# Merge sort

* Items of data are repeatedly split in half until each “list” contains only a single item
* These “lists” are then merged back together into a descending ordered list (high 🡪 low)
* This is known as the “divide and conquer” method, where…
	+ Divide refers to where the data is halved
	+ Conquer refers to splitting all data into singular lists

## Pseudocode

**array 🡨 [6, 4, 3, 5, 2, 1]**

**OUTPUT "Merge Sort Array"**

**mergeSort(array)**

**FUNCTION mergeSort(array):**

 **IF len(array) > 1 THEN**

 **middle=int(len(array) / 2)**

 **left 🡨 array[0:middle]; right 🡨 array[middle]**

 **mergeSort(left); mergeSort(right)**

 **#Divide elements into sub-sections AND re-merge**

 **a 🡨 b 🡨 0**

 **FOR element in range(len(array))**

 **L 🡨 left[a] IF a < len(left) else None**

 **ENDIF**

 **R 🡨 right[b] IF b < len(right) else None**

 **ENDIF**

 **IF ((L AND R) AND (L < R)) OR R is None:**

 **array[element] 🡨 L; a += 1**

 **ELSEIF ((L AND R) AND (L >= R)) OR L is None:**

 **array[element] 🡨 R; b += 1**

 **ENDIF**

 **ENDFOR**

**ENDFUNCTION**

**Key Learning Point:** Merge sort is “divide and conquer” – data is divided, sorted into lists, and sorted from there