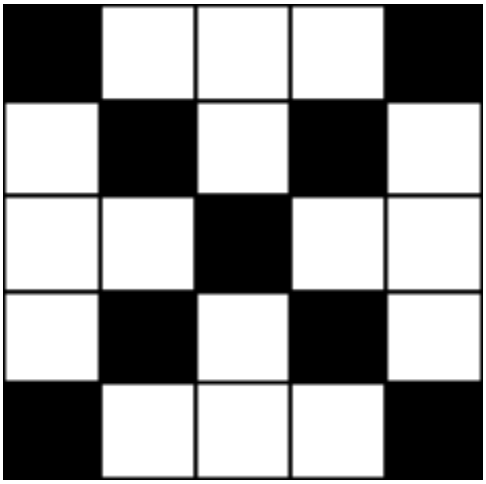
UNPLUGGED

Pixel Programming

Pair programming is when one person acts as a "computer" following instructions from a second person, who acts as the programmer. Can you, the programmer, direct your partner to successfully create a pixel drawing using simple instructions (move up, move down, move left, move right, fill in)? Explore how to write an algorithm, or sequence of instructions, in this paired activity.

Important Note: The partner acting as the computer can only move to another square as the programmer directs.



Step 1: Gather grid paper and pencils, markers, or pens.

Step 2: Determine the final result for your pixel art. Our suggestion is to start small, like a plus sign, checker board, letter x, etc.

Step 3: Determine where the "computer" starts (like the top left corner). The unit of measure is each move is one square on the grid. The programmer can only use the following instructions to code the pixel art:

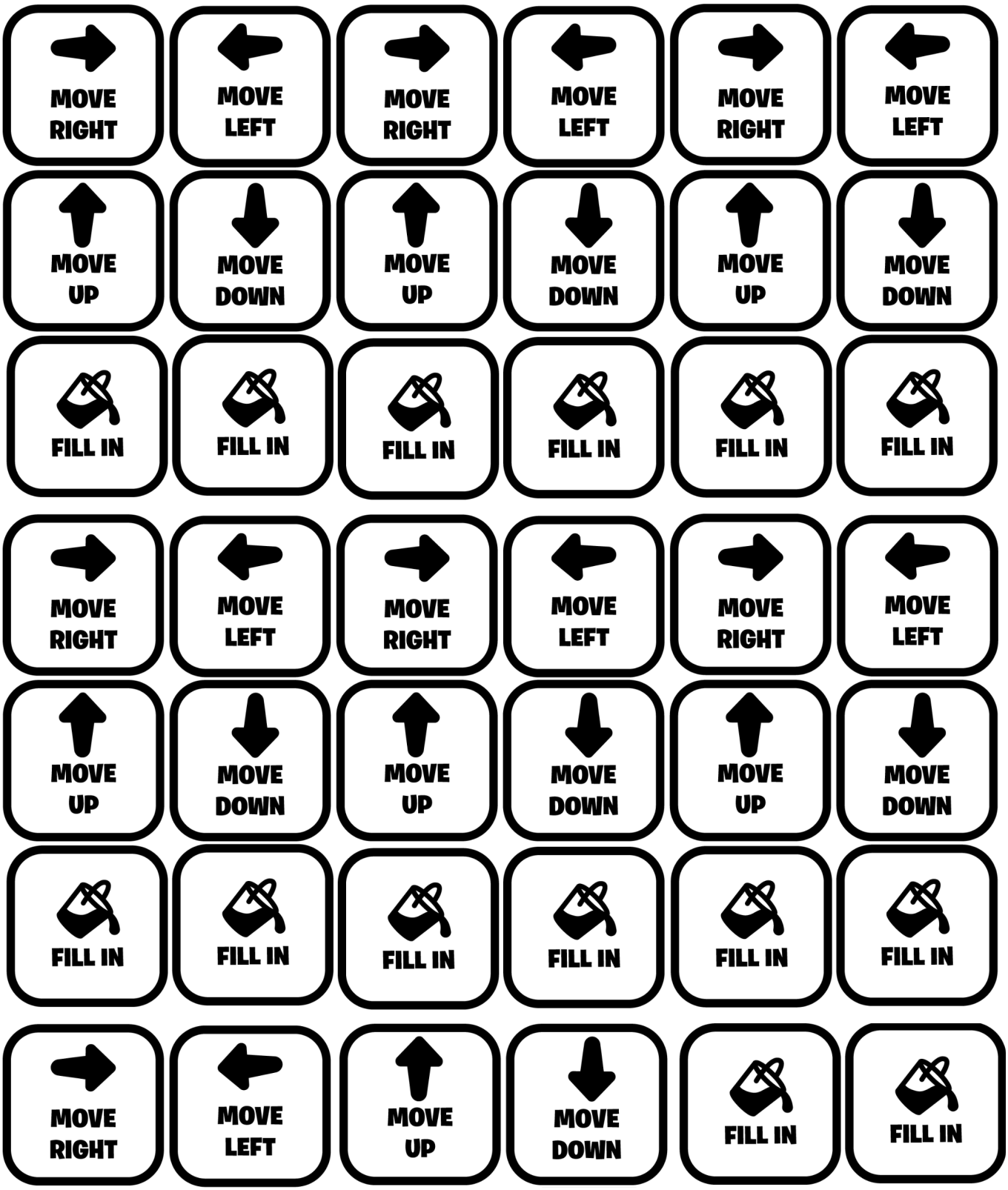
Fill In ***Move Up*** ***Move Down*** ***Move Left*** ***Move Right***

Using the unit of measure established and the final result desired, what is the first instruction? Write your full set of instructions on separate index cards or a sheet of paper. You can also print and cut out the cards on the following page so you can lay out each step in your instruction sequence (your algorithm) on a table or floor.

Step 4: Once you have completed your instructions, start your program (tell the "computer" to begin) and see if they can follow your algorithm to successfully create the pixel art. Were there any problems? Find the errors in your code (debug), by checking the order of the steps (the sequence) and make corrections where necessary.

Try it in Scratch! Try using Motion blocks like "move," "turn," or "point in direction" in a Scratch project to navigate a sprite around the stage. Or add the Pen extension and use blocks like "pen up" and "pen down" in addition to Motion blocks to draw a shape.

Printable Instruction Cards:



Tip: If you'd like to translate this document, **click here to make a copy** of this Google doc.