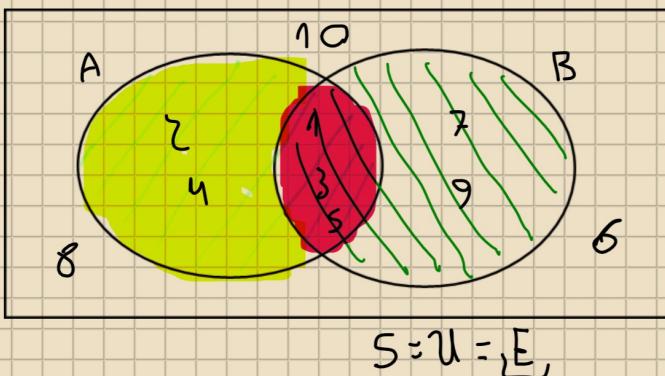


Conjuntos:



$A \cup B$ : UNIÓN

$A \cap B$ : INTERSECCIÓN

$$A: \{n \in 1 \text{ a } 5\} : \{1, 2, 3, 4, 5\}$$

$$B: \{1, 3, 5, 7, 9\} \quad \overline{B}: \{2, 4, 6, 8, 10\}$$

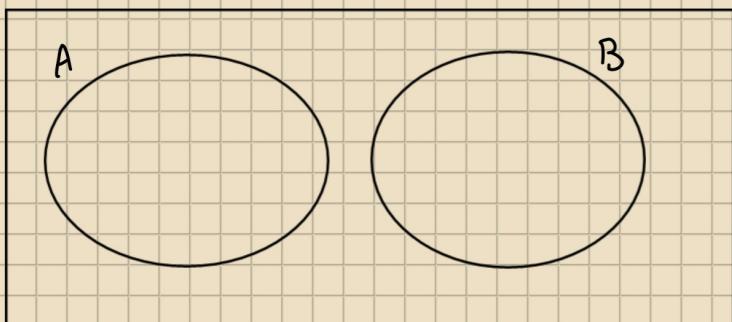
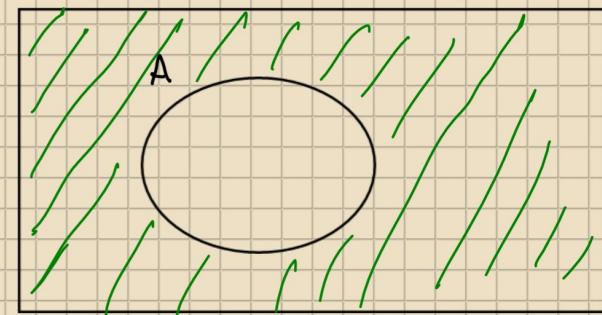
$$A \cap B: \{1, 3, 5\}$$

$$A \cup B: \{1, 2, 3, 4, 5, 7, 9\}$$

$$\text{Sola } A: A - B: \{2, 4\} : A \cap \overline{B}$$

$$A \cap \overline{B}: \{2, 4\}$$

$\overline{B}$   $B'$   $B^c$



$$A \cap B = \{\} \neq \emptyset$$

Disjuntos.

O mutuamente excluyentes.

O incompatible.

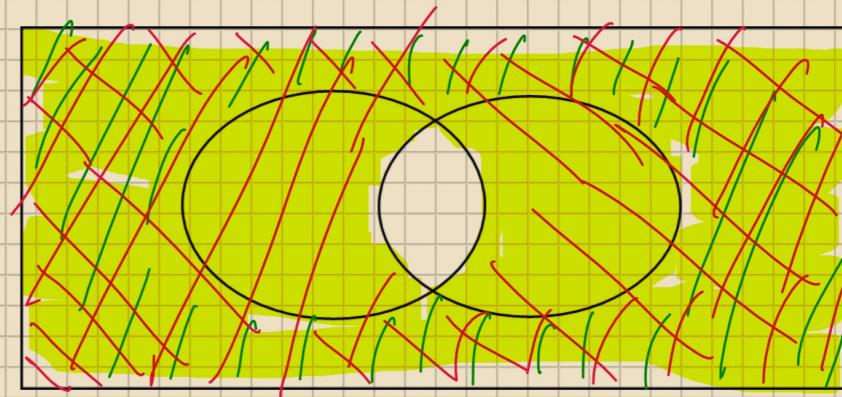
Leyes de De Morgan:

$$\text{i)} \overline{A \cup B} = \overline{A} \cap \overline{B}$$

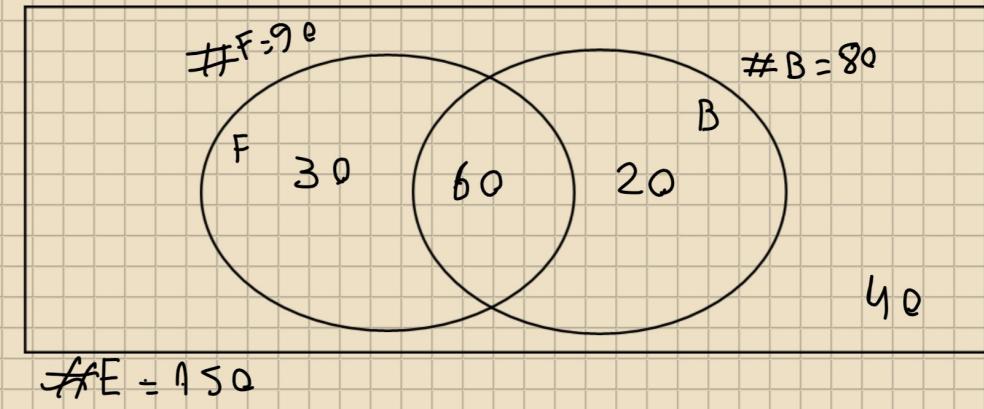
$$\text{ii)} \overline{A \cap B} = \overline{A} \cup \overline{B}$$

Se realiza una encuesta a 150 personas. 90 dijeron que juegan futbol, 80 juegan basquet y 20 solo juegan basquet.

Calcular cuantos juegan solo futbol, cuantos practican ambos deportes y cuantos no practican ninguno.



$$\overline{A \cup B}$$



$$\# \text{ Solo } B = 20$$

$$\# (\text{Solo } B \cup (B \cap F))$$

## Variaciones simples

-Los elementos no pueden repetirse.

-Si intercambio un elemento del grupo por otro, se forma un grupo diferente.

-Si intercambio un elemento del grupo por otro que no pertenece al grupo, se forma un grupo diferente.

1 2 3 u s

1 2 3

2 1 3

4 1 3

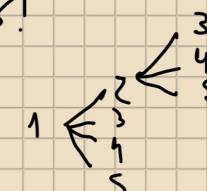
$$V_{n,k} = \frac{n!}{(n-k)!}$$

$$\boxed{V_{5,3}} = \frac{5!}{(5-3)!} = \frac{5 \cdot 4 \cdot 3 \cdot \cancel{2!}}{\cancel{2!}} = 60$$

$$\frac{n!}{(n-n)!} = \frac{n!}{0!} = n!$$

$$V_{5,2} = \frac{5!}{(5-2)!} = \frac{5 \cdot 4 \cdot \cancel{3!}}{\cancel{3!}} = 20$$

$$\frac{n!}{(n-(n-1))!} = \frac{n!}{1!} = n!$$



$S_{n,r}$

$$\frac{x!}{x^{-1}}$$

$$\text{FACToRIAL : } \underline{\underline{s!}}$$

$$V_{n,k} = n^k$$

$$V'_{5,3} = 5^3 = 125$$

$nPr$

$\underline{nCr}$

$5P3$

4  
5

4  
5

$$5 \cdot 5 \cdot 5 = 5^3 = 125$$

$$5 \cdot 4 \cdot 3$$

Variaciones con repetición:

2

2

3

3

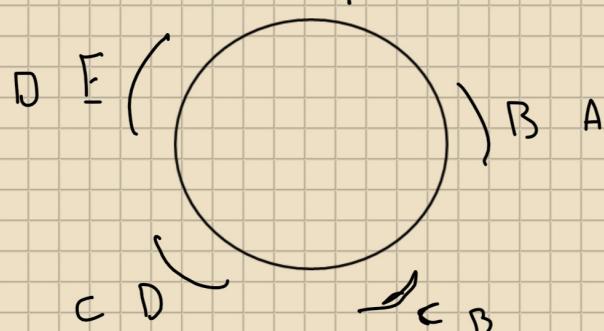
4

4

5

5

E  
A



Permutaciones circulares:

$$P_{n-1} = (n-1)!$$

Permutaciones

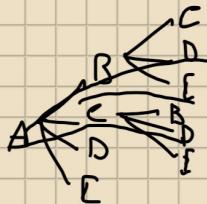
$$P_n = V_{n,n} = \underline{\underline{n!}}$$

Combinatoria

$$C_{n,k} = \frac{n!}{(n-k)! \cdot k!}$$

A B C D E

- ~~A B C~~
- A B D
- A B E
- ~~A C B~~
- ~~C A B~~
- ~~C B A~~
- ~~B A C~~
- ~~B C A~~



B

C

D

E

$$C_{5,3} = 5C_3 = \frac{5!}{(5-3)! \cdot 3!} = \frac{5 \cdot 4 \cdot 3 \cdot 2!}{2! \cdot 3!} = \frac{60}{6} = 10$$