Name: Louis Lam
CCID: leelaw

Q1
A* expands fewer nodes than Dijkstra because the heuristic guides the search toward the goal. Dijkstra expands nodes evenly in all directions, while A* focuses on promising paths. Because of fewer expansions, A* usually runs faster than Dijkstra.

Q2
Multiplying the heuristic by 1.25 makes A* more greedy (Weighted A*). It expands fewer nodes and often runs faster. However, the heuristic is no longer admissible, so the solution may not be optimal.

Q3
A*: No. The Octile heuristic is consistent, so once a node is expanded, its best path is already found.
Weighted A*: Yes. The heuristic is not consistent, so a cheaper path to a node may be found later, causing reopening.

Q4
No. The search trees do not grow exponentially in practice. The grid limits the branching factor, and obstacles reduce possible expansions. A* further reduces growth by using a heuristic to guide the search.