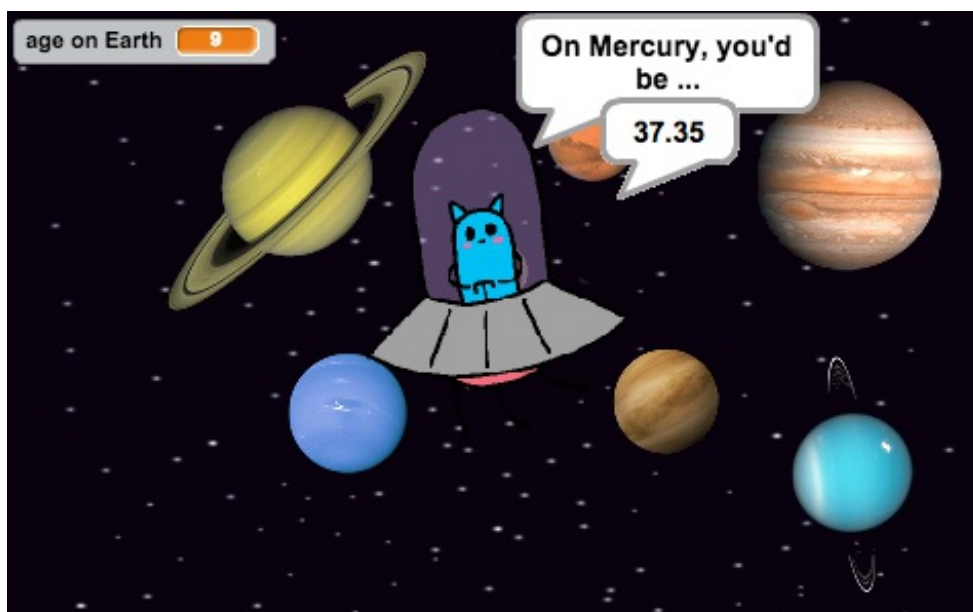


Introduction

British astronaut Tim Peake is going on the Principia mission to the International Space Station which is in orbit around Earth. Tim will be setting up Astro Pi computers running children's code on the Space Station.

You are going to code an alien that will tell you how old you'd be if you lived on another planet.



Step 1: Storing your age

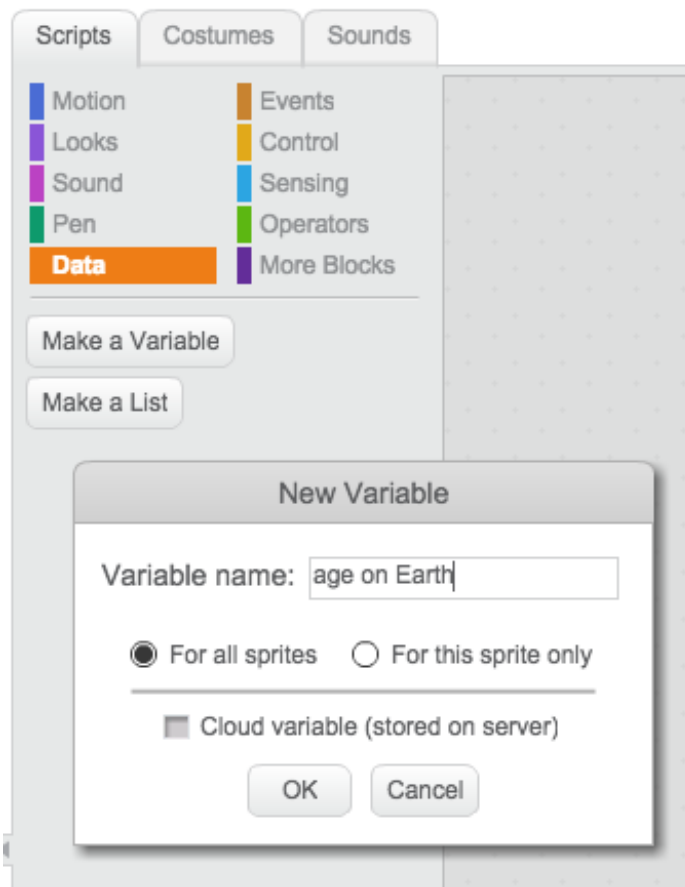
✔ Activity Checklist

- Open the 'Space Age' Scratch project. Your club leader will give you a copy of this project, or you can open it online at jumpto.cc/space-age-resources.

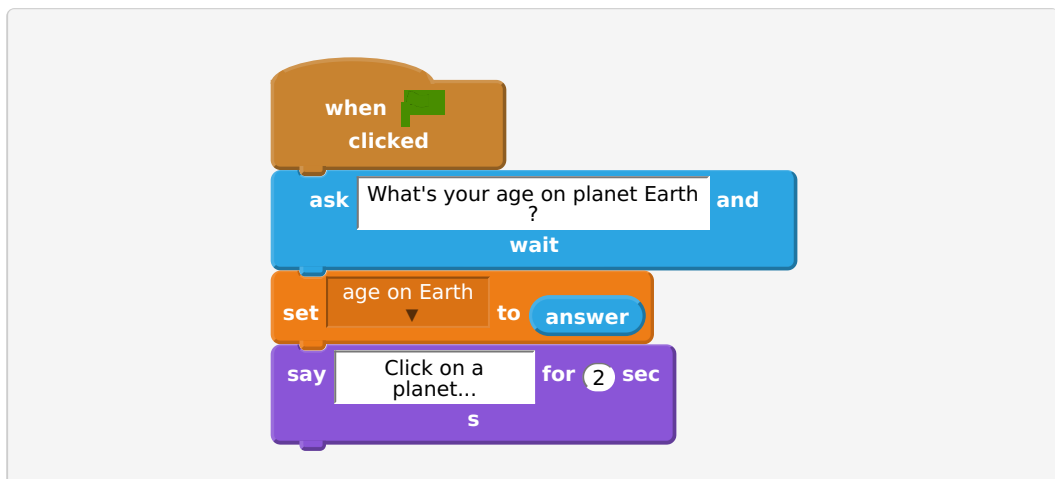
You should see an alien and some planet sprites.

- Let's start by creating a variable to store your age on Earth.

Click **Data** and then click 'Make a Variable'. Call this variable **age on Earth**.



- Now we can ask the user how old they are on Earth, and store their answer. Click on your 'Alien' sprite, and add this code:

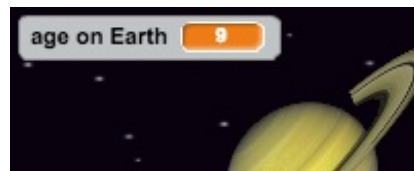


You can find the **answer** block in the **sensing** section.

- Click the green flag to test your project. Enter your age when asked.



Once you have entered your age, you should see that it has been stored in your `age on Earth` variable.



[Save your project](#)

Step 2: Your age on Mercury

Let's calculate how old you'd be if you lived on Mercury.

✔ Activity Checklist

- Click on your **'Mercury'** sprite (the smallest planet) and add this code:

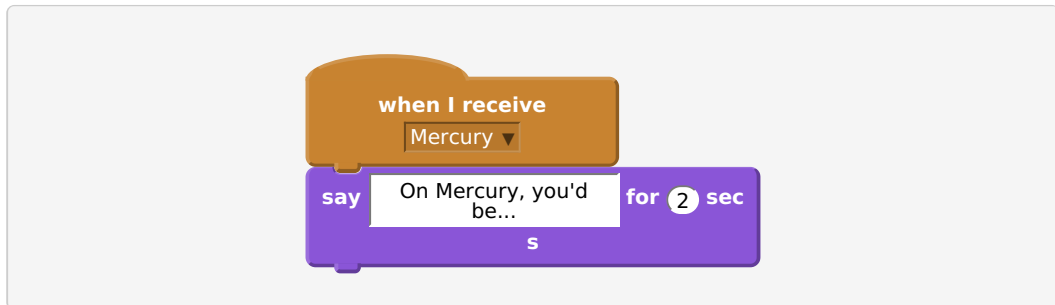


To create the `broadcast` block, click the down arrow on the block and enter the text `'Mercury'`.

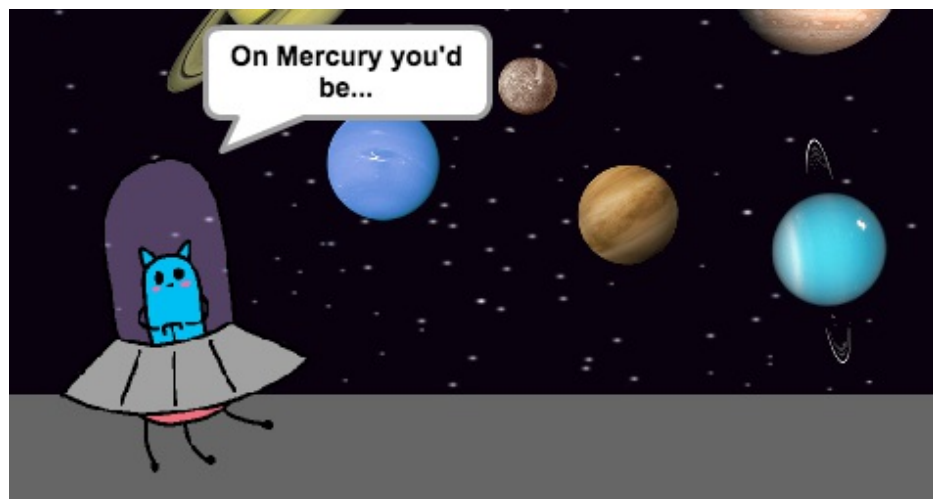


Now, whenever your 'Mercury' sprite is clicked it will broadcast a message to all other sprites.

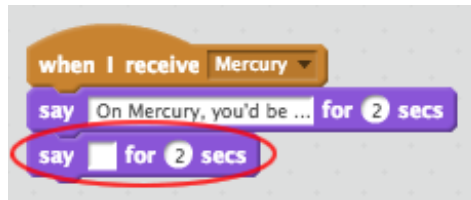
- Click on your '**Alien**' sprite, and add this code so that it responds to the message:



- Now test your project again. Clicking on Mercury should cause your Alien to say `On Mercury, you'd be...`.

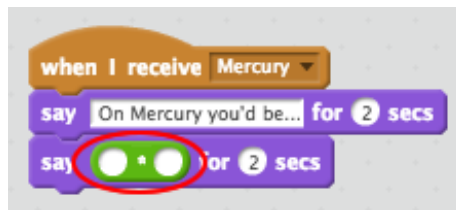


- You also want your alien to say what your age would be on Mercury. To do this, firstly add another `say` block to your alien's Mercury code.

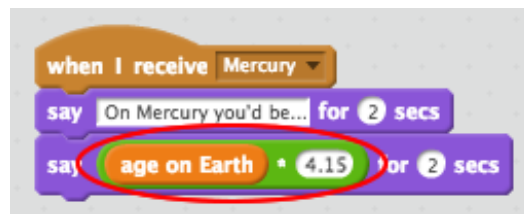


- One year on Earth is the time it takes for the Earth to orbit the sun, which is 365 days. Mercury only takes 88 days to orbit the sun, which means that there are 4.15 Mercury years per Earth year ($365 \div 88 = 4.15$).

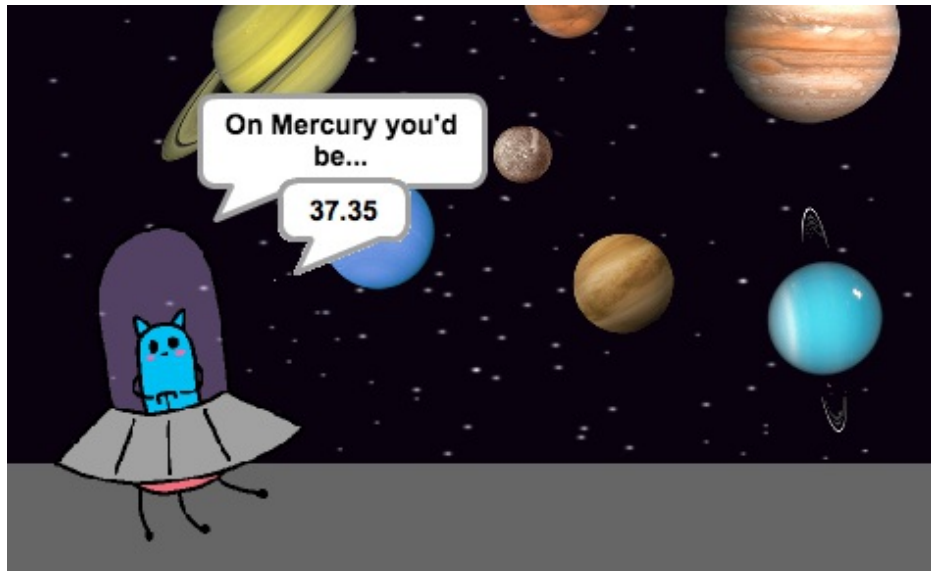
Let's multiply your age on Earth by 4.15 to calculate your age on Mercury. In Scratch, the symbol for multiply is *****. Add a multiply block to your Alien's Mercury code.



- To multiply your **age on Earth** by **4.15**, drag your variable into the first space, and type **4.15** into the second space.



- Test your project by clicking Mercury. Your alien should tell you how old you'd be if you lived on Mercury.



Save your project

Step 3: Travel to Mercury

Code your alien to travel to other planets!

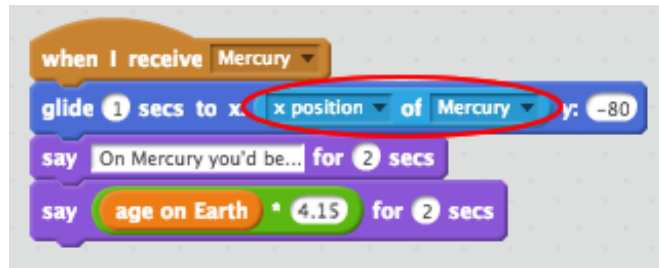
✔ Activity Checklist

- Click your 'Alien' sprite and add a **glide** block just before your **say** block. Change the block so that the alien takes 2 seconds to glide.

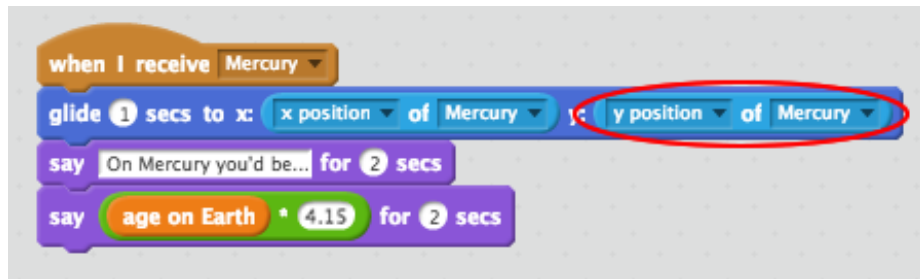


- You want your alien to glide to your 'Mercury' sprite, so you'll need to know the x and y positions of Mercury.

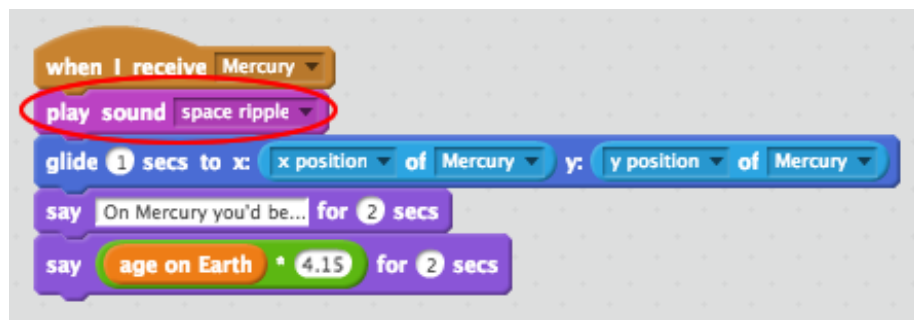
Click the **sensing** tab, and drag an **x position of...** block into your **glide** block. Make sure that 'Mercury' is selected.



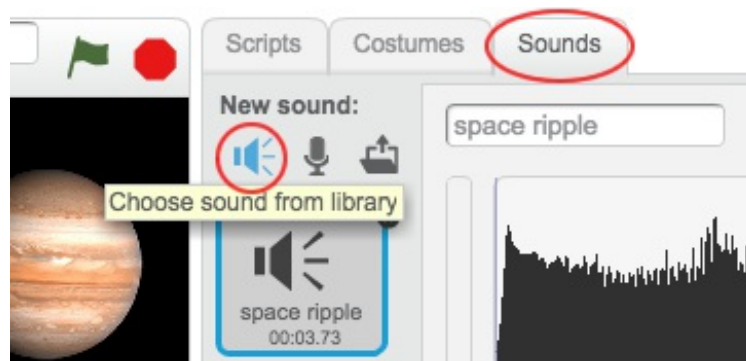
- Do the same for the y position. Make sure that **y position** and **Mercury** are selected.



- You can also play a sound as the alien is moving.



- If you prefer, you can even click the 'Sounds' tab and choose your own sound to play.



- Test your project. Your alien should now travel to Mercury and play a sound when clicked.



[Save your project](#)

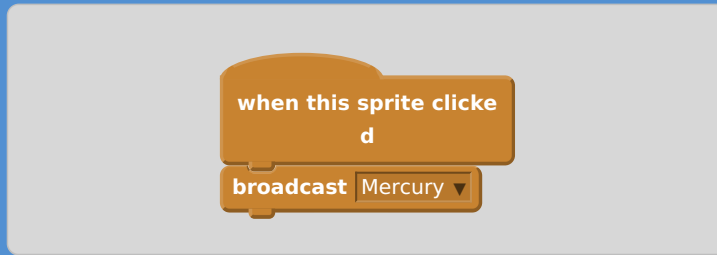
Challenge: Age on other planets

Can you code your alien to travel to other planets, and tell you your age there?

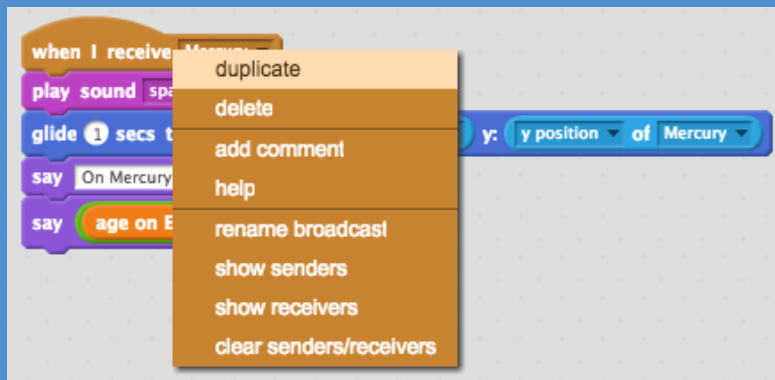
Here are the lengths of a year on each planet, relative to Earth:

Planet	Years per Earth year
Mercury	4.15 Earth years
Venus	1.62 Earth years
Mars	0.53 Earth years
Jupiter	0.08 Earth years
Saturn	0.03 Earth years
Uranus	0.01 Earth years
Neptune	0.006 Earth years

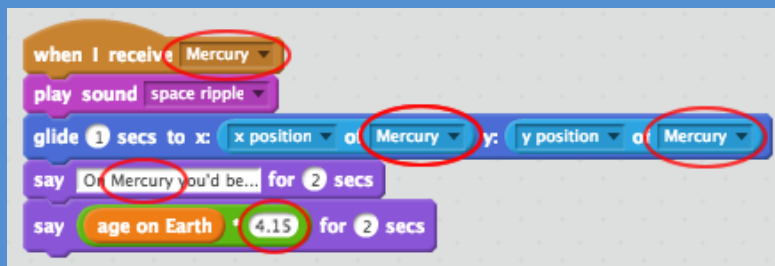
Remember that each planet will need to broadcast a message when it has been clicked.



You can also copy your alien's code to use for your other planets. Right-click on the top of your code and click 'duplicate'.



These are the bits of the duplicated code that you'll need to change:



Save your project

Challenge: Age accuracy

In your project, the user enters their age in years. This isn't very accurate if it's been a while since your birthday.

Can you improve your project so that it asks you how old you are in months, years and days? Remember there are 365 days in a year and (on average) 30 days in a month.

Here are some code blocks that will help you:



[Save your project](#)