



About Scratch

[Scratch](#) is a free online platform where youth can create stories, animations, games, and much more. Scratch is a **block-based coding language**, where blocks are used to represent instructions and students “learn to think creatively, reason systematically, and work collaboratively — essential skills for everyone in today’s society” (Scratch, 2019).

To learn how to create a Scratch Teacher Account, see [Scratch Teacher Account FAQ](#).

Abstraction Activity: Dot Returns to Earth Code Overview

```
when green flag clicked
  switch backdrop to Stars
  go to x: -149 y: -74
  point in direction 90
  say Hi, I'm Dot! for 2 seconds
  say Can you get me back to Earth? for 2 seconds
```

This is the starting code for the Scratch Abstraction Activity. Each block is explained in the “Code Explained” section below, along with suggestions for how students could code Dot to get back to Earth. Students do not necessarily need to change this sequence of start-up code, but rather, add blocks to get Dot to move back to Earth.

View the starting Scratch Program here:
<https://scratch.mit.edu/projects/334508472>

Sprites

Dot



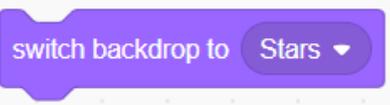
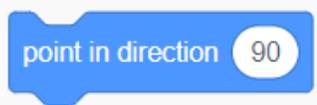
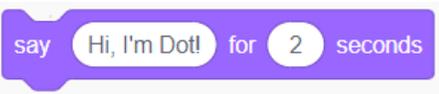
Earth



Code Explained





When the Green Flag is clicked - DOT	
	<p>This is an example of an Event block. When the Green Flag is clicked, the program will begin and the following will happen:</p>
	<p>The backdrop of the stage is set to Stars.</p>
	<p>The Dot Sprite goes to the bottom left corner, with (x,y) coordinates (-149, -74).</p>
	<p>The Dot Sprite points in direction 90° (points right).</p>
	<p>A speech bubble appears for 2 seconds above the Dot Sprite. The text reads "Hi, I'm Dot!"</p>
	<p>A speech bubble appears for 2 seconds above the Dot Sprite. The text reads "Can you get me back to Earth?"</p>
When the Green Flag is clicked - EARTH	
	<p>This is an example of an Event block. When the Green Flag is clicked, the program will begin and the following will happen:</p>
	<p>The Earth Sprite goes to the top right corner, with (x,y) coordinates (173, 97).</p>





Potential Solutions

The image shows five different Scratch code snippets, each with a corresponding explanation in a yellow box:

- Solution 1:** when clicked, switch backdrop to Stars, go to x: -149 y: -74, point in direction 90, say "Hi, I'm Dot!" for 2 seconds, say "Can you get me back to Earth?" for 2 seconds.
- Solution 2:** when this sprite clicked, move 250 steps, change y by 200. Explanation: 1) Code is triggered when the user clicks on the Dot sprite. Dot moves forward 250 steps then up by 200.
- Solution 3:** when space key pressed, go to Earth. Explanation: 2) Code is triggered when the space key is pressed. Dot goes to the Earth sprite.
- Solution 4:** when up arrow key pressed, go to x: 173 y: 97. Explanation: 3) Code is triggered when the up arrow is pressed. Dot goes to x,y location specified.
- Solution 5:** when right arrow key pressed, glide 2 secs to Earth. Explanation: 4) Code is triggered when the right arrow is pressed. Dot glides to the Earth sprite.
- Solution 6:** when down arrow key pressed, glide 2 secs to x: 173 y: 97. Explanation: 5) Code is triggered when the down arrow is pressed. Dot glides to the specified x,y location.

These are 5 potential solutions to code the Dot sprite to return to Earth. They are suggestions only. There are many other ways that students could code Dot successfully!

View the Scratch Program with potential solutions here:

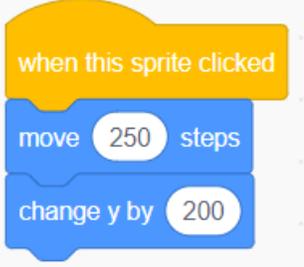
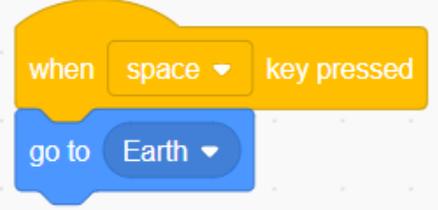
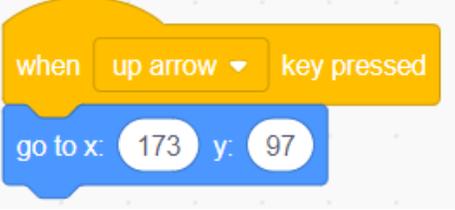
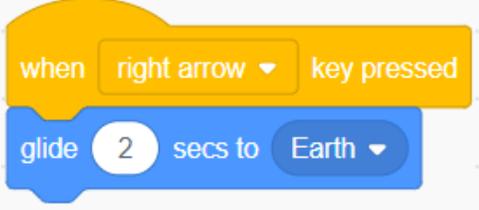
<https://scratch.mit.edu/projects/334785578>





Scratch Abstraction Activity

Teacher

	<p>When the Dot Sprite is clicked, the following will happen:</p> <p>Dot moves forward 250 steps. Dot's y-coordinate increases by 200.</p>
	<p>When the space key is pressed, the following will happen:</p> <p>Dot goes to the location of the Earth sprite.</p>
	<p>When the up arrow key is pressed, the following will happen:</p> <p>Dot goes to the (x,y) location of (173,97).</p>
	<p>When the right arrow key is pressed, the following will happen:</p> <p>Dot glides to the location of the Earth sprite over 2 seconds.</p>





Scratch Abstraction Activity

Teacher

```
when down arrow key pressed
  glide 2 secs to x: 173 y: 97
```

When the **down arrow key** is pressed, the following will happen:

Dot glides to the (x,y) location of (173,97) over 2 seconds.

