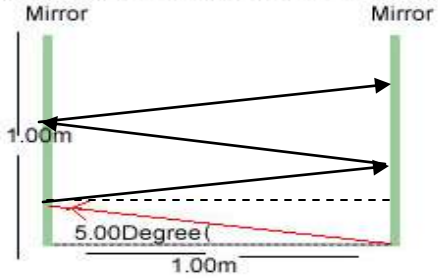
8) How many times will the incident beam shown in figure below be reflected by each of the parallel mirrors?



According to the law of reflection the angle of reflection is equal to the angle of incidence and hence at each reflection the distance d traveled by light along the width of the mirrors is such that

$d/1.00\ m = \tan 5^0$.

Or $d = 1.00 * \tan 5^0\ m = 0.08749\ m$

Hence the number of reflections n_1 on the mirror on left will be given by

$(2n_1 - 1)\ d = 1.00\ m$ [-1 as the first reflection is at d distance]

Gives $n_1 = \frac{1}{2}\left(\frac{1.00}{d} + 1\right) = 6.21$

Hence number of reflection on left mirror is $n_1 =$ **6**

For right mirror each reflection is at distance 2d hence the number of reflections n_2 is given by

$2d * n_2 = 1.00\ m$

Or $n_2 = 1/2d = 5.71$

Hence number of reflection on left mirror is $n_2 =$ **5**