Linear search algorithm

Another way to search is to use a **linear search algorithm**

This starts at the beginning and works through one number at a time

A **linear search** works in a line

In lots of ways it’s easier to do a linear search. But it’s not as **efficient** if there are lots of numbers.

Linear search algorithm

So, with a set of 20 numbers, you'd start at the end and guess 1

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Then guess 2

2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Then 3

3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Linear search algorithm

Linear search is simple to do

It also works on any set. The set doesn’t need to be in order. It will work on a random list that’s not in an order

Linear search algorithm

Problems with linear search:

- it might take a long time to get to the answer
- this is especially the case if the answer is towards the end of the set
- linear search is **less efficient** in most cases, especially with large sets

Linear search algorithm

Advantages of linear search:

- you might find the answer straight away
- in small sets, it’s just as easy to use a linear search anyway
- linear search is simpler to do
- linear search will work on sets that can’t be put in order (binary search will not work on these sets)

Linear search algorithm

Here's a way to program a linear search in Scratch

The user has to say Y or N when they're asked