Using Code to Draw Triangles  
 on the Cartesian Plane

**Algebra**

**Unit 3 Line Master 4a**

Let’s draw a triangle in Scratch by plotting and joining 3 points   
on a Cartesian plane.

Go to this application that has been premade in Scratch:

<https://scratch.mit.edu/projects/740509372/editor>

You will see the following code:

Diagram

Description automatically generated

If you have a Scratch login,   
 save the project in your Scratch   
 account by selecting **Remix**   
 at the top of the screen.

A login is not required to work with   
 the code, but you will not be able to   
 save your changes without it.

Using Code to Draw Triangles  
 on the Cartesian Plane (cont’d)

**Algebra**

**Unit 3 Line Master 4b**

1. When you run the program by clicking on the **green flag**   
 above the stage, you should see a triangle drawn on the stage:

Calendar, scatter chart

Description automatically generated

Here are the three points used to draw the triangle and where   
in the code you can see the instructions to plot them:

|  |  |  |
| --- | --- | --- |
| **Point A (0,0)** | **Point B (50,50)** | **Point C (50,0)** |
|  |  |  |

Label the points on the image of the triangle above using   
 A, B, and C.

Using Code to Draw Triangles  
 on the Cartesian Plane (cont’d)

**Algebra**

**Unit 3 Line Master 4c**

Let’s take a look at the code that draws the triangle.

Diagram

Description automatically generated

* Text, chat or text message, icon

  Description automatically generatedFirst, we set the pen colour to blue.   
  We also set the **drawer** sprite to invisible,   
  which is indicated below the stage.
* Then, we move the **drawer**sprite to the starting point,   
  which is (**AXCoord**, **AYCoord**). We set these two variables   
  to (0, 0) earlier in the code.
* Next, we put the pen down so that the sprite will leave a mark   
  as it glides to each point.
* You can see that we glide the sprite to the B and C points   
  and then back to the starting point, which is A.

Using Code to Draw Triangles  
 on the Cartesian Plane (cont’d)

**Algebra**

**Unit 3 Line Master 4d**

2. Adjust the points as indicated below and execute the program   
 to draw each triangle.   
 Sketch each triangle on the image of the stage provided.

|  |  |
| --- | --- |
| **Points** | **Triangle** |
| a) A(0, 0) B(50, 100) C(100, 0) | Calendar  Description automatically generated |
| b) A(–100, 100) B(0, 0) C(–100, 0) | Calendar  Description automatically generated |
| c) A(–100, –100) B(–50, –50) C(–100, 0) | Calendar  Description automatically generated |

Using Code to Draw Triangles  
 on the Cartesian Plane (cont’d)

**Algebra**

**Unit 3 Line Master 4e**

3. Adjust the points two more times to make your own triangles.   
 Indicate what points you used and sketch the triangles on the   
 image of the stage.

|  |  |
| --- | --- |
| **Points** | **Triangle** |
| a) | Calendar  Description automatically generated |
| b) | Calendar  Description automatically generated |

Using Code to Draw Triangles  
 on the Cartesian Plane (cont’d)

**Algebra**

**Unit 3 Line Master 4f**

4. Indicate the points that would be needed to make each   
 of these triangles.   
 You can check your answers by entering the points   
 in the application.

|  |  |
| --- | --- |
| **Points** | **Triangle** |
| a) |  |
| b) |  |

In Master 5, you will adjust the application so that it contains subprograms.

**Additional Challenge**

Alter the application to draw a rectangle with vertices A(0, 0),   
B(100, 0), C(100, 50), and D(0, 50).  
Then change the coordinates in your application to draw 2 more different rectangles.