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1.)

```
Number elements: 100

Successful search: 411.82
Unsuccessful search: 6

Number elements: 1000

Successful search: 1.63041e+08
Unsuccessful search: 9

Number elements: 10000

Successful search: 9.04402e+15
Unsuccessful search: 13

Number elements: 100000

Successful search: 2.01305e+21
Unsuccessful search: 16

sh: pause: command not found
Program ended with exit code: 0
```

```
Number elements: 10

Successful search: 7.2
Unsuccessful search: 3

Number elements: 100

Successful search: 411.82
Unsuccessful search: 6

Number elements: 1000

Successful search: 1.63041e+08
Unsuccessful search: 9

Number elements: 10000

Successful search: 9.04402e+15
Unsuccessful search: 13

Number elements: 100000

Successful search: 2.01305e+21
Unsuccessful search: 16

sh: pause: command not found
Program ended with exit code: 0
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Number elements: 1000

Successful search: 1.63041e+08
Unsuccessful search: 9

Number elements: 10000

Successful search: 9.04402e+15
Unsuccessful search: 13

Number elements: 100000

Successful search: 2.01305e+21
Unsuccessful search: 16

sh: pause: command not found
Program ended with exit code: 0
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Number elements: 100000

Successful search: 2.01305e+21
Unsuccessful search: 16

sh: pause: command not found
Program ended with exit code: 0
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Number elements: 10000

Successful search: 9.04402e+15
Unsuccessful search: 13

Number elements: 100000

Successful search: 2.01305e+21
Unsuccessful search: 16

sh: pause: command not found
Program ended with exit code: 0
```
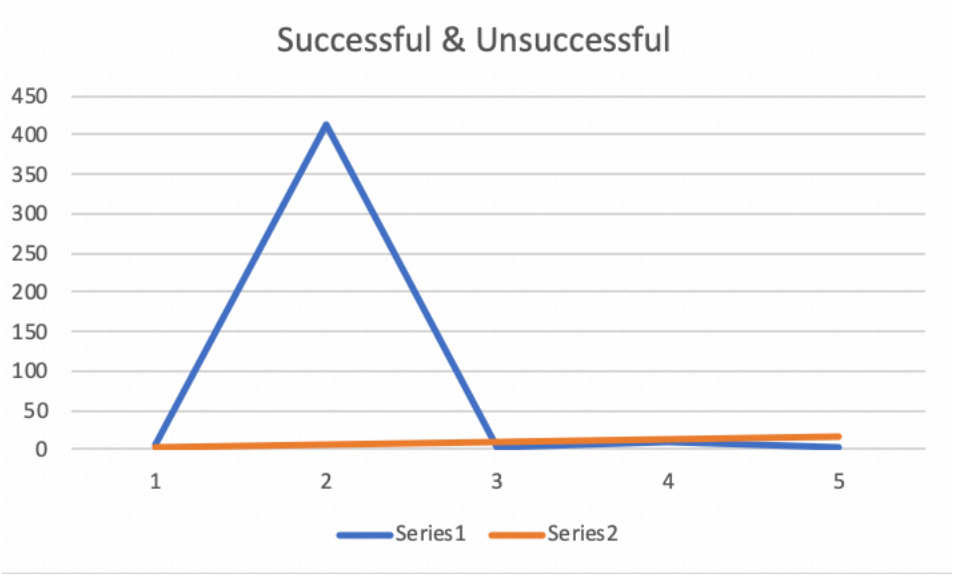

2.)

I think the average comparison for a successful search would be number of nodes at each level multiplied by the level. On the other hand, the average comparison for an unsuccessful search would be higher because every node has to be compared until there are no more nodes.

Tree size	Successful search	Unsuccessful search
10	5% chance	100
100	50% chance	100
1,000	500% chance	100
10,000	5,000% chance	100
100,000	50,5000% chance	100

For a successful search I divide the size of the tree by 2, I think there will be 50% chance every time. For an search that is unsuccessful will always have a 100% chance of being unsuccessful cause it will never find the given element.



3.)