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Pairs of Prime Numbers

Summer 2025

1+1=2

Hi again all, hopefully this will be interesting to readers who are alive :)

In my personal opinion, these special prime numbers are cool.
Also, pairs of prime numbers are interesting and worthy of note.
The Online Encyclopedia of Integer Sequences (OEIS) is a valuable resource.

It took some effort to get Maple to produce these lists, and to look them up in the OEIS.

Have a good week!

In number theory, Polignac's Conjecture (1849) states that there are probably infinitely many prime number pairs that differ by every positive even number d

Google search for twin prime, cousin prime, 6, 8, 10, ...

pattern (0,d) and lesser of prime pair sequence from oeis.org
where d is difference between prime numbers
and oeis stands for Online Encyclopedia of (usually positive) Integer Sequences

an exhaustive search of OEIS returns a longer list

In number theory, Polignac's conjecture was made by Alphonse de Polignac in 1849 and states: For any positive even number n , there are infinitely many cases of two consecutive prime numbers with difference n .

Numerical evidence suggests that Polignac's conjecture is true for all positive even numbers n .

OEIS (Online Encyclopedia of Integer Sequences) A number, description of prime pair Enumeration Counts (length of number lists in OEIS) as of January 2021

[A001359](#) p,p+2 enumeration count 100,000 These are known as twin primes.

[A023200](#) p,p+4 enumeration count 10,000 called cousin primes

[A023201](#) p,p+6 enumeration count 10,000 called sexy primes

[A023202](#) p,p+8 enumeration count 10,000 unofficially called octa primes

[A023203](#) p,p+10 enumeration count 10,000 unofficially called deca primes

[A046133](#) p,p+12 enumeration count 1,000

[A153417](#) p,p+14 enumeration count 1,000

[A049488](#) p,p+16 enumeration count 10,000

[A153418](#) p,p+18 enumeration count 1,000

[A153419](#) p,p+20 enumeration count 10,000

[A242476](#) p,p+22 enumeration count 1,000

[A033560](#) p,p+24 enumeration count 1,000

[A252089](#) p,p+26 enumeration count 52

[A252090](#) p,p+28 enumeration count 10,000

[A049481](#) p,p+30 enumeration count 10,000

[A049489](#) p,p+32 enumeration count 10,000

[A252091](#) p,p+34 enumeration count 10,000

[A156104](#) p,p+36 enumeration count 1,000

[A271347](#) p,p+38 enumeration count 10,000

[A271981](#) p,p+40 enumeration count 10,000

[A271982](#) p,p+42 enumeration count 10,000

[A272176](#) p,p+44 enumeration count 10,000

pattern for p,p+46 (and larger numbers like 48,50,52, ...) are not in The Online Encyclopedia of Integer sequences as of March 2020. They are deemed 'not of general interest'. Apparently, these sequences are too obscure and would not be looked up by enough people. However, prime pairs are interesting to me.

to quote Michael Penn, from YouTube.com

and that is a good place to stop