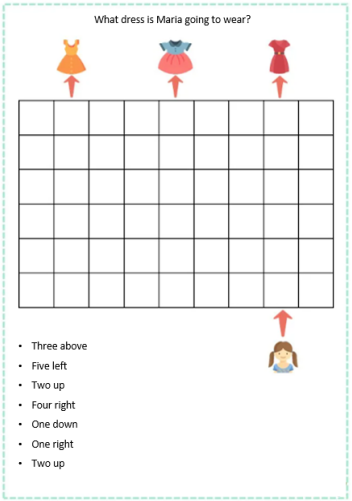
Case study 1 (Spatial orientation)

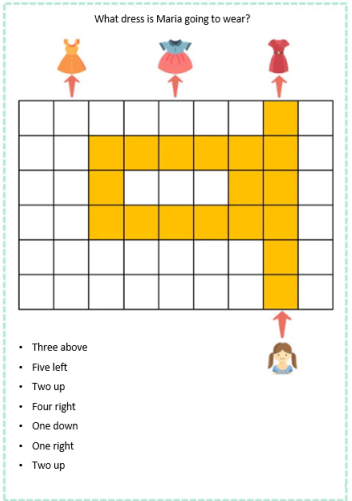
Spatial orientation is a natural capacity of living beings that allows us to know and determine the position of our own body in relation to space. It is a capacity that allows us to describe ourselves in relation to an object located in space, being able to move along the different axes, left-right, front-back, or up-down. It is a cognitive capacity involved in the learning of reading, writing, numeration and calculation.

- **Description:** Juan is a 9-year-old boy who has difficulties in situating himself in space, in writing straight, reading, differentiating between right and left and, in general, in situating objects and orienting his movements in the surrounding space. Therefore, he presents difficulties in the organisation of space in relation to himself and to different mobiles, in the control of dispersion and occupation of empty spaces and in the perception and structuring of space in relation to time.
- **Key words:** orientation, space, time, body, situation, laterality, organisation, occupation, and perception.

Tool 1

1. **Title:** Labyrinths
2. Using this tool, difficulties can be detected at a perceptual, motor, social and personal level. In addition, it will also allow us to work with the student on the ability to carry out common activities such as writing straight, reading, differentiating between right and left and, in general, locating objects and orienting our movements in the space around us.
3. **Instructions / Methodology / Recommendations how to use the tool**
   By means of the given indications, the student will have to trace the path until reaching the exit.
4. **Interpretation of the results**
   The results will be obtained using the correction template (second image). If the errors are higher than 4, the spatial orientation difficulty is high.

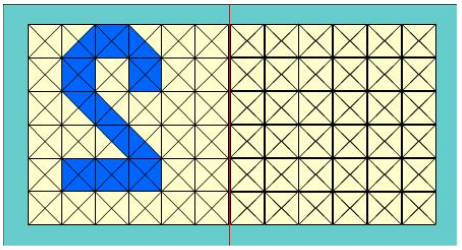




5. **Key words:** indications, position, location, distance, start and end.

Tool 2

1. **Title:** Drawing symmetrical figures
2. Using this tool it is possible to detect difficulties in the perceptual, motor, social and personal levels. This type of activity, in addition to working on spatial orientation, stimulates attention, so it can be very useful to work with children who have or may have attention deficit problems.
3. **Instructions / Methodology / Recommendations how to use the tool**



It has three options: in the first one you "practice" creating a figure equal but symmetrical to the given one, in the second one from a model you must "create" two symmetrical figures and in the third option you must create the drawing "of your choice" to form your symmetrical one. The general operation consists of painting over each triangle sequentially so that the desired colour appears and thus configuring the image.

4. **Interpretation of the results**
   The model that has been followed to draw the figure symmetrically, will be the template to correct and obtain the results. Once the results are corrected, we will see the level of affectation of the spatial orientation.
5. **Key words:** symmetry, triangle, square, attention, concentration, orientation and vision.

Tool 3

1. **Title:** Sudoku
2. With this tool, aspects related to spatial orientation, laterality and attention can be detected. It improves concentration, reduces stress and anxiety, stimulates logical thinking, helps develop problem-solving skills and enhances memory and the analysis of the relationship between the parts and the whole.
3. **Instructions / Methodology / Recommendations how to use the tool**
   The classic sudoku consists of a 9×9 matrix divided into 3×3 submatrices in which you have to place the numbers from one to nine in the boxes without repeating any of them. The goal is to place the missing numbers in those boxes without repeating any of those three cases.
4. **Interpretation of the results**
   The results will be interpreted using the solution template. If the failures exceed half of the gaps, there are difficulties in logical and quick thinking, concentration, problem solving and quality of cognitive function.

5. **Key words:** spatial orientation, laterality, attention, concentration and memory.

Tool 4

1. **Title:** Robot Mouse/Bee-bot
2. Using this tool you can detect the problems with logical and spacial ubication.
3. **Instructions / Methodology / Recommendations how to use the tool**
   To carry out the function of this tool, you will have to build the mazes (following a model or inventing one), propose an objective (place the cheese) and prepare the programs with the sequence cards. Next, you have to program with the buttons on the robot's housing. This can be done step by step (at the beginning) and then all in a row. Then you have to run and observe the trajectory that the mouse follows. If the mouse does not reach its destination, you will have to correct the errors and program it again.
4. **Interpretation of the results**
   Adult supervision will be essential to interpret the results. Depending on the results, we will be able to determine if we are dealing with a case of difficulties in learning mathematics, programming, sequencing and problem solving.

5. **Key words:** mathematics, programming, sequencing and problem solving.

Tool 5

1. **Title:** Mindo (table game)
2. This tool can detect problems with visual perception, attention and concentration, mental flexibility, planning, reasoning and hand-eye coordination.
3. **Instructions / Methodology / Recommendations how to use the tool**
   First we must take the tiles we need to complete the chosen challenge card. Then, following the model of the challenge card, we must try different arrangements with our tiles until we complete the grid. They can be placed horizontally or vertically. In addition, the front and back of the cards are different, which is important to keep in mind. It may happen that, when placing the tiles, you realise that you cannot complete the challenge with the ones you have left. It is quite common to have to redo the layout to get them all to fit perfectly to achieve it. The game ends when we have managed to reproduce the same pattern of colours proposed by the challenge card.
4. **Interpretation of the results**
   Under the supervision of the mentor, the results will be obtained. Once obtained, it will be determined if

there are difficulties in association and spatial orientation.

5. **Key words:** visual perception, attention, concentration, mental flexibility, planning, reasoning and hand-eye coordination.