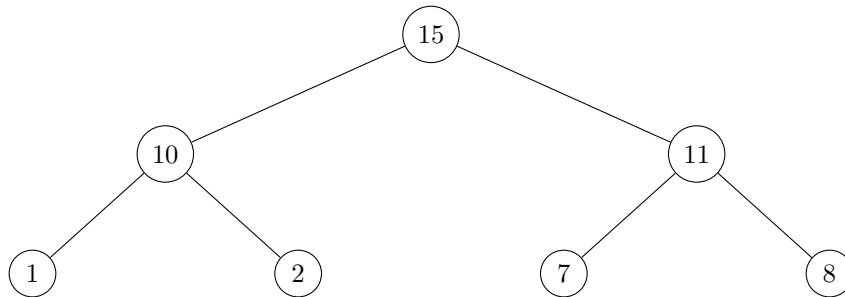


Tutorial 2: May 23rd

1. Insert 27 and 9 into the following heap, and then perform a delete-max operation on the resulting heap.



2. How would you implement a stack using a heap? Analyze the complexity of the push and pop operations.
3. Let L denote a sorted array of n distinct integers that are pairwise coprime. Given L and an integer k between 1 and $\frac{n(n-1)}{2}$, write a function that produces a pair (i, j) , with $i < j$, such that $\frac{L[i]}{L[j]}$ is the k -th smallest fraction that can be made from elements in L . The algorithm should run in $O(k \log k)$ time.