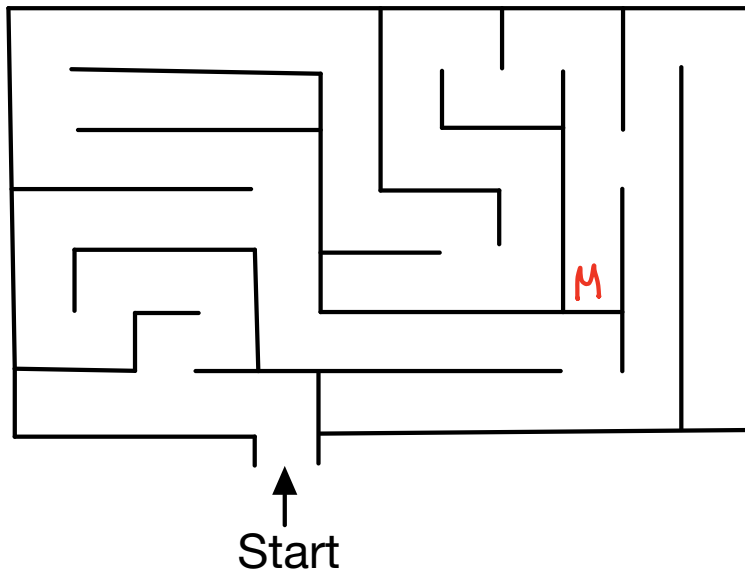


Mazes, Minotaurs and Maths

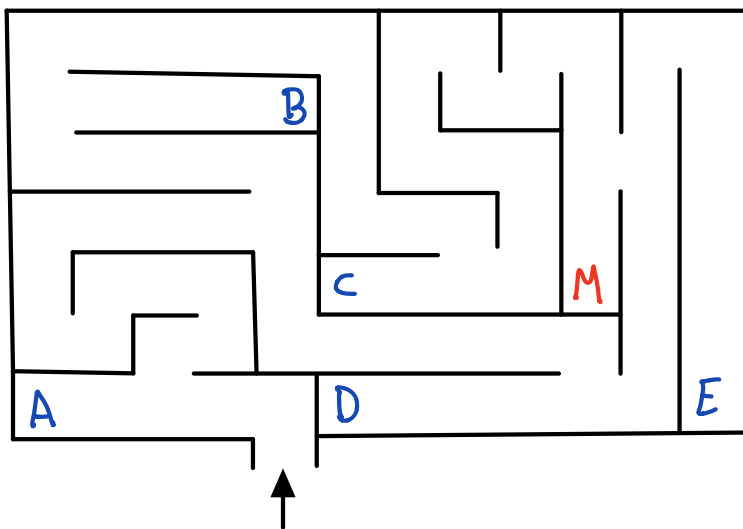
- The Minotaur was a "part man part bull" beast from Greek mythology.
- According to the story he lived in a labyrinth under the island of Crete.
- Theseus volunteered to defeat the minotaur.
- Ariadne gave Theseus a ball of thread, so that he could lay out the thread on the way there and follow it on the way back.
- How many possible ways are there to reach the Minotaur without retracing our steps?

- Consider the maze below.

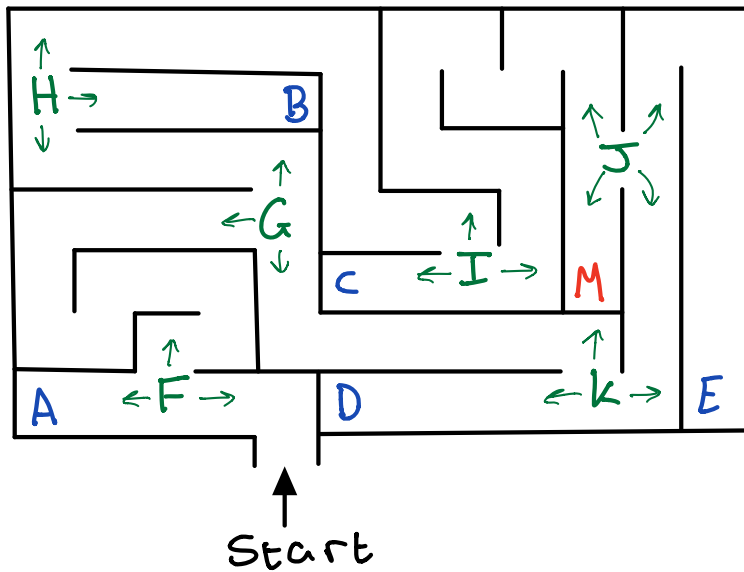


M = Minotaur

- Draw a path which takes you to the Minotaur.
- Can we simplify the maze so that it's clearer which way to go?
- Let's mark each of the dead ends with a letter



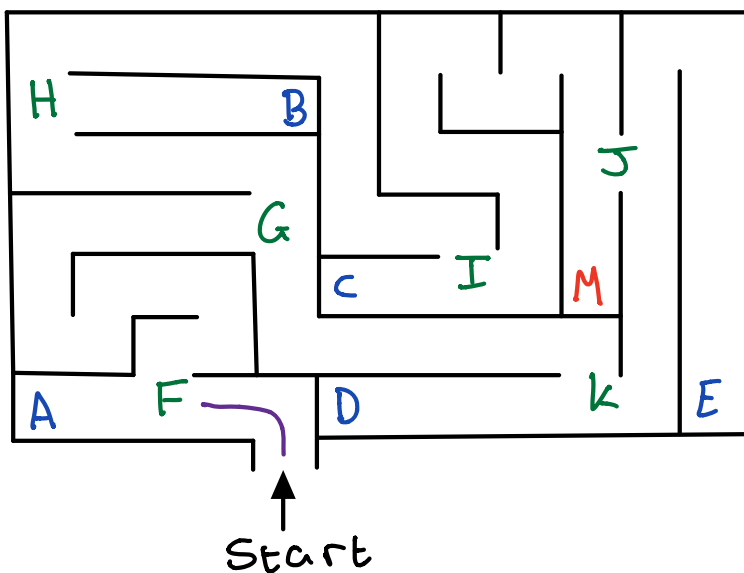
- Now let's mark each junction where we have a choice of direction with a letter



I've added arrows to show the different choices at each junction

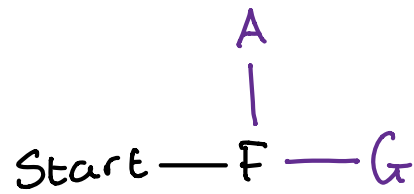
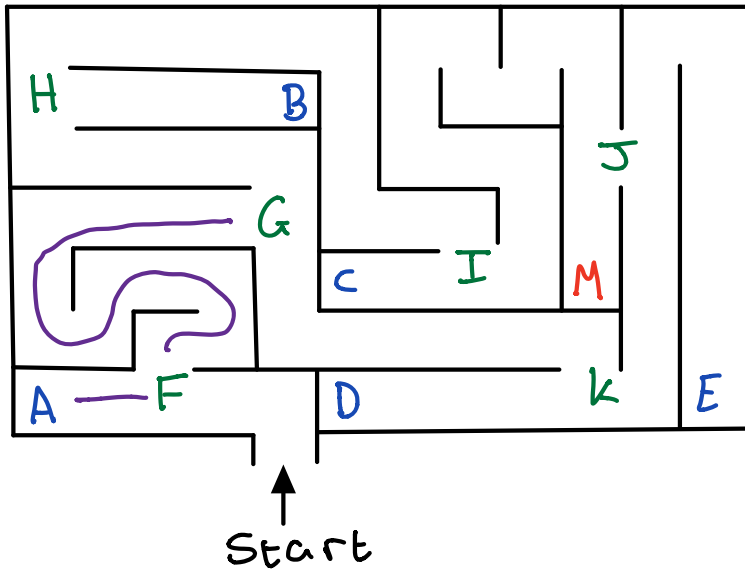
- We can turn all possible paths into a diagram

1- The first letter we reach is F



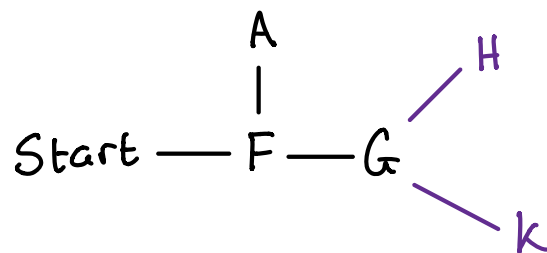
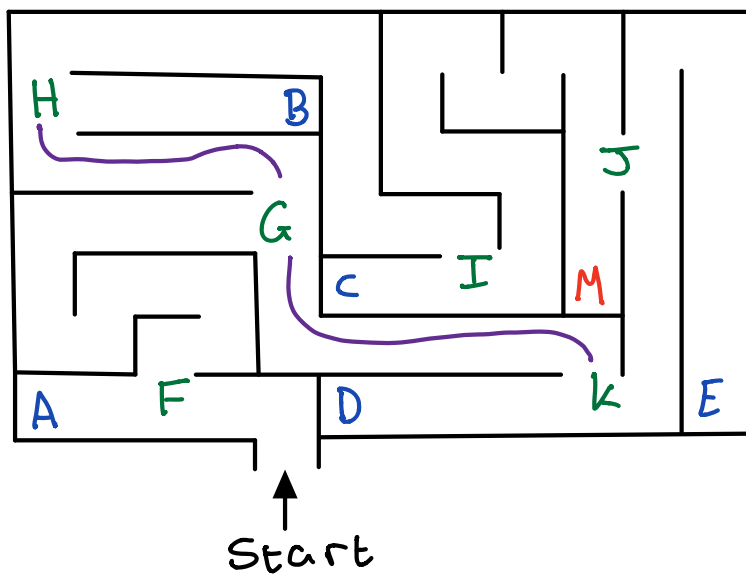
Start — F

2. At F we have a choice. Do we head to A or G?

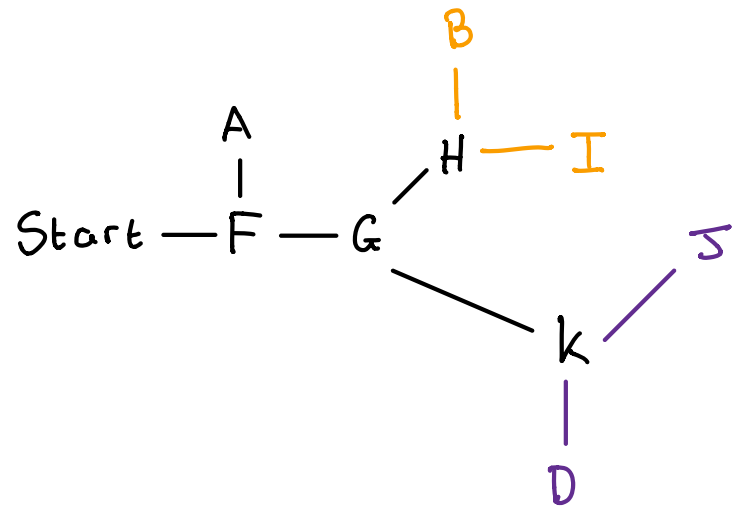
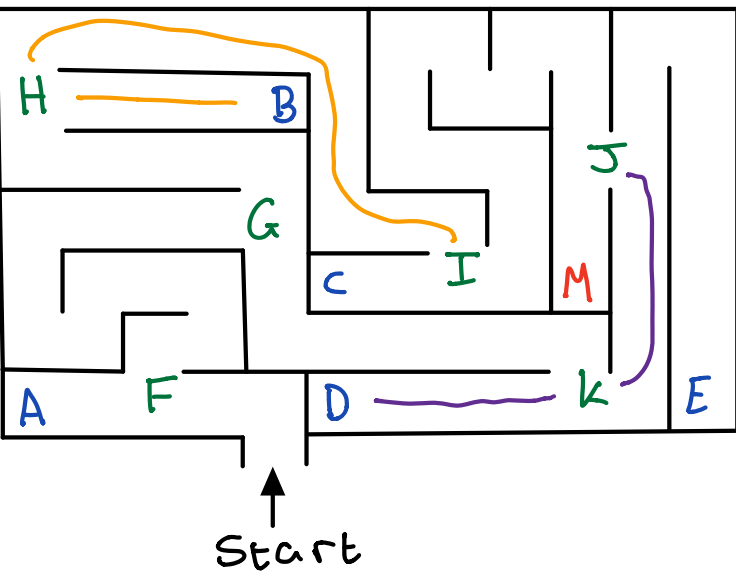


3. At A we hit a dead end so lets stop here.

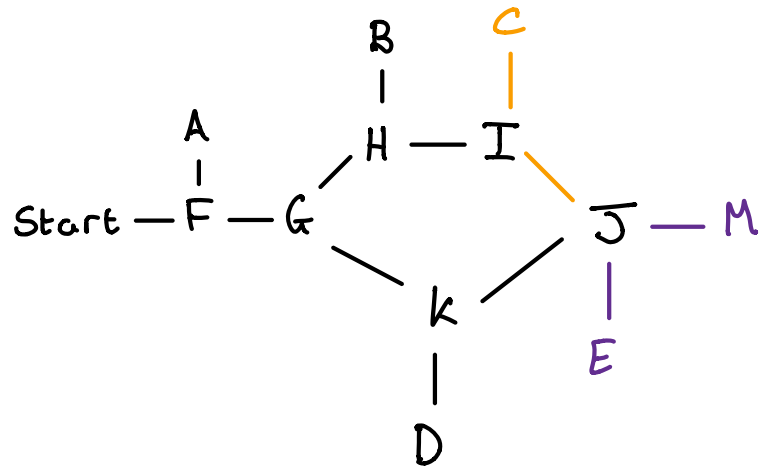
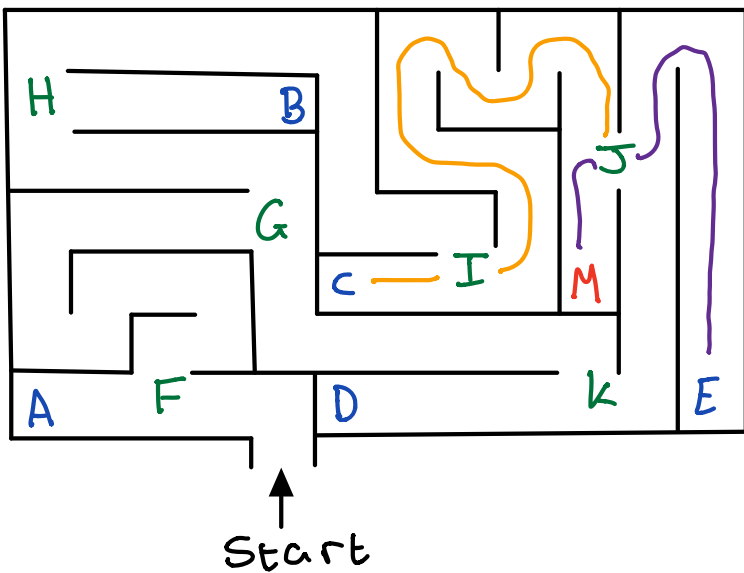
At G we have a choice, do we go to k or H.



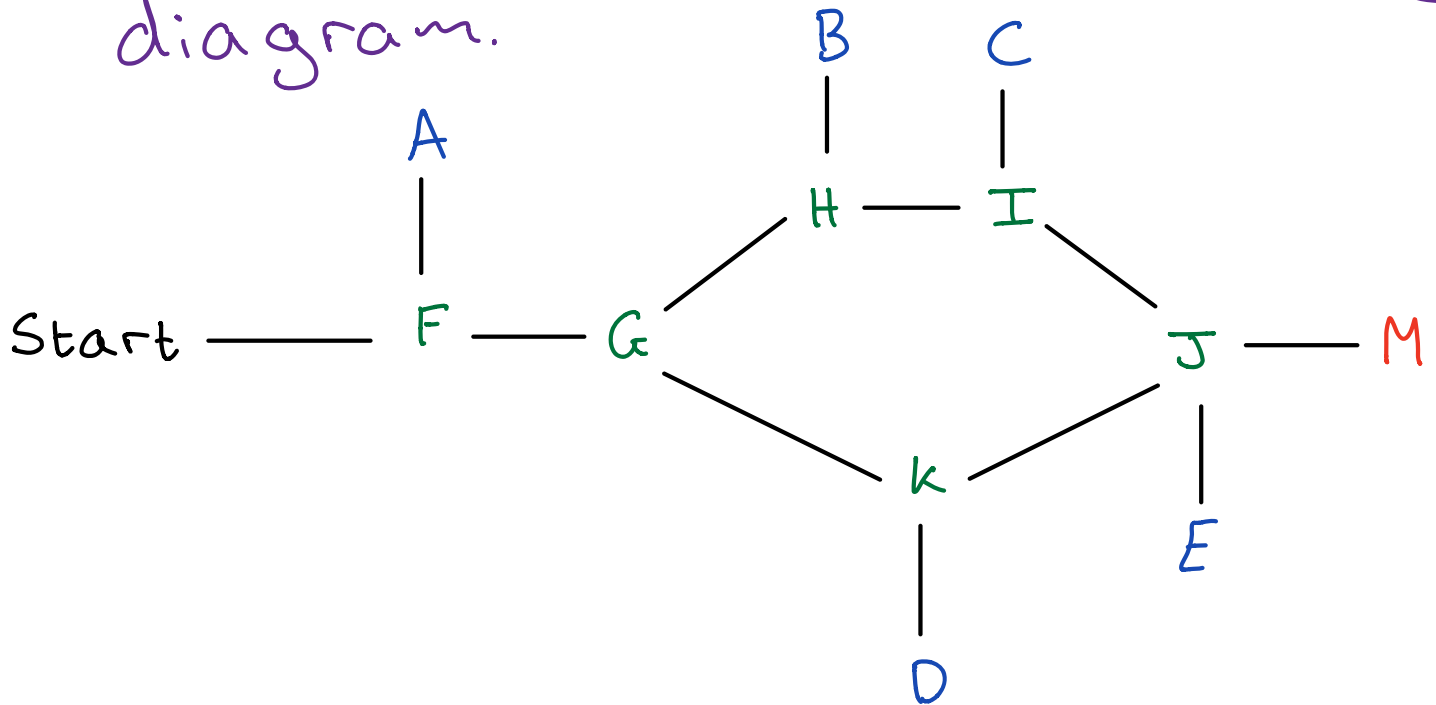
4. At H we have 2 choices, either B or I.
 At k we have 2 choices, either D or J.



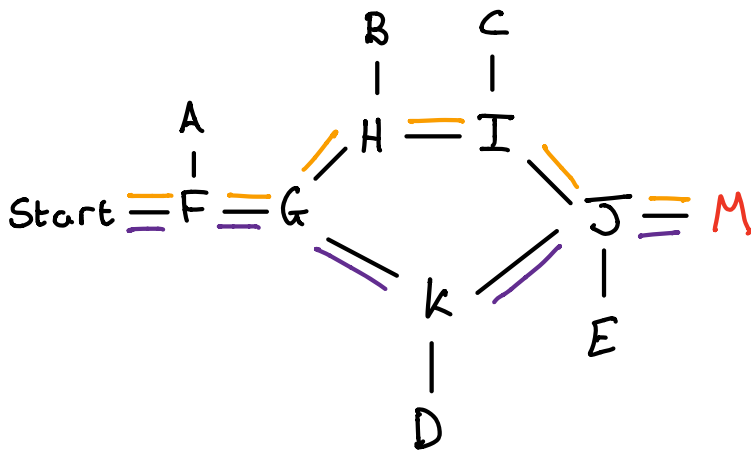
5. At I we have 2 choices, either C or J.
 At J we have 2 choices, either E or M.



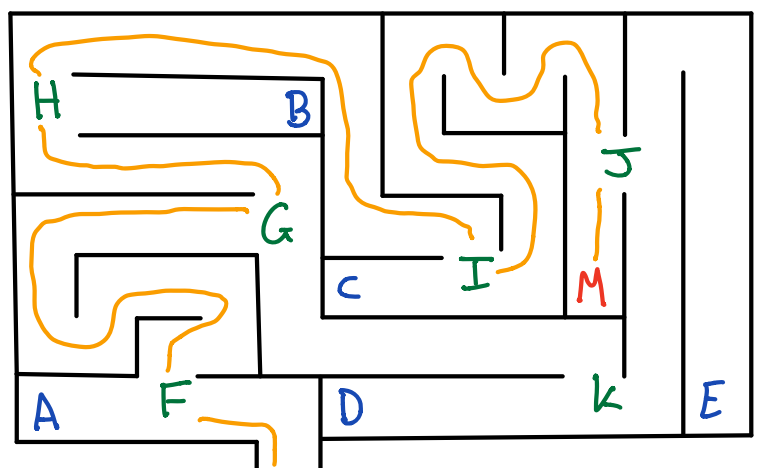
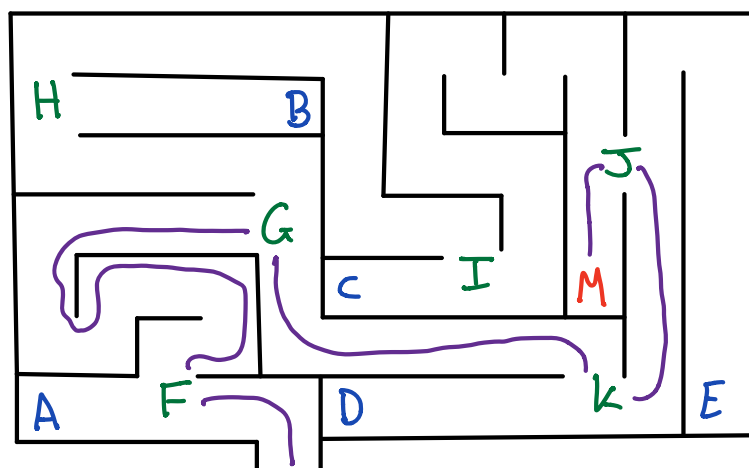
6. Hence we have the following diagram.



7. We can now see two clear paths



8. They look like this in the maze.



- These are the only two paths to M without retracing our steps.
 - It's maybe hard to see that these are the only two by looking at the maze but it's very easy to see by looking at the diagram.
 - That's the power of maths! We can take lots of confusing info and turn it into something which contains all the important bits but which is easier to understand.
-

- Try the same process with the maze below

