Name: _____ Date: _____

# Printing to the EXP Brain Screen

In this Lesson: You learn about what can be printed on the VEX EXP Brain Screen, and how to use VEXcode EXP in order to print to the Brain screen.

Notes:

- With VEXcode EXP, you have the ability to print text, colors, values, and shapes directly to the Brain screen on your robot

- Printing to the Brain screen is a useful tool for many things, including:
    - customizing your robot
    - indicating what team your robot is on
    - indicating that something has occurred as your robot is running (i.e. turning a certain color when the Bumper Switch is triggered, or increasing a counter each time a ball is in the intake)

Using VEXcode EXP to Print to the Brain screen

- Print blocks are automatically populated in the Looks category of the Toolbox when VEXcode EXP is opened (like those shown in the image to the right from the video)

- Print blocks can accept text or reporter values to print values from the robot

    - The precision of values can be adjusted using the [Set print precision] block

- You can change the color of what is printed to the screen from the default value of white using the [Set pen color] block

- The Draw section of blocks enables you to draw lines and shapes on the screen, using location coordinates on the Brain screen and pixel values, as shown in these examples from the video.
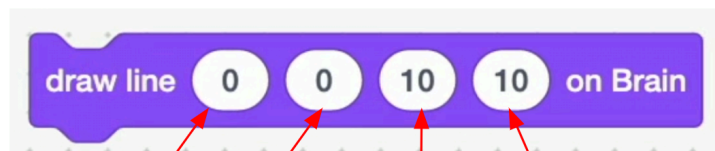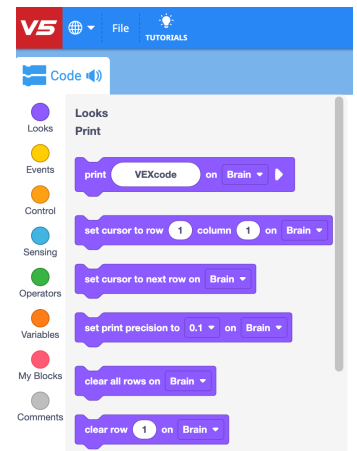

X value start of line   Y value start of line   X value end of line   Y value end of line
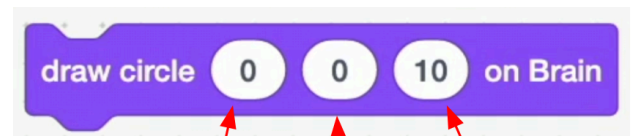
X value center of circle   Y value center of circle   Radius value in pixels
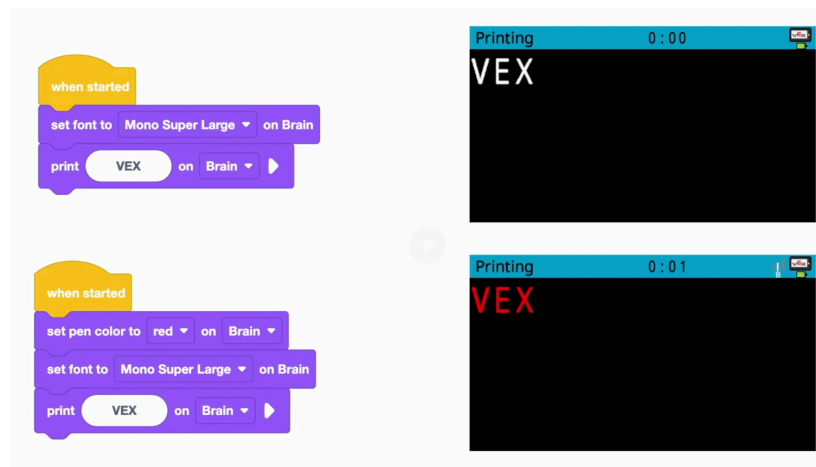
Locations on the Brain Screen

- The Brain Screen is divided into rows and columns, as well as an X, Y coordinate grid using pixel (px) values.

    - The top left corner of the screen has a coordinate value of (0,0)
    - The bottom right corner of the screen has a coordinate value of (159, 107)

- These values can be used to set the location on the screen in which your text, color, shape, or value is printed.
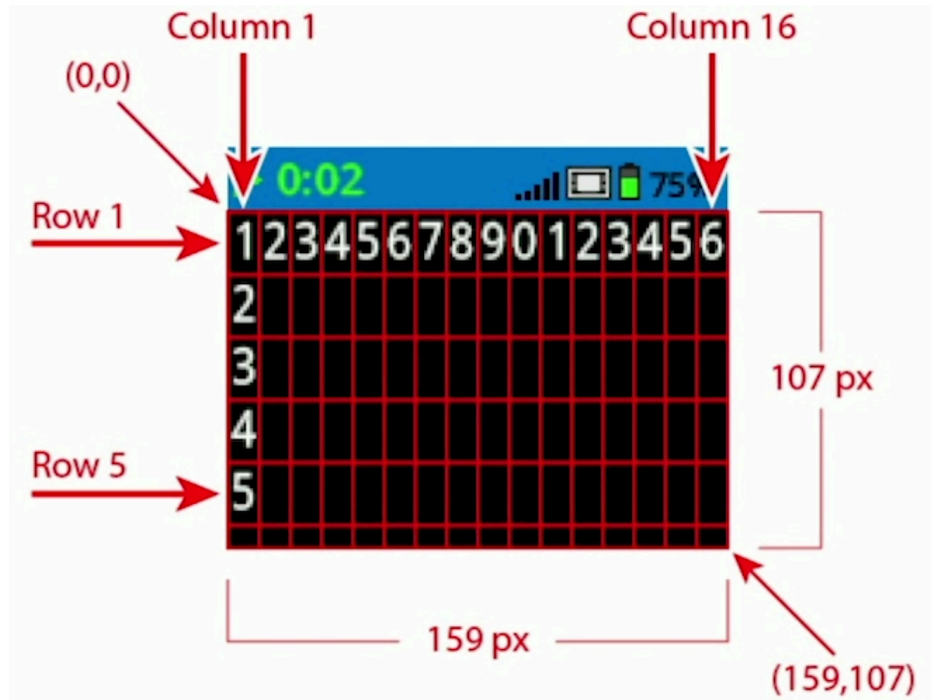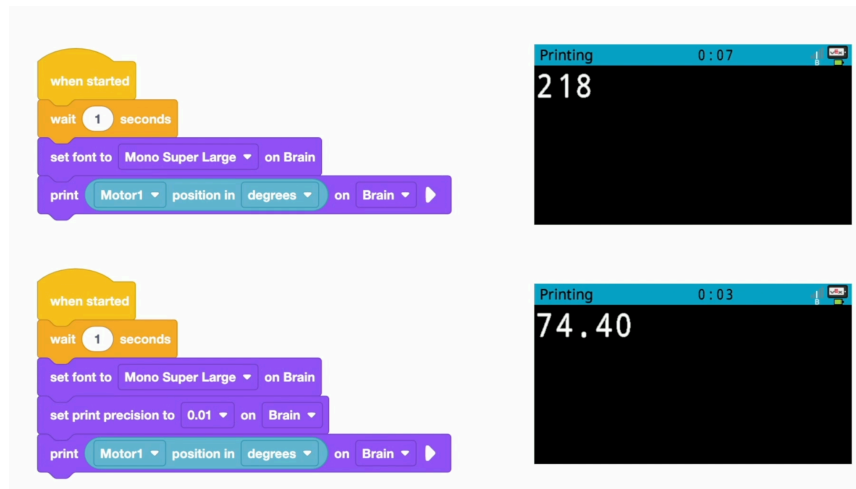

Printing Text on the Brain Screen

- You can change the font size and text color when printing to the Brain Screen, as shown in the examples from the video below.
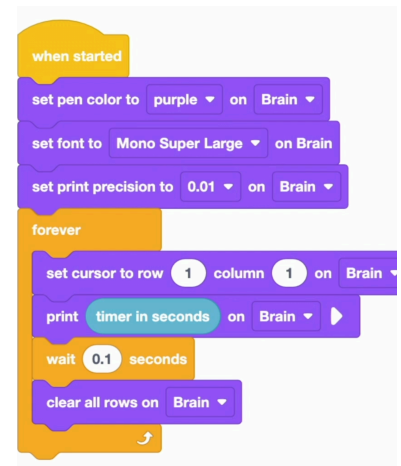

Printing Values on the Brain Screen

- You can also print values to the Brain Screen to get feedback from your robot, as shown in the examples from the video below.
- In the second example, the [Set print precision] block has been added in order to display data more precisely, which can be especially useful with sensor values.

Printing Changing Values on the Brain Screen

- You can create a project to print changing values on the Brain screen, as shown in this example project from the video.
  - In this project the font size, color, and precision have all been adjusted
  - The [Forever] loop sets the cursor to a specific location on the screen, and repeatedly prints values every 0.1 seconds, essentially creating a timer on the screen.

Printing Shapes on the Brain Screen

- You can also draw shapes on the Brain screen.
  - In the top example, the [Set fill color] block has been used to choose a color, and the three values in the [Draw circle on Brain] block represent the X,Y coordinates of the circle center, and the radius length, respectively.
  - In the second example, the four values in the [Draw rectangle] block represent the top left X and Y coordinates of the rectangle, and the bottom right X Y coordinates of the rectangle.
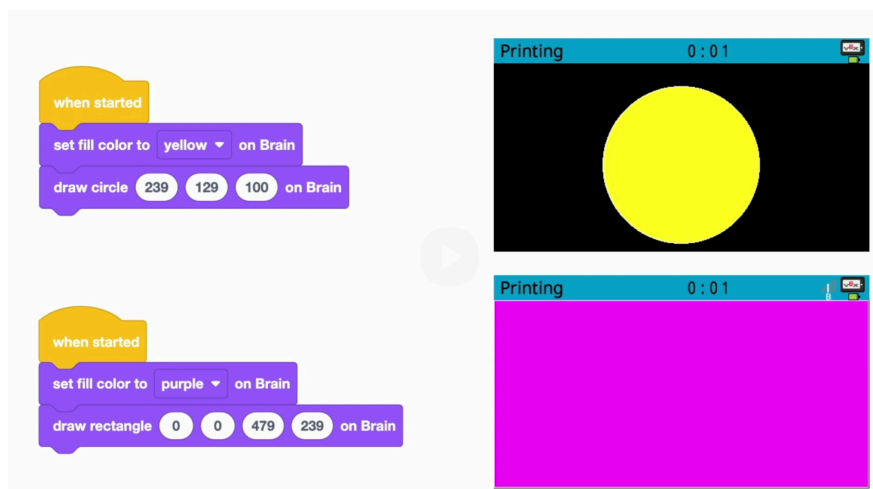
Note: *To learn more about each of these blocks, you can access the Help in VEXcode EXP.*