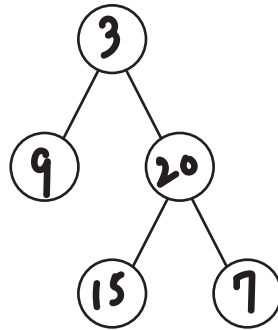


Breadth First Search



BREADTH - FIRST SEARCH

- ① define queue
 `q = collections.deque()`
 add a first item to the queue
- ② while the queue has items inside it:
 `.pop` from the left.
 ↳ `node = q.popleft()`
 +
 append on the right if the node has not been visited.
 ↳ if node:
 `q.append(node.left)`
 `q.append(node.right)`

```
def bfs(node: Optional[TreeNode]) -> list[int]:
    q = collections.deque()
    q.append(node)
    all_nodes = []
    while len(q) > 0:
        node = q.popleft()
        if node:
            all_nodes.append(node.val)
            q.append(node.left)
            q.append(node.right)
    return all_nodes
```