

Level

Nodes

0

1

1

2

2

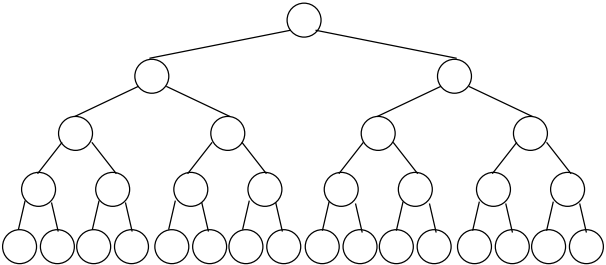
4

3

8

4

16



$$\begin{aligned} & \sum_{i=0}^h 2^i(h+1-i) \\ &= (h+1)\sum_{i=0}^h 2^i - \sum_{i=0}^h i2^i \\ &= (h+1)(2^{h+1}-1) - (2 + (h-1)2^{h+1}) \\ &= h2^{h+1} - h + 2^{h+1} - 1 - 2 - h2^{h+1} + 2^{h+1} \\ &= 2 \cdot 2^{h+1} - h - 3 \\ &= 4 \cdot 2^h - h - 3 \\ &= 4 \cdot 2^{\lg(n+1)} - \lg(n+1) - 3 \\ &= 4(n+1) - \lg(n+1) - 3 \\ &= 4n + 1 - \lg(n+1) \end{aligned}$$

