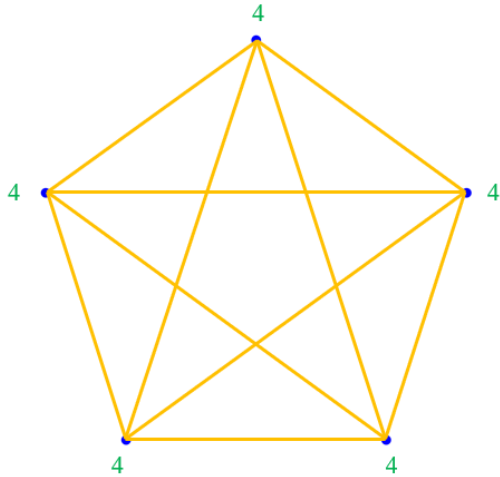


Halmazok, Gráfok

Gráfok részei



Csúcs (pont)

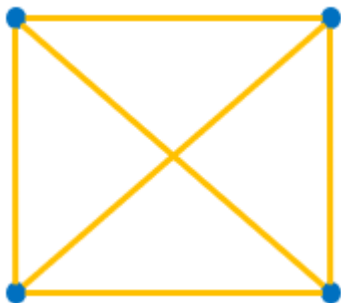
Él: A csúcsokat összekötő vonalak

Fokszám: A csúcsból kiinduló élek száma

Fokszámok összege = $2 \cdot$ élek száma

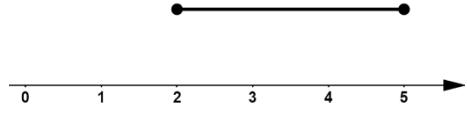
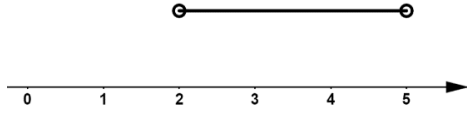
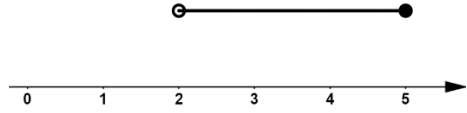
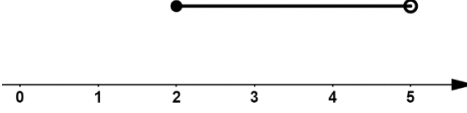
n csúcsú gráf éleinek a száma: $\frac{n \cdot (n - 1)}{2}$

Gráfok típusai

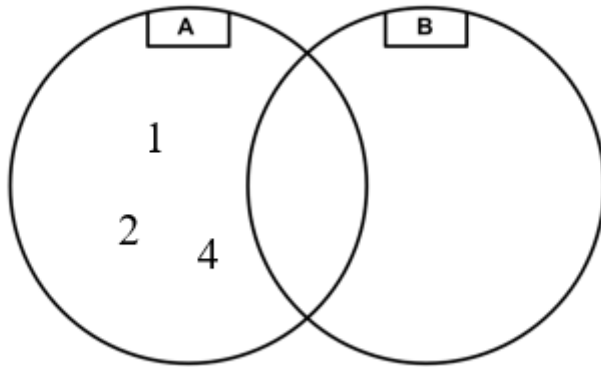


Teljes gráf: Ha bármely két pontja össze van kötve egy éllel.

Számok jelölése a számegyenesen, függvények grafikonján

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



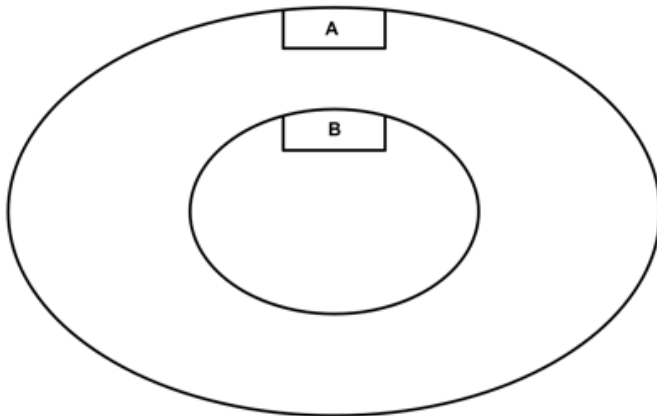
$$A = \{1; 2; 4\}$$

$$B = \{\emptyset\}$$

B üres halmaz

$$B = \{\emptyset\}$$

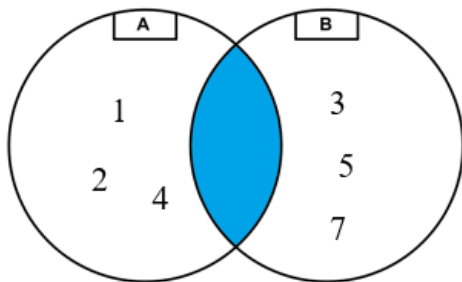
Üres halmaz jele: \emptyset



Részhalmaz

B halmaz A részhalmaza

Részhalmaz jele: $B \subseteq A$



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

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

Részalmazok

$$A = \{1; 2; 3\}$$

A halmaz részalmazai:

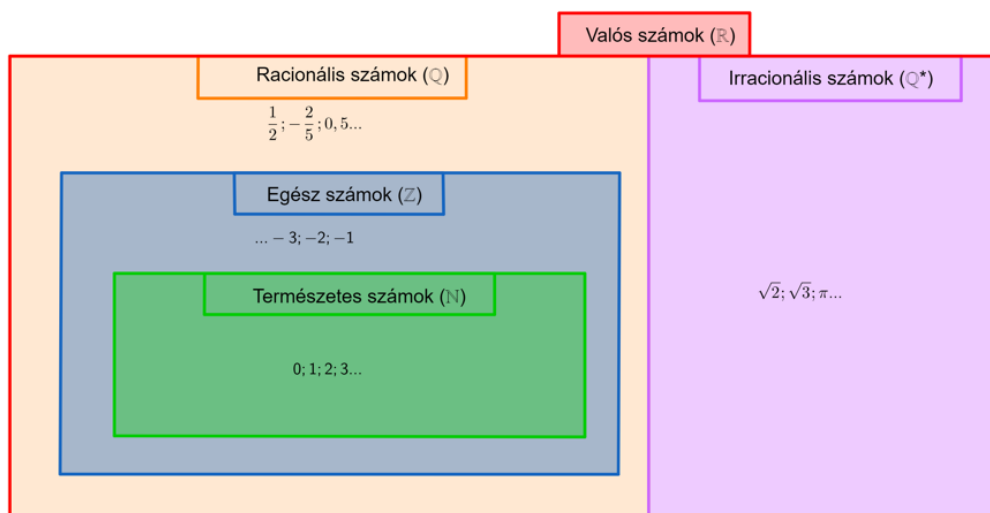
0 elemű: $\{\emptyset\}$

1 elemű: $\{1\}, \{2\}, \{3\}$

2 elemű: $\{1; 2\}, \{1; 3\}, \{2; 3\}$

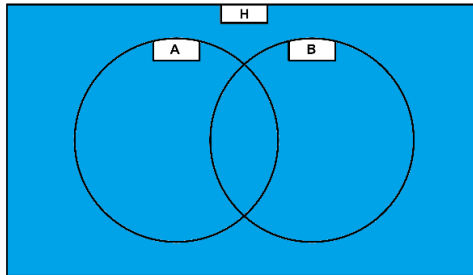
3 elemű: $\{1; 2; 3\}$

Számalmazok



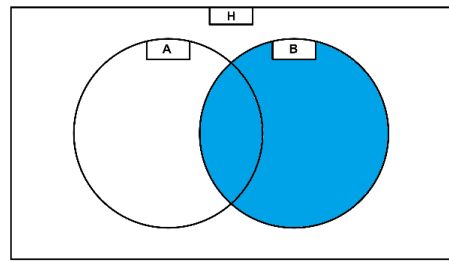
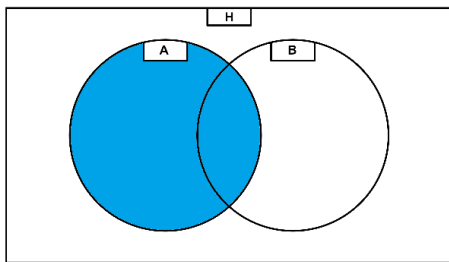
Halmaz műveletek 2 halmaz esetén

Alaphalmaz (H vagy U)



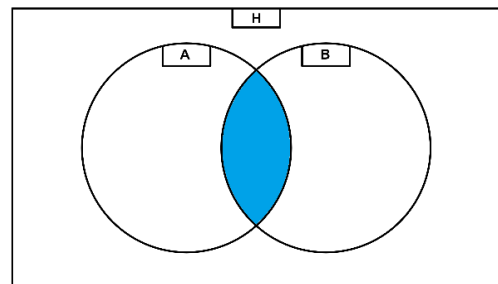
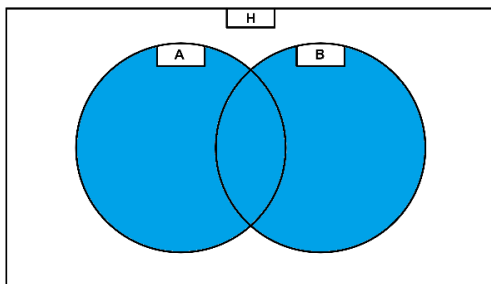
A

B

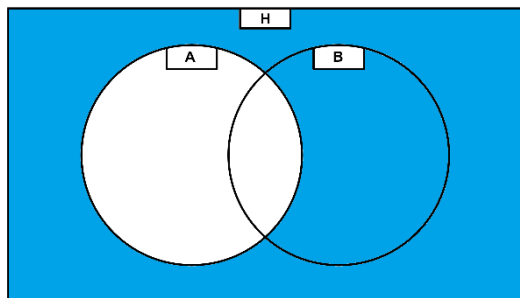


Unió ($A \cup B$)

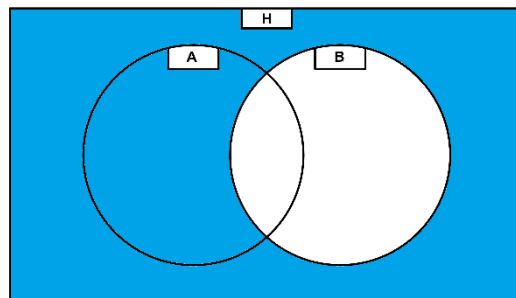
Metszet ($A \cap B$)



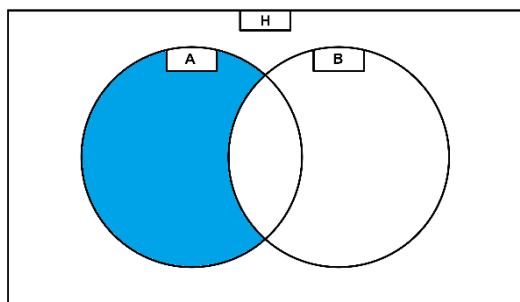
A komplementer (\bar{A})



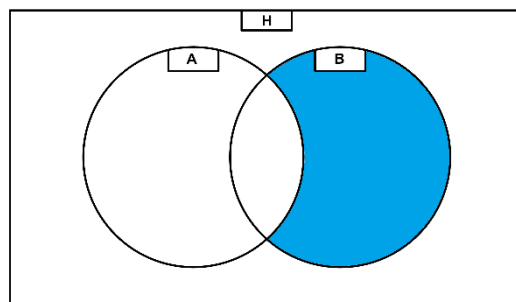
B komplementer (\bar{B})



A különbség B ($A \setminus B$)

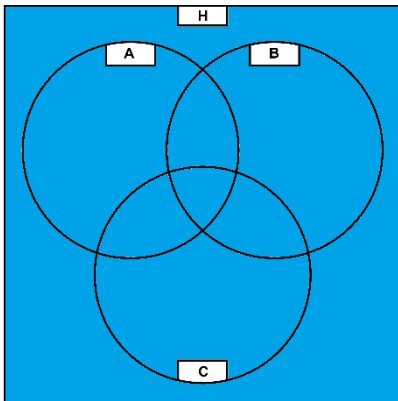


B különbség A ($B \setminus A$)

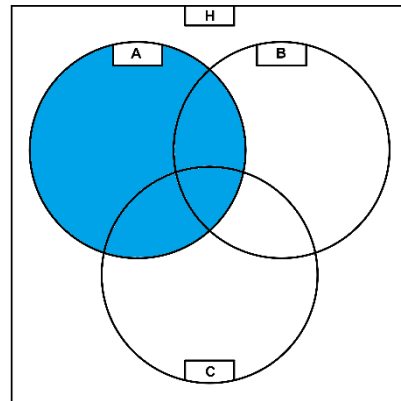


Halmaz műveletek 3 halmaz esetén

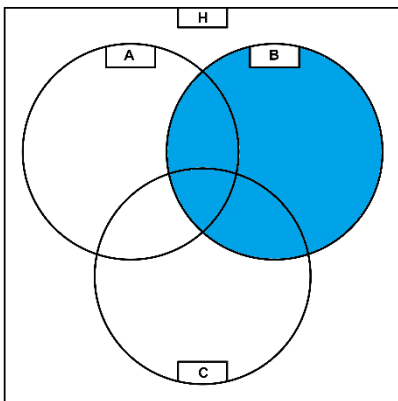
H



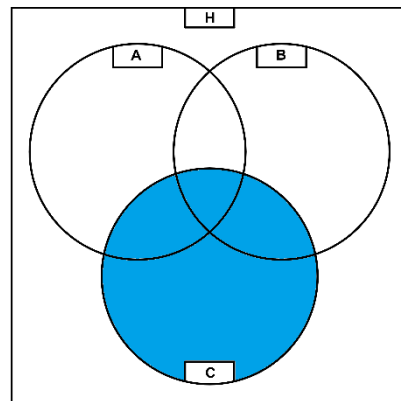
A



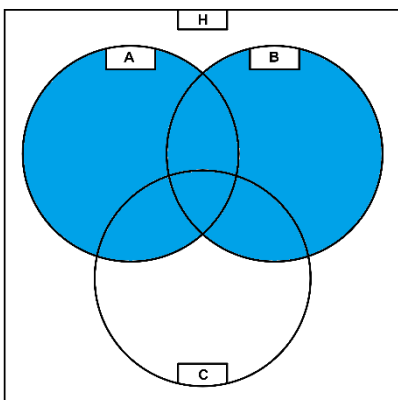
B



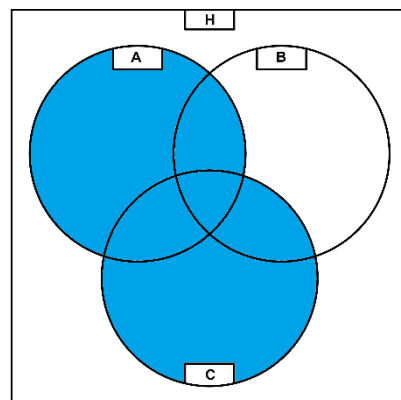
C



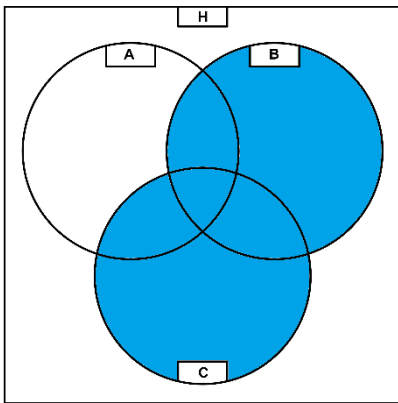
***A* unió *B* ($A \cup B$)**



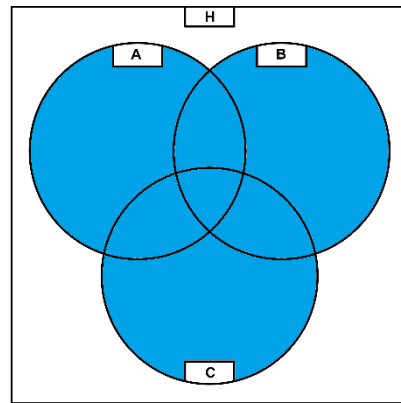
***A* unió *C* ($A \cup C$)**



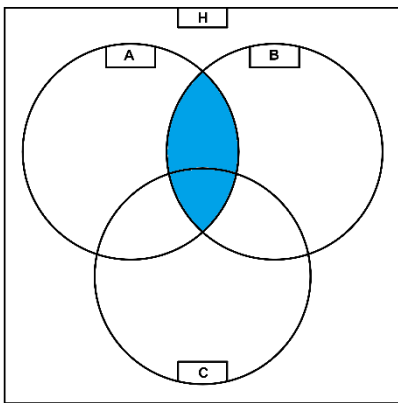
***B* unió *C* ($B \cup C$)**



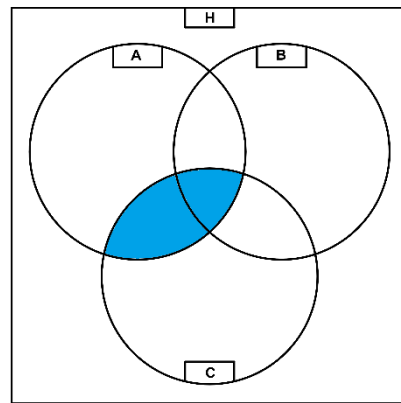
***A* unió *B* unió *C* ($A \cup B \cup C$)**



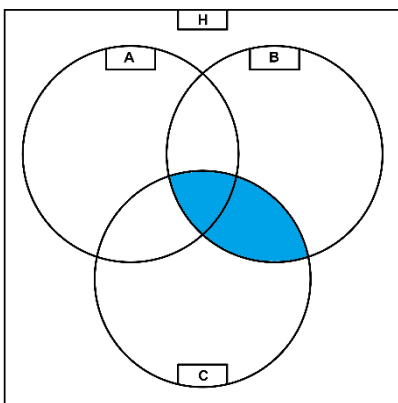
***A* metszet *B* ($A \cap B$)**



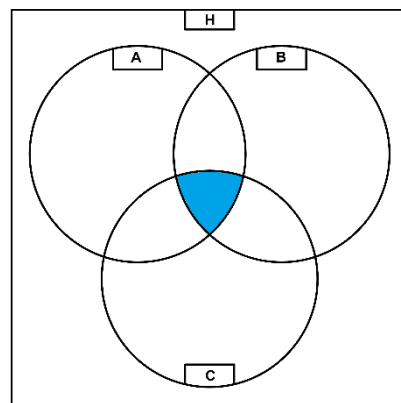
***A* metszet *C* ($A \cap C$)**



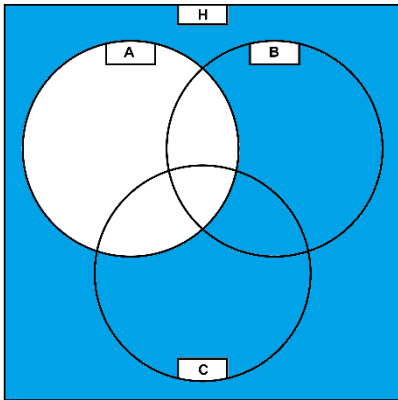
***B* metszet *C* ($B \cap C$)**



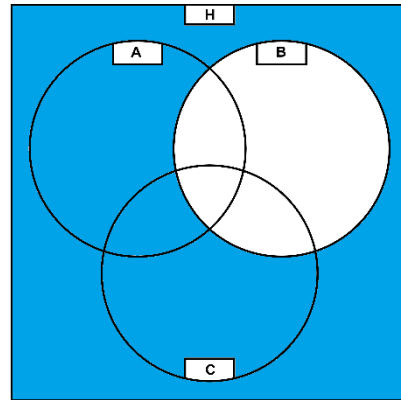
***A* metszet *B* metszet *C* ($A \cap B \cap C$)**



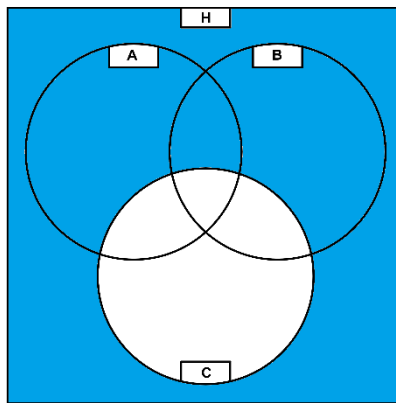
A komplementer (\bar{A})



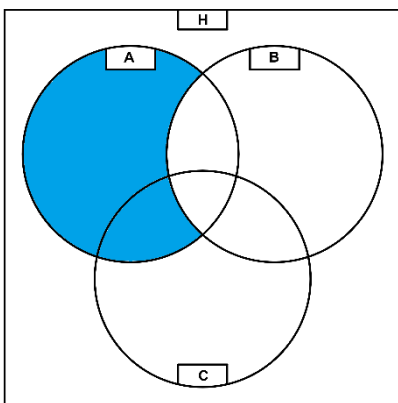
B komplementer (\bar{B})



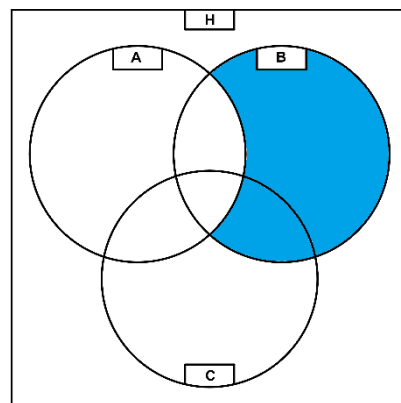
C komplementer (\bar{C})



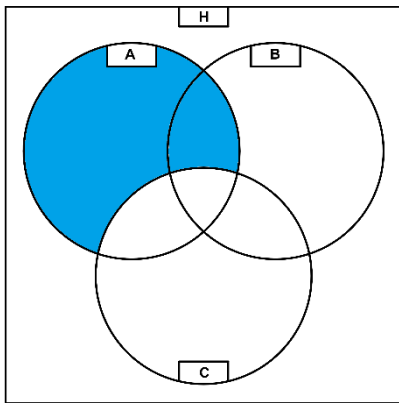
A különbség B ($A \setminus B$)



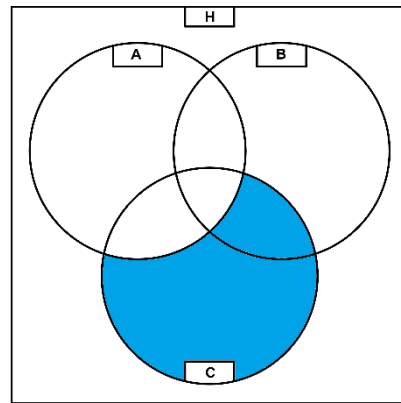
B különbség A ($B \setminus A$)



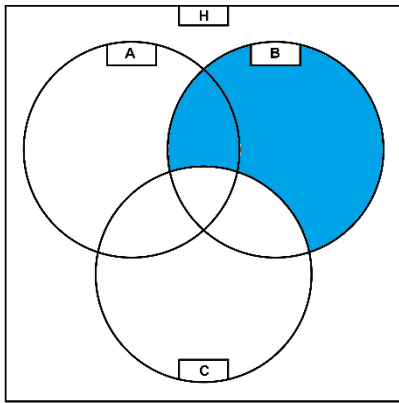
A különbség C ($A \setminus C$)



C különbség A ($C \setminus A$)



B különbség C ($B \setminus C$)



C különbség B ($C \setminus B$)

