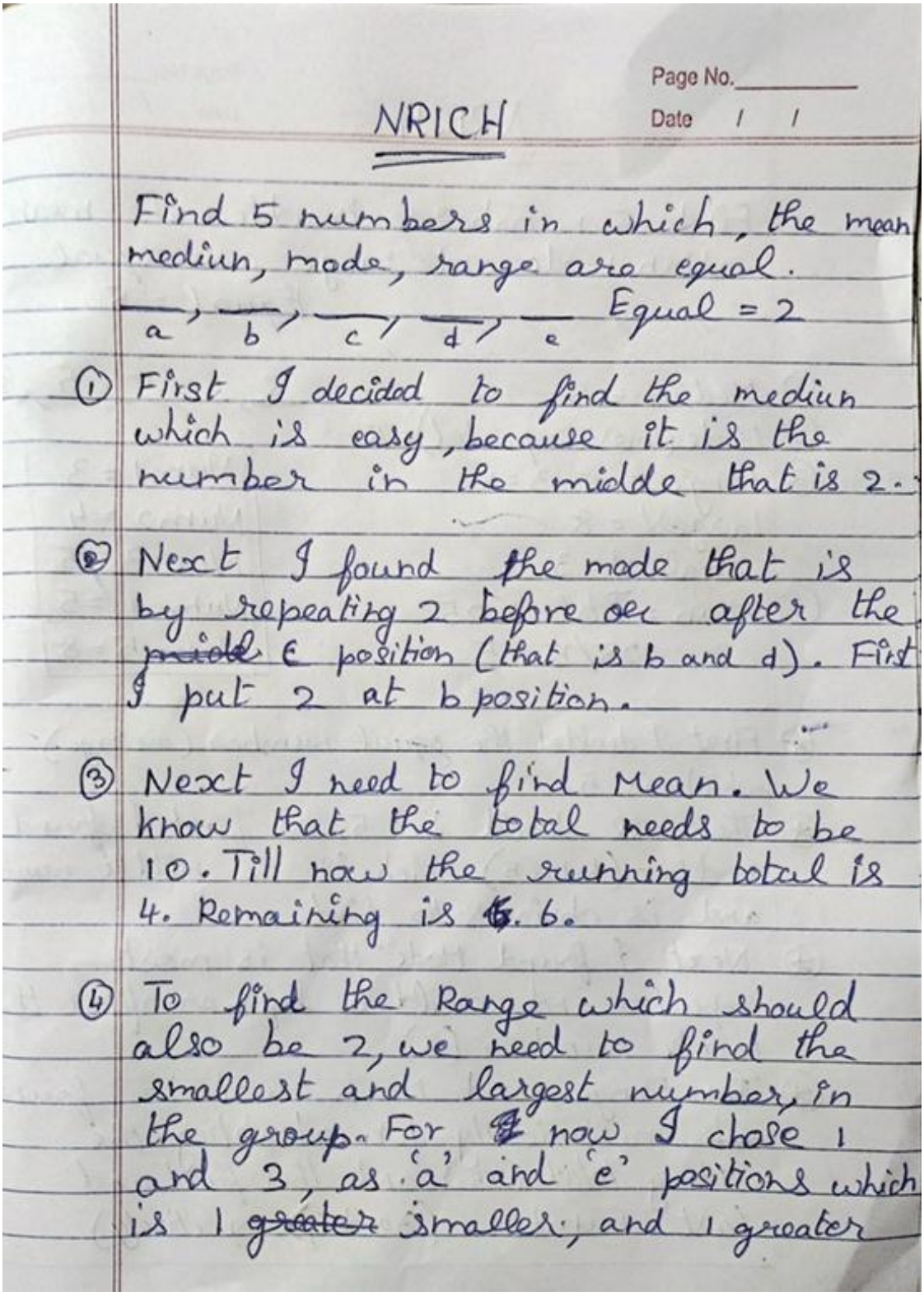
Solution for Unequal averages NRICH secondary live problem

Hello NRICH team,

I am A.Dhanyashree from Chennai, India. I worked on Unequal averages (https://nrich.maths.org/problems/unequal-averages) as part of the STEPS IN MATH program conducted by The GYM Foundation. (https://thegymfoundation.com/stepsinmath) I have attached the scanned copy of my solution. Thank you.



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Find 5 numbers in which, the mean, median, mode, range are equal.

a, b, c, d, e Equal = 2

① First I decided to find the median which is easy, because it is the number in the midde that is 2.

② Next I found the mode that is by repeating 2 before or after the ~~midd~~ e position (that is b and d). First I put 2 at b position.

③ Next I need to find Mean. We know that the total needs to be 10. Till now the running total is 4. Remaining is 6.

④ To find the Range which should also be 2, we need to find the smallest and largest number in the group. For now I chose 1 and 3, as 'a' and 'e' positions which is 1 ~~greater~~ smaller, and 1 greater

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than 2, respectively. 3 - 1 = 2 is range

⑤ Now the running total is 8 and total is 10. To find the mean, we need to find position 'd' that must be 2, because 10 - 8 = 2. Now Total is 10. $\frac{10}{5} = 2$ is mean.

⑥ In the range part, I found 1 by the following steps:-

$x + y = 4$

$y - x = 2$

$y = 2 + x$

$x + 2 + x = 4$

$2x - 2$

$x = 1$

To find 3, -> 2+1 = 3//

⑦ $\frac{1}{a}, \frac{2}{b}, \frac{2}{c}, \frac{2}{d}, \frac{3}{e}$

$a = 1$
$b = 2$
$c = 2$
$d = 2$
$e = 3$

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Find a set of 5 numbers in which → mode < median < mean

a, b, c, d, e

① First I decided to find ~~mean~~ mode. Then I took a small number that is 3, which must be repeated more. So, it can be kept only before the median (position c) that is only at position 'a' ~~and 'b'~~ and 'b'.

3, 3, –, –, –
a, b, c, d, e

② Next I found median which should be at the middle of the sequence, and greater than 3. So, I kept the next smallest number that is 4, as the median, 3<4

3, 3, 4, –, –
a, b, c, d, e

③ Finally, I found mean. As of now, the running total is 10, And the whole total must be 25, which I decided earlier. Remaining is 15. The next smallest number is 6, at position 'd' and 9 at 'e'. Mean = $\frac{25}{5} = 5 > 4 > 3$

3, 3, 4, 6, 9
a, b, c, d, e