

THE WOLLSTONECRAFT DETECTIVE AGENCY

NO 1

INCLUDES
STEM CONNECTIONS
& COMMON CORE
STANDARDS
CORRELATIONS

Ada and Mary
are on the case!

The CASE of the
MISSING MOONSTONE

by JORDAN STRATFORD art by KELLY MURPHY

EDUCATORS' GUIDE

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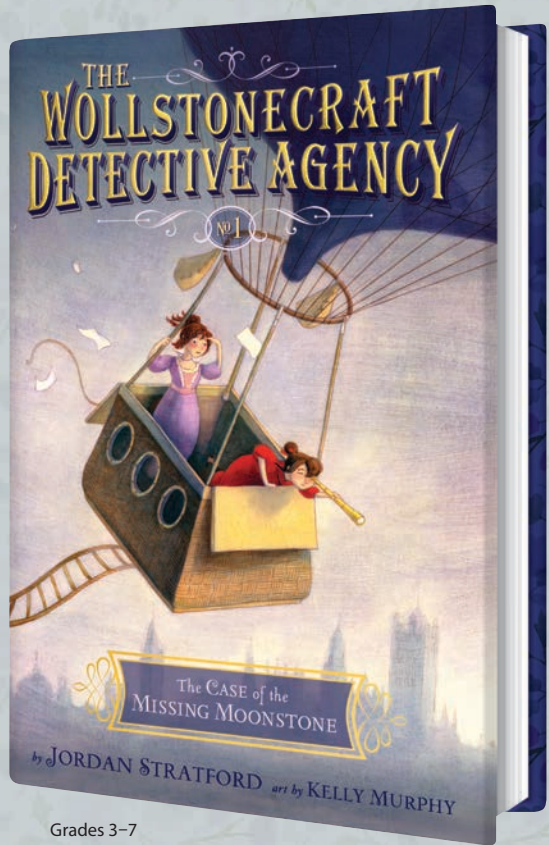
ABOUT THE BOOK

In an alternate 1826, Ada Lovelace (the world's first computer programmer) and Mary Shelley (author of *Frankenstein*) meet as girls and form a secret detective agency!

Eleven-year-old Ada is somewhat on her own in pre-Victorian London. Her mother is off in the country, her governess has just left to get married, and her father—the poet Lord Byron—is dead. But Ada, who feels awkward around most people anyway, prefers books to company. Unless she's getting a visit from Mr. Babbage, the marvelous mathematician who shares and encourages her enthusiasm for variables and equations, Ada would rather be left alone to read and invent.

That means Ada is not at all pleased to learn that a tutor has been arranged for her, especially as the tutor, who calls himself Percy B. Snagsby, seems to have plans to foist poetry on her. While having a tutor is an annoyance to Ada, it means the world to fourteen-year-old Mary Godwin, who has been invited to study alongside Ada. Every day, Mary rides unchaperoned to the Byron town house in a carriage with Charles, a factory boy who asks her to pretend he isn't really there (because he isn't supposed to be) and who all the while keeps himself buried in a book.

Though Ada finds Peebs—her name for her nervous tutor—quite useless, she quickly warms to the curious and adventurous Mary. The girls, who feel frustrated by society's constraints on women, find an outlet for their clever and inquiring minds by forming a secret constabulary, the Wollstonecraft Detective Agency. Their first case involves a stolen moonstone pendant, a false confession, mesmerism, a chase by omnibus, a hot-air balloon flight, and a showdown on a steamboat. In the end, Ada and Mary are able to right several wrongs. But in the course of doing so, they've revealed themselves. The clandestine detective agency is on its way to becoming one of London's most talked-about secrets.



Grades 3–7
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PRE-READING ACTIVITY

Ask students to think about a time they thought they were being treated in a particular way because of their gender. Have them write about their experiences and then share them with the class. Focus discussion on why they think they received certain treatment and how they felt about it. Follow up with further discussion on the questions, “Do you believe males and females have equal opportunities in education and employment in today’s society? Why or why not?”

INTERNET RESOURCES

Information Pioneers: Ada Lovelace

[Vimeo.com/11923950](https://www.vimeo.com/11923950)

Computer Science Unplugged

CSUnplugged.org/

The First 2000 Years of Computing

ComputerHistory.org/revolution

Great Women in Engineering History

EngineerGirl.org/4356.aspx

Historic Female Scientists and Mathematicians

SmithsonianMag.com/science-nature/ten-historic-female-scientists-you-should-know-84028788

SmithsonianMag.com/science-nature/five-historic-female-mathematicians-you-should-know-100731927



Ada Lovelace, the world’s first computer programmer



Mary Shelley, author of *Frankenstein*

QUESTIONS FOR GROUP DISCUSSION

Genre

What genre or genres do you think *The Case of the Missing Moonstone* fits into? The author uses history as a backdrop and historical figures to present imagined events. How did you decide what was historically true and what was made up? What other fictional books have you read that included characters from history? What knowledge or discovery did you take away from the book that you might not have found by reading a history book?

Role of Women

What did you learn about the status of women in English society during the time period of the book? Mary explains to Ada that “young ladies cannot be magistrates, or on the constabulary.” Why does Ada assume she can do whatever she wants? What explanation and advice does Mary have for Ada for dealing with the restrictions society places on women? How is Mary’s thinking affected by the writings of her mother? What advice would you give someone being treated differently or unfairly because of gender, race, or class? Discuss how opportunities for women have evolved since the 1800s.

Friendship

Since Ada is not really interested in interacting with people, how do she and Mary become friends? What are the makings of a good friendship, and which elements are present for Mary and Ada? Through Mary, Ada learns to pay more attention to her own actions and behaviors. How does having a friend like Mary affect how Ada relates to other people? How does Ada respond when she learns that Mary has kept a secret from her? What advice would you give Ada about friendship to help her sort out her feelings when she feels betrayed by Mary? How have the relationships in this book added to or changed your ideas about friendship?

Education

Though a number of characters in the book are children, none of them go to school. What opportunities for learning were available in 1826? To whom were they available? What does Mary’s attitude about school indicate about the conditions of schools available to her? How do you think a character like Charles would feel about the opportunity to go to school? The real Mary Wollstonecraft Godwin spoke out for universal education. How would you define universal education? Is it something available in today’s society? Without benefit of school or instruction, how does Ada educate herself, making connections between math, science, language, and her own life? Give examples from the book that show that one doesn’t need to be a genius in order to make a valuable contribution.

Science

To close the case of the missing acorn pendant, Mary imagines Ada “swooping down in [her] balloon with a contraption of some sort, solving all of this with science.” Ada asserts that she and Mary (with some help from Charles) did solve their case with science. “Wondering, guessing, trying, looking at things, sorting variables, guessing again. That’s how we did it. Science.” Which character do you think is right about how science works? How would you define what science is and how it works? What connections do you see between science and imagination in this book? In real life? In what ways, if any, has this book changed the way you think about the nature of science?

The above discussion questions correlate to the following Common Core Standards and can be used for class or small group discussion and reflection or offered to students as reflective writing prompts: Reading: Literature: Key Ideas and Details: RL.4.1, RL.5.1, RL.6.1 and RL.4.3, RL.5.3, RL.6.3; Writing: Text Type and Purposes: W.4.1, W.5.1, W.6.1 and W.4.2, W.5.2, W.6.2; Speaking & Listening: Comprehension and Collaboration: SL.4.1, SL.5.1, SL.6.1; Language: Conventions of Standard English: L.4.1, L.5.1, L.6.1.

History

Like the real Ada Lovelace, women who made history in male-dominated math, science, and engineering fields are often not as well known as their male counterparts. Give students a chance to investigate and tell the stories of women's achievements through living-history interviews. Have students work in pairs to select a significant female scientist, mathematician, or engineer in world history and identify and research the key accomplishments in her life. Students should also explore the challenges and restrictions women faced during the subject's lifetime. To share what they've learned, student pairs should prepare for an interview with their subject. After writing interview questions and answers, one student can serve as the interviewer while the other portrays the woman from history. Student presentations can be live in front of a classroom audience or audio-recorded for a class "history radio" podcast.

Correlates to the following Common Core Standards: Reading: Informational Text: Key Ideas and Details: RI.4.3, RI.5.3, RI.6.3; Integration of Knowledge and Ideas: RI.4.9, RI.5.9, RI.6.9; Writing: Text Type and Purposes: W.4.2, W.5.2, W.6.2; Research to Build and Present Knowledge: W.4.7, W.5.7, W.6.7; Speaking & Listening: Presentation of Knowledge and Ideas: SL.4.4, SL.5.4, SL.6.4 and SL.4.5, SL.5.5, SL.6.5

Science

Mary marvels at the maze of pipes that funnel hot air from chimneys to keep Ada's hot-air balloon aloft over the house. How does it work? Have half the class research the science behind how hot-air balloons work; the other half, how chimneys work. Then, divided into small groups, have students discuss both areas of research, determine how Ada's balloon worked, and examine what scientific principles are involved. Each group should create a drawing and fill in details of how they believe Ada

constructed her balloon and its hot-air source to share with the class. To make their own balloon, groups can draw inspiration from their ideas about Ada's balloon, then create their own plan or work from the balloon design available from Sonic Junior Balloonist (Balloonist.com), which includes step-by-step instructions for building and launching a hot-air balloon constructed from tissue paper. Provide materials for students to construct their balloons, arrange for a heat source, gather necessary safety equipment, and prepare to launch!

Correlates to the following Common Core Standards: Reading: Literature: Key Ideas and Details: RL.4.1, RL.5.1, RL.6.1; Reading: Informational Text: Key Ideas and Details: RI.4.3, RI.5.3, RI.6.3; Integration of Knowledge and Ideas: RI.4.7, RI.5.7, RI.6.7; Speaking & Listening: Comprehension and Collaboration: SL.4.1, SL.5.1, SL.6.1

Engineering


In designing her cannon, Ada is thinking about using something explosive to help fire a sock and/or Peebs into the air! Have students work in pairs to design and build a device that can send one of their own clean socks aloft without any explosives. Provide materials that encourage the creation of sock-conveyance devices propelled by air pressure, such as balloons, straws, string, tape, plastic and cardboard tubing, cardboard, and items from the recycling bin, like water bottles and yogurt cups. Students who need help getting started can search online for stomp rockets or balloon rockets. Have students keep notes as they research, brainstorm, plan, and design their device and encourage students to test and refine them before everyone competes to see which device can transport the sock the farthest.

Correlates to the following Common Core Standards: Writing: Research to Build and Present Knowledge: W.4.7, W.5.7, W.6.7; Speaking and Listening: Comprehension and Collaboration: SL.4.1, SL.5.1, SL.6.1

Engineering and History

Even as Ada's hot-air balloon is going down in flames, she's already thinking about making it bigger and better. Improving and refining is an important part of the engineering design process. Many inventions we enjoy today were imagined and developed long ago, but were refined and improved later by subsequent inventors, engineers, and designers.

Ask students to share what they know about the origins of technologies they regularly use—from indoor plumbing to cell phones. Following this discussion, divide students into small groups to research how the computer has evolved since Charles Babbage started with his ideas for the Difference Engine and the Analytical Engine. Beginning with the 1800s, have each group focus on a different time period, covering developments in computer technology in that era, how the technology was utilized, and how that usage compares to the way we meet a similar need today. Students should also include their own ideas for improving computers to meet a current problem or need and what they think will happen in the future of computing. Small groups should present their research and ideas to the entire class in a multimedia presentation.

 Correlates to the following Common Core Standards: Reading: Informational Text: Key Ideas and Details: RI.4.3, RI.5.3, RI.6.3; Writing: Research to Build and Present Knowledge: W.4.7, W.5.7, W.6.7 and W.4.9, W.5.9, W.6.9; Speaking & Listening: Comprehension and Collaboration: SL.4.1, SL.5.1, SL.6.1; Presentation of Knowledge and Ideas: SL.4.4, SL.5.4, SL.6.4 and SL.4.5, SL.5.5, SL.6.5

Math

If having students sit and imagine themselves as points on a curve, as Ada and Mr. Babbage do, is too abstract, get them focused on aspects of the work of the real Ada Lovelace and Charles Babbage. Babbage conceived the idea of the Analytical Engine—a general-purpose computer. But Ada Lovelace, who added extensive notes in her 1842 translation of *Sketch of the Analytical Engine Invented by Charles Babbage*, made clear how it would work. Her algorithm for generating Bernoulli numbers with the Analytical Engine is regarded as the world's first computer program. Present Lovelace's and Babbage's ideas and the concept of algorithms to students before showing them how to think about programming with this exercise in writing precise language and instructions.

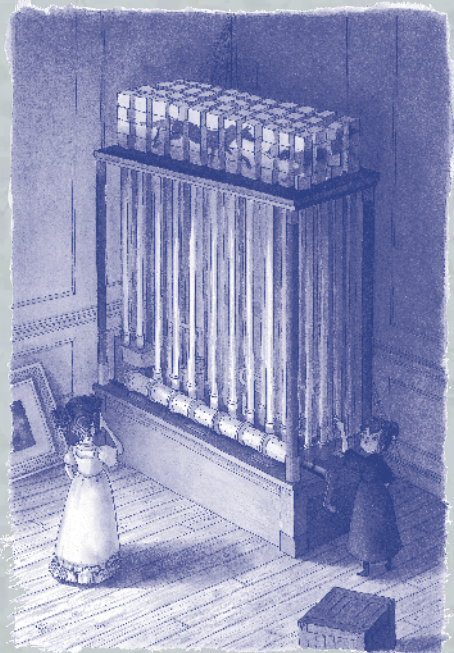


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As a set of step-by-step instructions for solving a problem, algorithms are all around us. They are especially important

to computers, which need methods for solving problems. Explain to students how a recipe could be considered an algorithm, as it produces a result given a specific set of inputs (ingredients) in a finite amount of time. Ask students to think about what other activities they do that could be broken down into step-by-step instructions. Ask them to pick one and describe it, breaking it down so that a computer might understand it. In their writing, students should include *inputs* (everything needed to do the steps) and *outputs* (the solution to the problem). Students should number each step and separately note any *assumptions* (accepted facts that relate to the activity). Have students exchange their work and act as the “computer” to check one another for precision and for reproducibility.

Correlates to the following Common Core Standards:
Writing: Text Type and Purposes: W.4.2, W.5.2, W.6.2;
Production and Distribution of Writing: W.4.4, W.5.4, W.6.4;
Speaking & Listening: Comprehension and Collaboration:
SL.4.1, SL.5.1, SL.6.1

Poetry

The real poets Lord Byron and Percy Bysshe Shelley are part of the fictional world created by the author of *The Case of the Missing Moonstone*. But Ada prefers math and science to poetry. Perhaps making science poetical would change her mind! Have students explore the connection between discovery in science and creativity on the page as they write poetry about or inspired by scientific ideas. As with science, poetry is a way to look at the world. Encourage students to think about the scientific process—observation, examination, inference, description, explanation, and the communication of ideas—as they develop a poem about a scientific idea that interests them or would have intrigued Ada.

Correlates to the following Common Core Standards:
Writing: Text Type and Purposes: W.4.2, W.5.2, W.6.2;
Production and Distribution of Writing: W.4.4, W.5.4, W.6.4



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VOCABULARY/USE OF LANGUAGE

About Ada, Mary quickly learns that “clearly, the younger girl needed no assistance so far as vocabulary was concerned.” As all are not quite the genius that Ada is, the author often has a character weave the definition of a word into dialogue or sometimes provides clues to meaning in the context of the story. Encourage student discussion of the words and meanings that they discover in the book by having students make an illustrated poster to hang on a World of Wollstonecraft Word Wall. Students can present their posters and then work in small groups to seek out related words to add to the wall.

Also woven throughout the book are allusions to many historical and literary people, places, and things. Help students identify names that have a meaning behind them. Then ask students to work together in small groups to try to determine the author’s reason for choosing those names. Ask each group to investigate at least one allusion and prepare a case file that includes details about the reference and what connection it has to the book. Students should present their deductions to the entire class.

Correlates to the following Common Core Standards: Reading: Literature: Craft and Structure: RL.4.4, RL.5.4, RL.6.4; Language, Vocabulary Acquisition and Use: L.4.4, L.5.4, L.6.4

ADDITIONAL READING

The Case of the Missing Moonstone is rooted in the tradition of the early masters of the mystery genre: Wilkie Collins and Sir Arthur Conan Doyle. Have students choose a Sherlock Holmes story to read. Then ask them to compare and contrast its plot, characters, use of deductive reasoning, and mystery to *The Case of the Missing Moonstone*.

MysteryNet.com/holmes/sherlock-holmes-stories

Students may find the [London] *Times* as interesting as Ada does. Have them explore and read historical newspaper articles from London in 1826. Ask students to compare and contrast an article on a similar topic in a current edition of the *New York Times* or your local paper.

NewspaperArchive.com/uk/middlesex/london/london-times/1826



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ABOUT THE AUTHOR



JORDAN STRATFORD is a producer, author, and screenwriter. Stratford launched the idea for the Wollstonecraft Detective Agency series on Kickstarter, where the response was overwhelming enthusiasm.

Mr. Stratford lives on Salt Spring Island in British Columbia, Canada, with his wife and children and is hard at work on *The Girl in Grey*, the next book in the Wollstonecraft Detective Agency series.

