

SORTING GRID

Introduction to the game: Dialogue with the children: "Today, we're going to become sorting masters! We have a special grid that helps us arrange things so we can understand them better. For example, we might sort numbers from the smallest to the biggest, or colors in the order of the rainbow. Are you ready to explore together how sorting works?"

Materials: Prepare grids (on paper or as physical boards): a 3x3 grid for younger children with simple categories, such as numbers from 1 to 9, and 5x5 or 6x6 grids for older children, where sorting is based on multiple features (for example, size and color). Sorting elements: cards with numbers, colors, or pictures of shapes, or physical objects (for example, blocks of different colors and sizes).

Game rules:

1. Explain to the children that the goal of the game is to correctly arrange the elements on the grid: By size (for example, the smallest on the left, the largest on the right). By color (for example, from lighter to darker shades).
2. Show a simple example: On a 3x3 grid, place three numbers (1, 3, 2) and say: "Now we're going to sort them so they go from the smallest to the biggest. Where should each number go?" The children help with sorting.

Sorting:

Basic task: Children work individually or in groups to sort the elements according to a chosen category. Younger children: Sort number cards from 1 to 9 in the correct order. Older children: Sort objects according to two properties, for example, size and color (small red, medium blue, large green).

Increasing the challenge: Increase the number of elements or introduce more categories. For example: Sort all the shapes from smallest to largest, and then by color.

Discussion and reflection: Ask the children how they decided where to place each element. Ask: "What would happen if we changed the sorting rules?"

Additional task:

Children create their own sorting grid: They draw the categories or make up their own sorting rules. They invite their friends to sort the elements according to their rules.

Group sorting with multiple categories: Use larger grids (for example, 6x6) and more complex challenges (for example, "Sort all the elements so that the colors go from light to dark, while the sizes increase from left to right.").

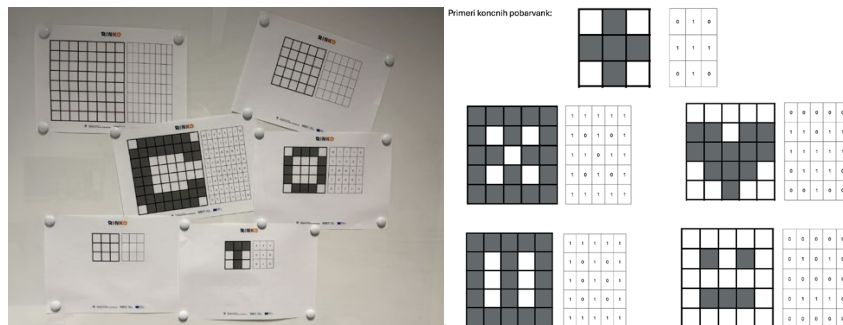
PIXEL ELF

Introduction to the game: "Today, we're going to become 'pixel elves' and create pictures the way computers do. Computers make images using magical pixels. Each tiny pixel can either light up (colored) or stay dark (an empty square). A colored pixel means 1, and an uncolored pixel means 0."

Materials:

Prepare grids of different sizes:

- 3x3 for younger children (simple shapes, e.g., a smiley face or a heart).
- 5x5 or 8x8 for older children (more complex shapes, e.g., a house, tree, or star).
- Provide colored pencils or markers and small sheets with pre-made binary codes (optional, for guided play).



Instructions for coloring: Explain to the children that they will draw pictures on the grid using colored and uncolored squares. Colored squares represent 1, and uncolored squares represent 0.

Show an example: If the center square of a 3x3 grid is colored, the elves see it as 010.

0	1	0
0	0	0
0	0	0

If they color a flower, the elves read it as a pattern of 0s and 1s, like in the picture below.

0	1	0
1	1	1
0	1	0

Give the children prepared templates and encourage them to color according to the binary code shown on the table of 0s and 1s.

BINARY BRACELETS

This activity lets children create unique bracelets using beads and elastic cords while discovering how computers use 0s and 1s to store information. Through colors and simple sequences, children explore the binary system in a creative and hands-on way.

Introduction to the game: "Did you know that computers can create sequences and images using magical numbers — 0 and 1? Today, we're going to become 'computer elves' and make unique bracelets encoded with binary numbers!"

Materials:

- Elastic strings or cords (for making bracelets).
- Beads in two colors (for example, white for 0 and black for 1). You can also choose other colors to give children more freedom.
- Sheets with pre-made binary codes (color patterns or 0s and 1s, optional).
- A sample bracelet for inspiration.



Instructions:

Choosing the coded sequence:

1. Children can:

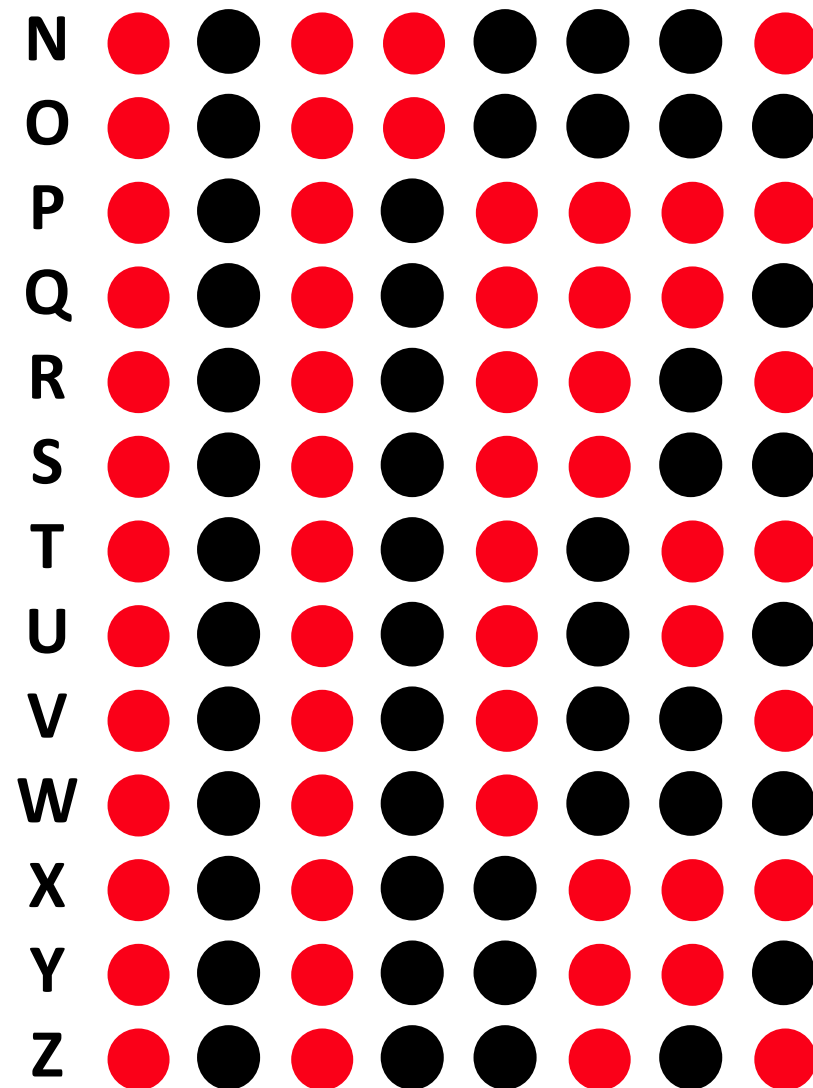
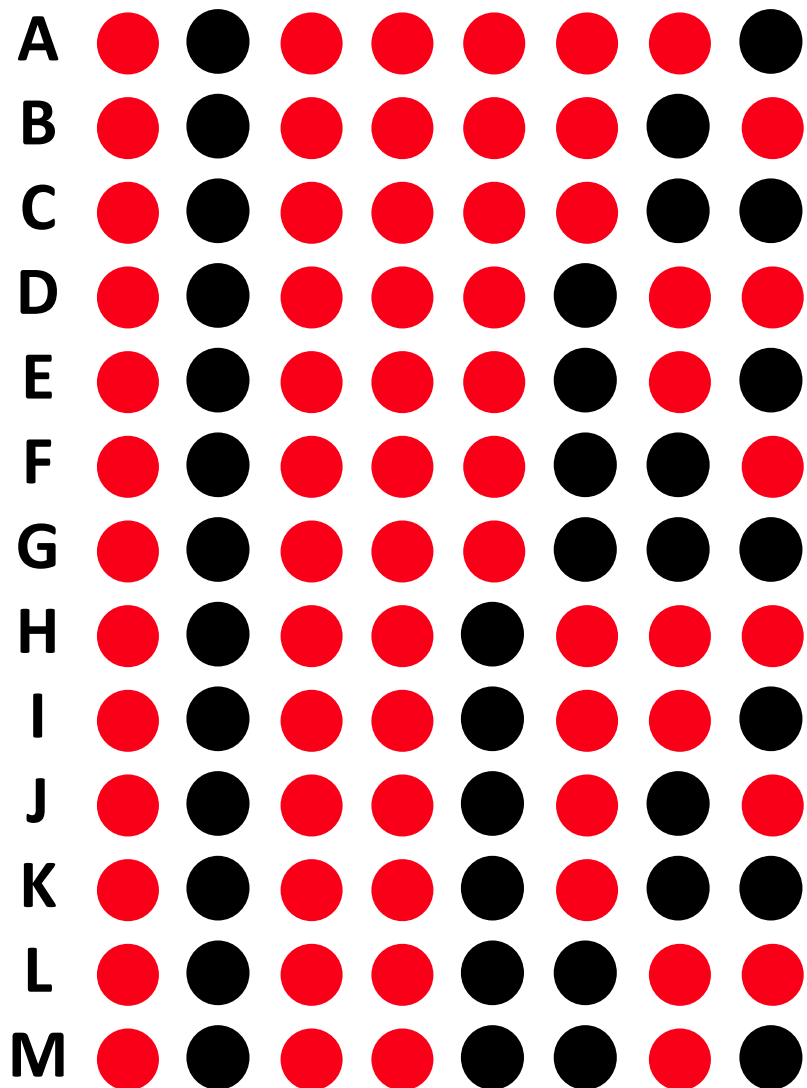
- Use pre-made codes for certain letters or symbols (like a sun, a flower, etc.).
- Create their own binary sequence to represent something personal.
- For example:
 - The letter "A" can correspond to the code 11100 or a specific color pattern (see the code sheet).
 - The letter "E" can correspond to the code 10011, and so on.

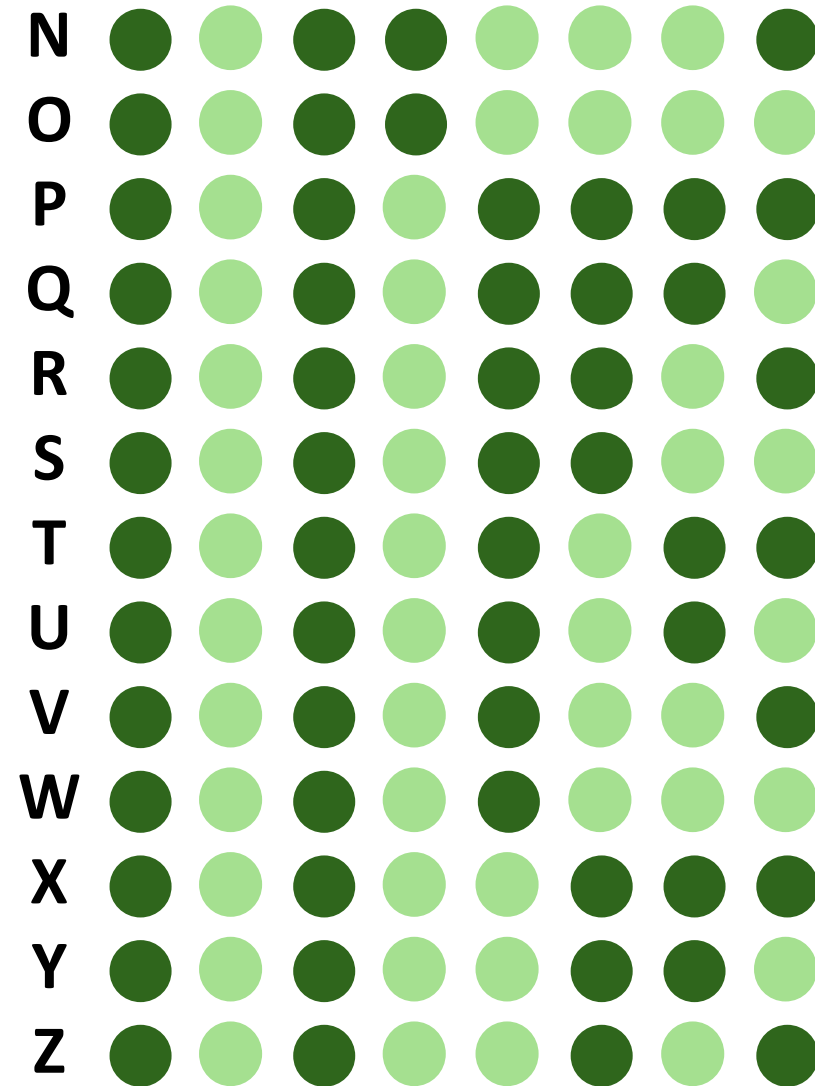
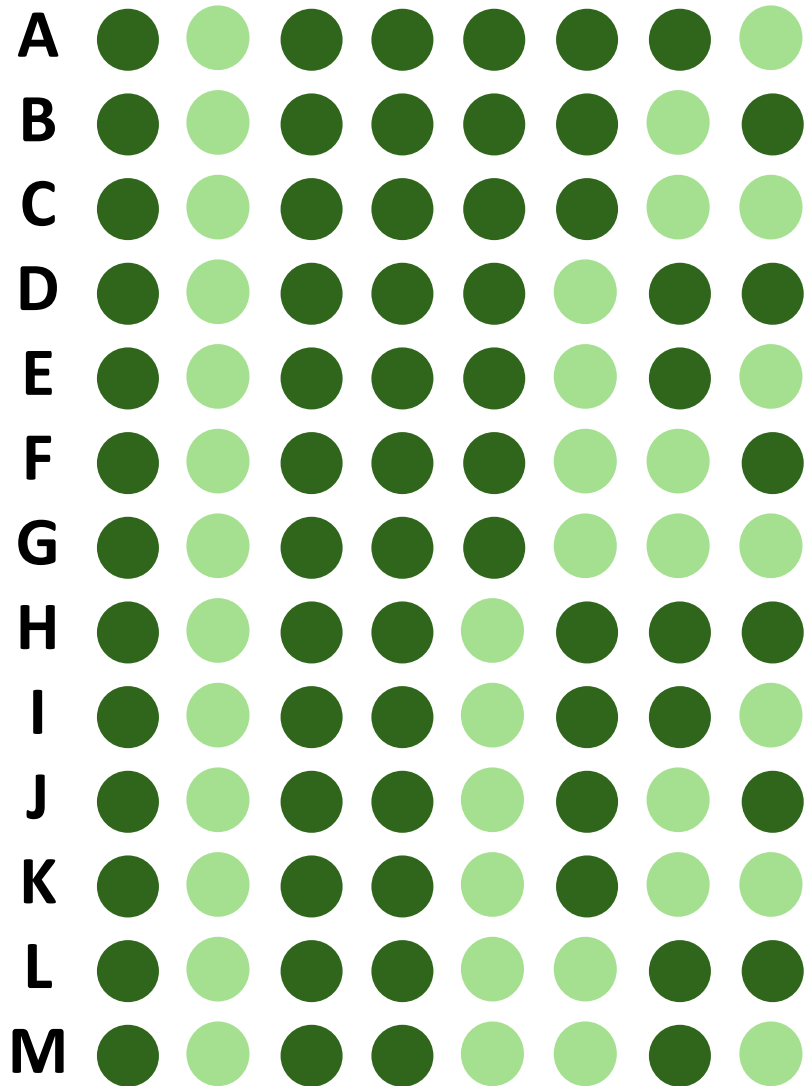
2. Making the bracelets:

- Light green beads represent 0, and dark green beads represent 1.
- Children string the beads onto the elastic in the sequence that matches their code.

3. Interpreting the code:

- When the bracelets are finished, children explain what their sequence means.
- For example: "My bracelet shows the letter JN because it follows the sequence 1110110010.«"







Pick a color:

0	
1	

A	0	1	0	0	0	0	0	1	N	0	1	0	0	1	1	1	0
B	0	1	0	0	0	0	1	0	O	0	1	0	0	1	1	1	1
C	0	1	0	0	0	0	1	1	P	0	1	0	1	0	0	0	0
D	0	1	0	0	0	1	0	0	Q	0	1	0	1	0	0	0	1
E	0	1	0	0	0	1	0	1	R	0	1	0	1	0	0	1	0
F	0	1	0	0	0	1	1	0	S	0	1	0	1	0	0	1	1
G	0	1	0	0	0	1	1	1	T	0	1	0	1	0	1	0	0
H	0	1	0	0	1	0	0	0	U	0	1	0	1	0	1	0	1
I	0	1	0	0	1	0	0	1	V	0	1	0	1	0	1	1	0
J	0	1	0	0	1	0	1	0	W	0	1	0	1	0	1	1	1
K	0	1	0	0	1	0	1	1	X	0	1	0	1	1	0	0	0
L	0	1	0	0	1	1	0	0	Y	0	1	0	1	1	0	0	1
M	0	1	0	0	1	1	0	1	Z	0	1	0	1	1	0	1	0

