(26) Diameter of a tree
- no. of nodes on longest path between two end nodes)

diameter = Max(diameter(left), diameter(right),
max(height(left), height(right)) + 1)

```
int diameter(Node n) {
    if (n == null) return 0;
    int lh = height(n.l);
    int rh = height(n.r);

    int ld = diameter(n.l);
    int rd = diameter(n.r);

    return Math.max(lh + lr + 1, Math.max(ld, rd));
}

int height(Node n) {
    if (n == null) return 0;

    return 1 + Math.max(height(n.l), height(n.r));
}
```

$O(n^2)$