

Building from Home: week 11—REMODEL

Mr. Lee's Technology class—App Creators, Computer Science for I&M, Design & Modeling, Automation & Robotics

Name:	Date:	Class period:
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Introduction: REMODEL

In our class we are often challenged to come up with a solution to a problem that may not be very well defined, or very well understood. Our current situation is a lot like this. As we remodel our idea of school, think about how you've grown since we stopped walking into Shaw every morning. What do you need in order to be successful with online school? Do you need materials, time away from annoying brothers or sisters, or better internet? What do you think about coming back to Shaw?

A literal remodeling is taking place right now, just outside our school. The parking lot I parked in every morning for 13 years is gone. Last fall it was torn up, flattened, and packed down to create a level surface to build on. Right after we stopped school, about six weeks ago, workers came back and started digging trenches. They made big concrete forms in the ground, putting straight lines in the dirt. The foundation of the gym is done. Last week masons started building the walls of the new gym. It's fascinating. It's new. It's a remodel.

Remember: you can choose to do PLTW activities for App Creators or CSIM online. See the instructions in Teams. You can do these activity pages as work to keep you engaged in problem solving. Remember to read carefully. Whatever you do, it will improve your grade.

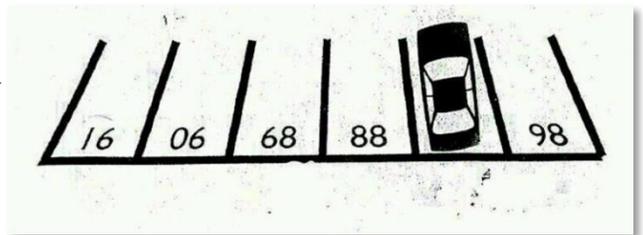
DIRECTIONS: Pick one of these activities to start with. Then do another one. Do a third, then more if you have time.

Activity 1: MAKE SOMETHING (building challenge)

1. This week's challenge: the Perfect Paper Airplane.
2. Get materials. You should start with a design you know how to make. Then remodel it using tape or paperclips or staples or _____ to make it fly better/higher/farther. Try using a different kind of paper to see if that helps.
3. Research. Find a design you haven't made before and test that against your best design. Which is better?
4. Post a picture of what you do in the WORK section of the student conversation in Teams.

Activity 2: SOLVE SOMETHING (brain work)

1. **Problem** of the week: What is the number of the parking space containing the car? How do you know? →
2. **Try:** [The Virus Riddle](#) at Ted Ed—watch the video, then answer the questions in the "Discuss" section.



Activity 3: READ SOMETHING (and then summarize)

1. Find a magazine—any article, even online—then read it on your own or to someone else. Then write a summary.
2. Or: read and summarize the article on the back—make sure to include the following in your summary:

Who is the article about	What is the article about	When did it take place
Where is the action happening	Why did this event happen	How was it completed
Problem or challenge in story	Result (success or failure)	Lesson that was learned

Activity 4: DO SOMETHING (for this class)

1. PLTW. You can now do App Creators (MIT App Inventor) or Computer Science for Innovators and Makers (MS Makecode) online. Send me screenshots of code you finish. This week, focus on:
 - a. App Creators: finishing up 1.7 and starting 1.8.
 - b. Computer Science for Innovators and Makers: finishing up 2.3 and starting 2.4.
2. Email me. Let me know what you're working on, any struggles you are having, or materials you may need. I can have Ms. Maddy check out micro:bits or other materials to you during lunch pickup.

NASA to name newest space telescope for pioneering female astronomer

Wed., May 20, 2020 By Joe Achenback and Sarah Kaplan WA Post

NASA will name its newest space telescope for pioneering astronomer Nancy Grace Roman – marking the first time in the agency’s 62-year history that one of its major billion-dollar programs has been named for a woman.

Roman, who overcame obstacles that women faced in her male-dominated field and at NASA to become the agency’s first female executive and its first chief astronomer, is a “fitting” eponym for the project, astronomer Heidi Hammel said Wednesday. Her championing of space-based observatories gave her the nickname “Mother of Hubble.”

With the new telescope, NASA is “taking her child and making it even more powerful,” Hammel said. “It’s widening the Hubble vision.”

Until Wednesday, the Roman Space Telescope had been named WFIRST, for Wide Field Infrared Survey Telescope. Still under development at NASA’s Goddard Spaceflight Center in Greenbelt, Maryland, the telescope, identical in scale to the Hubble Space Telescope, will study dark matter, dark energy, distant planets and the evolution of the universe. Its launch target is the mid-2020s.

In a statement released by the agency, former Sen. Barbara Mikulski, D-Md., a champion of the Hubble and the Roman, said the decision is fitting as the nation celebrates the 100th anniversary of women’s suffrage: “It recognizes the incredible achievements of women in science and moves us even closer to no more hidden figures and no more hidden galaxies.”

Roman, who died in December 2018 at 93, joined NASA months after its founding. She had a doctorate in astronomy, earned nearly a decade earlier at the University of Chicago. Even after leaving the agency in 1979, she remained an advocate for the Hubble.

“I was told from the beginning that women could not be scientists,” she said in an interview late in life.

Julie McEnery, deputy project scientist for the new telescope, said Roman was “somebody I really admired, and it makes me excited and proud to be associated with a mission that’s named after her. This is something that I’m going to enjoy day after day after day as the mission continues.”

As NASA’s first chief astronomer, Roman oversaw the creation of the agency’s earliest orbiting observatories. “Looking through the atmosphere is like looking through a piece of old stained glass,” she wrote in the Annual Review of Astronomy and Astrophysics. She knew an observatory in the sky would allow scientists to see objects farther and fainter than they ever had before.

In the 1970s, Roman set up a steering group for what would become the Hubble telescope. She spent untold hours writing testimony for Congress and convincing budget offices of the project’s importance. With its 7.9-foot mirror and \$4.5 billion price, the Hubble was far bigger and more costly than any space telescope ever launched. Skeptics wondered whether such an instrument was possible – and even if it was, would it be worth the cost?

“You simply had to be solid in your vision and persistent, and [Roman] had those qualities,” Hammel said.

The agency has struggled to escape the gravity well of a storied history dominated by white males. Dan Goldin, NASA administrator in the 1990s, famously lamented that its culture was “too stale, male and pale.” The agency that put 12 white males on the moon had historically consigned women and racial minorities to second-tier roles.

NASA’s most ambitious effort today is a plan to put astronauts back on the moon by 2024. That program is named Artemis, after the Greek goddess who was the twin sister of Apollo.



Last year, a telescope in Chile operated by the Association of Universities for

Nancy Grace Roman, NASA’s first chief astronomer, explains the Advanced Orbiting Solar Observatory to astronaut Buzz Aldrin in 1965. (NASA / Handout)

Research in Astronomy, and initially called the Large Synoptic Survey Telescope, was renamed for Vera Rubin. She also was a trailblazing astronomer, renowned for her research showing that galaxies were certain to contain dark matter that cannot be detected through direct observation.

If space scientists have neglected women in the naming of spacecraft, they have at times been downright hostile to women seeking to join their ranks. When NASA was established in 1958, many astronomy programs did not admit women. Observatories had no women’s restrooms. Rubin famously made her own lavatory at Palomar Observatory by pasting a paper cutout of a skirt to a bathroom door. Women were barred from research presentations and scholarly clubs.

As recently as 2018, a sweeping report by the National Academies of Sciences, Engineering and Medicine found that half of women in science had experienced harassment. The problem is especially bad for women of color; a 2017 survey of female space researchers found that 40% of nonwhite respondents had felt unsafe in their workplaces due to racism and sexism.

In an essay for the journal *Science*, Roman wrote of the hurdles she faced during her early career: A high school guidance counselor scoffed at her request to take advanced algebra, asking, “What lady would want to take mathematics instead of Latin?” And the physics department chairman at Swarthmore College, where she earned her bachelor’s degree, said he usually tried to talk women out of his program but conceded that she “might” make it.

“But I am glad I ignored the many people who told me that I could not be an astronomer,” Roman wrote. “I have had a wonderful career in a field that I love.”