

0-1 Knapsack: *Depth First* Traversal of State Space Tree with Branch-and-Bound Pruning

Capacity $W = 6$ lb

item 1

\$10
1 lb

item 2

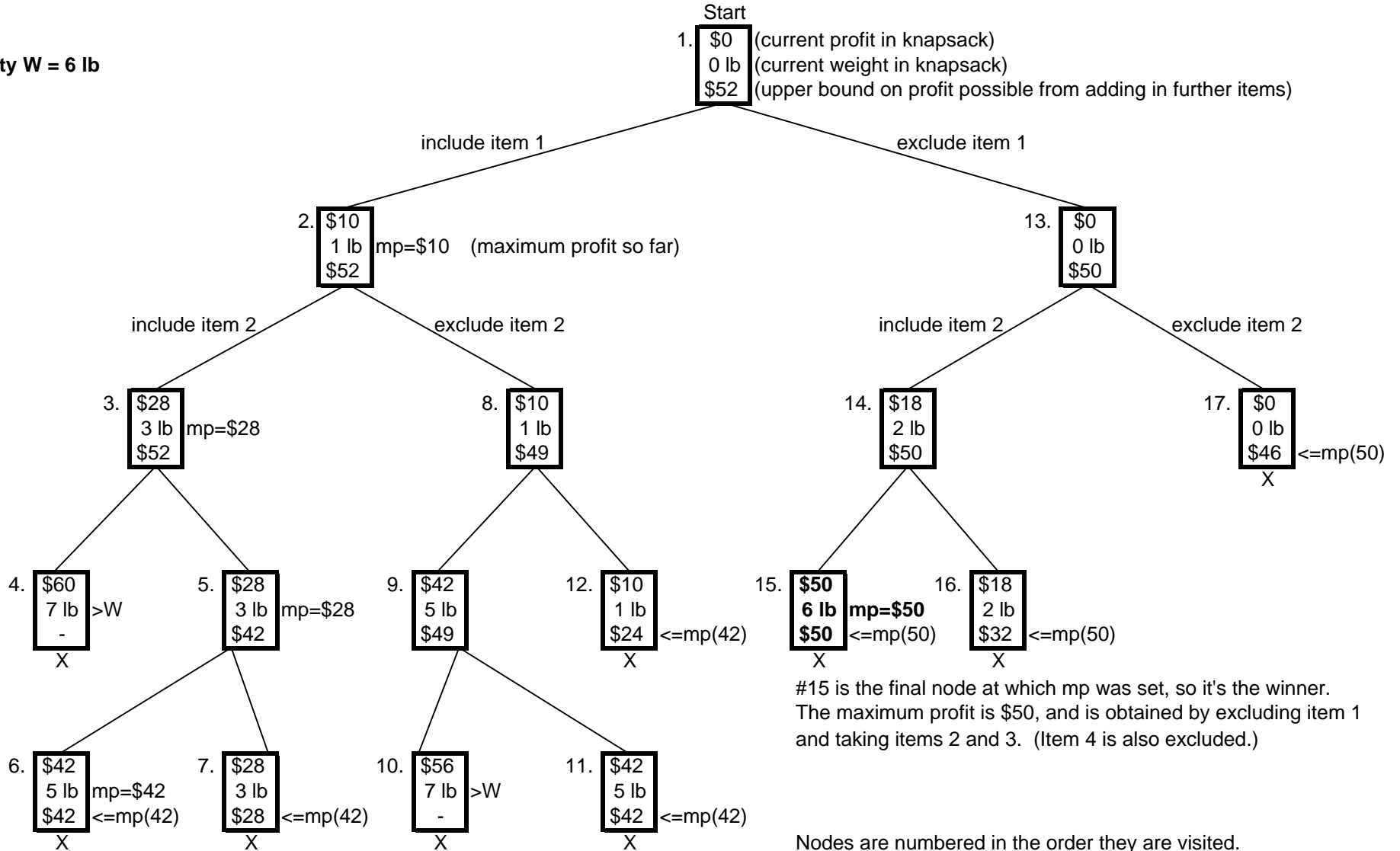
\$18
2 lb

item 3

\$32
4 lb

item 4

\$14
2 lb



0-1 Knapsack: *Breadth First* Traversal of State Space Tree with Branch-and-Bound Pruning

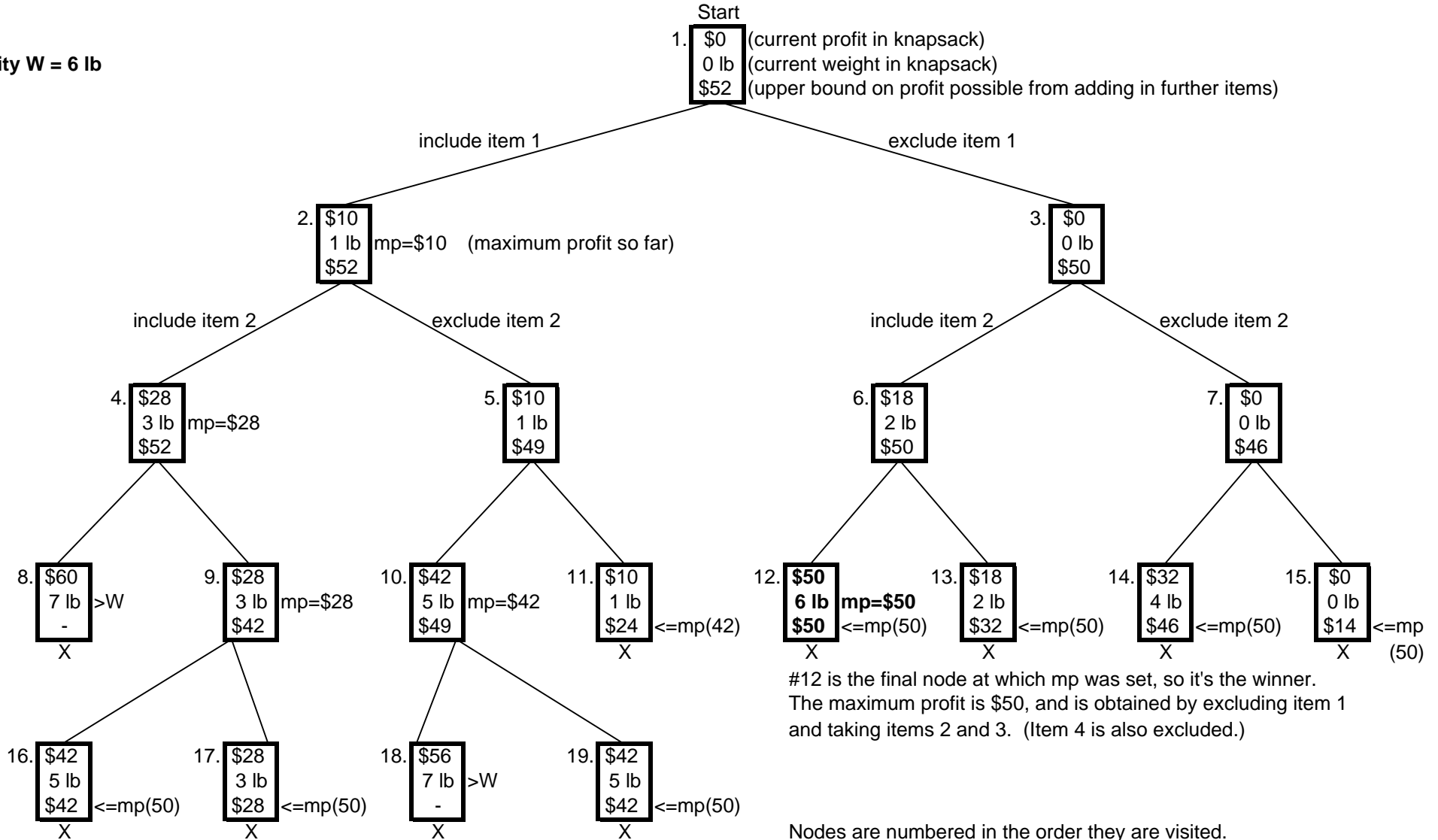
Capacity $W = 6$ lb

item 1
\$10
1 lb

item 2
\$18
2 lb

item 3
\$32
4 lb

item 4
\$14
2 lb



0-1 Knapsack: *Best First* Traversal of State Space Tree with Branch-and-Bound Pruning

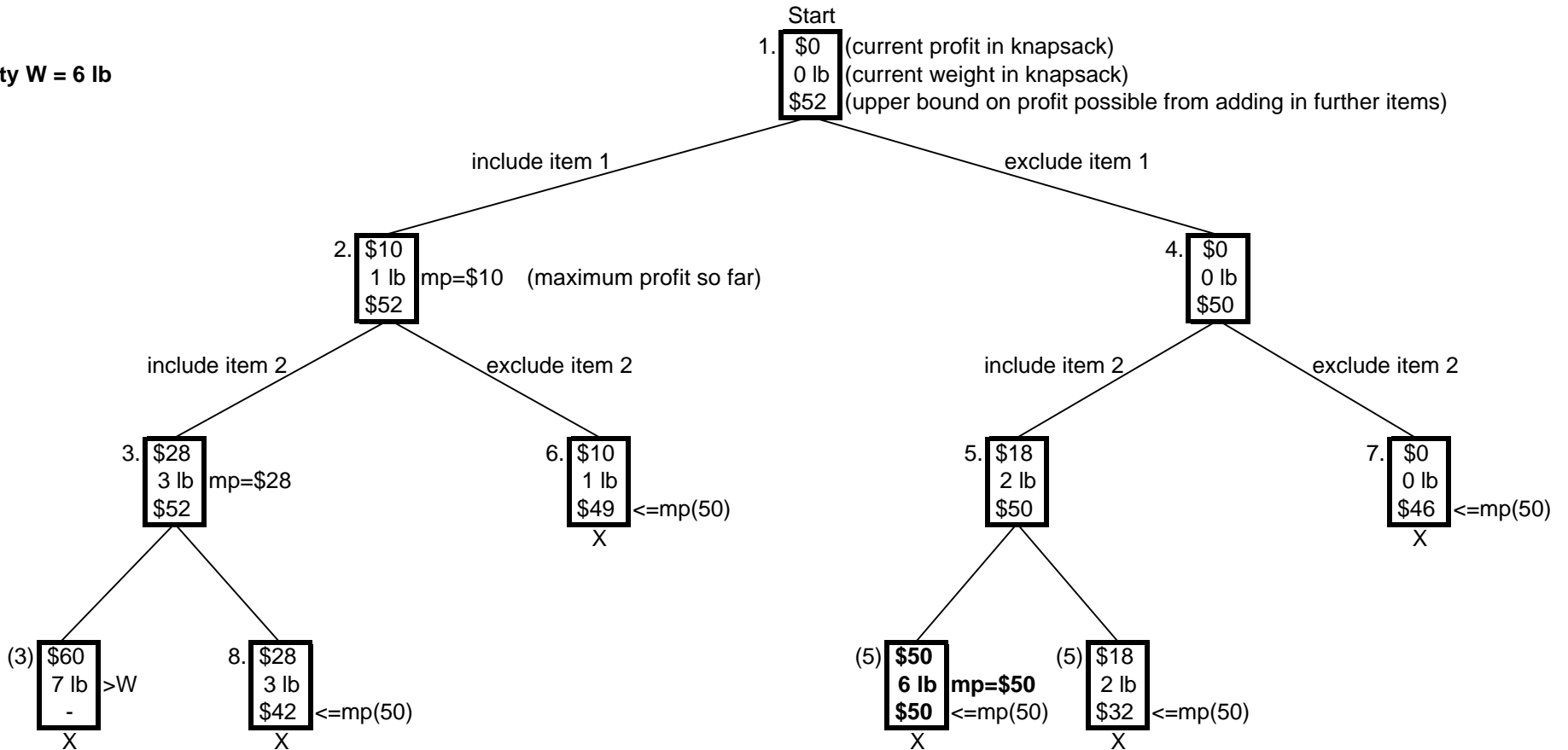
Capacity $W = 6$ lb

item 1
\$10
1 lb

item 2
\$18
2 lb

item 3
\$32
4 lb

item 4
\$14
2 lb



The same winner as with the other traversals of the state space tree.

Nodes are potentially seen twice.

The triplet of numbers in each node is computed when its PARENT is expanded.

The node is then placed in a priority queue if it's promising.

The nodes are dequeued in the order 1,...,8 shown, according to which has the highest potential profit of currently enqueued nodes. If a node is still promising, its children are computed and enqueued.

Nodes numbered (3) (5) are computed when their parents are expanded, but do not get enqueued.