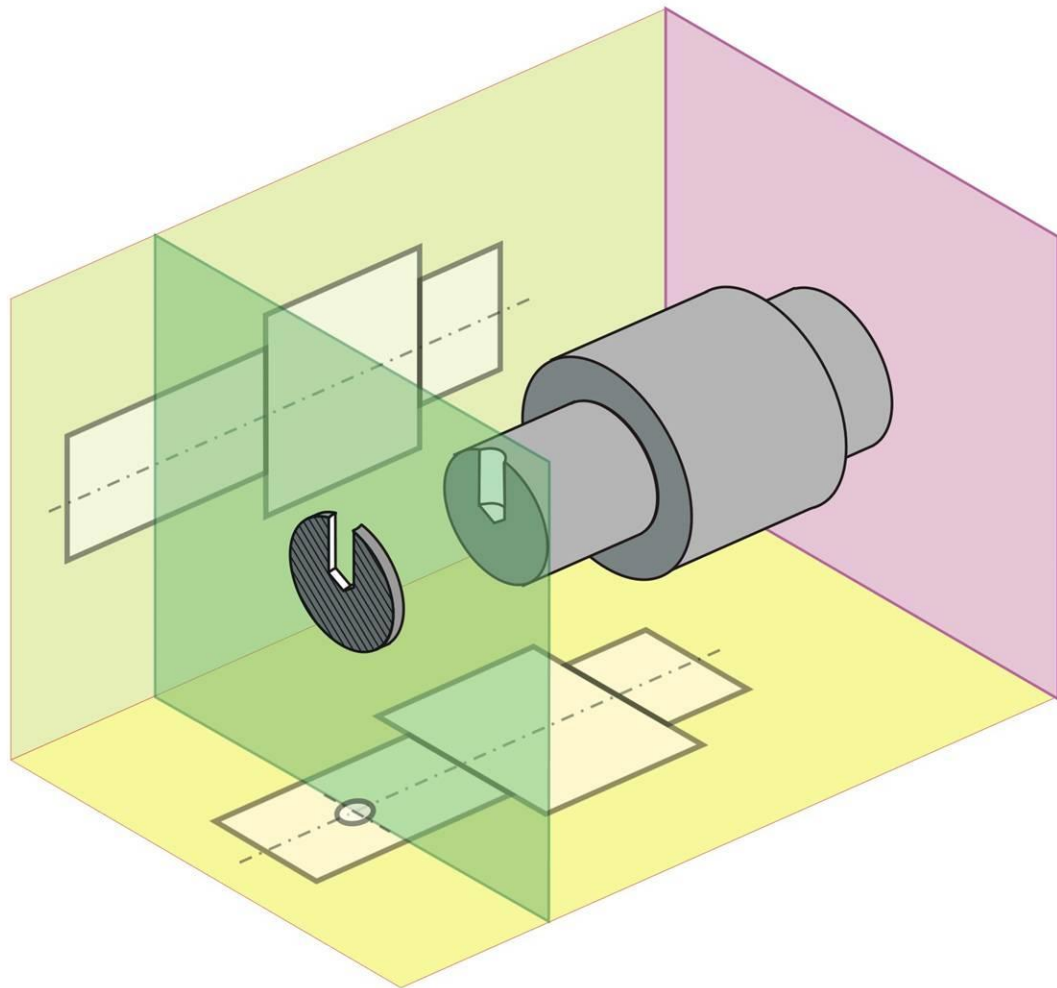


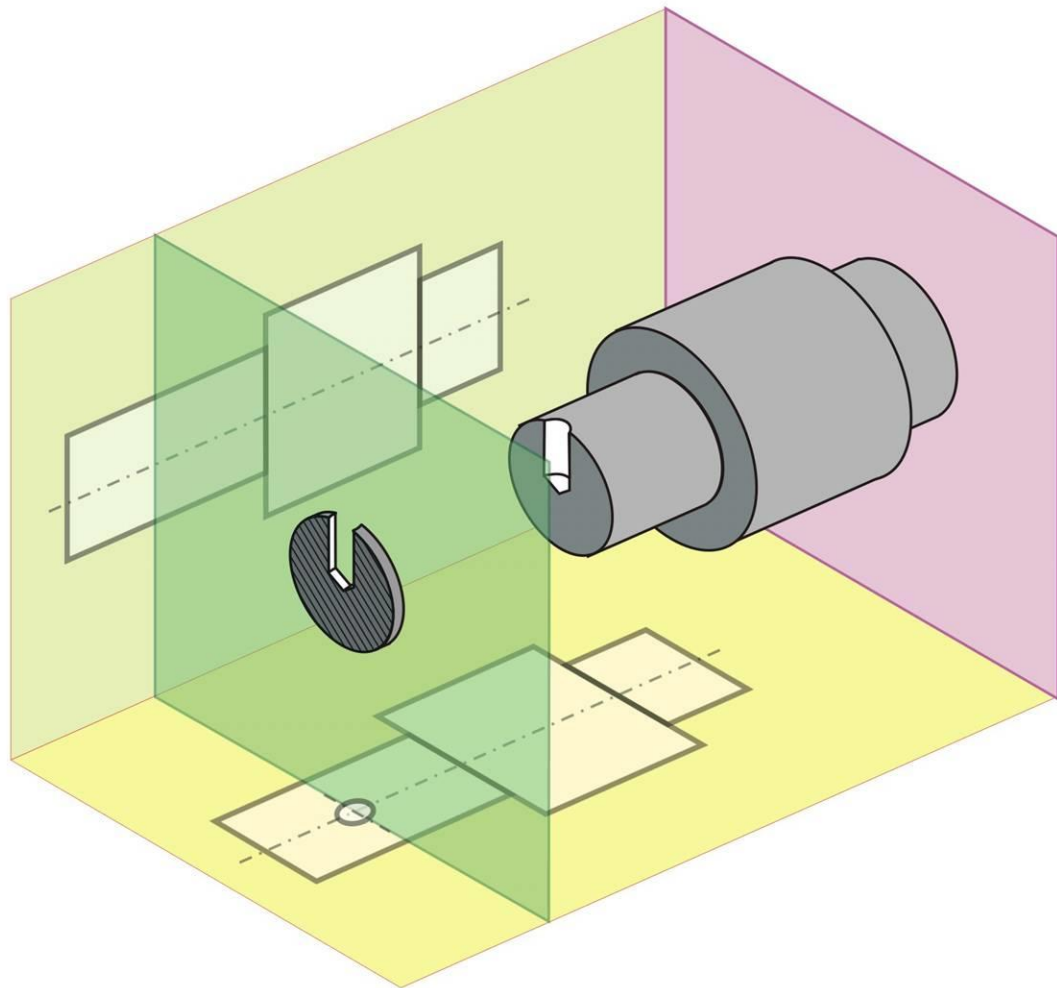


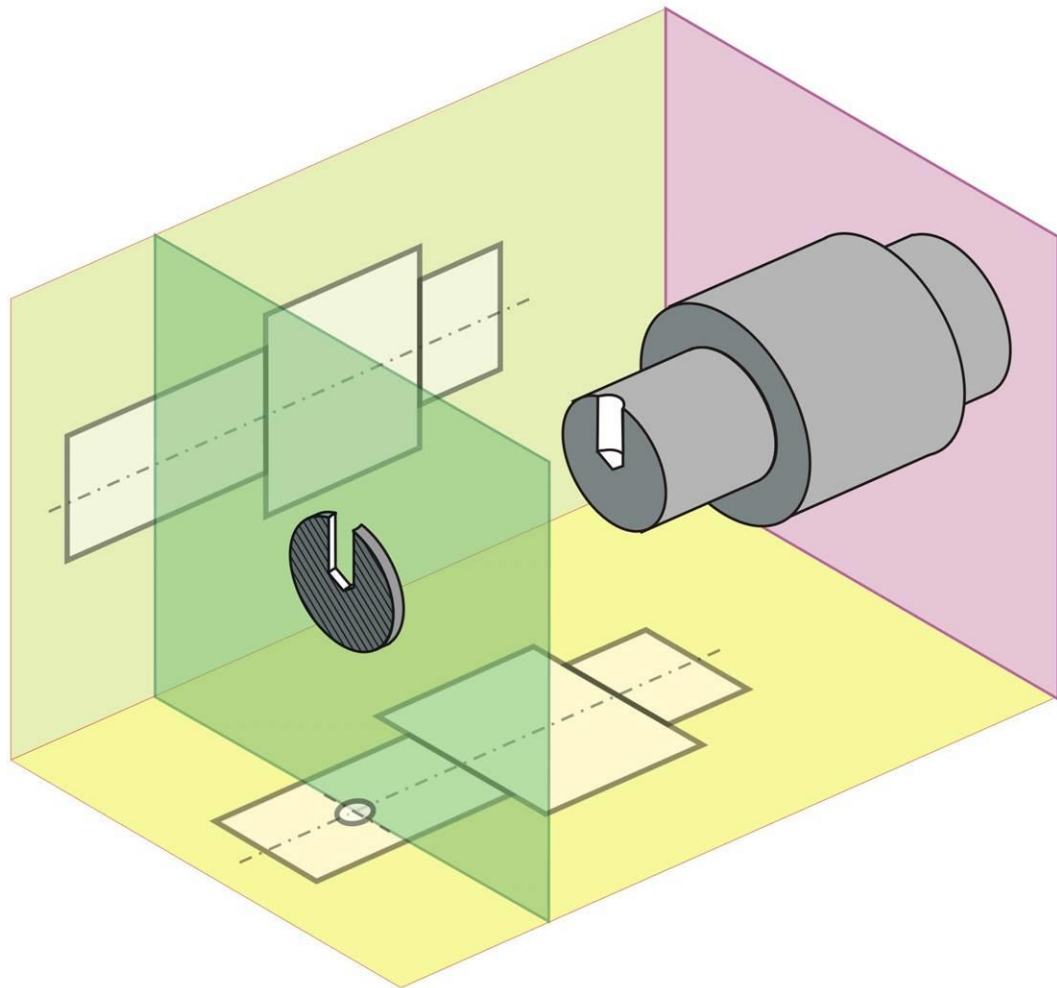


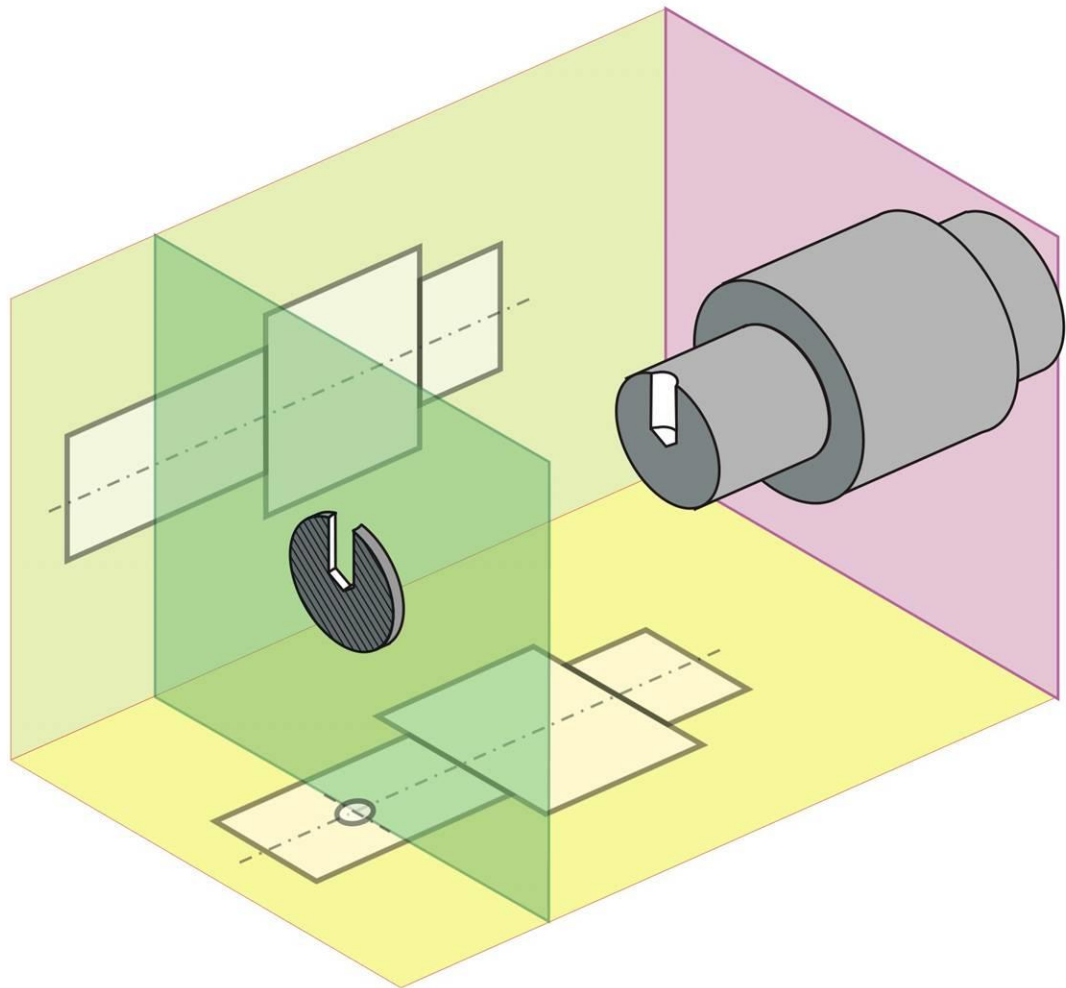


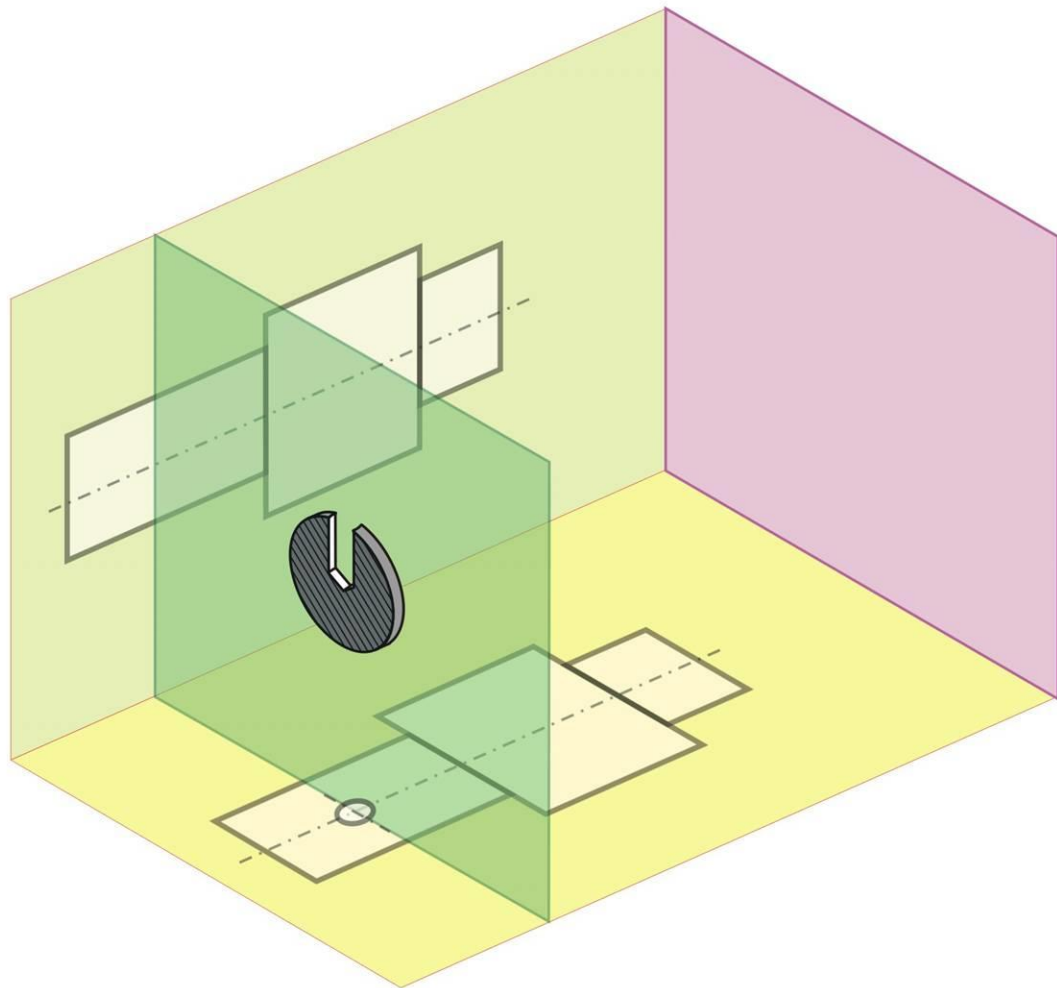




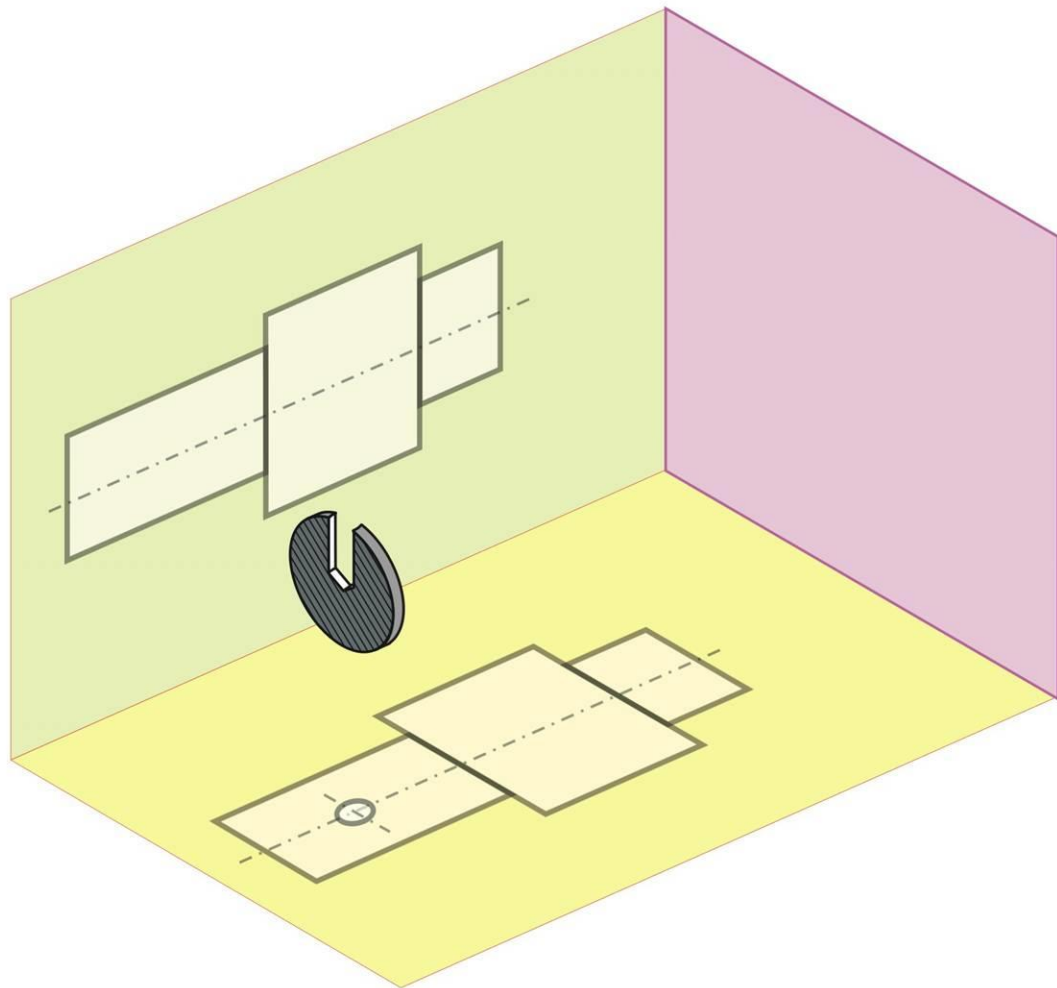


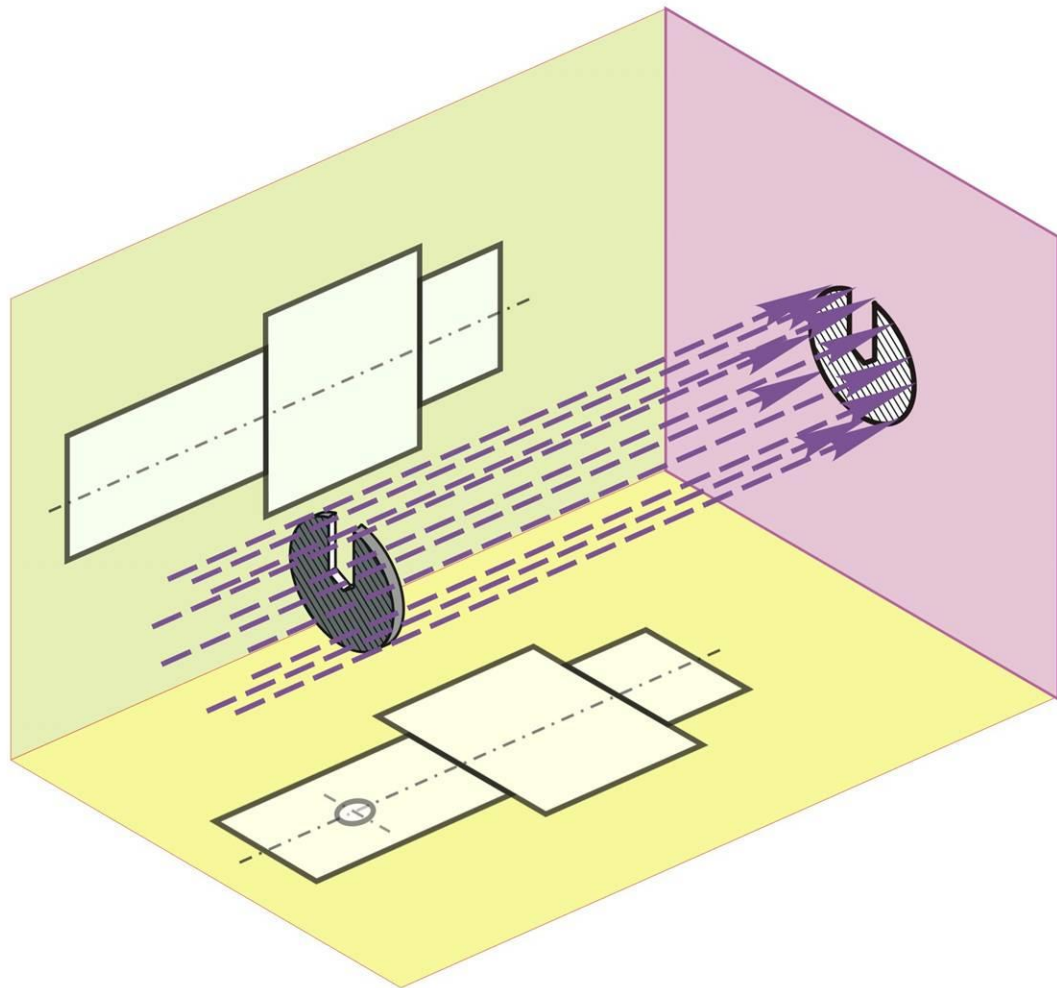


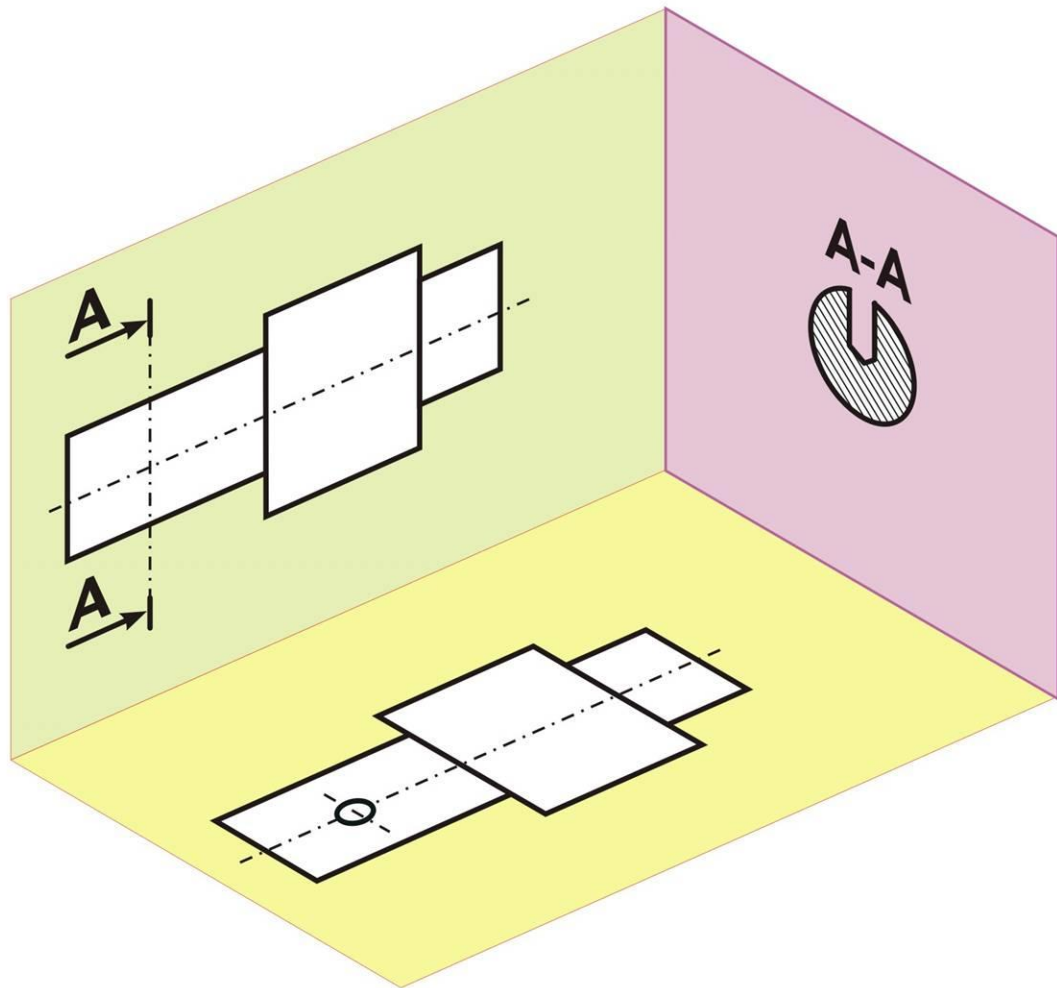


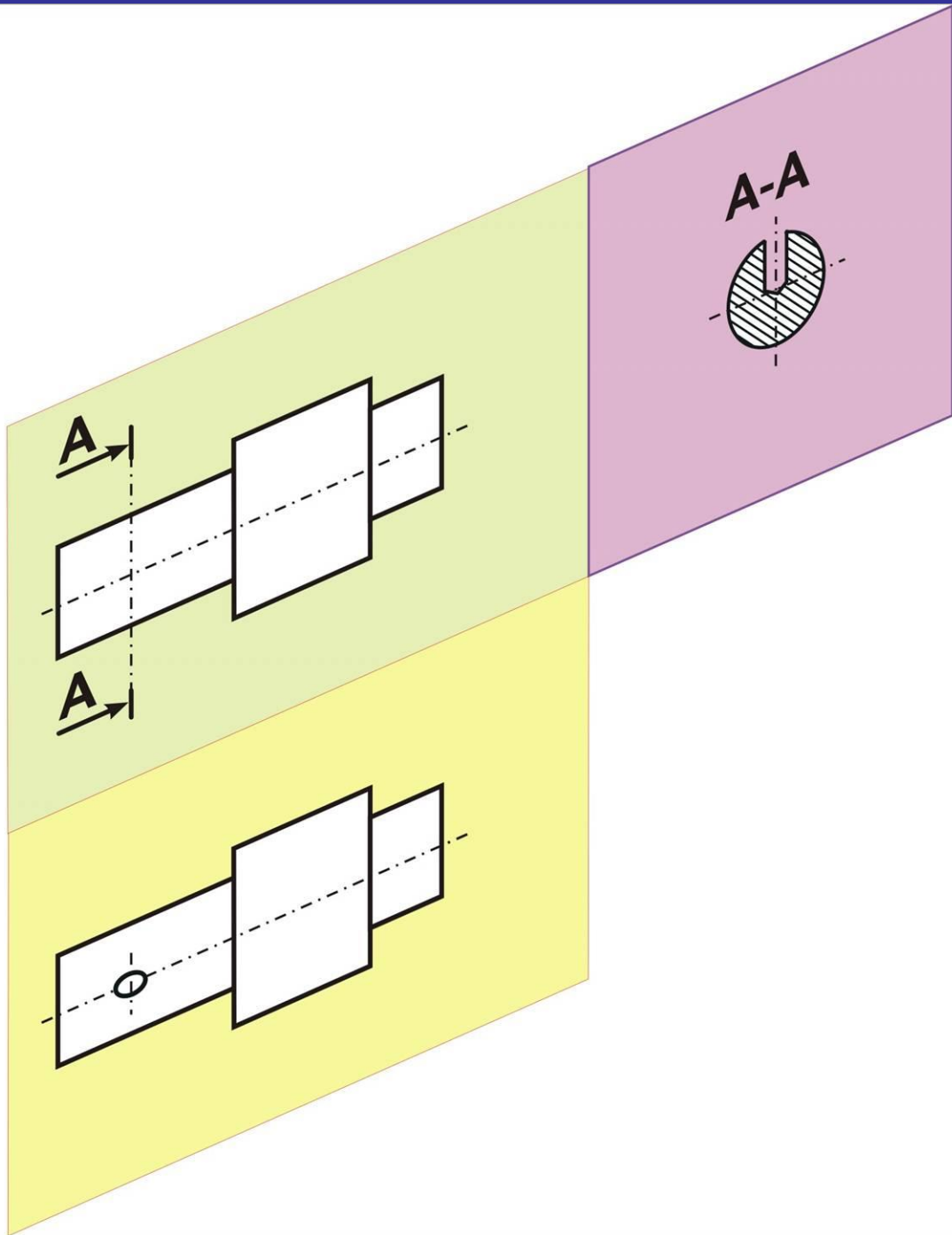


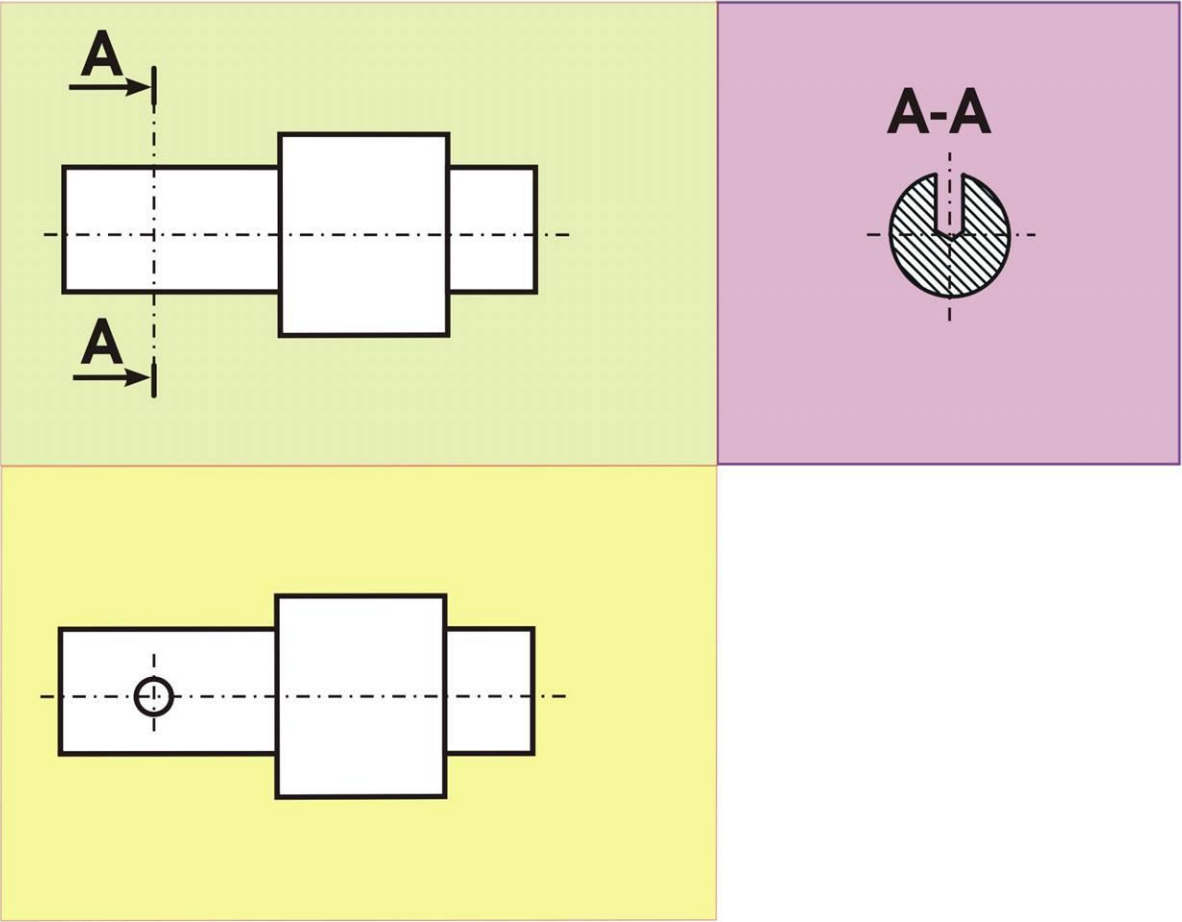


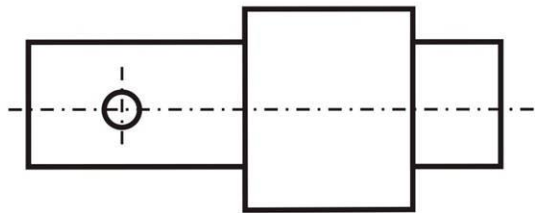
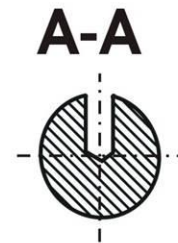
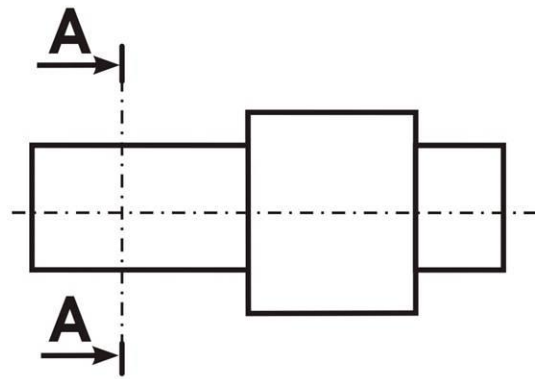






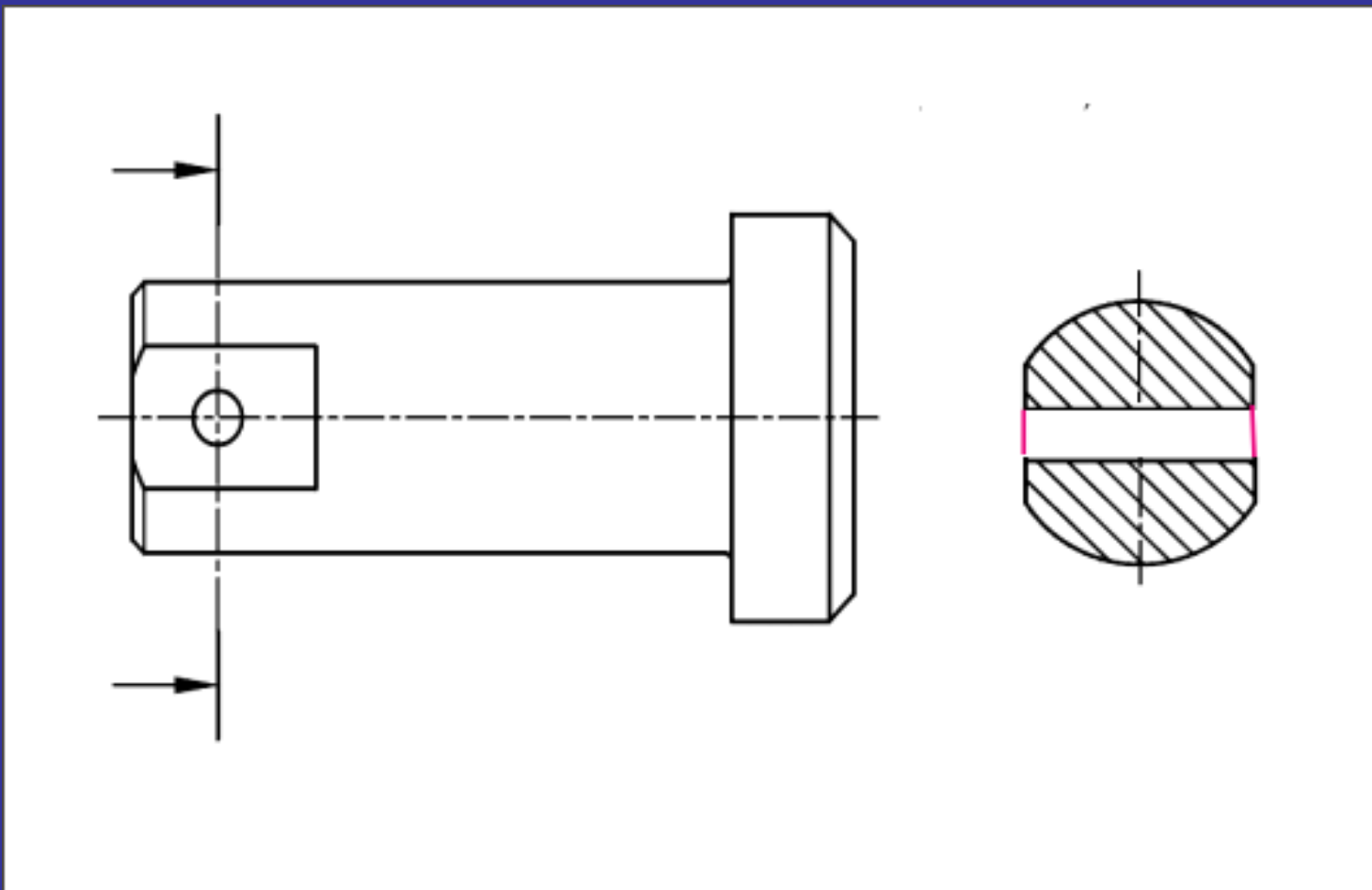






# „Széteső” szelvények ábrázolása

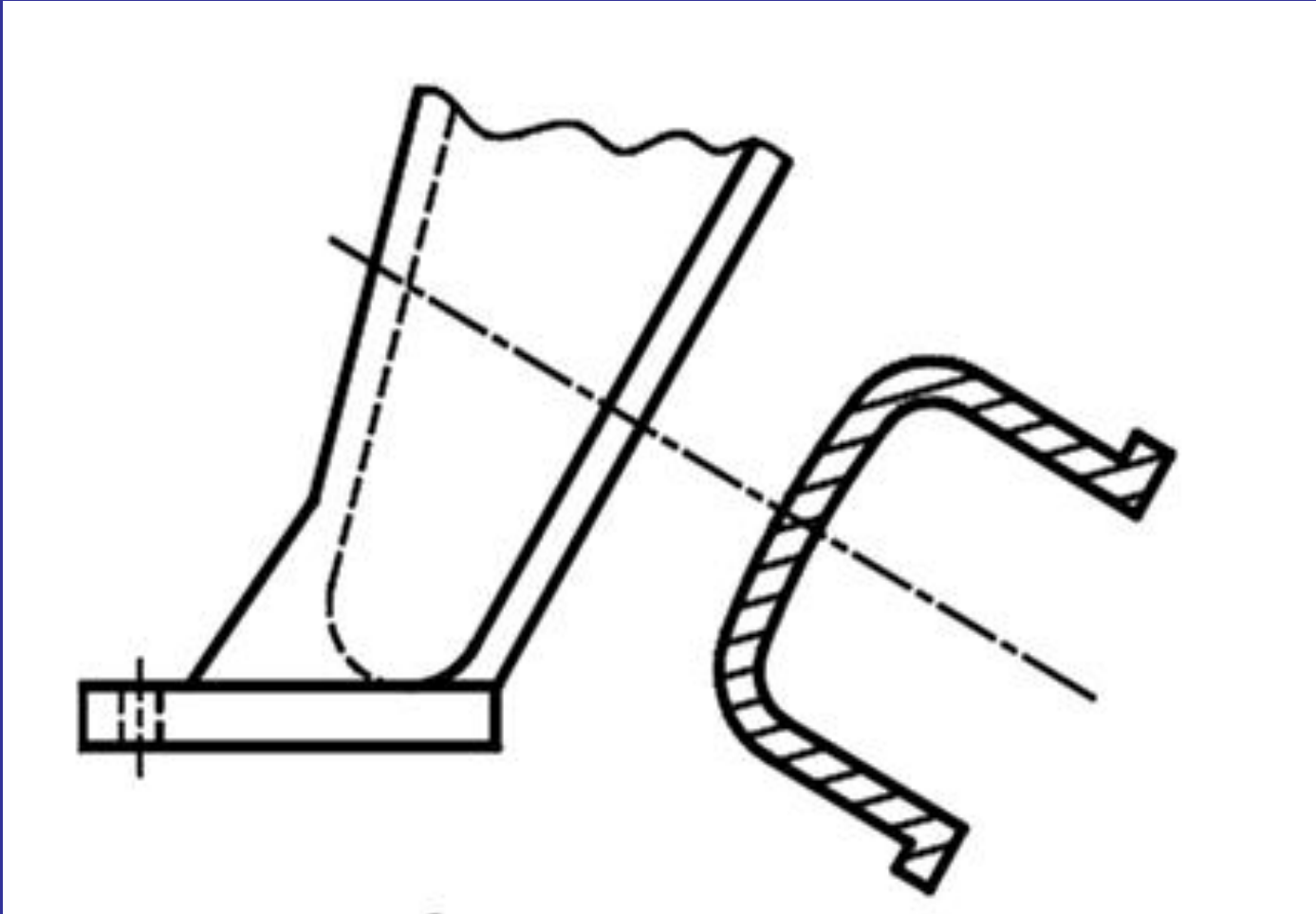
Ábrázolási előírás: A „széteső” szelvényrészeket össze kell kötni



# A SZELVÉNYEK ELHELYEZÉSI MÓDJAI

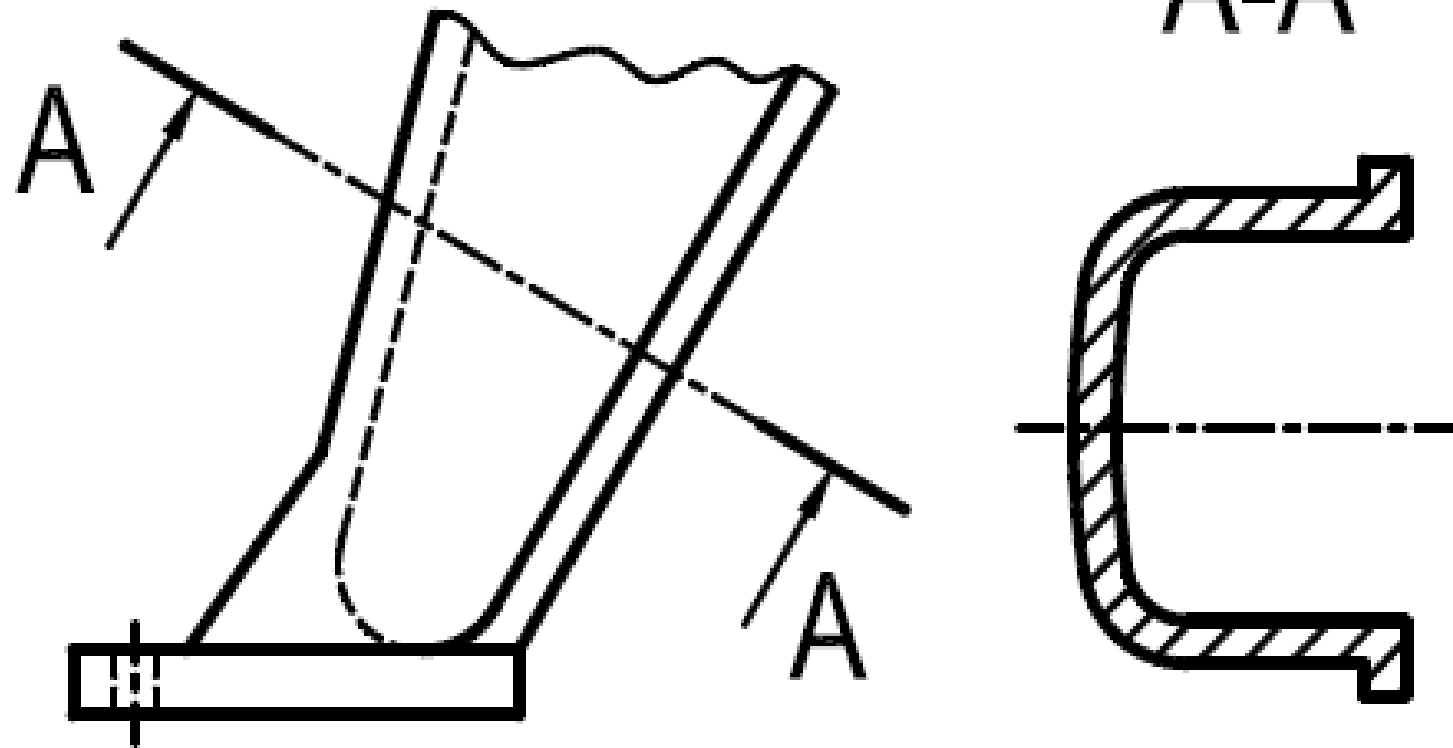


# Szelvény a nézet közelében, pontvonalal azonosítva



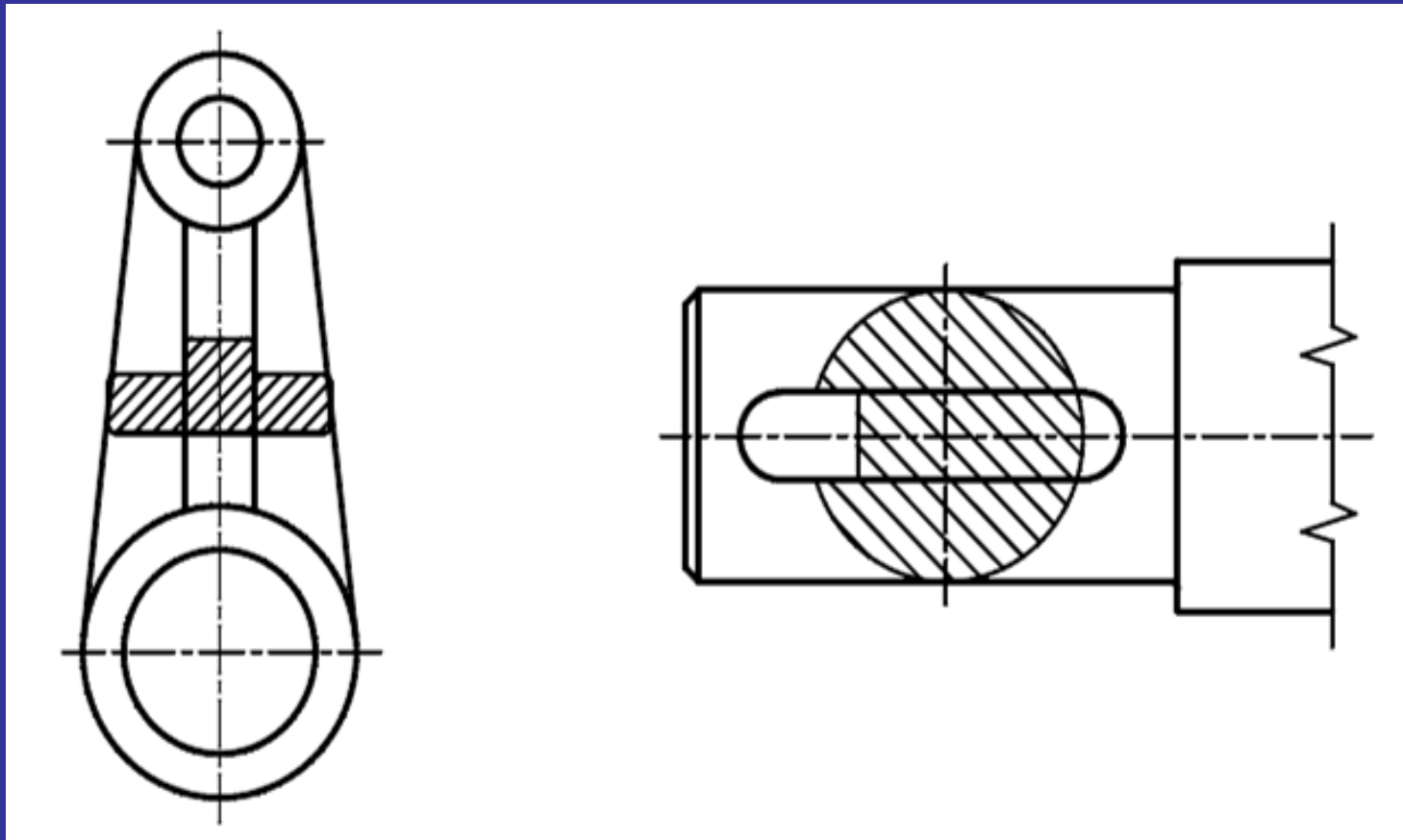
# Szelvény betűkkel azonosítva

(lehet elforgatva is)



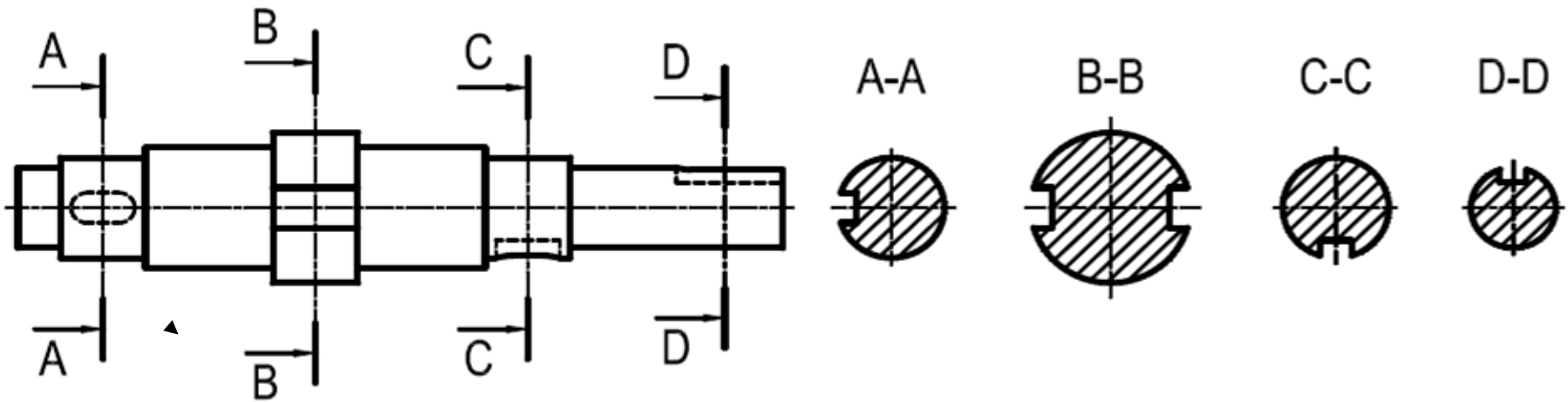
# Beforgatott szelvény

Vékony folytonos vonallal kontúrozva, vonalkázva  
(Azonosításra nincs szükség)



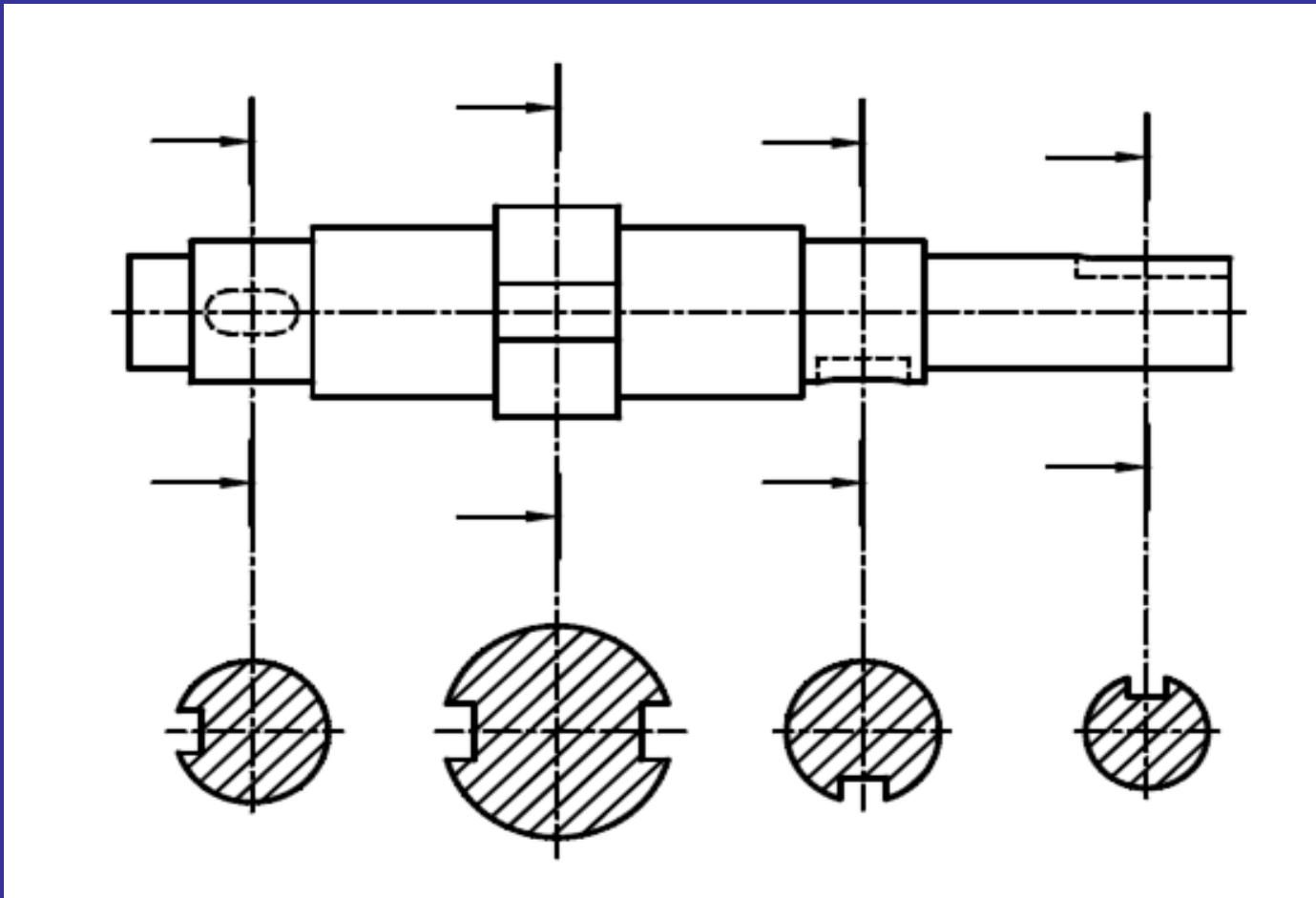
# Szelvénytípusok I.

Azonosítani kell, ha a szelvény helyzete nem egyértelmű



# Szelvénytípusok II.

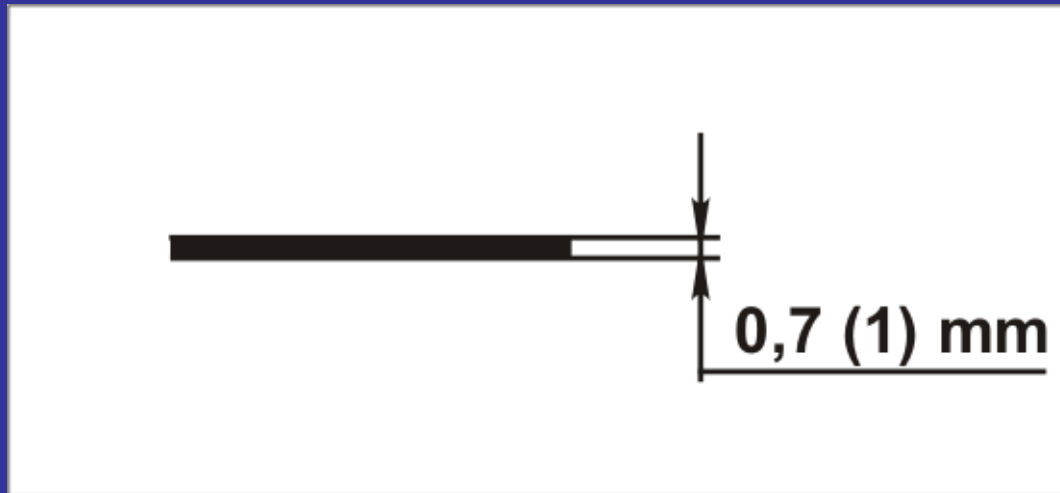
Azonosítani kell, ha a szelvény helyzete nem egyértelmű



**A MŰSZAKI RAJZOKON  
ALKALMAZANDÓ  
VONALVASTAGSÁGOK**

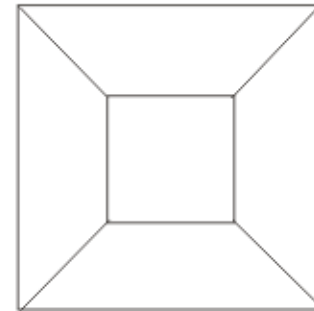
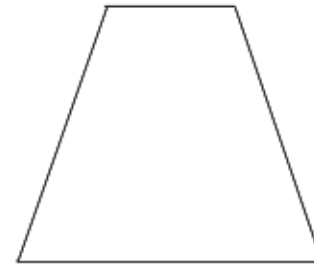
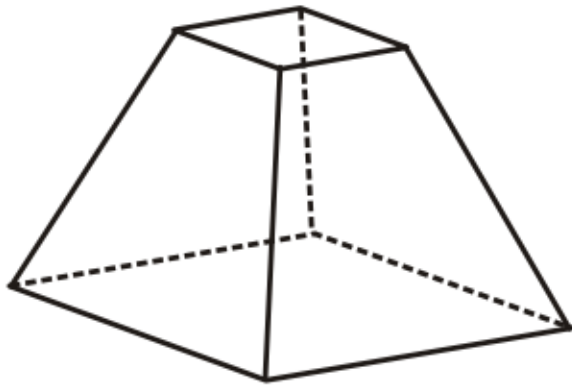
**Vastag vonalak**

# A vonal rajzolata

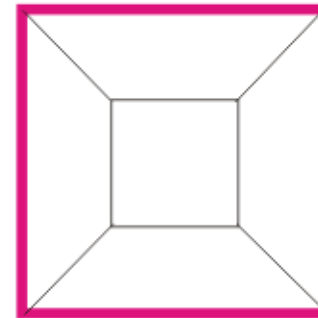
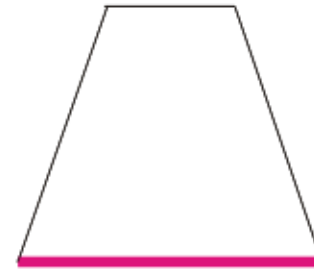
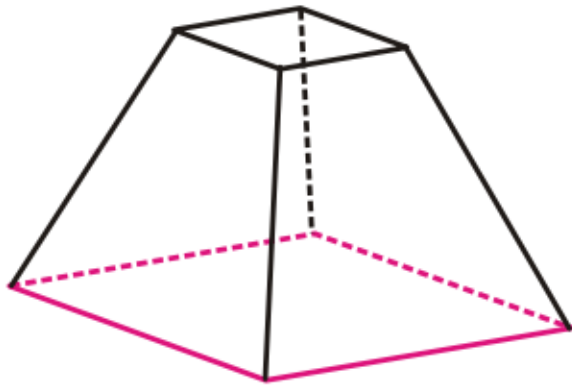




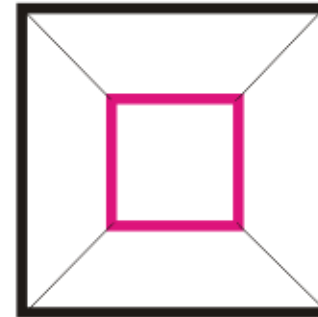
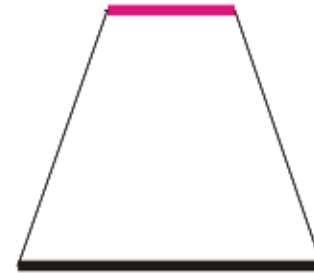
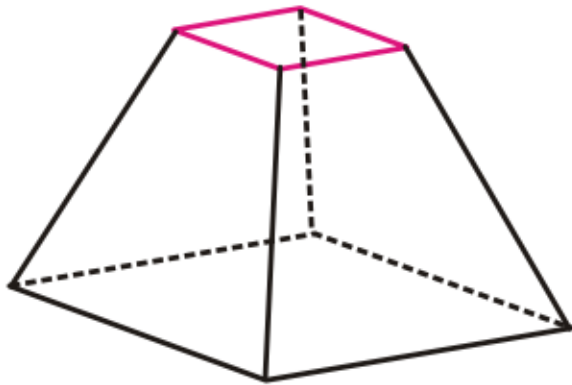
# Kontúrvonalak



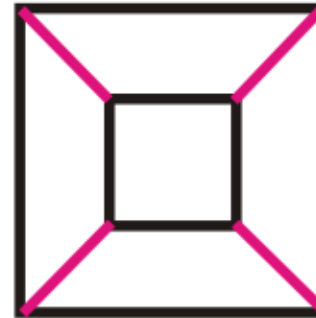
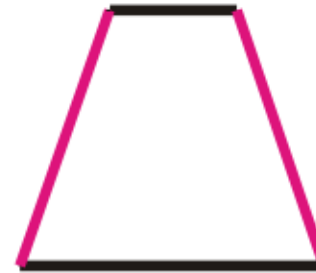
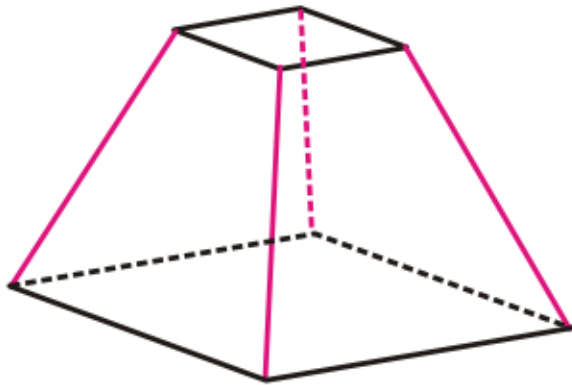
# Kontúrvonalak



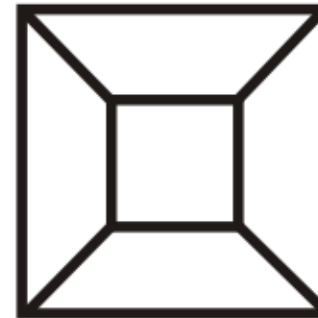
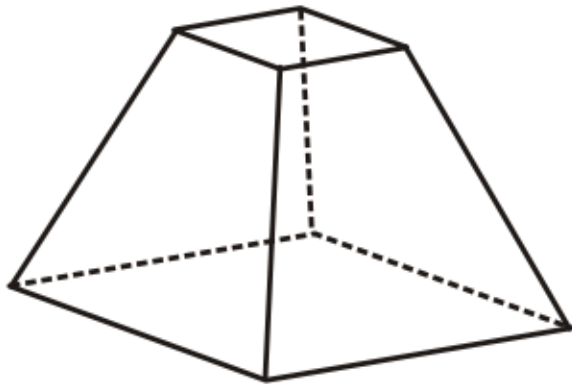
# Felületek határvonalai



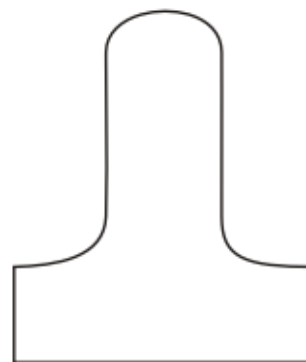
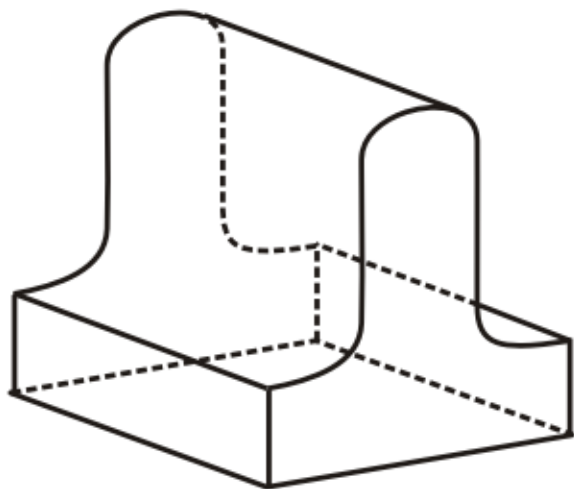
# Az adott nézeten látható élek



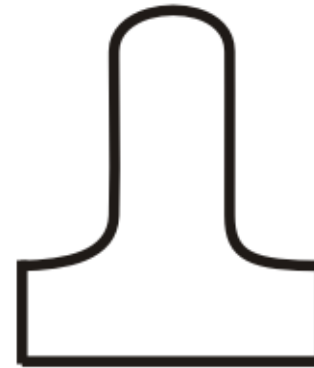
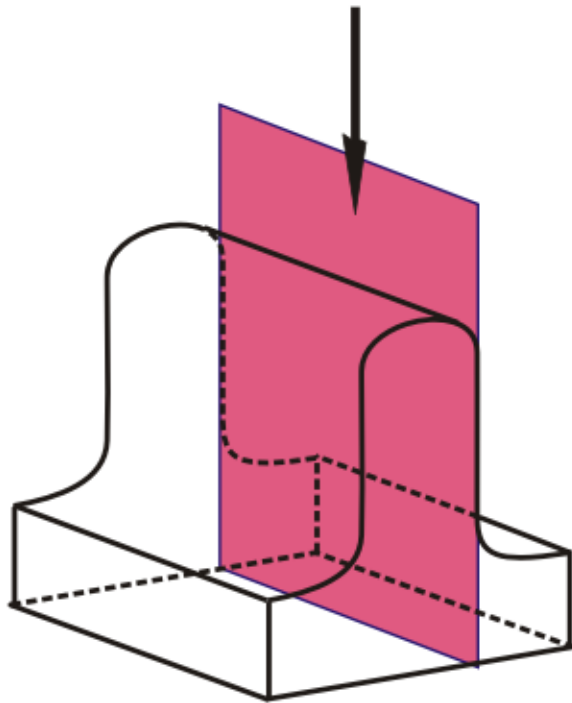
# Az adott nézeten látható élek



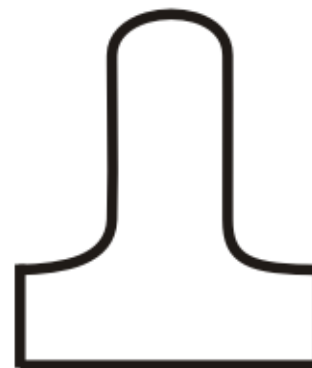
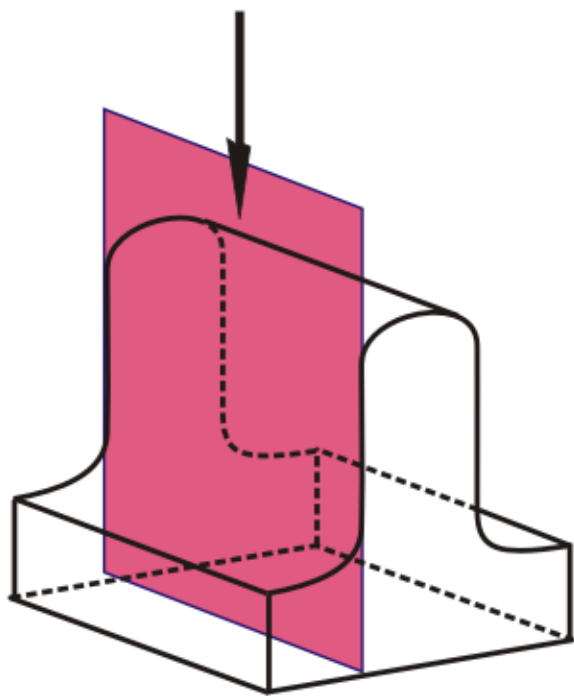
# A nézési iránnyal párhuzamos felületek éle



# A nézési iránnyal párhuzamos felületek éle

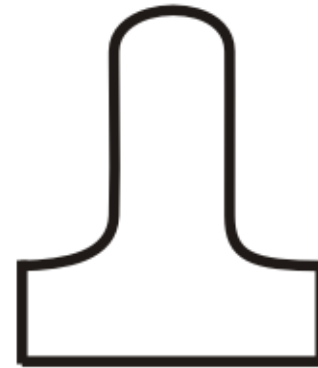
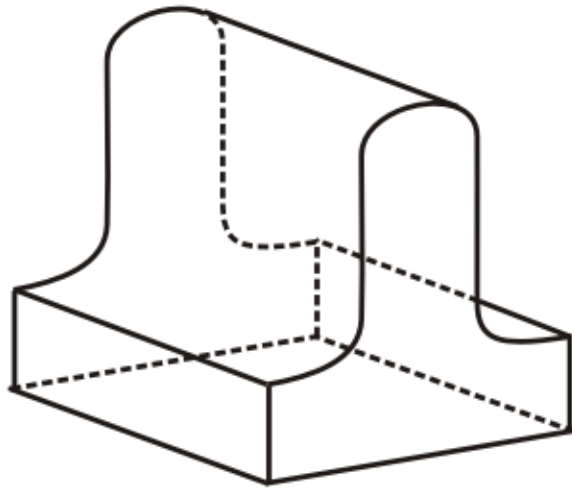


# A nézési iránnyal párhuzamos felületek éle

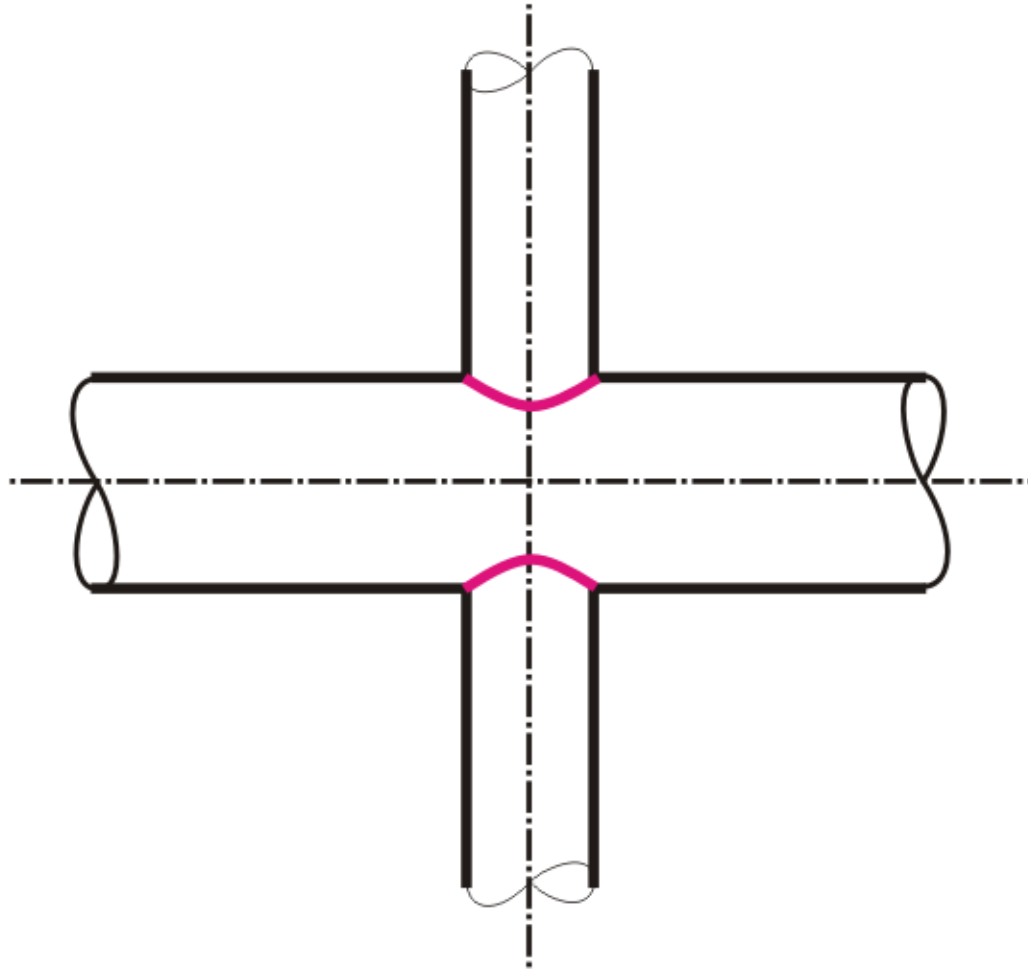




# A nézési iránnyal párhuzamos felületek éle

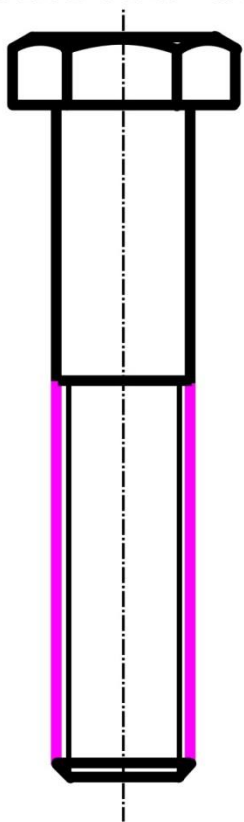


# Éles vonalú (nem legömbölyített) áthatások

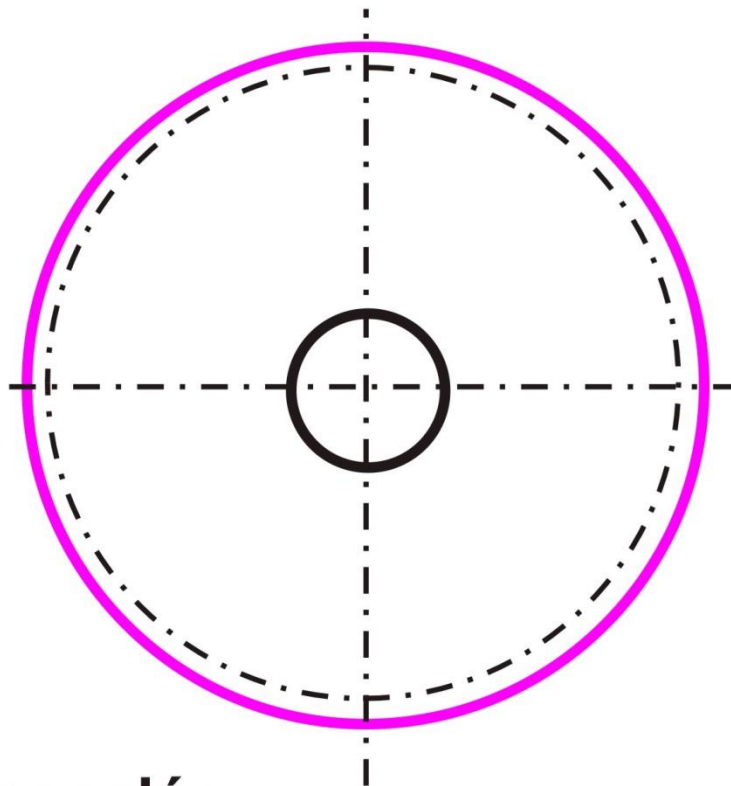


# Ismétlődő elemek külső burkolóvonalala

Menetes orsó



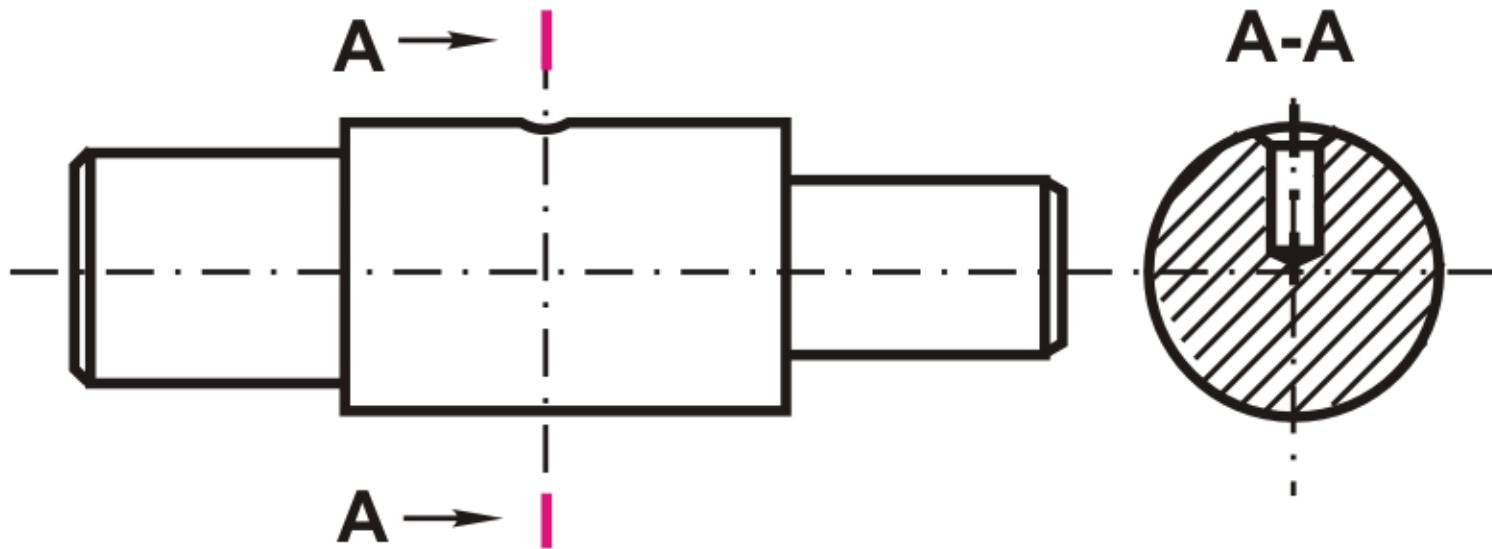
Fogaskerék



Fogasléc

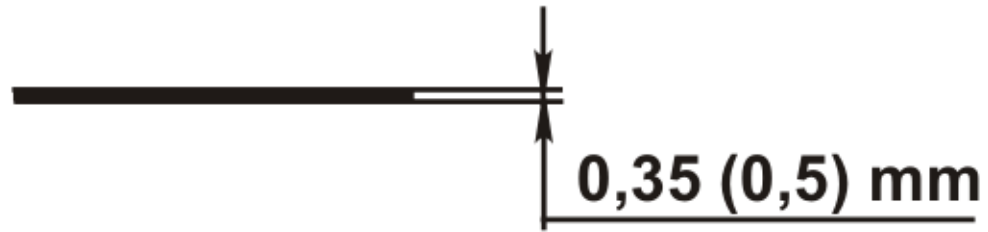


# Metszetek nyomvonalának végei

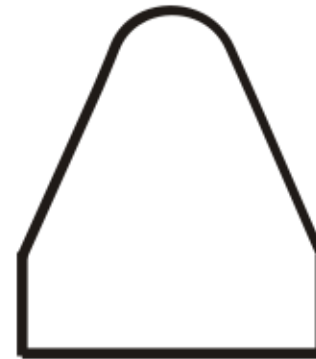
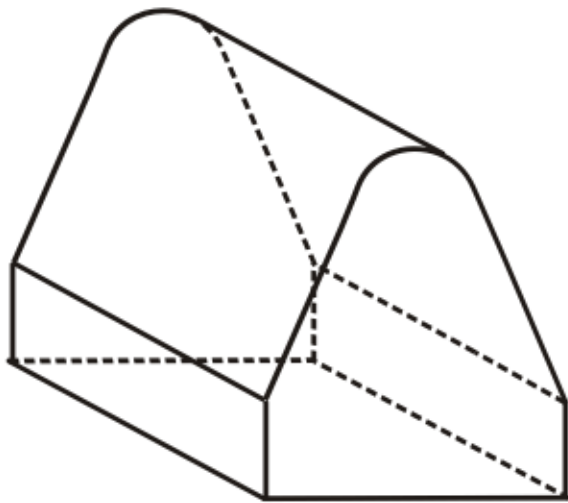


# Vékony vonalak

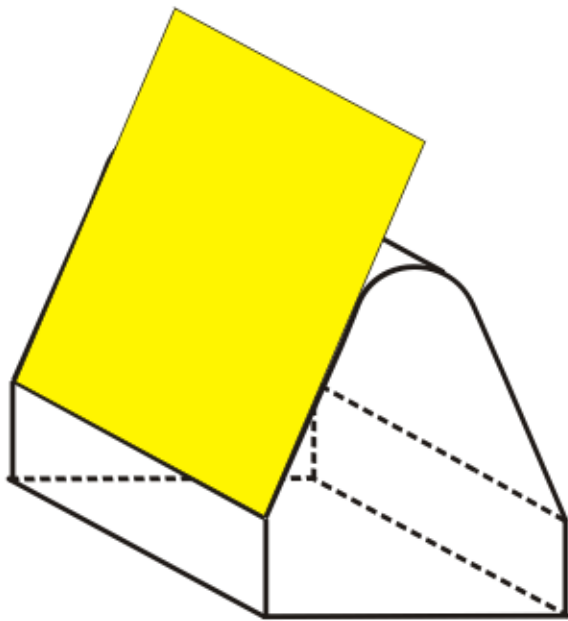
# A vonal rajzolata



# Tagoló vonalak

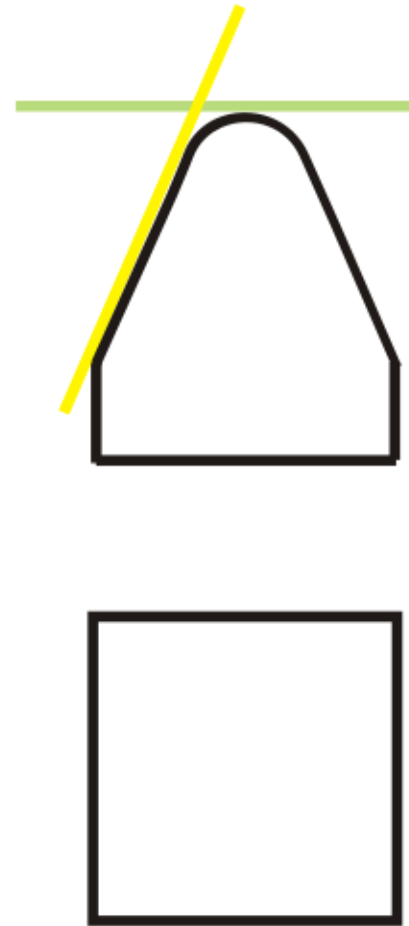
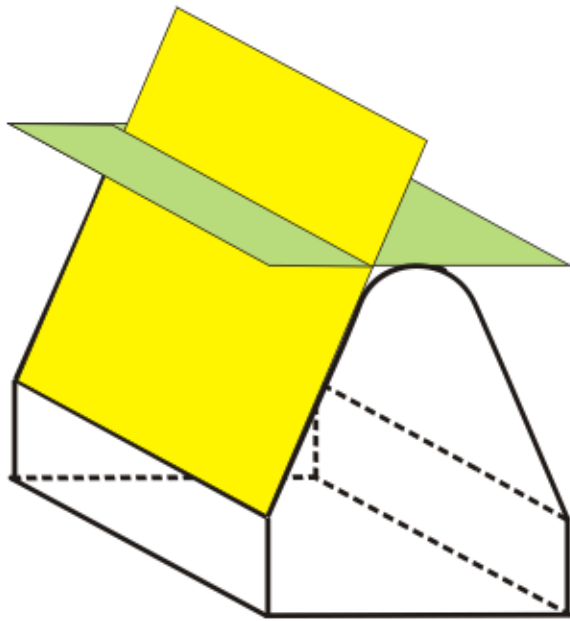


# Tagoló vonalak

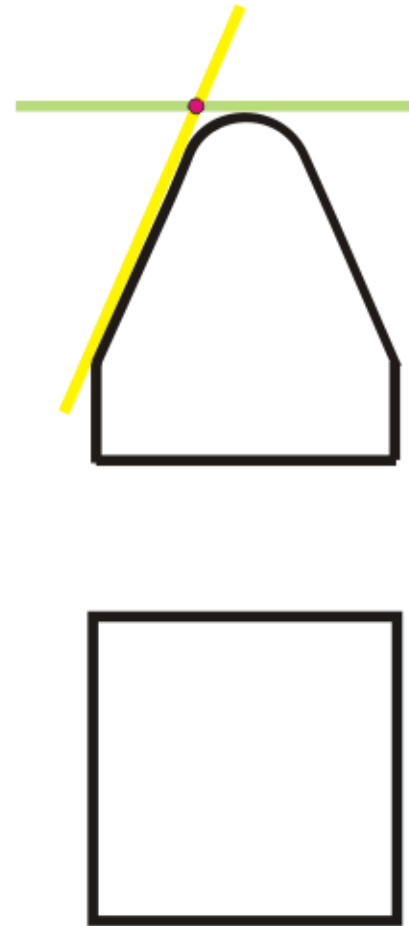
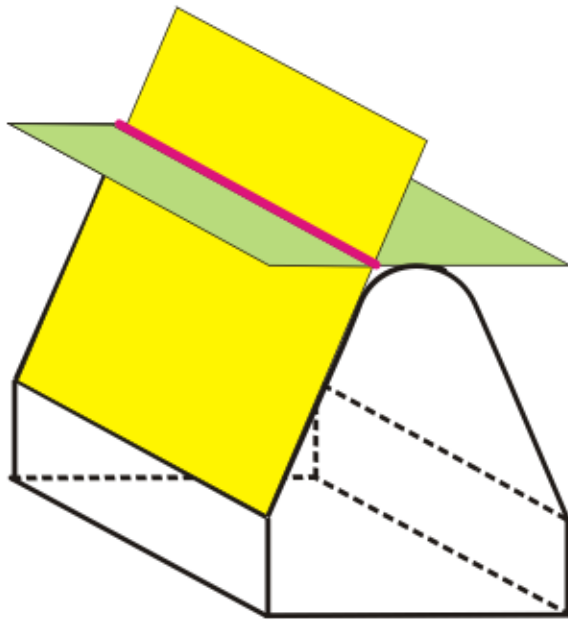




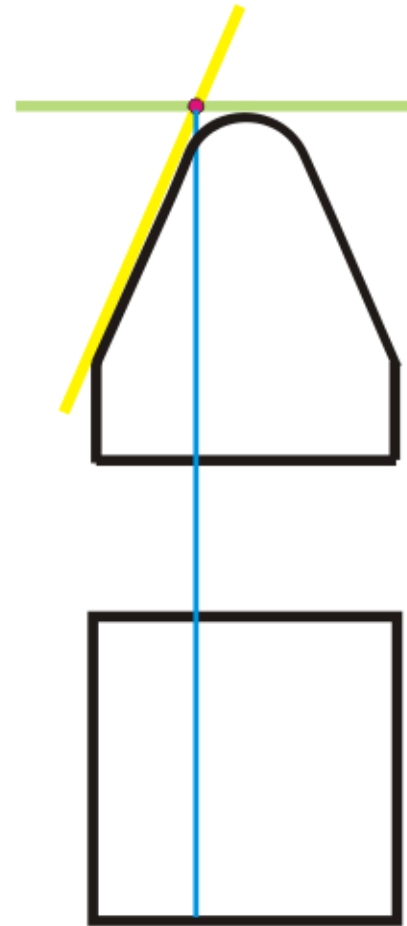
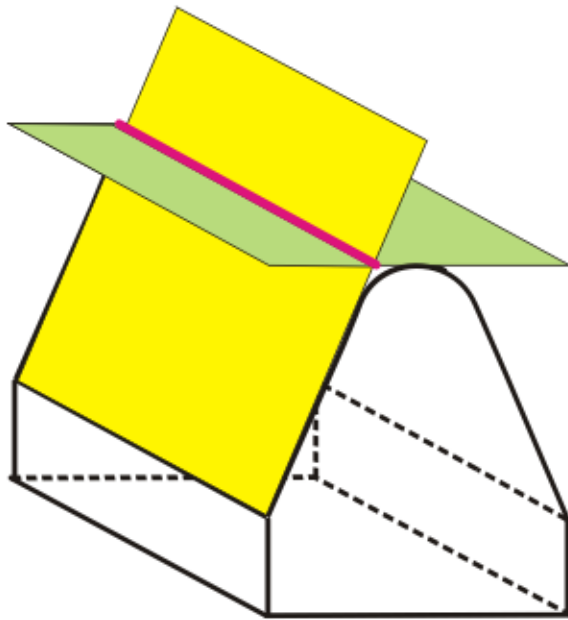
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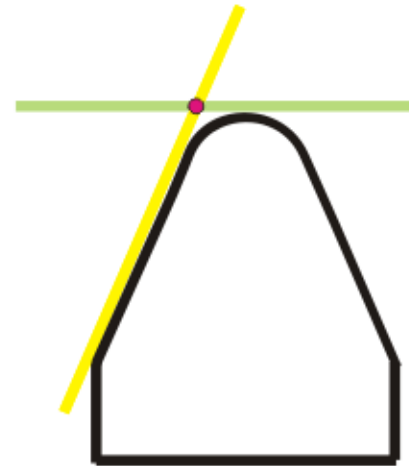
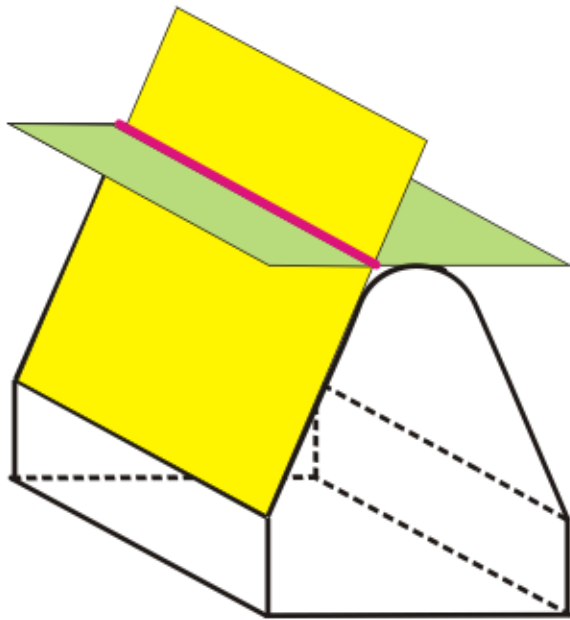
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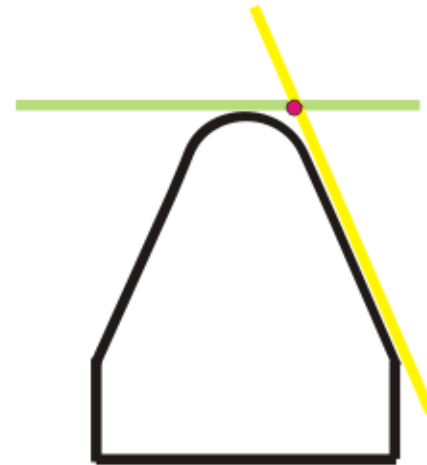
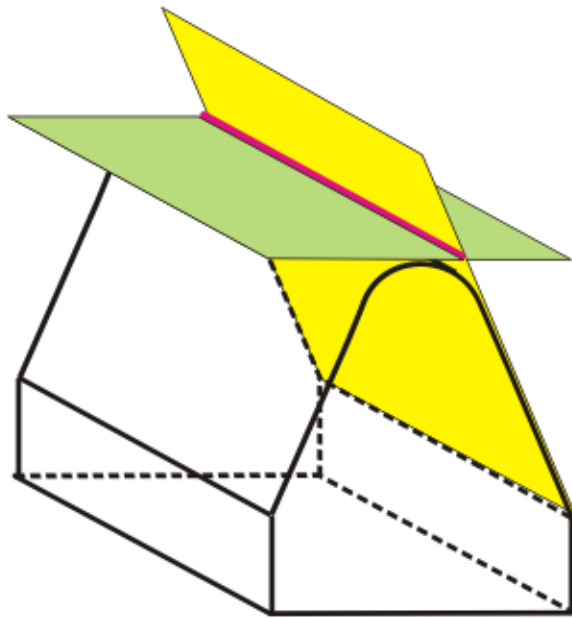
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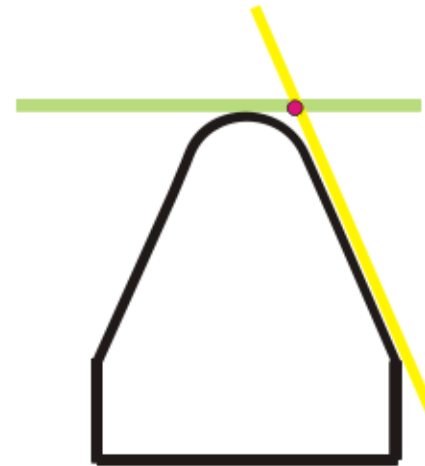
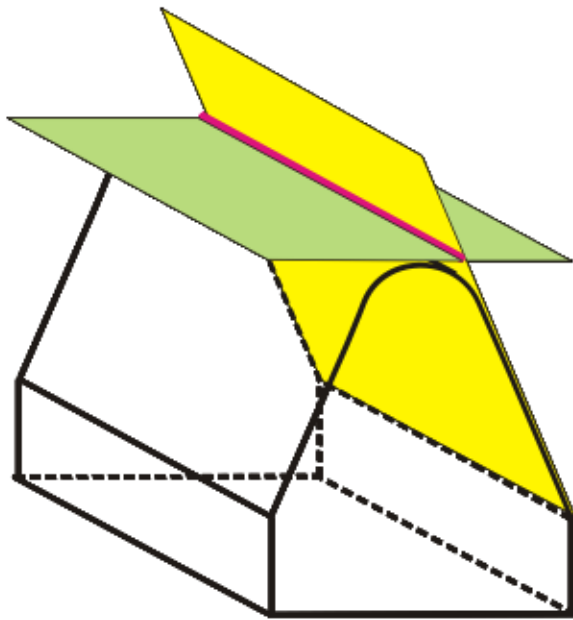
# Tagoló vonalak



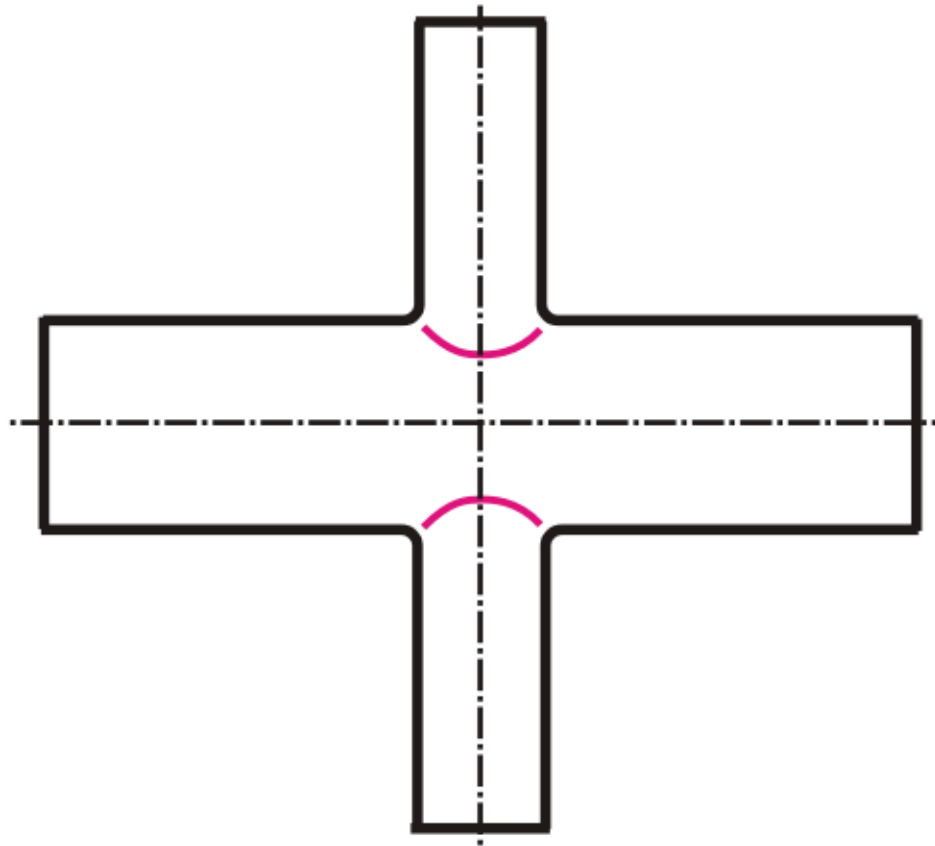
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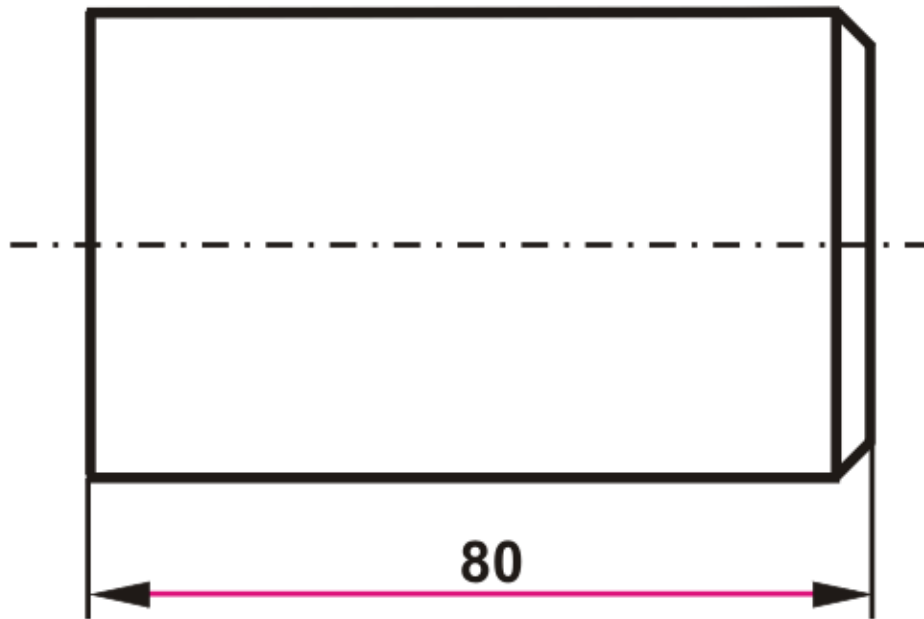
# Tagoló vonalak



# Tagoló vonalak

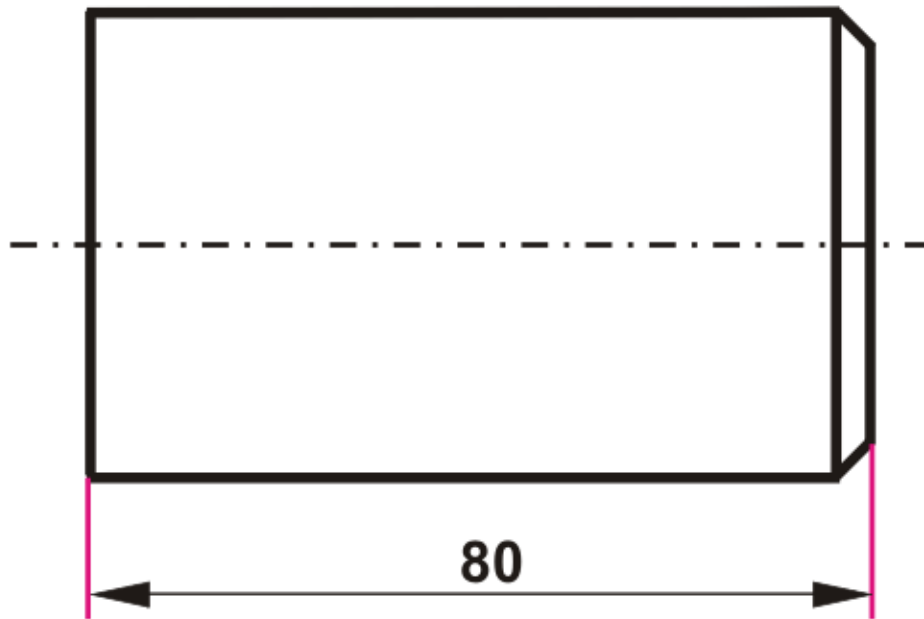


# Méretvonalak

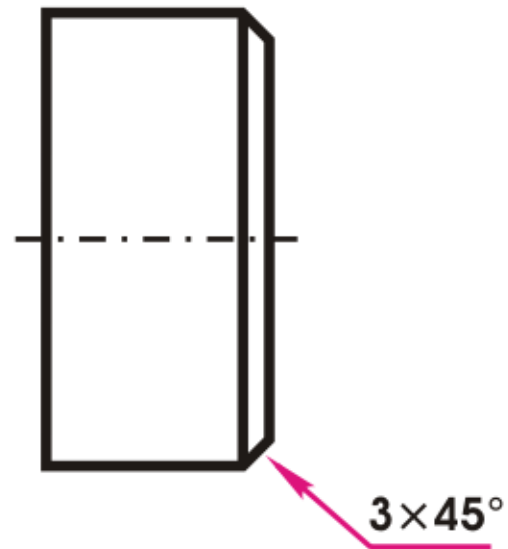
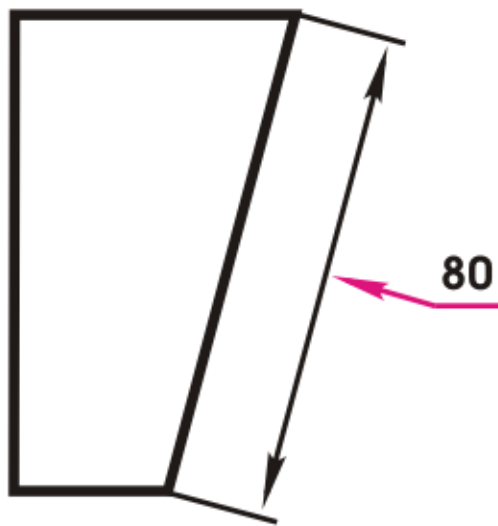




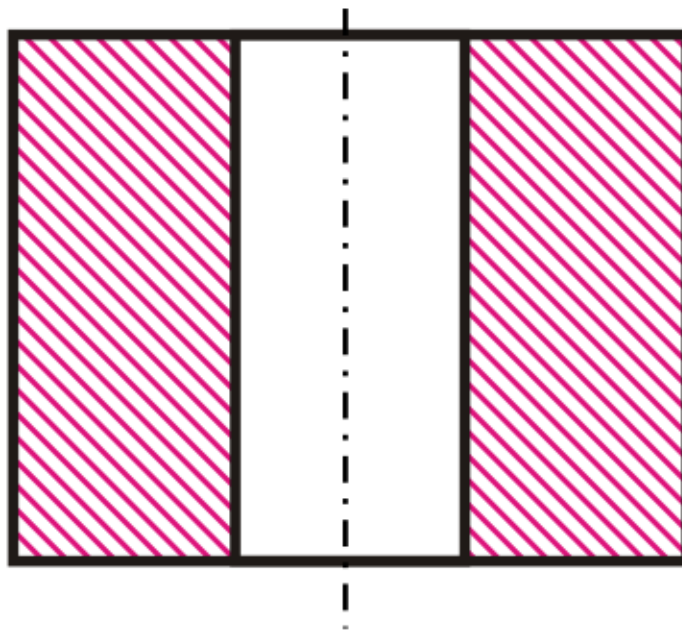
# Méret-segédvonalak



# Mutatóvonalak

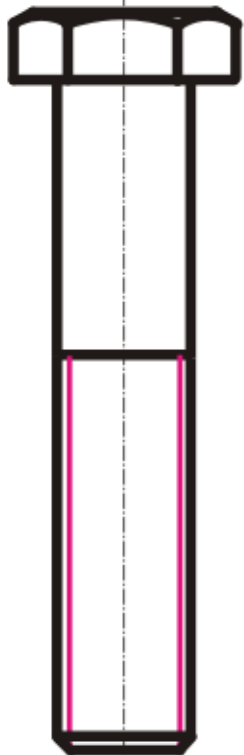


# Vonalkázás (sraffozás)

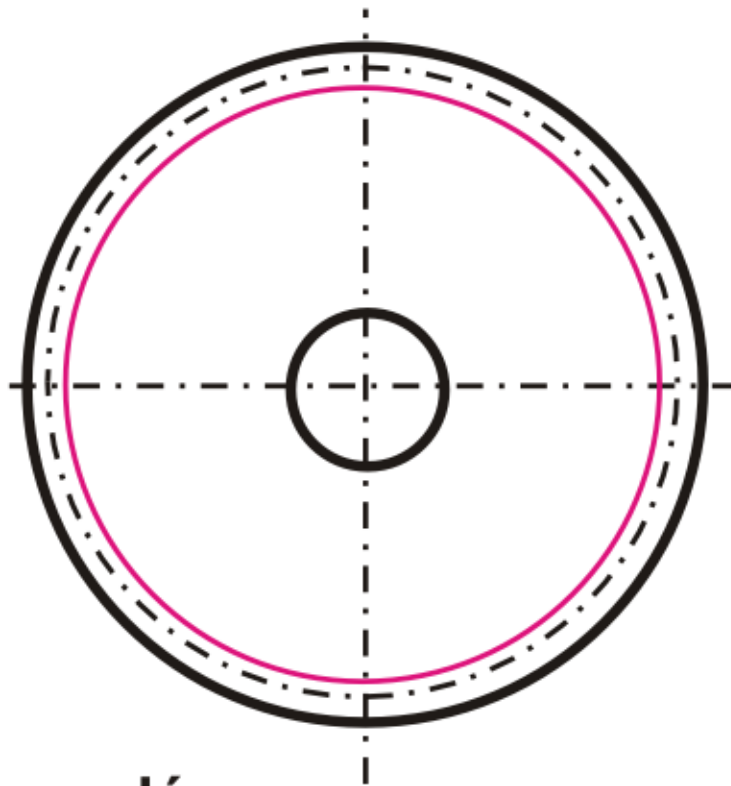


# Ismétlődő elemek belső burkolóvonalala

Menetes orsó



Fogaskerék

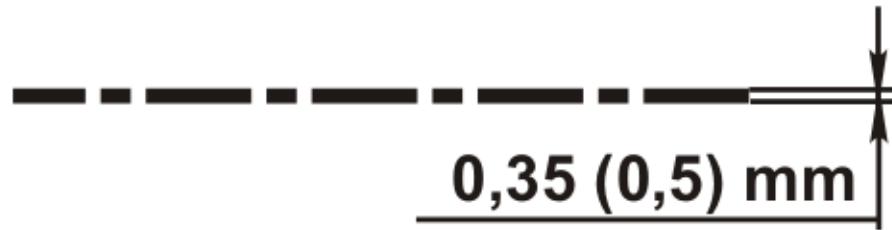


Fogasléc

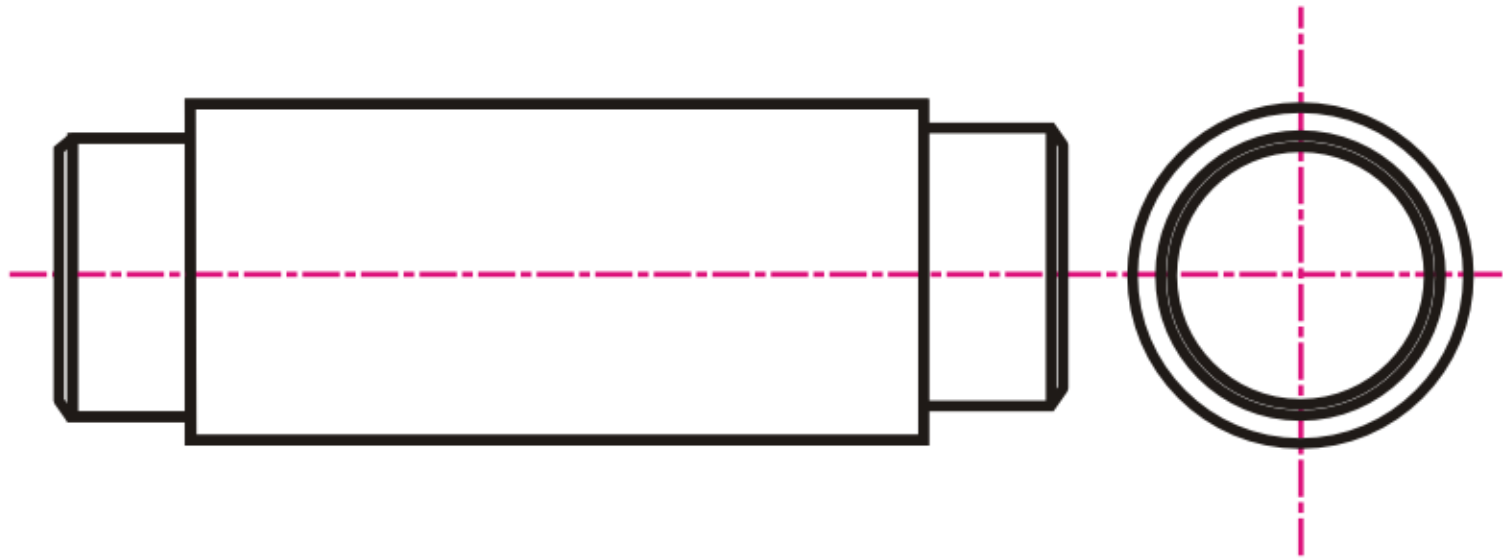


**Pont-vonalak**

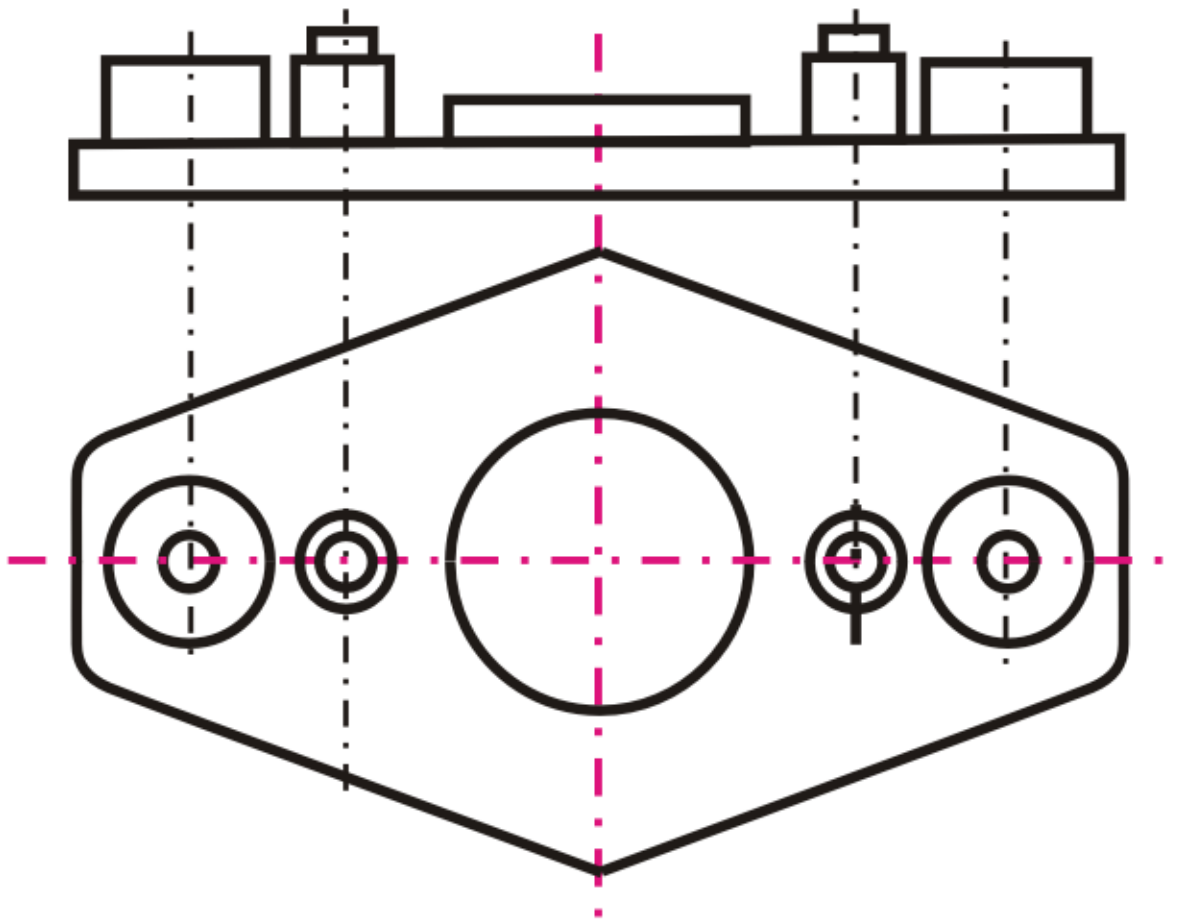
# A pont-vonalak rajzolata



# Forgástestek tengelye (középvonala)

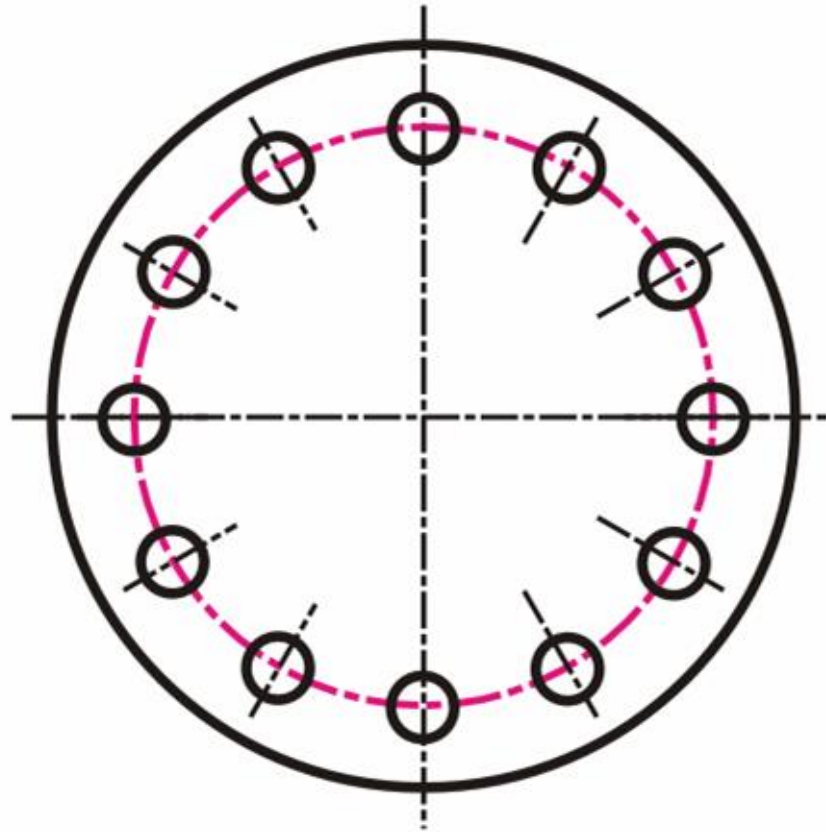


# Szimmetrikus alkatrészek középvonala

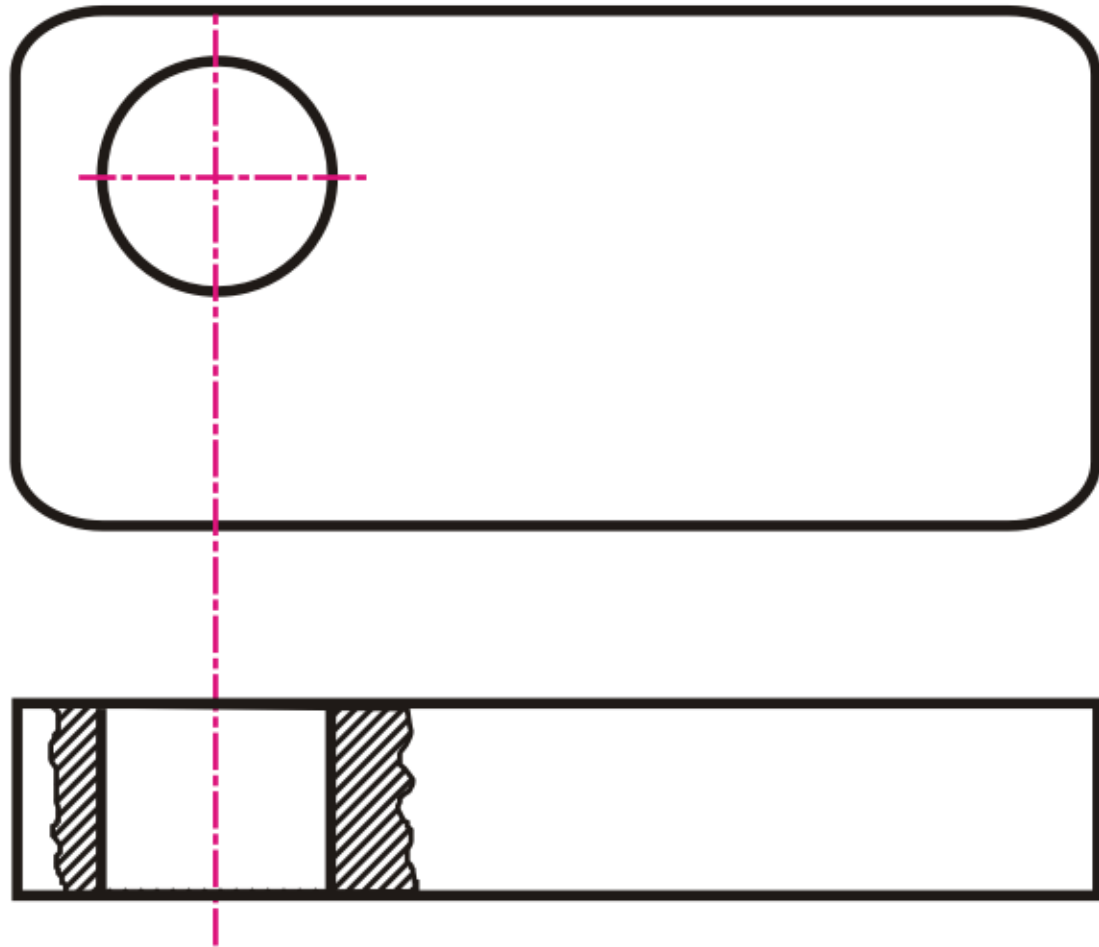




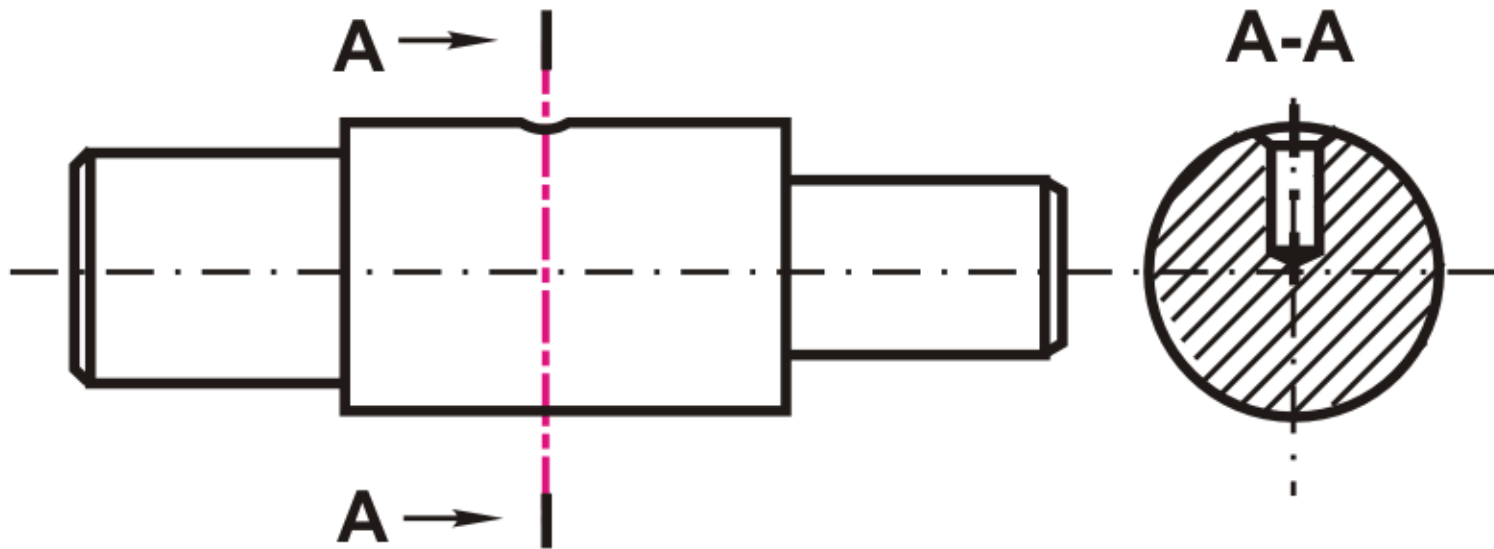
# Osztókörök középvonala



# Furatok középvonala és szimmetria-tengelyei

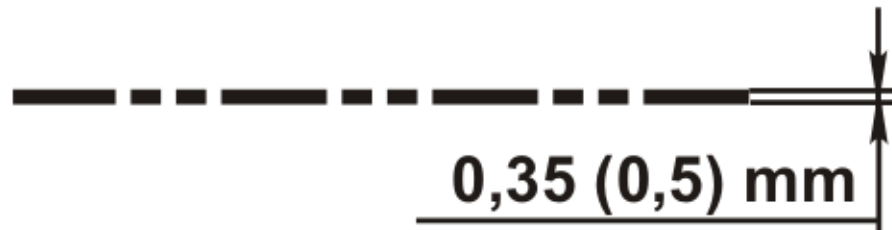


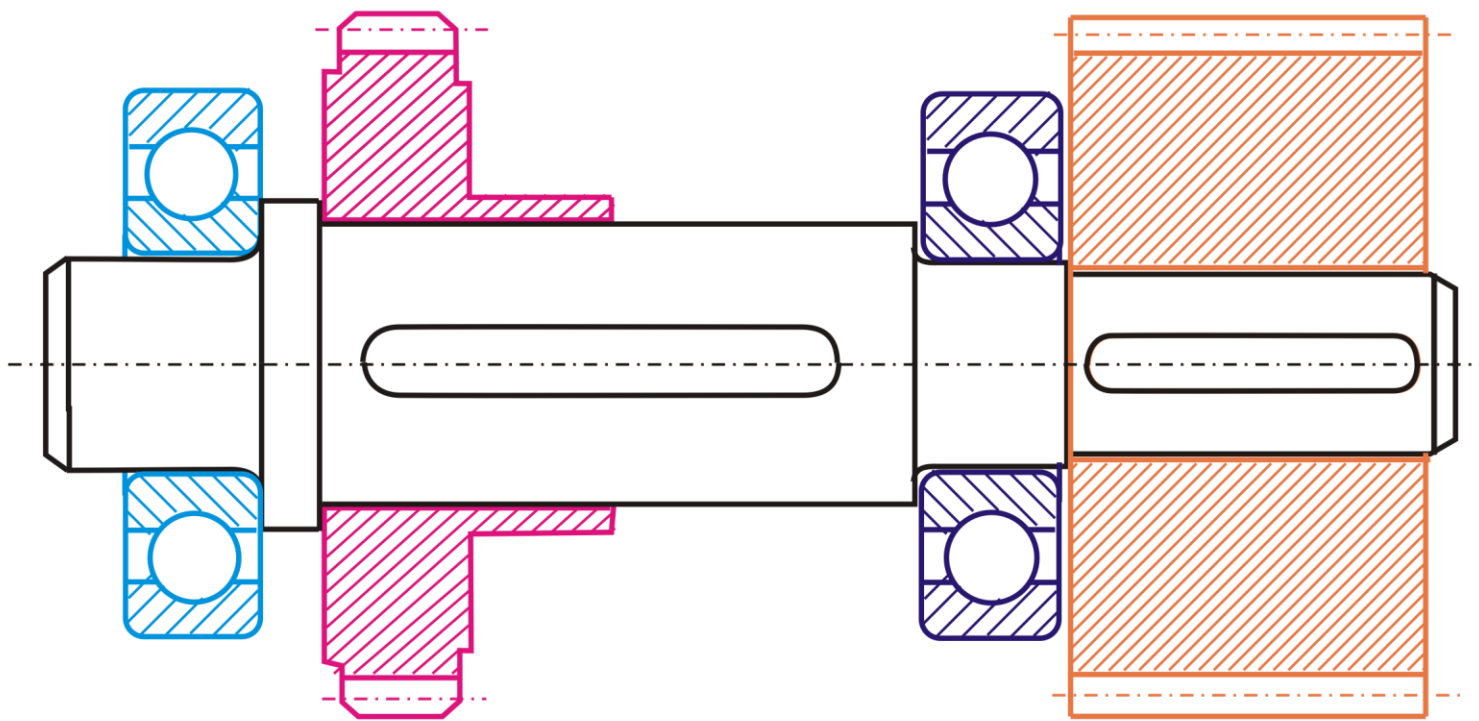
# Szelvények nyomvonalára



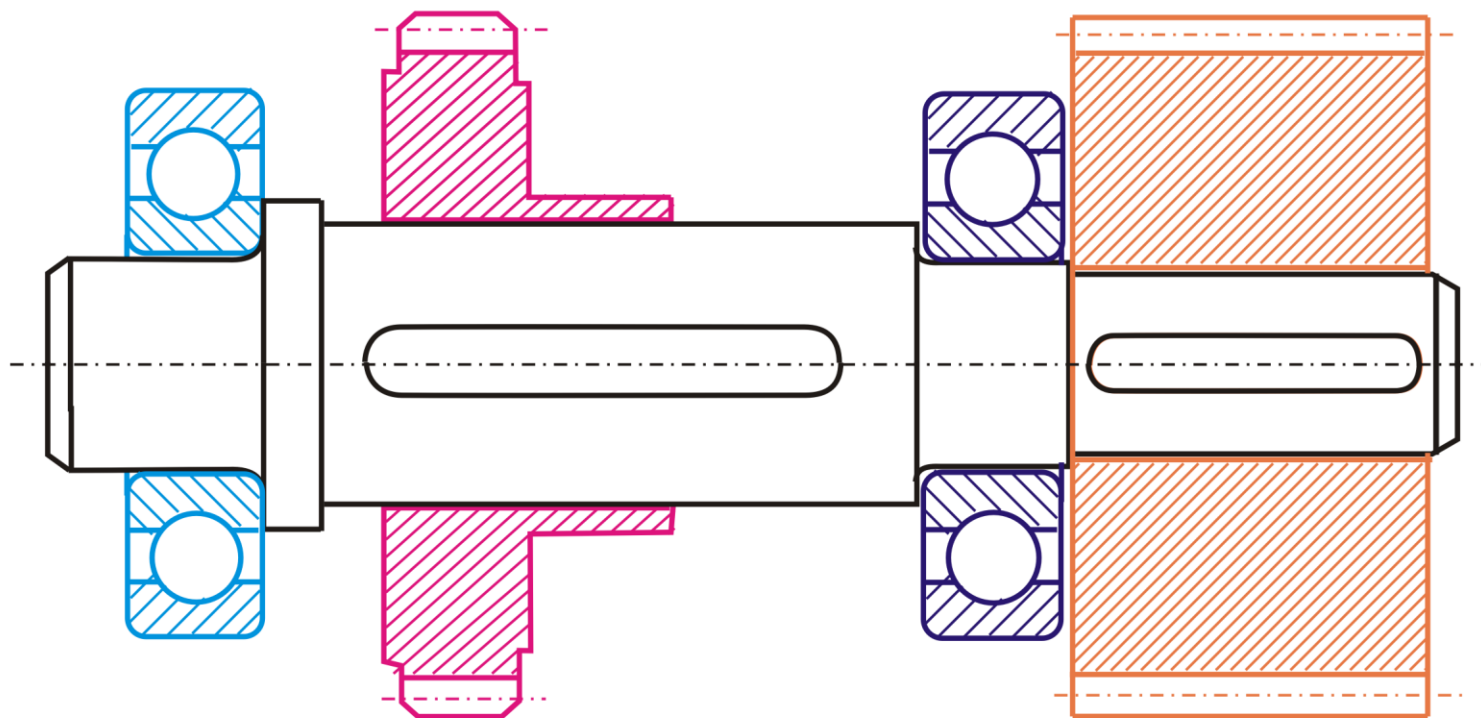
# Kétpont-vonalak

# A két-pont-vonalak rajzolata

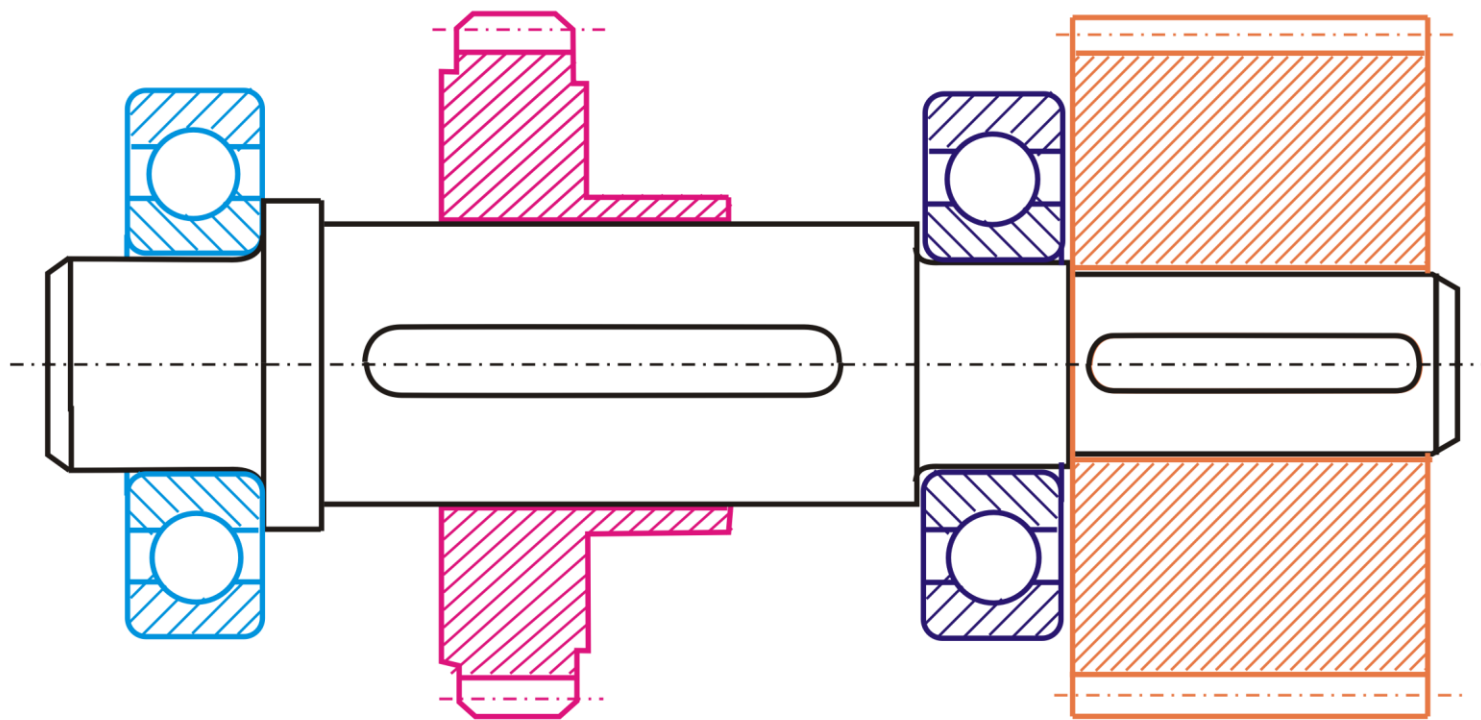




# Mozgó alkatrészek szélső helyzetei

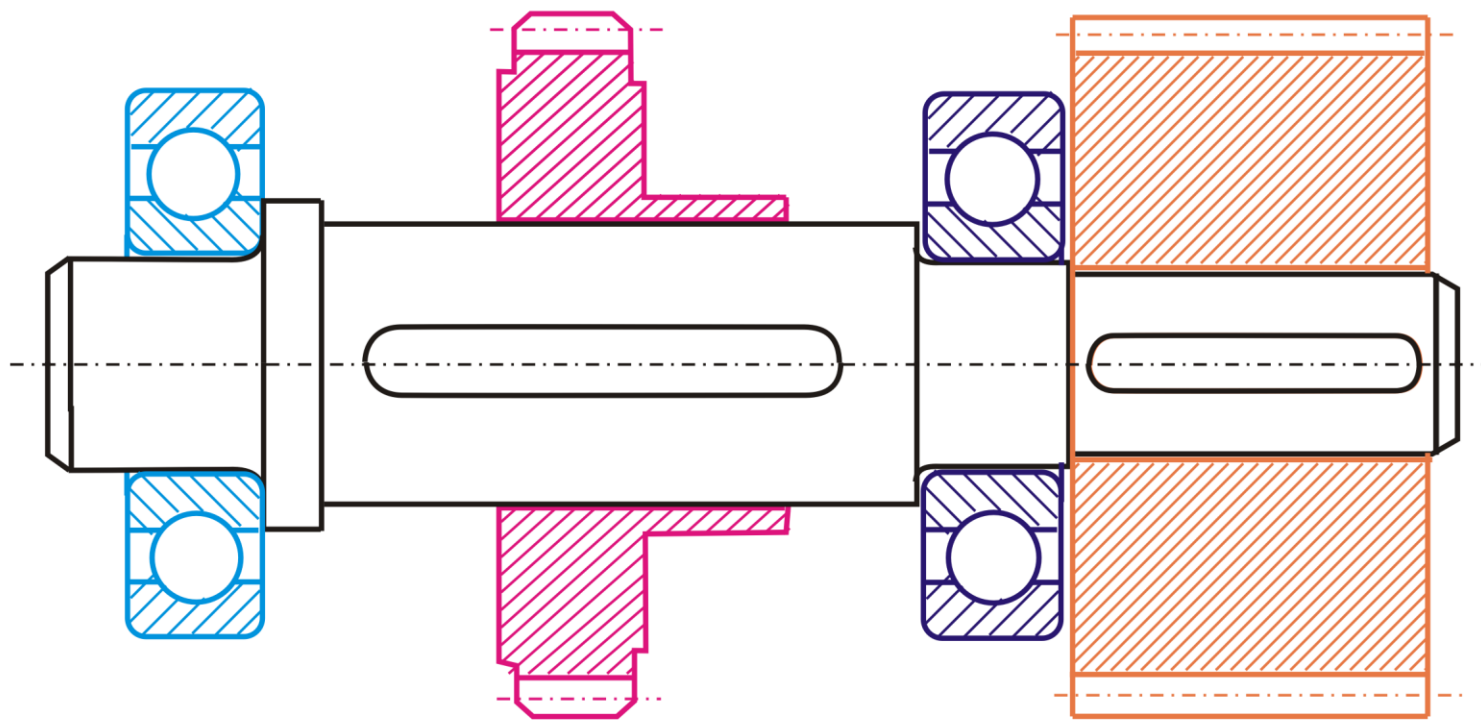


# Mozgó alkatrészek szélső helyzetei

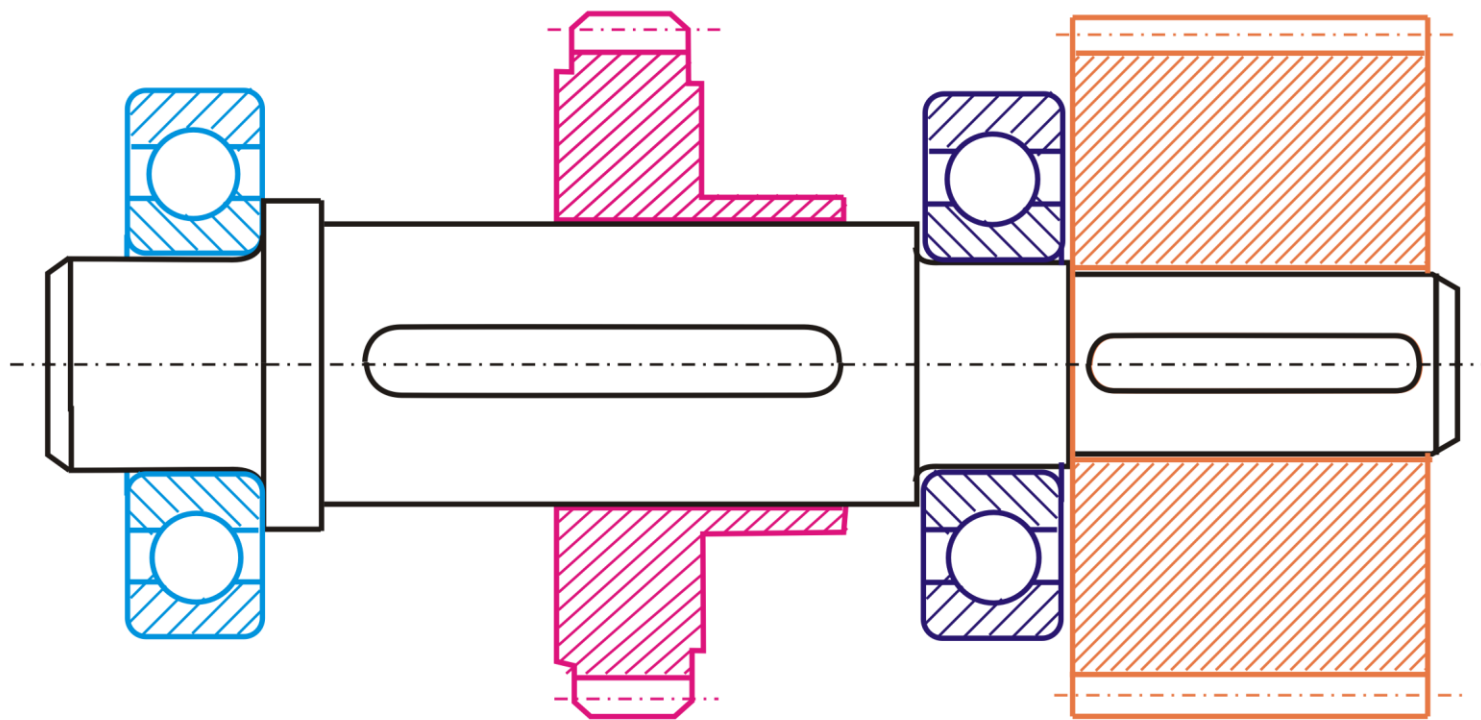




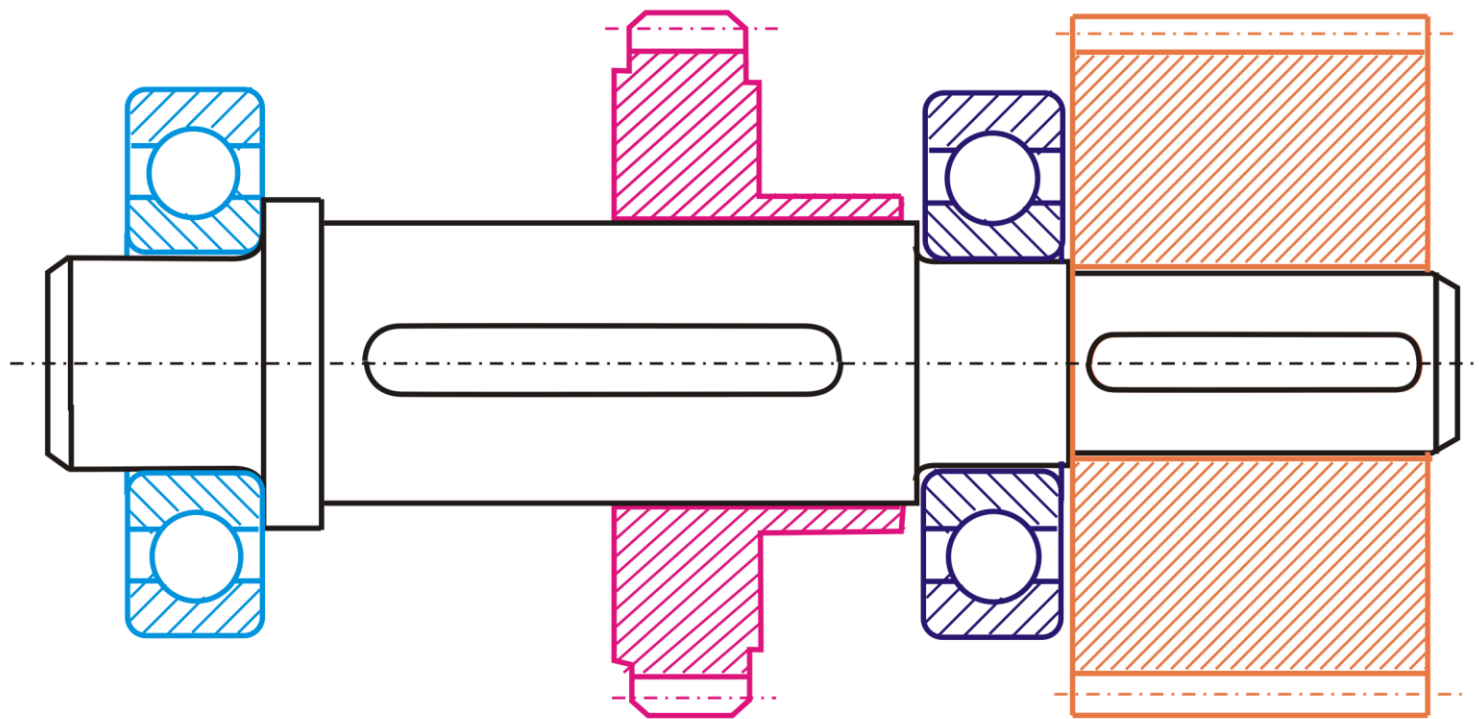
# Mozgó alkatrészek szélső helyzetei



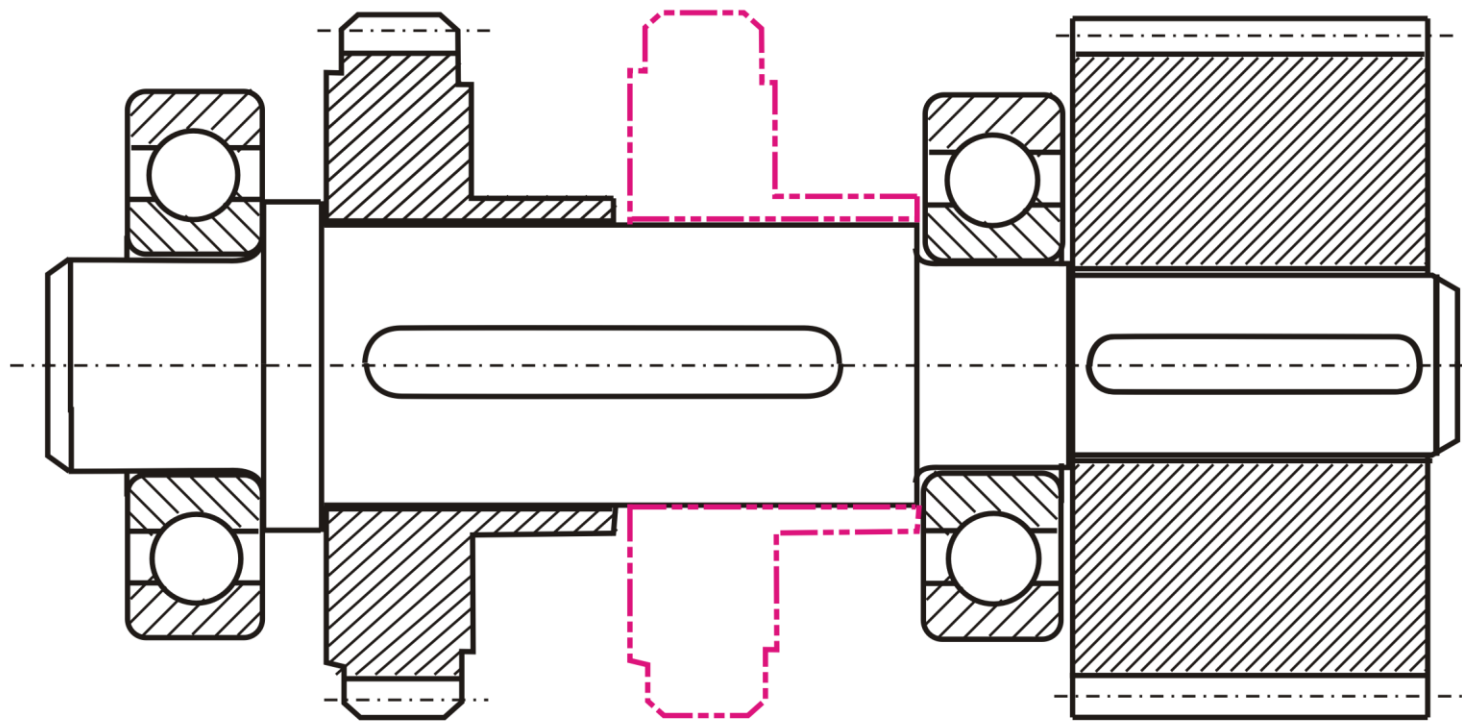
# Mozgó alkatrészek szélső helyzetei



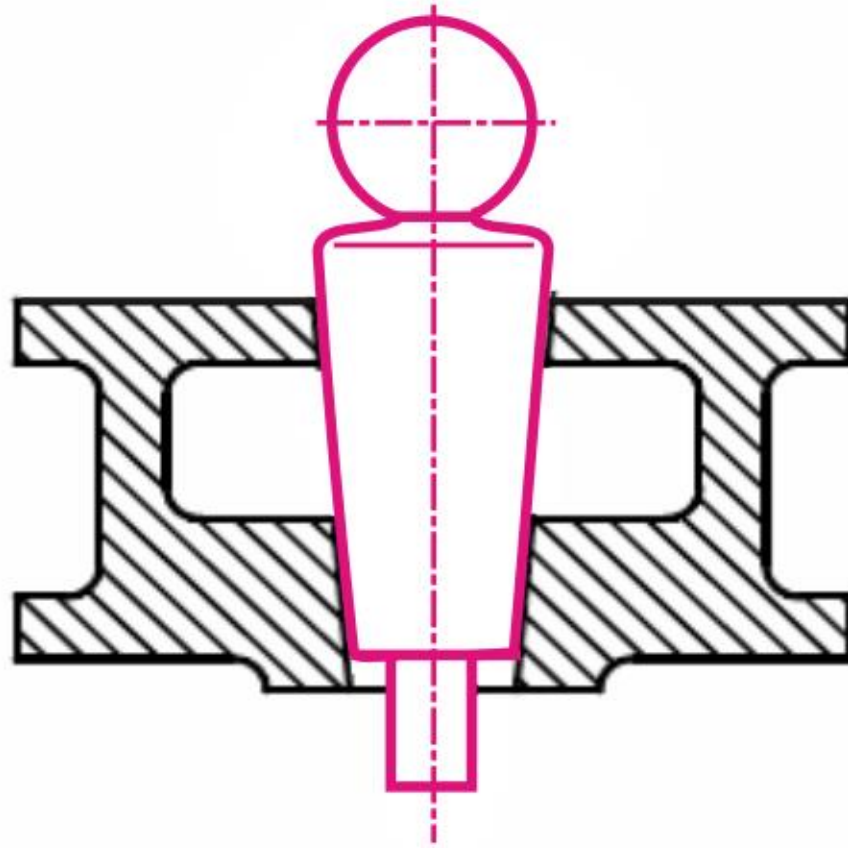
# Mozgó alkatrészek szélső helyzetei



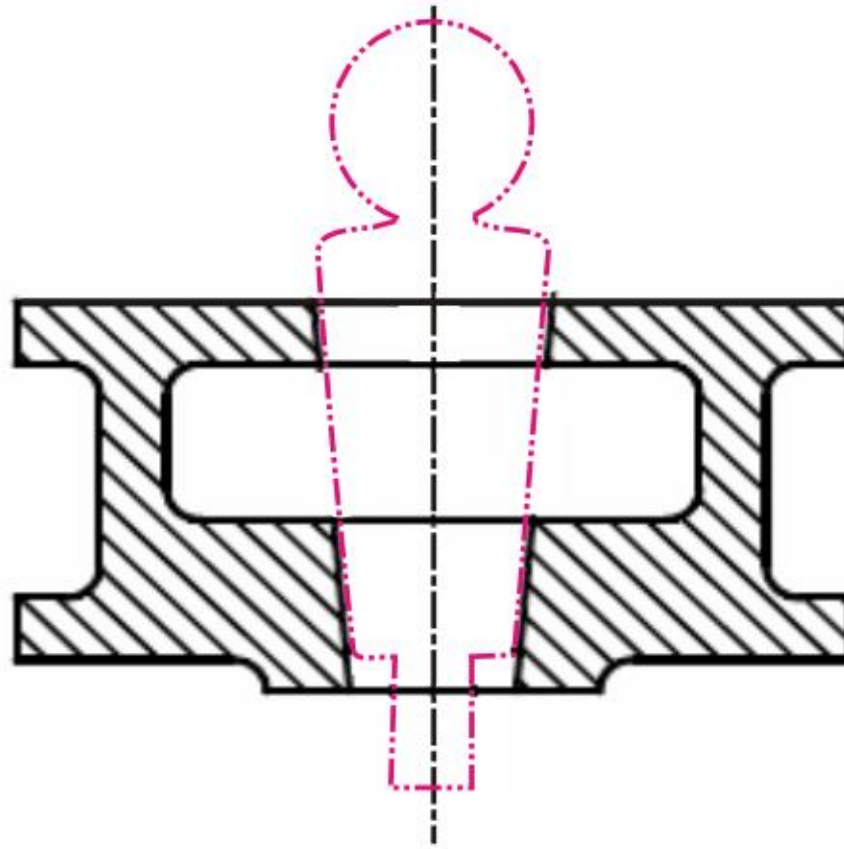
# Mozgó alkatrészek szélső helyzetei



# Csatlakozó alkatrészek körvonalala



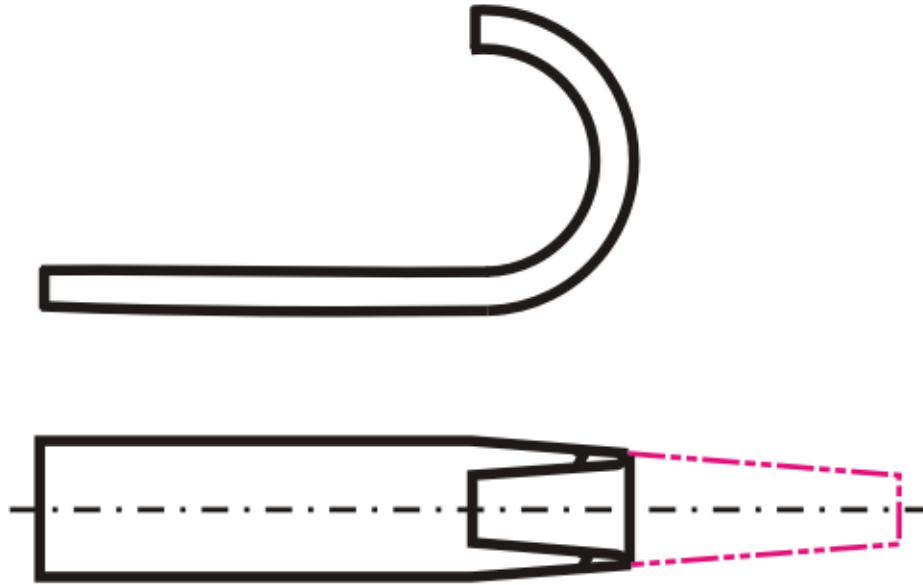
# Csatlakozó alkatrészek körvonalala



# Alkatrész kiterített (gyártás előtti) alakjának körvonala



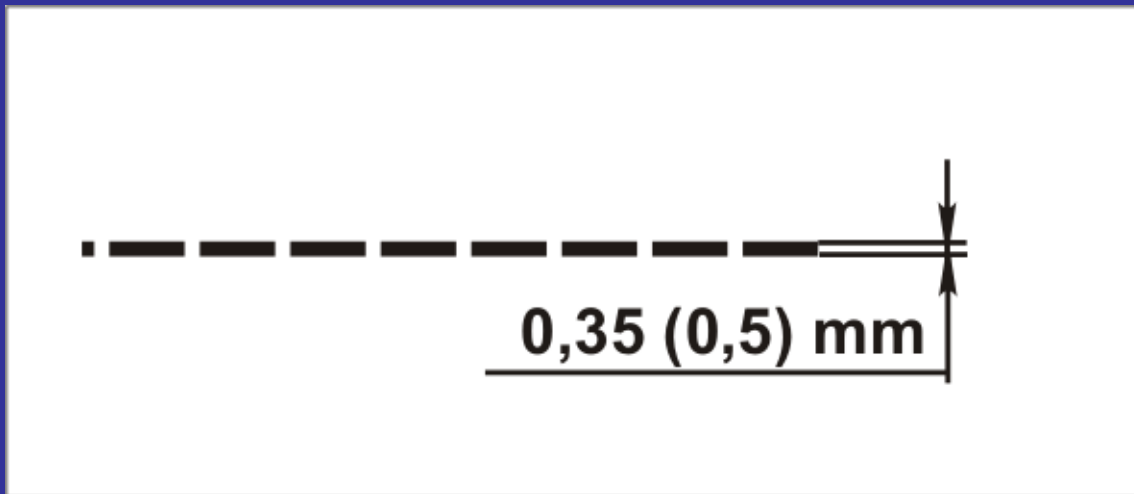
# Alkatrész kiterített (gyártás előtti) alakjának körvonalala



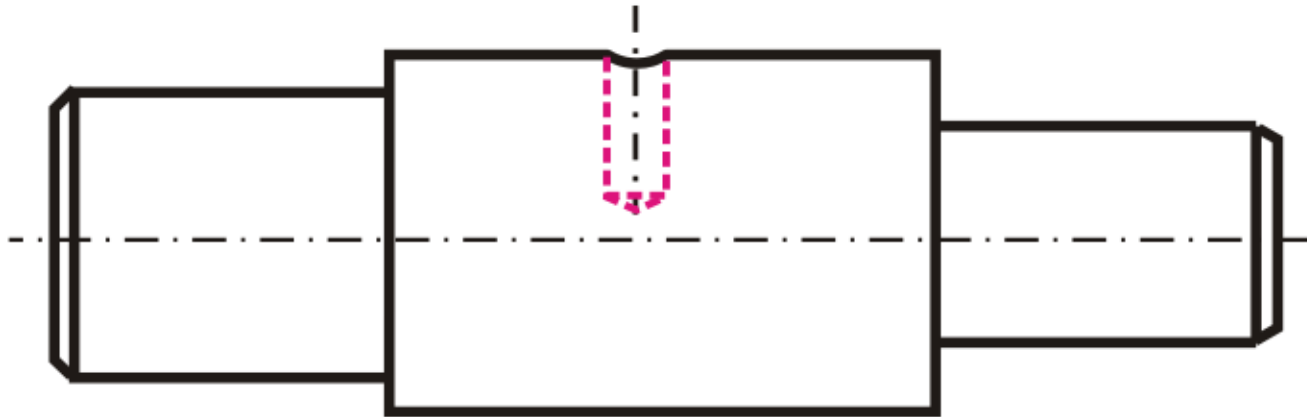


**Szaggatott vonalak**

# A szaggatott vonalak rajzolata



Nem látható, de az egyértelműséghez fontos élek ábrázolása (kerülni kell!)

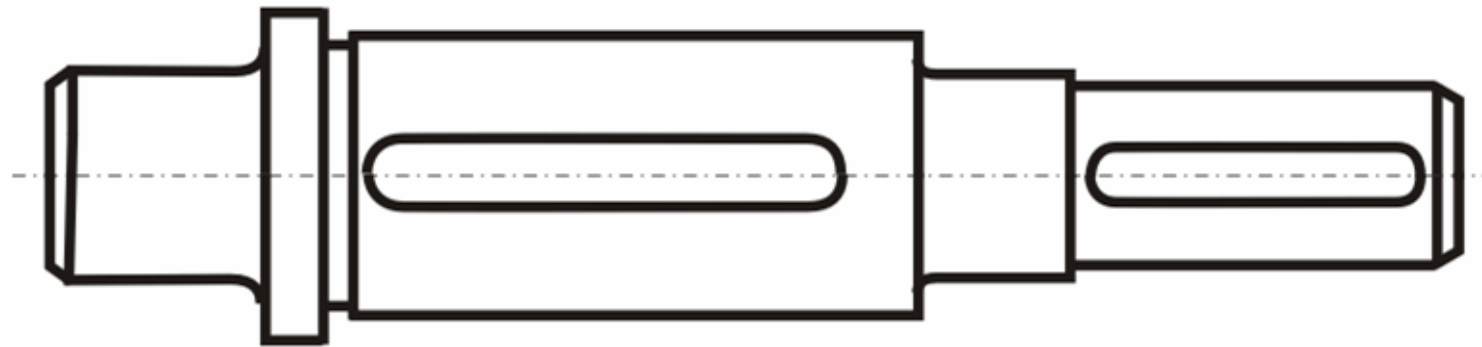


**Szabadkézzel rajzolt (tört)  
vonalak**

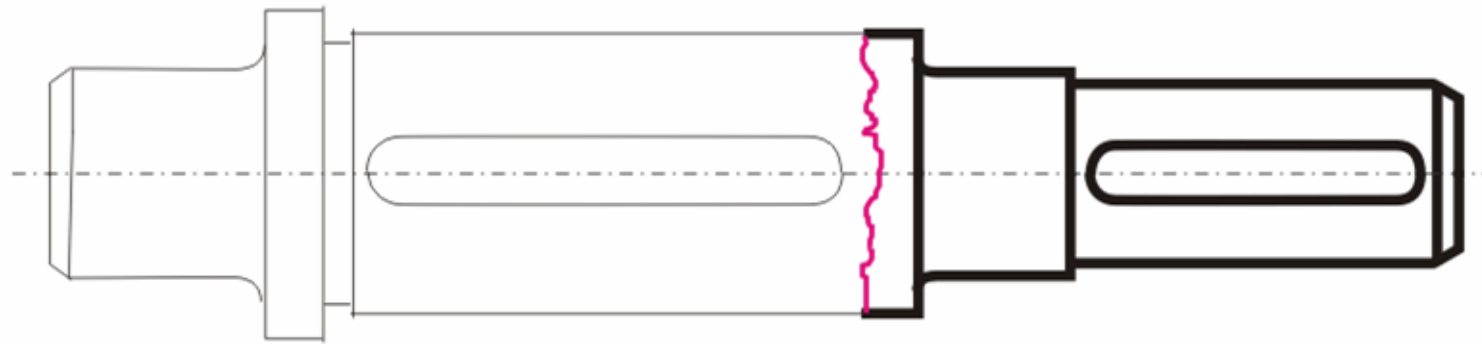
# A törtvonalalak rajzolata



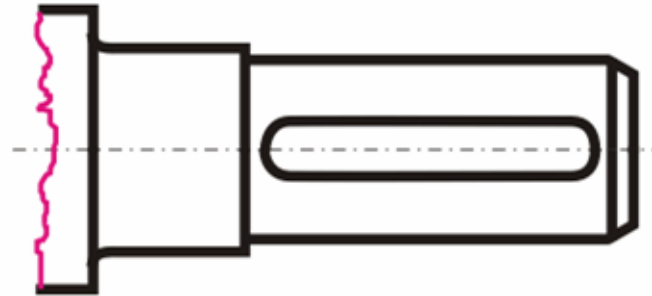
# Alkatrész elhagyott részének határa



# Alkatrész elhagyott részének határa

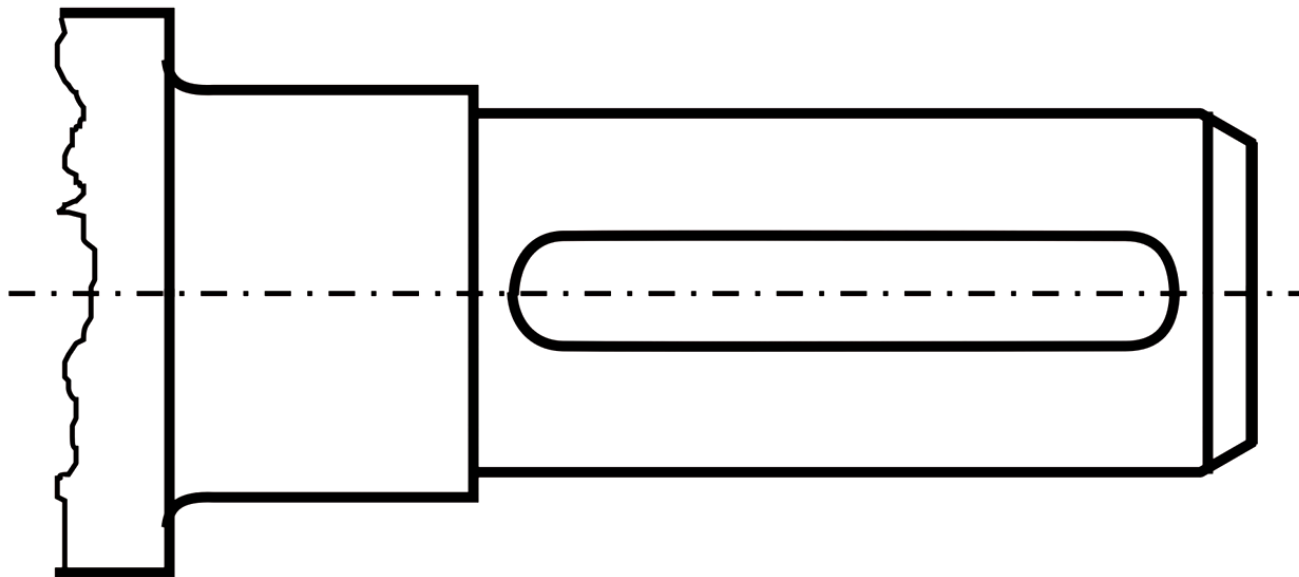


# Alkatrész elhagyott részének határa

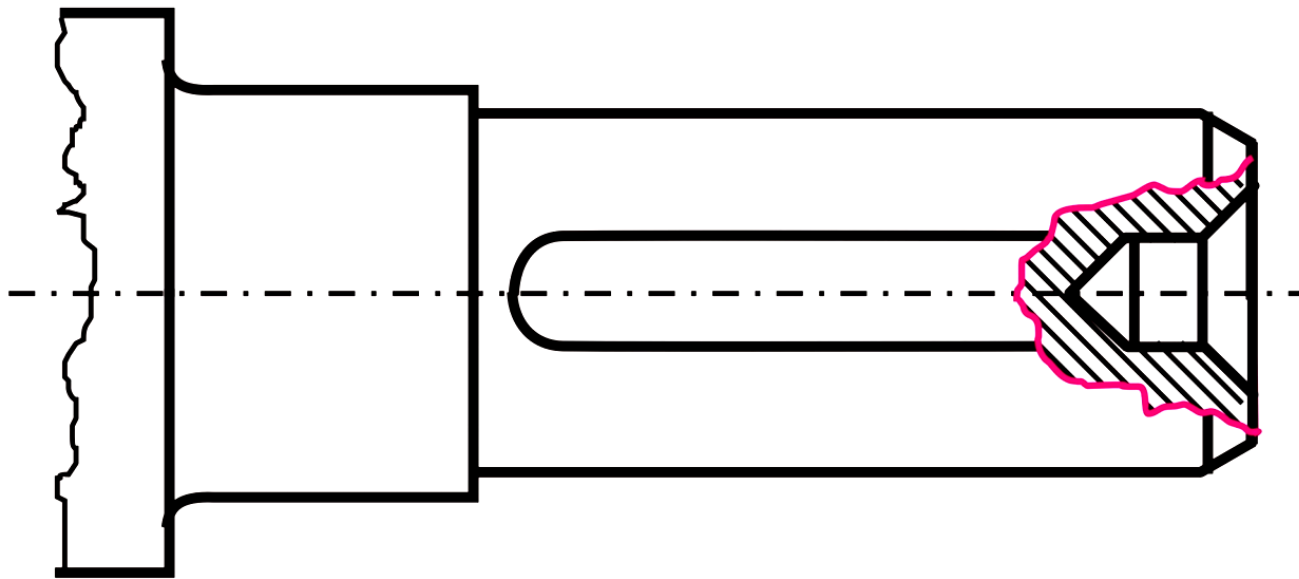




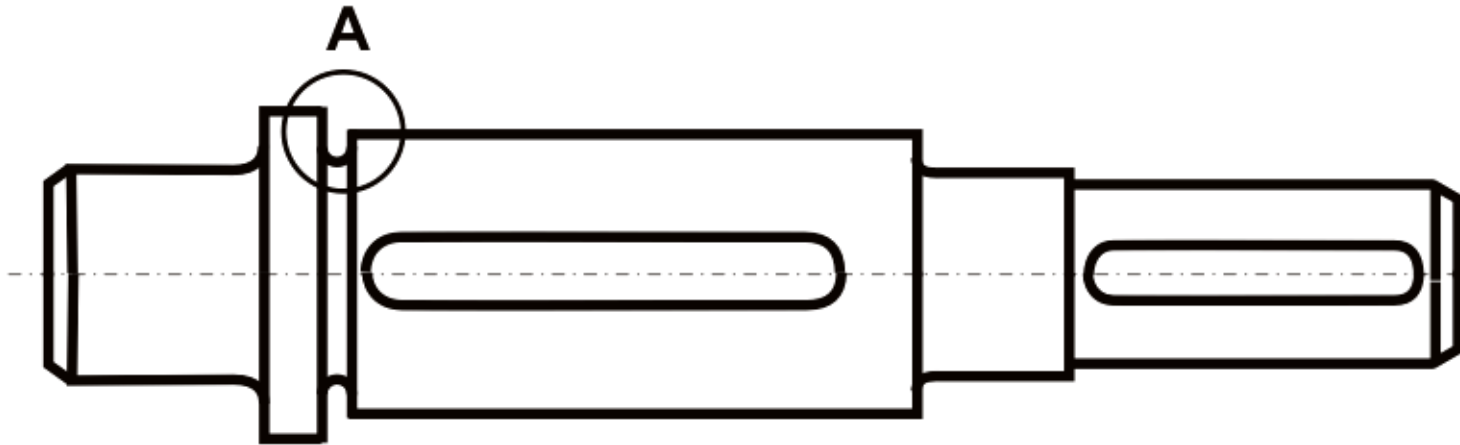
# Kitörés határa



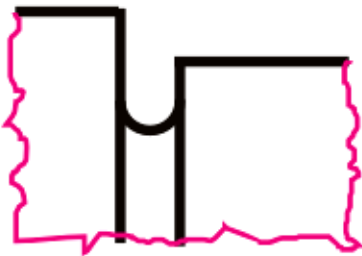
# Kitörés határa



# Résznézet határvonala



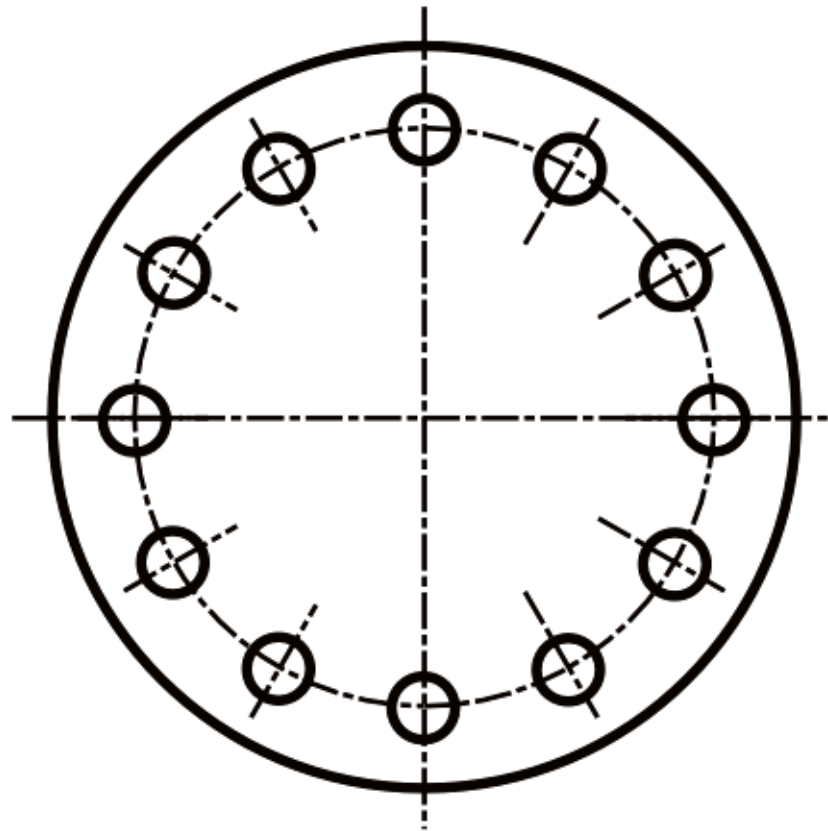
A (2:1)



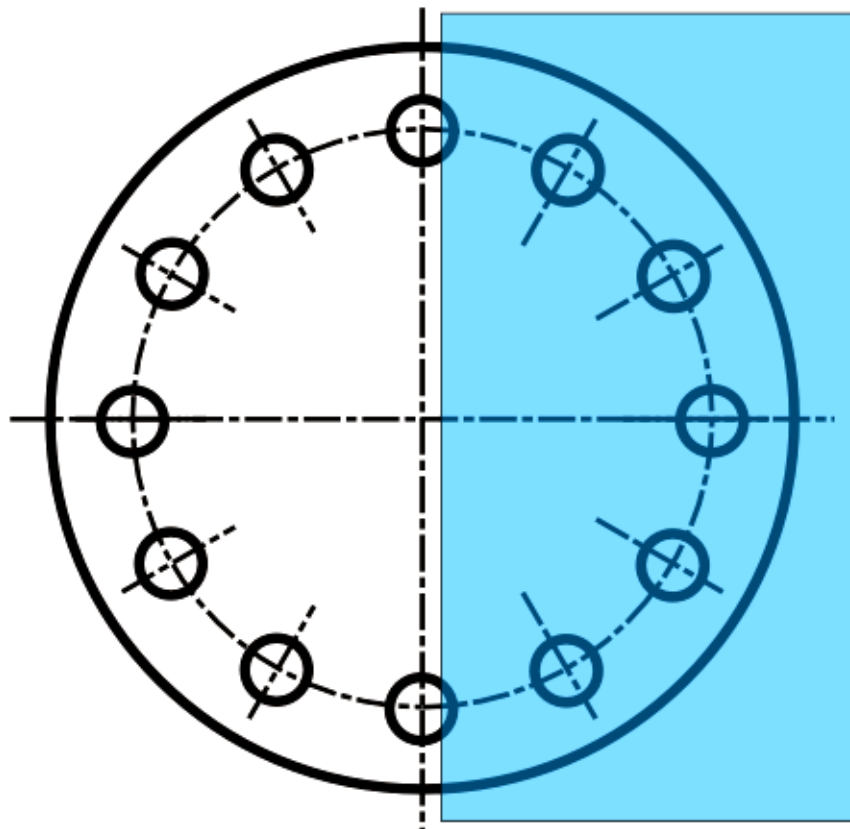
# RAJZOLÁSI EGYSZERÜSÍTÉSEK

# Szimmetrikus tárgyak egyszerűsített ábrázolása

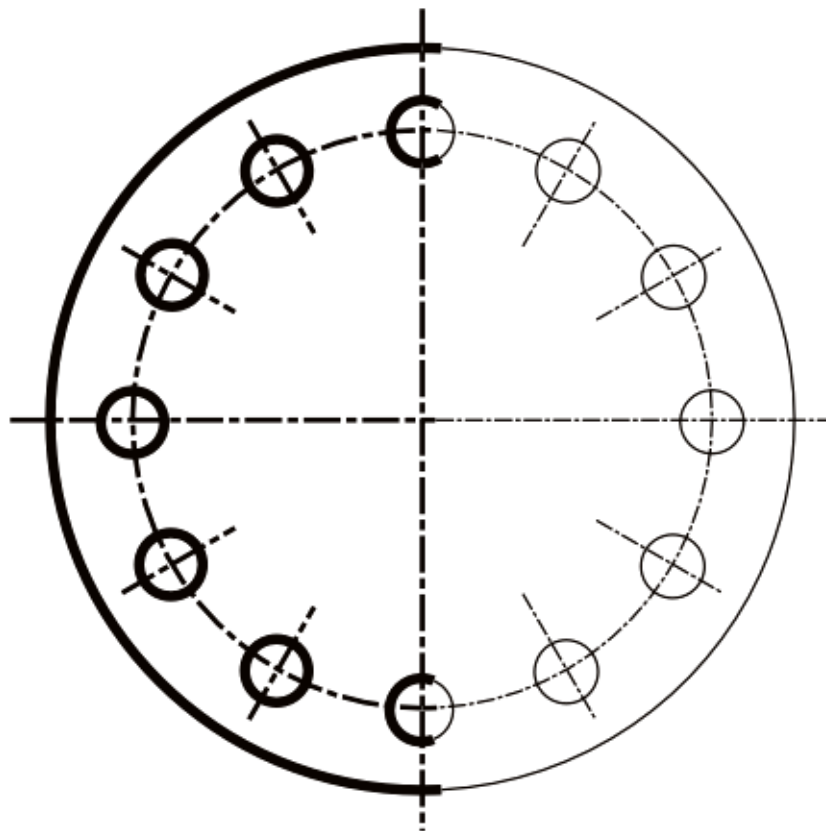
# Félnézet



# Félnézet

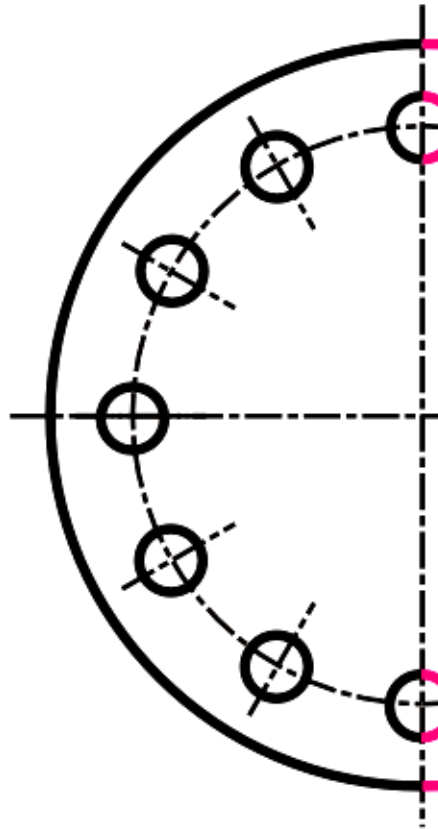


# Félnézet

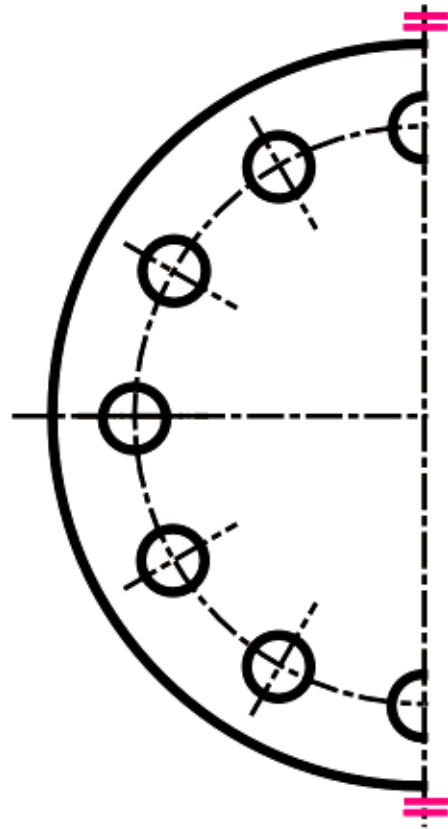




# Félnézet

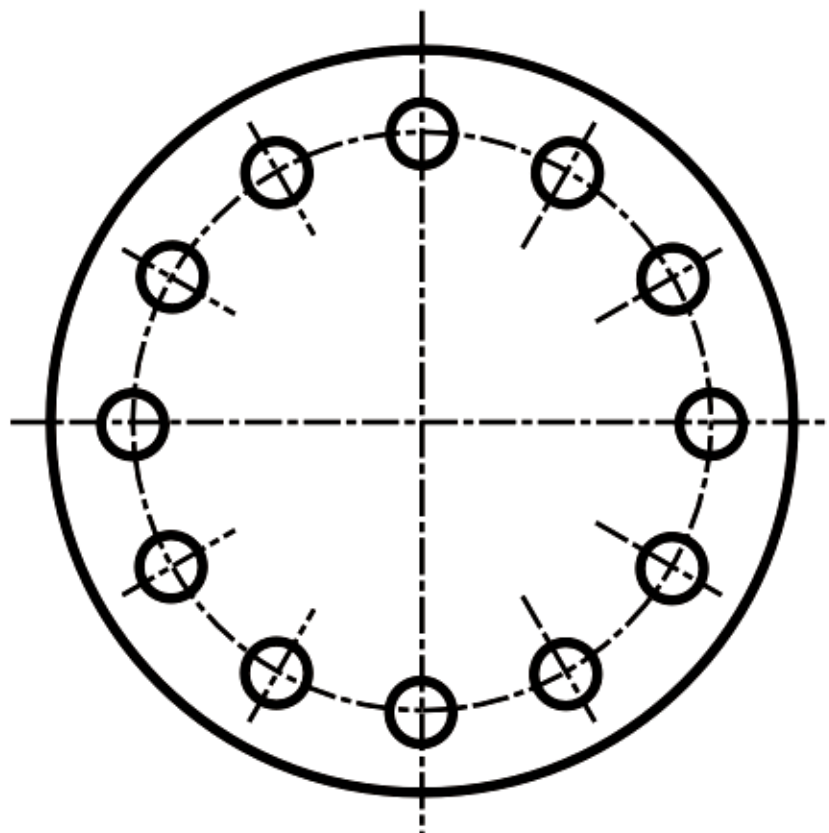


# Félnézet

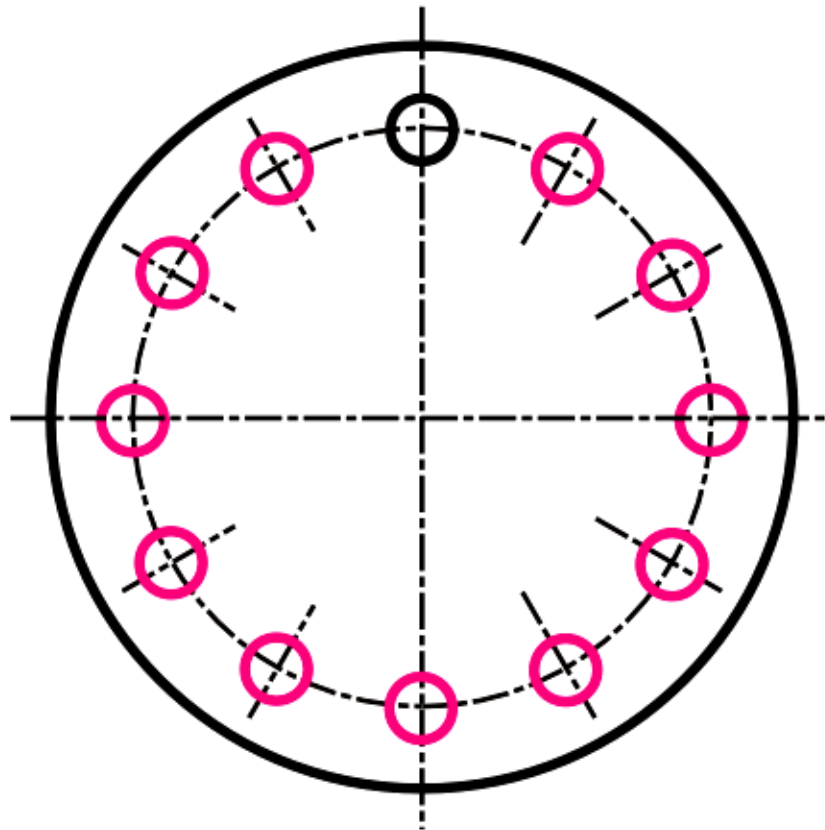


# Ismétlődő elemek „ritkített” ábrázolása

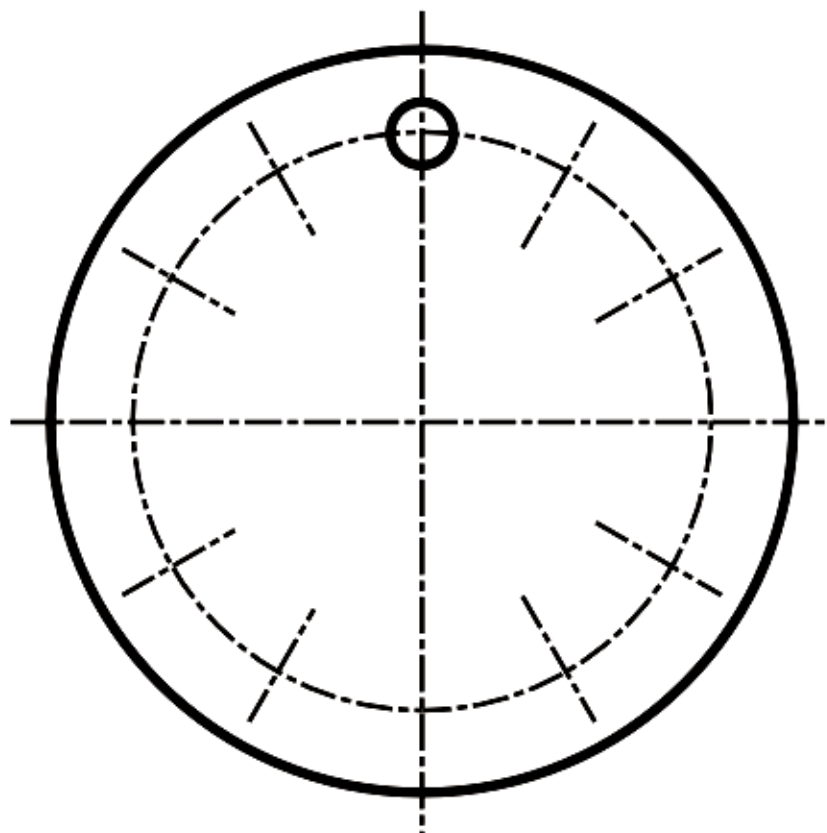
# Ismétlődő furatok



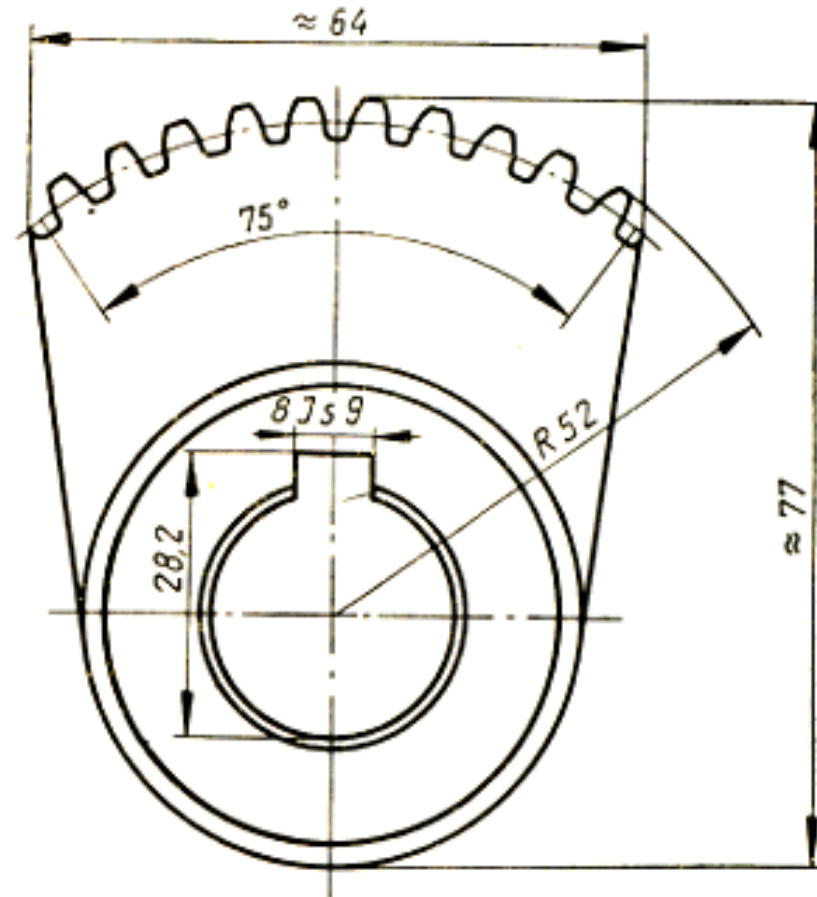
# Ismétlődő furatok



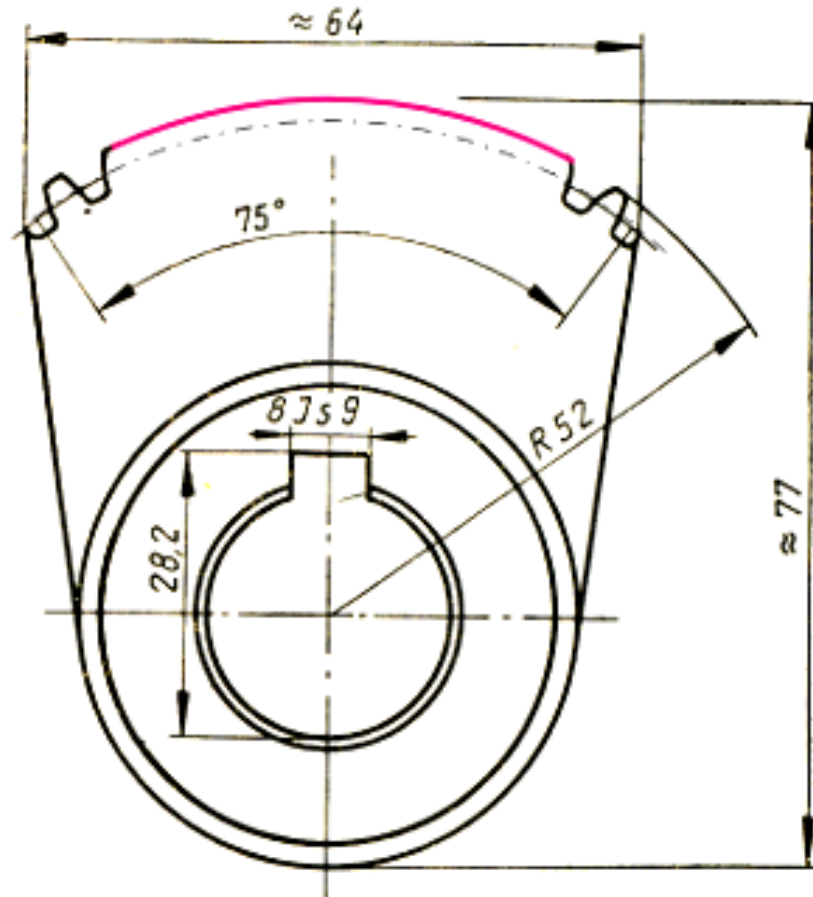
# Ismétlődrő furatok



# Ismétlődő mintázat

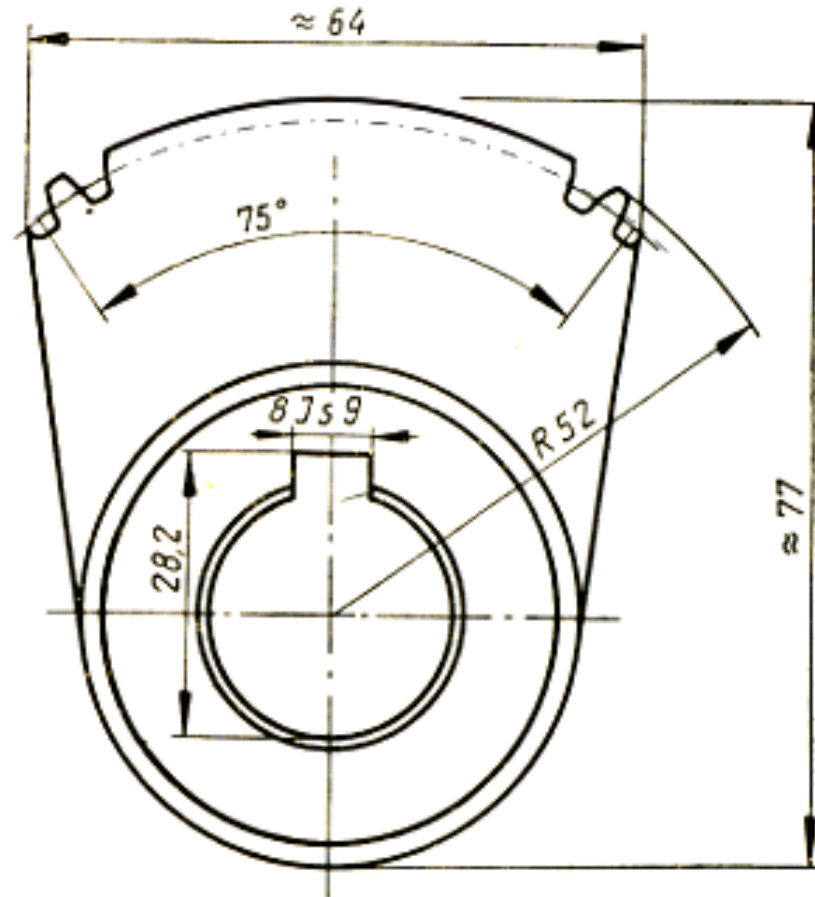


# Ismétlődő mintázat





# Ismétlődő mintázat

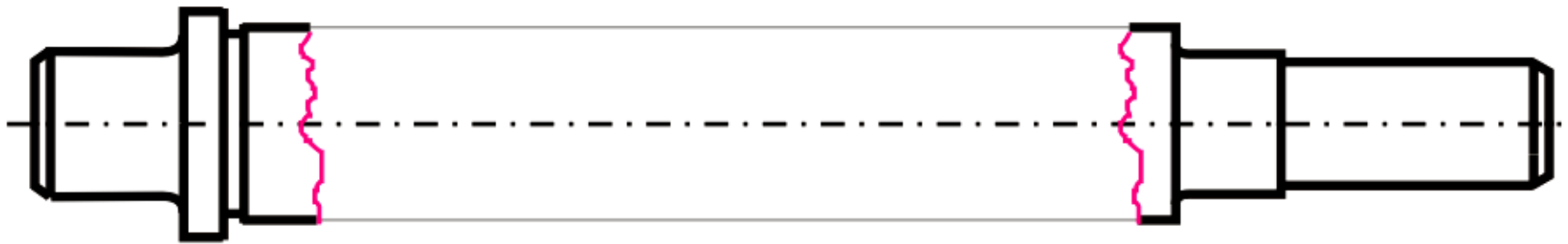


# **Semmitmondó részletek elhagyása**

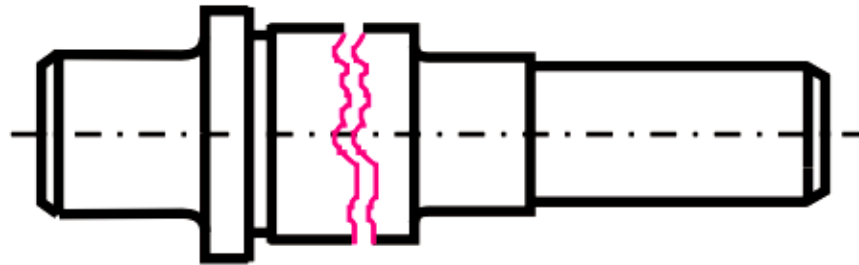
# Hosszú alkatrészek „kitörése”



# Hosszú alkatrészek „kitörése”



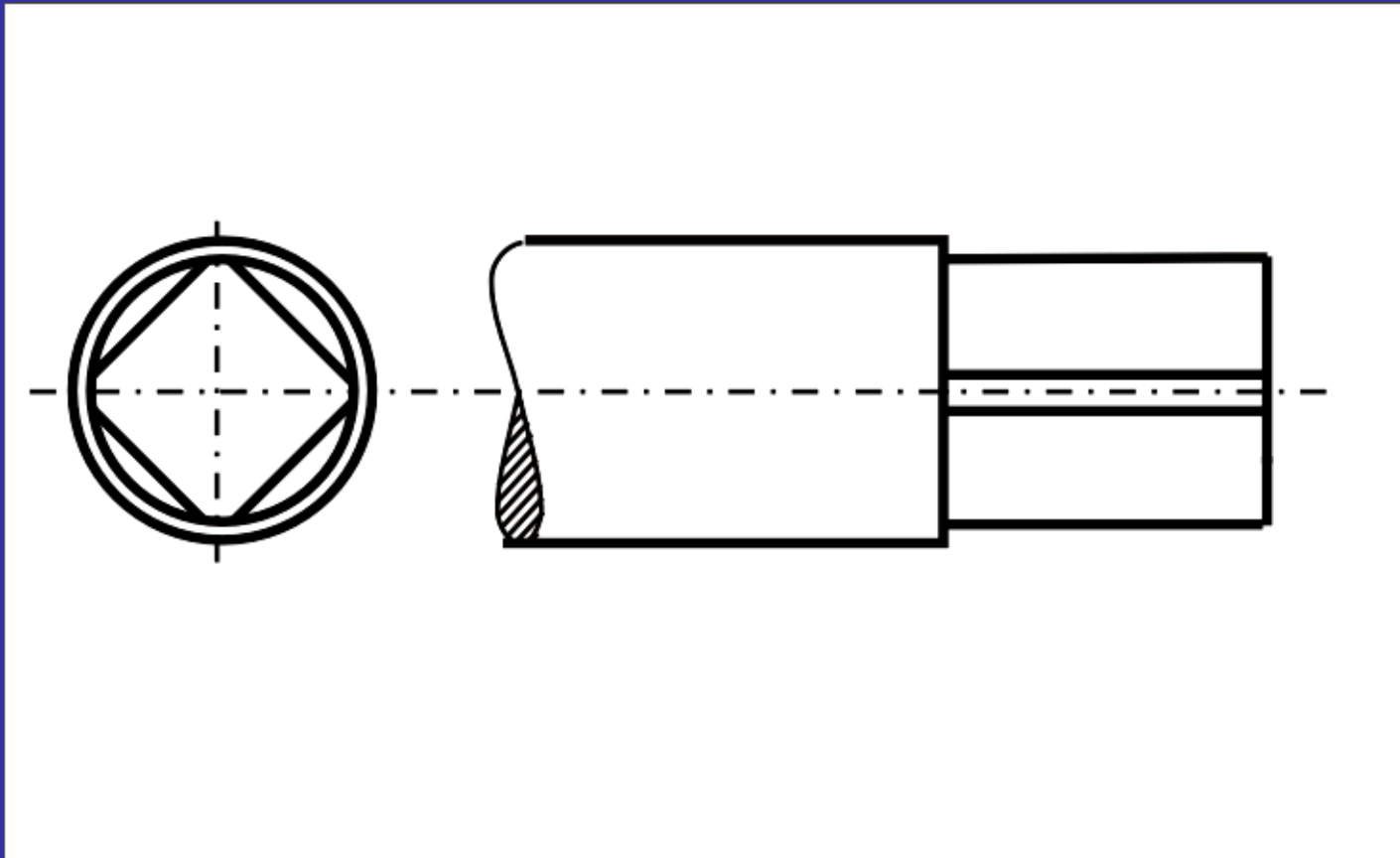
# Hosszú alkatrészek „kitörése”



# Sík felületek ábrázolása

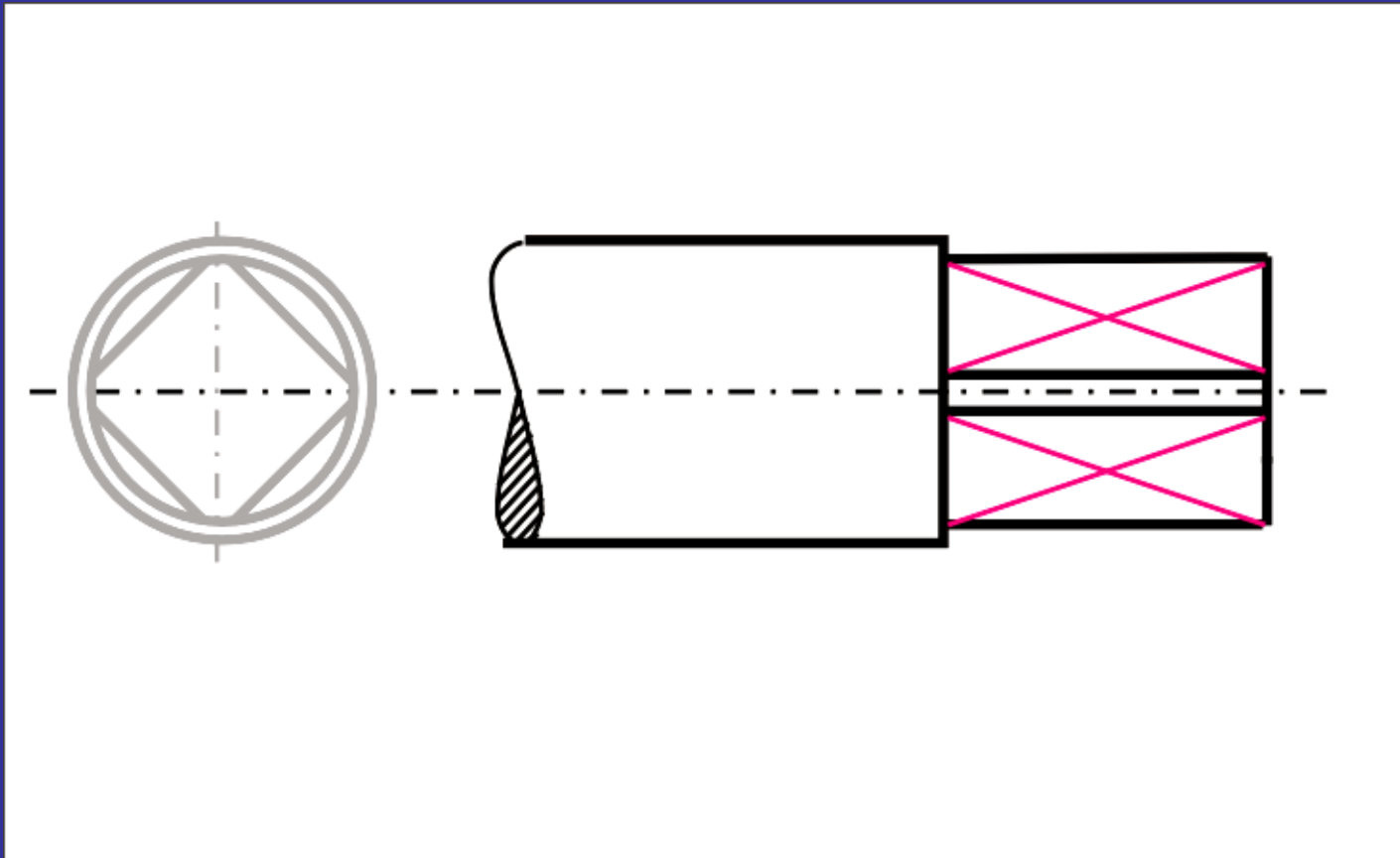
# Sík felület ábrázolása

(ha a vetületek nem elegendőek a sík jelleg érzékeltetésére)



# Sík felület ábrázolása

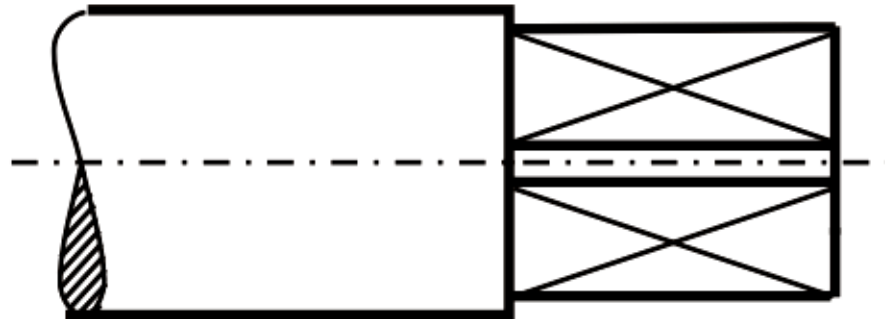
(ha a vetületek nem elegendőek a sík jelleg érzékeltetésére)

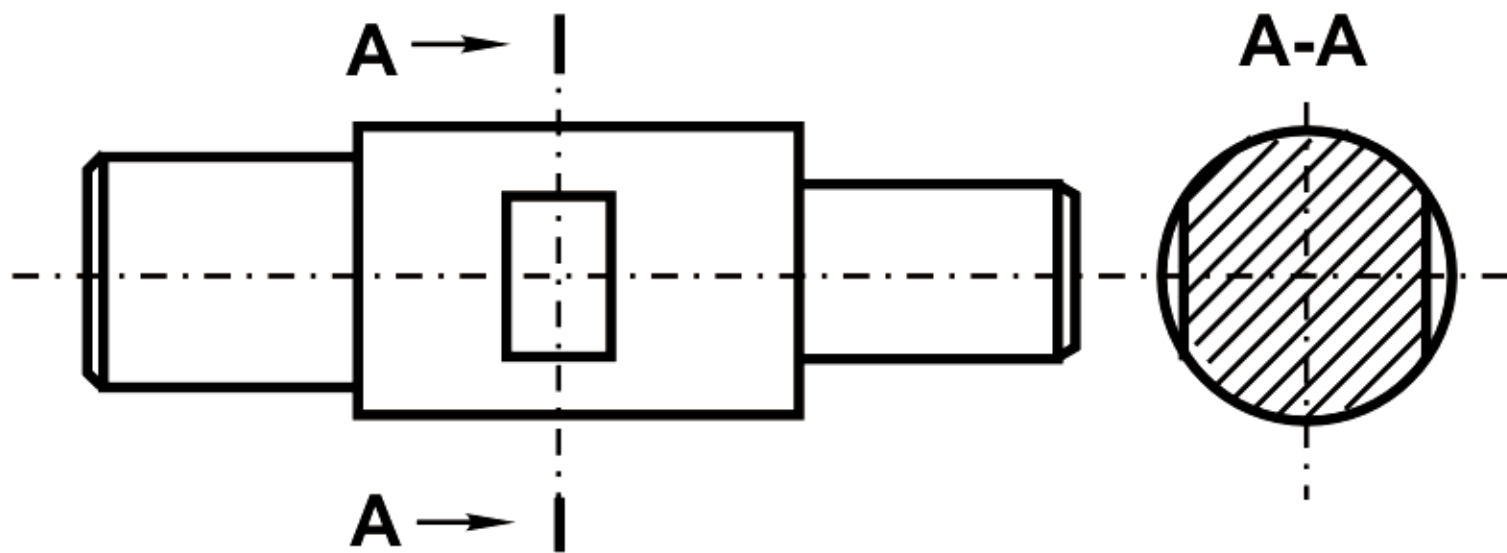


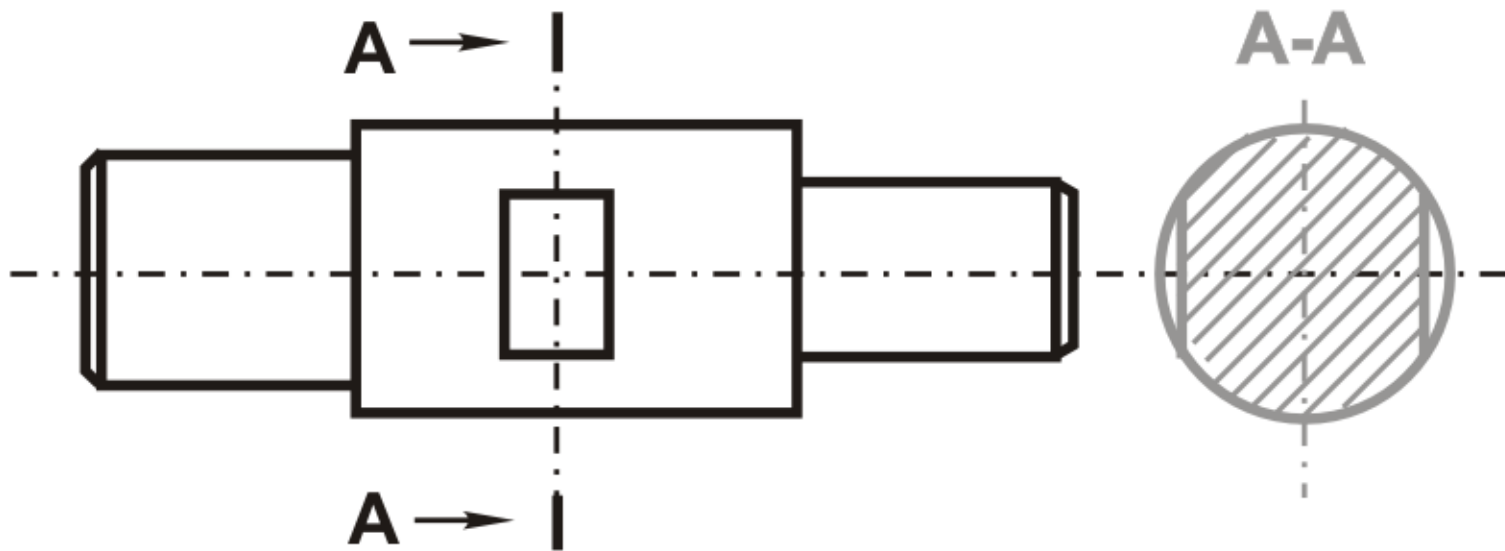


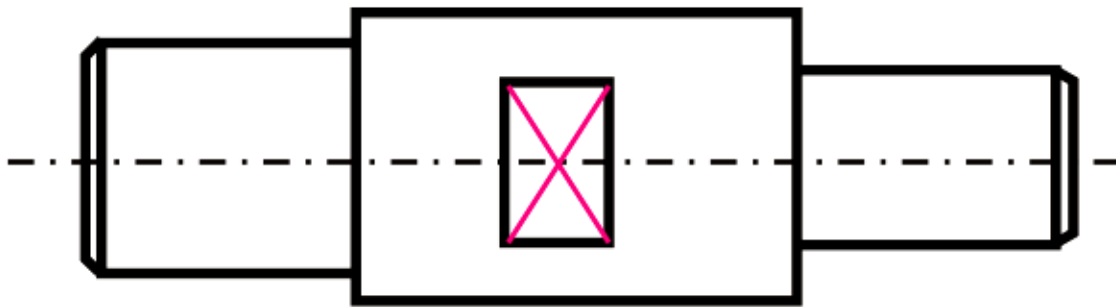
# Sík felület ábrázolása

(ha a vetületek nem elegendőek a sík jelleg érzékeltetésére)





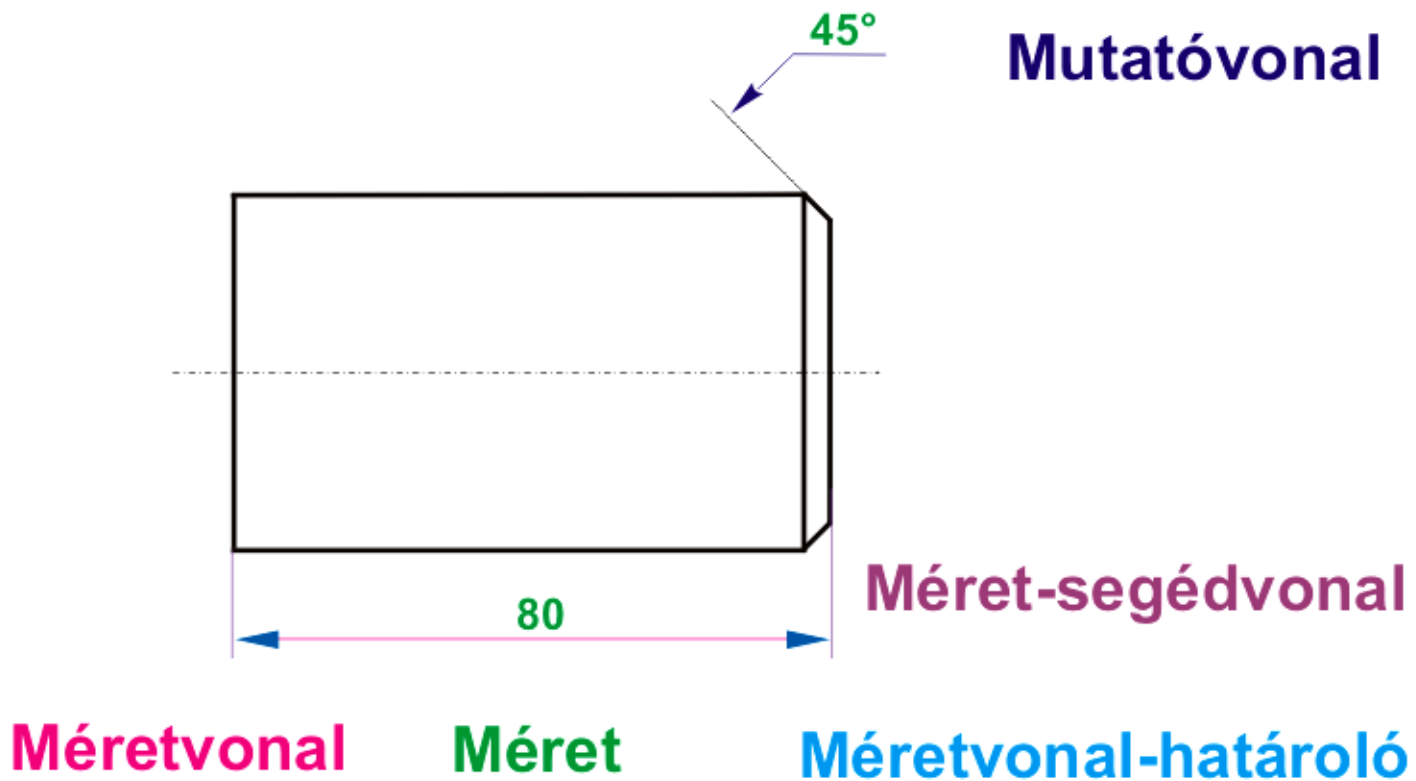




# A MÉRETMEGADÁS SZABÁLYAI

# A MÉRETMEGADÁS JELEI

# A méretmegadás alapsémája



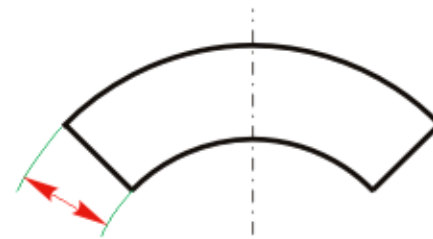
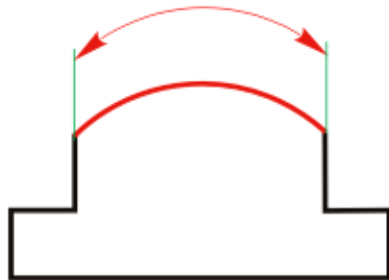
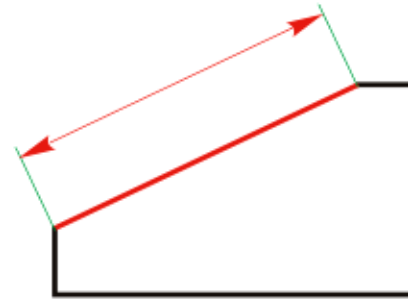
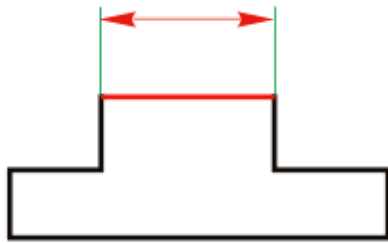
# A méretvonal

**Formája:** vékony vonal (0,35 mm)

**Célja:** a méretezett szakasz geometriai ábrázolása

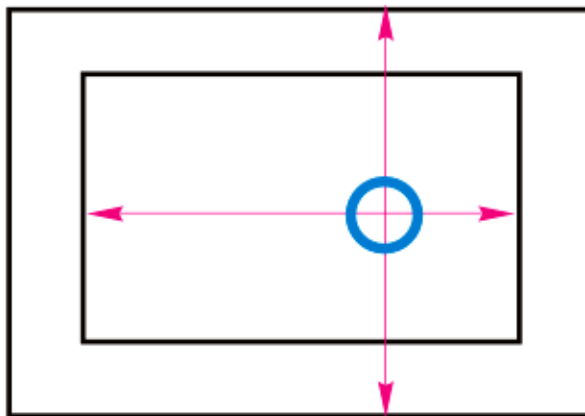


# A méretvonalak párhuzamosak a méretezett szakasszal

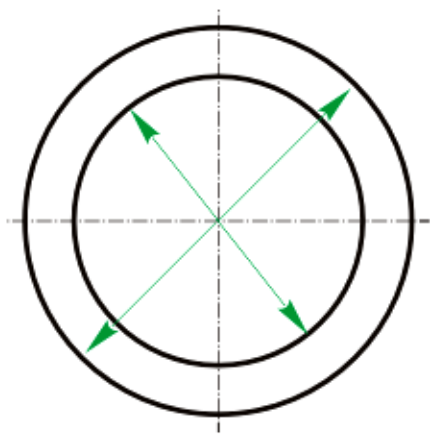


# A méretvonalak nem metszhetik egymást

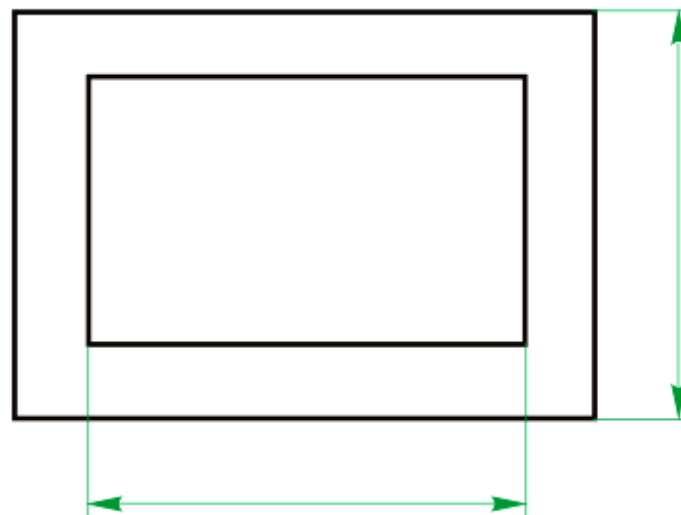
TILOS!



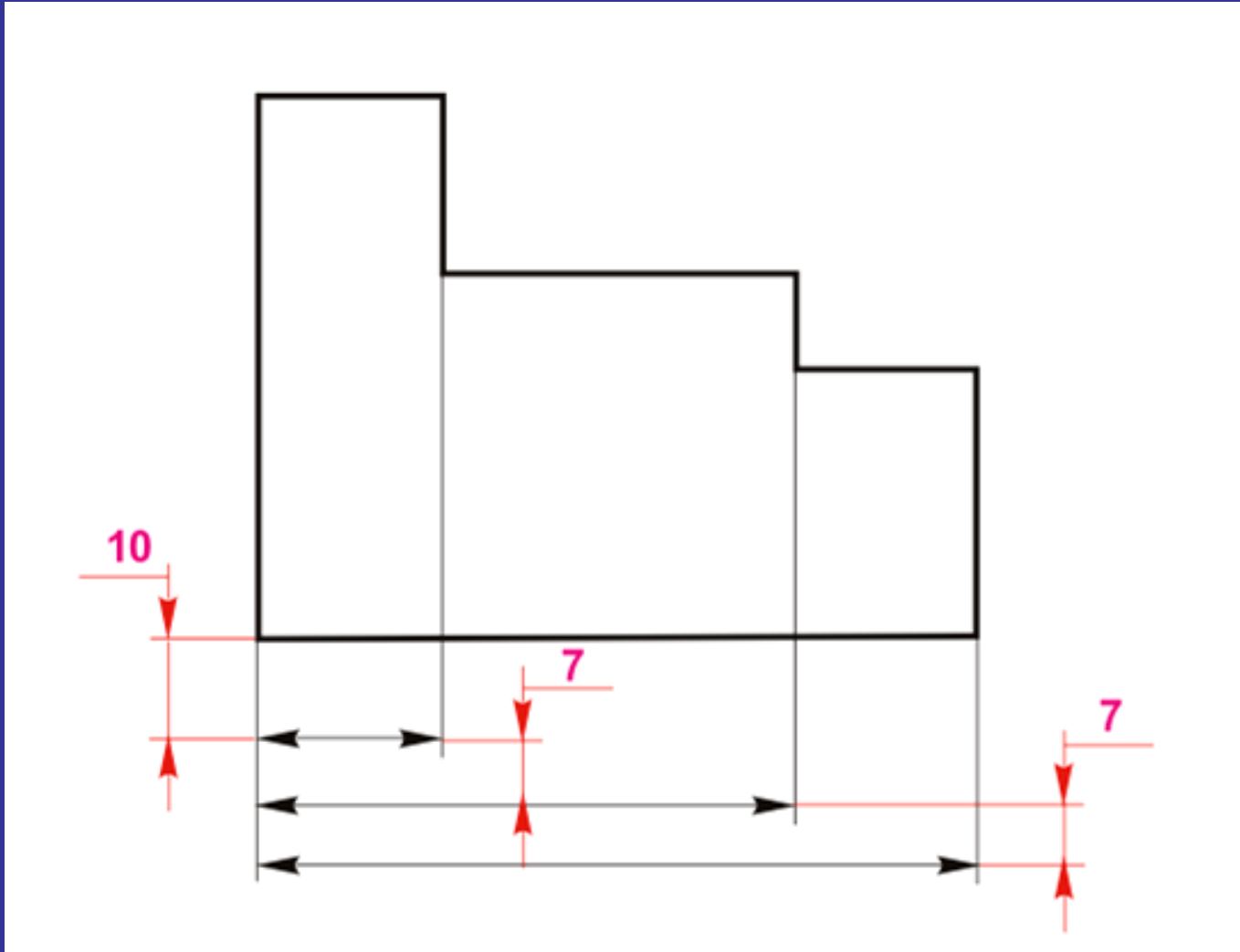
Kivétel



HELYES



# A méretvonalak távolsága a többi vonaltól

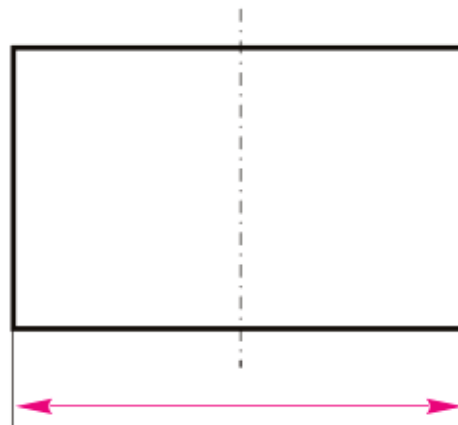


# A méretvonalak végpontjainak lehetséges helyzetei

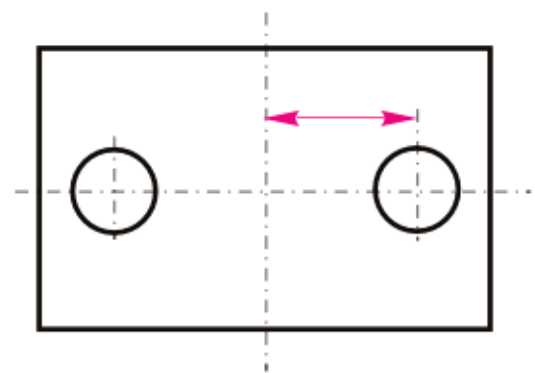
**Kontúrvonal**



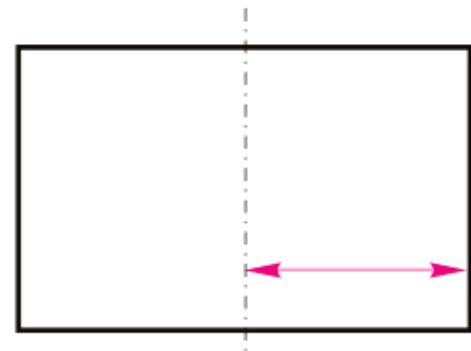
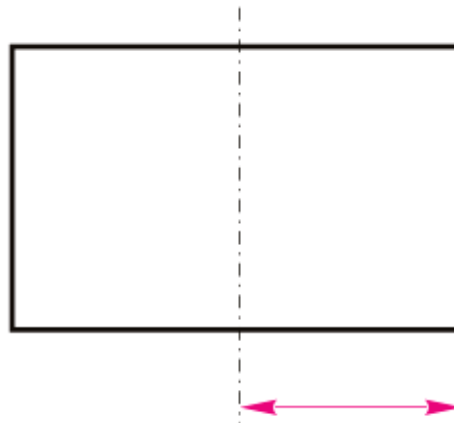
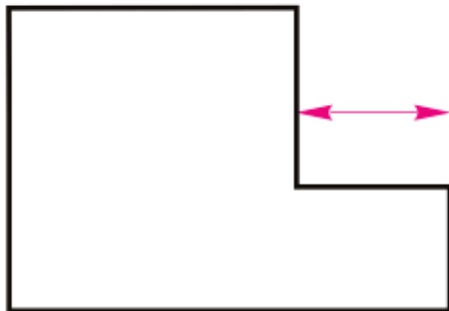
**Méret-segédvonal**



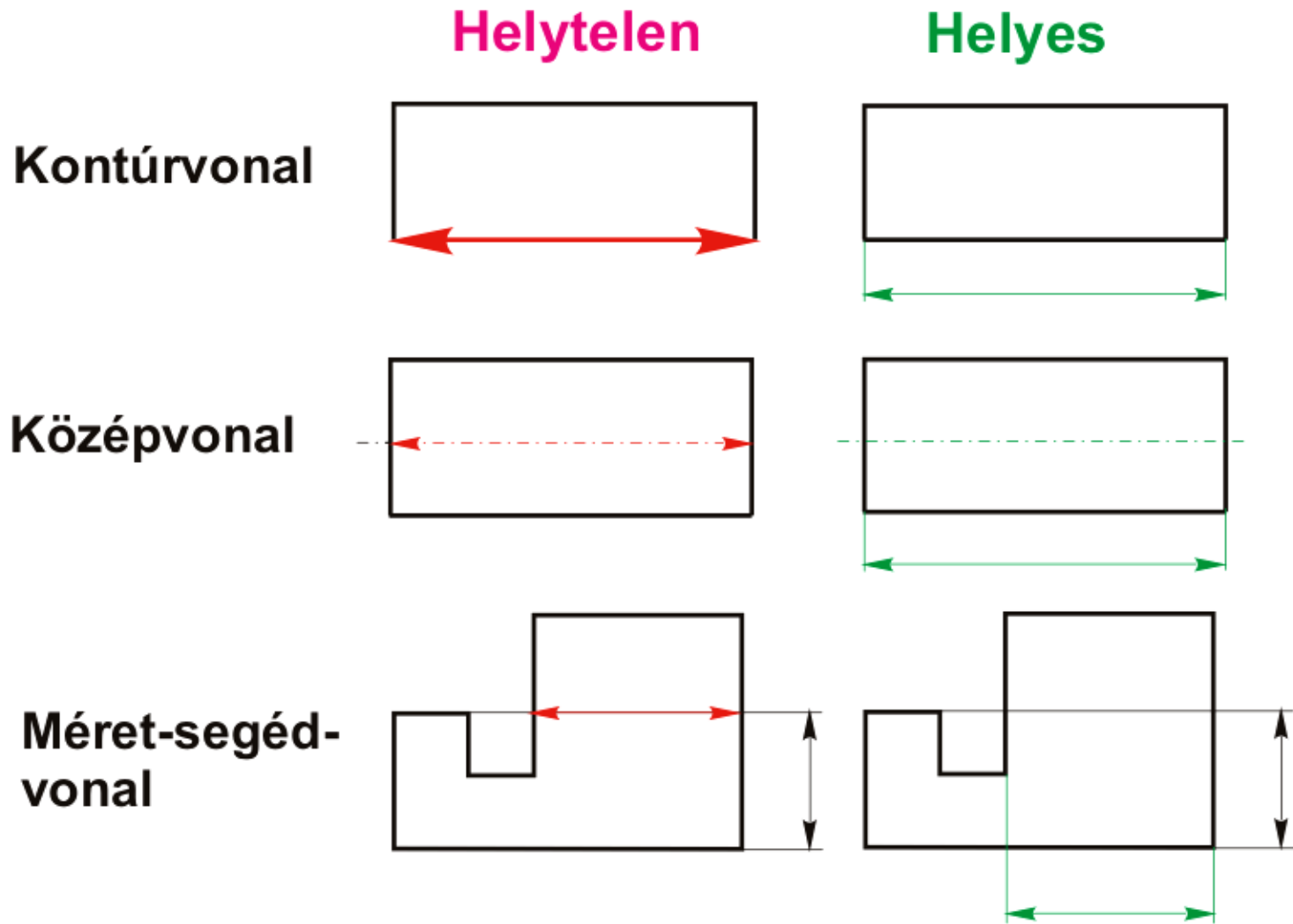
**Középvonal**



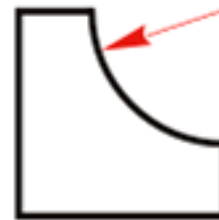
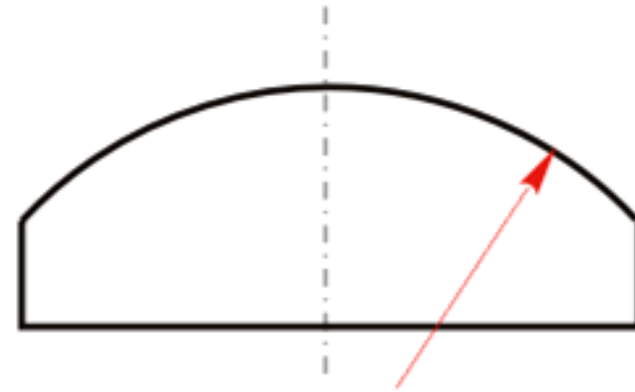
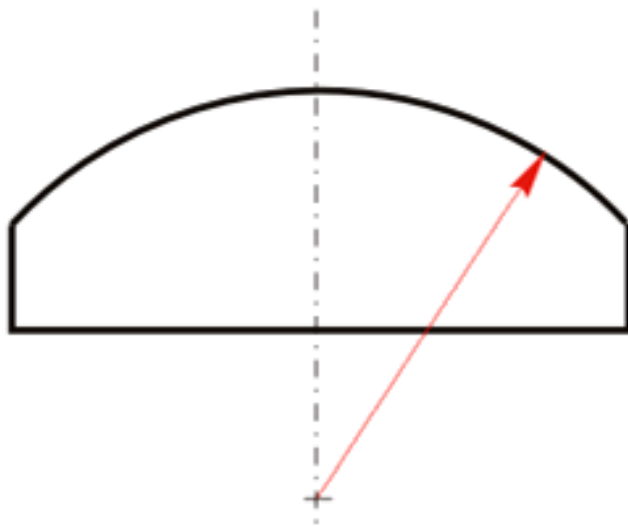
**Kombinációk**



# Méretvonalaként nem használható vonalak



# Íves felültek méretvonalai



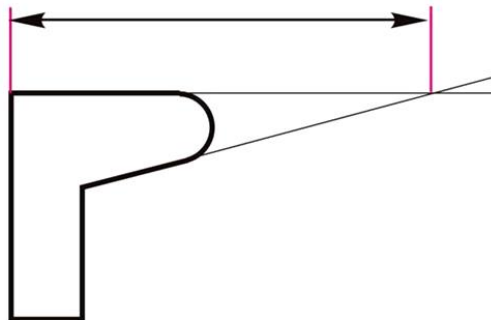
# A méret-segédvonal

**Formája:** vékony vonal

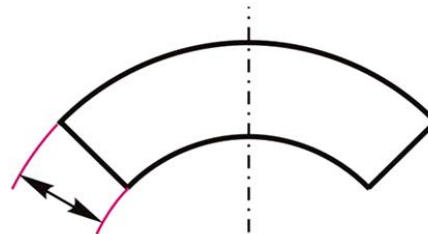
**Célja:** kivetített méretek jelzése

# Méret-segédvonal változatok

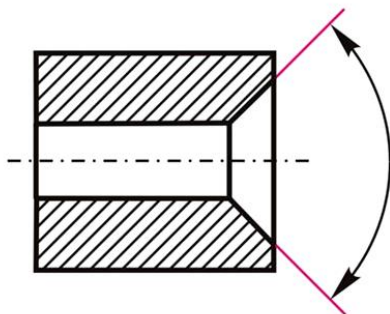
## Lekerekített felületek



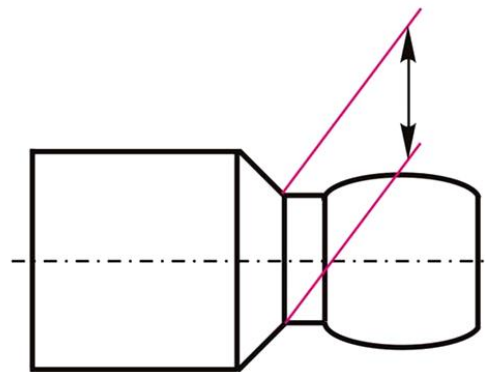
## Íves felületek



## Szöget bezáró felületek



## Átlósan kiemelt méretvonalak

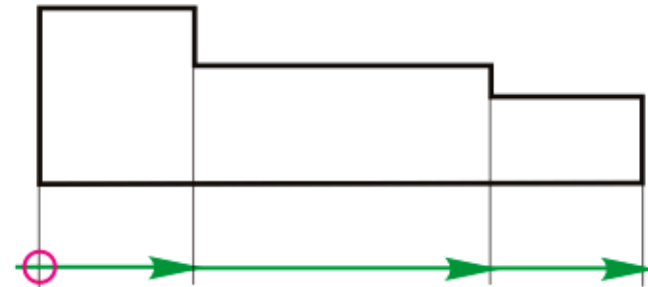




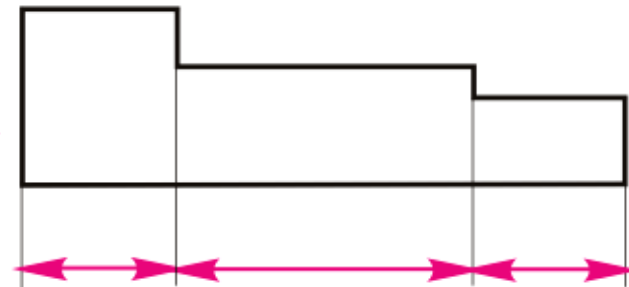
# A méretvonal-határoló

# Méretvonal-határolók változatai

**Kiindulási jel**



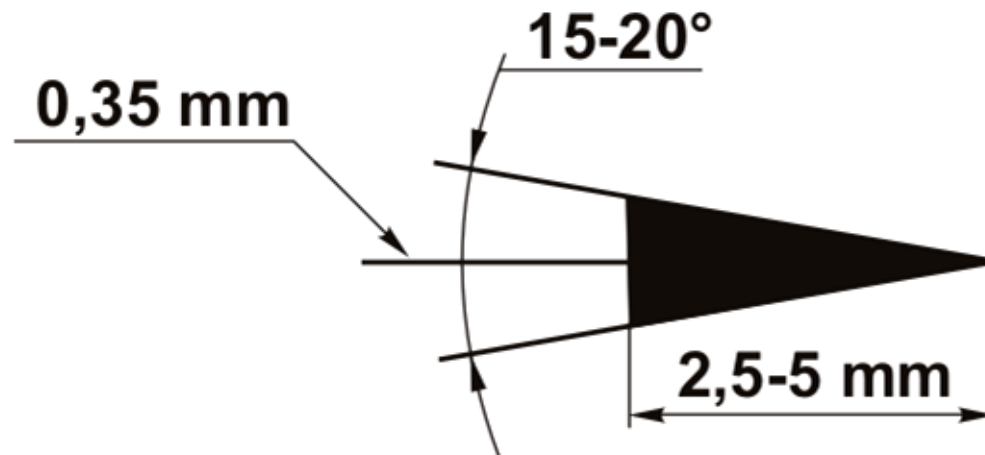
**Nyíl**



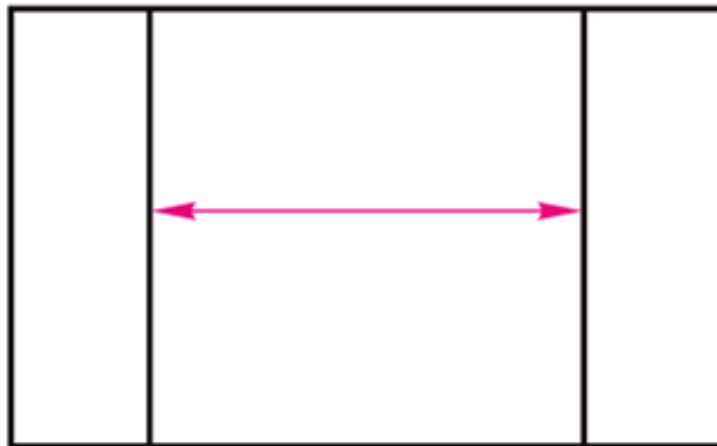
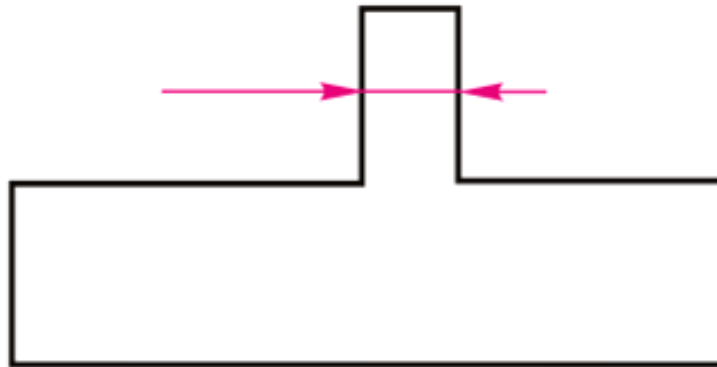
**Ferde vonás**



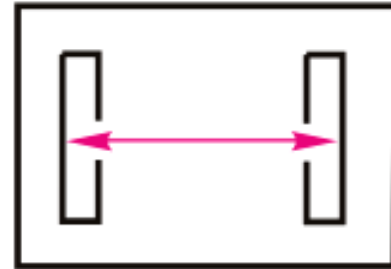
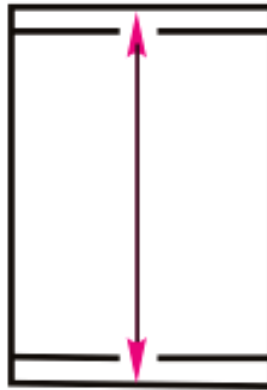
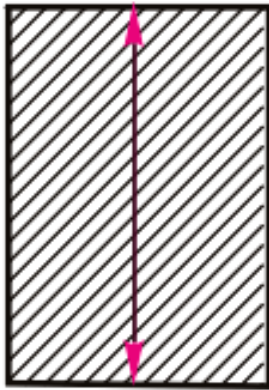
# A nyíl szokásos formája



# A nyíl elhelyezési lehetőségei



# A nyíllal fedésben lévő rajzi elemek ábrázolása

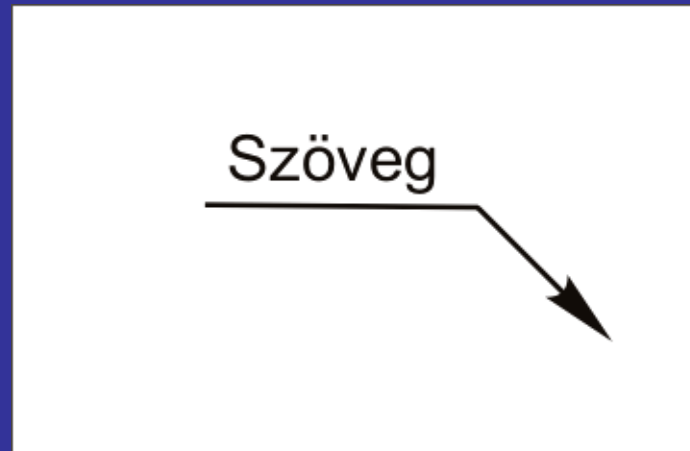


# A mutatóvonal

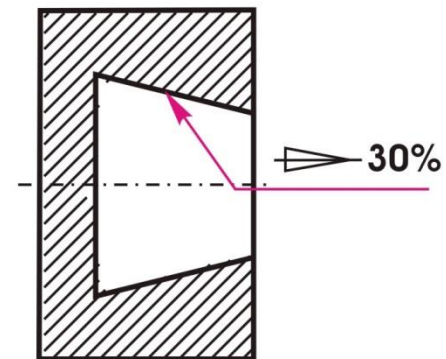
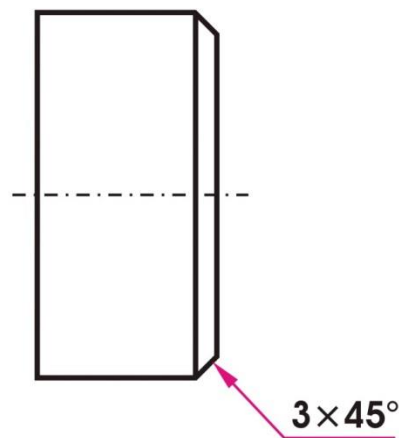
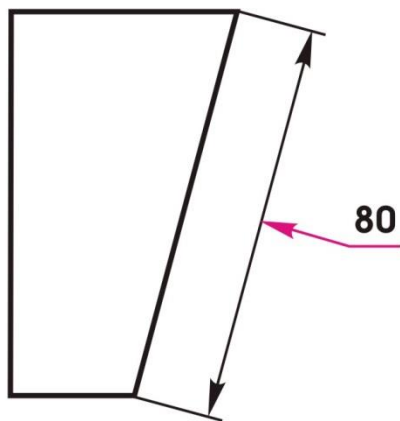
**Formája:** vékony vonal (0,35 mm)

**Célja:** a kiemelt szöveg (méret) helyzetének jelölése

# A mutatóvonal alakja



# A mutatóvonal elhelyezésének változatai





# A méret felirata

Betűnagyság: **3,5 mm**

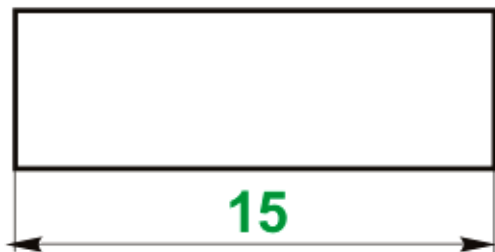
Méreték mértékegysége: **mm**

Mértékegység **nem** írandó ki

A szöveg (méretszám) a méretvonal felett, középen,  
**balról jobbra, vagy alulról felfelé** legyen olvasható

# A szöveg elhelyezésének változatai I.

Helyes

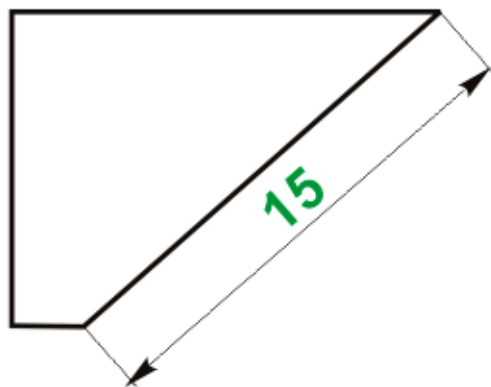


Tiltott!

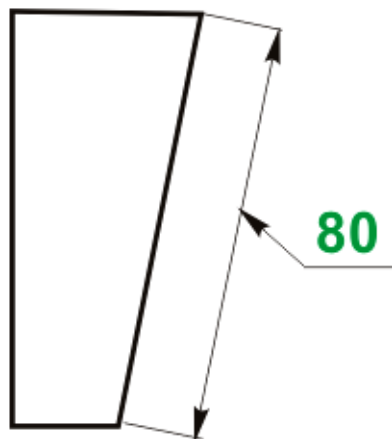
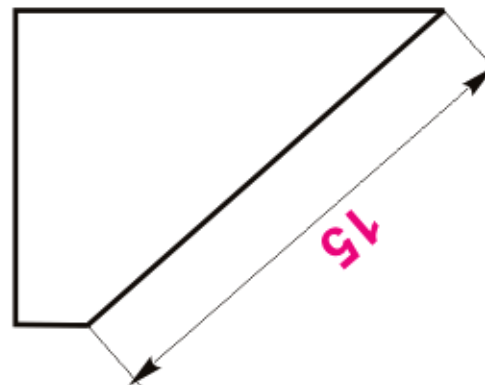


# A szöveg elhelyezésének változatai II.

**Helyes**

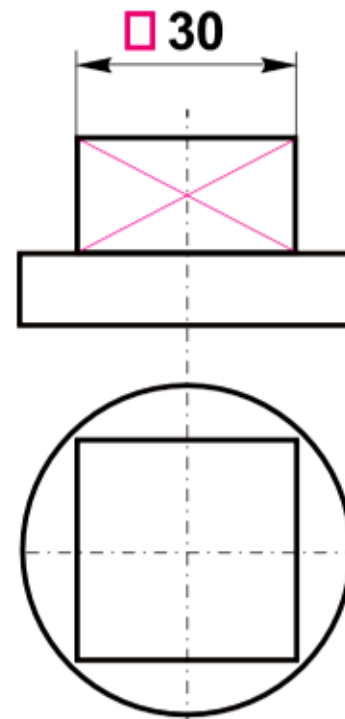
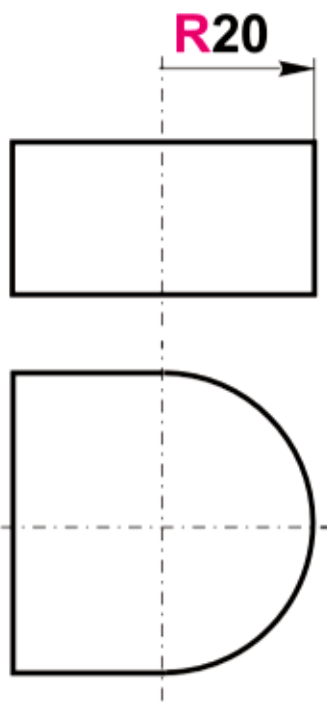
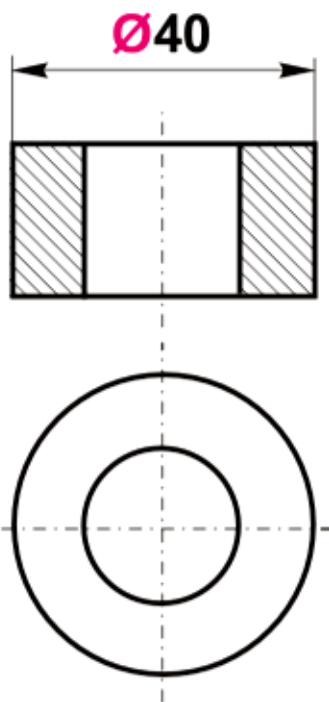


**Tiltott!**

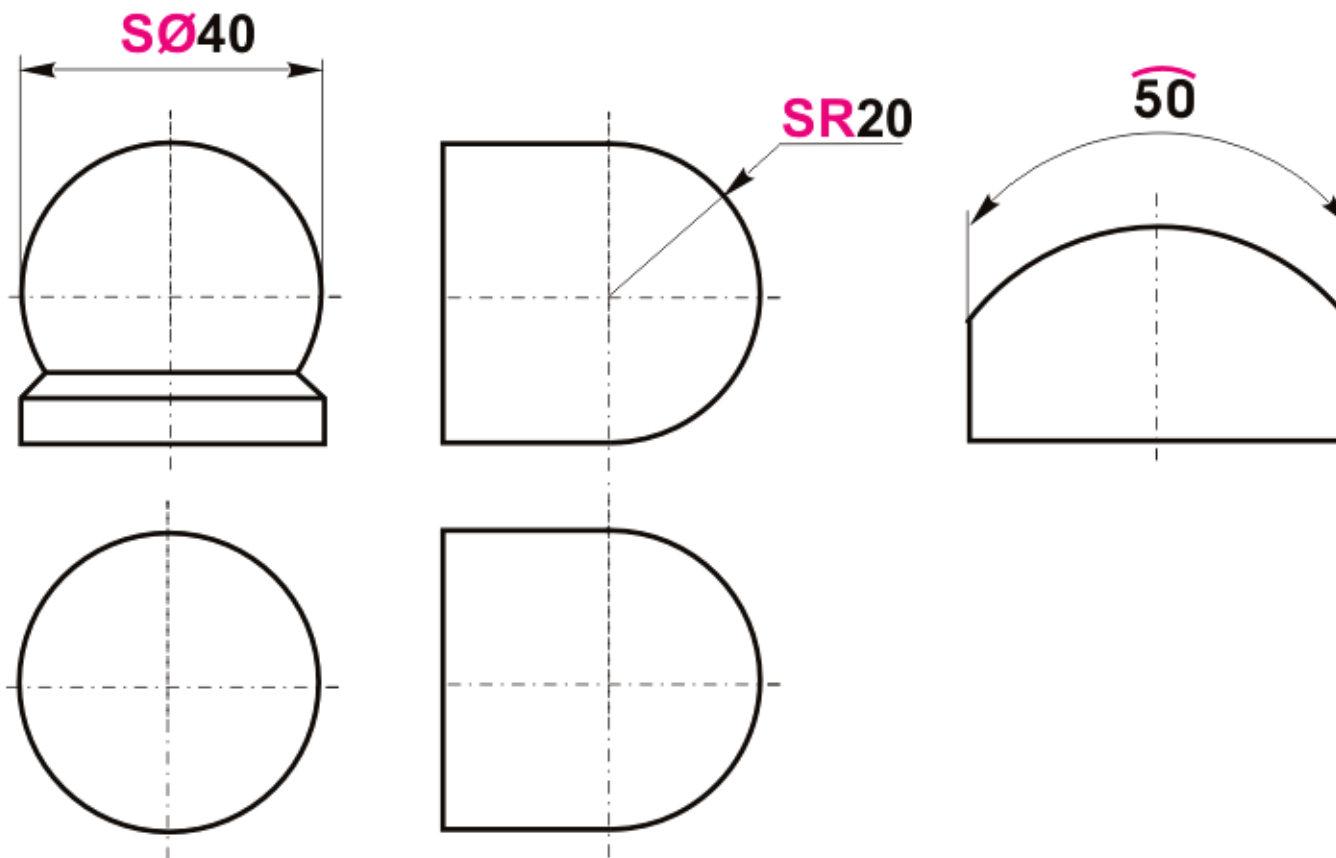


**Az alkatrész alakjára utaló jelek**

# Hengeres, lekerekített és négyzetes hasáb alakú alkatrészek

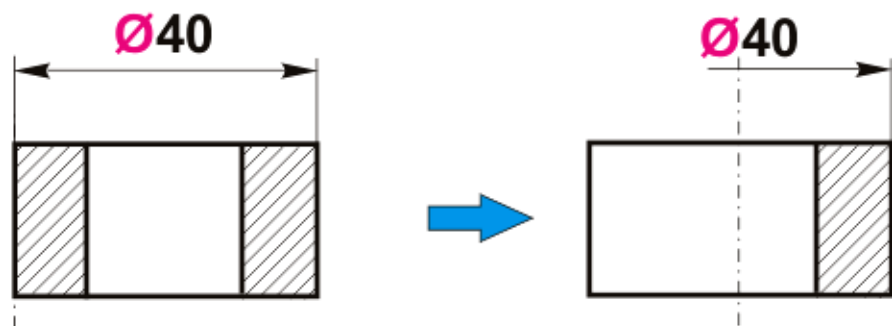


# Gömbfelületű és íves alkatrészek

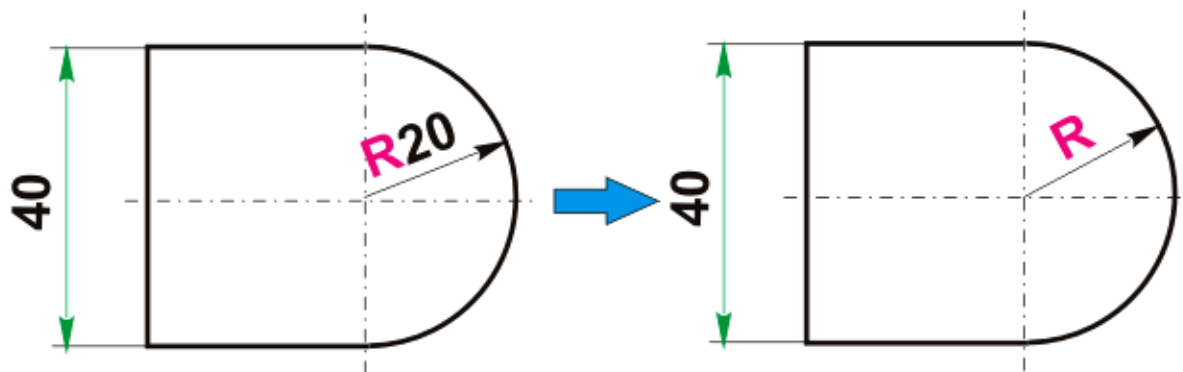


**Megengedhető egyszerűsítések**

## Csak az átmérő felének jelölése

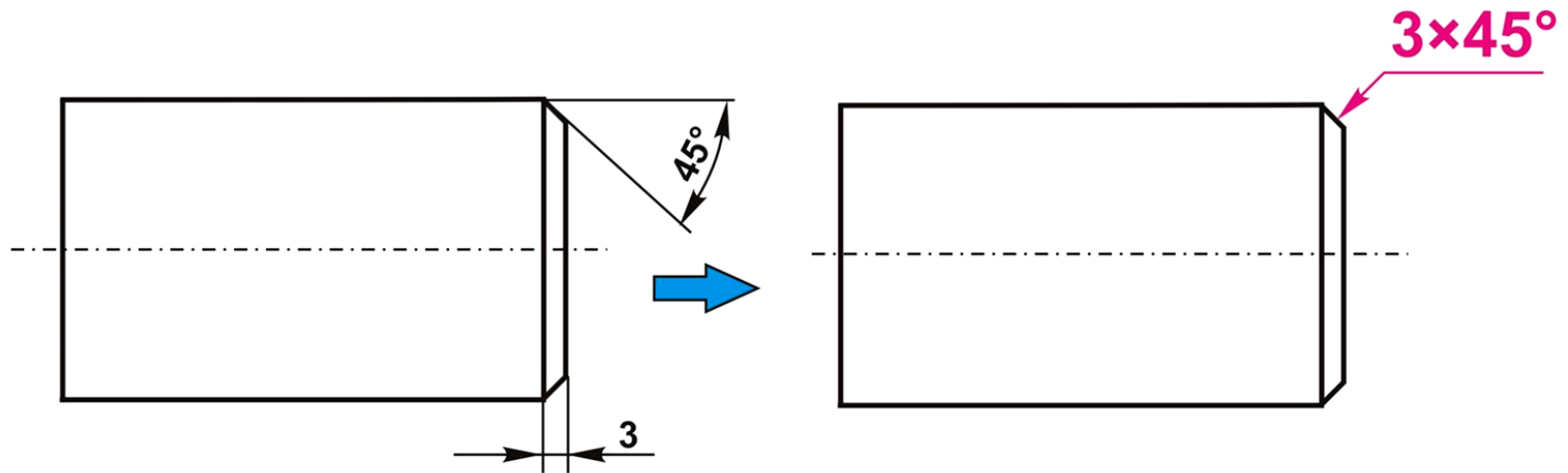


## A sugár számértékének elhagyása





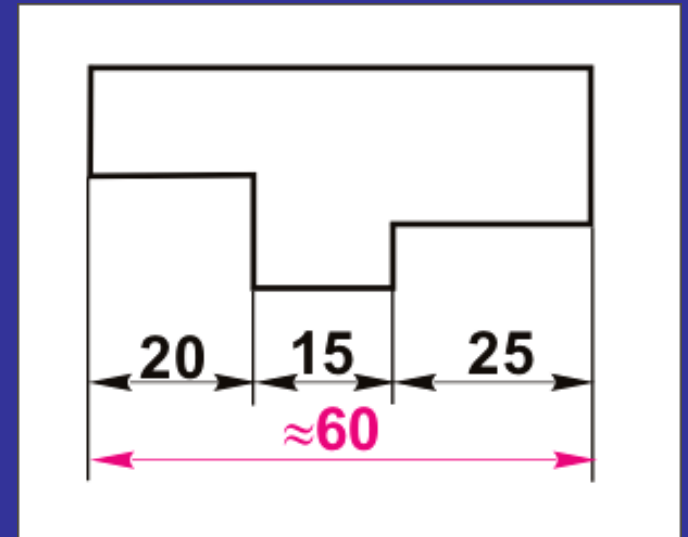
# Éltompítások összevont jelölése



# MÉRETHÁLÓZATOK

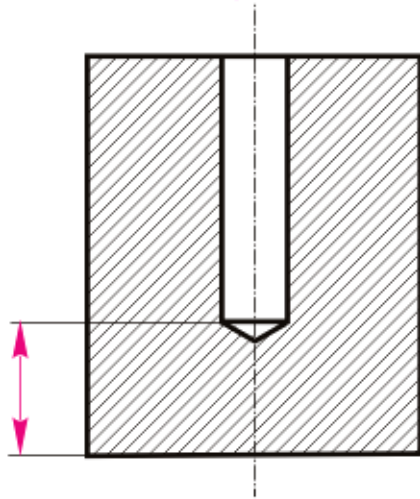
# A mérethálózatok általános jellemzése

- **Fogalma:**
  - rajz méretmegadásainak összessége
- **Alapelvei:**
  - Minden méret egyszer megadandó
  - Egy méret csak egyszer adható meg
  - Zárt méretlánc alkalmazása tilos
  - A mérethálózat legyen áttekinthető

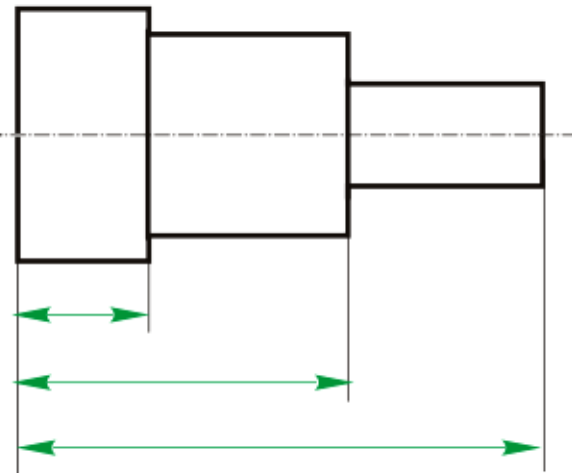
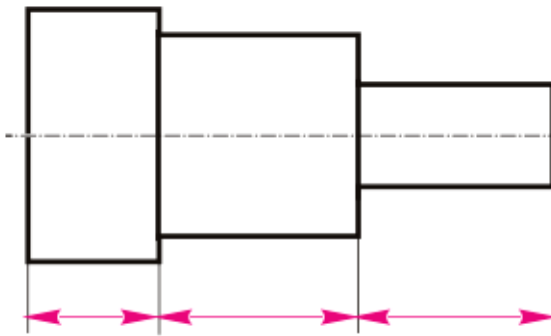
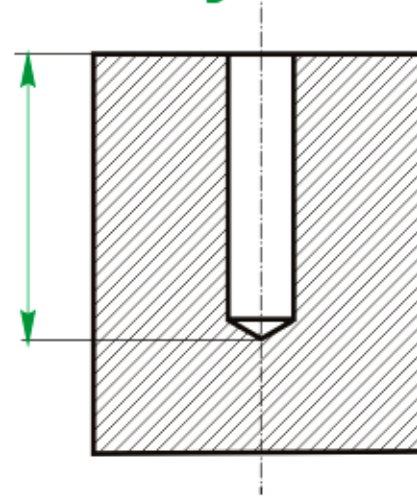


# A mérethálózat igazodjon a gyártás technológiájához

Helytelen

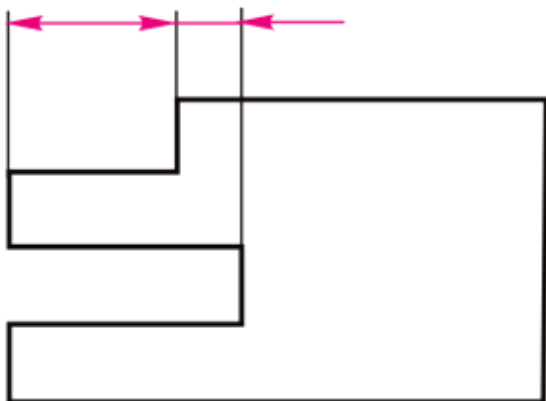


Helyes

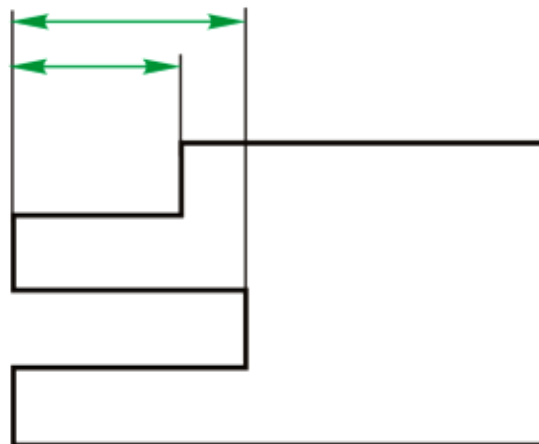


# A mérethálózat igazodjon az ellenőrző mérések menetéhez

**Helytelen**

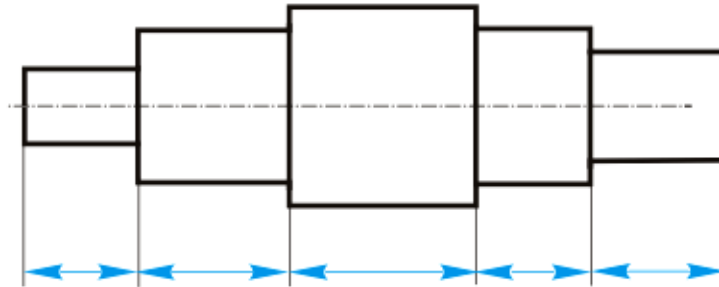


**Helyes**

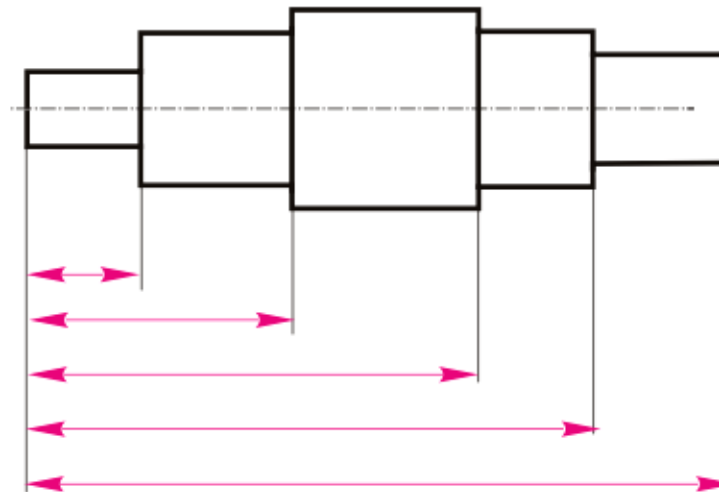


# A mérethálózatok fajtái

## Láncszerű mérethálózat



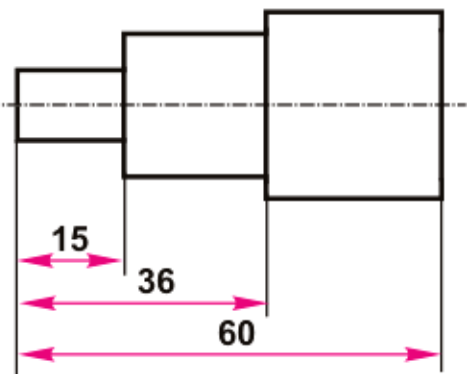
## Bázistól induló mérethálózat



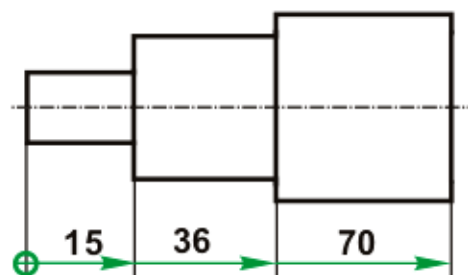
# Bázistól induló mérethálózatok

# A bázistól induló mérethálózat változatai

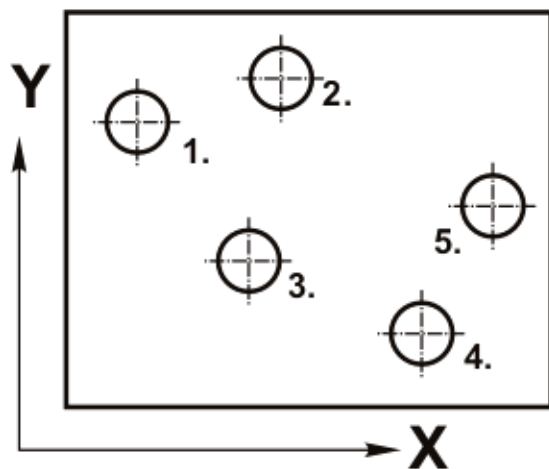
## Párhuzamos



## Összevont



## Koordinátás

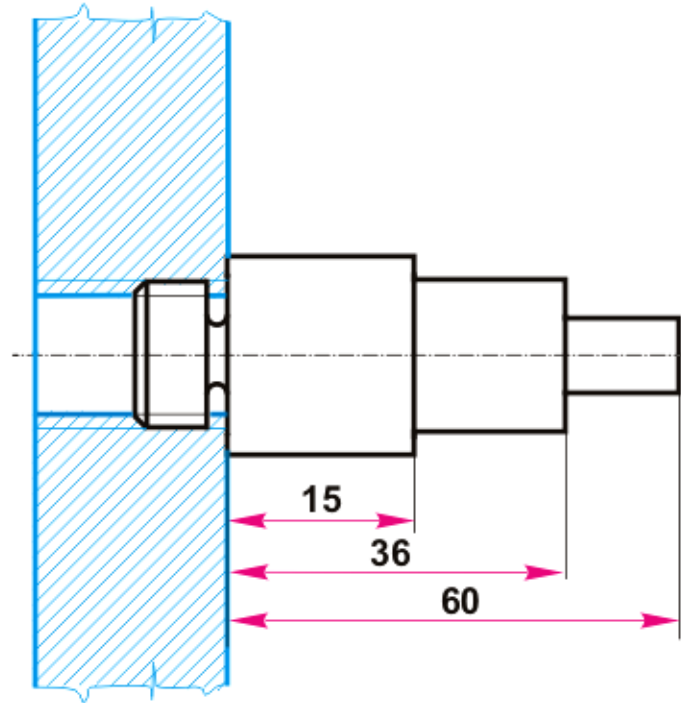


N°	X [mm]	Y [mm]
1.	10	40
2.	30	44
3.	23	20
4.	50	10
5.	60	30

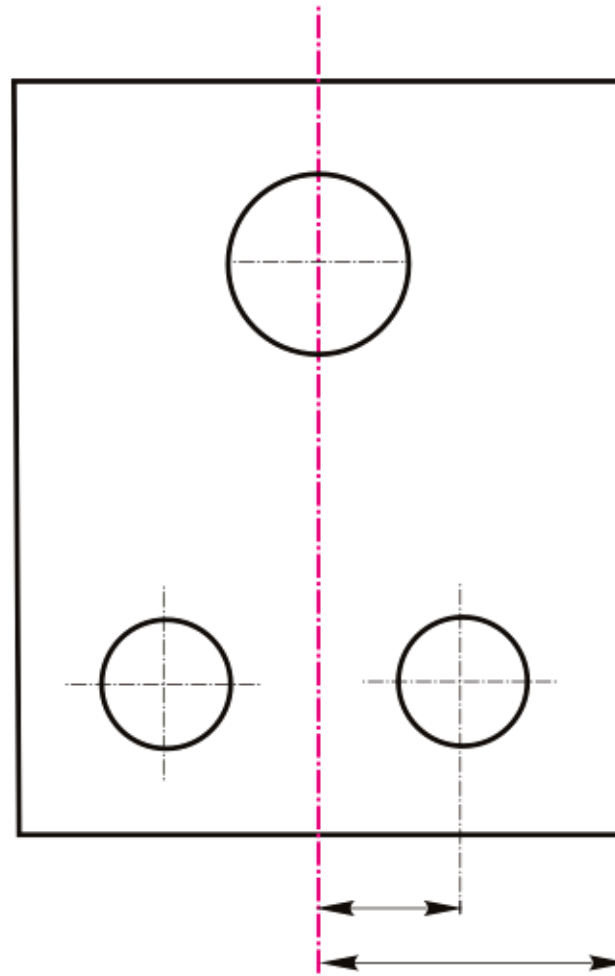


# A bázis kiválasztásának szempontjai

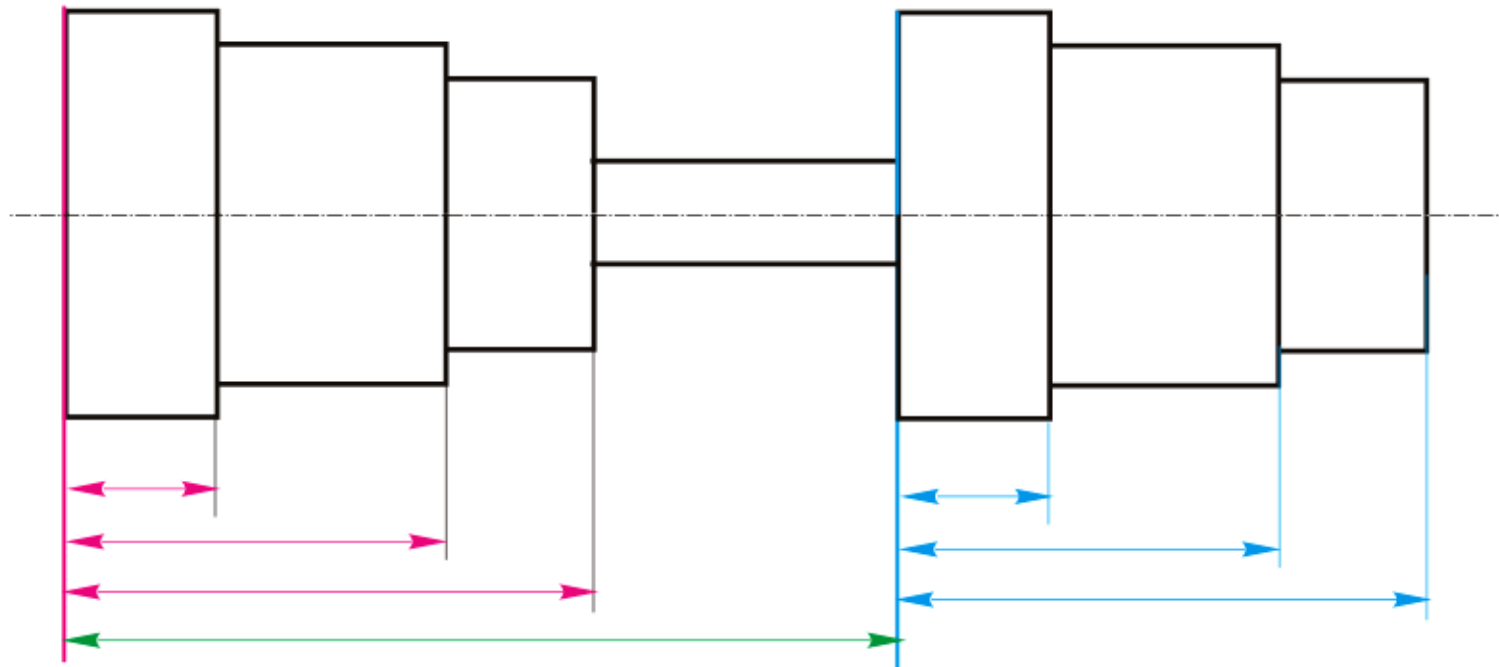
# Bázis: az alkatrész működése miatt fontos felület



# Bázis: az alkatrész működése miatt fontos szimmetriatengely



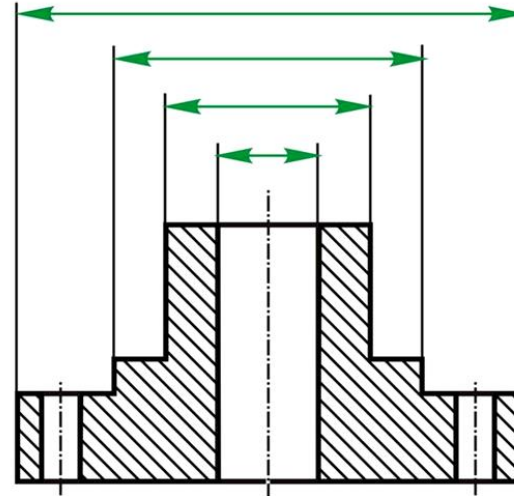
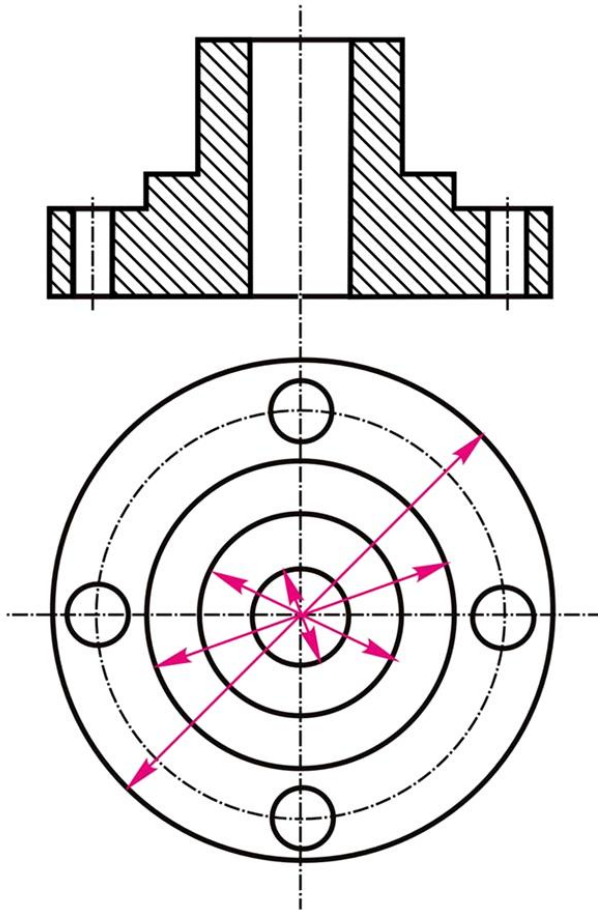
# Bázis: az alkatrész valamely fő méretének határoló vonala



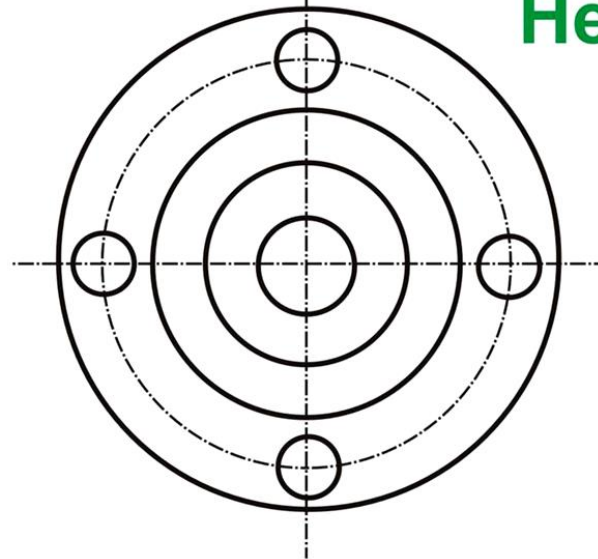
# **A mérethálózat elhelyezésének szempontjai**

# A méreteket a legjellemzőbb vetületen kell megadni

**Helytelen**

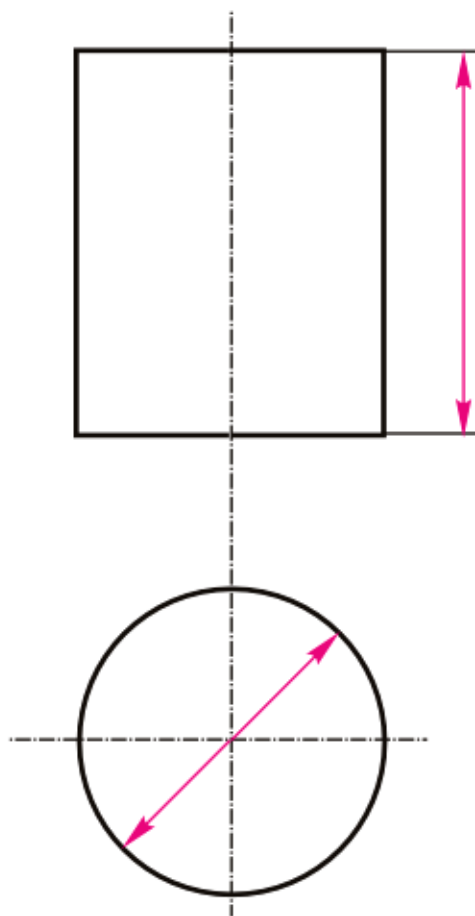


**Helyes**

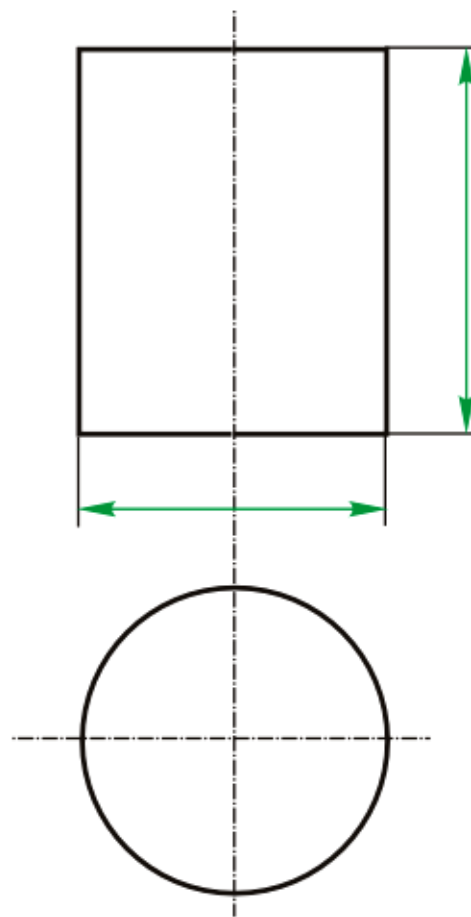


# Egy geometriai egységet alkotó méretcsoportot lehetőleg ugyanazon a vetületen adjuk meg

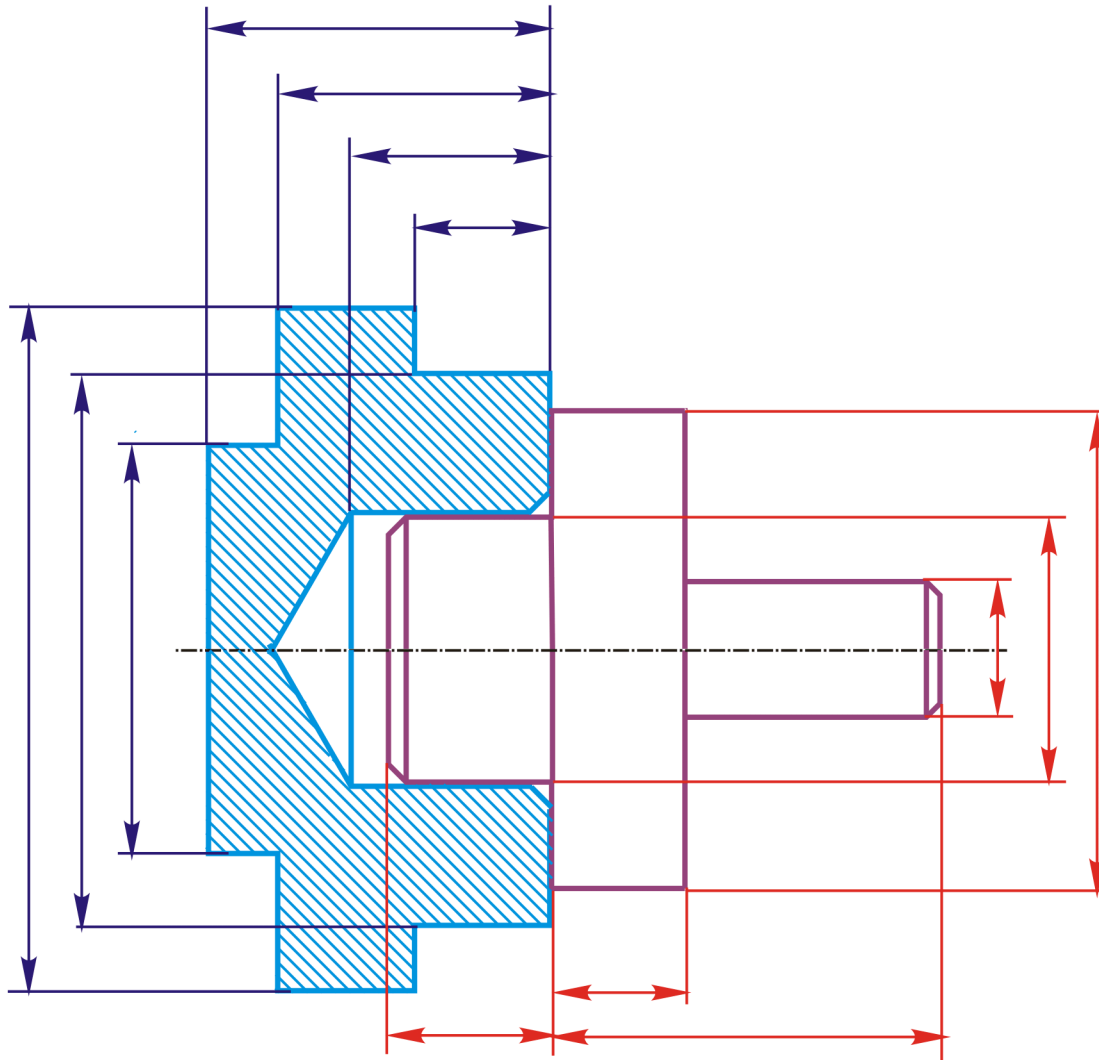
**Helytelen**



**Helyes**



# Összeállítási rajzon a különböző alkatrészek mérethálózata lehetőleg alkosson elkülönülő csoportokat





**KÖSZÖNÖM A FIGYELMET**