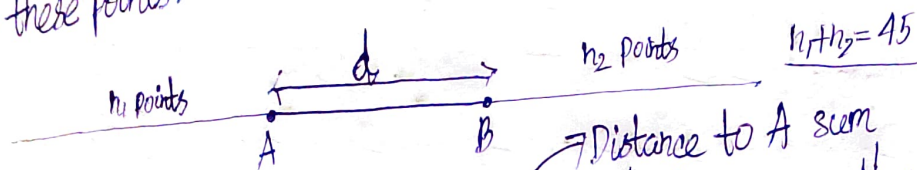


**Problem 26:** 45 points are chosen along line AB, all lying outside of segment AB. Prove that the sum of the distances from point A to these points is not equal to the sum of the distances from point B to these points.



If,  $d_1 + d_2 + \dots + d_{n_1} + (d'_1 + d + d'_2 + d + \dots + d'_{n_2} + d)$   $\rightarrow$  Distance to A sum  
 $= d_1 + d + d_2 + d + \dots + d_{n_1} + d + (d'_1 + d'_2 + \dots + d'_{n_2})$   $\rightarrow$  Distance to B sum

$\therefore$  45 is odd, they can't be equally partitioned

$\therefore d=0$  in this case, which is a contradiction

**Problem 28:** Can an ordinary 8x8 chessboard be covered with 1x2 dominoes so that only squares a1 and h8 remain uncovered?

a	<del>B</del>	W	B	W	B	W	B	W
b	W	B	W	B	W	B	W	B
c	B	W	B	W	B	W	<del>B</del>	<del>W</del>
d	W	B	W	B	W	B	W	B
e	B	W	B	W	B	W	B	W
f	W	B	W	B	W	B	W	B
g	B	W	B	W	B	W	B	W
h	W	B	W	B	W	B	W	<del>B</del>
	1	2	3	4	5	6	7	8

B	W
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 $\rightarrow$  a domino

The colors of a1 and h8 are same. If we leave them uncovered, we will have 32 white squares and 30 black squares to cover.

A domino covers 1 black and white square at a time

If we try covering intelligently, we will ~~cover~~ cover 30 black and 30 white squares at most, leaving out 2 white squares uncovered.

$\therefore$  Tiling is not possible.

**Problem 28:** 25 boys and 25 girls are seated at a round table. Show that both neighbors of at least 1 student are boys.