# An interesting pattern of primes

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If you observe below there is a a correlation between x and y . X will Always be a positive even number and y will always be a positive odd number and its subtraction will give 7 until a certain prime number and there after it will be a different correlation where the result is 8 and after a while it will be 9 and so on. Later i will repost its new correlation, for now it is enough to see that this pattern holds until the 1062 nd prime.

```
mathematica
( Defining the ordered pairs )
pairs = {{8, 1}, {10, 3}, {12, 5}, {14, 7}, {16, 9}, {18, 11}, {20, 13}, {22, 15}, {24,
17}, {26, 19}, {28, 21}, {30, 23}};

( Function to verify if a is prime )
isPrimeZ[x_, y_] := Module[{z},
    z = 7000 + 914 + y;
    z == 7907 + x && PrimeQ[z]
  ];

( Filttering the pairs that satisfy the conditiom)
results = Select[pairs, isPrimeZ[#[[1]], #[[2]]] &];

( Exihibiting the results)
results
```

$$\{\{12,5\},\{20,13\},\{26,19\},\{30,23\}\}$$

```
mathematica
( Defining the ordered pairs )
pairs =
{{10,2},{12,4},{14,6},{16,8},{18,10},{20,12},{22,14},{24,16},{26,18},{28,20},{30,22
},{32,24},{34,26},{36,28},{38,30},{40,32},{42,34},{44,36},{46,38},{48,40},{50,42},{
52,44},{54,46},{56,48},{58,50},{60,52},{62,54},{64,56},{66,58},{68,60},{70,62},{7
2,64},{74,66},{76,68},{78,70},{80,72},{82,74},{84,76},{86,78},{88,80},{90,82}};

( Function to verify if a is prime )
isPrimeZ[x_, y_] := Module[{z},
  z = 16000 + 1395 + y;
  z == 17387 + x && PrimeQ[z]
];

( Filttering the pairs that satisfy the conditiom)
results = Select[pairs, isPrimeZ[#[[1]], #[[2]]] &];
```

( Exihibiting the results)
Results

{{14,6},{30,22},{32,24},{44,36},{56,48},{62,54},{80,72},{84,76},{90,82}}

mathematica

```
AS=Cases[Tuples[Range[190],2],{p_,i_}/;EvenQ@p && OddQ@i && p-i==7]
( Defining the ordered pairs )
pairs = AS;

( Function to verify if a is prime )
isPrimeZ[x_, y_] := Module[{z},
  z = 7000 + 914 + y;
  z == 7907 + x && PrimeQ[z]
];

( Filttering the pairs that satisfy the conditiom)
results = Select[pairs, isPrimeZ[#[[1]], #[[2]]] &];

( Exihibiting the results)
results
po = results[[All, 1]]
Differences[%]
pp=results[[All, 2]]
pc=pairs[[All,1]]
ListLinePlot[results]
a=ListLinePlot[po,PlotStyle->Red]
b=ListLinePlot[pp,PlotStyle->Green]
d=ListLinePlot[pc,PlotStyle->Blue]
c=Show[a,b,d]
```

{{12,5},{20,13},{26,19},{30,23},{42,35},{44,37},{56,49},{86,79},{102,95},{104,97},{110,103},{132,125},{146,139},{152,145},{162,155},{174,167},{180,173},{182,175},{186,179}}

{12,20,26,30,42,44,56,86,102,104,110,132,146,152,162,174,180,182,186}
{8,6,4,12,2,12,30,16,2,6,22,14,6,10,12,6,2,4} THE DISTANCE BTWEEN EVERY ORDERED PAIR THAT GIVES A PRIME GIVES BY SUM THE NEXT ODD NUMBER IN THE PAIRS
{5,13,19,23,35,37,49,79,95,97,103,125,139,145,155,167,173,175,179}

8+5=13 ,13+6=19,19+4=23,23+12=35 AND SO ON

AND FINALLY WRITTEN IN PORTUGUESE AND FOR THE SAKE OF IDENTITY THE CONJECTURE THAT SEEMS TO HOLD TRUE :

{{12,5},{20,13},{26,19},{30,23},{42,35},{44,37},{56,49},{86,79},{102,95},{104,97},{110,103},{132,125},{146,139},{152,145},{162,155},{174,167},{180,173},{182,175},{186,179}} a Soma consecutiva dos pares dos pares ordenados menos a soma consecutiva dos impares progressivamente dá múltiplos consecutivos de 7....

12,5 20,13 28,18 30,23

| | | |
|---|---|---|
| 12 | 20 | 20 |
| +20 | +12 | 12 |
| | +26 | 26 |
| | | 30 |
| 32 | 58 | 88 |
| −13+5 | (−18 +19) | −(18 +19 23) |
| 32 | 58 | 88 |
| −18 | −37 | −60 |
| 14 | 21 | 28 ... |

7 7 7

in this little note
it is tracked to
pattern of primes
the pairs above are the "results"