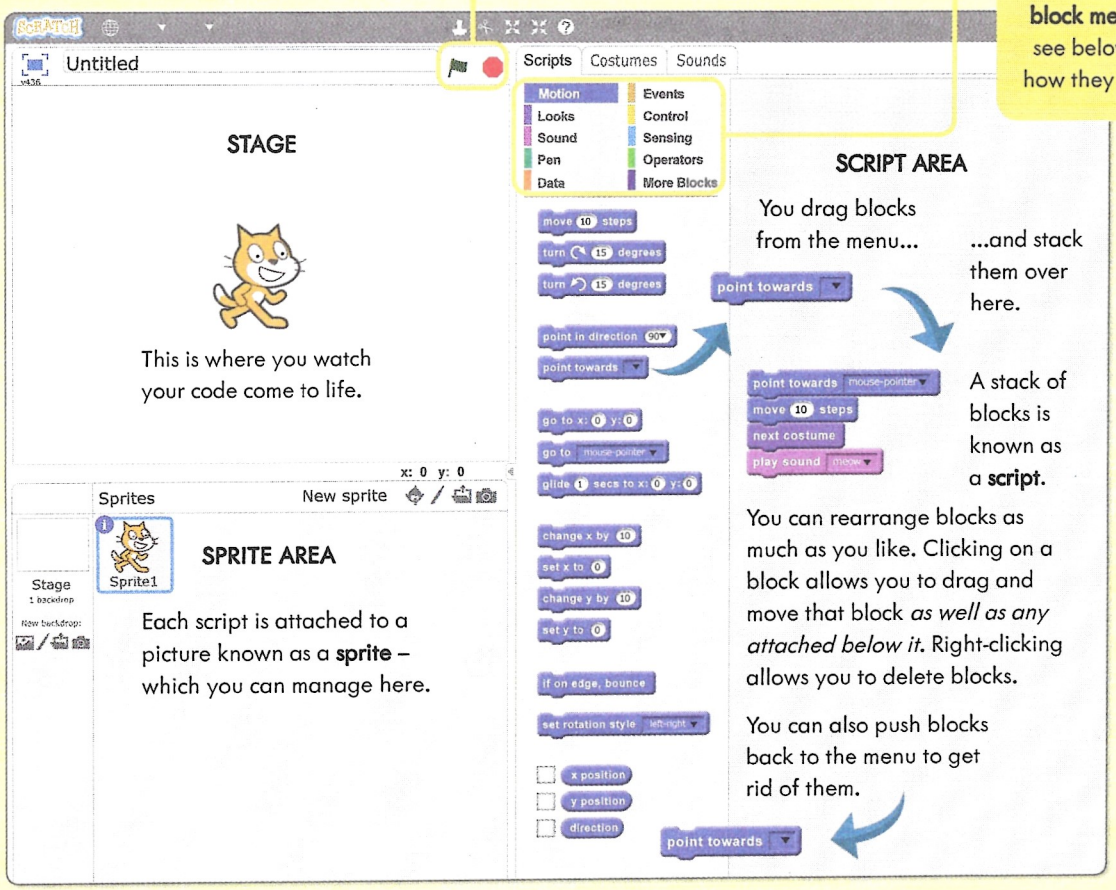
Starting Scratch

When you start up Scratch on your computer, you will see this screen.

On the Scratch website, click 'Create' (in the blue bar) to get here.

The **green flag** and **red button** are used as start and stop buttons.

These names are the **block menus** – see below for how they work.

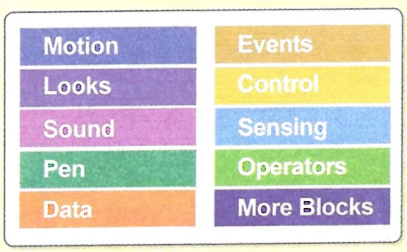


Block menus

Each **block menu** contains a variety of different, colour-coded blocks. For example...

- **Motion** menu blocks (blue) make sprites move.
- **Looks** menu blocks (purple) change how things look.
- **Control** menu blocks (gold) control the scripts themselves.

Click on a **block menu** name to bring up the blocks available, or turn to page 82 for a full list.

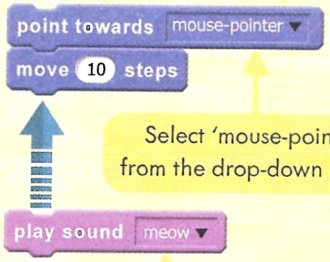


These are the ten **block menus**.

First steps

1 Try dragging these two blocks (from the **Motion menu**) into the **script area** to make the cat walk...

Then click on the **Sound** menu and add a **play sound** block.



Select 'mouse-pointer' from the drop-down menu.

Select 'meow' from the drop-down menu.

KEYWORDS

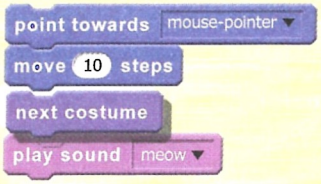
Instruction words such as MOVE and PLAY are sometimes known as KEYWORDS because they have a clear, exact meaning in the computer language.

2 Click on the script to **run** it. Click a few times and watch what happens.

The script glows as it runs, and the cat moves and meows. (If the cat goes too far, you can drag it back again.)

3 But the cat doesn't look as if it's walking. For that, its feet need to move...

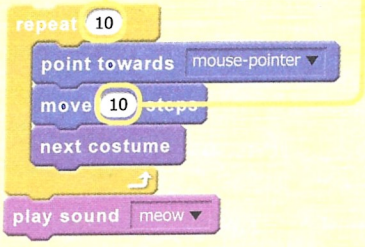
Click on the **Looks** menu and add a **next costume** block. This changes to another picture or 'costume' of the same sprite (in this case, the cat with its feet in a new position). Click on this script a few times.



Congratulations, you've written your first piece of code!

4 The cat's feet move – but only when you click on the script. To keep things going, you need to go to the **Control** menu for a **repeat** block. This block makes all the instructions inside it repeat, or **loop**, as many times as you tell it.

You can type into the little white boxes to change the numbers.



LOOPS

LOOPS are used a lot in all kinds of code, because they make programs much shorter and quicker to write.

Turn the page to see how to turn this script into a simple cat-and-mouse game.

Once upon a time

Find out how to use Scratch to make up animated stories, with backdrops, dialogue and surprise twists.

Choosing characters

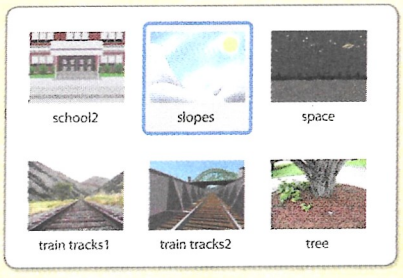
1 Start a new project and delete the cat. Then click on the **sprite** button to open the **Sprite Library.** Select two characters by clicking. These sprites will now appear on the stage.

Adding a backdrop

2 Look for the **backdrop** button to the left of the **sprite area.** Click on it to open the **Backdrop Library.**

3 Scroll until you find a backdrop that you like, then double-click to select it. This is where your story will start.

Drag the characters to arrange them against the backdrop.



Can't see one you like? Find out how to use photos as backdrops on page 31, or paint your own on page 54.

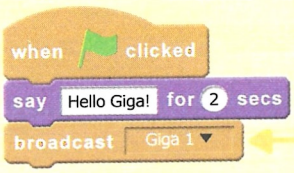
Broadcasting a message

To get your story moving, you'll need a new type of block called a **broadcast** block. You'll find this in the **Events** menu.

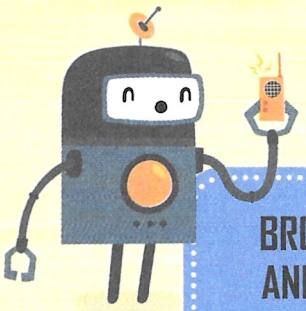
4 Select Pico (or whichever sprite will speak first). Give it a **green flag** block (from **Events**). Then add a **say** block (from **Looks**) and type its words into the white box.

This gives you time to read it.

5 Go to the **Events** menu and add a **broadcast** block. Click on the box and select 'new message', then type a name in the pop-up window.



We called the message Giga 1, because it's the first message sent TO Giga.

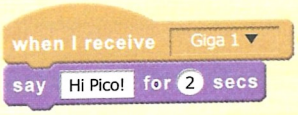


BROADCASTING AND RECEIVING

In Scratch, BROADCAST blocks are used to send messages from one script to another. RECEIVE blocks listen out for a particular message. If the right message is received, it triggers a new script.

Receiving a message

6 Select the other sprite and give it a **receive** block. Add a **say** block and type in a reply, like this.



Choose the message the sprite is waiting for from the drop-down menu.

Testing your scripts

7 Click on the green flag to test the scripts so far. You should see Pico speak, followed by Giga replying.

Pico

Hello Giga!

Hi Pico!

Giga

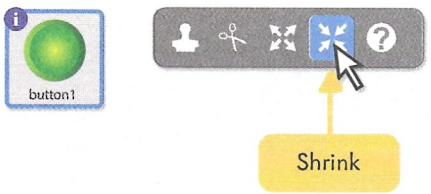
MESSAGING

Most computer languages have a way of sending messages between different parts of a program. This is known as MESSAGING.

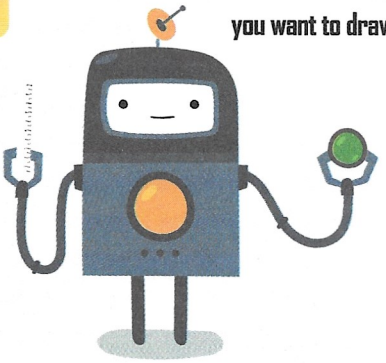
Pattern maker

You can make identical copies of sprites, called **clones**, and use them to create neat, repeating patterns.

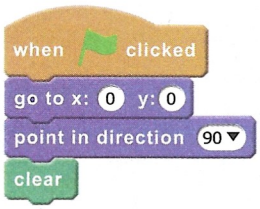
1 Start a new project, delete the cat and select a simple sprite. Click on the **shrink** button and then on the sprite several times.



The sprite should be about the same thickness as the lines you want to draw.

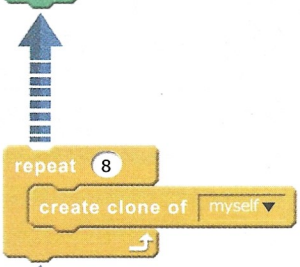


2 Begin with these blocks, to send the sprite to the middle, facing right, and clear the stage each time you click on the green flag.



Creating clones

3 Go to **Control** and take a **create clone** block. Select 'myself' from the drop-down menu. Insert this in a **repeat** loop, to make 8 identical clones, and add it to the end of your script.



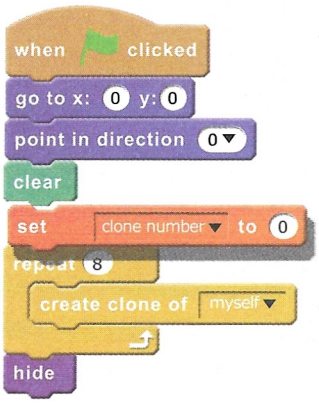
4 Then add a **hide** block (from **Looks**) to make the original sprite disappear, so you only see the clones.

CLONES

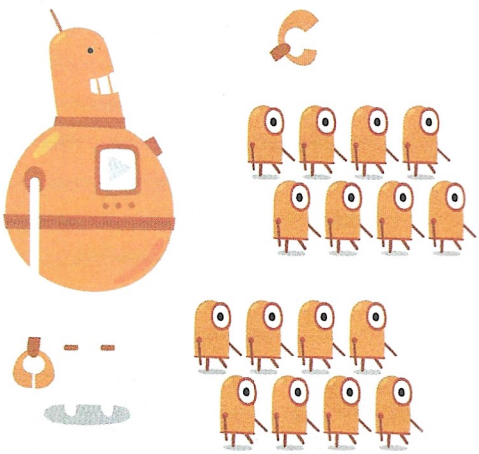
Clones are very useful if you want to make lots of sprites all do the same thing. You control the clones together, using a single script.

5 To control the clones, you will need to number them – and make sure the numbers always start from 0.

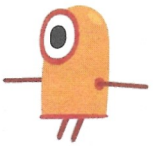
Go to **Data** and make a new variable called 'clone number' (select 'For all sprites' and uncheck the box so it won't show on stage). Then insert a **set variable** just after the start, like this.



March!



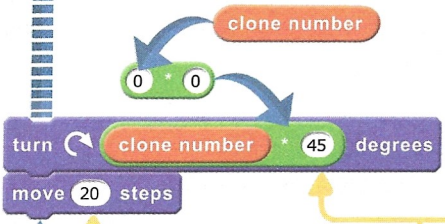
Controlling your clones



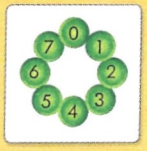
1 Start a new script with **when I start as a clone** (from **Control**). All the clones will follow these instructions when they appear – starting with a **show** block (from **Looks**).

This makes the clones visible on stage. They will all start on the same spot.

2 Begin by arranging your clones. Take a **multiply** block (from **Operators**) and snap in **clone number**. Snap this into a **turn** block (from **Motion**) and add a **move**.



Enter '45 degrees' and '20 steps' to make the clones form a ring, like this.

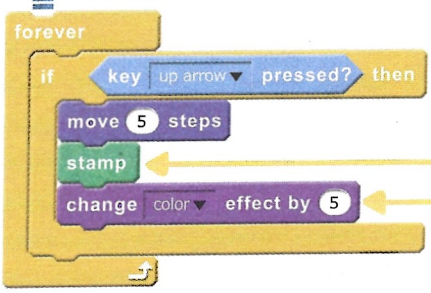


3 Add a **change variable** block, so each additional clone gets a new number.

Select 'clone number' and change it by 1.

Now to make them draw...

4 Below, add a **forever** loop with an **if/then** block inside it (both from **Control**). Set the **if** condition with **key pressed** (from **Sensing**) and select 'up arrow'. Then insert **move, stamp** (from **Pen**) and **change effect** (**Looks**).



When you press the up arrow, each clone draws a line.

This 'stamps' a picture of each clone on the stage.

Select 'color' to make the colour keep changing.

5 For sideways controls, insert two more **if/then** blocks inside the **forever** loop. Snap in **key pressed** blocks for left and right arrows, and add **turn** blocks (from **Motion**), like this.

Click on the green flag to try out the finished script...

Use the arrow keys to draw. Everything you do will be repeated neatly, eight times.