Discussion Question Answers

“When Computers Wore Skirts:” Katherine Johnson, Christine Darden, and the “West Computers”

1. **Compare Katherine Johnson’s and Christine Darden’s life and experience at NASA. How were their experiences similar? How were they different?**
   - Both were hired for a separated pool of women computers rather than higher-status engineers.
   - Johnson was hired for a segregated all-black computer pool, for Darden, the computer pool was all women, but it was mixed race.
   - Johnson calculated and programmed flight paths from known technical specifications. Darden designed experiments and did research to come up with new technologies and physical laws.
   - Johnson never became an administrator, but Darden became technical leader of NASA’s Sonic Boom Research Group and director of the Program Management Office.

2. **When did electronic computers start being introduced into NASA? What were they like (appearance, size, etc.) and how did people use them?**
   - Early 1960s (1962).
   - Computers were the size or larger than refrigerators. NASA would have whole rooms full of large computers.
   - Computers were all controlled by punch cards. People like Katherine Johnson had to program the computers by putting the instructions on a card.

3. **How were Katherine Johnson and Christine Darden recruited to work at NASA? How did they end up leaving the “computer pool”?**
   - Katherine Johnson was told by her relatives that the Langley Research Center had just opened up the “computer pool” to black women. She applied and was accepted to the segregated “West Computers” group.
   - Katherine Johnson was loaned out to the Flight Mechanics branch for temporary work. She did such a good job there, the engineering head decided not to return her to the computer pool and she became a part of the flight mechanics (eventually the Spacecraft Controls) branch.
   - Katherine Johnson specifically asked to go to mission briefings (which women had never gone to before), and so became the first women in these briefings.
   - Christine Darden went to her college’s recruiting office, and they told her she had just missed NASA’s recruitment officers. However, she submitted her application and became part of the computer pool because of her math background.
   - Christine Darden asked her supervisor why women were always hired as computers or data analysts while men were hired as engineers. When he couldn’t answer her, she asked to do her own research and became an engineer herself.

4. **How was the computer pool organized? How did the computers receive assignments? How did this change over time?**
   - There was a pool of white women computers and a segregated pool of black women computers. Both computer pools would hand-run calculations given to them by male engineers.
- The Engineering section would either come to the head of the “computers” and tell them what they wanted done, or they would ask for one of the computers to come work on a specific engineering project.
- First, female computers started used mechanical calculators to assist them in their calculations. Then, they started programming electronic computers to run their calculations. For a while, they would check the electronic computers calculations by hand.
- [Female] Computers transitioned to programming electronic computers. If the [female] computer had a math degree they were taught programming so that they could work on the electronic computers.

5. **What major historical events led to the first African American women being able to work at NASA?**
- World War II led to a shortage of white people to work in defense industries, so the president prohibited race-based discrimination in hiring for defense industries.
- The Cold War meant that the United States invested a lot of money into military and technological research. The government needed people to do the calculations for weapons and flight research. Women could be paid less than men, so they were preferred as human calculators.
- The Russians (Soviet Union) launched the first satellite, Sputnik, which led to the creation of NASA and a need for more scientists and engineers.
- Even before the Civil Rights movement was in full swing, the federal government needed scientific expertise, and used black college graduates to increase its scientific manpower.

6. **What are some of the larger changes that were happening in African American history between when Katherine Johnson started as a computer at NASA in the 1940s and when Christine Darden started in the late-1960s? How would these changes have affected their experiences at NASA?**
- World War II had led to a “Great Migration” of black Americans to the North, where segregation wasn’t legally enforced, but there was still “Jim Crow” laws in Southern states like Virginia. African Americans began to protest against these discriminatory laws.
- The Civil Rights movement was successful in ending segregation first in the federal government, and later in individual states. So Katherine Johnson started in a pool of only black women (the West Computers), but Christine Darden was in a mixed race pool of women.

7. **What do you think it would have been like for Johnson and Darden as African American women to work in a predominantly white and male environment as engineers?**
Students will have many of there own ideas to add, but some specifics Johnson and Darden pointed out:
- Although they were unusual, Johnson said she didn’t let being the only black women affect her. She “just did her job, and did it well.” Johnson remembers her father telling her, “You’re no better than anyone else, and no one else is better than you.”
- Darden participated in Civil Rights marches and sit-ins in her hometown.
- Christine Darden had to ask why women were treated differently than men (“computers” instead of “engineers”), and had to fight for the same priviledges men automatically received.