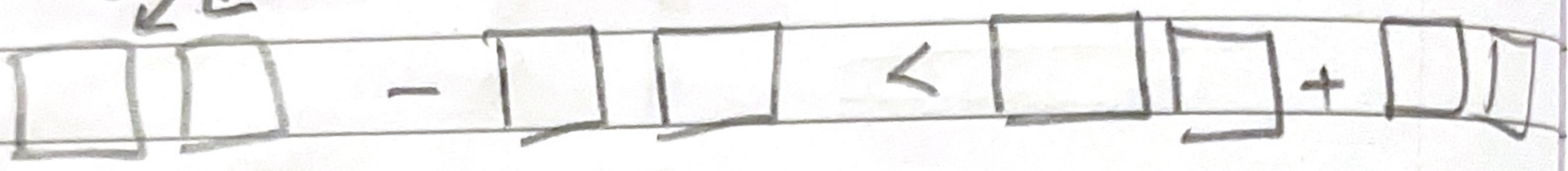
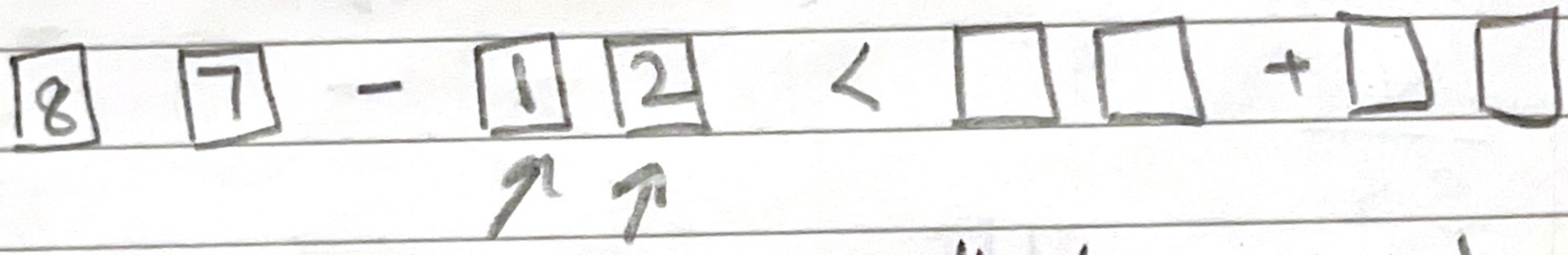
Take - sum

In take - sum, the Left hand side, first two boxes, the numbers should be biggest.



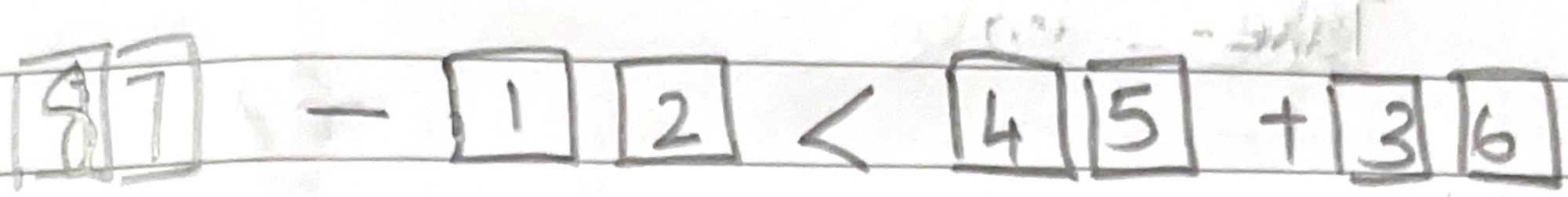
So I will put 8 and 7.



I will put the smallest numbers in the next two boxes 1, 2. because that will give us the highest score because the difference between the largest and the smallest number will be the biggest score.

For the right hand side numbers, I arranged them in such away that they would give me a higher sum to satisfy the inequality.

So this would look like.

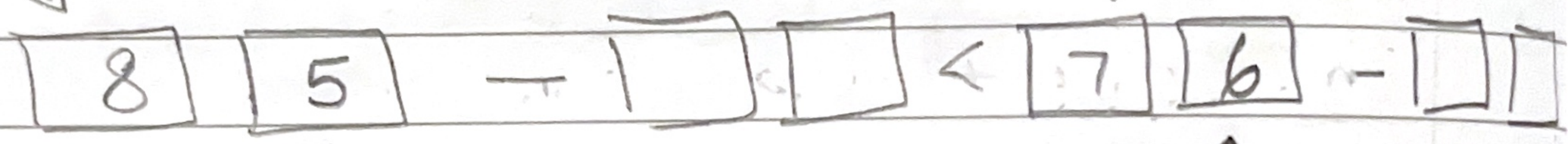


which gives the highest score of 75.

Take - take.

Step 1 In the first box, I put the biggest number — 8.

Step 2 After that, I put 7 in the first box of right hand side.

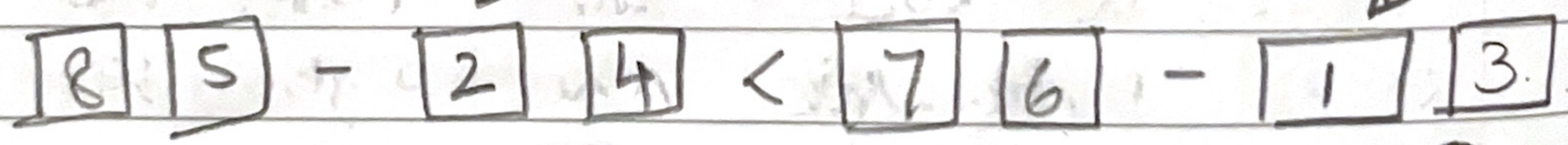


Step3 second highest number left after taking away 8, 7

Step 4 - largest number left

Step 6. second smallest number 2

Step 7 - smallest number



Step8 largest number left and last number

This gives us the largest possible score of 61.

I wanted the largest numbers in the first two boxes which could be 87, 86, 85 and so on.

On the right hand side also, I wanted

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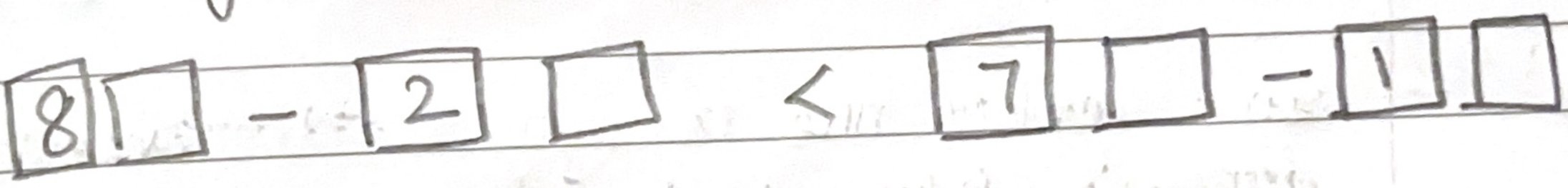
a big number so that rule of inequality was there.

So I could choose 70s or 60s....

For the seconds tens boxes, I needed to choose smaller numbers of 1 and 2. 2 was chosen for left hand for inequality rule. This gave me this:



Then the left over numbers 3, 4, 5, 6 were arranged in such a way that right hand side difference was larger than left hand side.

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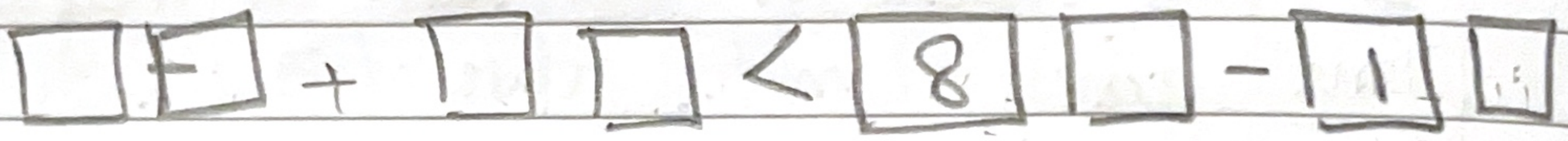
Sum - take

First I took the largest number 8 and smallest number 1 and arranged them like this so I can get a big difference.



to get the biggest difference. largest number should minus the smallest : 87 - 12 = 75.
So the left side should be less than 75.
To get a sum in 70s, I can use :

10 + 60 → X because I have used 12
20 + 50 → X
30 + 40

The left over numbers are.

3, 4, 5, 6

But if I use 35 + 46 = 81 which will be larger
I can exchange 2 with 3 →

25 + 46 = 71

So this will give me:

$$\frac{25 + 46}{71} < \frac{87 - 13}{74}$$

Now, if I have to check, I can slowly add 1 bigger number till inequality stops in ones place

$$25 + 47 < 86 - 13$$

6 ~~exchanged~~ 6 exchanged for 7

$$72 < 73$$

If I add 1 more then inequality will not be true

So the highest score is 72.

Sum - sum.

So when I started this, the numbers on left hand and right hand have to be close to each other.

1, 2, 3, 4, 5, 6, 7, 8

I randomly picked that the tens have to add up to 120.

So I picked out 6 and 5 for 1 side and 8 and 4 for the other and I arranged the rest of the numbers

61 + 53 < 47 + 82

Then I started moving numbers to keep getting higher scores.

67 + 53 < 41 + 82

120 123

I brought 7 to 10's place and exchanged 1 and 6.

71 + 63 < 54 + 82

I exchanged the 6 to 10's place on LHS and moved the 5 to 10s place on RHS

This gave me the highest score of 134.