

Katherine Johnson

Mathematician – NASA | b. 1918 d. 2020

30-60
minutes

Image source

Starters

5-10
mins

Katherine Johnson had a deep fascination with numbers and mathematics, and her skills enabled others to reach for the stars.

Beginning in 1953, she worked as a human computer at NASA's predecessor, the National Advisory Committee for Aeronautics (NACA). At NASA, Johnson became a vital part of the team that made history by sending humans to the moon. Her journey began with calculating the trajectory for America's first space trip, Alan Shepard's mission in 1961, a pivotal step toward a moon landing. She went on to perform the essential calculations for the first moon landing in 1969. After an incredible career at NASA, which included significant contributions to the space shuttle programme and satellite missions, she retired in 1986.

Watch this [video](#) – what do you think about Katherine's life?

Video Transcript – Summary

A trailblazing mathematician, Katherine Johnson (b. 1918 d. 2020) graduated high school at 14 and college at 18. Joining NASA as one of the first Black female mathematicians, she shattered racial and gender barriers in a male-dominated field. Known as a "human computer," she calculated key trajectories for space missions like Mercury and the moon landing. Katherine insisted on attending mission briefings, defying gender norms and paving the way for inclusion. Her 33 years at NASA highlighted how diversity drives progress. Katherine's story inspired many, proving anyone can excel in STEAM. She cherished letters from children, valuing the chance to spark young minds. Her enduring legacy is one of courage and potential.

Questions

1 **What do you think of Katherine Johnson's career?**

2 **What do you think is the hardest activity to do in space?**



Your next adventure starts here! Meet inspiring role models like Katherine at a [Stemettes Event](#).

30-60
minutes

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Image credit

Main Course



20 mins 1 activity
40 mins 2 activities

Make



Katherine helped send humans to the moon in 1969. In this activity, you will learn about our solar system.

Start with Mercury, the smallest planet, and colour in one square to represent it. Use this [link](#) to find out how many times larger each planet is compared to Mercury.

Then, colour in the correct number of squares to create a scaled model of the solar system.

Ingredients:

- Paper - grid for faster activity
- Internet access
- Calculator
- Pencils



Explore

Did you know that computers don't see pictures like we do? Instead, they use a language of just 1's and 0's to build every image you see on your screen. That's called binary code, and today, you get to step into the shoes of a computer and uncover how it all works.

Your mission is to take 4 sheets of paper and carefully draw a grid of 12x12 squares on each one. These grids will become your digital playground, where you'll learn how computers transform simple data into incredible visuals. Are you up for the challenge? Let's crack the binary code together!

Ingredients:

- Colouring pencils
- 4 pieces of paper

Explore: Steps 1-4



30-60 minutes



Katherine Johnson

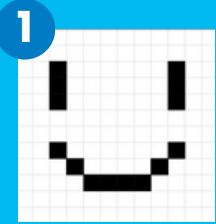
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Main Course

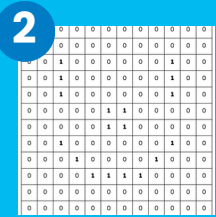


20 mins 1 activity
40 mins 2 activities

Explore: Steps 1 & 2



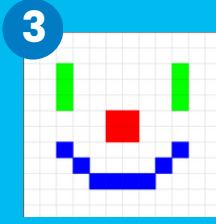
On your first piece of paper, draw a black and white pattern by colouring in each square.



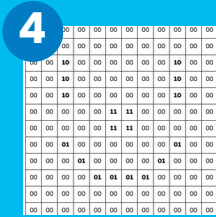
On your second piece of paper, you will recreate the first pattern you made, but by using binary!

Instead of filling in the squares with the colour, fill in the black squares with a '1' and the white/blank squares with a '0'.

Explore: Steps 3 & 4



Take another piece of paper and draw the same pattern, but use blue, green, and red to colour it.



Take the last piece of paper and repeat step 2. Use these numbers for the colours:

- red = 11
- green = 10
- blue = 01
- white/blank = 00

Dessert



5 mins

Show and Tell

Spread the fun and excitement by sharing the challenges you've been exploring with your friends and family.

Share

We would love to see how you're doing with the challenges. Remember to tag us on social media and use the hashtag **#GGSWExStemettes**

