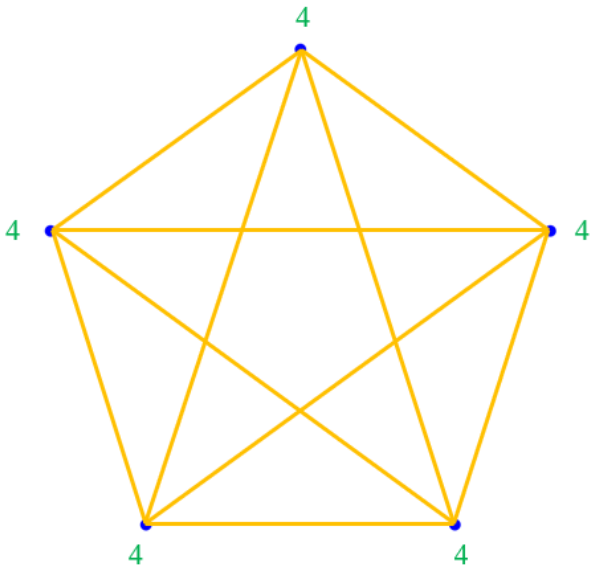
Halmazok

Gráfok részei



Csúcs (pont)

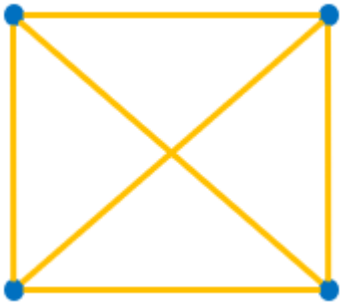
Él: A csúcsokat összekötő vonalak

Fokszám: A csúcsból kiinduló élek száma

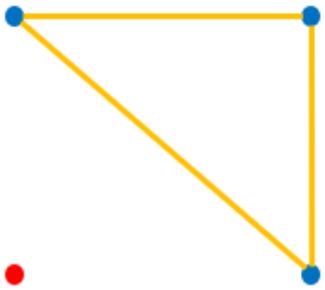
$Fokszámok\ összege = 2 \cdot élek\ száma$

$n\ csúcsú\ gráf\ éleinek\ a\ száma$: $\boldsymbol{\frac{n \cdot (n-1)}{2}}$

Gráfok típusai



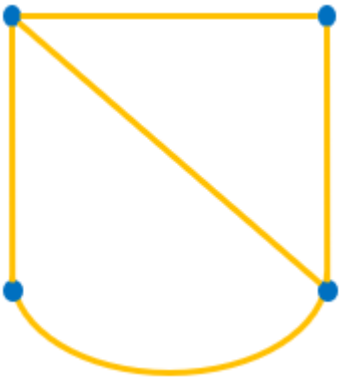
Teljes gráf: Ha bármely két pontja össze van kötve egy éllel.



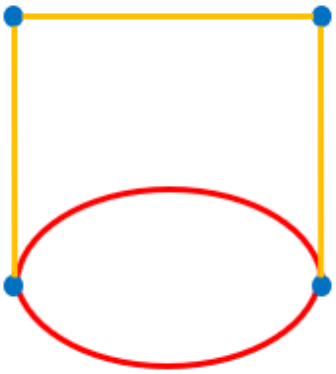
Izolált pont: Ha egy pontban nincs él.

Többszörös él: Ha két pont között egynél több élt húzunk.

Hurok: Olyan él, amelynek a két végpontja ugyanaz a pont.

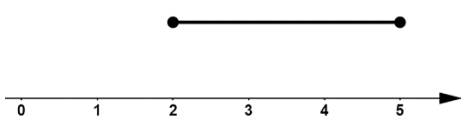
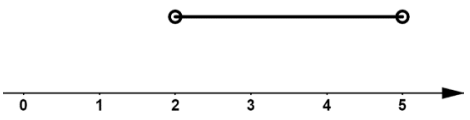
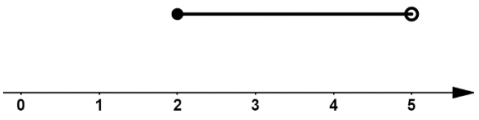


Egyszerű gráf: Ha nincs benne hurok vagy többszörös él.

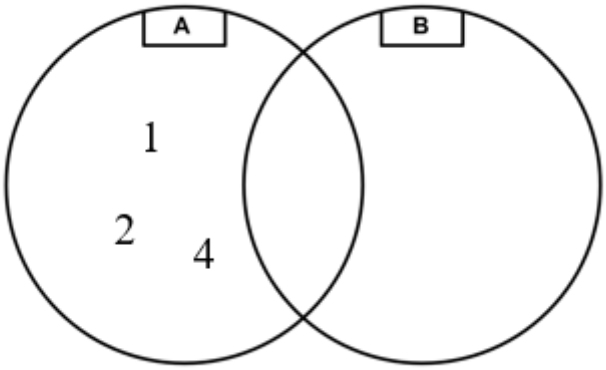


Nem egyszerű gráf: Ha van benne hurok vagy többszörös él.

Számok jelölése a számegyenesen

Algebrai jelölés	Halmaz jelölés	Jelölés a számegyenesen
$2 \leq x \leq 5$ Első elem: 2 Utolsó elem: 5	$[2; 5]$	
$2 < x < 5$ Első elem: 2,0001 Utolsó elem: 4,9999	$]2; 5[$	
$2 < x \leq 5$ Első elem: 2,0001 Utolsó elem: 5	$]2; 5]$	
$2 \leq x < 5$ Első elem: 2 Utolsó elem: 4,9999	$[2; 5[$	

Halmazok típusai



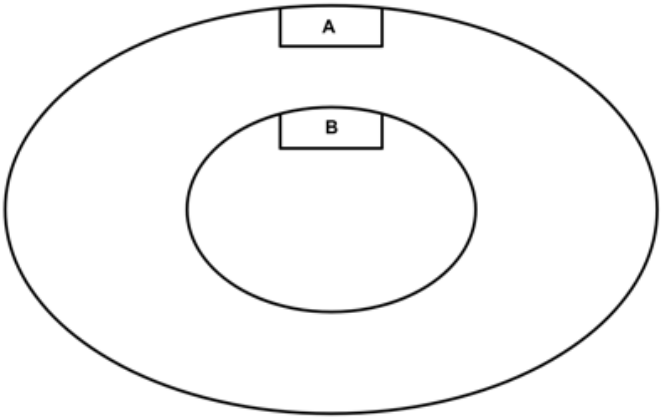
$A = \{1; 2; 4\}$

$B = \{\emptyset\}$

B üres halmaz

$B = \{\emptyset\}$

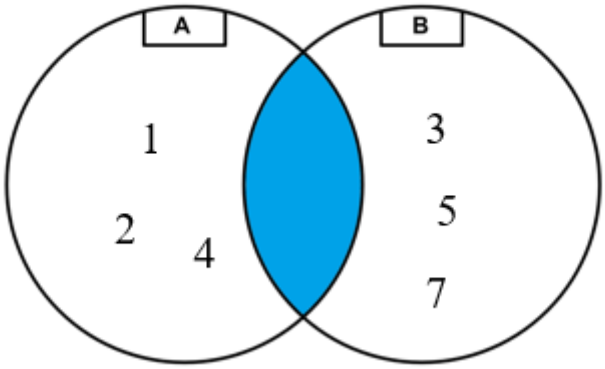
Üres halmaz jele: $\emptyset$



Részhalmaz

$B\ halmaz\ A\ részhalmaza$

Részhalmaz jele: $B \subseteq A$



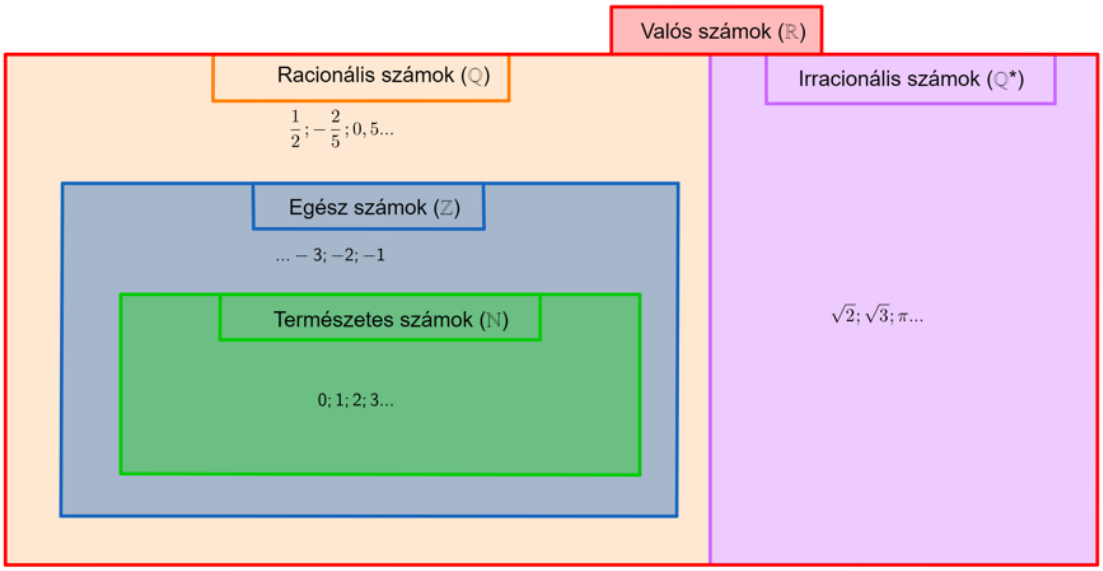
$A = \{1; 2; 4\}$

$B = \{3; 5; 7\}$

A és B halmaz diszjunkt

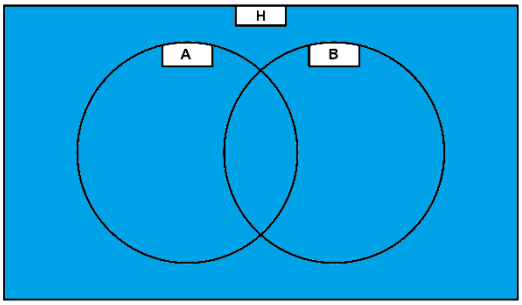
Két halmaz diszjunkt, ha nincs közös elemük (nincs semmi a közös részben (metszetben)).

Számhalmazok

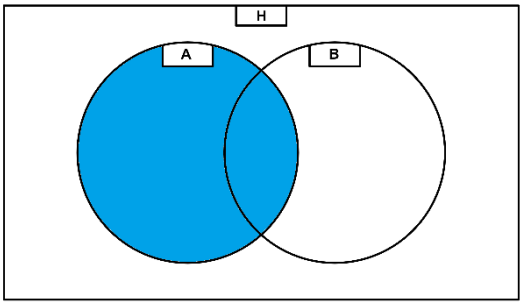


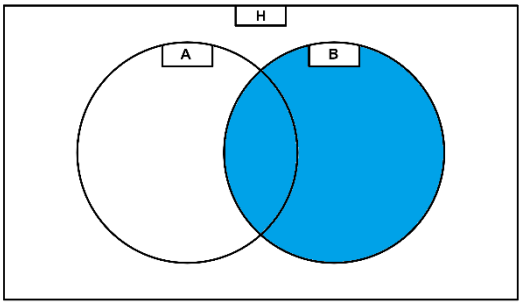
Halmaz műveletek 2 halmaz esetén

Alaphalmaz (H vagy U)

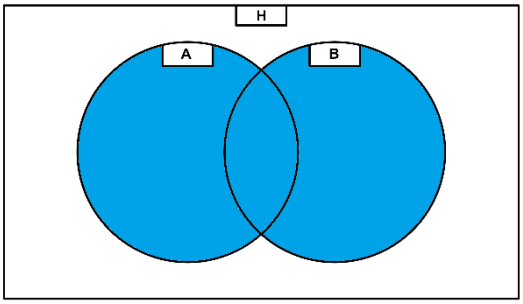


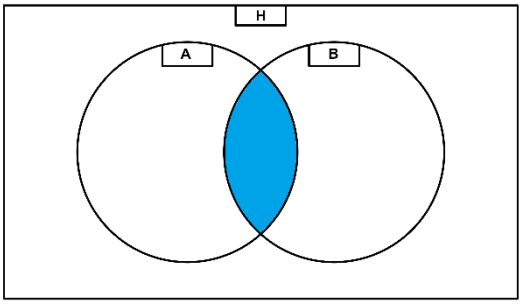
A **B**



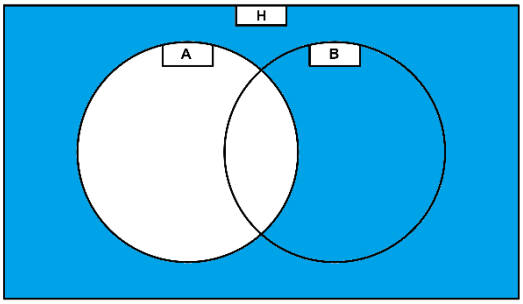


Unió $(A \cup B)$ **Metszet** $(A \cap B)$

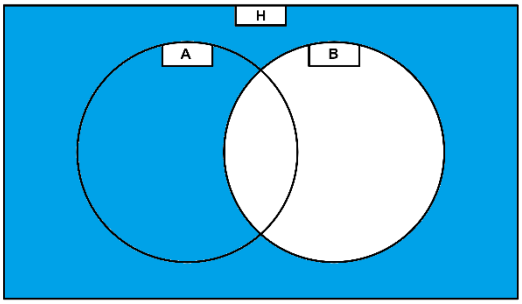




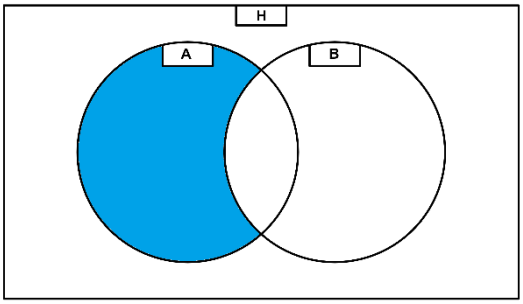
A komplementer $(\overline{A})$



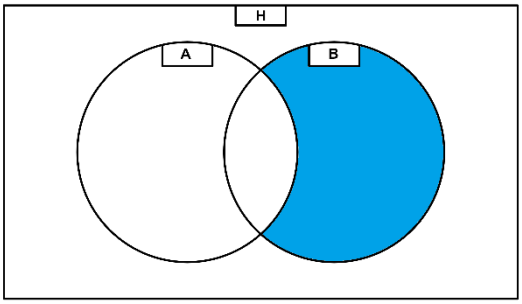
B komplementer $(\overline{B})$



A különbség B $(A \backslash B)$

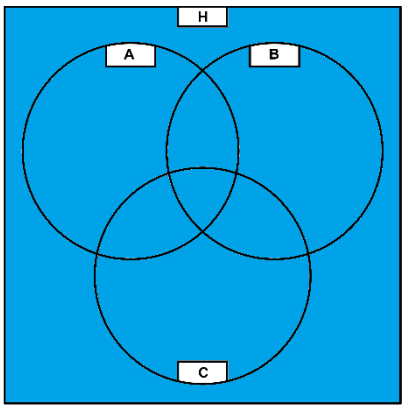


B különbség A $(B \backslash A)$

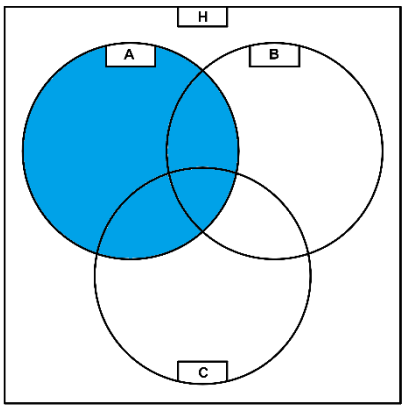


Halmaz műveletek 3 halmaz esetén

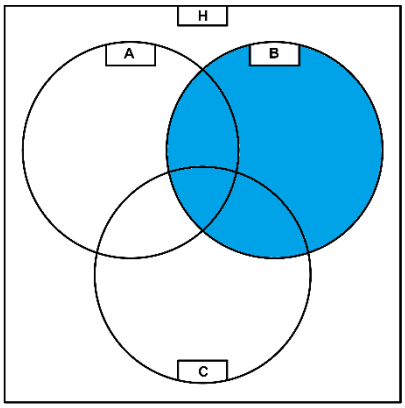
H



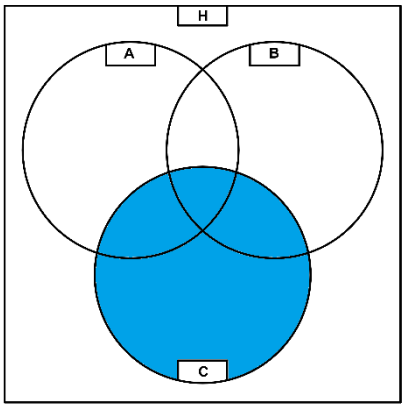
A



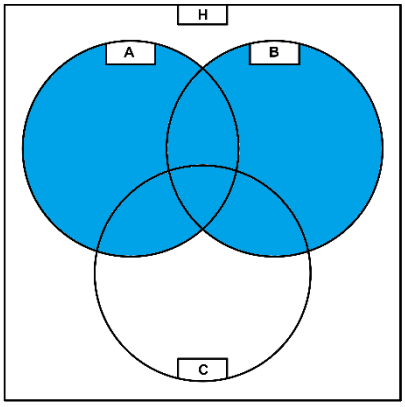
B



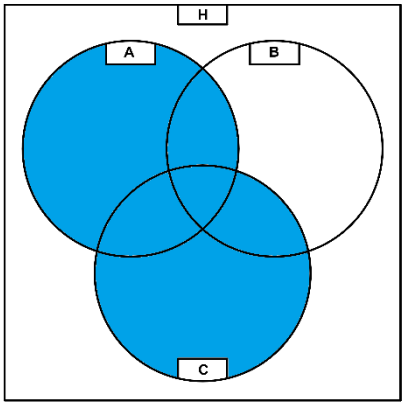
C



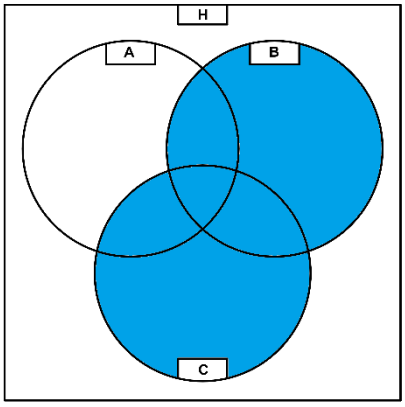
A unió B $(\boldsymbol{A} \cup \boldsymbol{B})$



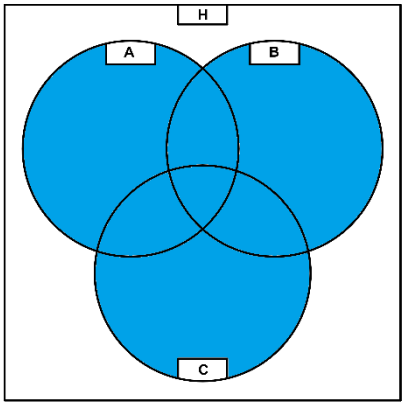
A unió C $(\boldsymbol{A} \cup \boldsymbol{C})$



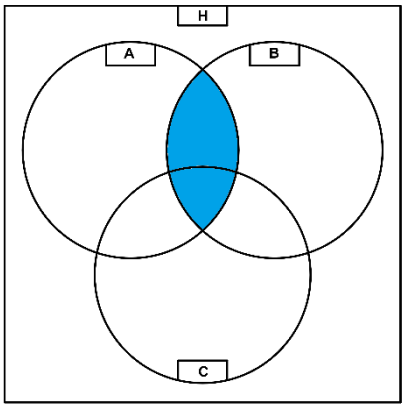
B unió C $(\boldsymbol{B \cup C})$



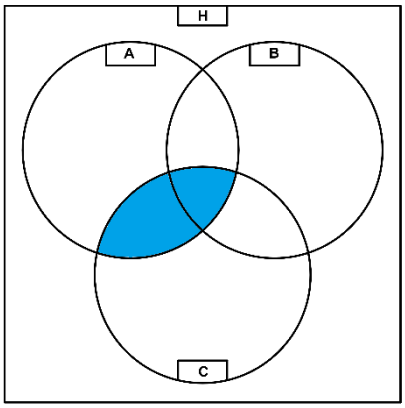
A unió B unió C $(\boldsymbol{A \cup B \cup C})$



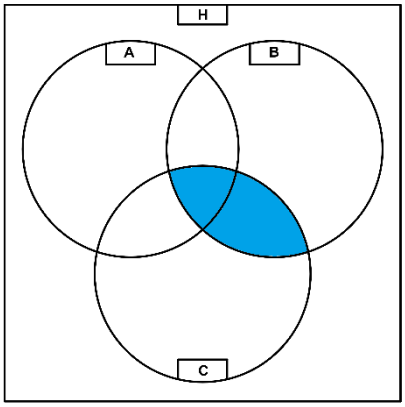
A metszet B $(\boldsymbol{A \cap B})$



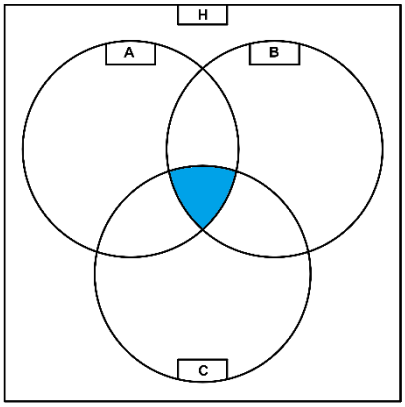
A metszet C $(\boldsymbol{A \cap C})$



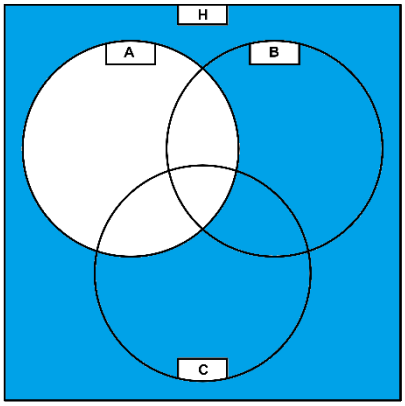
B metszet C $(\boldsymbol{B \cap C})$



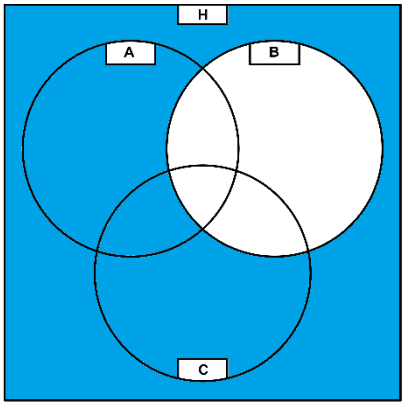
A metszet B metszet C $(\boldsymbol{A \cap B \cap C})$



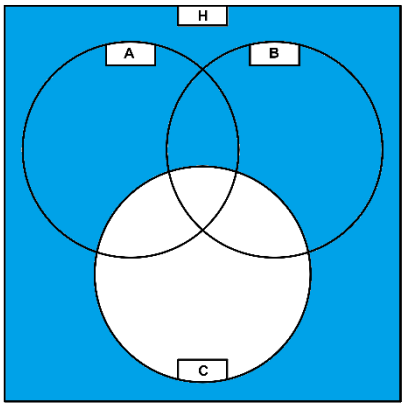
A komplementer ($\overline{A}$)



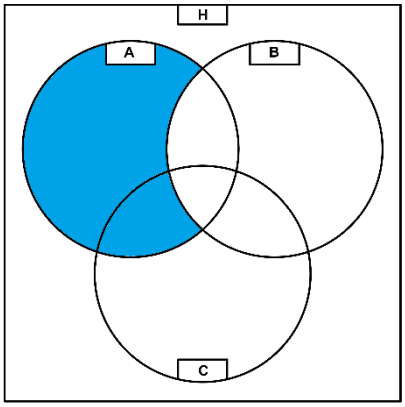
B komplementer ($\overline{B}$)



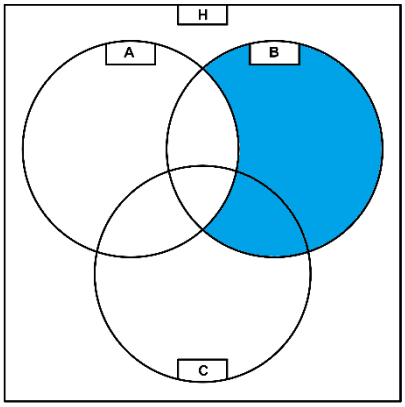
C komplementer ($\overline{C}$)



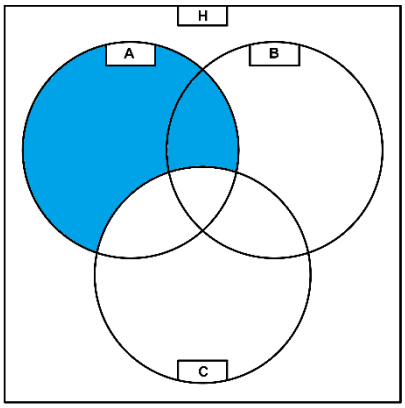
A különbség B ($A \backslash B$)



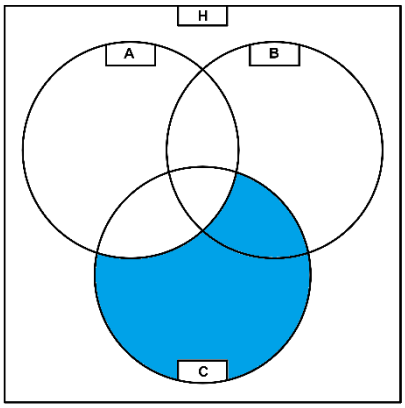
B különbség A ($B \backslash A$)



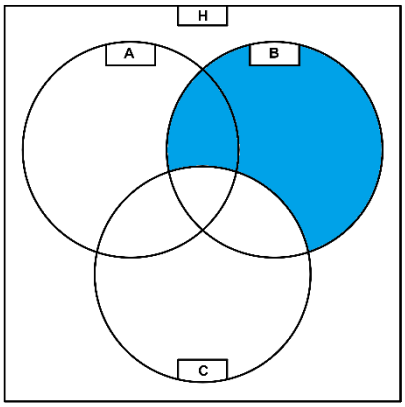
A különbség C $(A \setminus C)$



C különbség A $(C \setminus A)$



B különbség C $(B \setminus C)$



C különbség B $(C \setminus B)$