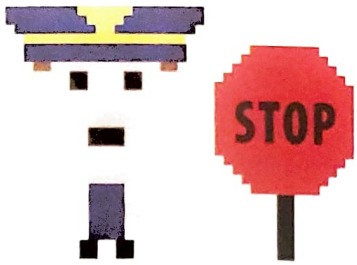
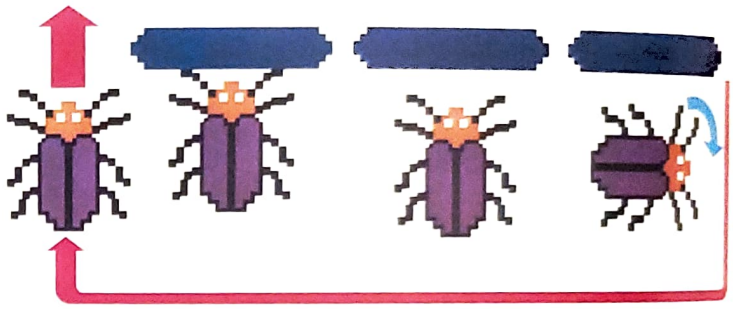
Beetle mania

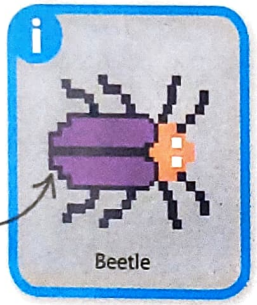
Now for Mimi's main enemies: a small army of evil beetles that scurry around inside the maze. If she bumps into one, the game ends.





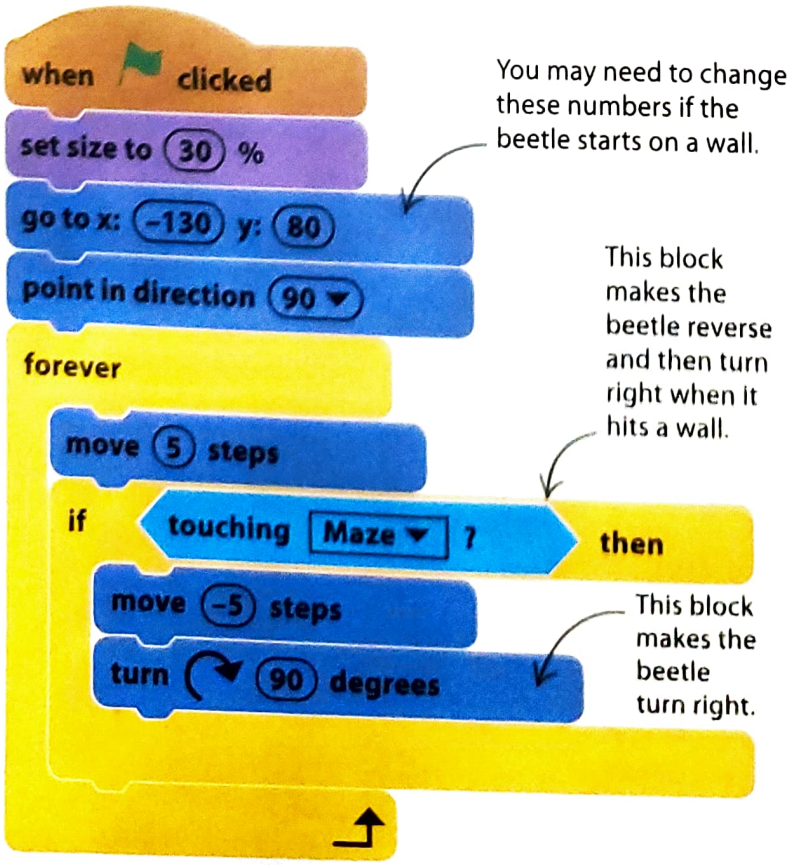
35 To make the beetles move automatically, you need to create a sequence of steps for them to follow. Programmers call this an algorithm. Our algorithm will tell each beetle to move forward until it hits a wall. Then it will stop, turn, and move forward again.

36 Click the "New sprite" symbol and choose the Beetle sprite from the library.



The beetle is now your selected sprite.

37 Add the following script to set the beetle's size, location, and direction. It uses a "forever" loop to move the beetle, and an "if then" block to make it stop and turn right whenever it hits a wall.

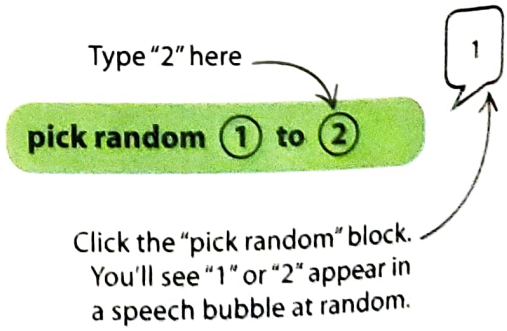


You may need to change these numbers if the beetle starts on a wall.

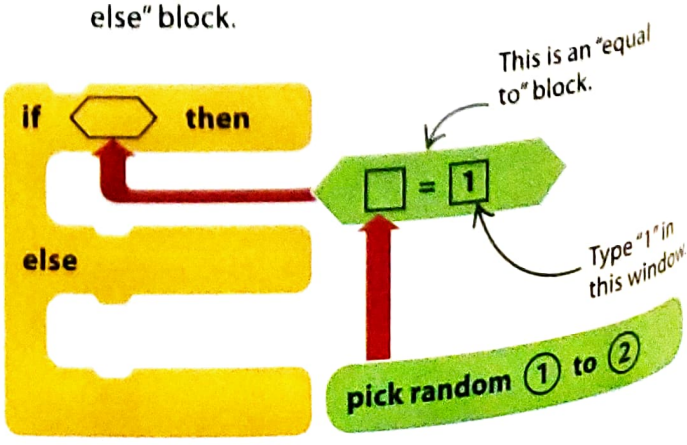
This block makes the beetle reverse and then turn right when it hits a wall.

This block makes the beetle turn right.

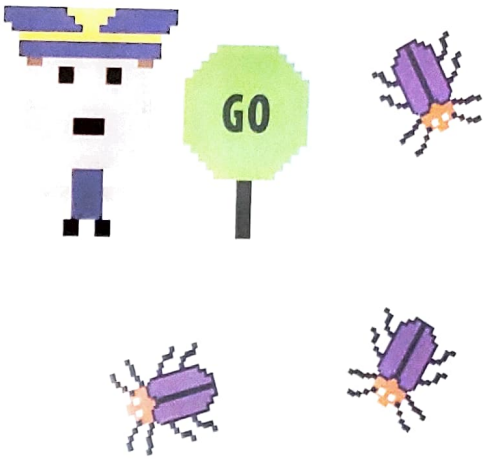
38 Run the script. You might notice a glitch: the beetle always turns right and ends up going around in loops. We need to change the script so that the beetle turns left or right at random. To make a random choice, use a "pick random" block. Drag it to an empty part of the scripts area and set the second number to 2.



39 Now drag the "pick random" block into the first window of an "equal to" block. Then drag the "equal to" block into an "if then else" block.



40 Add two "turn 90 degrees" blocks to make the beetle turn left or right. Read through the script carefully and see if you can figure out how it works.




```
if pick random 1 to 2 = 1 then
    turn ↶ 90 degrees
else
    turn ↷ 90 degrees
```

41 Remove the "turn 90 degrees" block from the beetle's original script and put the "if then else" block in its place, as below. Run the project and watch what happens. Check there's enough room for Mimi to squeeze past the beetle. If not, adjust the maze in the paint editor.

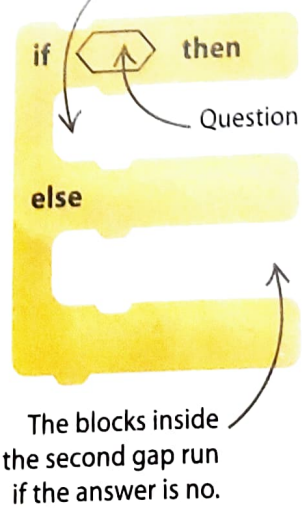
```
when 🚩 clicked
set size to 30 %
go to x: -130 y: 80
point in direction 90
forever
    move 5 steps
    if touching Maze ? then
        move -5 steps
        if pick random 1 to 2 = 1 then
            turn ↶ 90 degrees
        else
            turn ↷ 90 degrees
```

The blocks inside the "if then" block run only when the beetle touches the maze.

EXPERT TIPS

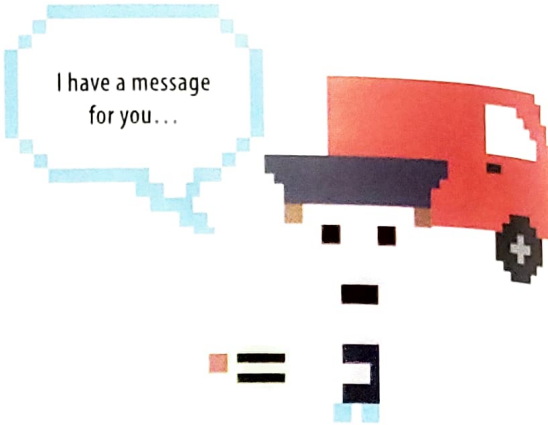
if then else

The "if then else" block is just like an "if then" but with an extra trick. A normal "if then" asks a question and runs the blocks inside only if the answer is yes. The "if then else" block can hold two groups of blocks: one to run if the answer is yes, and another if the answer is no. The words "if", "then", and "else" are used in nearly all computer languages to make decisions between two options.

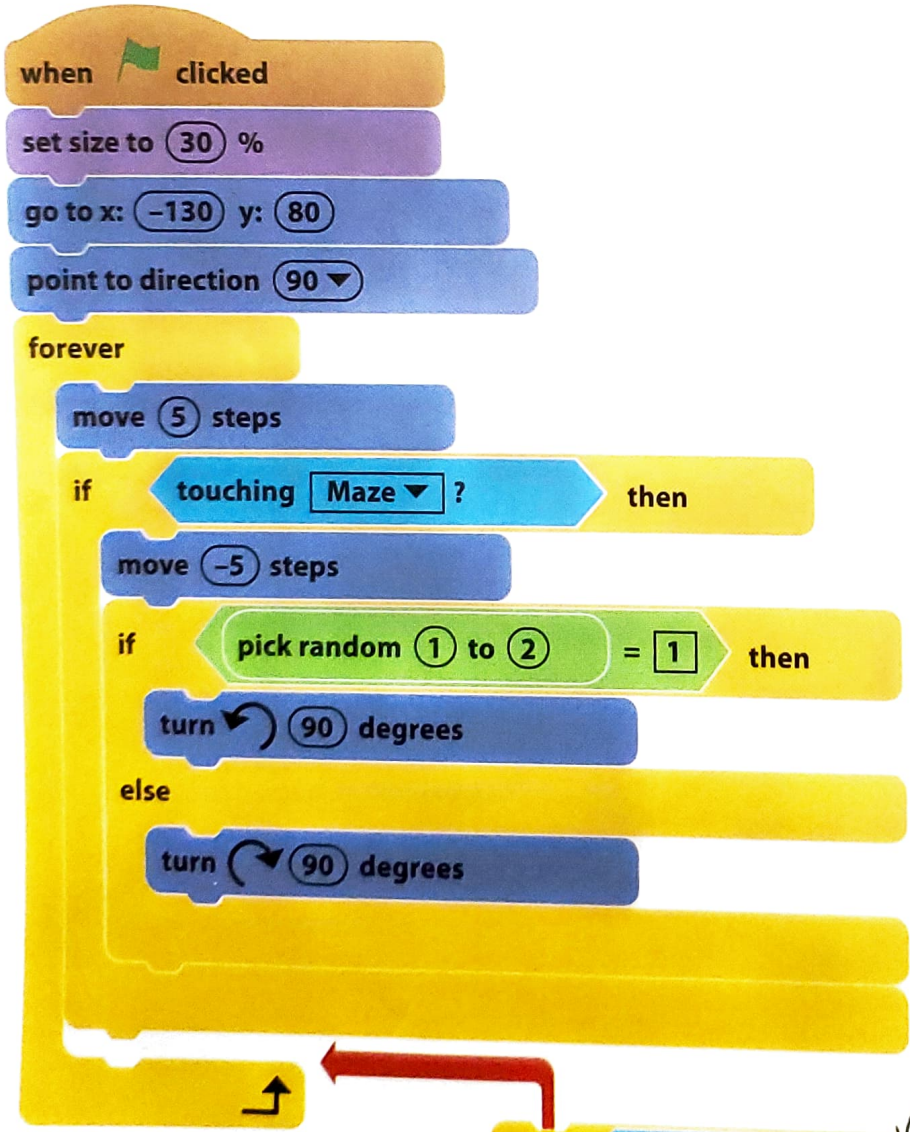


Sending messages

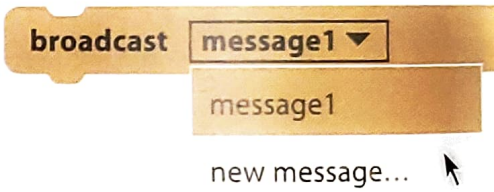
The next step is to make the beetle end the game if Mimi bumps into it. Instead of using another "touching" block in Mimi's script, you can use a message. Scratch lets you send messages between sprites to trigger scripts. The beetle will send a message to Mimi that stops her script.

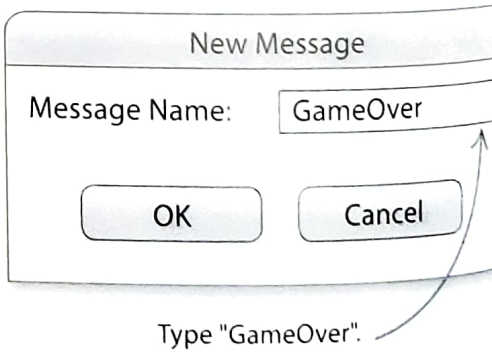


42 Add the "if then" blocks shown below to the beetle's script. The new blocks check whether the beetle is touching Mimi and, if it is, send a message. Select "Mouse1" in the "touching" block.



43 Now give the message a name. Open the menu in the "broadcast" block, choose "new message", and type "GameOver" in the pop-up bo





Type "GameOver".

Select "Mouse1".

This block is found under Events. It sends a message when the beetle hits Mimi.