

Code a Magen David

Teacher Workbook



Your students will make:

A Magen David coded with text on the Kano Art platform

Equipment you will need:

- Laptops
- Pen
- Gridded paper

Time needed:

1 - 2 lessons

Your students will learn:

In this lesson your students will learn to use **coordinates** to plot graphics on a grid using **JavaScript**. They will be able to manipulate these graphics to change shape, color and size in order to fit a purpose. They will also be able to use **decomposition** and **abstraction** to find areas of code that aren't needed to simplify the algorithm.

Coding concepts and computational thinking:

JavaScript (JS): A text based object-oriented programming language

Algorithm: A list of steps to follow in order to complete a task

Debug: Finding and fixing problems in the algorithm

Decomposition: Taking a complex problem and breaking it into parts or smaller problems

Abstraction: Removing unnecessary detail to simplify an algorithm

Mathematic links:

Coordinates: Kano Art uses a grid to plot shapes, lines and text. The top left-hand corner of the screen is 0,0 with the center point being 250, 250.

Art links:

Create and revise works of art through exploration and problem solving using a variety of media

Lesson:

Introduction:

Start by opening up the website **art.kano.me**

Show students the blank grid on the screen and explain how the coordinates on this program work.

On their grid paper, have the students draw a grid with 0,0 in the top left corner (same as the Kano program). Make an x in the center of the graph to show 250, 250

Show on the online program how to use the **moveTo** command (this moves the cursor to a new position on the graph).

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Make the cursor move to 200, 200 (50 up and to the left of center)

Change the color to blue using the code **color blue**

On their pieces of paper, can they plot a square with the center being 250, 250?

Extension:

Challenge the students to code a square on the program that sits directly in the center of the screen. This means that coordinates 250, 250 should be in the center of the square.

Answer: Square 100

Part One:

Students should practice plotting shapes and lines of various thickness on the grid. Challenge them to create an artwork using squares, rectangles, circles and lines.

Extension: Can students figure out how to draw an ellipse and a triangle?

Part Two:

Students follow the **student workbook** to code a Magen David.

Extension: Using the knowledge the students have from the previous part of the lesson, can they write their name somewhere on the screen?

Extension: Can they create a border around the screen in a different color?