

A Curriculum Guide to

Charlie Thorne and the Last Equation

By Stuart Gibbs

About the Book

Charlie Thorne is a genius and a thief, but isn't yet old enough to drive. Now it's up to her to save the world. Decades ago, Albert Einstein devised an equation that could benefit all life on earth—or destroy it. Fearing what would happen if the equation fell into the wrong hands, he hid it. But now, a diabolical group known as the Furies are closing in on its location. In desperation, a team of CIA agents drags Charlie into the hunt, needing her brilliance to find it first—even though this means placing her life in grave danger. In a breakneck adventure that spans the globe, Charlie must crack a complex code created by Einstein himself, struggle to survive in a world where no one can be trusted, and fight to keep the last equation safe once and for all.

Prereading Activity

Have students complete an anticipation guide structured in the following manner:

<i>Before Reading</i>	<i>After Reading</i>	<i>Statements</i>
		Kids need to be sheltered from terrible things happening in the world.
		Adults always know better ways to approach problems than young people.
		The government always has your best interest at heart.
		When in danger, it is best to play it safe rather than take a risk.
		Family should always be protected, no matter what.
		During times of crisis, what individuals say is as important as their actions.

Instruct students to complete the guide by placing a “+” sign in the box next to the statements for which they agree, and a “0” next to those for which they disagree. They must commit to agreement or disagreement—there are no conditional responses. Students should be assured that there are no correct or incorrect positions.

Discussion Questions

The discussion questions below particularly address the following English Language Arts Common Core State Standards: (R.L.4.2) (R.L.6.2) (**R. L.4-5.7, 9**) (S.L.4-6.1, 2, 3) (**W.4.4., W.5.4., W.6.4**)

The following questions may be utilized throughout the study of *Charlie Thorne and the Last Equation* as reflective writing prompts, or, alternatively, they can be used as targeted questions for class discussion and reflection.

1. Readers witness Albert Einstein's last moments and the desperate attempts of Einstein's friend and confidant, Ernest Klein, to protect the information about “Pandorabüschel.” Why do you think such

attention is given to preventing this information from being discovered? In what ways does the opening scene set the stage for the events to follow?

2. Despite Einstein's instructions, Ernst has an incredibly difficult time destroying Einstein's papers. What makes this act so challenging, even when knowing it's exactly what his friend wants? As he complies with his friend's wishes, what does his sense of urgency indicate?

3. Part 1, "The Fate of the World," opens with the following Einstein quote: "It has become appallingly obvious that our technology has exceeded our humanity." What do you think Einstein means by this? How does this statement make you feel about human nature? Explain your answers.

4. After learning of Agent Dante Garcia's intentions and scrutinizing a photo of Charlie Thorne, CIA director Jamilla Carter says, "You must be joking." Why does Agent Carter appear dumbstruck over Dante's plan to recruit Charlie? Do you think Dante makes a strong enough case for his plan? Explain your answers.

5. Think about Charlie's appearance, personality, and skill sets. How do these traits and characteristics benefit or hinder her in her line of work? What makes her a great asset to the CIA? Explain your answers.

6. Dante tells Director Carter, "Anyone that brilliant is going to chafe at authority. Because they're smarter than the authorities." Do you agree or disagree with this statement? How or when can this attitude become a problem? How or when can it become an asset? How do you decide when to question authority and when to follow?

7. While making a case for utilizing Charlie for the Pandora mission, Dante compares her to Einstein, da Vinci, Darwin, Franklin, and Newton as children. What do you think makes Charlie similar to these historical figures? Which of these figures would you most like to learn more about? Explain your answers.

8. What is it about Charlie that makes her such an unexpected choice to work with law enforcement? Do you think Agent Carter is justified in her attitude toward Charlie? Think about the judgments Agent Carter makes before meeting Charlie, and how that might affect her opinion of her. What can Charlie teach her adult colleagues, and what might she learn from them?

9. After nicely asking a man for his truck by telling him "it's an emergency" and having him behave condescendingly toward her, Charlie tells him, "I would feel bad about taking your truck. But now that I realize you are a sexist jerk, that's not the case anymore." What made the man's actions sexist? What could he have done or said instead? Do you think the circumstances warranted Charlie's actions? What does this encounter indicate about her personality? Explain your answers.

11. Upon waking up to find she's been captured by the CIA, Charlie tells Dante, "I could have run you over, you know . . . If I weren't such a nice person, you'd be roadkill right now and I'd already be halfway around the world." After witnessing their bickering, what can you glean about Charlie's relationship with Dante?

12. While being held by the CIA, Charlie declares, "Just so we're clear here, you're making a mistake. I haven't done anything illegal." Consider Charlie's rationale for taking forty million dollars. Do you think this justifies her actions? How might she have handled the situation differently?

13. What are your earliest impressions of CIA operative Milana Moon? Do you find her actions to be trustworthy or suspicious? How does she treat Dante? What are her goals? Using examples from the text, support your position.

14. Charlie tells Dante, “I don’t want to be a spy. It sounds like a lousy job. The pay stinks, you answer to government, and people occasionally try to kill you.” Do you think Charlie has any valid points with this analysis? Do you think she changes her mind over the course of the book? Based on what you know about Dante, why do you think he wanted to be a spy? What kind of skills does a successful spy need?

15. Dante explains that Einstein was hopeful the Pandora equation would solve the world’s energy problems, but soon realized that in the wrong hands, Pandora would allow for nuclear weapons to be built by malicious people. Why is this such a major dilemma? Can you think of anything else that could have a negative effect when used one way and a positive effect when used another?

16. Describe some of the specific ways in which the Furies exercise their power. In your opinion, what makes this terrorist organization so threatening? What do all these men have in common? What are their goals? What, if anything, surprises you about the makeup of this terrorist organization?

17. Alexi Kolyenko’s racist and hateful attitude toward refugees and people who are seemingly different from him motivates his decision to organize the Furies and seek to obtain the means to cause major destruction. What are some of the ways in which Alexi’s scapegoating is so problematic? How can this kind of attitude escalate to cause serious harm? Can you draw any parallels to what’s happening in the United States today?

18. How does learning that they may have a mole impact the CIA’s mission? Can you think of ways this is especially difficult news for Dante and Milana to discover? How might this impact their future work with the organization?

19. After an exchange of gunfire with those trying to get to Pandora at the Mount Wilson Observatory, Charlie tells Tim Ralston, “I’m the good guy here.” Though Tim has reason to question this statement, why does he ultimately believe her? Do you think he’s made the right choice by doing so? Why can it sometimes be difficult to identify who’s “good” and who’s “bad”?

20. Charlie’s participation in the mission to recover Pandora takes her around the world. What are some of the places she sees? What do you think are the most important discoveries she makes along the way, both related to Einstein’s equation and to herself?

21. Considering the novel’s epilogue, what do you predict will happen in the next installment of *Charlie Thorne*?

Research Prompts

1. Albert Einstein is considered by some to be the most influential scientist and greatest mind to have lived in the past century. Using resources from the library and the Internet, investigate the life and work of Einstein, being sure to look closely at the following:

- When and where did Einstein live?
- What was his educational background?
- What were his most important scientific contributions?

- What were his goals as a scientist?
- How did his contributions reshape the world?
- How did Einstein have a hand in establishing the Nation of Israel?
- What are additional facts you found especially interesting?

After conducting your research, create and share a digital artifact, such as an audio clip, video clip, or an image, that synthesizes the highlights of your findings.

2. In *Charlie Thorne and the Last Equation*, the United States government finds it essential to maintain the secrecy surrounding Einstein's Pandora equation, or *Pandorabüchse*. Do you believe the government has a right to keep secrets from its citizens? After a brief discussion about this issue, read "Top 10 Weird Government Secrets" from *Time Magazine*

(http://content.time.com/time/specials/packages/article/0,28804,2008962_2008964_2008979,00.html)

Utilize your library's resources to research and discover other types of secrets that are believed to be kept by the government, being sure to consider the following:

- What are some of the most common US government secrets believed to be kept from the greater population?
- What would motivate the US government not to share this information?
- Are any of these secrets located close to you?
- What might be the consequences if any of these were found to be true?
- Which secrets did you find most interesting, and why?

Taking what you've learned, select the secret that's of most interest to you and make a case for why you believe this information should or should not be shared widely.

3. Readers are introduced to the Manhattan Project, the code name for the project funded by the United States government during World War II that developed the first atomic weapons used in attacks against Japan. Investigate Einstein's role in the development of the project. Be sure to also discover the following:

- What did Einstein share with President Roosevelt in 1939 regarding the Nazis and atomic power?
- Where was the Manhattan Project developed?
- Why was the project given this name?
- Who were the scientists involved, and other key players?
- What was Einstein's later reaction to the role he played?

After examining what you've learned, engage in a group discussion about Einstein's actions and reactions to weapons of mass destruction. Be sure to consider his shift in beliefs, and discuss why.

4. Readers are introduced to the CIA in the United States and the Mossad in Israel, as well as their work in investigating crimes in their respective countries and throughout the world. The CIA and Mossad are two of the world's largest intelligence organizations. After selecting one of these two organizations, use <https://www.cia.gov/index.html> or <https://www.mossad.gov.il/eng/Pages/default.aspx> to research the roles of the CIA or Mossad in investigating crime. Then create a digital report about your findings. Consider the following:

- What is the CIA or Mossad's primary functions?
- What types of investigative campaigns does this organization undertake?

- What are some of the specific divisions within the organization?
- What is the criteria for working as an agent?

After completing your research, share your knowledge with a peer.

5. Charlie's mission leads her to the Mount Wilson Observatory for a pivotal scene in the race for Pandora. Using the Internet and the library, seek to discover more information about the history of the observatory, being sure to consider the following:

- Why was the observatory founded? What was its mission?
- Who was involved in creating the observatory?
- What did the L.A. landscape look like when the observatory was first built, and how has it changed today?
- What equipment is housed in the observatory?
- Why was the research performed there so important? What are some of the discoveries that were made?

After completing your research, select a digital tool of your choice to share your discoveries with others.

Extension Activities

1. Charlie's grand adventure takes her around the globe. Using the novel as inspiration, use textual descriptions of the locales to select one particular destination to research. Work with a partner to roleplay news reporters giving a report on your selected spot. Ask your teacher to record your report, and use props and costumes to add color and excitement.

2. Imagine that a director-producer wants you to make recommendations for roles in a movie adaption of *Charlie Thorne and the Last Equation* as the casting director. Decide which actors and actresses would play each part. Include photos and descriptions that tell why each is a good fit, and then write a report to convince the producer of these selections.

3. Select a character of your choice from *Charlie Thorne and the Last Equation*. Consider that character's goals, and create a list of the most important tasks they must accomplish. Include explanations as to why these tasks are necessary toward meeting the goal.

4. After reading *Charlie Thorne and the Last Equation*, brainstorm a list of wrongdoings or crimes committed by the characters. As a class, divide into groups to act as the prosecution, defense, and jury. Use several sources to prepare, including the novel and Internet resources on judicial proceedings and roles of the members of a trial. Additional resources for literary mock trials can be found at www.readwritethink.org. Then write a persuasive piece to complement your work.

5. Working with a small group, create a character trait silhouette about your favorite or least favorite character. Begin by tracing a member of the group onto butcher paper to create a life-size silhouette. The traced silhouette should reflect physical traits of the character, so modify as you draw. Next, cut out the silhouette and write in ten of the character's most important traits. For each trait, include a quote that supports the description. You should also draw symbols which represent your character's interests, personality, beliefs, skills, or profession.

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