

# READING GROUP GUIDE

A Reading Group and STEM Guide to

## ***Bounders***

By Monica Tesler

### **About the Book**

In the tradition of Michael Vey and *The Unwanteds*, twelve-year-old Jasper and his friends are forced to go up against an alien society in this first book in a brand-new adventure series!

Thirteen years ago, Earth Force—a space-military agency—discovered a connection between brain structure and space travel. Now they’ve brought together the first team of cadets, called Bounders, to be trained as high-level astronauts.

Twelve-year-old Jasper is part of this team being sent out into space. After being bullied back on Earth, Jasper is thrilled to have something new and different to do with other kids who are more like him. While learning all about the new technologies and taking classes in mobility—otherwise known as flying with jetpacks—Jasper befriends the four other students in his pod and finally feels like he has found his place in the world.

But then Jasper and his new friends learn that they haven’t been told everything about Earth Force. They weren’t brought to space for astronaut training, but to learn a new, highly classified brain-sync technology that allows them to manipulate matter and quantum bound, or teleport. And it isn’t long before they find out this new technology was actually stolen from an alien society.

When Jasper and his friends discover the truth about why Earth Force needs them, they are faced with a choice: rebel against the academy that brought them together, or fulfill their duty and protect the planet at all costs.

## **Discussion Questions**

1. Discuss Jasper's friendship with Cole and Lucy and how those relationships developed throughout the story.
2. Why was Jasper's choice to bunk near Cole instead of Marco important and how did it affect him?
3. How do Jasper's feelings about his pod change over the course of the story? How do Jasper's feelings about his role in the pod change?
4. Jasper didn't get his first choice of pod leader. Discuss his disappointment and how his pod ended up better overall for having Jon Waters as their leader.
5. How is Jasper bullied in the story? How does that relate to any personal experience with a bully or bullying incidents you have encountered?
6. Compare the kinds of teasing that Marco and Regis did. Relate it to a personal experience.
7. Explain how Jasper felt about the food and tell why.
8. Different kinds of competitions happened through the book. Describe them and explain why each one was so important.
9. Would the kind of travel through space described and used in the book ever happen in reality?
10. What part did the game *Evolution* play in the story and how?
11. Marco's character showed up early in the book. Did he change as the story progressed? Did other characters' opinions or impressions of him change? Was he an asset or liability to Jasper and the other pod members?
12. A special kind of glove improved the way Bounders could travel. How did the gloves relate to the aliens and the choices made by the scientists about taking and using that technology?
13. What sorts of activities put the Bounders in danger?
14. Are Bounders always treated kindly in the story? Discuss situations in which a non-Bounder treated a Bounder unkindly. Discuss situations in which a Bounder treated another Bounder unkindly. Does this relate

to ways people today might be treated—especially those who may appear different? Conversely, discuss situations where someone was particularly kind to someone else in the story.

15. How does the name-calling by others affect the Bounders and why is the name B-wad considered insulting? What is the consequence of using terms today that insult groups of people?

16. Would you personally like to be a Bounder? Explain the reasons why or why not.

17. Discuss the special relationship between Mira and Jasper and the different ways it developed.

18. Marco and Jasper broke the rules early on in the story and continued to do so, even including their pod in one activity. What rules did they break? What effect does the information they learned have on the outcome of the book? Is it ever acceptable to break rules and why?

### **Extension Activities**

1. Compare the technology used in the Bounders book with the technology in the book *Astrotwins*, by astronaut Mark Kelly.

2. Review the NASA site and look at living conditions and activities on the International Space Station (ISS). Compare life today on a space station with Jasper's day and experiences.

<http://www.nasa.gov/audience/foreducators/stem-on-station/dayinthelife>

3. Look up the life cycle of a star and make a diagram illustrating the various stages in it. What stage is our sun in currently?

4. Read about Kepler-186f and the characteristics that it has. Explain what conditions life needs to develop on another planet.

<http://www.nasa.gov/ames/kepler/nasas-kepler-discovers-first-earth-size-planet-in-the-habitable-zone-of-another-star>

5. Predict what kind of situations and problems could arise if you were to write a sequel about Jasper, his friends, and EarthBound Academy.

6. Develop questions about right and wrong and lead a discussion about ways right and wrong were portrayed in the book.

7. Develop and design a space station of your own. Include some of the

items found in Bounders, but address all the needs a space traveler would have in a space station.

## **Science, Technology, Engineering, and Mathematics (STEM)**

### **Science**

#### **Grade 5**

PS1.A: Structure and Properties of Matter, PS2.B: Types of Interactions, LS1.C: Organization for Matter and Energy Flow in Organisms,

LS2.A: Interdependent Relationships in Ecosystems, ESS1.A: The Universe and its Stars, ESS1.B: Earth and the Solar System, ESS3.C: Human Impacts on Earth Systems

#### **Middle School**

PS1.A: Structure and Properties of Matter, PS2.A: Forces and Motion, PS2.B: Types of Interactions, PS4.B: Electromagnetic Radiation, LS1.D: Information Processing, LS2.A: Interdependent Relationships in Ecosystems, LS4.D: Biodiversity and Humans, LS1.B: Growth and Development of Organisms, LS3.A: Inheritance of Traits, LS3.B: Variation of Traits, LS4.B: Natural Selection, ESS1.A: The Universe and Its Stars, ESS1.B: Earth and the Solar System, ESS3.C: Human Impacts on Earth Systems

#### **High School**

PS1.A: Structure and Properties of Matter, PS2.B: Types of Interactions, PS3.C: Relationship Between Energy and Forces, PS3.D: Energy in Chemical Processes, PS4.A: Wave Properties, PS4.B: Electromagnetic Radiation, PS4.C: Information Technologies and Instrumentation, LS1.A: Structure and Function, LS2.D: Social Interactions and Group Behavior, LS4.D: Biodiversity and Humans, LS1.A: Structure and Function, LS3.A: Inheritance of Traits, LS3.B: Variation of Traits, LS4.B: Natural Selection, LS4.C: Adaptation, ESS1.A: The Universe and Its Stars, ESS1.B: Earth and the Solar System, ESS1.C: The History of Planet Earth, PS3.D: Energy in Chemical Processes and Everyday Life, PS4.B: Electromagnetic Radiation, ESS2.E: Biogeology, ESS3.A: Natural Resources

1. What parts of the book help explain the concept of gravity and in what ways does the book's explanation differ from the scientific concept of gravity?

2. Why did the Bounders feel gravity while on the spacecraft even though they were in space with zero gravity?
3. How are Bounders genetically different from the other population members?
4. Research the Human Genome Project and how the information generated by the HGP will be beneficial for science and technology development.
5. As gene science continues to advance, what might be the benefit of knowing information about your genes? Can you see any downside to this knowledge? How might we protect the information? Who should make the rules regarding protection and disclosure?
6. In the book, genetic engineering is credited with both eliminating and later reintroducing the genes that create Bounders. Can you think of a real world example where this would be beneficial? Can you see any risks associated with using science in this way? How did eliminating the genes that created Bounders lead to problems for Earth?
7. In *Bounders*, the Paleo Planet showed a planet that was said to be similar to a long-ago Earth. What does the book say about the features and the life on it? Is it accurate to compare the life there with that of an early Earth? In what ways could they be compared?
8. Why would it be important for the Bounders to keep their hands off the animals in Paleo Planet?
9. Occludium was mined by the Tunnelers. How does this mineral resemble one of the existing elements we know today?
10. Explain why aliens existing in our universe might or might not be possible.
11. Part of *Bounders* takes place on a future Earth. How is Earth in *Bounders* different than Earth today? How are these differences important to the storyline?
12. Look up the distances of five stars nearest Earth and make a diagram or graph showing those distances.
13. Develop a simple food chain that might exist on the Paleo Planet.

## **Technology**

## **Grade 5**

ESS3.C: Human Impacts on Earth Systems, LS1.C: Organization for Matter and Energy Flow in Organisms, LS2.A: Interdependent Relationships in Ecosystems Influence of Engineering, Technology, and Science on Society and the Natural World,

## **Middle School**

LS1.B: Growth and Development of Organisms, LS4.B: Natural Selection, Interdependence of Science, Engineering, and Technology, ESS3.C: Human Impacts on Earth Systems

## **High School**

PS3.C: Relationship Between Energy and Forces, PS2.B: Types of Interactions, PS4.C: Information Technologies and Instrumentation, LS1.A: Structure and Function, ESS2.E: Biogeology, Influence of Engineering, Technology, and Science on Society and the Natural World

1. Read about aquaculture and identify what is needed to do this successfully. Explain why aquaculture would be useful for space travel.
2. Take a virtual tour of one of the space stations. Identify the technology used in it.

[http://www.nasa.gov/mission\\_pages/station/main/suni\\_iss\\_tour.html](http://www.nasa.gov/mission_pages/station/main/suni_iss_tour.html)

3. Read this Canadian astronaut's description of how it felt to launch. Compare and contrast it to Jasper's description of his launch.

<http://www.businessinsider.com/canadian-chris-hadfield-describes-a-shuttle-launch-2012-12>

4. Look up the definition of *quantum*. How does it apply to the way the Bounders travel?

## **Engineering**

### **Grade 5**

ETS1.A: Defining and Delimiting Engineering Problems, Influence of Engineering, Technology, and Science on Society and the Natural

World, Developing and Using Models, Constructing Explanations and Designing Solutions

## **Middle School**

ETS1.B: Developing Possible Solutions, ETS1.C: Optimizing the Design Solution, Interdependence of Science, Engineering, and Technology, Influence of Science, Engineering and Technology on Society and the Natural World, Influence of Science, Engineering, and Technology on Society and the Natural World, ETS1.B: Developing Possible Solutions, ESS3.C: Human Impacts on Earth Systems

## **High School**

Using Mathematics and Computational Thinking, Constructing Explanations and Designing Solutions, Influence of Science, Engineering, and Technology on Society and the Natural World, ETS1.A: Defining and Delimiting Engineering Problems

1. What kinds of problems must an engineer solve for a spacecraft to safely hold astronauts in space? Relate the design to issues that must also be addressed for reentry and in gravity when it's on Earth.
2. Read about the gloves and how Jasper and his friends traveled. What engineering designs likely went into developing the gloves for space travel?
3. What was Gedney's role in engineering and why were the Earth Force pod members in Jasper's group fortunate to have him as one of their teachers?

## **Mathematics**

Based on Common Core State Standards

## **Grade 5**

MP.2 Reason abstractly and quantitatively, MP.4 Model with mathematics.

## **Middle School**

MP.2 Reason abstractly and quantitatively, 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals),

using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies

## **High School**

MP.2 Reason abstractly and quantitatively, MP.4 Model with mathematics, HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and

interpret the scale and the origin in graphs and data displays, HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

1. Military time operates on 24 hours rather than 12 hours. Determine an easy way to convert time back into 12 hours when using military time.
2. Look up the actual speed of light. Write and explain how FTL speed is explained in the book. Do you think spacecraft will ever go at that speed or higher? Explain your reasons.
3. The metric system is used in the book rather than the standard units we use in the US today. Look up how to convert metric to standard units. Look up your height and weight in metric units. Explain how the metric system differs from the units used in the US and what units are used to measure what.

*Guide written by Shirley Duke, a children's freelance writer.*

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