

Grace Hopper

*"The most dangerous phrase in the language is,
"We've always done it this way."*

Grace Hopper was a computer scientist, inventor of the first compiler, and a U.S. Naval officer. She's also credited with coining the term "bug" and "de-bug" as related to computer errors. Learn more about Grace Hopper in this monthly patch.

Complete 3-Daisy, 4-Brownie, 5-Junior, 6-Cadette,
and 7-Senior/Ambassador steps to earn your patch.

All monthly patches are custom designed patches. Once we get the final number of patches after the 15th of each month, we place an order. Patches take about a month to create and then we mail them to you. You will get a confirmation email once the patches are headed your way.

Order patch on-line by **April 15, 2020** at www.getyourgirlpower.org

Discover

1. Over Grace's lifetime she had many accomplishments; some being the first woman to receive the National Medal of Technology, becoming an U.S. Naval officer and helping to make major advancements in computer science; however she says one of the most important things she has accomplished, is training young people in computer science. Grace would always encourage them to give things a try and back them up even if their idea failed. She said she would keep track of these people as they moved along in their careers and would call them up and remind them to take chances. Has anyone ever challenged you to take a chance? What is something you have stepped out of your comfort zone to do? If there isn't something, what is something you would like to take a chance on in the future? Discuss with your troop.

2. When the United States entered World War II, Grace wanted to help serve her country but unfortunately at the age of 36 they said she was too old, didn't weigh enough and was female, so they wouldn't let her join. However, eventually the Navy accepted women to serve in the military, so more men could go overseas, and Grace got her opportunity. She joined the WAVES (Women Accepted for Voluntary Emergency Services) and graduated at the top of her class. Learn more about women in military groups, such as the WAVES.
3. Grace became the first woman to earn a Ph.D. in mathematics from Yale University in 1934. Do you like math? Would you ever want to become a mathematician? Discuss with your troop what you like or dislike about math then discuss what someone with a degree in mathematics could do for a career.

Connect

4. From a very young age Grace had always been good at explaining difficult concepts in math and physics. Can you think of something that you are especially good at? What is a special talent you have? What is something that comes easier to you than most people? It can be something like a subject in school, making bracelets or something more abstract like, maybe you are really good at making friends! Discuss with your troop each of your unique talents and discover what makes each of you special.
5. Once Grace took apart seven different alarm clocks and then put them back together just to see how they worked. Find a project with your troop or ask your parents if there is something you could take apart to see the inner workings of. Bonus points if you are able to deconstruct it and put it back together. You learn so much when you have the opportunity to see how something works from start to finish. Pick a project and discuss with your troop.

6. Grace was an advocate of developing a new computer program language that would use the English language; she was quickly told that computers can't do this and was discouraged to try. She thought it would be easier for people that were computer data processors to write their program in English and the computer would translate it into machine code. Grace was right; it was easier and this was eventually put into practice. Click the link below to try your hand at coding your initials. **You will need:** different colored beads and string to make binary code bracelets.

https://chandra.harvard.edu/resources/handouts/lithos/binary_bracelets.pdf

7. On what would have been Grace's 107th birthday, she was honored with a Google Doodle. Look up Grace's Google Doodle. Design your own Google Doodle for Grace or any of the past monthly patch women we have talked about his year. Google's theme for this year is "I Show Kindness By...". Make a Google Doodle and submit it to Google. Wouldn't it be cool to have a doodle for everyone to see from a Girl Scout troop in Central Illinois!

Take Action

8. Did you know there is a Grace Hopper celebration? It is the largest gathering of women technologists in the world. Have your own Grace Hopper celebration. Do a new technology-type activity with your troop to commemorate your celebration.
9. Grace was instrumental in the advances for women in the two key elements of STEM-technology and math. Take some time to talk with

women in STEM that you know. Depending on what field the women you speak with are in, you might have more specific questions. Below are three STEM questions to get you started for an interesting and productive conversation.

- a. What are some stereotypes or challenges you have faced being a woman in STEM?
 - b. Have you always been interested in STEM? If not, how did you end up in this career path?
 - c. How do you think STEM can help change the world?
10. Dive into coding! There are so many coding apps and resources out there that you can play with. Some are Grasshopper, Vidcode, Codespark, and Tynker. Don't be intimidated, STEM is all about trying things out. Don't be afraid to fail and try again.