# Scratch logo and symbol, meaning, history, PNG

*Background pattern

Description automatically generated***Lunar Lander**

Register/login at <https://scratch.mit.edu>

A picture containing text, person, clipart

Description automatically generated*Use positive and negative speed to control a rocket landing.*

1. Choose a nice planet background to land on.
2. Create a new rocket sprite and adjust the size.
3. **X** marks the landing spot. Add a **Button5** sprite, call it **X**, and put it below the rocket.
4. Create a variable called **speed** to control the rocket.
5. Graphical user interface, application

   Description automatically generatedChange **speed** to a slider (right-click on it).
6. For positive and negative speed **change slider range** to: -10 to 10 (right-click on it).

Graphical user interface, application

Description automatically generated*Positive speed makes it go up, negative speed goes down.*

1. Add a **forever** loop to the rocket to **change y by the speed**.

*Is the rocket touching the* ***X****?   
How can we ignore the flame touching* ***X****?*

1. Diagram, application

   Description automatically generatedInside the loop, **switch costume** to one without a rocket flame.

*Carry on flying if it has* ***not*** *landed.*

1. Add an **if** block, with a **NOT** operator.

*The rocket can only land if it is touching the* ***X******AND*** *the rocket isn’t moving (speed=0).*

1. Shape

   Description automatically generatedAdd an **AND** operator inside **NOT**.
2. Graphical user interface, application

   Description automatically generatedOn one side of the **AND**, test for the rocket **touching X**.
3. On the other side of the **AND**, add a test for **speed=0**.
4. Inside the **if** block, **switch costume** back to one with a flame to show the rocket firing.

*The rocket has landed if it’s touching the landing spot, and the speed isn’t changing. Use a* ***timer*** *to count how long it’s been since the engine last fired.*

1. *Timeline

   Description automatically generated***Reset timer** to 0 every time we switch to a rocket firing costume.
2. When the **timer** reaches **1 second** it’s landed.
3. **Play** a space sound on landing.

*Make the game harder by making the rocket or X smaller.*

***Save*** *your code with a good name.* ***File > Save now***