Take the numbers 1,1,2,2,3,3. Write them in a line so that there is one number between the two ones, two numbers between the two twos, and three numbers between the two threes.

Take the numbers 1,1,2,2,3,3,4,4. Write them in a line so that there is one number between the two ones, two numbers between the two twos, three numbers between the two threes, and four numbers between the two fours.

Take the numbers 1,1,2,2,3,3,4,4,5,5. Write them in a line so that there is one number between the two ones, two numbers between the two twos, three numbers between the two threes, four numbers between the two fours and five numbers between the two fives.

One of the above challenges is impossible - can you work out which one and prove why it is impossible?