



Pixel-palooza

The Big Idea:

Digital images are made of thousands of tiny dots called pixels (short for picture element) that are arranged in rows and columns so close together that they appear connected. We're going to use squares of colored paper pixels to make a big house and some designs of our own!

You Will Need:

- ★ Our activity uses 100 3x3-inch sticky notes in 5 colors. If you don't have sticky notes, you can make your own squares by cutting colored paper or coloring plain paper.
- ★ Crayons or markers in several colors
- ★ Masking tape (if you're making your own sticky notes)
- ★ Scissors: 1 pair (if you're making your own sticky notes)
- ★ Graph paper, print or draw your own

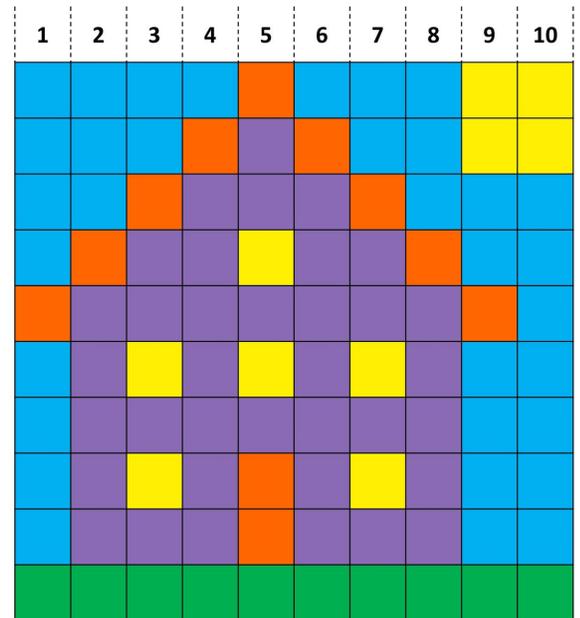
The Math Behind the Scenes:

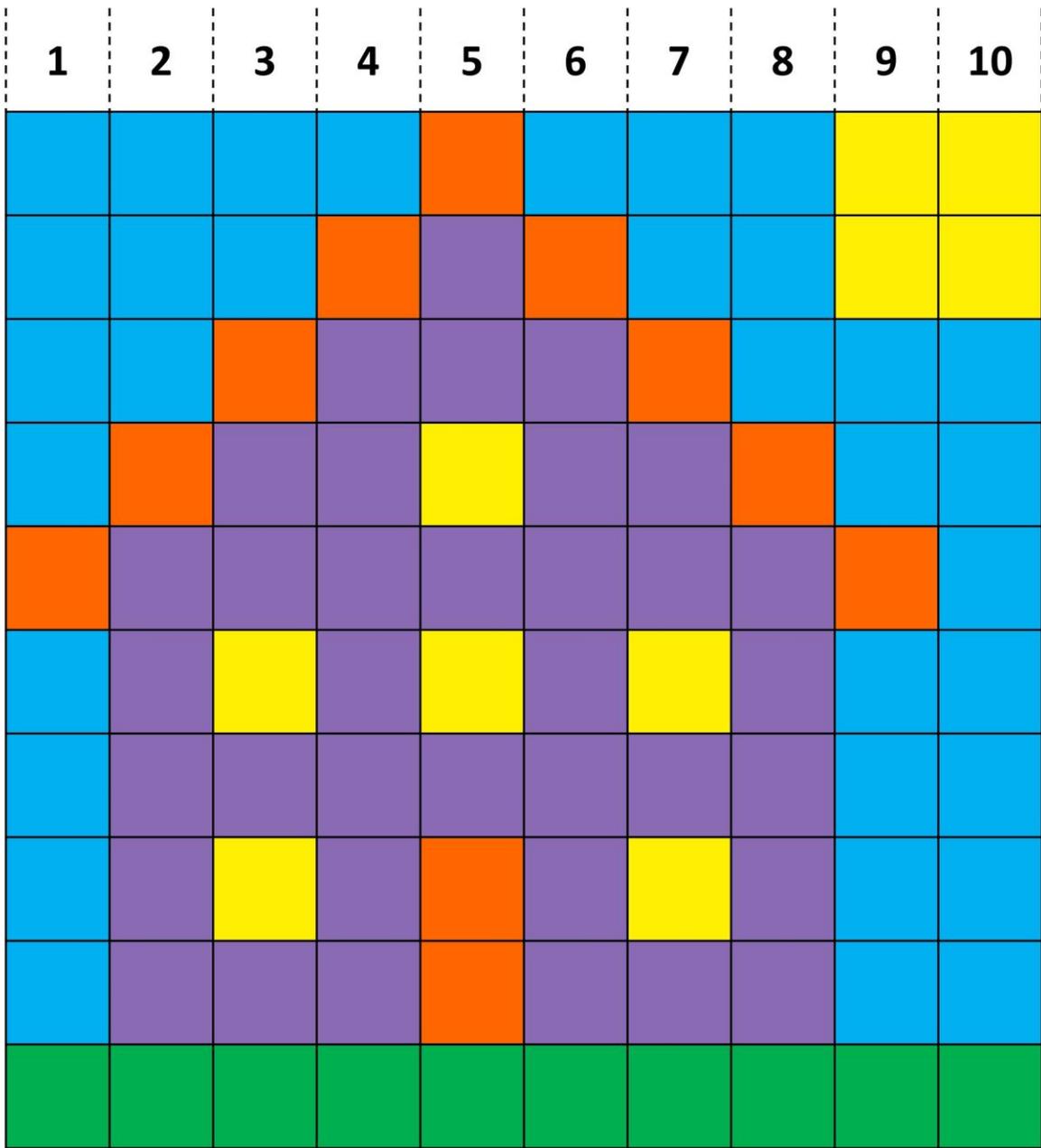
Pixels can be used to practice **area**, **perimeter**, **fractions** and **proportions**. We'll use **graphing** skills to make our own art, then explore **scale** by recreating that image with our paper pixels.

Block Party House

Let's recreate this **Block Party House** – it has lots of colored squares that look like pixels! You may want to print the next page to use as a guide while you're working.

- ★ How many squares tall is the picture?
In the column (long tall row) with the door, how many squares of each color do we have?
- ★ How many squares wide is the picture?
- ★ If we have 10 rows with 10 squares in each, what does that add up to? We can count by 10s to find out, or multiply 10×10 , to discover that our house is made of 100 pixels!





Build the House

Beginning at the top of column 1 on our Block Party House picture, stick the matching color notes on the floor, a wall or a window – make sure you have enough room to complete the entire picture! The sticky notes must line up close to each other so the rows of the finished picture are even.

- ★ Are any of the rows identical?
- ★ Which color is used the most in our pixel picture?
- ★ How can we figure out how many purple squares there are without counting them all? (Since we know the total number of squares is 10×10 , or $10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10$, we can count the other colors and subtract from 100.)

Bonus:

- ★ Are any of the rows symmetrical? (Answer: No, since the house is not centered, and there are two columns of blue on the right versus only one on the left, no row can be bilaterally symmetric.)
- ★ What's another method we can use to count the purple squares? (Answer: You can count using multiplication and filling in arrays! The rectangular portion of the house is 7×5 , with 5 yellow squares and 2 orange squares, so we know it's $35 - 5 - 2$, or 28. That just leaves the top portion of the house, which is $4 + 3 + 1$. That gives us 36 purple squares, just like we found $100 - 33 \text{ blue} - 11 \text{ orange} - 10 \text{ yellow} - 10 \text{ green} = 36$ remaining purple squares.)

Dream Up Your Own

What else can you draw? You could make a person, a car or rocket ship, an ice cream cone, or anything else you can draw by filling in squares on graph paper! Just like the sticky notes, on graph paper you make pictures totally out of squares.

1. Print a sheet of our graph paper or grab a sheet of plain paper, a ruler and a pencil to draw a grid.
2. Then draw a simple picture whose outline follows the grid lines.
3. Add color using crayons or markers – try use the same colors as your sticky notes, if possible!
4. When you've finished your design, recreate it using your sticky notes. You can reuse notes from your Block Party House, if needed.

