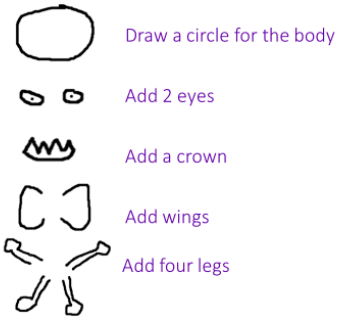
Algorithms

An algorithm is a list of instructions, or rules, that make something happen or works something out.

How to draw a fluffy algorithm…



What is an algorithm?

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Did yours turn out like this?

Or like this?

Now it's your turn:

1) Think of a character
2) Write each step of your algorithm
3) When you have done all your steps get a friend to try it
4) Was it what you expected?
5) Change your algorithm to improve it
6) Get another friend to try it
7) What did you find out?

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Barefoot

My Algorithm

by: _____

How to draw a Crazy Character called:

My friend followed my algorithm and drew

Drawn by:

My other friend followed my algorithm and drew

Drawn by:

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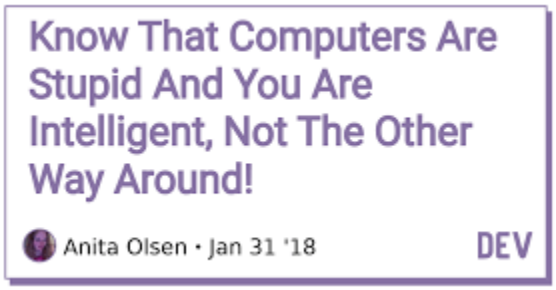
Now write some ideas down on how you could make sure that both your friends/family drew the same picture. Do you need to make your algorithm more specific?

I have learnt that:

Jam Sandwich Algorithm



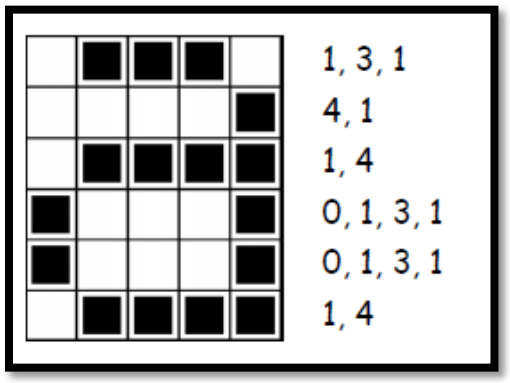
Now try and create an Algorithm that makes a Jam Sandwich, see if you can get a family member to try it out. Don`t forget they must behave like a computer and can only do exactly what you have written, so you will need to tell them to pick up a knife, put it down and open the butter for example, because computers are very stupid and cannot think for themselves! Oh and the computer will not understand words like 'twist', 'unscrew' and 'spread' so you can't use those 😉

You are welcome to have a go at doing this activity, this is a difficult one….

Image representation

What's the point of this task? You will gain an understanding of how images are stored in a computer.

Introduction: Computers store drawings, photographs and other pictures using only numbers. Computer screens are divided up into a grid of small dots called pixels (**pi**cture **el**ements). In a black and white picture, each pixel is either black or white.



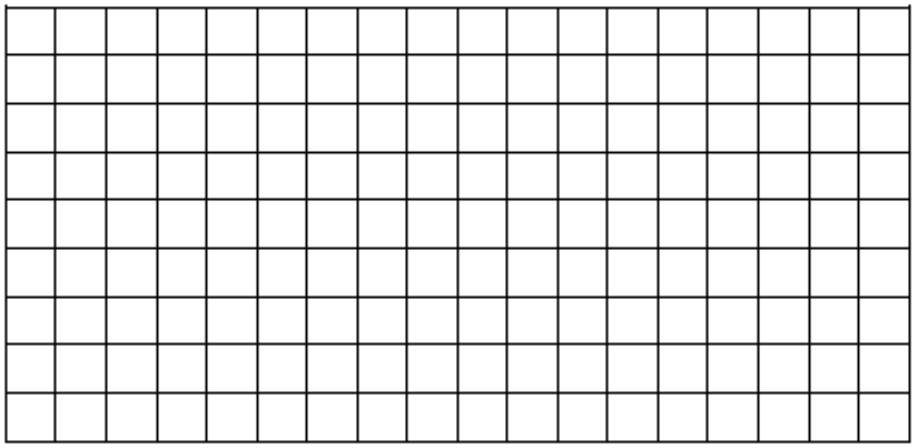
When a computer stores a picture, all that it needs to store is which dots are black and which are white.

This picture can be represented by numbers. The first line consists of one white pixel, then three black, then one white. The first line is represented as 1, 3, 1.

The **first number always relates to the number of white pixels**. **If the first pixel is black, the line will begin with a zero.**

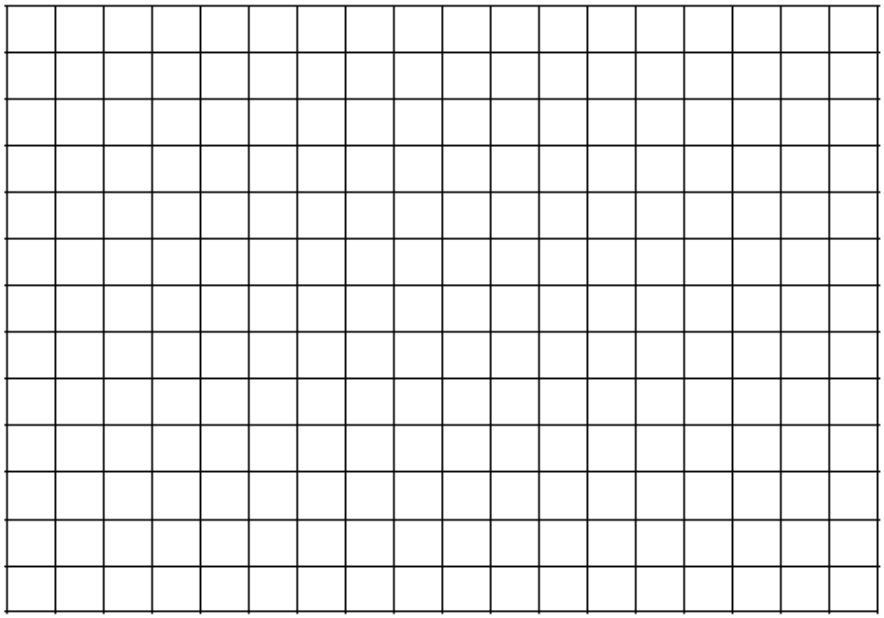
Look at the number representations below. Read each line and create the picture in the grids.

PICTURE 1



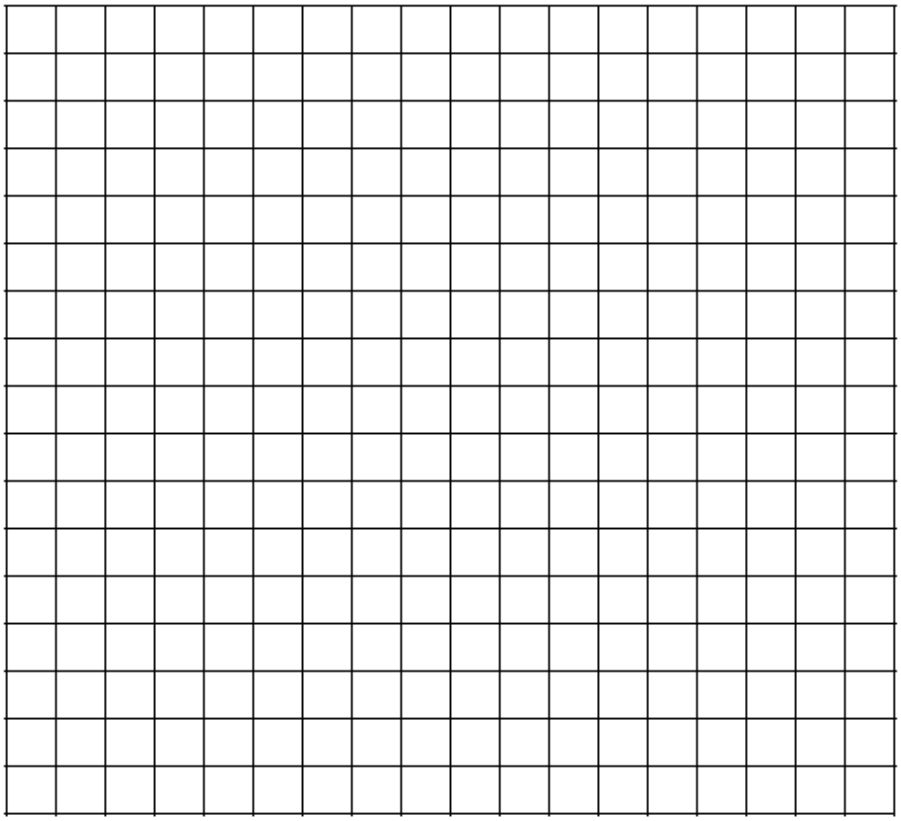
4, 11
4, 9, 2, 1
4, 9, 2, 1
4, 11
4, 9
4, 9
5, 7
0, 17
1, 15

PICTURE 2



6, 5, 2, 3
4, 2, 5, 2, 3, 1
3, 1, 9, 1, 2, 1
3, 1, 9, 1, 1, 1
2, 1, 11, 1
2, 1, 10, 2
2, 1, 9, 1, 1, 1
2, 1, 8, 1, 2, 1
2, 1, 7, 1, 3, 1
1, 1, 1, 1, 4, 2, 3, 1
0, 1, 2, 1, 2, 2, 5, 1
0, 1, 3, 2, 5, 2
1, 3, 2, 5

PICTURE 3

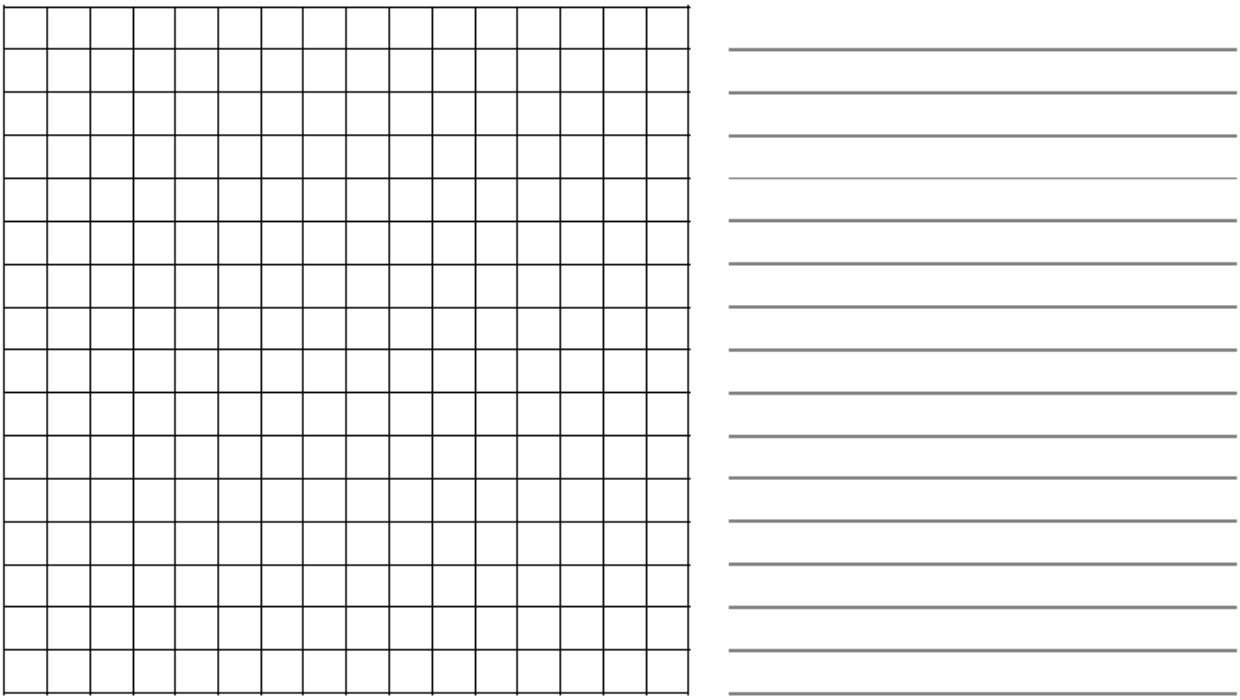


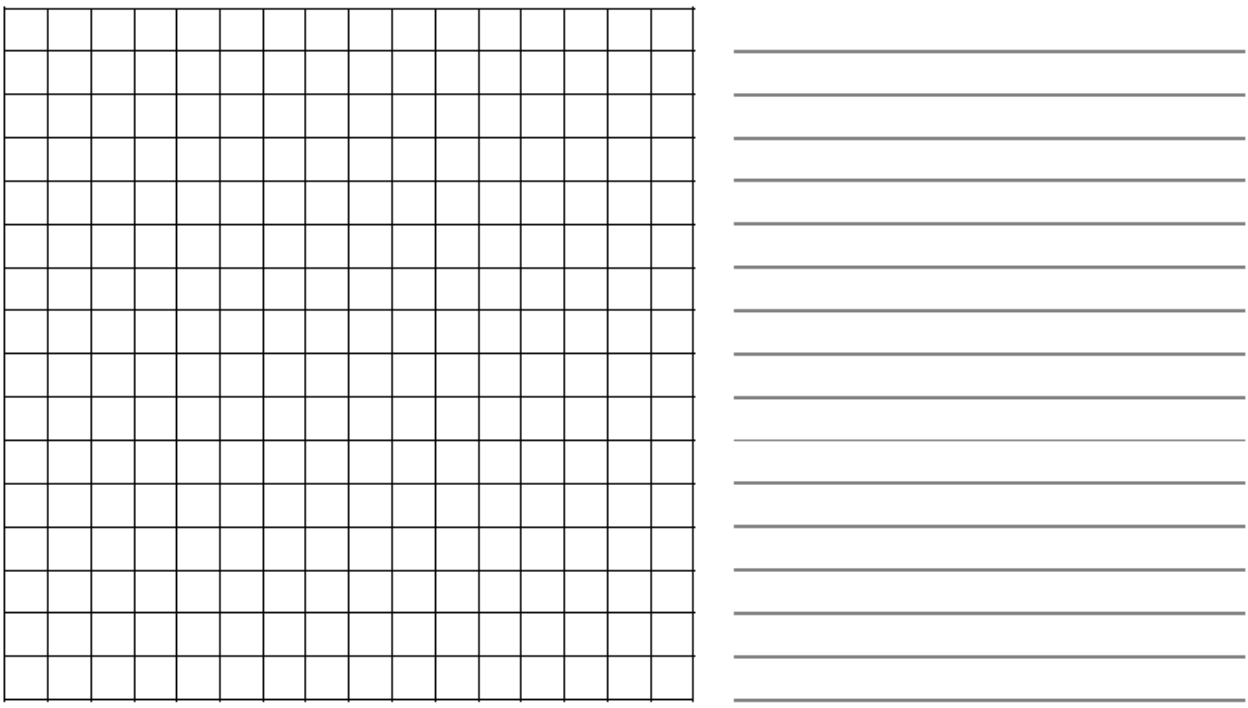
6, 2, 2, 2
5, 1, 2, 2, 2, 1
6, 6
4, 2, 6, 2
3, 1, 10, 1
2, 1, 12, 1
2, 1, 3, 1, 4, 1, 3, 1
1, 2, 12, 2
0, 1, 16, 1
0, 1, 6, 1, 2, 1, 6, 1
0, 1, 7, 2, 7, 1
1, 1, 14, 1
2, 1, 12, 1
2, 1, 5, 2, 5, 1
3, 1, 10, 1
4, 2, 6, 2
6, 6

Ormiston Rivers Year 6 Computer Science Transition

Create your own!

Why not try making your own coded picture for a peer? Draw you picture on the top grid, and when you've finished, write the code numbers beside the picture on the bottom grid. Cut along the dotted line and give the bottom grid to a peer to colour in.





Computer Science activities you can do at home: https://code.org/learn; https://www.codecademy.com; https://www.kodugamelab.com/; https://www.tynker.com/