

Solution

Pupils can consider each of the criteria. They can do so in turn, or they can choose to vary the order in which they look at the criteria to reduce the necessary working out. This task encourages pupils to share mathematical ideas in the classroom and helps to facilitate their learning among their peers.

I am a positive whole number less than 20:

Pupils can recognise that the number must be from 1 to 19.

If you times me by 5 you will get an EVEN number:

Pupils recognise that ODD numbers multiplied by 5 – another odd number – give an ODD number.

They recognise that EVEN numbers multiplied by 5 give an EVEN number.

Solution set is now: 2, 4, 6, 8, 10, 12, 14, 16, 18

I can be divided by the number 3 without a remainder:

Pupils use their knowledge of the 3 times tables.

Solution set is now: 6, 12, 18

If I am DOUBLED I am less than 30:

Pupils recognise that doubling means multiplying by 2 and use their knowledge of the 2 times tables.

Solution set is now: 6, 12

If you HALVE me I am more than 5:

Pupils divide by 2 to see which is greater than 5.

Solution: 12

Pupils may discuss alternative strategies and how these will impact the time they take to work out the required number, for example:

‘If you **halve** me I am **more than 5**.’ ...which means that I have to be bigger than 10.

This reduces the solution set to a number between 12, 14, 16 and 18.

Discussions may take place between the teacher and the pupils on whether it would be quicker to do this first as opposed to if you times me 5 you will get an EVEN number.

Or

The effect of ‘I am in the 3 times tables’ (but less than 20).

Solution set is reduced to 3, 6, 9, 12, 15, 18.

Or

‘If I am **doubled** I am **less than 30**’.

Solution set is reduced to numbers between 1 and 14.

They combine all of the above requirements, in ANY given order, to correctly deduce the missing number to be 12.

