



A Curriculum Guide to:  
*Reaching for the Moon*  
By Katherine Johnson

**About the Book**

When astronaut John Glenn was about to head into orbit back in 1962, he insisted that research mathematician Katherine Johnson check the calculations before takeoff. When NASA sent manned rockets to the moon, Katherine Johnson plotted their course. Who was this extraordinary woman, born poor in segregated America? How did she earn such high regard at NASA? In her own words, Katherine Johnson tells of her love of learning and her hard-earned success. She sets her life against the backdrop of harsh racism, sexism, and slow shifts in the civil rights movement. Throughout the book, she portrays a warm, determined extended family and strong Black community that keep her going through hard times—propelling her to receive one of the country's greatest honors, the Presidential Medal of Freedom.

## Discussion Questions

The following questions particularly address the following Common Core State Standards: (RI.4-7.1, 2, 3) (RI.4-5.8)

1. Katherine thinks often of her father's words: "You are no better than anyone else, but nobody else is better than you." Why are these words of wisdom so important to her? When in her life does she apply them, and how does it work out?
2. Growing up, Katherine repeated an adage in her Black community: "You have to be twice as good in order to be thought of as half as good." Note examples of this from Katherine's own experiences. Compare the qualifications of the Black "computers" at NASA to those of the White "computers." Why do you think the White women needed fewer credentials? What do you think about the adage and this assessment?
3. Katherine draws an admiring portrait of her parents. What makes them important to her? What are their goals for their children, and do the children reach those goals? Give examples of how her parents sacrificed for their children's futures. How might Katherine's life have turned out differently if she didn't have her parents' expectations, encouragement, and support?
4. Discuss the role of education in Katherine's life and success. Where does she go to school? What kind of student is she? In what ways does she surprise her teachers? How does she give back to her community through education?
5. Name some of Katherine's important teachers and mentors, and explain how they help her. Where does she meet them, and why do they encourage her? In contrast, who are the people she encounters who try to keep her from succeeding? What lessons do you think Katherine learns when facing those who don't believe in her?
6. Why did Whites deny Blacks access to education for so long? What were some of the dangers that enslaved people faced when learning to read? What were other ways that Whites made it hard for Blacks to get an education, both before and after the Civil War?
7. Katherine makes it clear that life can be dangerous due to racial hatred. "Mobs and even communities of angry Whites used terror to enforce the norms of segregation," she writes. Find and discuss examples of terrorism perpetrated by the Klan and others in her life and times. How does it affect Katherine and her community? Think about everyday interactions and comments, intentional or unintentional, that perpetuate prejudices and stereotypes; these are known as microaggressions. Can you find examples of those situations in the book, and Katherine's reactions to them?

8. "I loved numbers and numbers loved me," Katherine writes early on in her autobiography. What do you think she means by that? Why does she love numbers so much? In what way do they love her? How does her love of numbers help her to succeed in life?

9. In discussing numbers, Katherine's father says to her brother, Charles, "Once you understand the background of any idea, you can figure any problem out for yourself." What does he mean by that? How does Katherine apply that advice to mathematics and other problems that she encounters? How does the idea help her to teach math?

10. When Katherine first submits her application to NACA, later NASA, she has the feeling that the White woman who takes it might not pass it on. Nevertheless, she doesn't give up. "Having patience was part of Negro life," she explains. How else might her experiences growing up in a segregated community have impacted the way she handles situations? Give examples from the book.

11. Describe Katherine's time at NASA as portrayed in the book. What was her role in the space program? What are some of her contributions? What resistance did she face? How did she feel about her work there?

12. In chapter five, Katherine describes a situation in which she finds a mistake in a White male engineer's math calculations. Why does she think pointing out the mistake might cause her trouble? "I'd crossed a social line, and everyone froze. I could almost hear some of the engineers thinking, *Who is she, a Colored woman, to question a White male engineer?*" Discuss her description of the incident and explain the outcome. Why do you think the engineers reacted that way?

13. Katherine married twice: her first marriage was to Jimmie Goble, who died in 1956, and her second is to Jim Johnson. How does she meet each man? What role do they each play in her life? Do they support Katherine's career? Describe the men's personalities as conveyed by the autobiography.

14. After her first husband dies, Katherine writes, "Bad things happen, and then life goes on." Do you think this is a good philosophy to follow? Explain your answer. Discuss her husband's death and how she copes with it. Give other examples of bad things that happen in her life before and after his death, and how she deals with them. Do you think any of these bad things change the way she views the world?

15. Discuss some of the personal characteristics that make Katherine so successful in her field, citing specific examples. Compare and contrast these with the traits that help Katherine face difficulties in her personal life as well as the hardships of life as a black woman.

16. Katherine notes that words used to describe race, such as African American, have changed over the years. Why do you think that is? Talk about the different words she uses throughout the book, and which ones are no longer considered acceptable. Why do you think she uses an initial capital letter for *White* as well as *Black* and *Colored*?

### **Extension Activities**

#### **1. Be Her Biographer**

Katherine's story is one that every child should know. Have your students work in pairs to write and illustrate a short picture book biography about Katherine Johnson to read to younger children. Before they start, share some picture book biographies to provide a model, including those that feature Katherine Johnson. Discuss different approaches such as focusing on Katherine's childhood, her education, or her work at NASA—or briefly covering all of those topics. If possible, have the students read their biographies to students in a younger grade.

#### **2. A Proud Tradition**

Katherine attended West Virginia State College, one of dozens of historically Black colleges and universities (HBCU) in the US. Provide students with a list of HBCUs, and ask each of them to choose one to research. They should learn the history of the college as well as facts about it today, and prepare a poster with their findings. You can find a list of HBCUs here: <https://hbculifestyle.com/list-of-hbcu-schools/>. Have students also mark their chosen school on a US map in your classroom.

#### **3. The Times of Her Life**

*Reaching for the Moon* mentions many important national and world events, providing a context for the author's life story. Have each student create a timeline that marks ten important episodes in Katherine's personal or professional life. They should then add ten historic events that took place around the same time period as the episodes. Post the timelines in your classroom and have students compare their choices.

#### **4. Digging Deeper**

Once the timelines are posted, have students choose a national or world event, or an important aspect of Black history mentioned in the autobiography as a research topic. They should find

out more about the topic using digital and print sources with the goal of creating a multimedia presentation for the class that includes words, images, and possibly video clips and music.

### **5. Two Views of Katherine Johnson**

As a class, watch this four-and-a-half-minute video that features Katherine talking about her life and work: <https://www.makers.com/profiles/591f267c6c3f646439558630>. Hold a discussion in which students compare and contrast the autobiography with the video. What parts overlap? Does the video offer any information not in the book? How much more does the book cover? What are the advantages of each medium? Another possibility is to preview the movie, *Hidden Figures*; if you consider it suitable for your class, you can watch it together and compare the autobiography and movie, noting the similarities and differences.

*Guide written by Kathleen Odean, a youth librarian for seventeen years, who chaired the 2002 Newbery Award Committee. She now gives all-day workshops on new books for children and teens. She tweets at @kathleenodean.*

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