"IF" COMMANDS

Sometimes we want to run different bits of code in response to a question or input in a program. We can do this by using "if" commands. This is called selection. Let's make a quiz to try it out.

I have made a plan of what we need to do.

Ask a question. If the answer is correct, say, "Well done."

We need to use if answer =

Ask, "What animal am I?" If answer = cat, say, "Well done."

Quiz Master

Question time

1

Start Scratch (see page 4) and click **Create** or **Try it out**. Click the **Scripts** tab in the center of the Scratch screen. Select the **Events** group.

Drag a **When green flag clicked** code block to the scripts area.

Download our robots to use as sprites on Scratch! Go to http://www.qed-publishing.co.uk/extra-resources.php or scan here:

Key word

Selection: The way a computer program chooses which commands to run, after a simple question or value check

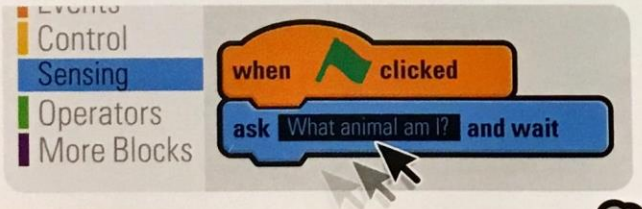
What animal am I?

2

Click the **Sensing** group.

Drag an **Ask and wait** code block to join it.

Change the question text to "What animal am I?"



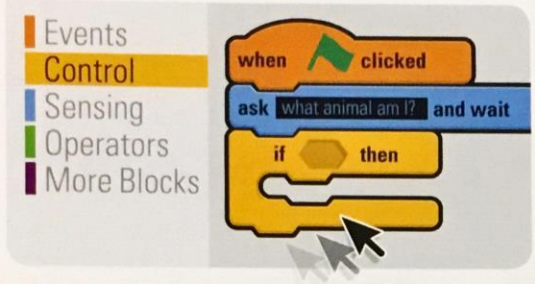
Click the green flag icon to test your code.

cat

3

Now we need our program to check if the answer is correct. Click the **Control** group.

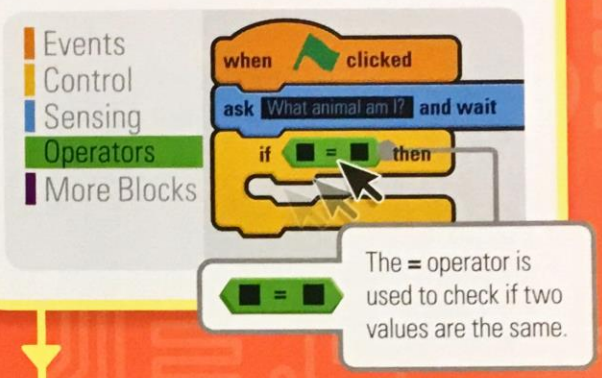
Drag an **If then** code block to join your program.



4

Click the **Operators** group.

Drag a green **Equals** box onto the **If then** block.

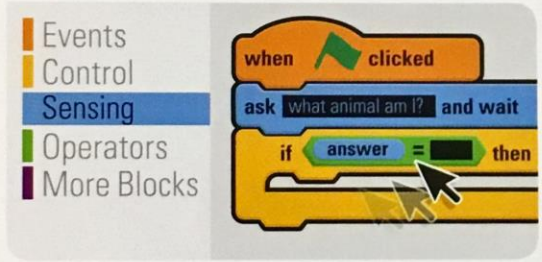


The = operator is used to check if two values are the same.

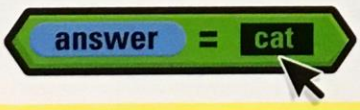
5

Click the **Sensing** group.

Drag an **Answer** code block into the left square in the **Equals** block.



Now click inside the right-hand square in the **Equals** block and type in the correct answer: cat.



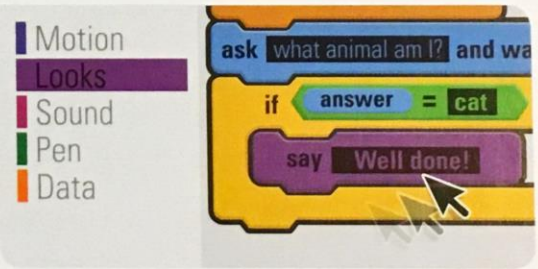
6

Click the **Looks** group.

Drag a **Say Hello!** code block into the middle of the **If then** block.

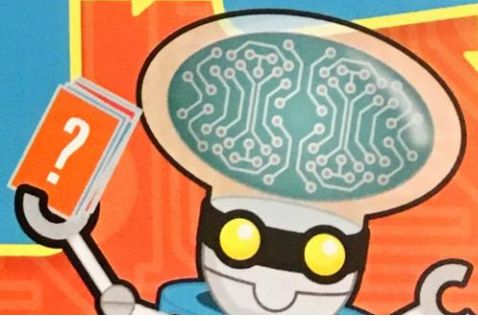
Change the text to say "Well done!"

Click the green flag icon to test your code.



Challenge

Can you think of a more difficult question?



Saving your work

Click the **File** menu at the top of the page on the left. Then click:
Download to your computer – to save a file onto your computer.
Upload from your computer – to open a file you saved earlier.
New – to start some new work.

QUIZ TIME

To make a better quiz, we need to find a way to ask several questions. We also need to keep a score of our right answers. To do this, we can add a score variable.

Capital quiz

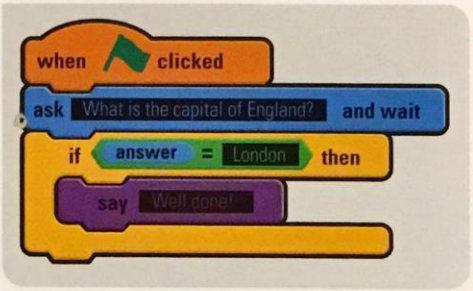
1

Start Scratch.

Build a quiz with one question. Turn back to the previous page if you need help.

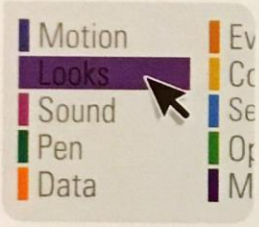
Change the question and answer text.

Test your code.

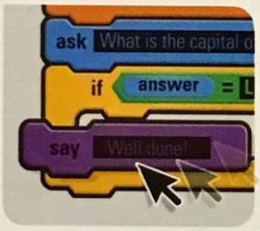


2

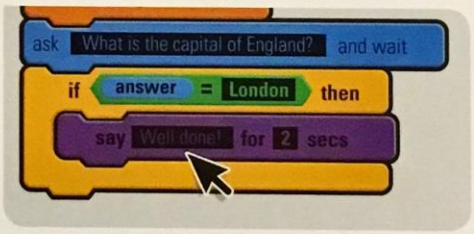
We need to make the program wait before asking the next question.



Click the **Looks** group.



Remove the **Say Well Done!** code block.



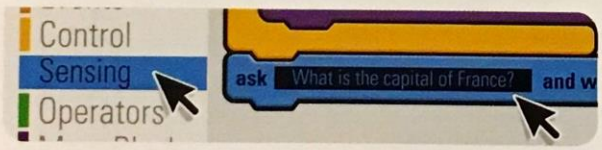
Replace it with a **Say Hello! for 2 secs** block. Change the text to "Well done!"

3

Click the **Sensing** group.

Drag an **Ask and wait** code block to join after the **If then** block.

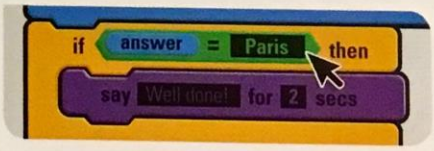
Type in the next question.

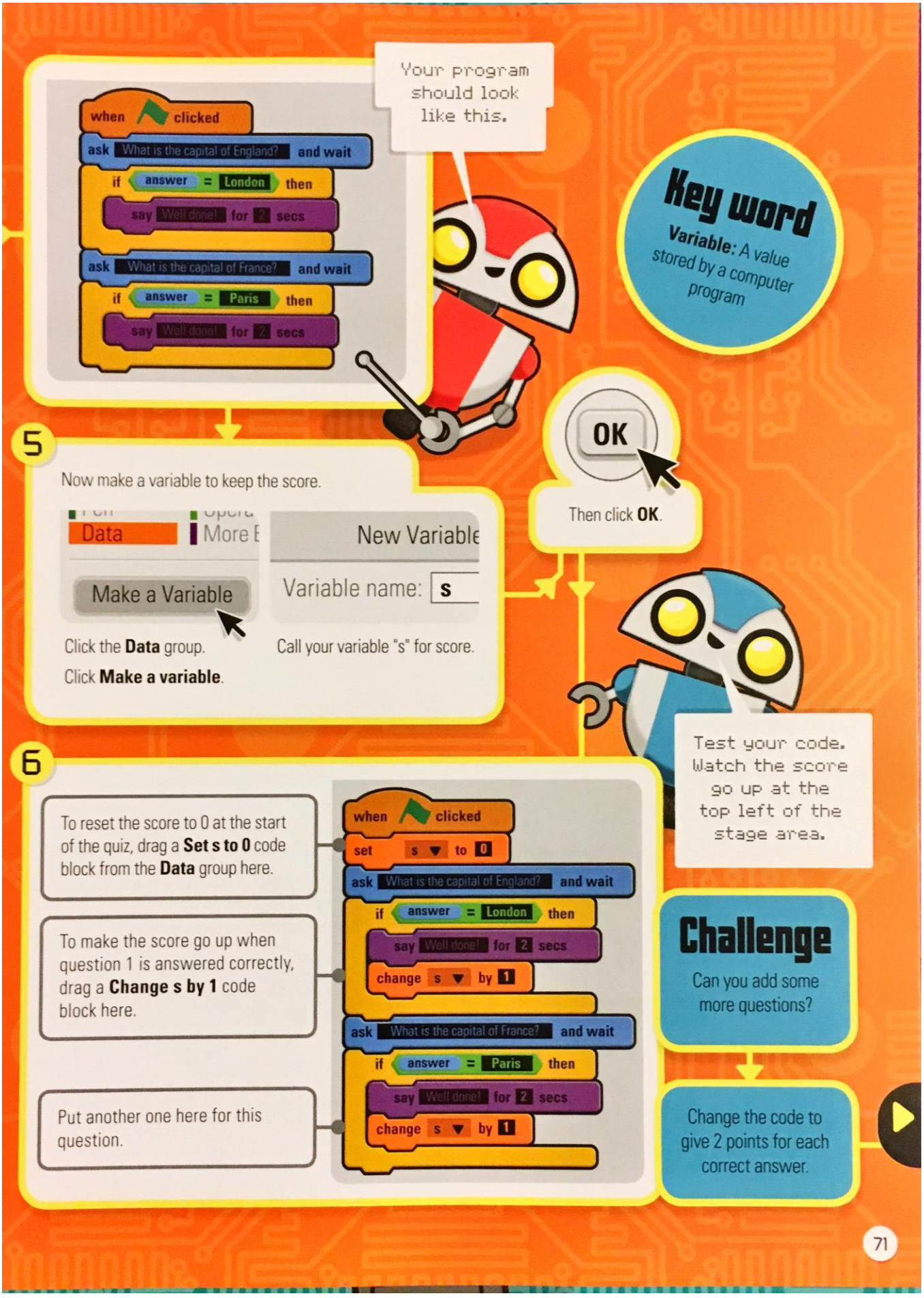


4

Drag in code to check the answer to your second question. Turn back to the previous page if you need help.

Test your code.




when clicked
ask What is the capital of England? and wait
if answer = London then
say Well done! for 2 secs
ask What is the capital of France? and wait
if answer = Paris then
say Well done! for 2 secs
Your program should look like this.
Key word
Variable: A value stored by a computer program
OK
Then click OK.
5
Now make a variable to keep the score.
Data
More E
New Variable
Make a Variable
Variable name: s
Click the Data group.
Click Make a variable.
Call your variable "s" for score.
Test your code. Watch the score go up at the top left of the stage area.
6
To reset the score to 0 at the start of the quiz, drag a Set s to 0 code block from the Data group here.
To make the score go up when question 1 is answered correctly, drag a Change s by 1 code block here.
Put another one here for this question.
when clicked
set s to 0
ask What is the capital of England? and wait
if answer = London then
say Well done! for 2 secs
change s by 1
ask What is the capital of France? and wait
if answer = Paris then
say Well done! for 2 secs
change s by 1
Challenge
Can you add some more questions?
Change the code to give 2 points for each correct answer.

"ELSE" COMMANDS

Key wor

Operator: A piece code that carries out mathematical or logica operation

We've learned how to use selection to check if something is true. What about if it is false—if someone gives the wrong answer to a question? We can use "else" commands to run a different bit of code in this case.

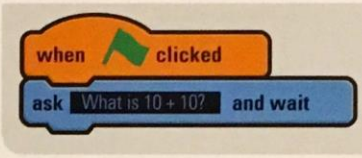
Wrong answer

1

Start Scratch.

Make one question. Turn to page 68 for help if you need it.

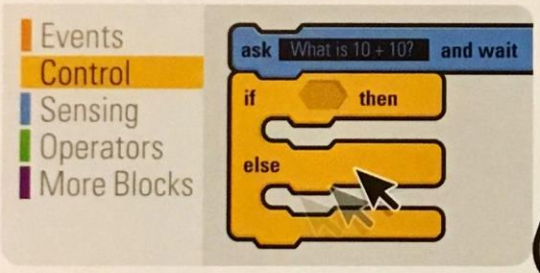
Change the question text.



2

Click the **Control** group.

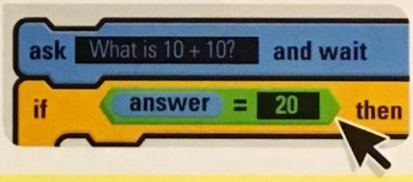
Drag an **If then else** code block to join your program.



3

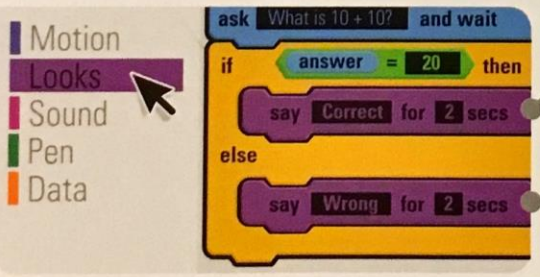
Drag in code to check the answer to the question.

If you need help, turn back to page 69.



4

Now we need to make the program give a message to the player, depending on their answer.



Drag a **Say for 2 secs** code block into the top gap and type in "Correct."

Drag a **Say for 2 secs** code block into the bottom gap and type in "Wrong."

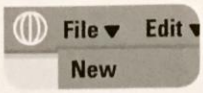
Now try adding another question to your quiz. Use another **If then else** code block so the player gets told if each answer is right or wrong.

Higher or lower?

We know how to check if an answer, or variable, is equal to a value. Now we will learn to use "Less than" or "More than" operators to compare how big a variable is. We are going to make a small program that checks how old the player is before it starts.

1

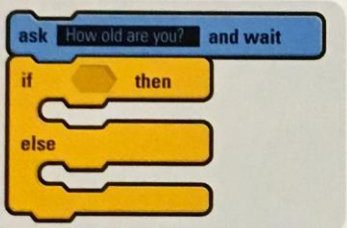
Start a new program.



Make code to ask, "How old are you?"

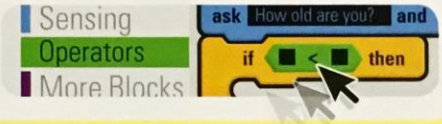
2

From the **Control** group, drag an **If then else** code block to join your program.



Click the **Operators** group.

Drag a **Less than** code block onto the **If then else** block.

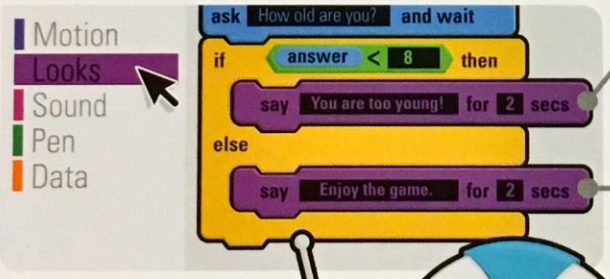


3

Click the **Sensing** group. Drag an **Answer** code block into the left square in the **Less than** block. Type "8" into the right square.

4

Click the **Looks** group.



Drag a **Say for 2 secs** code block into the top gap and type in a message.

Drag a **Say for 2 secs** code block into the bottom gap and type in a message.

You can add a **Stop** command after the **Say** command to stop the program.

You can start the rest of your program below here. Only players ages 8 and up could use it.

Challenge

Try making the "How old are you?" program using the "More than" operator instead of "Less than."

IF SPRITE IS TOUCHED...

Selection can be really useful in games. For example, we can use "If then" command blocks to check if one sprite has touched another.

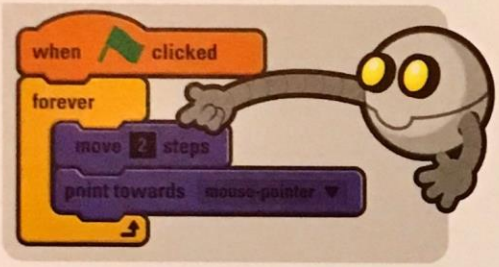
Apple-eating game

We are going to make a game where a cat sprite has to eat four apples. We will have to make lots of apple sprites by duplicating them.

1. Move the cat to follow the mouse cursor.
2. If the cat has touched an apple, hide the apple and make the score go up.
3. Make lots of apples!

1

First we will drag code to the scripts area to make the Scratch sprite move slowly across the screen, pointing toward the mouse pointer.



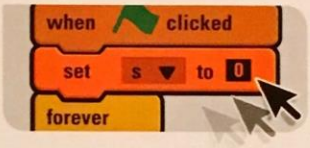
Drag the **When green flag clicked** code block from the **Events** group. Get the **Forever** loop block from the **Control** group and the other blocks from the **Motion** group. Change the speed of the sprite to move 2 steps each loop.

Click the green flag icon near the top of the Scratch screen to test your code.

2

Click the **Data** group to make a variable called "s" for the score.

Look at step 5 on page 71 for help.



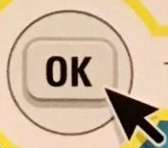
Drag a **Set s to 0** code block above the **Forever** loop.

3

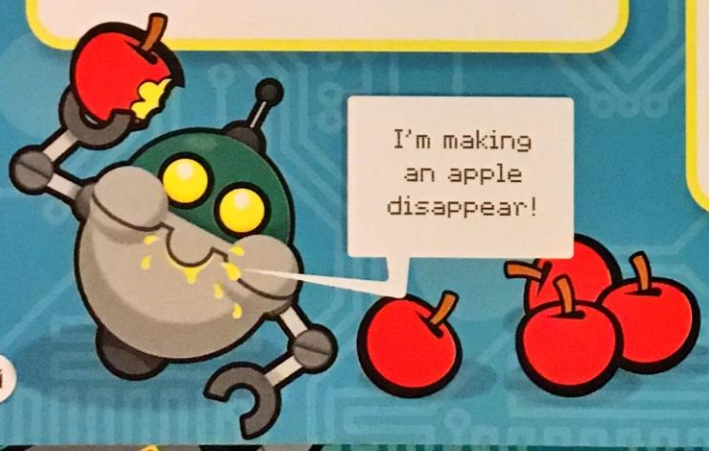
Now add an apple sprite.

Click this icon.

Scroll down to the apple and click on it.

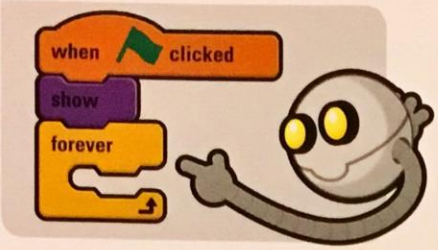


Then click **OK**.



4

Now we will drag code to the scripts area to control the apple.



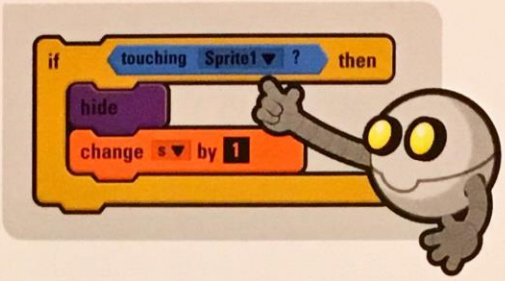
Get the **When green flag clicked** code block from the **Events** group.

Get the **Show** code block from the **Looks** group and the **Forever** loop from the **Control** group.

The **Show** code block will make sure the apple is visible at the start of the game.

5

Every loop, we must check if the cat has touched the apple. If it has, the score must go up.

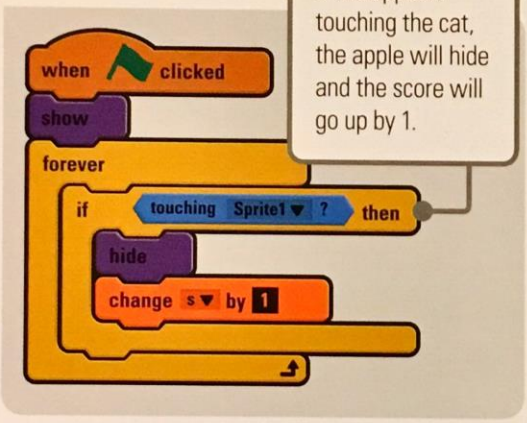


Join together these blocks of code.

You'll find the **If then** block in the **Control** group, the **Touching** block in the **Sensing** group, the **Hide** block in the **Looks** group, and the **Change s by 1** block in the **Data** group.

Set the **Touching** code block to "Sprite1"—the cat.

6



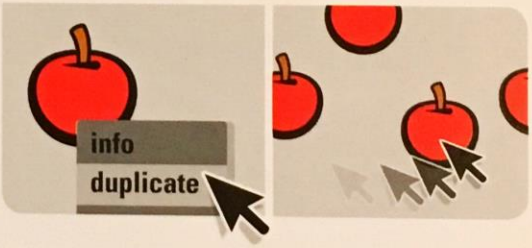
If the apple is touching the cat, the apple will hide and the score will go up by 1.

Drag the **If then** code block into the **Forever** loop.

This will mean the **If touching** check will run on every loop forever.

7

Finally, right-click the apple and click **Duplicate**. (If you're using a Mac, you'll need to hold the **Control** key and click.)



Drag the new apple to a space and then duplicate two more apples.

Test your game!

When the apples are duplicated, their code is duplicated, too!

Challenge

Make your own game with different sprites. How about making the apples move when the flag is clicked?