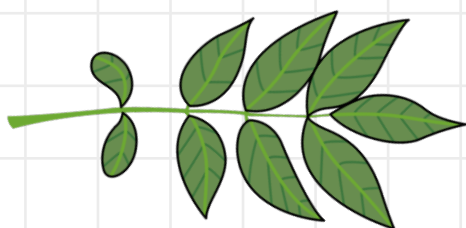# Graphics for games

Overview

This activity meets **requirement three** of **stage three** of the **Digital Maker Staged Activity Badge** ('Design and create digital graphics'). It shows everyone how to design a theme, and create the sprites and background for a computer game.

45 minutes

**Flexible (ideally two young people at each computer)**

If you're running this activity without access to the internet, you'll need to download the software and starter project ahead of time. You'll probably also want to print handouts.

Wherever you have access to computers

You will need:

- Laptops, desktop computers, or tablets (ideally one for each pair)

- Activity handouts (at least one for each pair or group)

If your meeting place has internet access

Run Scratch online in a web browser and open the starter project 'Shape shooter' using this link: **rpf.io/scouts-graphics-on**

If your meeting place doesn't have internet access

- Download the Scratch desktop application before you begin. Check out the Scratch guide at **rpf.io/scouts-scratch** for instructions.

- Download the Scouts game design starter project 'shape-shooter.sb3' from **rpf.io/scouts-graphics-go**

Key messages

- Creating a computer game is as much about art as it is about programming.

- The theme of a computer game comes from what the game looks and sounds like, not just what it does.

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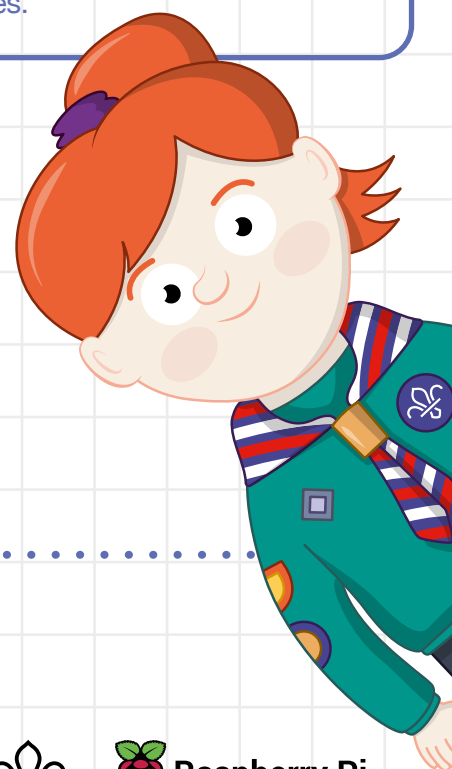
Leader instructions

1 Talk about the different things that make a computer game. Emphasise that they use images as well as code.

2 Explain that an image in a computer game is often known as a sprite.

3 If people haven't used it before, introduce Scratch. Explain that it's a programming language for creating games, stories, and animations.

4 Explain that everyone will be modifying a computer game by creating new sprites for it.

5 Show everyone the 'Shape shooter' game.

6 Explain that people can change the sprites to anything they want.

7 You can introduce a theme for the game (for example, recycling) or leave it totally up to the young people to decide.
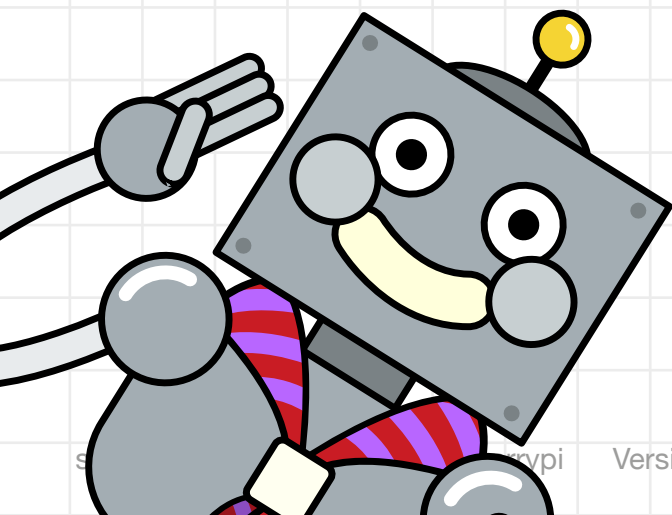
Alternatives

○ Young people could create their own game and graphics.

○ Young people could use more sophisticated image editing software, such as Photoshop (**rpf.io/photoshop**), GIMP (**rpf.io/gimp**), or PiSKEL (**rpf.io/piskel**), and upload costumes.

Community and sharing

○ Ask the young people to take it in turns to show everyone else their new games and graphics.
○ You can share the games on the Scratch website by logging in and using the 'Share' option.

Adaptability

○ Use the 'Upload Costume' option in Scratch to upload pictures from your computer, then use these pictures as sprites in your game. If you like, you can take your own pictures with your mobile phone or camera.
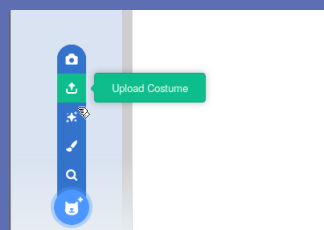
Safety

If young people are working online, they should ask for permission before viewing any other websites. It's a good idea to set up parental controls – you can find instructions on the NSPCC website (**rpf.io/scouts-nspcc-online**). You should also give each young person a 'Stay safe' leaflet (**rpf.io/scouts-staysafe**).

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Graphics for games

In this activity, you'll design your own theme and graphics for a computer game called 'Shape shooter'.

Part one: the game design

1 Open the 'Shape shooter' starter project in Scratch 3:

- If your device is connected to the internet, open the starter project at **rpf.io/scouts-graphics-on**

- If your device isn't connected to the internet, click on 'File', then 'Load from your computer', then select the 'shape-shooter.sb3' file that's already been downloaded.

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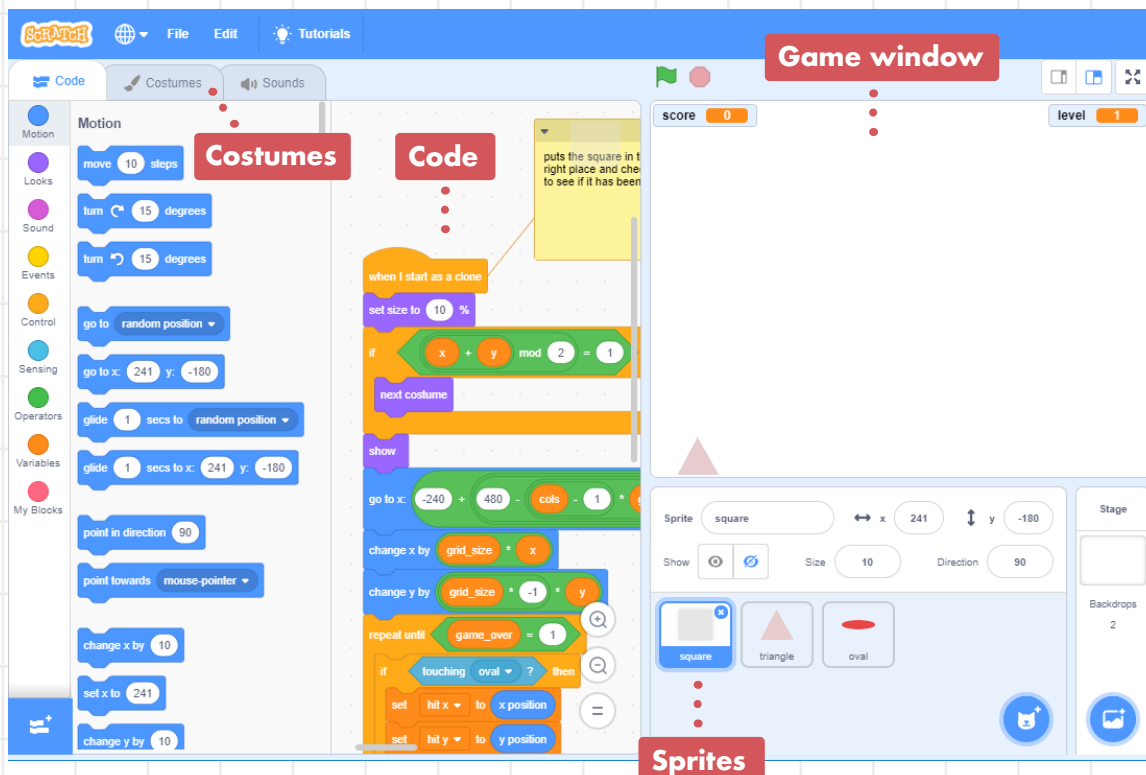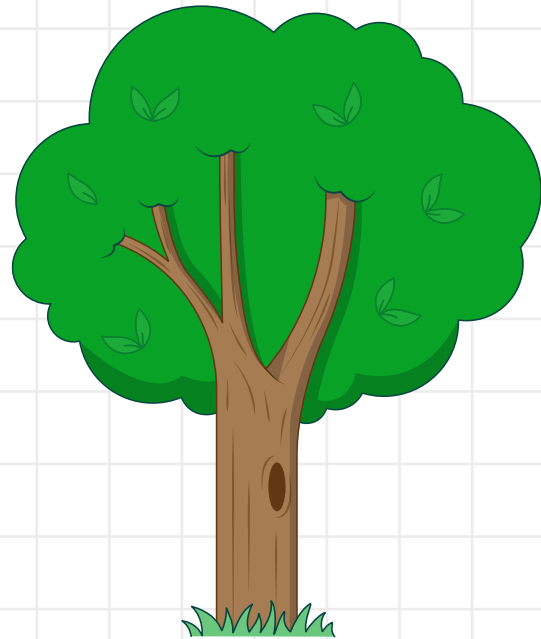
2 You'll see the 'Shape shooter' game, sprites, costumes, and code in Scratch.

3 Click on the green flag to play the game. The aim of the game is to shoot the squares with the ovals. Use your mouse or touchscreen to control the triangle that's shooting the ovals.

4 As you can see, at the moment, the game's graphics are really simple.

5 Chat with your group and decide what you want your game to have. The choice is yours – it could be a Scouts theme, such as 'badge collector', or something of your own creation, such as 'fairies vs dragons'.
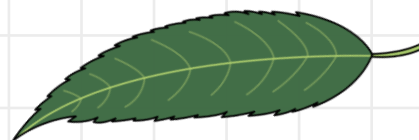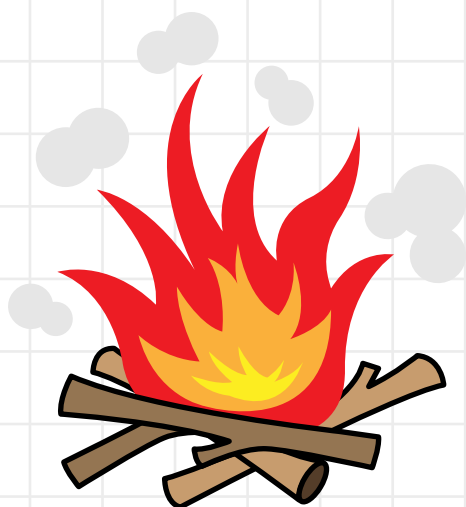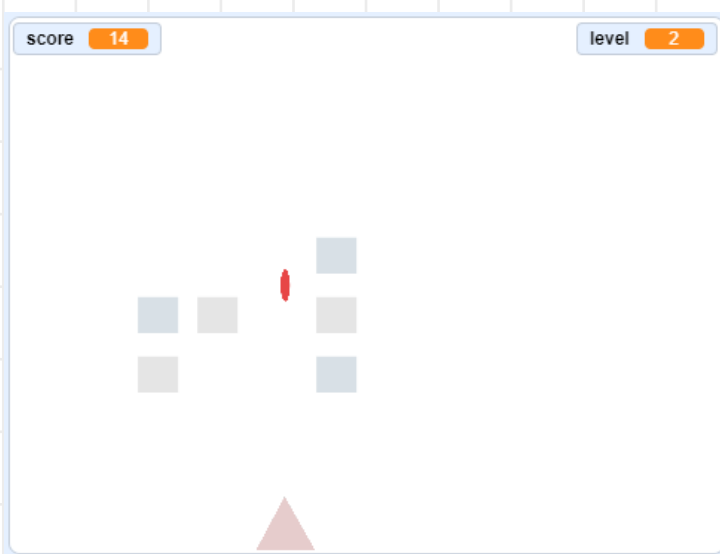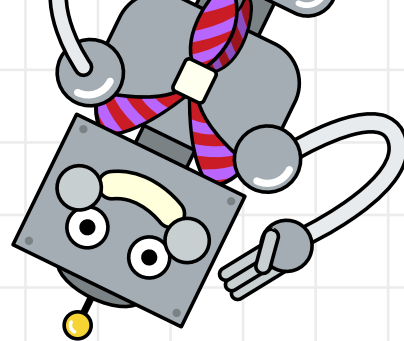
6 In this example, 'Plant waterer', the squares are dried out plants that need watering, and the triangle is a bucket that shoots water droplets instead of ovals:
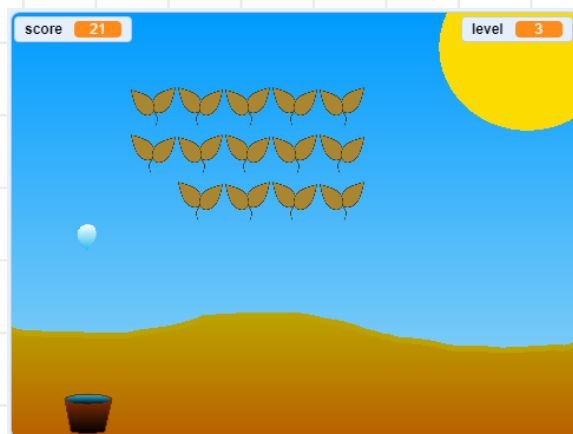
7 Decide on a background and what you'll use instead of the square, triangle, and oval sprites.

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# Graphics for games

Part two: create your sprites

1 Click on the square sprite underneath the game demo, then click on the 'Costumes' tab in the top left-hand corner to open the editor.

2 Mouse over 'Choose a Costume' (a cat with a + symbol next to it) in the bottom left-hand corner, then click on 'Paint' to create a new costume.
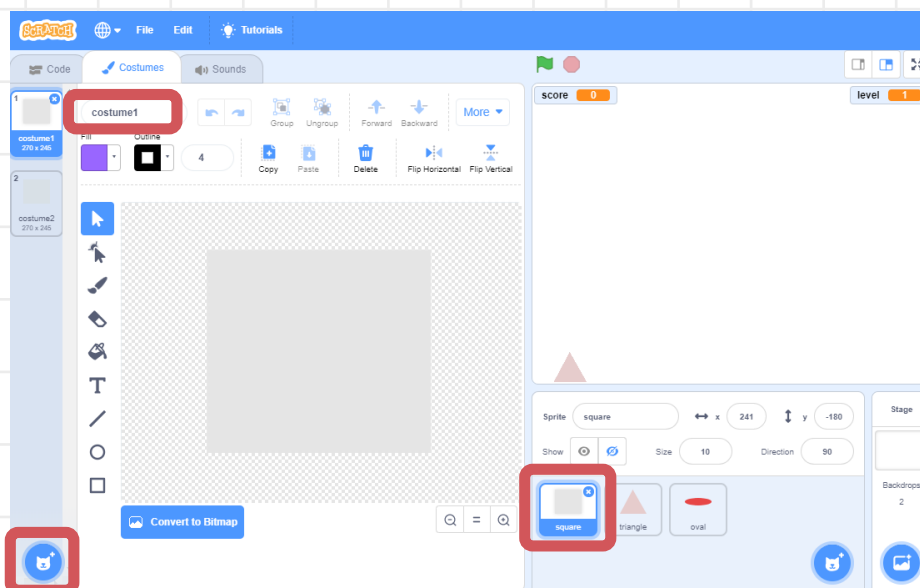
3 Use the editor to create a new costume for the square sprite (make sure that the new costume is about the same size as the square sprite). Scratch has two editors, vector and bitmap:


- In the vector editor, the paint tools draw, move around, and change lines, shapes, and text. The vector editor is the default editor.

- The bitmap editor allows you to paint your costumes using pixels as if you were using a paint brush or pencil. Click on 'Convert to Bitmap' if you want to open the bitmap editor.

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Graphics for games
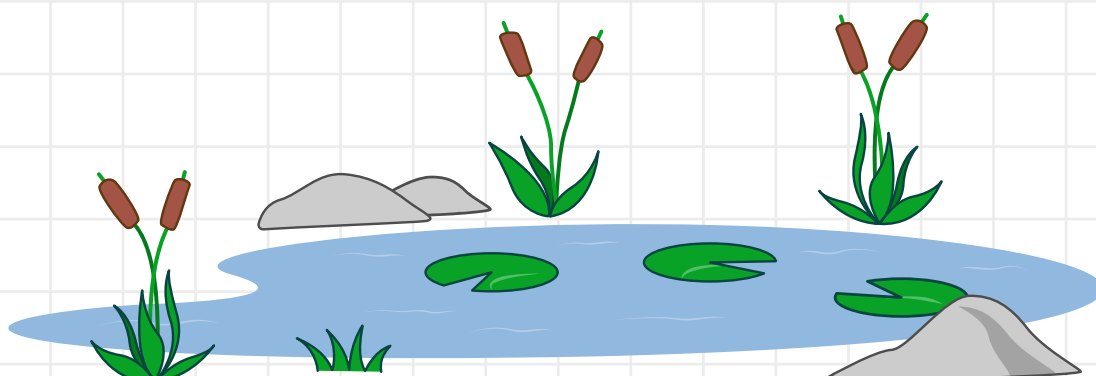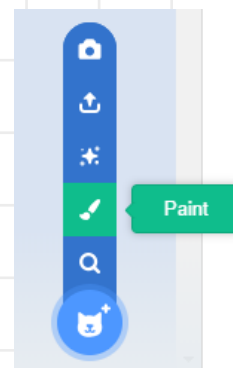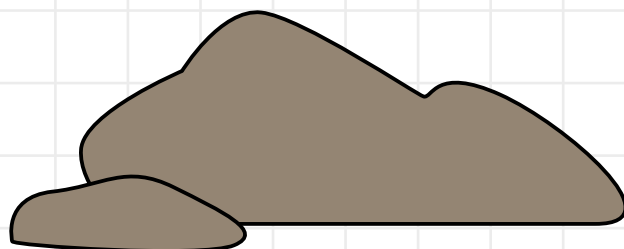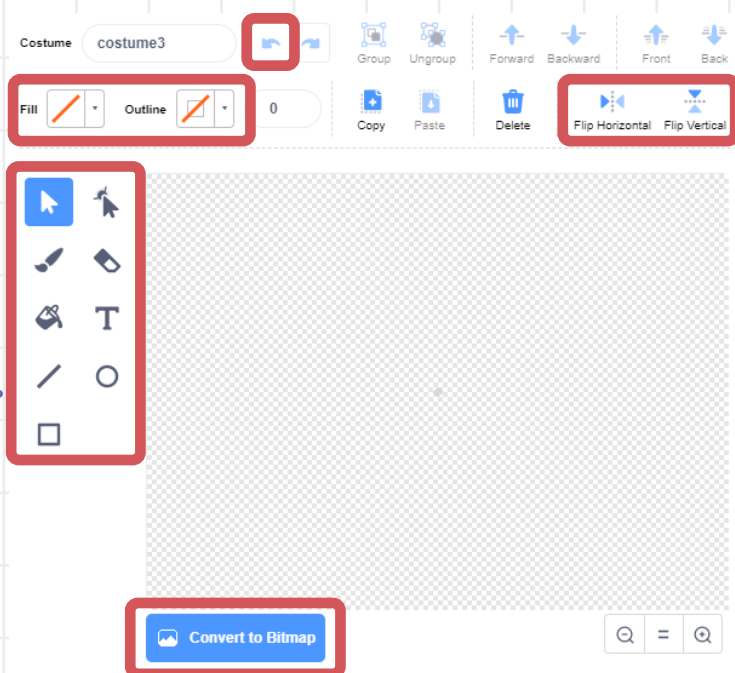
4 To change the colour of the 'Fill' or 'Outline', use the colour selectors. To choose a colour, set the following values:

- Color – the colour you want

- Saturation – how much of the colour you want

- Brightness – how bright you want the colour to be
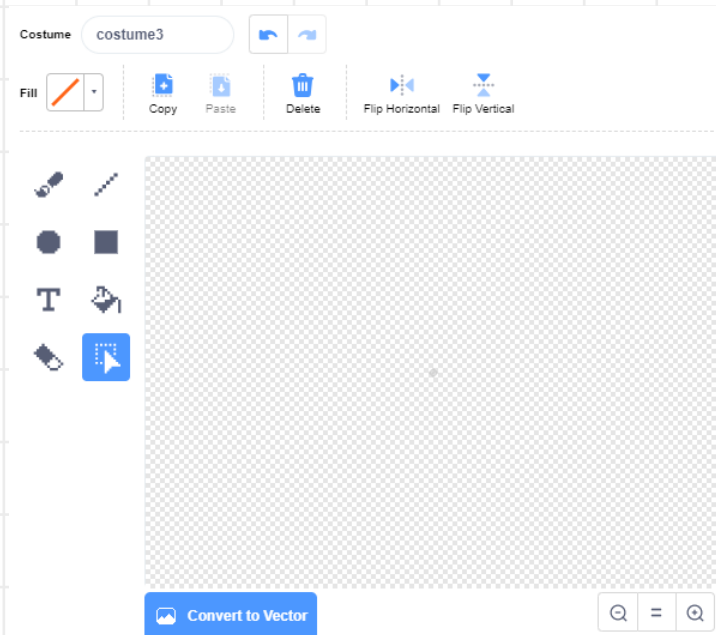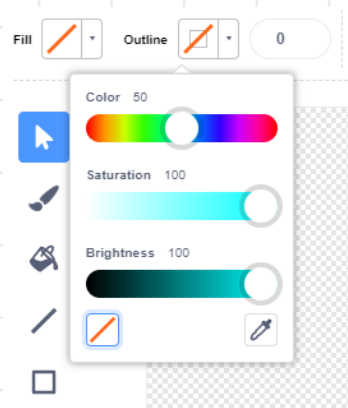
5 The square sprite can have more than one costume - it'll switch between them as the squares move across the screen.

6 If you create more than one costume for the sprite, you can animate it. Make a small change to the second costume, and then the sprite will change appearance as it moves.

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Graphics for games

7 Delete any costumes that you no longer need by clicking on the 'x'.
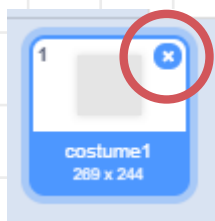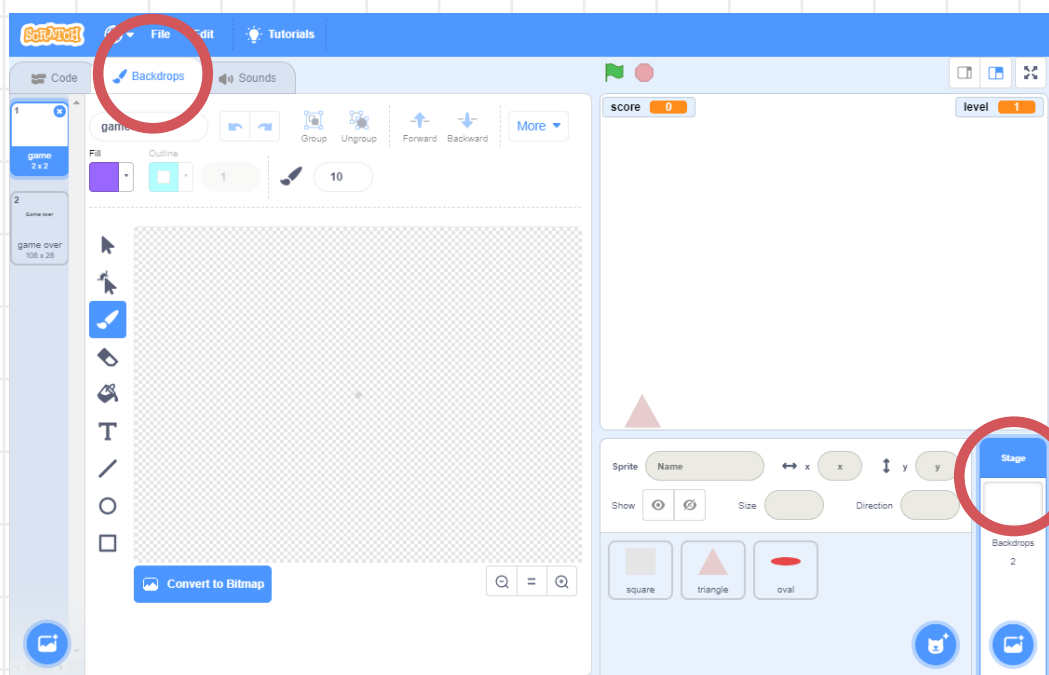

costume1
269 x 244

8 Play the game to see how your new sprite looks.

9 Create new costumes for your triangle and oval sprites.

Part three: create a backdrop

1 Your game should also have a background to complement the game. Click on 'Stage' on the right-hand side, then click on 'Backdrops' to display the backdrops.

2 There are two backdrops, one that's used while the game is being played, and one that's used when the game is over.

game
2 x 2

Game over
game over
106 x 28

3 Create a new background for your game to complete the theme.

4 Share your game with your friends and see who can get the highest score.

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Graphics for games

Trivia

Computer sprites are named after the mythical sprites, because they float across the screen.

Discuss

How do you think the game could be modified to make it more fun, or to fit your theme better?

Tip

If you want to create multiple costumes, right-click on the sprite in the menu on the left-hand side, then click 'duplicate'. This will create a copy that you can modify, so that you don't have to redraw the whole costume.

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