Prime numbers
(Number Theory and Set Theory)

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$$p \notin \left\{ \sum_{n=1}^{a} c + c \right\}$$

p is prime if and only if p not in the sequence/set.

where a is all natural numbers less than or equal to $\left(\frac{p}{c} - 1\right)$, $a \in \mathbb{N}$

a={1,2,.. $\left(\frac{p}{c} - 1\right)$ }

and

where c is all the primes less than or equal to the squareroot of p, $c \in \mathbb{N}$

c={2,3,5…, $c \leqslant \sqrt{p}$ }

or if we want to use all natural numbers except 1 and not only pimes.

C={2,3,4,5,6…, $c \leqslant \sqrt{p}$ }

<u>example:</u>

p=29

$c \leqslant \sqrt{29} = 5$,{2,3,5}

$a \leqslant \frac{p}{c} - 1$

c=2 so $\frac{29}{2} - 1 = 13$ so a={1,2,3,4,5,6,7,8,9,10,11,12,13}

$\sum_{n=1}^{a} 2 + 2$ = set a where c is 2 {4,6,8,10,12,14,16,18,20,22,24,26,28}

c=3 so $\frac{29}{3} - 1 = 8$ so a={1,2,3,4,5,6,7,8}

$\sum_{n=1}^{a} 3 + 3$ =set a where c is 3 {6,9,15,18,21,24,27}

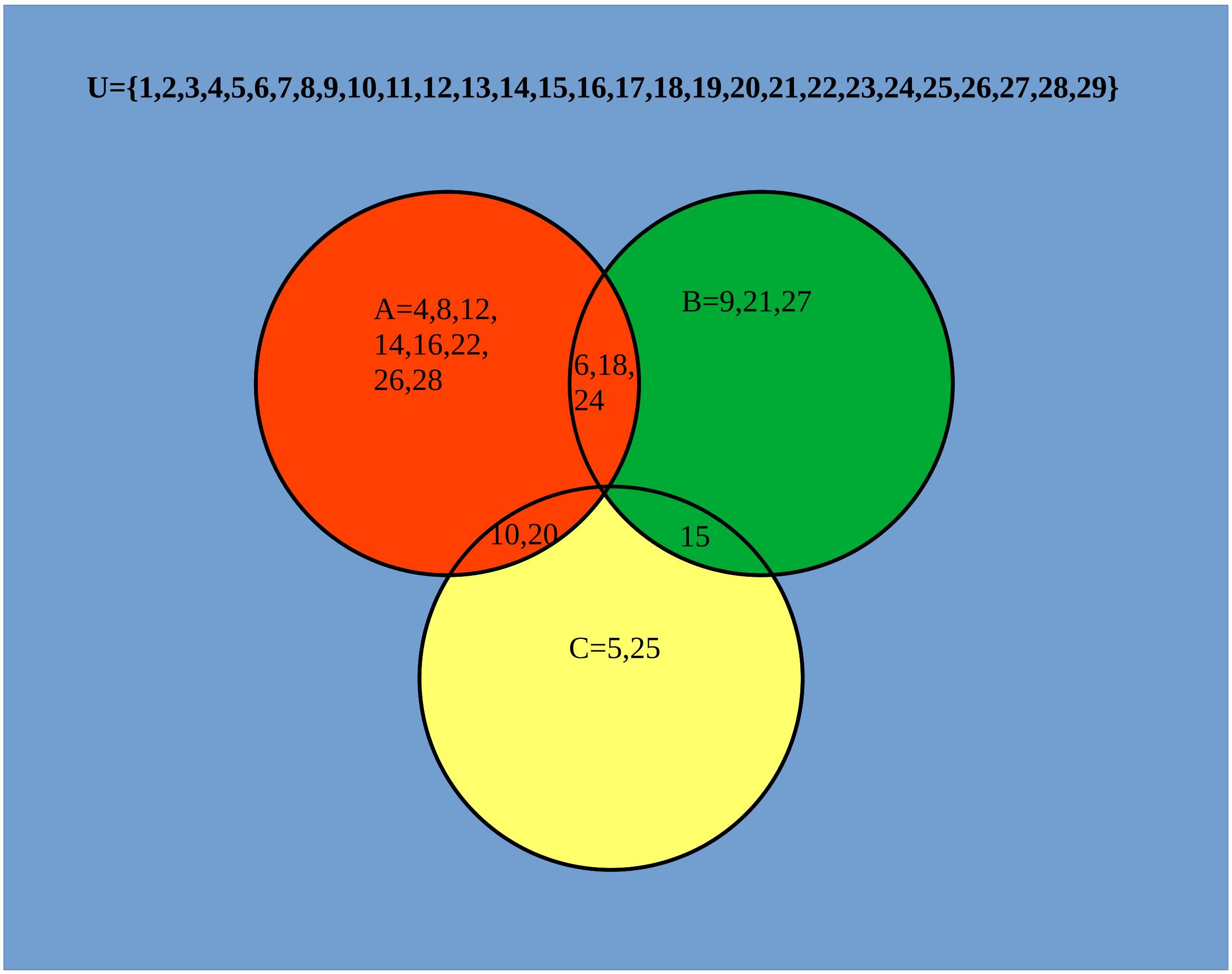
c=5 so $\frac{29}{5} - 1 = 4$ so a={1,2,3,4}

$\sum_{n=1}^{a} 5 + 5$ =set a where c is 5 {5,10,15,20,25}

so p is prime because it’s not in the set where c=2,c=3 and c=5

On Set Theory:
Let say the universal set is all the natural numbers.
All prime numbers are not in the subset A,B,C

p is prime iff p in U but not in subsets



$$\{A,B,C\} \subset U$$

$$p \notin \{A,B,C\}$$