

STEM & WRITING GUIDE

ABOUT THE BOOKS

Life aboard the PSS 118, a public school spaceship orbiting Jupiter, has never been stellar for Jack. But when he accidentally activates a brand-new light speed engine and transports the ship across the galaxy, middle school gets a whole lot more complicated. Jack and his friends—Becka, Ari, and the rest—must battle sinister aliens, navigate a robot civil war, and figure out whom they can trust as they race to save humanity...all while trying to keep up with their homework.

NOTE TO TEACHERS FROM THE AUTHOR

I used to be a middle school teacher. In fact, part of that experience inspired me to write these books and try to fill them with kids that seem *real*, even if the future imagined in SEVENTH GRADE VS. THE GALAXY and its sequels (probably) isn't. But while the story is absolutely fiction—and a lot of it is pretty silly—there's plenty drawn from science. As a teacher, I always appreciated opportunities to explore one subject in another. I'm hoping this guide helps kids appreciate that maybe science and writing aren't lightyears apart after all.

You'll find three main sections below, the first on "Our Galaxy," the second on "Our Solar System," and the third on "Our Home Planet." Each draws directly from the books (although you don't need to have read them to follow along—and there are no big spoilers!). And each contains intros, science/astronomy research questions, and shorter and longer writing prompts. There's also a handful of additional discussion questions at the very end.

There are lots of heroes in THE ADVENTURES OF THE PSS 118: The kids, some aliens, even the Ship. But also: The teachers. Jack's universe wouldn't be the same without them. And same for our own.

Thanks for doing what you do.

Josh

OUR GALAXY

As Jack likes to say (kind of obviously), “space is big.” It’s almost impossible to wrap your mind around it, but let’s try. Earth’s circumference at the equator (so one trip all the way around the middle) is about 25,000 miles. But that’s nothing. The Sun’s distance from Earth is *93 million miles*. But that’s *still* nothing. The Sun’s distance from Neptune (the farthest-out planet) is almost 3 billion miles. BUT THAT’S STILL NOTHING.

The kids onboard the PSS 118 take “Astronomical Geography” class, taught by Mr. Cardegna. Here’s what they learn—that our galaxy is “[a]bout 100,000 lightyears across, end to end. And another thousand thick, top to bottom.” How big is a lightyear? Six. Trillion. Miles.

Put a different way: “Mr. Cardegna likes to say that if the whole Milky Way was crammed into a ball the size of the Sun, our entire solar system would be smaller than a grain of sand.”

And that’s just the Milky Way, our one galaxy. Of *billions*—maybe more.

RESEARCH QUESTIONS:

- At one point, Becka whistles so loudly, it’s “like she’s hailing a cab from the Andromeda galaxy,” the closest major galaxy to the Milky Way. What are some known differences between the Andromeda galaxy and the Milky Way? How about some similarities?
- Because space is so big, measuring distance in miles (or kilometers) becomes basically impossible—which is why, when the kids ask the Ship to generate a map at one point, it offers other measurements of distance, like “LD,” “AU,” and “parsec.” What are these measurements and when might it make sense to use them?
- Saving the galaxy is tough. And some of those tough moments take forever. “Ten more seconds go by,” Jack thinks to himself, “and it feels like a galactic year.” What *is* a galactic year? And how long does it take?

SHORTER WRITING PROMPT:

- Mr. Cardegna teaches the kids a mnemonic device to help them remember the arms of the Milky Way galaxy: “Three Purple Ninjas Outwitted Nine Scary Carnivorous Octopi.” (The arms of the galaxy are thought of in different ways. But one list is: 3kpc, Perseus, Norma, Outer, New Outer, Scutum-Centaurus, Carina-Sagittarius, and Orion-Cygnus.) Make your own mnemonic device to remember some other list of space facts. (Planets in our solar system? Moons around Jupiter? Galaxies in our neighborhood?)

LONGER WRITING PROMPT:

- So, yeah, space is *big*. Impossibly, indescribably big. In a paragraph or two, can you explain how that makes you *feel*?

OUR SOLAR SYSTEM

With the Sun at the center, the planets in our solar system are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune—and nearly every planet is mentioned in the ADVENTURES OF THE PSS 118, in one way or another.

But for Jack and his friends, the most important part of the solar system is what he calls the “Jovian Sector”—Jupiter and its moons. Jupiter has a lot of moons, but the biggest are the “Galilean Moons”: Ganymede, Callisto, Io, and Europa. The kids onboard the PSS 118 are all from Ganymede, but that hasn’t stopped them from participating in Galilean Moon League sports, spelling bees, and science fairs across the sector. Before this story begins, Jack’s whole life was lived near Jupiter and, any time he sees four moons, he thinks of home.

RESEARCH QUESTIONS:

- Throughout the series, we get glimpses of what life is like on Mars, sometimes called the Red Planet. By Jack’s time, people have lived there for hundreds of years. Unlike Ganymede, they’ve got their own schools on the surface. They’ve got football stadiums and fake beaches under giant domes. Of all the planets in the solar system (other than Earth) to build civilization, why do you think people made their homes on Mars?
- Jack tells us at some point that, “unlike Mars or the Jovian moons, Venus has never been all that interesting to anyone. Probably because it’s the hottest planet in the system.” Venus *isn’t* the closest planet to the Sun—but then why is it the hottest?
- Jack and his friends notice “the red-brown swirls of Jupiter, the Great Red Spot visible dead center. A target bull’s-eye calling us in.” What *is* the Great Red Spot? Can you find three images of Jupiter and its spot that you think are the most extraordinary?

SHORTER WRITING PROMPT:

- Language changes as people change. And—because Jack and his friends live in space, in the future—their language isn’t *exactly* the same as ours. The kids find themselves on an alien beach, and Jack wears a t-shirt with the slogan: “It’s Always Summer on Venus.” Principal Lochner has posters up in his office that say: “Your moon is where the heart is.” and “There’s no ‘I’ in Outer Space!” During one tense moment, the kids chant this popular rhyme: “Eenie meenie, miney moon. Catch a spaceship by the spoon. If it crashes sing a tune. My captain says to pick the very best one and you are it.” If *you* lived in space, in the future, what are some phrases (or slogans or songs) that **you** might use that we don’t have today?

LONGER WRITING PROMPT:

- Imagine a future where people live on Mars and write a short story set in a school on the Red Planet.

OUR HOME PLANET

To Jack and his friends—born and raised on Ganymede—little captures the imagination more than Planet Earth. “There’s only one place in our solar system where you can breathe real air and feel real sunshine,” Jack thinks to himself. “And you can’t grow up in space—breathing stale oxygen and looking at pictures of kids playing football on real, grows-from-the-actual-ground grass—without dreaming of one day going to Earth.”

RESEARCH QUESTIONS:

- There’s a term Jack uses a couple times—the “Goldilocks Zone.” What is it? What makes it special?
- Here and there, we learn that humans have also built up *the* moon, *our* moon, which Jack and his friends sometimes call Luna. (People visit Luna so much that, from New York City, there are “EXPRESS FERRIES EVERY FIFTEEN MINUTES TO BROOKLYN, FAR ROCKAWAY, AND THE MOON.”) In Jack’s time, it’s common for people to visit the moon. In our time, not as much. When was the first time a human being set foot on the moon? When was the last time? When might the next time be?
- In Jack’s future, at least some places on Earth need “[m]assive city walls” to protect themselves from “surrounding water.” Why might these walls be needed?

SHORTER WRITING PROMPT:

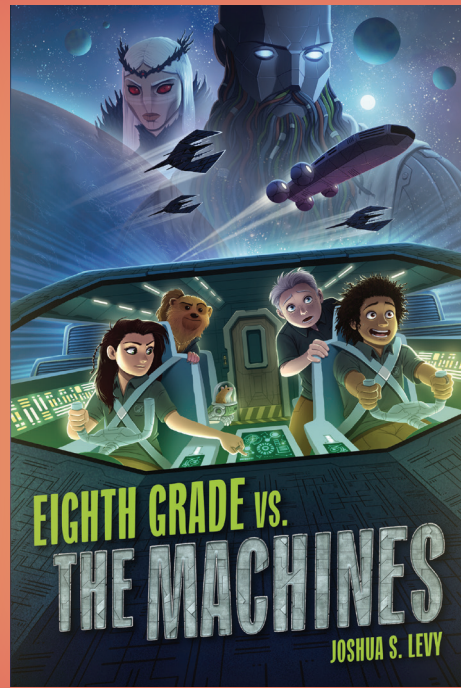
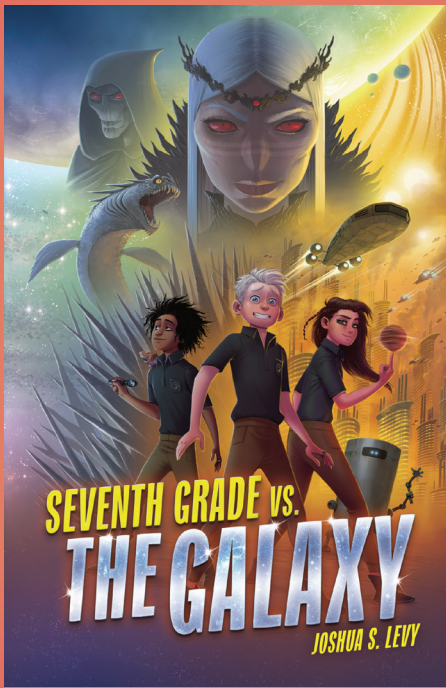
- At one point, we learn a bit about what Jack calls the George Washington Bridge *Park*. He tells us: “Ari and I did an Earth Fair project on it once. It connects New York to New Jersey across a river and hasn’t been used for old wheelcars since, well, whenever we stopped using old wheelcars. These days, it’s a park.” Can you think of another landmark on Earth that, in the future, might not be needed in the same way we use it today? How might that place change as time moves forward?

LONGER WRITING PROMPT:

- Even centuries in the future, there’s no place like Earth. What are some things we can do *now* to make sure the planet is safe and healthy, even when people one day take to the stars?
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ADDITIONAL DISCUSSION QUESTIONS ABOUT THE FUTURE

- Life in Jack’s time is quite different from life today, but much of it is familiar. He still goes to school—plays (zero-g) dodgeball and takes (thermonuclear physics) tests. He likes wearing t-shirts and eating ice cream (as long as there are no raisins in it). He and his friends settle more arguments than they probably should by playing rock-paper-scissors. What are some things about life today that you hope will never change? What are some things you hope will change?
 - There are a lot of artificially intelligent characters in this series: The Ship, the lunch robots, and others—some fun (a stand-up robot comedian), some not-as-fun (a robot pirate). We even learn a bit about their history and politics. Knowing what you know about AI today, what do you think robots *will* really be like in the future?
 - Beyond AI, human technology has also advanced by Jack’s time. Ring communicators. Pocket-sized 3D printers. Fusion engines. Space elevators. Thinking about technology that doesn’t exist today—is there anything you hope is eventually invented? Anything you hope *isn’t* invented?
 - Do you think aliens exist somewhere out there? If so, what do think they might be like? If not, why not?
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Seventh Grade vs. the Galaxy

PB: 978-1-7284-2309-8 • \$8.99 (List & S&L) • Ages: 9-13

Eighth Grade vs. the Machines

HC: 978-1-5415-9894-2 • \$17.99 (List) • \$13.49 (S&L) • PB: 979-8-7656-0814-2 • \$10.99 (List & S&L) • Ages: 9-13

Last Summer in Outer Space

HC: 978-1-7284-8619-2 • \$19.99 (List) • \$14.99 (S&L) • Ages: 9-13



JOSHUA S. LEVY was born and raised in Florida. After teaching middle school (yes, including seventh and eighth grade) for a little while, Josh went to law school. He lives with his wife and children in New Jersey, where he practices as a lawyer. Unfortunately, outer space doesn't come up in court nearly as often as he'd like.