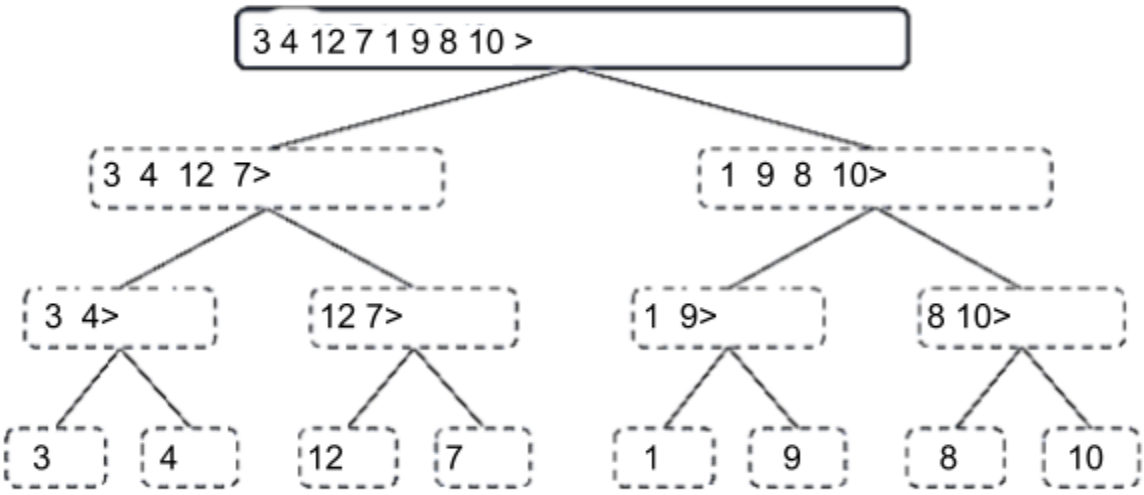
Names: _____ Worksheet #9

CS Logins: _____ Sorting and Master Theorem Activities

As always, sit with a partner and work through these together.

Activity #1: Show how you would merge sort the following input sequence [3, 4, 12, 7, 1, 9, 8, 10], filling in the returned sorted sublists in the spaces below



Activity #2: solve for Θ for Binary Search using Master Theorem:

$T(n) = T(n/2) + \Theta(1)$ Θ(1) to decide which half to do, then T(n/2) to recurse

a = _____ b = _____ d = _____ a _____ b^d

$T(n) = \Theta($ _____)

Activity #3: solve for Θ using Master Theorem:

$T(n) = 5T(n/2) + \Theta(n^3)$

a = _____ b = _____ d = _____ a _____ b^d

$T(n) = \Theta($ _____)

Activity #4: Show how you would quicksort the following input sequence [3, 4, 12, 7, 1, 9, 8, 10]. Draw out the call tree like you did for merge sort. Pick arbitrary but consistent elements as your pivot value, e.g., the 1st, 2nd, middle, or last. List your first pivot choice here:_____