

Grades: 4-5

SciGirls, “Space Squad”

This series showcases bright, curious real girls putting science and engineering to work as they answer questions and make unexpected discoveries in the world around them. In this episode Texas SciGirls Katya, Mariana, Angela and Eloyda are over the moon! Teaming up with NASA materials engineers, they create their own water bottle insulators, bringing space science to life on Earth.

After watching this episode, choose from the following questions and/or tasks to extend your learning

Question Box 1

About:

- Tell why each girl is interested in space.
- Why do scientists test and design materials for outer space?
- What do the girls learn about in the textiles lab?
- What is meant by “there is no magic material”?
- Describe the materials used in a space suit and tell the function of each.
- What are the two most important things to consider when making space suits?

Research:

- What research do the girls conduct? How does examining images help?
- Why is astronaut feedback important?

Test Materials:

- What do the girls want to make protective cover for? Why?
- What type of protection do the girls want for their water bottles and why?
- What materials do they consider? Provide a reason why each material is selected.

Build and Test:

- How do the girls test and record the results of each material?
- After reviewing the results of their testing, what do they decide is the best material to use?
- How do they build their “spacesuits” for their water bottles?
- Describe the final project. What does it look like? Is it effective?

Question Box 2

- Why do you think people have the desire to explore the unknown of deep water and space that protective wear necessary?
- What were some of the most interesting parts to this program? Explain.
- What were some of your most powerful learning moments and what made them so? Explain.

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- What surprised you in the program, and why?
- What's the most important thing you learned from the TV show? Why do you think so?

Box 3 (Tasks)

- Compare and contrast the qualities of a [spacesuit](#) and a [wetsuit](#).
- Write an inequality that shows the possible widths of a wetsuit. How might the weight of the wetsuits vary if we are only talking about full body wetsuits?
- How does the weight of a spacesuit, 310 pounds, compare with the possible weights of wetsuits?
- Describe what makes a good insulator.
- How did the SciGirls use engineering to build their water bottle insulator?

Box 4 (Enrichment)

- Research History of the Space Suit: [History of Space Suits](#)
- Tell the purpose for each and evaluate its effectiveness.
- Explain the difference between how a bottle insulator would work on Earth compared to space.
- How are bottle insulators and space suits similar?

Box 5 (Extend/Real-Life)

- Select Activity 1 or 2:
 - Explore [Inside the Space Suit of the Future](#). Design your own spacesuit using what you've learned from reading about wetsuits and space suits. Develop and test your own "spacesuit" for a water bottle just like the SciGirls did. Tell about the materials you selected and how you tested each.
 - Draw a model of your own bottle insulator and/or build a bottle insulator with materials you have around your house.