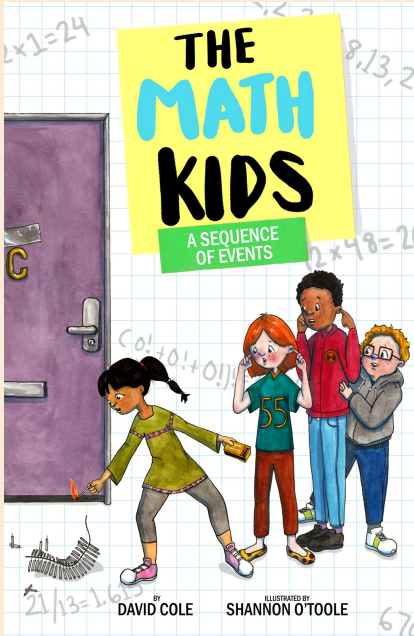


A Sequence of Events

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Grade Level

This teacher guide is recommended for students in Grades 4, 5, and 6.

About the Author

David Cole has been interested in math since he was a very young boy. He pursued degrees in math and computer science and has shared this love of math at many levels, including teaching at the college level, coaching elementary math teams, and running a summer math camp. He also has a love of writing and has written a number of plays that have been performed. *The Math Kids* was born of a desire to combine his interests and exercise both sides of his brain at the same time.

About the Illustrator

Shannon O'Toole is a Toronto based illustrator, painter, and elementary school teacher. Her playful illustration work is inspired by the unique and humorous characters in her life. Aside from illustrating books for children, Shannon has exhibited her artwork in galleries across Ontario. When she is not drawing, Shannon can be found curled up with her dog, Edgar, watching old movies.

Book Summary

The Math Kids Club is back! After solving the case of the prime-time burglars, the Math Kids, Jordan, Justin, and Stephanie are ready to return to the original purpose of their club: solving math problems. And the district Math Olympics is the perfect opportunity to do just that. But before they can enter the competition, they need a fourth teammate. The Math Kids set their sights on Catherine Duchesne. Even though Catherine has been quiet in class, she knows some really cool math tricks that are sure to help the Math Kids win the competition. But when Catherine doesn't show up for school and Jordan, Justin, and Stephanie find out her father's been kidnapped, the group springs into action to help their new friend.

The Math Kids: A Sequence of Events is the second book in the Math Kids series.

How to Use this Teaching Guide

The purpose of this teaching guide to *The Math Kids: A Sequence of Events* is to help teachers take concepts from the book and create lessons and activities that allow students to engage in critical thinking and creative problem-solving.

The content of this book lends itself strongly to the math curriculum but can also be used to develop cross-curriculum lessons. Some of the lessons in this guide connect to specific chapters of *A Sequence of Events* but the lessons/activities themselves are more generalized and can be modified to fit the strengths, interests, and needs of students.

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"I'D LIKE TO BUY A NUMBER"

Grade 6 Math - Number Sense and Operations

Lesson Summary:

In this lesson, students will work on solving a complex word problem and determine what information will be necessary for them to solve the problem. This lesson connects well to the concert problem that the Math Kids solve in chapter 4 of *A Sequence of Events*. Students will be given a problem without any numbers in it and, in small groups, will determine which numbers they feel are necessary to solve the problem.

Instructions:

1. Before class, create a word problem for students to solve. The problem should contain numbers that are not relevant to the problem itself so that students can practice determining which pieces of information are important. An example of a word problem is given in the resources on page 8. Remember to cover or redact the numbers on the handout before giving it to students!
2. Divide students into pairs or small groups and hand out the problem.
3. Remind students to take their time reading the problem and determine which pieces of information to ask for.
4. When students ask for the missing information, tell them the appropriate number. Students could be challenged to try to solve the problem using as few pieces of information as possible.
5. When students have finished solving the problem, have a gallery walk or a group discussion as a consolidation. Allow students to share the methods/techniques they used to solve the problem. If using the problem given in the resources, possible solutions include finding grams first, jars of honey first, kg of honey first, and the profit from one beehive first.
6. Ask students which pieces of information they received, what they thought was the best way to solve the problem is, and what other techniques they could use to solve the problem.

Expansions and Extensions:

- If students finish early, encourage them to look at the question a different way and try to solve it using different techniques.

Technological Integrations:

- Ask students to show their work using a variety of manipulatives, such as math manipulatives that can be found online. Online manipulatives allow students to visualize their thoughts, edit their work, and easily share their ideas with others. Math manipulative websites can be found in the resources section on page 9.



THE MATHEMATICS OF ART

Grade 4 Art - Visual Arts

Lesson Summary:

In this lesson, students investigate famous works of art to find examples of how math and art can connect. This lesson connects to chapter 8 in which Catherine tells Stephanie that her interest in math came from her love of art. This lesson connects well with the Grade 4 art curriculum as students will practise analyzing art and looking for meaning. This lesson also can be used to connect to a variety of math expectations such as geometric and spatial reasoning, or measurement.

Instructions:

1. After reading chapter 8 of *A Sequence of Events* and highlighting Catherine and Stephanie's conversation, ask students if they can think of any examples of math in art and how math can be incorporated into art.
2. Show students a variety of art pieces that demonstrate examples of mathematics. Ask students critical thinking questions that will help them to discover math in the art pieces and in the world around them. Some art pieces and discussion questions that could be used include:
 - Stuart Davis' *Swing Landscape* (1938). Davis' painting was inspired by the shapes he saw around his home in Massachusetts. What shapes and lines do you see in this painting? What do these shapes remind you of? What might they represent?
 - Pablo Picasso's *Three Musicians* (1921). Picasso often used regular and irregular shapes in his work. What shapes do you see in this painting? Where are the three musicians? How many different shapes can you see in this picture?
 - Norval Morrisseau's *Shaman and Disciples* (1979). The central figure in this painting is said to be a self-portrait of Morrisseau himself. Describe the kind of lines and shapes you see in this painting. Does anything remind you of something you've seen in nature?

Expansions and Extensions:

- Have students create a work of art that includes math by using math manipulatives such as pattern blocks, counters, or geoboards.

Technological Integrations:

- Students can use a variety of websites to create art that includes math. Give students time to create their works of art and then share their creations with the class. Ask students to explain their work. Websites can be found on page 9 in the resources section.
- Allow students to explore other works of art by looking through online art gallery exhibits. Give students ideas of math concepts to look for in art such as symmetry, shapes, and patterns.



TWITTER-IZE IT

Grade 5 Language Arts - Reading and Writing

Lesson Summary:

In this lesson, students will practice summarization by developing a “tweet” that highlights the main points of each chapter of *A Sequence of Events*. This lesson is designed for students in Grade 5 and aligns well with the Grade 5 reading and writing curriculum expectations. This lesson requires students to demonstrate their understanding of the text through summarizing important ideas and details; it also helps students practice creative writing in a unique form.

Instructions:

1. Once students have heard or read the entirety of *A Sequence of Events*, review summarizing with students. A clip that could be used to help explain summarizing, called “A Cop Summarizes,” can be found on Vimeo (<https://vimeo.com/30867560>).
2. Divide students into pairs or small groups and assign each group a chapter of the novel. Have students reread their assigned chapter and make notes about the important plot points and details.
3. Next, students should begin creating their summaries. Remember, each post on Twitter is allowed to have only 280 characters or roughly 40-60 words.
4. Once all groups have finished their tweet, have each group read their tweet to the class and discuss the summaries as a class. Were all important plot points and details mentioned? Could words or sentences be cut to make a more succinct summary?

Expansions and Extensions:

- For an extra challenge, students could try to create their chapter summary in Twitter’s previous character limit which was 140. Students could also try to create an effective summary in as few words/characters as possible.

Technological Integrations:

- Students could give a sense of authenticity to their summary by making it look exactly like a tweet using websites such as <https://www.tweetgen.com/>. As a class, create a thread of tweets that can be saved to an online class folder, printed off, or used as review. This can be done for all novels read over the course of a school year!



FREEZE FRAME

Grade 4 Art - Drama

Lesson Summary:

This lesson has students connect the drama curriculum to *A Sequence of Events*. Students will select important scenes from the novel and create tableaux that represent those scenes. This lesson helps students to think about important sections of the book while incorporating creative thinking and presentation. It can also be used to help teachers check for students' understanding of the text.

Tableau: "A group of silent, motionless figures used to represent a scene, theme, or abstract idea (e.g., peace, joy), or an important moment in a narrative. Tableaux may be presented as stand-alone images to communicate one specific message or may be used to achieve particular effects in a longer drama work. Important features of a tableau include character, space, gesture, facial expressions, and levels (Ontario Arts Curriculum, 2009)."

Instructions:

1. Review tableaux with students; remind them that tableaux are a series of motionless "scenes" and should highlight an important plot point or moment.
2. Divide students into groups of 3-5.
3. Either instruct groups to select an important scene or create your own list of scenes and allow groups to select a scene from the list.
4. Give students ample time to create 2-4 tableaux that represent the scene or plot point they selected.
5. Allow each group to present and encourage students to discuss the tableaux. Have students guess the important plot point being demonstrated or which character each student represents.

Expansions and Extensions:

- Students can create additional tableaux or create tableaux to represent different important scenes.
- Before beginning the activity, have students create their own list of the most important plot points.
- Tableau with a twist: tap on one student in the tableau. That student then "unfreezes" and talks from their character's perspective about the scene.
- Allow students to use or create props that can add to their tableau.

Technological Integrations:

- Take pictures of each tableau and, as a class, put the pictures in chronological order to create a video of tableaux that retell *A Sequence of Events*.



A DAY IN THE LIFE OF CATHERINE

Grade 6 Language Arts - Writing

Lesson Summary:

In this lesson, students will use the events of chapters 10 and 11 of *A Sequence of Events* to engage in a creative writing activity. In chapters 10 and 11, Catherine disappears from school for a few days creating a “hole” in her character’s story. Students will use creative writing and thinking skills to describe what Catherine did during that time. This activity can be done in small groups or individually.

Instructions:

1. Review the events of chapters 10 and 11 with students.
2. Have students brainstorm some ideas of what Catherine may have experienced while she was “missing” from the story.
3. Have students organize their ideas using a graphic organizer such as a web/net, storyboard, flow chart, or events chain.
4. When students have finished brainstorming, have them write a small writing piece that details Catherine’s experiences. This could be done in a variety of writing styles, such as diary entries.
5. When finished this activity, allow students to share some of the ideas about what Catherine did when she “disappeared.”
6. Ask students what ideas they had in common and what ideas were dissimilar.

Expansions and Extensions:

- Students could continue to write in Catherine’s perspective and rewrite the ending of the book from entirely her perspective.
- Students could be asked to present their creative writing pieces in a variety of ways such as an oral presentation or acting out their writing.

Technological Integrations:

- Have students act out their creative writing or a single scene from it and record it, creating their own movie.
- Students could create a series of blog posts that Catherine uses to document her experiences.

"I'D LIKE TO BUY A NUMBER" HANDOUT

In your small group, work on solving the problem by asking for only the necessary pieces of information. Take time to read the question, determine the most important pieces, and then ask your teacher for the necessary numbers. For an added challenge, try to solve the problem using as few pieces of information as possible!

Each year about 5 million kg of honey are produced by Manitoba beekeepers. A 500 g jar costs \$6.35. One beehive has about 45,000 bees and produces about 70 kg of honey in six weeks. If a beekeeper has 120 beehives, how much money would they earn in 6 weeks?



URL Links, Resources, and References:

Math in Art Creation Websites

<https://mathigon.org/polypad>

<https://www.geogebra.org/>

<https://reallysketch.com/>

<https://www.mathsisfun.com/geometry/symmetry-artist.html>

<https://www.mathsisfun.com/geometry/spiral-artist.html>

<https://www.mathsisfun.com/geometry/tessellation-artist.html>

Math Manipulatives and Math Resources:

Toy Theatre Math Manipulatives: <https://toytheater.com/category/teacher-tools/virtual-manipulatives/>

Mathigon Math Manipulatives: <https://mathigon.org/polypad>

Geogebra: <https://www.geogebra.org/>

Didax Math Manipulatives: <https://www.didax.com/math/virtual-manipulatives.html>

Curriculum Documents

Ontario Math (2020) Curriculum: <https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics>

Ontario Language Arts (2006) Curriculum:

<http://www.edu.gov.on.ca/eng/curriculum/elementary/language18currb.pdf>

Ontario Art (2009) Curriculum:

<http://www.edu.gov.on.ca/eng/curriculum/elementary/arts18b09curr.pdf>

Other

Common Deer Press: <https://www.commondeerpress.com/>

<https://www.commondeerpress.com/a-sequence-of-events>

