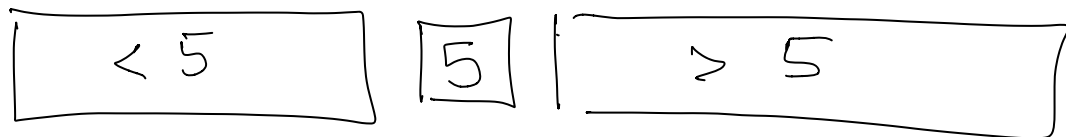
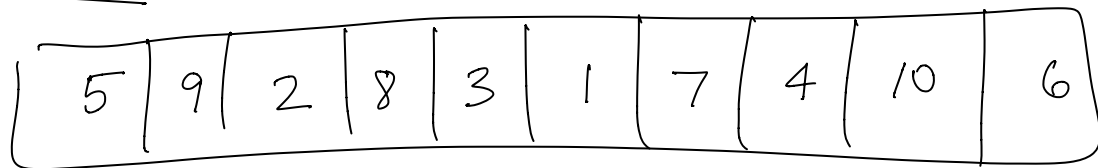


## Quicksort - $O(n \log n)$



## Quicksort

if the array has 0 or 1 element, do nothing

else:

pick one element of the array to use as the PIVOT element.  
partition the elements of the array so that it  
consists of 3 sections

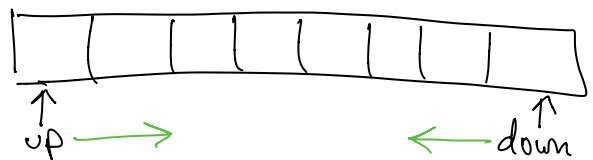


quicksort(smaller-than-pivot section)

quicksort(larger-than-pivot section)

## Partitioning

- Assume that we choose the pivot to be the first item in the array.
- Set up two indices in the array, called up & down
- Move the "up" index to the right  
until we find an item > pivot
- Move the "down" index to the left  
until we find an item < pivot.
- Swap those 2 items.



pivot = 44  
up = 0  
down = 8

