Title Goldbach Conjecture

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Abstract The Goldbach Conjecture states:

Every even number greater than 4 can be written as the sum of two primes.

Examples:

6 = 3+3
8 = 3+5
10 = 3+7 5+5
:
etc
:
1224 = 71+1153 73+1151 191+1033 193+1031

We will call the two primes summing to a particular number a Goldbach Pair (GP) for that number.

Method

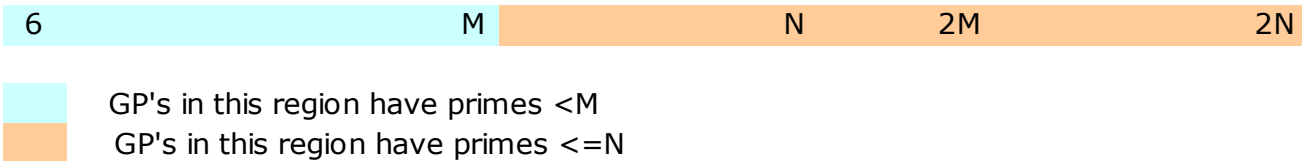
This attempt requires very little mathematical knowledge.

Important Facts

Fact 1
Bertrand's (proven) postulate confirms that for every integer P>1 there will be at least one prime between P and 2P.

https://en.wikipedia.org/wiki/Bertrand%27s_postulate

Fact 2
The following diagram shows how GP's are distributed for successive primes M and N.



Proof
Consider a case where all even numbers less than a particular even number E are GP's. (a)

We need to show all even numbers {X; E<=X<=2N} are also GP's.

For even numbers (E_1, E_2) where ($0<E_2<=E_1<E$)

$$X = E_1 + E_2 \qquad \text{(b)}$$

Using E = 12 as an example the following values for E_1 and E_2 are possible.

E_1	E_2	
10	2	(c)
8	4	
6	6	

E_1 is always a GP but E_2 is a GP only when it is >= 6.

For X to be a GP the numbers in (b) must be of the form:

X = (A+a) + (B-a) {a, A, B prime}
Or, equivalently X = (A+a) + (B+a) – (a+a)

Thus one solution for X = 12 is for line (c) above:

a = 3, A = 7, B=5
X = (7+3) + (5-3)

And the GP is (7+5) verifying the Goldbach Conjecture.

It appears that even though a GP exists the primes must be found by inspection.