



## How to use a map

### BOX NOTICE

Name of the activity	Learn how to use a map
Activity duration	1h
Material needed	How to use a map box, an IT room, scissors, glue
Number of pupils involved (per box)	3-4, one who indicates the directions, one who moves accordingly, and one or two who check the result

### Step 1: Preparation

You may start by showing the map to your pupils. What can they see on the map? What are the different elements, and how are they represented? Do they know what the names refer to?

### Step 2: Ada Lovelace

Since this box focuses on early research about computers, your pupils will have to do some research on the main pioneer on the subject: Ada Lovelace. They may not know her name at this point of the activity, so you can give them if needed. Then, ask your pupils to do some research on the internet about who she was. You may use her as an example to show the importance of women in science and start talks about gender equality in your class!

If this box is used as part of the second sequence of the box, this step can be incorporated into the sequence's first step.



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The main pieces of information that pupils must find are included in the short paragraph you will find in the box.

## Step 3: Using the map as an early computer

Now that your pupils have learnt a bit more about Ada Lovelace's work, they should have discovered that she invented the first "programme" that allows her to calculate numbers using several formulas, some of which would check if the previous result corresponds to a specific number, etc.

Using the following method, help Ada Lovelace (you will find a token representing her in the box) go to some of the places that are represented on the map! Ask your pupils to be as specific as they can:

- They must indicate each time they walk forward, turn right or left.
- They are in Ada Lovelace's shoes: they must take her perspective into account.
- They must indicate if they walk, drive or swim depending on their environment.

Highlight the fact that this method has been used to create computers: although it may sound weird to explain each step in much detail, this is necessary to learn to code or simply to demonstrate results in other mathematics exercises.

Then, you may add a bit more difficulty to this system with the following rules:

- Ask your pupils to pick up a ruler and calculate the distance they travel each time they move the token.
- Ada Lovelace cannot cross parts with water
- Ada Lovelace can only walk past X trees (you decide, depending on where she needs to go)
- If Ada Lovelace walks by the fish pond, she must walk to a cottage afterwards.

- Ada Lovelace cannot enter the church unless she has visited every building on the map

Do not hesitate to add some more as you wish! You may use several rules at a time (make sure that they can work together) or conditions such as “If,” “Unless,” or “When.”

## Step 4: Creation of the chessboard

Once the first activity is over, if you still have time, be ready to play! Follow the instructions to build the chess board in the Creation of the chess board document. Before starting the activity, make sure that you are familiar with chess and how the pieces move. You do not have to be an expert on how to play best, but you will have to explain how the game works!

Once all the relevant pieces have been set up, you may create new challenges for your pupils, either by using the ones from the second sequence using a knight, or you can create new challenges: the rook may only move if it can move at least three squares, the knight can only land on another piece, the queen may only move forward or on the side, never backwards, etc. Then, you can also force some pieces to move when a specific condition is met and order the movement of the pieces with a certain priority. The more planned the moves, the closer you get to building an actual computer using only pen and paper!



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