Objectives:

- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Construct arrays to show that prime numbers (p) have exactly one array (1 x p)
- Recognise and use square numbers and cube numbers and the notation for (^{2}) and (^{3}). Construct arrays for square numbers to show that square numbers have an odd number of factors since one is repeated (e.g. 16 can be constructed as 1 x 16; 2 x 8 and 4 x 4 ~ factors are 1,2,4,8,16)

Year 6 Task:

This task is taken from the NRich website. To view the task, follow the link: https://nrich.maths.org/1150?utm_source=primary-map Included on the website are tips on how to get started and worked solutions. Good luck!

Two Primes Make One Square

Flora had a challenge for her friends.
She asked, "Can you make square numbers by adding two prime numbers together?"

Ollie had a think.
"Well, let me see... I know that 4 = 2 + 2. That's a good start!"

Have a go yourself. Try with the squares of the numbers from 4 to 20.

Once you have had some initial ideas, take a look at how three more of Flora's friends started the problem:

Bailey said:
"I made the square numbers out of cubes and tried taking a prime number of cubes away and seeing if it left a prime number of cubes."

Dina said:
"I wondered whether noticing that 2 is the only even prime number was important."

Shameem said:
"I listed the prime numbers up to 100 and then I listed the squares of the numbers from 4 to 20."

Did you go about the task in the same way as any of these children?
What do you like about each method?

Continue working on the problem. You might like to adopt Bailey's or Dina's or Shameem's approach.

Did you find any square numbers which cannot be made by adding two prime numbers together? Why or why not?