1.

```
localSearch (x, w, v, W):
    S ← [ ]
    While still items to go in:
        if S weight + item Weight <= Weight:
            S. append [item]
            S Weight += item weight
    Neighbors = find Neighbors (S)

    While s` ∈ neighbors (S):
        if value(s`) > Value(S) & weight (s`) <= W:
            S ← s`
    return S
```

Generate a random solution to check against

← recursive function returns all variations where S's neighbors are flipped

2. No. it will find the best local solution, but not the best overall. It hinges on your starting random solutions