

An interesting pattern of primes

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If you observe below there is 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 condition)

```
results = Select[pairs, isPrimeZ[#[[1]], #[[2]]] &];
```

(Exhibiting 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},{72,64},  
{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 condition)

```
results = Select[pairs, isPrimeZ[#[[1]], #[[2]]] &];
```

(Exhibiting 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]

];

(Filtering the pairs that satisfy the condition)

results = Select[pairs, isPrimeZ#[[1]], #[[2]] &];

(Exhibiting 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]

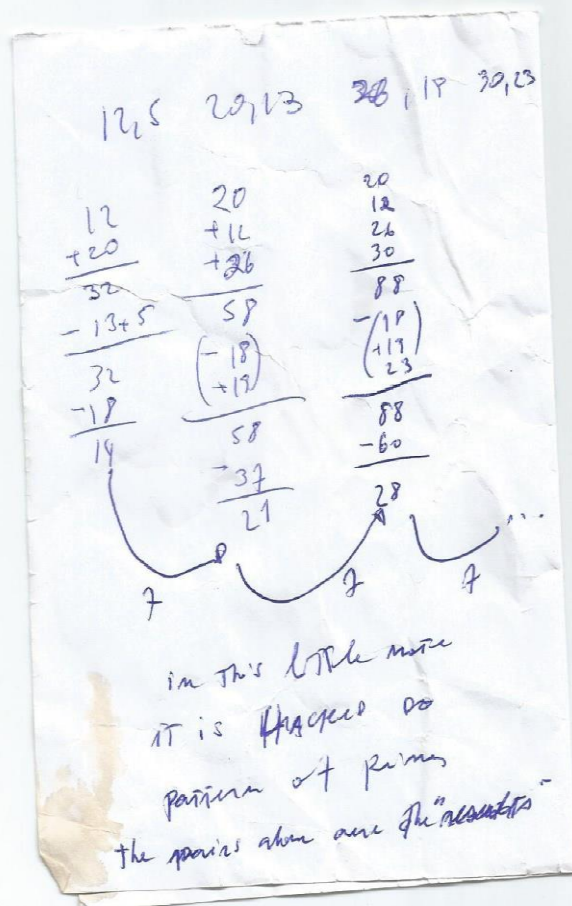
{{12,5},{20,13},{26,19},{30,23},{42,35},{44,37},{56,49},{86,79},{102,95},{104,97},
{110,103},{132,125},{146,139},{152,145},{162,155},{174,167},{180,173},{182,175},
{186,179}}

{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 BETWEEN
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 :

$\{\{12,5\},\{20,13\},\{26,19\},\{30,23\},\{42,35\},\{44,37\},\{56,49\},\{86,79\},\{102,95\},\{104,97\},$
 $\{110,103\},\{132,125\},\{146,139\},\{152,145\},\{162,155\},\{174,167\},\{180,173\},\{182,17$
 $5\},\{186,179\}\}$ a Soma consecutiva dos pares dos pares ordenados menos a
soma consecutiva dos impares progressivamente dá múltiplos consecutivos de
7....



pairs={{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},{194,187},{

```
204,197},{210,203},{216,209},{240,233},{254,247},{260,253},{264,257},{272,265},{284,277},{30
2,295},{312,305},{314,307},{324,317},{326,319},{330,323},{336,329},{356,349},{362,355},{366,
359},{380,373},{384,377},{386,379},{390,383},{404,397},{410,403},{422,415},{446,439},{456,44
9},{462,455},{470,463},{480,473},{482,475}}
```

```
list = pairs[[All, 1]]
```

```
list2=pairs[[All,2]]
```

```
list3=Drop[list2,2]
```

```
pairs = Table[{list[[i]], list[[i + 2]]}, {i, 1, Length[list] - 2}];
```

```
sums = Map[Total, pairs];
```

```
sums
```

```
division=sums/2
```

```
list3-division
```

```
PrimeQ[list2]
```

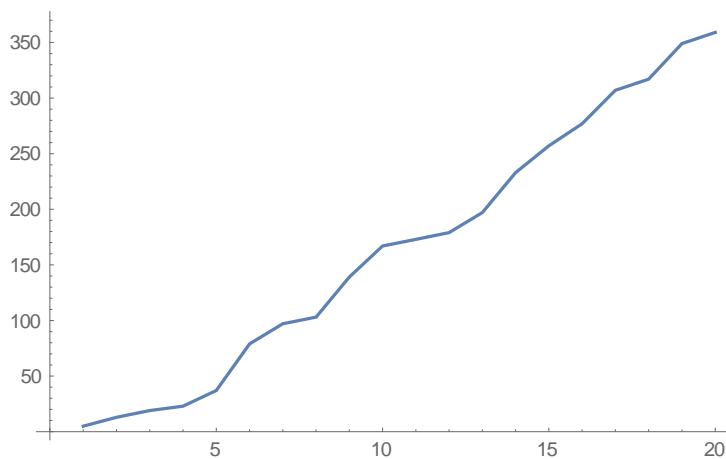
```
a=Select[list2,PrimeQ,(20)]
```

```
ListLinePlot[a]
```

```
PrimePi[a]
```

```
ListLinePlot[%]
```

```
{5,13,19,23,37,79,97,103,139,167,173,179,197,233,257,277,307,317,349,359}
```



```
{3,6,8,9,12,22,25,27,34,39,40,41,45,51,55,59,63,66,70,72}
```

