

Overview

1. Decompose the game
2. Explain the plan
3. Choose plan view animal sprite
4. Delete the ones you don't want to use
5. Rename the main animal sprite
6. Move
7. Steering
8. Save or download a copy
9. Testing
10. Draw a cheese
11. Program the cheese
12. Duplicate cheese with code inside
13. Code instructions
14. Create obstacle sprites challenge
15. Create background
16. Pupils design and build their own game

- 6A. Longer move from number keys
7A Experiment with degrees
- 11A. Create other obstacles effects

Methodologies

- Decomposition (1)
I do you do (most)
Parsons (11)
Working individually (16)

Learning Objectives

Blocks

- I can link keys to commands
- I can choose and place a programming block carefully
- I can delete a programming block

Sprites

- I can choose a sprite from the library
- I can draw a simple sprite
- I can duplicate (copy) a sprite
- I can delete a sprite
- I know that if you delete a sprite it deletes all its code
- I can undelete a sprite
- I can get my sprite back if it goes off the screen

Stage

- I know that the stage can have many backdrops (pictures)
- I know where the stage is
- I can choose a new stage backdrop from library
- I can draw my own backdrops

This is a simple introductory module designed to be used with primary pupils who have never used Scratch before. Its main aim is to help pupils familiarise themselves with the environment before going on to create more complex projects.

You start by decomposing a working game together as a class. You then build the game together your pupils copying you to learn about Scratch functionality. Pupils tick off the key skills as they build the project with you. Finally they design and build their own game ticking off the Scratch skills they learned as they use them.

It is a second draft 23/08/2020

Animal Challenge

1, Decompose the game

Open animal challenge on your interactive white board or touch screen TV in your chosen Scratch version 2 or 3.

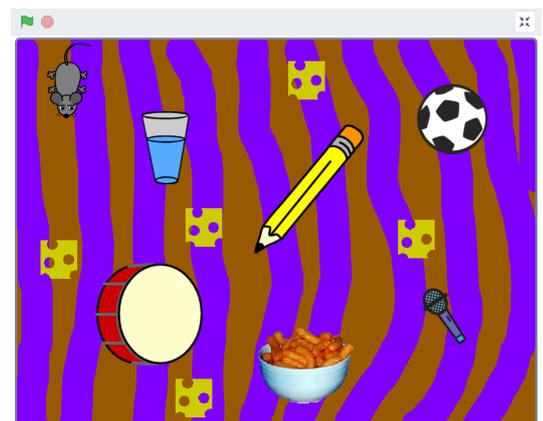
Make the game full screen. *I can change the Scratch screen sizes*

Give out the decomposition sheet and instruct pupils to match the instruction to what it does by drawing a line when they see it in action on the game.

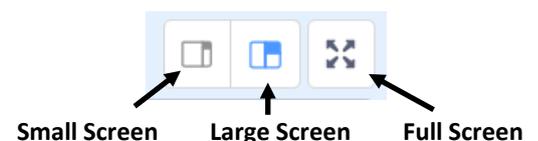
Play the game starting it with a green flag.

Read the instructions out loud and play the game using the space bar to move forward and the left and right arrows to steer left and right.

Make sure pupils can see that you are pressing the space bar to move forward and the right and left arrows to steer. You will need to play the game through lots of times for pupils to see what happens with the green flag.



Animal Challenge Full Screen



Exaggerate your key presses and say out loud what buttons you are pressing on the keyboard or what you are pressing on the screen.
When most pupils have completed the sheet go through the answers together. There is an answer sheet to help you.

2, Explain the Plan

Explain that each pupil is going to make a similar game to the animal challenges although they might choose a different character and different obstacles. Along the way they are going to learn lots of things about Scratch programming. Give out the skills list for pupils to tick as you go.

3, Choose Plan View Animal Sprites

Ask pupils to log on and start Scratch
Demonstrate how to choose a sprite from library

I can choose a sprite from the library

IF Scratch 3

Hover cursor over cat+ icon (1)
Move up to choose a sprite (2)
Choose animals tab at the top to just look for animals
Explain that plan view sprites are seen from above
If you move your cursor over the animal it will cycle through all the costumes. If one of these is from above it can be included.

IF Scratch 2

Click choose sprite from library (1)
Left click on animals from the left hand side menu
Explain that plan view sprites are seen from above
If one of these is from above it can be included.

END

Ask if anyone can see a sprite seen from above?
Answer Beetle, Cat2, Crab are early examples
Select one
Go through the process once more selecting a new plan view sprite

Now instruct pupils to find as many plan view animal sprites as they can
Give them time to do so

Formative Assessment Opportunities

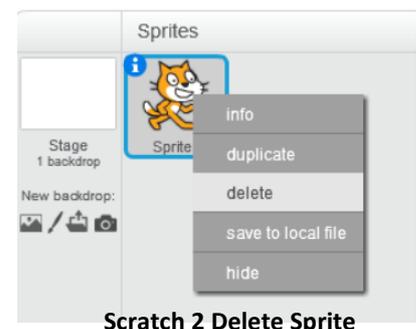
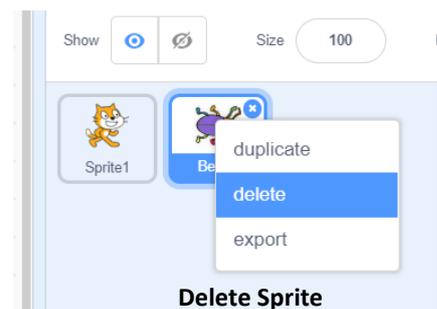
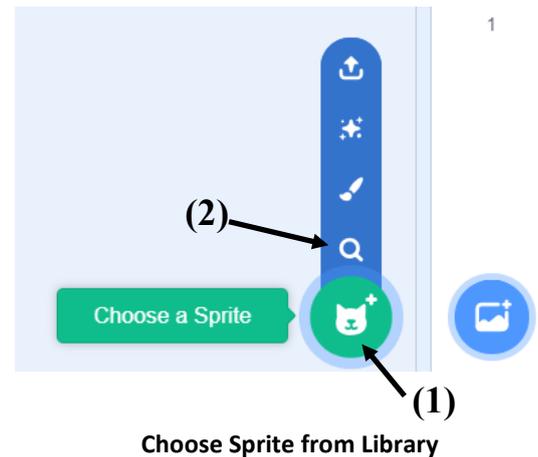
Watch your pupils, if any are unable to do this demonstrate it again for them and record your support on their assessment sheet.
Are any pupil doing the work for their neighbour? If they are explain that they should not do this as they are not helping them but making their neighbour helpless. Ask them would they write a sum in their neighbour's maths book or complete a sentence in their neighbour's writing book?

4, Delete the sprites you don't want to use

Show pupils how to delete a sprite
Right mouse click on the sprite
Select delete
Demonstrate how to delete a sprite again

I can delete a sprite

Now instruct all pupils to delete all sprites but keep one that they want to keep as their main sprite. Pupils have to spend time finding sprites or they will do it later when you want them to concentrate on more important aspects of programming.



5, Rename the main animal sprite

I can rename a sprite

IF Scratch 3

Name is directly above sprites. Highlight and type a new one

IF Scratch 2

Click on the blue i on the sprite icon. See instructions on the right.

END

I can join Scratch blocks together

6, Move

Explain that you are now going to provide the programming to make their sprite move.

Make sure you are on your sprite and not the backdrop.

The sprite shows a blue halo around it when it is selected.

You can also see a picture of your sprite in the top right corner of the coding area. Point these out to pupils.

IF PC, Chrome Book, Mac

Drag out a **when space key is pressed** starting block from events.

Show pupils how the arrow head can be used to open a menu and select other keys although in this case the space key is the right one.

Navigate to the motion commands and ask the pupils which block might help them move once the space key is pressed.

Drag out the move 10 steps and hold it just underneath the when space key pressed block, a grey shadow (Scratch 3) or a white line (Scratch 2) will appear showing that the blocks will soon be linked.

6A, Move Further Extension With Number Keys PC, Chromebook or Mac only

Pupils who finish quickly can create new blocks where number keys move further such as when 2 key is pressed move 20 steps

IF Tablet

Drag out a when this sprite clicked starting block from events.

Navigate to the motion commands and ask the pupils which block might help them move once the sprite is touched or clicked?

Drag out the move 10 steps and hold it just underneath the when this sprite clicked block, a grey shadow will appear showing that the blocks will soon be linked.

END

Tell pupils that this is the snap to shadow or snap to line.

It helps you know where you are placing something.

Make sure you demonstrate this slowly as pupils make lots of mistakes by just snapping blocks too quickly.

Explain that move 10 means move 10 tiny dots of pixels. Pixel dots make up the screen. In Scratch there are 420 across and 380 down

Demonstrate how the coding works by pressing the space key (PC Chromebook Mac) or touching the sprite (Tablet).

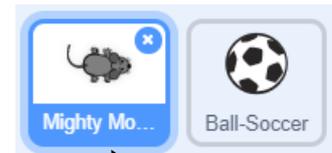
Now instruct pupils to create and test their move command.



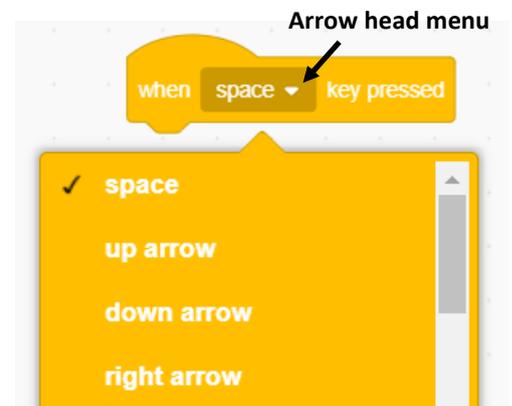
Scratch 2 Rename Sprite

Click on the blue i to open the menu below that allows you to rename the sprite.

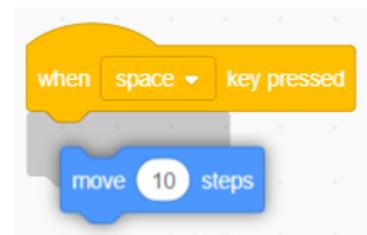
Click in the arrow head to close that menu.



Selected Sprite with Blue Halo



Drop Down Menu



Snap to Shadow



Tablet Snap to Shadow

7, Steering

Explain that they are now going to provide the code to make their animal turn right or left.

IF PC, Chrome Book, Mac

Drag out two when key pressed blocks.

Demonstrate changing these to right and left arrow.

Go to the motion blocks and ask pupils which blocks might be useful?

Challenge them to find the right blocks to make the right arrow on the keyboard turn right and the left arrow on the keyboard turn left.

I can use key press starting blocks

IF Tablet

Show pupils how to find the arrow sprites from the library.

Make one point right and the other point left by going to the costume tab and click on either arrow1-a or arrow1-b for left and right.

Back in the right arrow code drag out when this sprite clicked and link it to broadcast block. Select the menu arrow (1) and select new message.

Call the new message right turn.

Do the same for the left arrow but name the message left turn

Now navigate back to the animal sprite and drag out a when I receive starting block and change it to right turn before dragging a turn right 15 degrees block as shown. Do the same for the left turn.

Broadcasts take the instructions given by the left and right arrow sprites and pass them on to the animal sprites. They are more complex than the rest of the starter code and some teachers may wish to make these as part of a template code file so that the arrows and broadcasts are already setup so pupils can focus on the basics at this point.

END

I can change a block to make it act differently

7A, Experiment with Degrees

Encourage pupils to try different amounts of turn between 5 and 90 degrees.

Remind them to make both right and left turns the same.

8, Save or Download a Copy

Of course this may need to be done earlier or later depending on the speed of your sessions. Regular saving is always to be encouraged as well as incrementing each save by adding the next number in the series. animalfun1 animalfun2 etc.

IF Scratch 3 online logged in

File and save now although projects will be automatically saved even if pupils forget.

I can save a copy of my work regularly

IF Scratch 3 online but not logged in

File and save to your computer

This file must then be found and moved to pupil home areas

IF Scratch 3 offline editor

File and save to your computer

Save in normal windows or Mac way

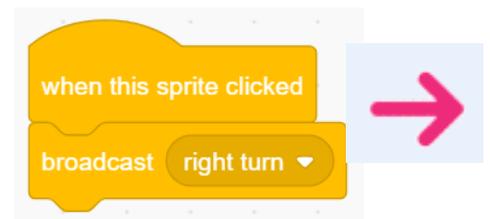
If Scratch 2 offline editor

File save or save as

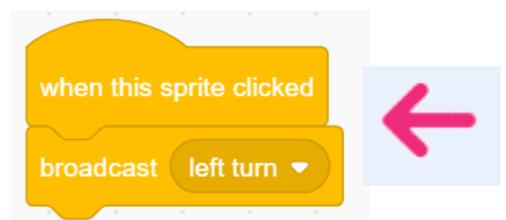
Save in normal way for Windows or Mac



Tablet steering inside arrow sprite



Tablet Code inside Right Arrow Sprite



Tablet Code inside Left Arrow Sprite



Tablet Code inside Animal Sprite

END

9, Testing

After each code build pupils should always test what they have built to see if it works.

10, Draw a Cheese

Demonstrate how pupils can draw their own cheeses. *I can draw my own sprites*

IF Scratch 3

Hover over the new sprite cat+ icon and then move up to select paint.

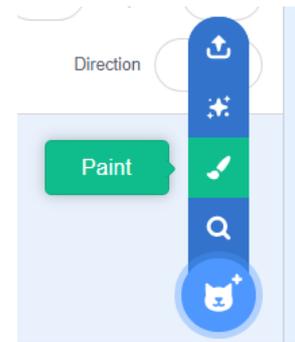
Choose the rectangle tool

Change the fill colour to a cheese appropriate yellow

Remove the outline (red diagonal line from selection tools)

Drag out a square

Then use the eraser tool to remove some holes



Paint New Sprite



Selection Tools



Rectangle Tool

IF Scratch 2

Select the paintbrush from new sprite options

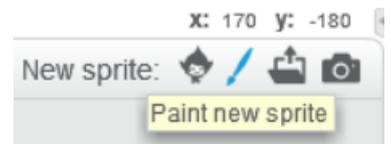
Choose the rectangle tool from the menu on the left

Make sure it is a solid rectangle

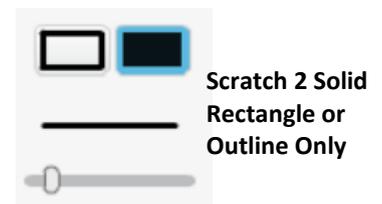
Choose a cheese appropriate yellow

Drag out a square

Then use the eraser tool to remove some holes



Scratch 2 Paint New Sprite



Scratch 2 Solid Rectangle or Outline Only

END

Instruct pupils that they don't have to create chesses but it must be a simple shape using the circle or rectangle tool.

Give them time to create a couple of sprites before choosing the best one.

11, Program the Cheese

Make sure your chosen sprite is selected

Cheese picture in top right of coding window

Blue halo around the cheese sprite

I can use green flag starting blocks

Drag out when green flag clicked, show, hide, wait until & touching blocks

Change the touching block to the name of your main character.

Show pupils how the touching mighty mouse can fit inside the wait until.

Point out that the shapes gives a clue that they will work together.

Remind pupils that when they decomposed the game the green flag made the cheeses show if they were hidden and then once the mouse touched them they disappeared.

I can use wait until blocks

Give pupils time to experiment with the order and test it.

Instruct them not to copy from their neighbour and that it is fine to try an order that doesn't work as you learn something from this.

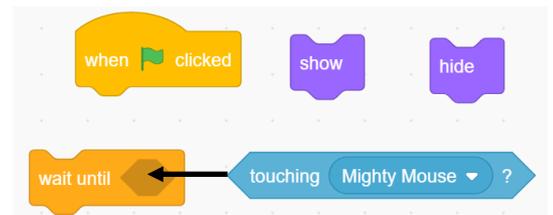
Formative Assessment Opportunities

Watch pupils do this. Record any pupil who does this quickly and any who persevere but this gets there independently.

Show pupils the correct solution before you move on.

12, Duplicate Cheese with Code Inside

Once pupils have created and tested their code they are ready to duplicate the spite and spread them around the screen.



Blocks to drag out

Right mouse click on the sprite tile and select duplicate.
All the code will also be duplicated.
These can then be spread around the screen evenly.

I can make a copy of a sprite and its code

13, Code Instructions

The technical name for the first three blocks of code under the green flag is initialisation. Initialisation code makes sure that the program always runs the same way every time the program is run.

Make sure you are inside the main animal sprite character by checking the image in the top left hand side of the coding area and the blue halo around the sprite tile.

Drag out the code as shown on the right a block at a time.

I know that initiation code makes the sprite run the same every time it is run

Encourage pupils to experiment with the set size to % block as this can aid their mathematical understanding.

Before they drag out the go to x and y block ask pupils to move their sprite to where they would like it to start on the screen. Explain that when the x and y block is dragged out it remembers the position of the sprite when it is added. If pupils have not encountered cartesian coordinates yet don't go any further.

The point in direction block can be adapted for all angles. The Scratch 3 version has a draggable dial if the number is selected.

14, Create Obstacle Sprites

Challenge pupils to import obstacles to spread around their screen
Obstacles can't hide or they might be mistaken for things to be collected but they could do other things when they are touched such as say something or make a sound.

What effects can pupils create that happen when the main character touches the obstacles?

Give pupils plenty of time to create these

Formative Assessment Opportunities

This is a great opportunity to observe pupils and see who can adapt what they have learnt in a similar but different context.

It fits in with

You can create something that is similar but not the same as any examples I provided on the assessment sheet.

15, Create background

This is a great opportunity to draw a colourful background

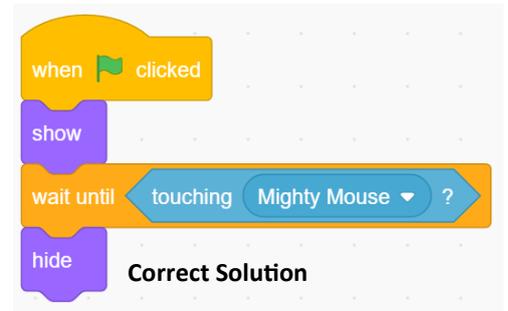
IF Scratch 2

Left click on stage on the left hand side of the screen.
Click backdrops, the middle tab at the top of the screen.
Make sure you are on bitmap mode and use the drawing tools.

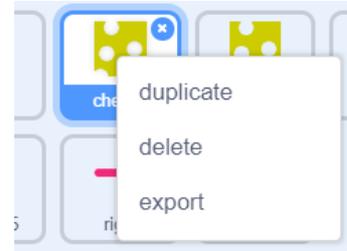
IF Scratch 3

Left click on the stage icon (bottom right)
Select the paint icon as shown on the right
Make sure you are on bitmap mode and use the drawing tools

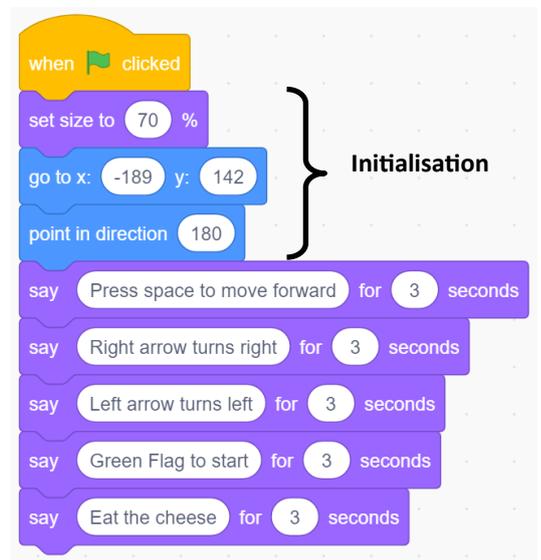
I can draw a Scratch backdrop



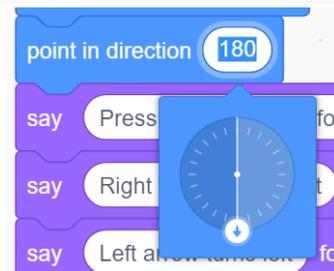
Correct Solution



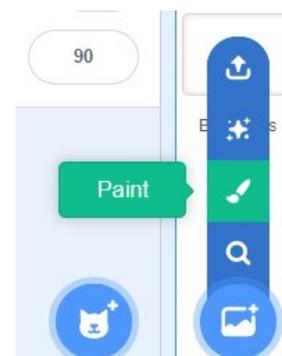
Duplicate a Sprite



Initialisation



Direction Number Dial in



Stage Options

16 Plan and build your own game

In this section pupils plan their own similar project and then build it ticking off the key skills as they go. There is space for them to write their own skills discovered at the bottom. There is also an alternative tick sheet where they can say if the idea was their own or another pupil in the class. My thanks to Cobie van de Ven @hetdiglab for this adaptation.

There is a simple 10 minute planner to complete first