

Linear search algorithm

One way to search is to start at the beginning and work your way through one number at a time

This is called a **linear search** - it 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

Here's an algorithm for a linear search:

```
SET guesses to 0
```

```
SET start to 1
```

```
WHILE number not equal to start:
```

```
    Add 1 to start
```

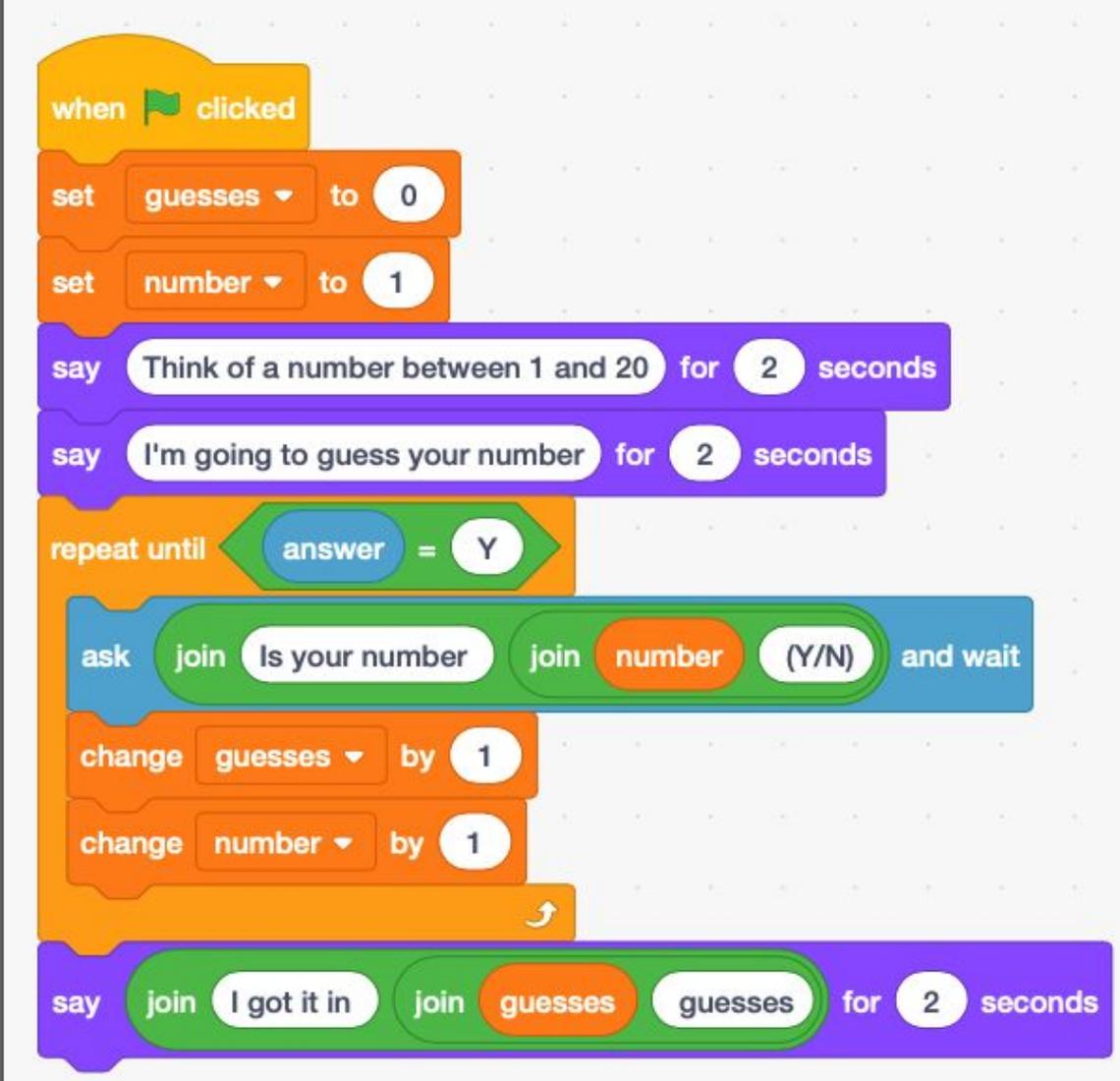
```
    Add 1 to guesses
```

```
PRINT ("found it in" + guesses)
```

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



```
when green flag clicked
  set guesses to 0
  set number to 1
  say Think of a number between 1 and 20 for 2 seconds
  say I'm going to guess your number for 2 seconds
  repeat until answer = Y
    ask join Is your number join number (Y/N) and wait
    change guesses by 1
    change number by 1
  say join I got it in join guesses guesses for 2 seconds
```

The image shows a Scratch script for a linear search algorithm. It starts with a 'when green flag clicked' event block. The script then sets two variables: 'guesses' to 0 and 'number' to 1. It uses two 'say' blocks to prompt the user to think of a number and to announce the start of the guessing process. A 'repeat until' loop is used to perform the search, with the condition 'answer = Y'. Inside the loop, an 'ask' block prompts the user with the current number and asks for a 'Y/N' response. The 'change' blocks increment both 'guesses' and 'number' by 1. After the loop, a final 'say' block displays the total number of guesses taken to find the number.