

1. Name the three properties of a tree.
 - > A tree is a connected, acyclic, and undirected graph
2. Is a tree a forest
 - > A tree is a forest, however a forest cannot be a tree as it is not connected.
3. What do you call the special designated node in a tree?
 - > Root of the tree
4. What is the minimum number of nodes in a tree?
 - > The minimum number of nodes in a tree is 1
5. Can a tree have no subtrees at all?
 - > A tree can have no subtrees
6. Children of node 16
 - > Nodes 13, 6, and 60
7. Parent of node 1
 - > Node 7
8. Siblings of 23
 - > Node 23 has no siblings
9. Ancestors of 9
 - > The ancestors of node 9 are: Node 4, 12, 7, and 22
10. Descendants of 16
 - > The descendants of node 16 are: Nodes 13, 23, 6, 60, and 21
11. Leaves
 - > The leaves of the tree are: nodes 23, 21, 20, 9, and 1
12. Non-leaves
 - > The non-leaves are: Nodes 22, 16, 7, 13, 6, 60, 12, and 4
13. Depth of node 4
 - > Node 4 has a depth of 3
14. Degree of the tree
 - > The degree of the tree is 3
15. Height of the tree
 - > The height of the tree is 4
16. Weight of the tree
 - > The weight of the tree is 5
17. Is the tree a binary tree?
 - > The tree is not a binary tree
18. Removing 6, is the tree a full binary tree?
 - > Removing 6 will not make the tree a full binary tree
19. Removing 6, is the tree a complete binary tree?
 - > Removing 6, the tree will still not be a complete binary tree
20. Is a full binary tree a complete?
 - > Yes, a full binary tree is a complete tree

21. Is a complete binary tree full?
 - > In some cases yes, but a complete tree does not always mean a full tree
22. How many leaves does a complete n-ary tree of height h have?
 - > The tree has n^h amount of leaves
23. What is the height of a complete n-ary tree with m leaves?
 - > The height of the tree is $\log n^m$
24. What is the number of internal nodes of a complete n-ary tree of height h?
 - > The number of internal nodes of the tree is $(n^h)-1$
25. What is the total number of nodes a complete n-ary tree of height h have?
 - > The total number of nodes of the tree is $(n^{(h+1)})-1$