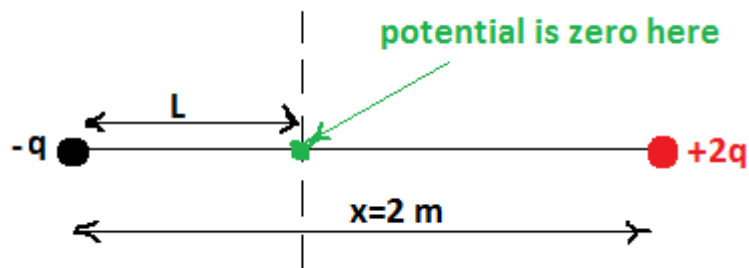


### Answer on question 61002

Charges of  $-q$  and  $+2q$  are fixed in place, with a distance of  $2.00\text{ m}$  between them. A dashed line is drawn through the negative charge, perpendicular to the line between the charges. On the dashed line, at a distance  $L$  from the negative charge, there is at least one spot where the total potential is zero. Find  $L$ .

### Solution



Using this figure, we write the potential in the green point:

$$\varphi = \frac{-q}{L} + \frac{+2q}{X-L} = 0 \rightarrow \frac{1}{L} = \frac{2}{X-L} \rightarrow X-L = 2L \rightarrow L = \frac{X}{3} = \frac{2}{3}m.$$

**Answer**  $L = \frac{2}{3}m.$