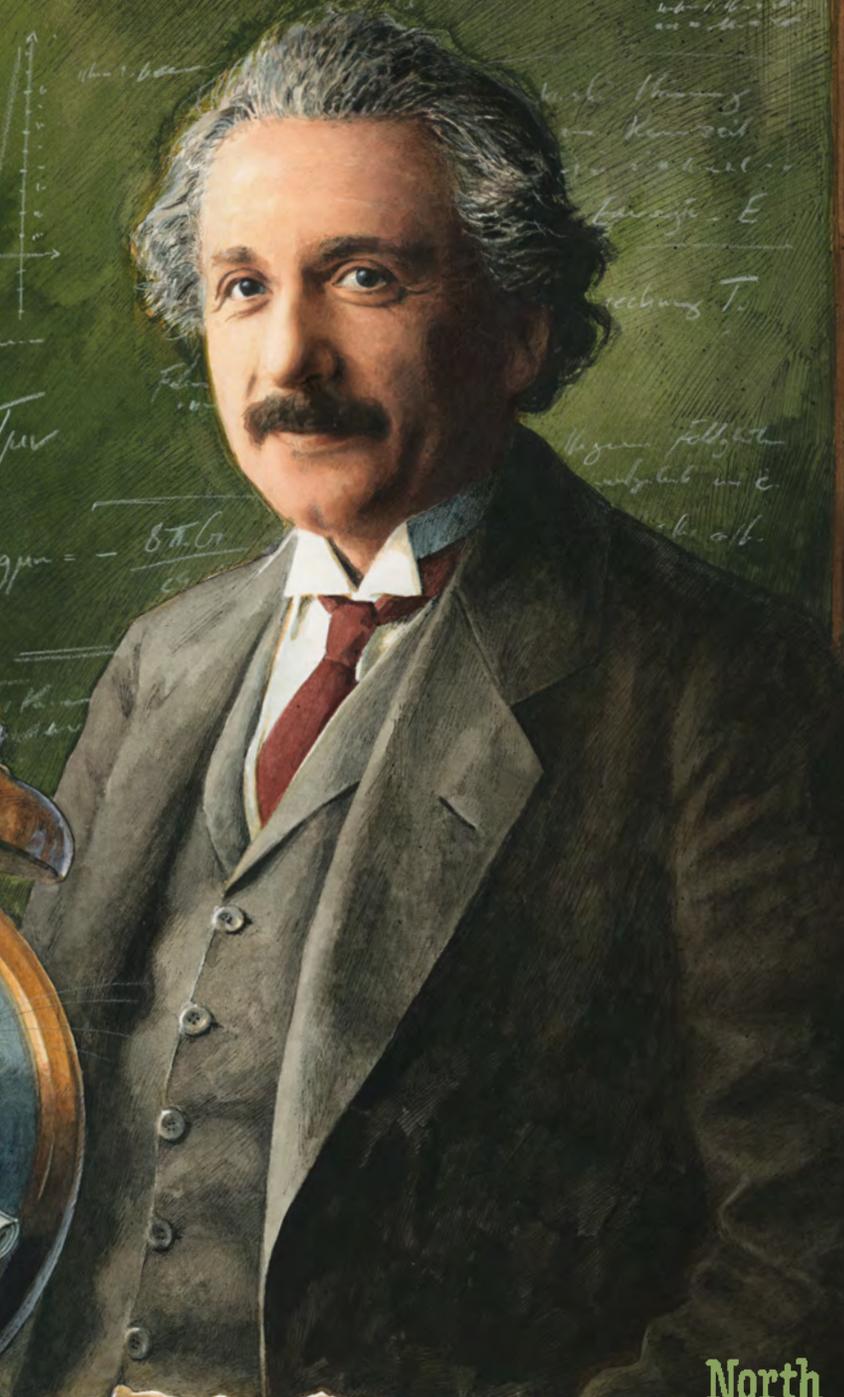


EINSTEIN

The Fantastic Journey of a Mouse Through Space and Time

**Teacher
Resource
Guide**



Time is relative!

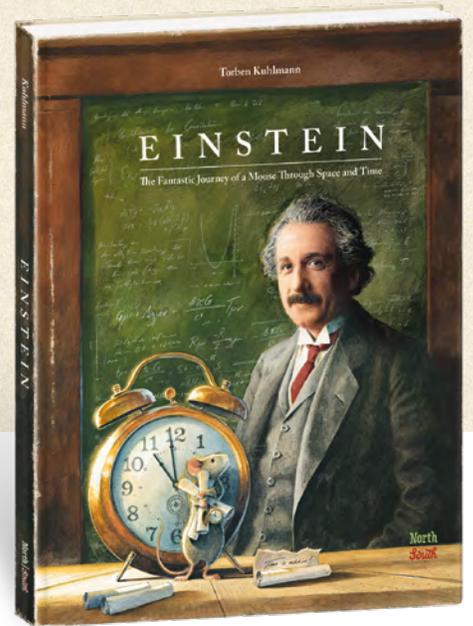
**North
South**

Teacher Resource Guide

EINSTEIN

The Fantastic Journey of a Mouse Through Space and Time

by Torben Kuhlmann



The Book

When an inventive mouse misses the biggest cheese festival the world has ever seen, he's determined to turn back the clock. But what is time, and can it be influenced? With the help of a mouse clockmaker, a lot of inventiveness, and the notes of Albert Einstein he succeeds in traveling back in time. But when he misses his goal by eighty years, the only one who can help is an employee of the Swiss Patent Office, who turned our concept of space and time upside down.

The Author-Illustrator

Torben Kuhlmann was born in Germany in 1982. Highly creative as a young child, Torben was recognized as early as kindergarten for being a gifted draftsman. He was captivated by small airplanes, strange machines, and steaming trains; these elements made their way into his drawings. He studied illustration and design at the Hamburg University for Applied Sciences. His preferred media are pen and watercolor. He also works with acrylics, oil paints, and digital programs. He works as a freelance illustrator in Hamburg. His books *Lindbergh-The Tale of a Flying Mouse*, *Moletown*, and *Armstrong-The Adventurous Journey of a Mouse to the Moon* quickly became best sellers and owe their inventiveness to Torben's great enthusiasm for unusual mechanical inventions. *Edison-The Mystery of the Missing Mouse Treasure*, his fourth picture book for NorthSouth Books, was chosen as a 2019 Batchelder Honor.



The Guide

This guide provides elementary students with adaptive STEAM extensions to explore the concepts of time, design, invention, and research. Story discussion is the springboard for all activities, which were created in conjunction with the [Common Core Standards](#) and the pursuit of information according to the [American Association of School Librarians \(AASL\)](#) foundations of inquiry, inclusion, collaboration, exploration, curation, and engagement.

The Curriculum Writer

Carrie Charley Brown holds a BS in Elementary Education and a M.Ed. in School Media Library. Additionally, she also holds a Literacy endorsement and is currently an elementary school library media specialist in Louisville, Kentucky. She is the founder and co-coordinator of the Reading for Research Month (ReFoReMo) online challenge for picture book creators and educators at www.reforemo.com.

The Publisher and Copyright

Einstein-The Fantastic Journey of a Mouse Through Space and Time by Torben Kuhlmann, NorthSouth Books, 2021, \$ 22.00 USD / \$ 30.00 CAN; 8.5" x 11", 128 pages; ages 8 to 12
ISBN: 978-0-7358-4444-5, On Sale: 7 September 2021

Einstein Website

For additional resources such as coloring pages and a “Making of Einstein” video, please visit the book’s website themouseadventures.com.



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Curriculum Connections

- Ask and answer questions to demonstrate understanding of a text.
- Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.
- Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting).
- Compare and contrast the themes, settings, and plots of stories.
- Determine or clarify the meaning of unknown and multiple-meaning words and phrases.
- Recall information from experiences or gather information from provided sources to answer a question.
- Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report or other writing).

BEFORE READING

Prereading Picture Walk & Discussion

Take a picture walk through the first 10 pages of the book. Discuss the following:

Title: The title of this book mentions 'Einstein'. What do you know already know about Albert Einstein? Share.

Technology Extension: Using a technology resource, students may do a brief five-minute Einstein search and report back with one fact. This offers students at least some prior knowledge before reading.

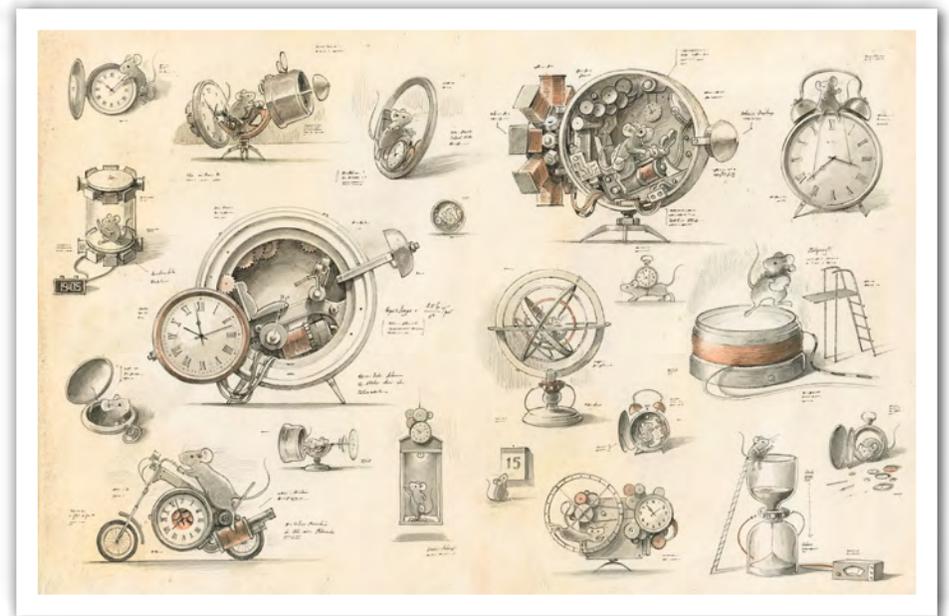
Resources:

[Kiddle](#) (Free kid-friendly search engine. Use search term: Albert Einstein)

[Cool Kid Facts](#)

Endpapers Prediction:

Based on the images in the endpapers, what do you think will happen in this story? How do the pictures connect to the work of Albert Einstein?



Illustrations/Vocabulary:

Examine page 8.

Are the words in the picture familiar to you?

Käsefest

Juli

Bergkäse

Using the pictures as clues, what do you think these words mean? Share.

Technology Extension:

Allow students to use [Google Translate](https://www.google.com/translate) to check the German words from above.

For the "Detect Language" settings in Google Translate: Start with "German" in the first search box and "English" in the second to search the following words: Käsefest, Juli, Bergkäse

Then, using English in the first box, guide students to translate 'cheese' into French and Italian, which are also native languages in Switzerland (our setting).

Model how to use the speaker function to listen to the pronunciation of each word. Then, allow students to try one phrase on their own. Suggestion. "Hello, how are you today?"



Setting:

Examine pages 9-10. Based on the clues from the pictures, where do you think the setting of this story is? (See mountains, flag)

Technology Extension:

Challenge students to use a kid-friendly search engine or database to confirm which country owns the flag pictured on pg. 10. Brainstorm search-terms before they begin. (Note: “country flag” will produce broader search results, “red white cross flag” produces more specific results)

DURING READING

Setting: What is the time period for this story?

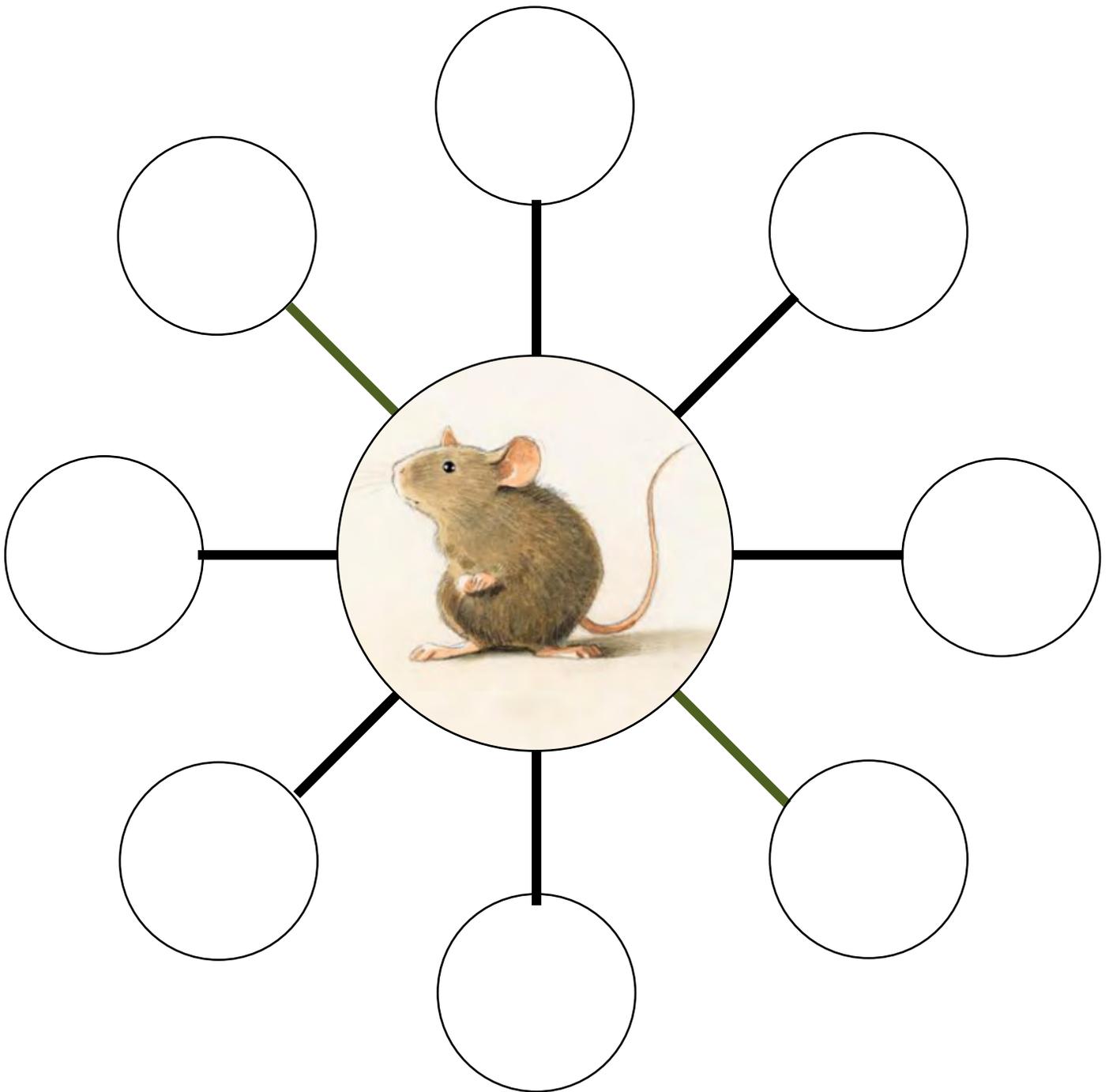
What information from the text supports your answer?

Compare and contrast: How is the setting the same or different than the place you live?

How is the time period the same or different than the time you live in?

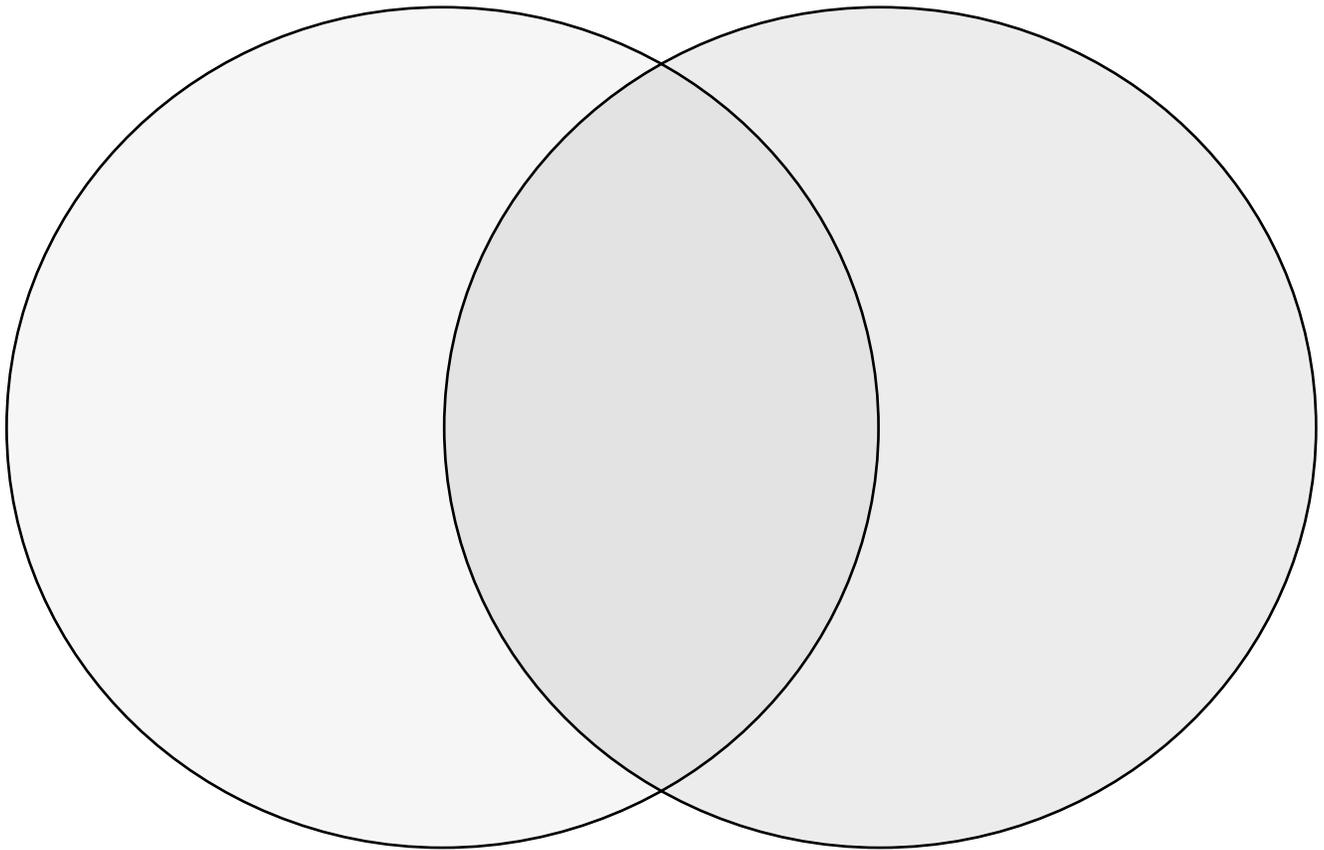
Character

What characteristics define the main character? What text evidence supports your answer?





Compare and contrast the main character with an everyday mouse.



What human characteristics does the mouse have?

Compare and contrast the following line of text to guide your thoughts:

“The mouse had stolen a small brochure from the professor’s briefcase when he wasn’t looking.” (p. 8)

What was your first clue that the main character is a fantastical mouse?

What did that tell you about the genre of this book?

Sketch the main character.

The mouse asks himself a lot of questions throughout the story.
What does this say about him?

Reread page 12 as an example, noting that the mouse asks himself seven questions on this one page alone.

Compare and contrast: How is the mouse the same or different from Albert Einstein?

How is the mouse a problem-solver throughout the story?

Compare and contrast: How is the mouse the same or different from you?

How is the mouse's size an advantage for him? How is it a disadvantage?

Facilitate a turn and talk discussion around the question presented on page 51:

How could a mouse ask a human a question without revealing that he is a fantastical mouse?



Vocabulary

You may want the following words on your vocabulary radar to enhance student comprehension increase oral and academic vocabulary.

p. 8 What is a brochure? The mouse's brochure features Camembert, Brie, Gouda, Emmentaler, Cheddar, Pecorino. Which group do these words belong to? Which of the words in this group served as the context clue to make sense of the whole group?



p. 11 What is wafting? Which context clue from this sentence gives you a hint for the meaning? "Then from somewhere an unmistakable scent came wafting into his nostrils."

p. 11 Students may "flag" unknown words with a Post-It, or be allowed to use a digital dictionary for comprehension support. Additional words on this page for further discussion may include: sarcastic, portly, sneer

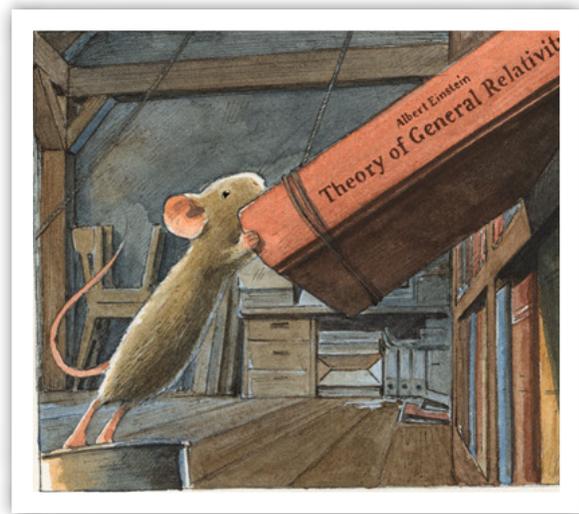
p. 19-20 What is an Uhrmacher? Use the clues from the pictures and the text.

p. 21 Look at the picture. What does the German word *seit* mean?

p. 23-24 Discuss synonyms for contraption, spectacles, beckoned, profession? Which words could you substitute in their sentences? Which context clues help you figure it out the meaning?

Challenge: Which two vocabulary words create a wheel and axle? (screw & cogwheel)

p. 26-28 generations, shudder, filigree, preserved, clinical



p. 29-32 The academic vocabulary on these pages necessitates group support and discussion while reading. How do the illustrations help you understand the following vocabulary?

Theory of General Relativity, electromagnetism, proverbial, beholder, profound, equations, figures, mathematical signs.

p. 34 calculations, undeterred, suitable, cogwheels,

p. 38 stowed, quantities, solenoid coils

p. 40 counterclockwise, twilight, ceased, hypnotized, theories,

p. 42 Bernese, patent, prospect

p.45 despairingly

p. 47 trance, paralysis, breadth,

p. 48 pry, encounter, vendor, murmured, newspapers, suspenders

p. 49 Examine how the following words are used in the sentences on p. 49: whisk (verb), racking (verb). How might the word meanings be different if used as nouns?

coordinates, panic, stranded, despair, arranged, miraculous, coincidence,

p. 50 Discuss which language (s) are used for the newspaper titles on this page. (Use Google Translate to assist as needed or challenge students to a quick search and share.)

p. 51 legendary, paved, image, relative, applications

p. 53 riddle, formulating, complex, query

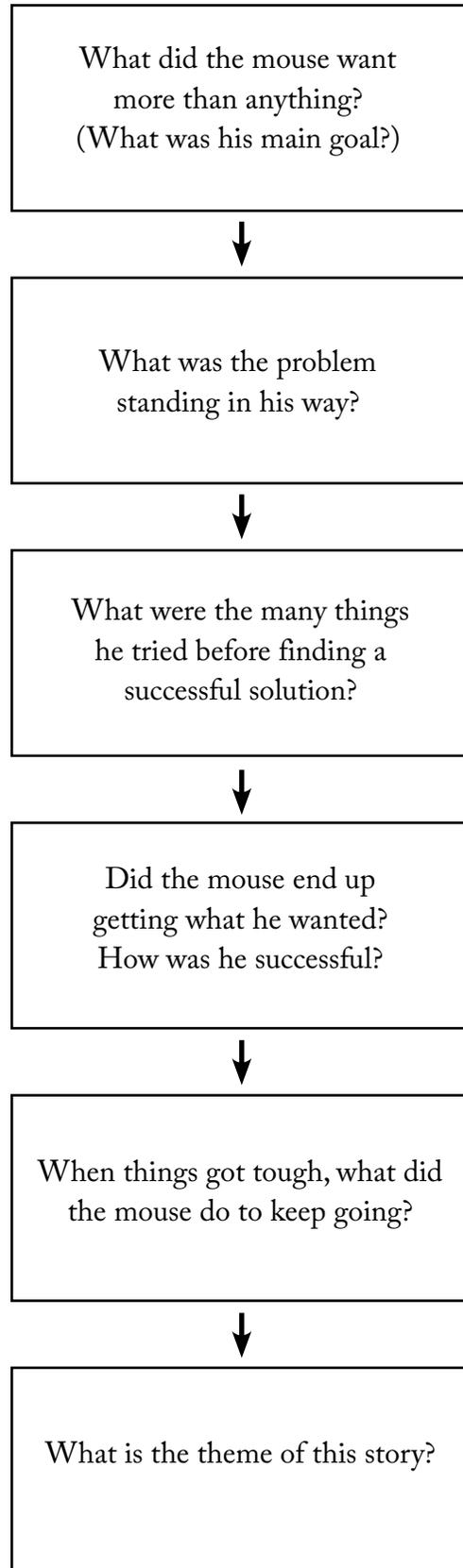
p. 55 capsule, narrow, panic-stricken

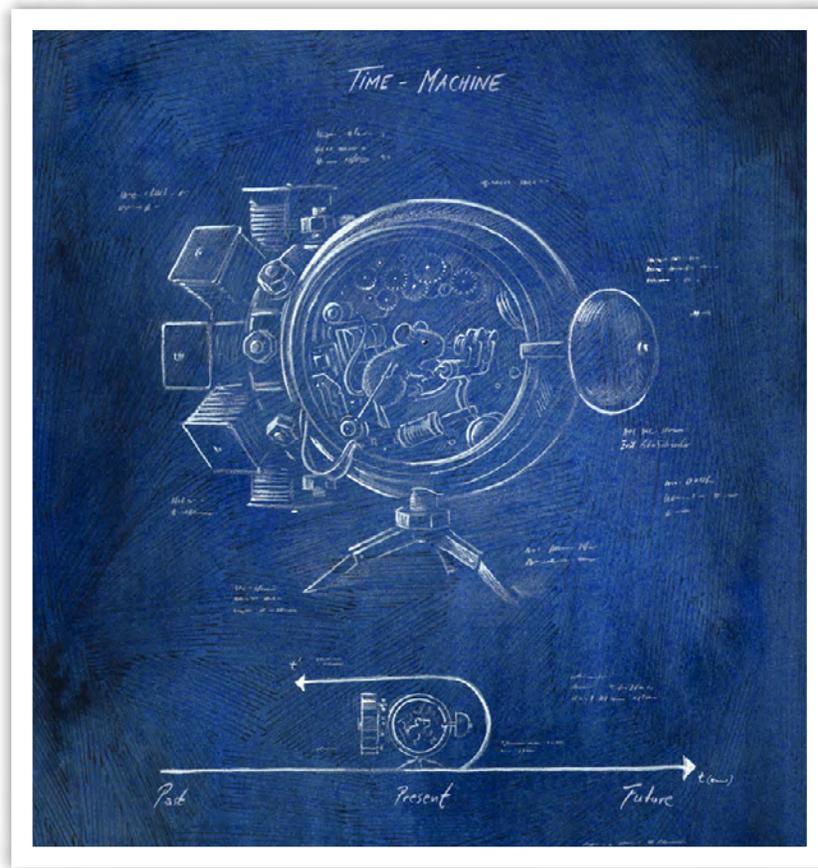
p. 57 incredulously, silhouette, accustomed, legible

p. 59 encounter, revolutionary

AFTER READING

Plot





Writing/Comprehension

Examine the mouse's time machine on page 34. What would your time machine look like? Design a blueprint for your time machine and write about how it will work.

Our main character visits different time periods. Choose and research one time period and tell why you would want to go back in time to experience it. (p.49)

Write a biography poem about Albert Einstein or the mouse (first facts/characteristics p. 51/61)

What are you most curious about? Ask Albert Einstein by writing him a letter. (p. 52)

Write a riddle for Einstein to solve. (p. 52)

What would happen if...

Give 3 example scenarios before having students write their own What-Ifs for their classmates.

Examples: What would happen if . . . we could travel back in time? . . . we could meet with past inventors?
. . .we could talk to animals?

Research the nonfiction biography and science features on pages 61-65. What is one new thing you learned?
How does the idea apply to our modern-day world?

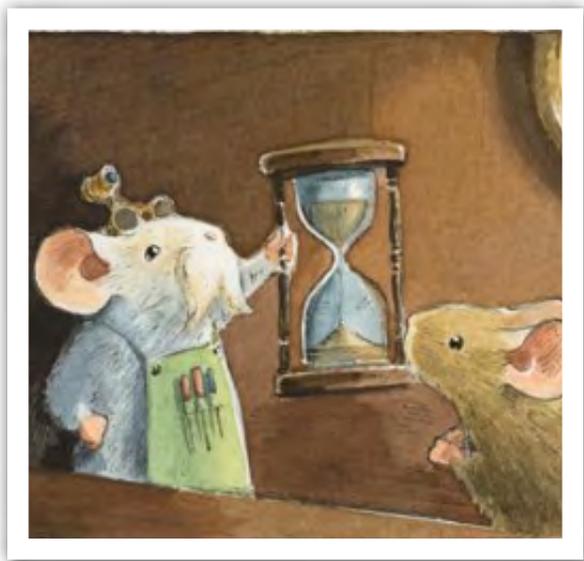
STEAM & HISTORY EXTENSIONS

Lapsed Time Experiments:

Challenge students to a series of time experiments.
Use student volunteers as demonstrators.

How long does it take to . . .

- Write your name
- Take all of the books out of your desk
- Walk from one side of the room to the other
- Walk down the hall and back
- Turn twenty pages of your notebook, one by one
- Listen to a favorite song



Challenge students:

Display a one-minute timer. (digital or minute-glass)

How many _____
can you do in one minute?

Some possibilities: Jumping jacks, repeated name writing, squats, dance moves, hops, blinks, etc.

For extra fun, add some Minute-to-Win-It challenges, such as:

Cup stacking: How many cups can you stack in 1-2-3 minutes?

Dancing Spider Races: How long will it take your dry-erase spider to float? How long will it take you to blow your spider to the finish-line?

LEGO brick-building challenge: How long will it take you to build a _____?
(mouse, clock, etc.)

Tracking Time:

Using page 25 as a springboard, create a timeline of which time devices were created first.

Use additional digital resources to research and confirm placement on the timeline.

Extend research to specific early time pieces as desired. Examples: sandglasses, water clocks, candle clocks, sundials, etc.

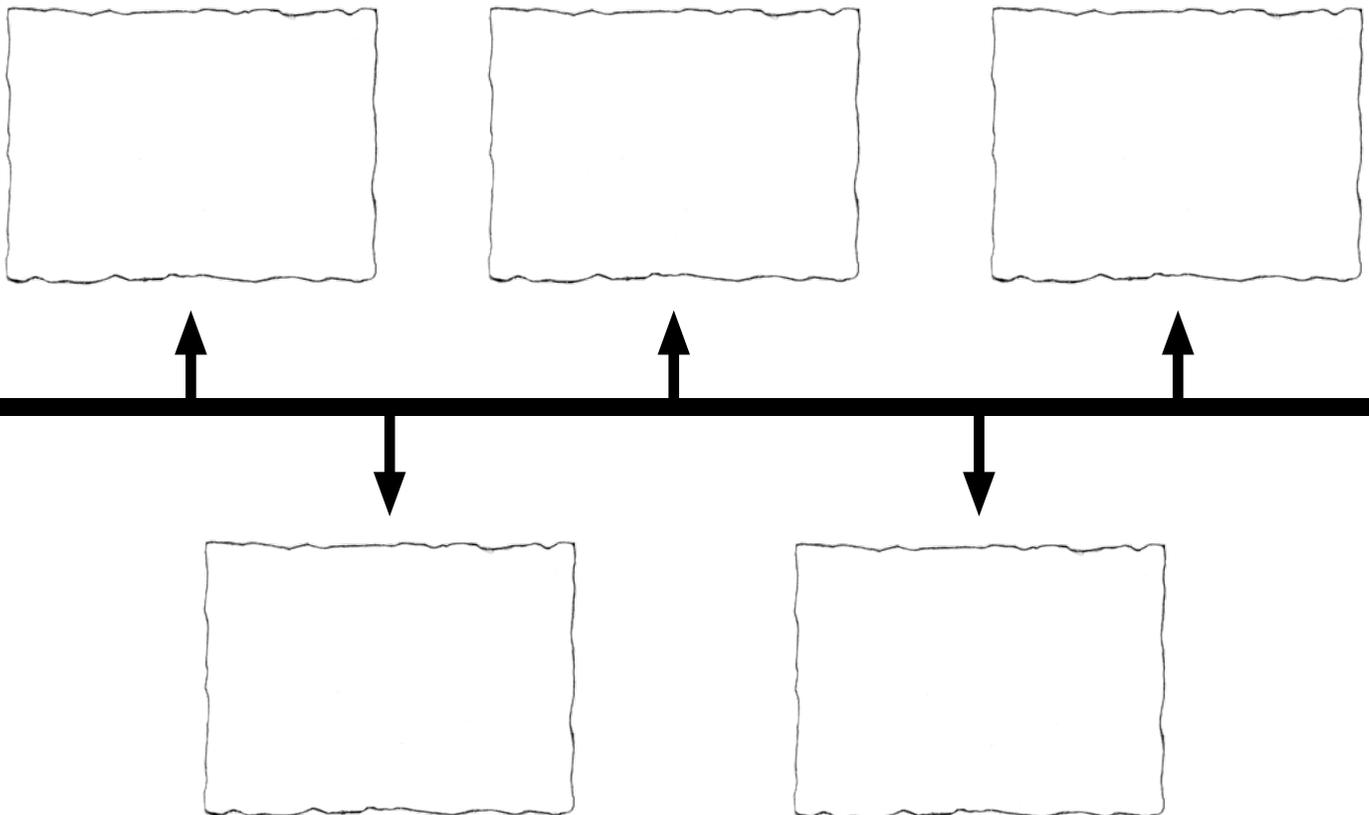
Resource Examples:

[Wonderopolis](#)

[Kiddle](#) (Free kid-friendly search engine. Use search terms: telling time history)

Brittanica School (or another digital encyclopedia/database your school provides)

Print Resource: Neder, Bill E. Clocks from Time to Time. Newbridge Educational Pub., 2003.



Sun Dial Experiment:

Tell the time with the sun by making a homemade sundial!

You'll need:

A circular template or a paper plate

Clay

Straw or unsharpened pencil

Pencil (to write with)

Sun

Clock (to track time)



Basic ideas to get you started:

1. Place a small lump of clay or Playdoh in the center of your circle.
2. Stand a straw or unsharpened pencil in the center of the clay.
3. Place the “dial” outside on a sunny day. (Chose a spot that gets sun all day.)
4. Use a pencil to mark readings at certain times of day. (Trace the shadow line and mark the time of the reading.) If you can check every hour, great! But 3 or 4 times will show the movement, as well.

Observe:

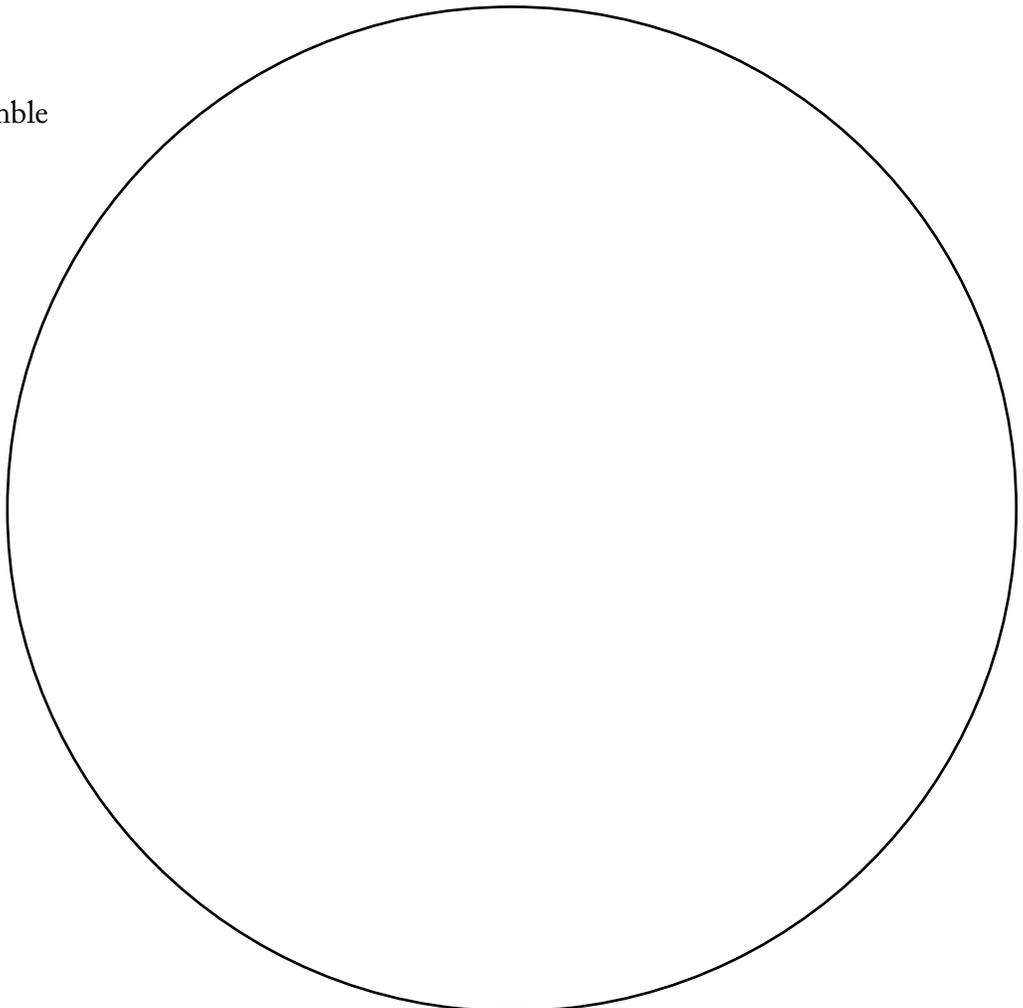
Did your markings move?

How do your markings resemble
an analog clock face?

Some additional resources:

[The Winkle](#)

[SciShow Kids](#)



Clock Research Extension:

Using pages 20–21 and resources listed above, research the history behind different clock designs: pocket watches, grandfather clocks, cuckoo clocks, wrist watches, etc.

Extend the research to clock inventors. For example, students could research Benjamin Banneker, the creator of the first (American) mechanical clock in 1752.

Encourage students to share and/or present information. Then, compare and contrast creations from different inventors. For example, Thomas Jefferson's mechanical clock creation had two dials and also weights to show days of the week.



Sketch Challenge:

Examine the many clock and watch designs on pages 14 and 20.

Sketch your own clock design! If desired, take it one step forward and build a prototype.

Change Over Time Research:

Inquiry springboard: Compare pages 30 and 42. What do you notice that is different between the pages? Using an inquiry description and question as a starting point (see below), research how one of these items has changed over time: phone, computer, phonograph, typewriter, oil-burning lamp, vehicles, clothing, print newspapers (p. 43) vs. digital news of today, adding machine, fountain pens. Create a timeline, display board, newspaper, one-pager, or brochure, and write to show changes.

Inquiry description/question example:

Clothing:

In today's world, you don't see all adult men wearing suits and all adult women in long dresses and bonnets, as mentioned on p. 43. Did you know that there was a time when this type of clothing was traditionally worn daily? At what time did this start and when/how did it change over time?

Sample search terms that might facilitate productive research: technology and invention, phones and invention, computer history timeline, etc.

Example Resources:

Free kid-friendly search engine: [Kiddle](#) (Use search terms: telling time history)

Brittanica School (or another digital encyclopedia/database)

PebbleGo

Simple Machines (Gears) Inquiry-Design Challenge

Using the *Guided Inquiry Design in Action* model by Leslie K. Maniotes, students will be immersed in the engineering and design process through inquiry.

Goals: Open minds, stimulate curiosity, build background knowledge, pursue new information, design & create a gear system, share creations, and evaluate to improve.

The inquiry journal will be a place to record important sources, write new questions, find answers, do rough sketches, and create designs. (Master copies to follow)



Open invitation:

Reread page 17 and examine the illustration of the gears.

Prompt: How do gears work? Think-Pair-Share (2-3 mins) to discuss

Journal: Respond to the prompt above by sketching a picture on the cover of your inquiry journal. Your picture should illustrate how you think gears work. (This may also be used as a preassessment.)

Discuss: We know from the story that an analog clock uses gears. What other machines might use gears in the real world?

Immerse:

Students will watch a working gear video or live demonstration.

Video examples:

[ScienceOnline Gear Basics](#)

[Knowledge Platform Gears and the Principles of Gear Systems](#)

[Madly Learning: Learn About Gears](#)

The teacher will pause in appropriate places to allow students to answer questions and make predictions. After viewing, the teacher presents questions for students to examine as small groups. This page is included in the student inquiry journal. Students will record responses to each question:

What makes a circular design best for gears? How would gears perform if they were not circular? How does the size of the gear affect the rate of rotation? Which materials make the best gears? What materials could we reuse to create a working gear design? How would using upcycled materials affect the performance and durability of the mechanism?

Explore: Which type of gear mechanism interests you most as a designer?

The teacher will provide students with research materials, such as books, videos, and hands-on materials to explore as they seek an answer to the prompt. Students will have an interest page in their journal to list which types of gear designs interest them most, as well as a discoveries page to sketch or list ideas as they explore. The teacher may also opt to include a brochure challenge page: Make a brochure that features the most important parts of a gear mechanism. Watch one of the videos again, if needed.

Research Video Examples:

[Children’s Museum of Houston What’s a Gear to Do?](#)

[Creative Ideas KM: How to Make a Simple Gear from Cardboard](#)

[Science Buddies: Make Candy Gears STEM Activity](#)

[RecreationFun: STEM All About Gears with Rosa](#)

Different types of gear systems:

[King Mechanical Gear Mechanisms in Action](#)

[ScienceOnline Time, Clocks, & Gears](#)

Nonfiction Book extensions:

Macauley, David. *How Machines Work: Zoo Break!* New York: Penguin Random House, 2015.

Walker, Sally M., and Roseann Feldmann. *Put Wheels and Axles to the Test.* Minneapolis: Lerner Publications Company, 2012.

Hands-on materials:

If available, provide students with gear kits, such as LEGO, K’nex, or Learning Resources Gears.



Identify: The teacher will facilitate interests by listing design preference similarities on the board. Students with similar interests may choose to work together in pairs or groups for the remainder of the project. To differentiate for students who would like more creative freedom, students may also choose to work alone. Once grouped, students will identify and draft one design idea to build their own gear mechanism. Students will have a blueprint page in their inquiry journal. Consider providing them rulers to assist their design process.

Things to consider as you sketch your design:

- How many teeth will each gear need?
- How far apart should the teeth be spaced so that they fit together?
- What other materials will you need to make your gear system work?
- List the steps that you will need to follow to build your design.

Gather: Which materials will you need to build your design?
Provide students with varied materials to choose from.

Material ideas:

- Cardboard, foam sheets, straws, toothpicks, popsicle sticks, paper towel/toilet paper rolls, string/yarn, lids, spice drop candies, Styrofoam cups, thumb tacks, pony beads, twisty ties, pipe cleaners
- Glue, glue gun, tape, scissors

Create/Share:

Students will access their materials and build their designs. They will reflect on the process by recording any changes they made in the steps or design. The teacher may also opt to incorporate a digital storytelling component as they create. This would include taking pictures of their design stages and incorporating them into a digital story. The video could then be accessed by other students to recreate the product and also allow a viewing experience for other students to evaluate and offer feedback on designs. When the design is complete, students will present their designs to the rest of the class.

Evaluate:

Students will evaluate their design by writing in their inquiry journal.

Maniotes, Leslie K., and Carol Collier Kuhlthau. *Guided Inquiry Design in Action: Elementary School*. Libraries Unlimited, an Imprint of ABC-CLIO, LLC, 2018.



Gears

Inquiry Journal

By _____





INQUIRY JOURNAL:

Predict

Share & record ideas: What other machines might use gears in the real world?
As classmates share, draw other possible machines in this space.



INQUIRY JOURNAL:

Immerse

Answer the questions below as your group discovers the answers. _____

What makes a circular design best for gears? _____

How would gears perform if they were not circular? _____

How does the size of the gear affect the rate of rotation? _____

Which materials make the best gears? _____

What materials could we reuse to create a working gear design? _____

How would using upcycled materials affect the performance and durability of the mechanism? _____



INQUIRY JOURNAL:

Explore

Which type of gear mechanism interests you most as a designer?

Choose one option below and explain why you think that design will work well:

Cardboard Gears _____

Candy Wheel Gears _____

Styrofoam Cup Gears _____

My own idea _____





INQUIRY JOURNAL:

Explore

Use this space for quick-sketches or taking notes as you discover new ideas.



INQUIRY JOURNAL:

Explore

Challenge: Design a brochure that features the most important parts of a gear mechanism.



INQUIRY JOURNAL:

Identify

Use this space to sketch a blueprint of your design.
Think about the following questions as you sketch:

How many teeth will each gear need?

How far apart should the teeth be spaced so that they fit together when turned?

What other materials will you need to make your gear system work?



INQUIRY JOURNAL:

Identify

List the steps that you will need to follow to build your design.



INQUIRY JOURNAL:

Gather

I will use these materials to build my design:



INQUIRY JOURNAL:

Create/Share

I made these changes to my blueprint as I created:



INQUIRY JOURNAL:

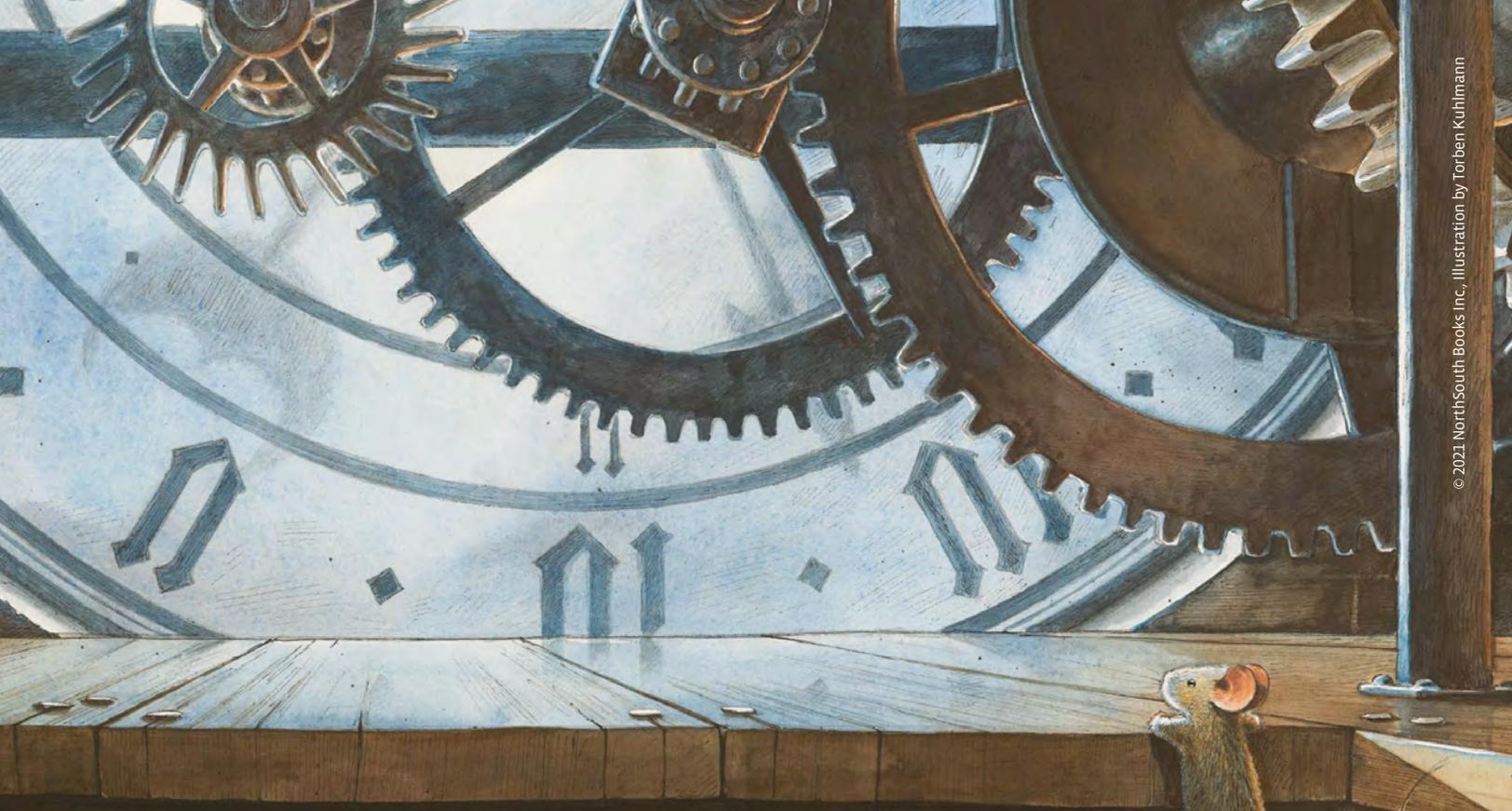
Evaluate

This part of my design worked well: _____

This was hard for me: _____

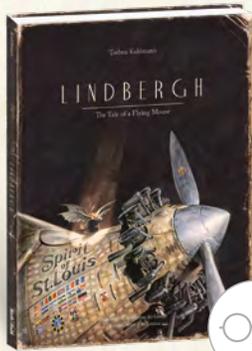
I would do this better next time: _____

Two things I learned about gears: _____



Time is Relative!

Award-winning author-illustrator Torben Kuhlmann's brilliant new book bends time and imagination. The Mouse Adventures are a global phenomenon, selling over one million copies worldwide!



LINDBERGH

The Tale of a Flying Mouse

ISBN: 978-0-7358-4167-3

[Download our free teachers guide for Lindbergh here.](#)

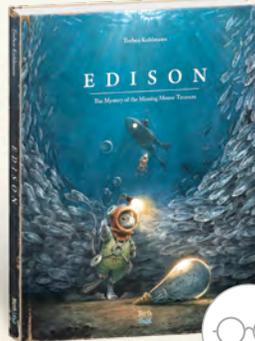


ARMSTRONG

The Adventurous Journey of a Mouse to the Moon

ISBN: 978-0-7358-4262-5

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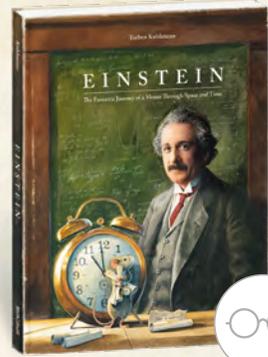


EDISON

The Mystery of the Missing Mouse Treasure

ISBN: 978-0-7358-4322-6

[Download our free teachers guide for Edison here.](#)



EINSTEIN

The Fantastic Journey of a Mouse Through Space and Time

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