Enjoying coding

Lesson Plan

Title: Big Tower with exadecimal code

Coding in cooperative learning

Class: 2nd -6th Primary

Description

We describe a design to partners so that they can reproduce it perfectly.

We use the hexadecimal code.

The hexadecimal code uses 16 symbols: 10 numbers and 6 letters.
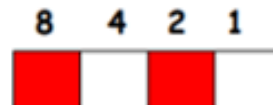
We train with simple drawings.

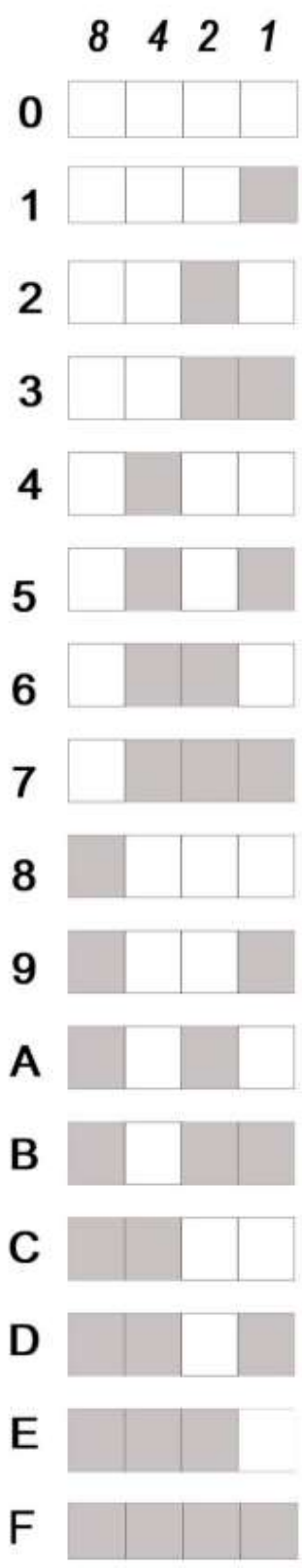We share the coding rule.

METHOD

You have 4 squares in a row and you can decide If fill them or leave them empty.

To every square corresponds a number said weight. We give weight 1 to square more to the right and double the weight moving to the left.

This is how we obtain the weights 2, 4, 6, 8.

IN THE EXAMPLE, THE SUM IS 8 + 2 = 10.

	8	**4**	**2**	**1**
0				
1				▓
2			▓	
3			▓	▓
4		▓		
5		▓		▓
6		▓	▓	
7		▓	▓	▓
8	▓			
9	▓			▓
A	▓		▓	
B	▓		▓	▓
C	▓	▓		
D	▓	▓		▓
E	▓	▓	▓	
F	▓	▓	▓	▓

$A = 8+2 = 10$

$B = 8+2+1 = 11$

$C = 8+4 = 12$

$D = 8+4+1 = 13$

$E = 8+4+2 = 14$

$F = 8+4+2+1 = 15$

LET'S TEST

8 4 2 1

	8	4	2	1
0				
1				■
2			■	
3			■	■
4		■		
5		■		■
6		■	■	
7		■	■	■
8	■			
9	■			■
A	■		■	
B	■		■	■
C	■	■		
D	■	■		■
E	■	■	■	
F	■	■	■	■

							3C
							7E
							DB
							FF
							FF
							DB
							66
							3C

SOLUTION

							3C
							7E
							DB
							FF
							FF
							DB
							66
							3C

WRITE THE HEXADECIMAL CODE

| FF | FE | FC | F8 | F0 | E0 | C0 | 80 |
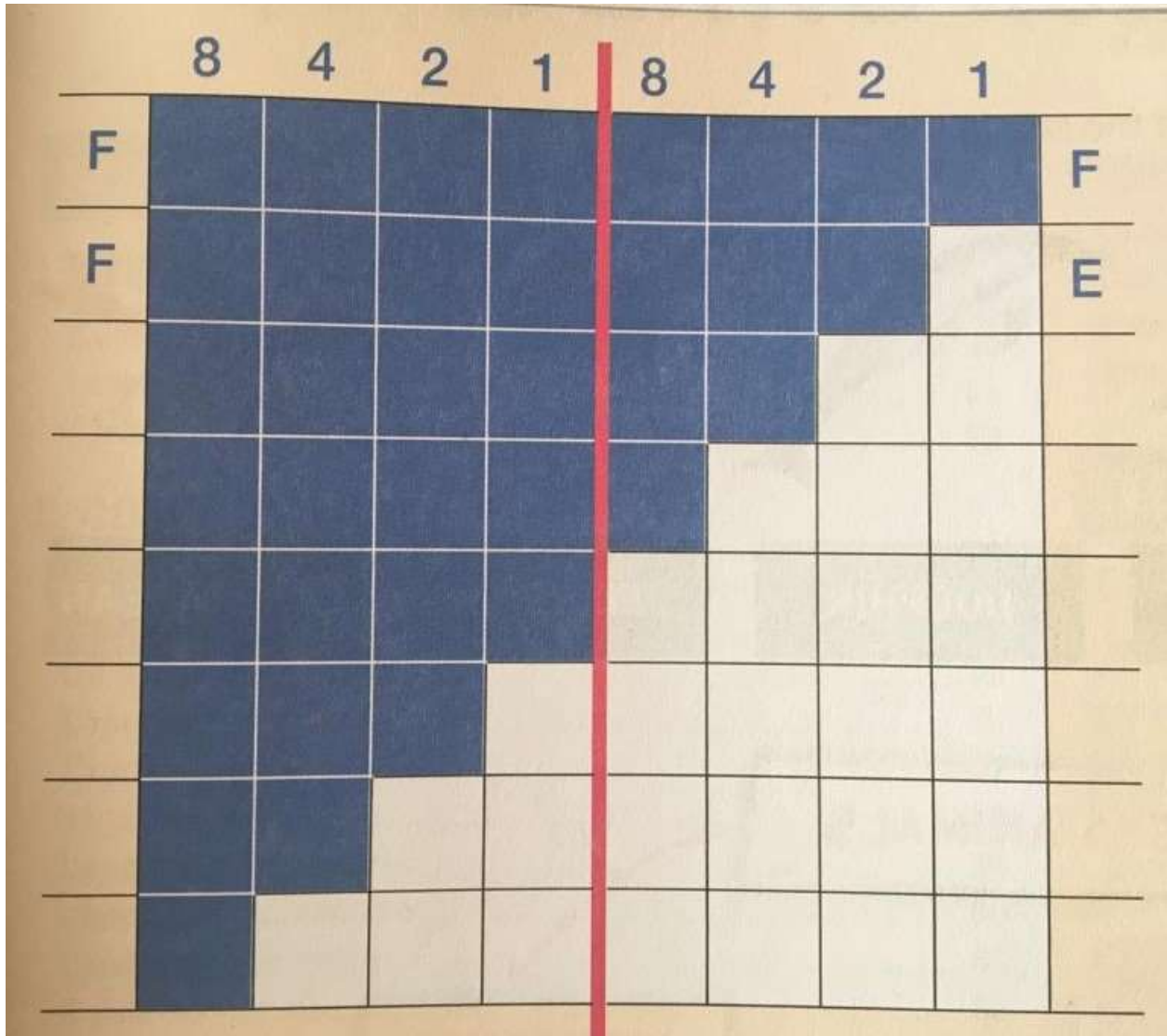
DRAW THE CORRESPONDING FIGURE ON THE GRID

10   18   1C   1E   1F   10   FF   7E

10

A DIFFICULT CHALLENGE FOR THE OLDESTS: DRAW THE BIG TOWER BY FOLLOWING THE HEXADECIMAL CODE ON FOUR COLUMNS.

Code
0100
0380
0280
0380
0280
0280
0380
07C0
0540
0540
0540
0FE0
0AA0
1FF0
1FF0
1550
1550
3FF8
3C78
3938
3118
3198
3018
3838
3C78
2FE8
1550
1550
1550
1550
1FF0
1550
1550
1550
1550
1FF0
1550
1FF0
1FF0
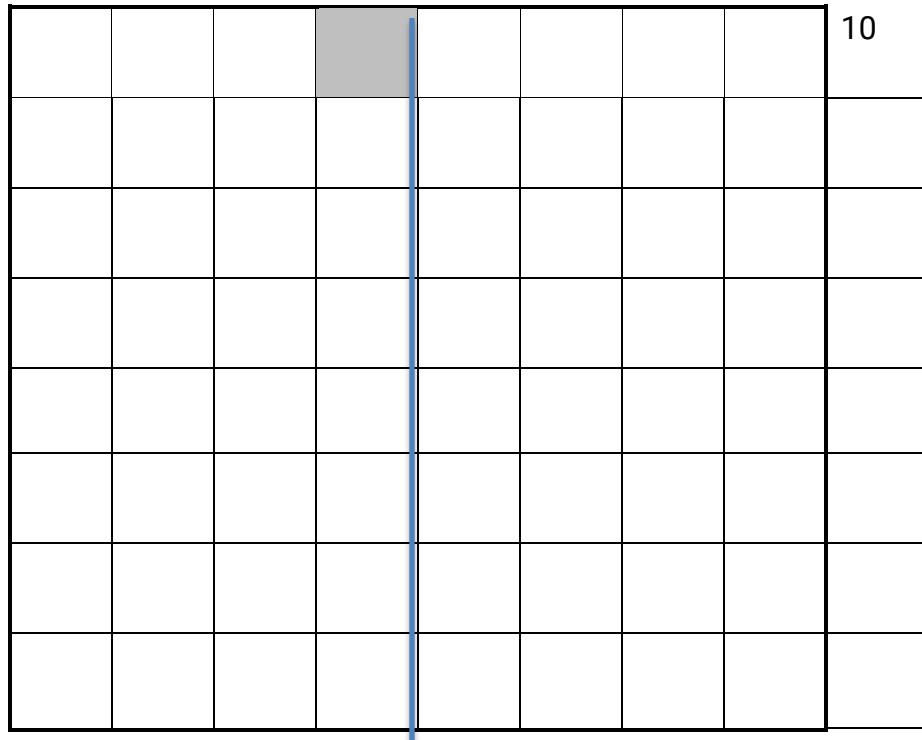
Challenge

1. Represent the drawing by reading the code correctly.

2.Transforming a drawing into a code so that it is reproducible by partners

Targets

Computational thinking is characterized by the use of some mental processes such as:

- Breaking down a complex problem into smaller parts
- Analyze the data and organize it
- Representing information through codes or other symbolic systems
- Building algorithms or sequences of simple instructions to solve problems

Code and code breaking.

Activate students' natural curiosity about secrets and secret codes.

Give students time to practice their skills in decoding messages.

Necessary material

Paper and colored pencils

Timeline

Two hours of school.

Verify

Check if they can decode the received code correctly.

Check that they encode the drawing in hex code correctly.

This activity also allows error control through debugging, which is essential for training and learning

Others

The first drawings and the first grids are also suitable for 2nd grade children. More complex designs are a great challenge for 5th and 6th grade pupils.