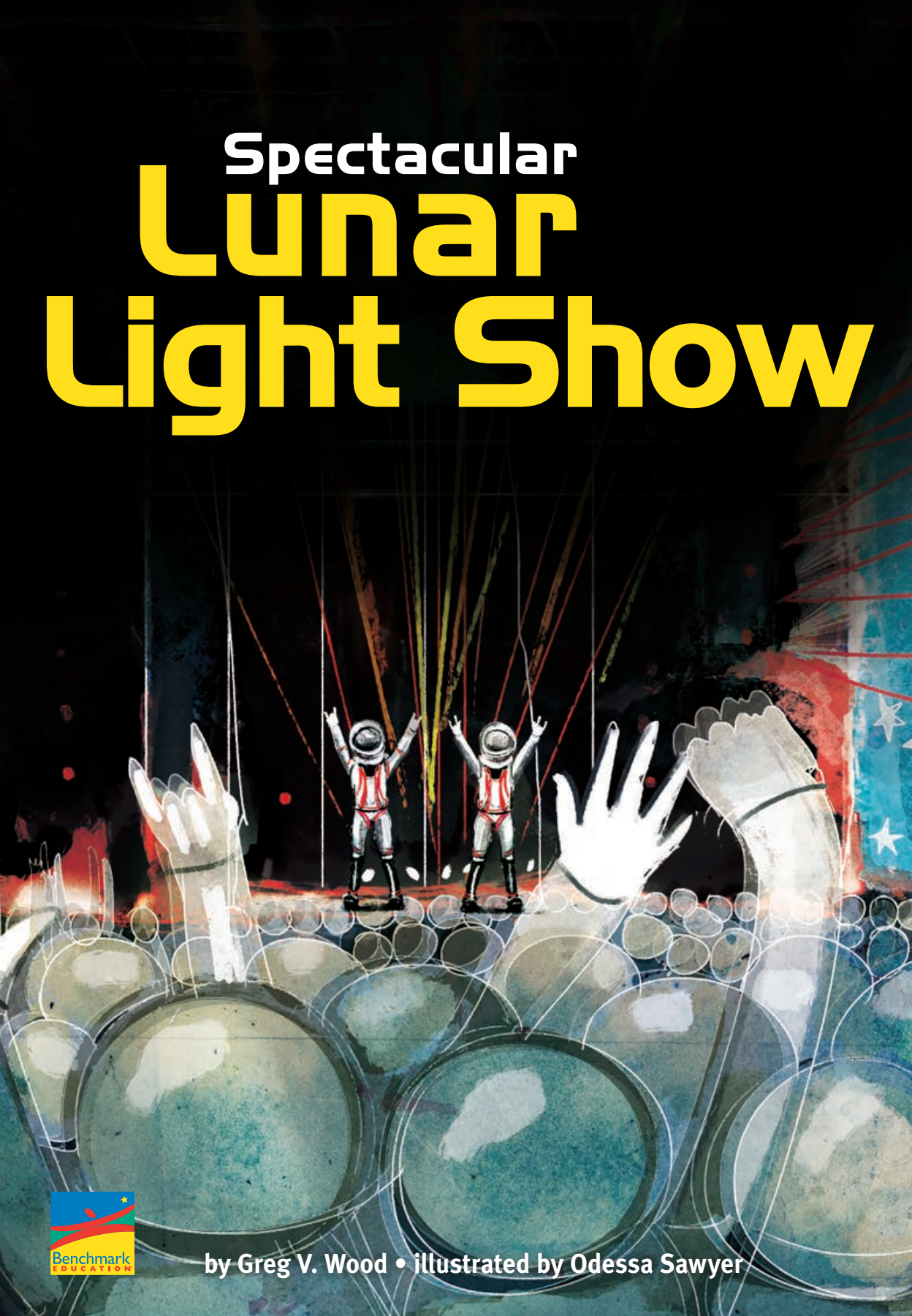
Spectacular Lunar Light Show



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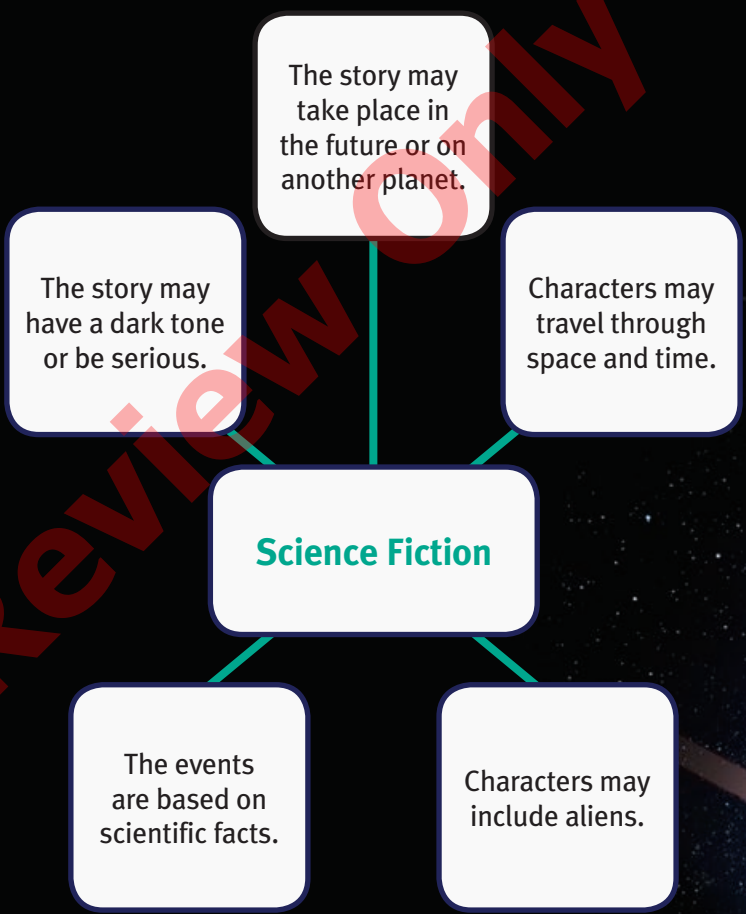

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Let's Put On a Show!

"Get the plans ready!" said Cheng nervously. "It's almost time to go."

Cheng and Meg were getting ready to present their plans for the greatest show in the **solar** system—a laser light show and rock concert from the moon to Earth! It was a tall order for a couple of kids to accomplish, but Cheng and Meg were ready for the challenge.

One hundred years ago, in 1969, the United States landed its Apollo 11 spacecraft on the moon. An astronaut walked on the moon for the first time. It was a giant leap in space exploration, one that started humans on their quest to build homes all over the solar system.

Now thousands of people lived in the climate-controlled, domed base named for Neil Armstrong, the first person to step foot on the **lunar** surface. The Armstrong Moon Base residents included Meg and Cheng, as well as their families.

To celebrate the one-hundredth anniversary of that first moon landing, the Lunar Youth Council elected Meg and Cheng to present ideas to the Lunar Governing Board about how to celebrate.

Meg and Cheng's plan was to put on an old-fashioned rock 'n' roll show on the moon and transmit it to Earth. That way, Earthlings and "mooners" could celebrate together, even though they literally lived worlds apart.

The adults of the Lunar Governing Board were less excited than Cheng and Meg had hoped they would be.

"You can put on the concert," they said. "But we can't spare any labor or equipment to help you. You'll have to do it all on your own. And you'll have to use whatever old, spare gear you can find."

"This is going to be a lot harder than we thought," Cheng said.

But Meg wasn't discouraged. "We can do this, and it's going to be awesome!" she said with confidence.

Cheng and Meg started tackling the problem of creating a light show that could be seen from Earth. Since Earth was 384,400 kilometers away, they knew they'd need very bright lights.

"You know what we need?" Meg asked.

Cheng nodded. "Lasers?"

"Exactly. Their light is so intense that it might reach all the way to Earth."

They found an old laser covered with moon dust in a tool shed. It hadn't been used in years, but with a little cleanup and maintenance, they got it back in working order.

A few hours later—when it was nighttime on Earth, where the show would be seen—they fired up the laser.

"Jalen, this is Armstrong Moon Base," Meg said over the radio headset built into her helmet. "Is our laser light bright enough?"

Jalen was their friend on Earth. He'd agreed to help Meg and Cheng test their light show. He lived in the city they would be transmitting the show to. He even lived down the street from the stadium where people would gather to see it.

"I'm looking out my window," Jalen said. "Just let me know when you start."

Cheng and Meg exchanged disappointed looks.

"We already started," Meg said. "We've got a laser beam aimed at your location right now."

"Sorry," Jalen said. "I don't see anything at all."

"The beam isn't strong enough," Cheng said. "The light must be too weak by the time it reaches Earth."

"Back to the drawing board," said Meg.

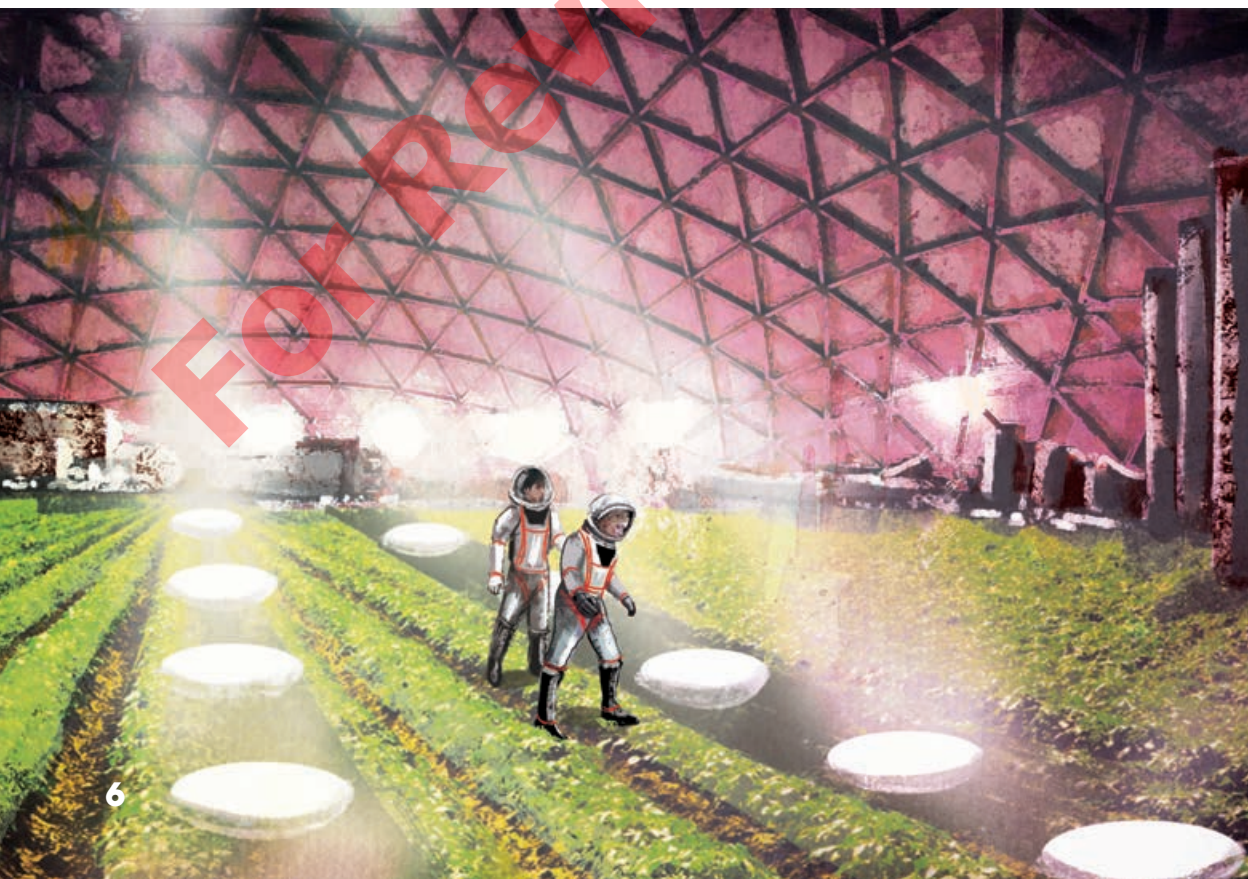
The next day, Meg and Cheng brainstormed ways to improve the **underwhelming** light show.

They were walking through the base's farm, where vegetables grew beneath a dome. Solar lamps shined on mirrors, which reflected light and heat down on the crops. It gave Meg an idea.

"What if we used concave mirrors to concentrate the laser? We could bounce the laser's light off a **reflective** surface to make it more visible on Earth."

"If the mirrors were huge, that could work," Cheng said. "It would be even better if the mirrors were high up, circling the moon."

"One problem at a time. First let's find some mirrors. Then we can worry about how to get them into lunar orbit."



News about the upcoming concert was spreading around Armstrong Moon Base. People were looking forward to it, which was great, but Meg and Cheng were starting to feel the pressure of making sure the show lived up to expectations.

In the agricultural dome's recycling pile, they found some old mirrors.

When Meg and Cheng told the farm technicians they wanted to use the mirrors for the concert, the techs said, "Sure. Good luck getting those fossils to work."

The mirrors were folded up like umbrellas, but when in use, they would expand and open up into bowl shapes.

Meg and Cheng **refurbished** and polished the mirrors. Then they strapped drone rockets to one. The small rockets were usually used to launch mini-satellites, and they were the perfect tools to boost the mirrors into orbit.

They watched the rocket trails climb into the dark sky. When they reached the correct **altitude**, the rockets detached and left the mirror to circle high above the moon.

Cheng used a telescope to find the mirror in orbit and helped Meg aim the laser.

"Firing in three, two, one!" Meg turned the laser on. An intense beam of light glowed bright red toward the sky. Through the telescope, Cheng saw the laser beam striking the **orbital** mirror. The mirror reflected the light toward Earth.

"Jalen's not going to believe it!" said Meg.

Meg set her radio headset to the **frequency** that Jalen was monitoring from his home on Earth.

"Jalen, this is Armstrong Moon Base. Come in."

"Armstrong Moon Base, this is Jalen. I'm in my bedroom with the window open, standing by for the light show. Tell me when it starts."

Meg frowned. "It's already started, Jalen. We're bouncing light from the lunar surface off our mirror right now."

Jalen's voice came over the radio again. "Oh, you mean that little red light? Good job, guys."

He didn't sound impressed. Meg and Cheng realized they were going to need another idea if they were going to pull off a spectacular light show.

"Thanks, Jalen," Meg said. "Check back with us tomorrow. We're going to try something else."

Jalen wished them good luck. They were going to need it.