Neighbouring numbers

Materials

The board and six rounded tokens with the number 1 until 6 into them. Everything is made by PVC

Brief description

Given the 13 boxes, you have to enter all the token numbers so that this condition is fulfilled: in both directions, at the distance indicated by each of their values, another token is placed.
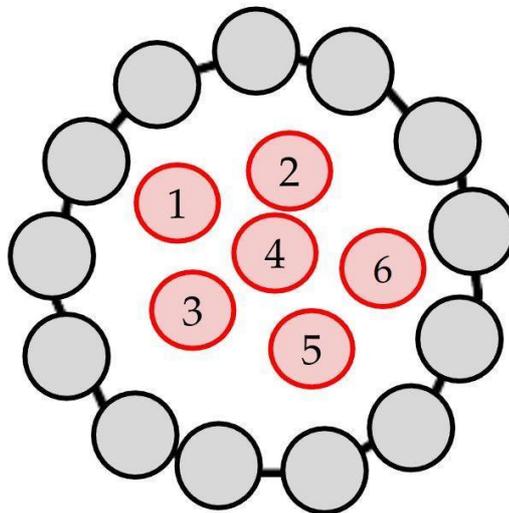
Then, we can propose the "reversed puzzle":

Place all tokens numbers so that there are **no** tokens at the distance (on both sides) that their value indicates.

Assembly

Design of all the pieces

The pieces are only circles with the numbers 1 to 6 inside, made by PVC. They are really simple to design and cut them.
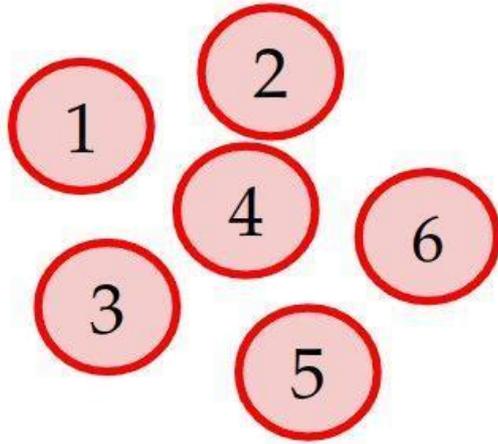
Assembly

Nothing to assemble.

The Board (DINA3)

Neighbouring numbers

Challenge 1:

Place all the numbered tokens in the circles.

At the distance indicated by the number there will be a token in both directions.
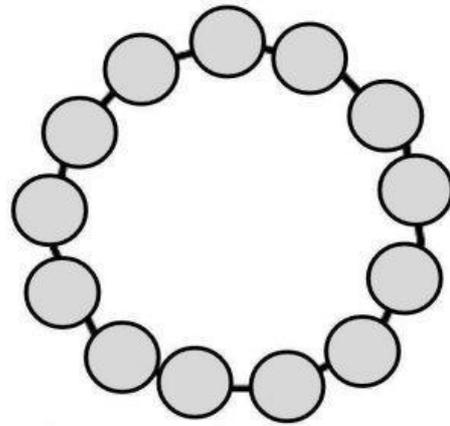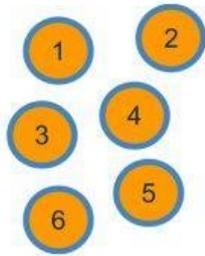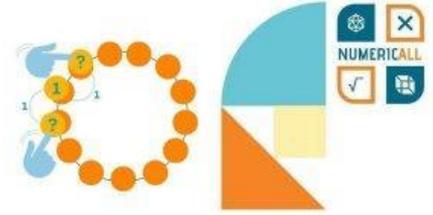
Neighbouring numbers

Challenge 2:
Place all the numbered tokens in the circles.
This time there will be NO tokens at the distance indicated by the number in either directions.
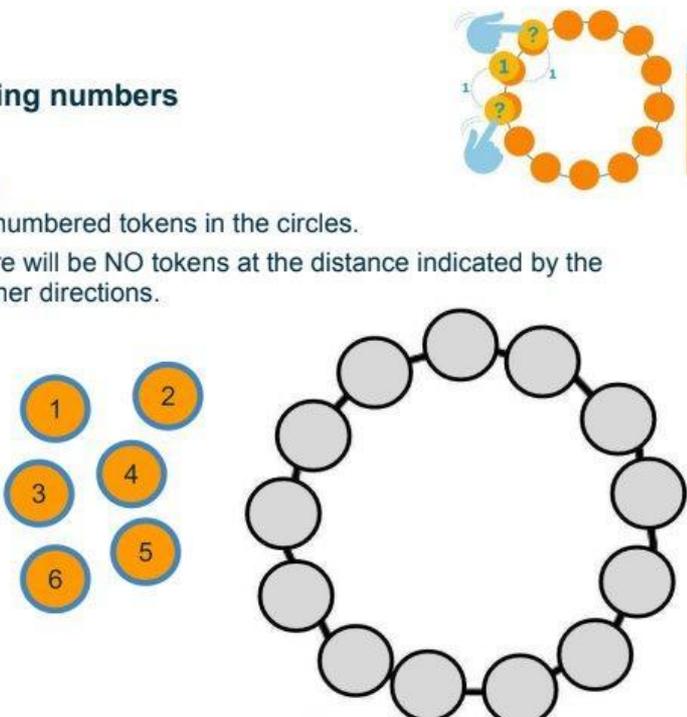
Other Options

The pieces can be designed for DYS only putting raised dots instead of the numbers

Explanation

There are two different challenges. The first one is to place all the tokens so that there's another token at the distance that its value indicates which means that if you place the token labeled with 3, at 3 boxes of distance (in both directions) you must place another token. The second challenge is the "reverse": NO token must be placed at the distance of any other token. There are many solutions for the puzzles.

The starting point could be the token number 1, since in both sides you have to place a token. From that point, you can continue with the 2 and so on.

It is easy to extend the activity to other possibilities of number of tokens and/or boxes, and check the possible solutions in every case. You will find that some options have no solutions and others are trivial.

Competences

- Experimentation/trial and error process
- Solving problem skills
- Strategy and generalization
- Modelling

Observations

Other relations between "number of boxes" - "number of tokens" can be included for a further activity and maths research

For 3d Printers (If applicable)

Tokens can be made easily by 3D printers, since they are only circles. Also, 3D printing permits including some raised dots in every token corresponding to any number for blind people.