There's always one, isn't there?

Problem

Take any pair of numbers, say 9 and 14.

Take the larger number, 14, and count up by that amount :

14, 28, 42, 56, …

Then divide each of the values by 9, your chosen smaller number, and look at the remainders.

5, 1, 6, 2, …

Notice there's a one.

Now do the same again but using different numbers, say 7 and 12.

Counting in twelves and dividing each result by 7 :

12, 24, 36, 48, …

5, 3, 1, 6, …

Again somewhere in those remainders is a one.

Pick the pairs how you like, somewhere there'll always be a one - won't there?

What actually happens?

Why?

Relevance

NA3 What are highest common factors and why do they matter?