Since we have two darts. We are going to start our trial at k/2. If we miss the target at first, then for the second trial we will move next farther point 5 feet away from the previous point to get correct estimate.

If the first trial at k/2 is successful then again the next trial can be started at index (k/2+k)/2 i.e. in a binary search way to find the farthest point of successful trial and the moment we miss the target then we will start the trial from second dart from the position next to the point where we were successful. So total number of trials in worst case will be k/2 which will happen when we miss the target at index k/2 during first trial and then we keep on getting success from index 1 to index k/2 - 1.