Questions for a Book Club reading “The Math Olympian”

Here are some questions that might be fruitful for book clubs, especially math teachers who wish to read this book together and discuss how a "math novel" can be used as a springboard to reflect and discuss our practice of teaching.

The five questions below are inspired by Chapter 1 of “The Math Olympian”. Questions (b)/(c)/(e) are more for pedagogy, while (a)/(d) are more appropriate for a student-led Math Club. Please feel free to use this in whatever way is most appropriate for you.

(a) The book opens with a quote from Bethany Hamilton, a world-champion professional surfer who competes despite having only one arm. What do you think of her quote that little girls are made of "courage, sacrifice, determination, commitment, toughness, heart, talent, guts"? Do you feel that young people like the fictional Bethany MacDonald should pursue dreams that help them develop these traits in their own lives? Or perhaps, do you empathize with Bethany's mom that her 12-year-old daughter should avoid ambitious goals that might lead to disappointment, and instead "just enjoy being a teenager" (p. 29) ?

(b) Bethany meets several mentors in The Math Olympian, each of whom plays a key role in her development. In Chapter 1 (p. 9-102), we meet the first mentor, Mr. Collins. What do you think of Mr. Collins as a character and as a teacher? He has a very specific perspective on how mathematics should be taught in schools (e.g. p. 41, 46, 57). What are some of these opinions on effective math teaching, and do you agree/disagree with his opinions?

(c) Mr. Collins shares some surprising applications of math in his coaching sessions, such as Linear Algebra being the key to the Google Search Algorithm, and Newcomb’s Law being a tool used by the federal government in fraud detection. Do you feel that these types of applications should be emphasized in our classrooms to get students excited about mathematics, or do you feel that talking about applications needlessly detracts us from covering the core topics in our curriculum?

(d) When Bethany learns of her mother’s secret at the end of Chapter One, she thinks this: “I unfairly assumed that she was just a bad mother who tried to discourage my dreams, instead of a loving mother who tried to protect me from pain. How could I have been this selfish?” (p. 96-97). Bethany has a complex relationship with her mother Lucy. Do you feel that Lucy’s back story as a competitive athlete helps or hinders Bethany from pursuing the Math Olympiad?

(e) Here is a math problem that I think you will enjoy, where you will be able to find the correct answer of 36 relatively quickly: Sheila has received four free tickets to a Justin Bieber concert, and decides to give them away: to two of her female friends (chosen from Alice/Bethany/Candace/Diana), and two of her male friends (chosen from Edwin/Fernando/George/Harry). Determine the number of different ways Sheila can give out the four tickets. Now here is the surprising follow-up: how and why is this concert ticket problem completely identical to the 3x3 Counting Rectangles Problem on p. 68? (You have to explain why every rectangle/square in the Counting Problem can be mapped directly to a specific choice of two girls and two boys in the Ticket Problem, and vice-versa). If you want a hint, or the solution, don't hesitate to e-mail me at richard.hoshino@gmail.com