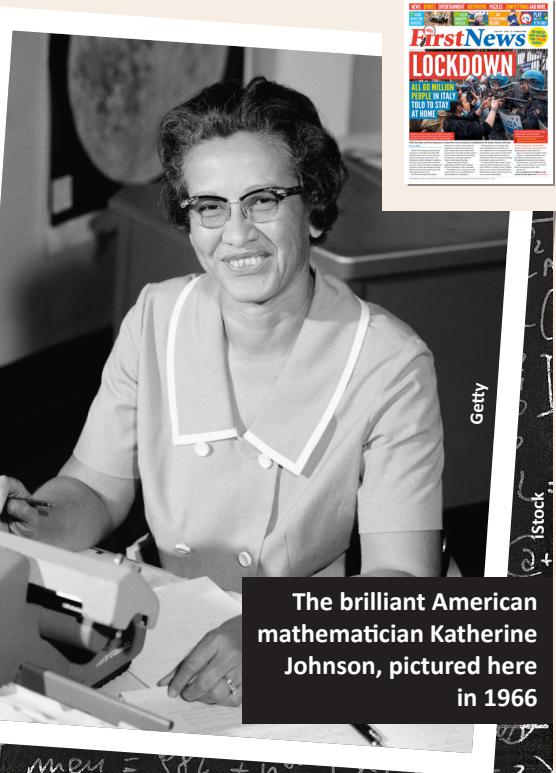


## SCIENCE NEWS

# GOODBYE KATHERINE JOHNSON



The brilliant American mathematician Katherine Johnson, pictured here in 1966

**WITHOUT** Katherine Johnson, humans wouldn't have made it to the moon.

The American mathematician, who died last month aged 101, was a crucial member of the NASA team of experts that got astronauts safely to the moon and back in 1969. She calculated the precise journeys that would let Apollo 11 land on the lunar surface and return to Earth.

Before that historic mission, Johnson was part of another two moments of space history. Her calculations helped plan the flight made by Alan Shepard, the first American in space onboard the Mercury spacecraft in 1961. Then she was a crucial part of the team that plotted John Glenn's mission in the vessel Friendship 7, helping him become the first American to orbit the Earth in 1962.

But despite her amazing work, often done with only a slide rule and pencil, nobody outside NASA knew about Johnson's work for decades. That's because, being a woman and African-American, Johnson and her colleagues weren't given the credit they deserved. It may seem ridiculous and awful today, but black Americans were still forced to use separate schools, colleges and public transport until 1964.

It's only recently that the record has been put right, and these women, known as the hidden figures of the first American space missions, are now celebrated as heroes.

Johnson's story – and that of two other unsung NASA mathematicians – was told in the Oscar-nominated 2016 film *Hidden Figures*.



Johnson joins the cast of *Hidden Figures* at the Oscars



Katherine Johnson receives the Presidential Medal of Freedom from President Obama



A slide rule

## KATHERINE JOHNSON A TIMELINE

**1918** – Johnson is born in West Virginia.

**1930** – School for African-Americans in Johnson's district was only available until the age of 12, so her parents move to an area where she could continue her education.

**1933** – Johnson starts university (West Virginia State College) at the age 15. She leaves with the highest honours in maths and French in 1937, aged only 18.

**1940** – Johnson becomes the first ever black woman to start on a master's course at the University.

**1953** – She gets a job at the National Advisory Committee for Aeronautics (which later turned into NASA).

**1986** – Johnson retires from NASA.

**2015** – President Obama gives Johnson the Presidential Medal of Freedom.

## SCIENCE NEWS

## GLOSSARY

**slide rule** – A ruler that had a sliding middle part and was used to make quick calculations (mostly division and multiplication). They stopped being used after the invention of the calculator

**NASA** – The National Aeronautics and Space Administration. The part of the US government responsible for space exploration

**African-American** – Black Americans whose ancestors came from Africa and were probably brought to the country as slaves



1. Here is a short biography of Katherine Johnson. Fill in the gaps with the correct word.

Katherine Johnson, ( \_\_\_\_\_ - \_\_\_\_\_ ) was a brilliant African-American \_\_\_\_\_. Her \_\_\_\_\_ played a \_\_\_\_\_ part in helping humans land on the moon. She worked for \_\_\_\_\_ for 33 years and died aged \_\_\_\_\_.

101

crucial

2020

calculations

NASA

mathematician

1918

2. How did Katherine's parents help her to succeed?

3. Why didn't the world know about Katherine's amazing work for so long?

4. Put these events in order and fill in the year. Katherine worked on all the space missions in the list.

- First American man to orbit the Earth – \_\_\_\_\_
- American Civil Rights Act (making it illegal to treat people differently because of their colour) – \_\_\_\_\_
- First American man in space – \_\_\_\_\_
- First human to land on the moon – \_\_\_\_\_

5. Why does Katherine's mathematical skill seem particularly impressive to modern readers, from the digital age?

6. Black Americans were segregated (kept separate) from white people until 1964. What **comment** does the journalist make about this?

7. Look at the last paragraph. What does the word '**unsung**' tell you about the mathematicians?

8. How was Katherine finally given the recognition she deserved towards the end of her life? Find two ways.

- 1.
- 2.

9. Can you explain why "Hidden Figures" is a great name for this film? Think carefully about what the words mean.

10. What do you think we can learn from Katherine's life? What message do you take away?

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## TEACHER ANSWERS

**AIM OF THE NEWS COMPREHENSIONS:** News reports are unique non-fiction texts. Being real, they naturally engage students, and with the range of topics that are covered, help to develop pupils' knowledge and understanding of the wider world outside the classroom. The reports are ideal for short, focused comprehension or discussion activities. Along with the opportunity to find fascinating facts and appreciate the opinions of those involved, there is plenty to be inferred and deduced to understand in more depth what is being reported. Like authors, journalists play with language, so news 'stories' are rich nuggets of text to investigate and provide the opportunity for literacy programmes.

**TEACHER ANSWER GUIDE:** The teacher answers are intended to provide a quick reference guide. Suggestions are given for the 'Expected response' or starting point that pupils could give. The 'Development' then gives more in-depth ideas that students can work towards as they develop their reading comprehension skills.

For a list of the reading skills used, please email schools@firstnews.co.uk.

**1. Here is a short biography of Katherine Johnson. Fill in the gaps with the correct word.**

READING SKILL – Summarise information from more than one paragraph  
(NC 2e)

**Expected response**

- Katherine Johnson, (1918 – 2020) was a brilliant African-American **mathematician** Her **calculations** played a **crucial** part in helping humans land on the moon. She worked for **NASA** for 33 years and died aged **101**.

101

crucial

2020

calculations

NASA

mathematician

1918

**2. How did Katherine's parents help her to succeed?**

READING SKILL – Find and explain information  
(NC 2a)

**Expected response**

- They moved house to a new area so that Katherine could carry on with her schooling, because, where they lived, African-American children stopped school at age 12.

**3. Why didn't the world know about Katherine's amazing work for so long?**

READING SKILL – Infer information and justify with evidence  
(NC 2c & 8)

**Expected response**

- Because she was a black woman.

**Development**

- Katherine worked at a time in history when African-Americans were not treated fairly. In fact, there were racist laws in the country until 1964, so she was not spoken about or given credit for her work.

**4. Put these events in order and fill in the year. Katherine worked on all the space missions in the list.**

READING SKILL – Find and explain information  
(NC 2a)

**Expected response**

2 First American man to orbit the Earth – **1962**

3 American Civil Rights Act (making it illegal to treat people differently because of their colour) – **1964**

1 First American man in space – **1961**

4 First human to land on the moon – **1969**

**5. Why does Katherine's mathematical skill seem particularly impressive to modern readers, from the digital age?**

READING SKILL – Find and explain information (NC 2a)  
– Infer information and justify with evidence (NC 2c & 8)

**Expected response**

- She didn't have calculators

**Development**

- Katherine didn't have computers or calculators – almost all her maths was done by hand, with a pencil

**6. Black Americans were segregated (kept separate) from white people until 1964. What comment does the journalist make about this?**

READING SKILL – Find and explain information

(NC 2a)

***Expected response***

- “It may seem ridiculous and awful today”.

**7. Look at the last paragraph. What does the word ‘unsung’ tell you about the mathematicians?**

READING SKILL – Understand vocabulary in context

(NC 2a)

***Expected response***

- They were not talked about or praised.

**8. How was Katherine finally given the recognition she deserved towards the end of her life? Find two ways.**

READING SKILL – Find and explain information

(NC 2a)

***Expected response***

- In 2015 she was given the Presidential Medal of Freedom from President Obama.
- In 2016 a film was made about her life and work.

**9. Can you explain why “Hidden Figures” is a great name for this film? Think carefully about what the words mean.**

READING SKILL – Infer information and justify with evidence

(NC 2c & 8)

***Expected response***

- No-one knew about Katherine and her friends, so they were hidden.

***Development***

- The word ‘figures’ mean numbers and also people, so it’s a good title because it shows Katherine and her friends were people we didn’t know about it. But they were also mathematicians and their work wasn’t known about.

**10. What do you think we can learn from Katherine’s life? What message do you take away?**

READING SKILL – Develop personal ideas from reading news stories

(NC 6, 7 & 8 )

***Children’s own responses***