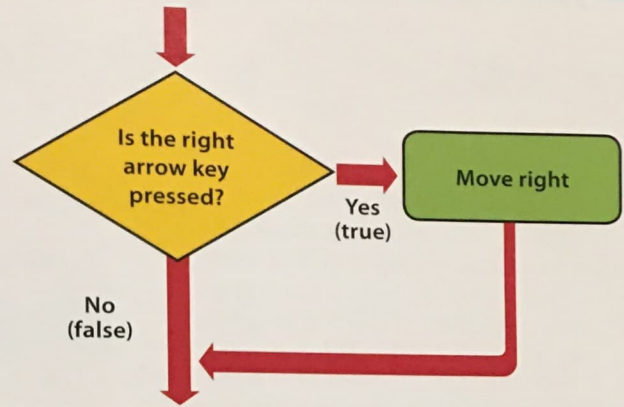


EXPERT TIPS


Making choices

You make choices all the time. If you're hungry, you decide to eat; if not, you don't. Computer programs can also make choices between different options. One way to make them do this is to use an "if then" instruction, which is used in lots of programming languages. In Scratch, the "if then" block includes a statement or a question and runs the code inside the block only if the statement is true (or the answer is yes).



Add a ballerina

The dinosaurs are dancing, but it's not much of a party without some friends. A ballerina is going to join the fun and will do a routine. Her code will show you how to create more complicated dance routines.

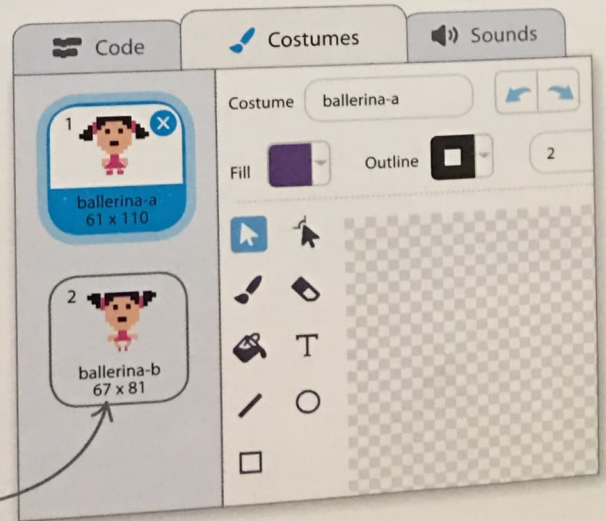
- 25** Click on the sprite symbol  in the sprites list and load the ballerina. Then use your mouse to drag the sprite to a good spot on the stage. To give the ballerina some code, make sure she's selected in the sprites list—the selected sprite has a blue outline.



Ballerina is the selected sprite.

- 26** You can see all the costumes of a sprite by clicking on the Costumes tab when the sprite is selected. The ballerina has four costumes, and switching between them will make her dance a beautiful ballet.

Each costume has a unique name.

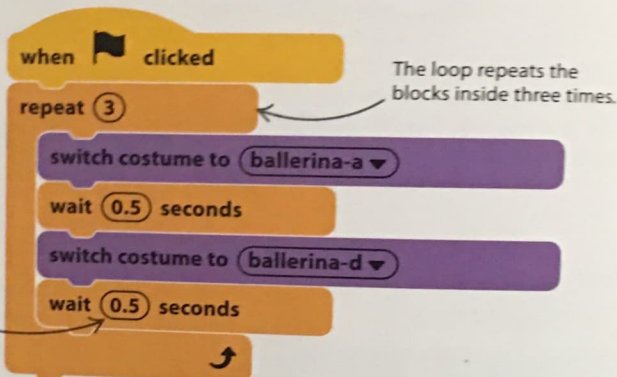


- 27** Using the names of the different costumes, you can design a dance routine for the ballerina, like the one shown here. Each step in the dance will become an instruction block in the code.



Costume ballerina-a then ballerina-d, repeated three times.

- 28** Build this code to create the ballerina's first dance. There's no "forever" loop—instead, the code uses a "repeat" loop that runs a fixed number of times before moving on to the next block. Run the project to see her perform the dance routine.



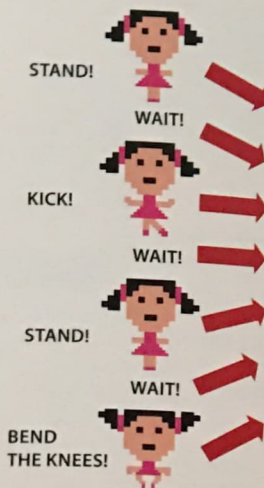
To set the delay time, click on the window and type 0.5.

LINGO

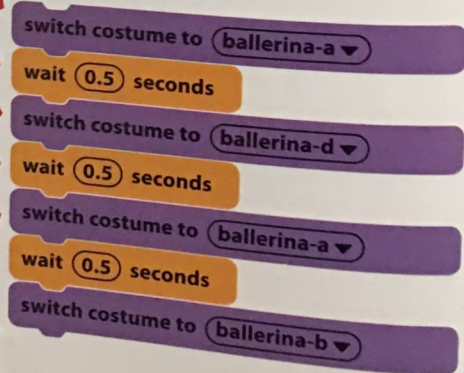
Algorithms

An algorithm is a series of simple, step-by-step instructions that together carry out a particular task. In this project, you converted the ballerina's dance routine (an algorithm) into a program. Every computer program has an algorithm at its heart. Programming is translating the steps of the algorithm into a computer programming language that the computer understands.

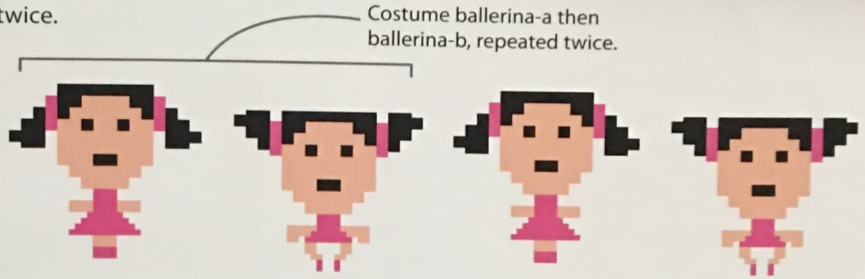
ALGORITHM (Dance steps)



PROGRAM (Dance steps turned into computer programming language)



- 29** Now for the second part of the ballerina's routine. After flexing her leg three times, she'll dip twice.



- 30** Add the blocks shown here to the bottom of the ballerina's code, after the first "repeat" block.

```

when clicked
repeat 3
  switch costume to ballerina-a
  wait 0.5 seconds
  switch costume to ballerina-d
  wait 0.5 seconds

```

↑ Add the second repeat block here.

```

repeat 2
  switch costume to ballerina-a
  wait 0.5 seconds
  switch costume to ballerina-b
  wait 0.5 seconds

```

- 31** Next, click the green flag, and you'll see the ballerina do her full routine. But she'll do the routine only once. To make the dance go on, you can wrap the whole body of the code in a "forever" loop. Loops inside loops!

```

when clicked
forever
  switch costume to ballerina-a
  wait 0.5 seconds
  switch costume to ballerina-d
  wait 0.5 seconds
  repeat 2
    switch costume to ballerina-a
    wait 0.5 seconds
    switch costume to ballerina-b
    wait 0.5 seconds

```

Drag the "forever" loop to the top of the existing code, and the jaws will expand to fit.