Prime Numbers 8

The Goldbach-Euler Conjecture

Goldbach's conjecture is one of the oldest unsolved problems in number theory and in all of Mathematics. It states:

Every even integer greater than 2 can be written as the sum of two Primes

Expressing a given even number as a sum of two primes is called a **Goldbach partition** of the number. For example,

4 = 2 + 2 **6** = 3 + 3 **8** = 3 + 5 **10** = 3 + 7 = 5 + 5 etc..

In 1742, Christian Goldbach wrote a letter to Leonard Euler in which he conjectured that every positive integer greater than 2 is the sum of three primes. Euler modified this idea to state that positive even integers greater than or equal to 4 can be wirtten as the sum of 2 primes. (Goldbach counted 1 as a prime number, but these days convention says that 1 is not amongst the primes)
The nearest anyone has come to proving this conjecture was in 1939 when Schnirelman proved that even numbers can be expressed as the sum of a maximum of 300,000 primes. However, this is not really very near!

Verify Goldbach's conjecture for the following even numbers.

10 3+7 5+5	**12** 5+7	**14** 3+11 7+7	**16** 11+5	**18** 11+7
20	**22**	**24**	**26**	**28**
30	**32**	**34**	**36**	**38**
40	**42**	**44**	**46**	**48**
50	**52**	**54**	**56**	**58**
60	**62**	**64**	**66**	**68**
70	**72**	**74**	**76**	**78**

Have we proved Goldbach's conjecture for even numbers from 4 to 78?

Can you find all the pairs of primes which add to 100? (there are six of them)