

1)

i)

Let "x" represent the 1st element in the array. Let "low" represent the smaller index of the array. Let "high" represent the larger index of the array. Let "i" represent the smaller index of the element. Let "j" represent the larger index of the element.

- 1) check if there's more than 2 elements in the array
- 2) loop where i is less than j
- 3) compare current element with the i and j
- 4) swap the elements in the array, break them into smaller arrays
- 5) **Output:** x has numbers less than it on the left and greater than it on the right

ii)

**Input:** array  
if ( low >= high ) { **Output:** return }  
while ( i < j ) {  
    while ( A[i] < x ) { **Output:** i++ }  
    while ( A[i] > x ) { **Output:** j-- }  
    if ( i <= j ) { swap(A[i++], A[j--]) }  
}  
**Output:** pivot number partitioned array

2)

i)

Let "num" represent the missing number of the array. Let "total" represent the sum of all elements in the array.

- 1) multiply (num + 1) by (num + 2), divide by 2
- 2) loop through array
- 3) **Output:** total is the missing number

ii)

**Input:** array  
total = ( n \* ( n + 1 ) ) / 2  
for "i" ( i = 0, i < num, i++ ) { **Output:** total -= A[i] }  
**Output:** total