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Preface

Welcome!

Rogue Rodent Mystery: A Crime Scene Investigation is a 10-lesson course for elementary students. It is designed to ignite curiosity and stimulate authentic learning by creating real life contexts ranging from lab analyses to print making to criminal investigation. Our courses have been used enthusiastically in all 50 states, stimulating young minds and engaging young hands for many years. In fact, thematic integration—over an extended period of hands-on engagement—forms the driving concept behind all Community Learning's courses. The lessons and activities that comprise Rogue Rodent Mystery are aligned to the practices, cross-cutting concepts, and disciplinary core ideas that are the foundation of the Next Generation Science Standards (NGSS). In addition, the activities included in this unit align to the Common Core State Standards in Mathematics and English Language Arts and Literacy. For more information on the standards please see the Standards Matrix included in the appendix.

Who Can Teach *Rogue Rodent Mystery* and Where?

Instructors are supported by easy-to-manage materials and step-by-step plans. No specialized knowledge is required to launch the course, making this entertaining forensic science mystery ideal for classrooms, after-school programs, intersession programs, museum groups, summer camps, youth groups, and clubs . . . anywhere young people are gathered.

Hands-on Enrichment in Science and Critical Thinking

The call for hands-on activities that build critical thinking skills, confidence, competence, and science literacy can be heard on the national, state, and local levels. To be sure, educators and officials in both the public and private sectors point to the critical role ongoing, quality after-school programs play, especially programs with a focus on science, math, and reading—the same skills now tightly linked to the economic productivity of our society.

Rogue Rodent Mystery exposes students to this and more. The course sets up scenarios that invite students to solve problems creatively, think critically, work cooperatively in teams, and use evidence, models, tools, and scientific techniques effectively.

Bringing the Mystery to Life

Rogue Rodent Mystery is based on the premise that a crime occurred in Ms. Hawkins' science classroom at Cavia Elementary. Her classroom is filled with all sorts of neat things and also has a pet guinea pig named Alice. Alice is a very special part of the class. Mrs. Hawkins loves animals and knows that the best way for her students to learn about what an animal needs to survive is by observing, or watching, the animal up close. The entire class helps take care of the guinea pig - feeding her, giving her fresh water, cleaning her enclosure, providing things for Alice to chew on, and taking her home to care for her on the weekends. Yesterday, Mrs. Hawkins said goodbye to her students as they headed home. She put Alice safely back in her enclosure and then went to the cafeteria to grab an afternoon snack. When she came back 20 minutes later she noticed …Alice was gone! Inside this box are all the materials needed by your students to conduct the investigation, including photographs, scientific equipment and "evidence." Each lesson introduces new intriguing evidence, forensic techniques, and insight toward solving the *Rogue Rodent Mystery*. To limit the suspect possibilities, Ms. Hawkins has narrowed the suspects to four—all current students of hers. Together, your students work toward the most plausible scenarios and celebrate their findings in the concluding lesson with certificates honoring their work as forensic investigators.

Making the Most of Each Lesson

With all the necessary materials provided in convenient, lightweight carryalls, and the setups, processes, and procedures explained in detail, instructors will find *Rogue Rodent Mystery* easy and fun to teach. Each lesson provides an activity that teaches a new but related aspect of scientific reasoning and a particular scientific process. None of the labs require special handling or complicated setups.

After familiarizing themselves with the lesson, vocabulary, and intended outcome of the activity, instructors set up their classroom so that it is easy for students to work in groups. Clear guidance is provided in each lesson on how to set up the demonstration area with all the relevant materials at hand.

Any necessary safety precautions specific to individual lessons are also provided. The instructor should be sure to know where emergency help and supplies are located.

Each lesson activity that the students accomplish becomes part of their "crime scene portfolio" and contributes, ultimately, to solving the mystery. Because of this, instructors need to review the corresponding pages in the Student Activity Book in order to guide students in completing their part of the activity.

Course Kit Components

Each Course Kit comes with a printed Instructor's Guide and Teacher Resources on a thumb drive (referred through this guide simply as "Resources"). The thumb drive contains a PDF version of the Instructor's Guide, Student Book, Handouts, Supply Lists, Safety Sheets, and Video Links. Our course kits also contain all the materials you need to successfully guide your students through each lesson.

The Rogue Rodent Mystery: Teacher Resources and QR Code

Our online resources provide instructors with an in depth guide to *The Rogue Rodent Mystery*, ensuring that both the instructor and the students are able to make the most out of this one-of-a-kind crime scene investigation. This resource page includes an introduction to the course, the Preparation Overview, Lesson by Lesson Training, Video Tutorials, access to the Instructor's Guide, the Student Book, along with the Student Handouts. To access these helpful resources, scan the QR code below or visit **https://blog.commlearning.com/** to get started!

Instructor's Guide

Every step is taken to provide an easy-to-follow format and fun-to-read instructions for each lesson. In addition to a brief listing of objectives, materials, and setup procedures, useful icons point the instructor to a number of key elements:

Notes for the Instructor

Brief instructor notes introduce the subject matter and challenges presented in the particular lesson. They often contain real-life, age-appropriate examples from crime in history or popular culture.

Notes for the Students

These notes "set the stage" for each lesson by presenting brief material to read, listen to, and discuss.

Vocabulary

New and relevant terms are defined here. Note, too, the comprehensive "Glossary" at the rear of the Instructor's Guide and Student Books.

Activity Description

Here, step-by-step procedures are provided for both the instructor's demonstration and the students' immersion in the activity.

Wrap-up

Discussion-provoking questions are designed to summarize learning and help students take their inquiry further.

Clean-up

Clear instruction on preserving and storing materials is provided to ensure kit longevity and cost effectiveness.

Other Directions, Discussions and Destinations

To extend lessons and deepen understanding across disciplinary and cultural divides, relevant links to multimedia, web resources, and books are provided here.

Student Books

Designed for students to record their discoveries class after class, the Student Books acquire a narrative quality that keeps the young "Crime Scene Investigators" engaged in scientific investigation over time. The books serve as companions to the Instructor's Guide and contain reports, charts, places to attach samples, and areas to record observations, as well as a full glossary of terms used in the course.

The complete *Rogue Rodent Mystery* Student Book is provided in Resources for your individual use.

Companion Resources

When you adopt *Rogue Rodent Mystery*, your instructors will have access to a number of companion resources, including lesson extensions and other great ideas for the classroom. Word search and crossword puzzles help reinforce newly learned and used vocabulary. Links to forensic videos and other multi-media resources provide authentic lesson extensions. Immediate support is always available by phone, email, or webinar from the experts at Community Learning.

About Community Learning

At Community Learning, we believe learning should be a journey fueled by curiosity, so we create and curate hands-on learning kits and partner with organizations that share our vision for exploration-based education. Instead of traditional textbooks, our activities and resources get learners doing, thinking, and exploring—whether they're aspiring scientists, storytellers, or makers—while building critical thinking skills through engaging challenges and real-world problem-solving. Working alongside outstanding educators and experts, we carefully select and develop kits and products that inspire through engagement and fun, helping parents and educators nurture their learners' natural curiosity in ways that spark discoveries that could last a lifetime. Together, let's engage, expand, and inspire the next generation of lifelong learners.

If you have any questions, suggestions, or feedback, please visit our website or email us at **info@commlearning.com**.

Preparation Overview

	Lesson 1 Observing the Clues: Investigating with Your Senses	Lesson 2 Recording Your Findings: Sketching the Scene	Lesson 3 Listening to a Witness: Creating a Composite Sketch	Lesson 4 Analyzing Alibis: Monitoring the Movement of Suspects	Lesson 5 Applying Physics: Studying Force and a Falling Skeleton
Print/Copy	Student Book pages iii-6	Student Book pages 7-10	Student Book pages 11-14	Student Book pages 15-26	Student Book pages 27-36
Organize Kit Supplies	• Crime scene video • Air freshener • Senses cards • Person of interest script • Scissors • Blindfolds • Earplugs • Small bandages • Plastic spoon • Plastic cup • Red tempera paint • Pencils	• Crime scene tape • Flip chart • Scaled dog photos • Scaled doghouse photos • Crime scene sketch • Mrs. Hawkins's 1st letter • Scissors • Evidence Envelope • Marker	• Examples of composite sketches • "Artist" and "sketch" stickers • Centimeter cubes • Plastic cups • Pencils • Crayons	• Copy of suspect photos • Evidence Envelope • Copy of Mrs. Hawkins's 2nd letter • Flip chart • Marker • Copies of alibi cards for each suspect • Scissors • Pencils	• Copy of Cavia Elementary School map • Sketch of Mrs. Hawkins's crime scene • Set of directional stickers • Stress balls • Figurines • Rulers • Crayons • Pencils
Prepare	• Locate crime scene video on Teacher Resource Thumb Drive. • Make red paint • Arrange for an adult (person of interest) to come into your room at a designated time • Cut out the required number of senses cards • Print Vocabulary Words	• Cut out the dogs and doghouses • Address the Evidence Envelope to your school and your class	• Count cubes into plastic cups	• Choose and label the appropriate suspects for your class • Arrange suspect photos near flip chart • Place Mrs. Hawkins's letter in the Evidence Envelope	• Designate large flat areas for groups to work
Acquire Additional Supplies	• Water	• Cell phone, digital camera, or note paper • Clock with second hand			

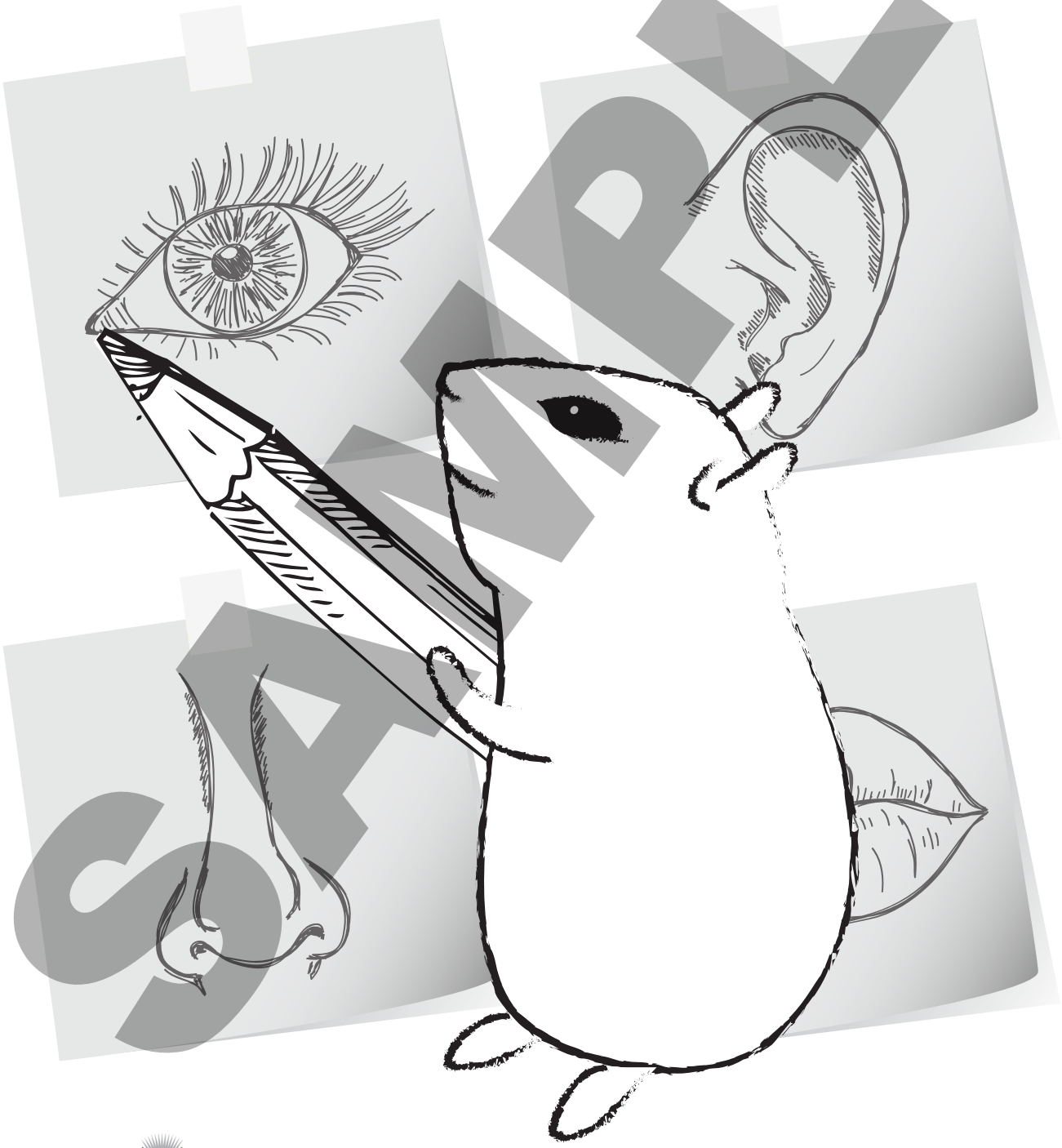
Preparation Overview

	Lesson 6 Inspecting Pattern Evidence: Comparing Shoe Prints	Lesson 7 Researching Rodents: Discovering a Guinea Pig's Survival Needs	Lesson 8 Following Colorful Clues: Making Orange Paint	Lesson 9 Weighing the Evidence: Testing the Scales of Justice	Lesson 10 Considering the Confession: Understanding Misunderstandings!
Print/Copy	Student Book pages 37-44	Student Book pages 45-51	Student Book pages 52-56	Student Book pages 57-58	Student Book pages 59-63
Organize Kit Supplies	• Scissors • Plastic cups • Card stock paper • Spray bottles • Rulers • Centimeter cubes • Crayons • Pencils	• Copies of Alice's photo • Copy of Mrs. Hawkins's 3rd letter • Evidence Envelope • Markers • Crayons • Poster board sheets • Pencils	• Red, blue, and yellow temper paint powders • 1,000 mL beaker • Plastic cups • Coffee scoop • Mixing spoon • Flip Chart • Marker • Copy of Mrs. Hawkins's 4th letter • Evidence Envelope • Foam plates • Suspect stickers • Wooden stir sticks • Pencils	• Crime scene video • Copy of suspect photos • Copies of Lady Justice • Plastic cups • Centimeter cubes • Pan balances • Index cards • Markers • Pencils	• Evidence Envelope • Copy of Mrs. Hawkins's final letter • Guinea pig stickers • Poster board sheets • Crayons • Markers • Pencils
Prepare	• Cut sheets of card stock in half • Count out centimeter cubes into plastic cups • Fill spray bottles with water • Try the shoe print experiment to get a good idea of how it works best	• Gather print resources about guinea pigs from a local or school library • Optional: set up classroom for online access to resources about guinea pigs • Place Mrs. Hawkins's letter in the Evidence Envelope	• Mix paints and pour into plastic cups for each group • Arrange plastic cups of paint on foam plates • Place Mrs. Hawkins's letter in the Evidence Envelope	• Count out centimeter cubes into cups • Display suspect photos	• Place Mrs. Hawkins's letter in the Evidence Envelope
Acquire Additional Supplies	• Water • Paper towels	• Books about guinea pigs • Optional: computers with internet access	• Paper towels	• One monetary bill of any denomination	• Optional: celebration supplies

Lesson 1

Observing the Clues:

Investigating With Your Senses



Lesson 1

Observing the Clues: Investigation with Your Senses

OBJECTIVES

Students will:

- Understand that senses allow our bodies to take in information about the environment
- Practice using their senses in a mystery-based setting
- Record their information and use the record to communicate their findings to peers
- Organize and display data on a graph

MATERIALS

Instructor:

- Crime scene video
- 1 air freshener
- 1 set of Senses Cards
- 1 copy of person of interest (POI) script
- 1 pair of scissors
- 2 blindfolds
- 2 sets of earplugs
- 2 small ⅜" x 1 ½" bandages
- 1 plastic spoon
- 1 Plastic cup
- Red tempera paint
- Water

Students (per each):

- Student book
- Pencil

PREPARATION

1. Have your students practice using their five senses before this activity.
2. Locate the crime scene video on the Teacher Resource Thumb Drive.
3. Using the plastic cup and the plastic spoon, make a small amount of red paint: mix 2 heaping spoonfuls of red tempera paint powder with 1 Tbsp. of water. Stir until smooth.
4. Arrange for a non-class member, preferably an adult, to visit your class as the person of interest (POI) at a designated time. Provide the POI with a loose script (see activity) and instructions.
5. Prepare the Senses Cards deck by cutting out the cards. Use two no-eye cards, two no-nose cards, two no-ear cards and enough full-face cards so that each person in the class may draw one card from the deck.
6. Print Vocabulary Words

Notes for the Instructor

This mystery is a project-based learning experience that asks your students to complete a series of activities in order to bring home Alice, the missing guinea pig. The more realistic the mystery seems to your students, the more engaged and invested they will be in learning the information and conducting the science experiments. As the instructor, your enthusiasm and investment is key!

Throughout this mystery, students will use the scientific method to solve problems. They will:

- Make **observations** about the world around them and use these observations to ask questions.
- Form an idea, or **hypothesis**, about what they think happened.
- Conduct tests, or **experiments**, that help them answer their questions.
- Look at the results, or **data**, of their experiment and figure out what the data show.
- Make a **conclusion**, or answer their initial question.
- **Communicate** their findings with others.

This initial activity introduces your students to the mystery of the missing guinea pig through a video taken immediately after realizing that Alice was missing. Students will also be introduced to the job of a **forensic scientist** and prepare to take on the role by practicing their skill of observation.

Observation, the process of using your senses to gather information, is one of the most essential skills in science. Scientists are constantly taking in information through their senses of sight, sound, smell, taste and touch. These observations often lead to questions that are then answered through experimentation.

In particular, forensic scientists must be very in tune to their senses as they investigate crime scenes. Everything that they see, hear, smell and feel can help them to solve the mystery. Conversely, if the forensic scientists miss something important, the mystery may go unsolved.

Data collection and record keeping is also extremely important in forensic science. Investigators take detailed photographs, create sketches, make notes and label physical evidence. Recording allows scientists to revisit the scene throughout the investigation.

After watching the video, your students will practice making observations and recording those findings about a person of interest that will visit the classroom. With these skills in place, they will be well on their way to bringing Alice home!

Notes for the Students

Our bodies are constantly taking in information about the world around us. Our eyes help us see; our ears help us hear; our nose helps us smell; our skin and hands help us feel; and our mouths help us taste. Using all of our senses to gather information is called **observation**.

Forensic scientists rely heavily on their **senses** (except for their sense of taste) when looking at a crime scene and talking with **persons of interest**. Forensic scientists never know what might be an important piece of information to solve the mystery, so they try to take in as much information as possible using each sense.

You'll often see a good forensic scientist taking notes. The notes help them to remember all of the information they gather.

In order to bring Alice home safely, we need to be good forensic scientists. Today you will sharpen your senses by helping me learn more about a person of interest (POI). You may take notes in your student books — write things down or draw pictures — to help you remember. Then we will share and record our observations as a class. These skills will come in handy later!

Our POI will be a visitor to the classroom. He hasn't done anything wrong, but I want to learn more about him…just in case. You can help me by using your senses of sight, sound, smell and touch (not taste) to write down as much as you can about the POI.

There is one catch. During the visit, some of you will have one of your senses taken away. Two of you will be wearing blindfolds, removing your sense of sight. Another two of you will use earplugs, removing your sense of hearing. Another two of you will use small bandages to block your sense of smell. Those of you with these impairments will have to work hard to collect information using your remaining senses. After our visitor leaves, we will record the information that we gathered on a **graph**.

Vocabulary

Forensic scientist: a person who uses science to solve a mystery or crime

Graph: an illustration that records data

Observation: the process of using your senses to gather information

Person of interest (POI): a person who may be involved in a crime

Sense: a way that your body takes in information about the world around you, including sight, hearing, smell, taste and touch

Activity 1: Looking at the Crime Scene

15 minutes

1. Read the *Introduction* out loud to the class, if you have not already done so.
2. Tell the students that as soon as Mrs. Hawkins realized that something was wrong in her room, she used her cell phone to make a video of the scene. She made sure to film and mention everything that she thought we might need to know about to help find Alice.
3. Watch the video sent in from Mrs. Hawkins's class.
4. Give students time to share their reactions and excitement about Alice's disappearance.
5. Ask students to complete *Looking at the Crime Scene* in their Student Books.
6. Discuss what differences the students found in the classroom after the crime.

Activity 2: Observing a Person of Interest

30 minutes

1. Before class, ask another adult to come into your classroom at a designated time. Before entering he should open the air freshener, smear red paint on his palms, and then hold the air freshener in his hand. Provide this person with a loose script:

> "Hello guys! I'm Mr. Percellus." (May change name accordingly.) Scuffle your feet as if wiping them on a doormat and wave your hands around a bit. Next, discuss the weather with the teacher, tapping your foot and waving your hands while talking. Finally, proclaim, "My hands are filthy!" Hold them up to reveal red paint before noisily washing in the classroom sink. Instead of drying your hands, shake them dry, spraying as many students as possible in the process. Say, "Goodbye everyone!" and then leave noisily.

2. Explain that before moving forward with the case you think we might need to sharpen our skills of observation and collecting data. Read *Notes for the Students* section to the class.
3. Show students the four types of cards in the Senses Cards deck. Explain that students with a full-face card will observe the POI with all of their senses. Students who draw a card with a sense crossed out will observe the POI without that sense.
4. Shuffle the deck. Give each student a card from the Senses Cards deck to determine which students will wear blindfolds, earplugs or a bandage covering their nostrils. Help students to put on sense blocking materials before the POI arrives.
5. Introduce the POI to the class. Remind students to record any observations in *Observing a Person of Interest (POI)* in their Student Books. The two students who are blindfolded will have to remember their observations and record them after the blindfolds have been removed.
6. After the encounter, students will consider the observations they made using each sense. The data will be recorded on a graph. Review *Parts of a Graph* in the Student Books. Talk about how to record information on a graph.
   - Title a graph to describe what you are graphing: "Observations of a Person of Interest."
   - Y-axis or vertical (up and down) lists the actions of the POI.
   - X-axis or horizontal (side to side) lists the sense(s) that may used to observe an action.
7. Discuss what actions the students observed the POI doing.
8. Turn to the populated graph *Observations from a Person of Interest* in the Student Books.
9. Read the list of things observed to the students and add anything additional.

10. Ask the students to complete the graph by placing an "X" in the sense(s) used to observe each change.

Activity 3: Revisiting the Video

15 minutes

1. Congratulate students on sharpening their senses. Remind them that forensic scientists must always have their eyes, ears, noses, and hands on high alert during a case so that they don't miss any important clues.
2. Re-watch the video, this time focusing on what each sense is taking in from the crime scene.
3. Turn to *Revisiting the Video* in the Student Book and read the list of "classroom changes" to the students from the "Observations from the Crime Scene" graph. Ask students to add any additional changes they noted.
4. Have students complete the graph by placing an "X" in the sense(s) used to observe the classroom changes that occurred after the crime was committed.
5. The video can be watched again at any point during this mystery. Use it as a reference for the crime scene or to reinvigorate the investigation.

Wrap-up

10 minutes

1. Discuss what happened.
   - Count the observations for each sense on the "Observations from a Person of Interest" graph. Which sense(s) did we use the most? Why do you think that is?
   - Why did some people have different answers than others? What does this tell us about how people take in information? How is this game like being a witness in a crime?
2. Have the students wearing blindfolds or earplugs compare their observations to the others. What do you notice? What are some situations where a person's senses might be impaired? Do you think this person would still be a good witness?
3. If possible, have the POI revisit the classroom as a regular person. Reiterate the idea that this person did not do anything wrong; we were simply observing him to practice our skills.
4. Give students time to record any additional thoughts on the blank *My Observations* page.

Clean-up

5 minutes

1. Clean and dry plastic cups.
2. Collect Student Books.
3. Return all remaining supplies to the kit.

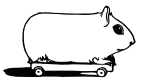
Other Directions, Discussions and Destinations

The following activities and websites enrich what has been learned in this lesson about observation and senses.

1. Brainstorm a list of detective/spy tools. What sense does each tool heighten? Challenge students to invent their own detective/spy tool. Students should come up with a name for the tool, describe what it does and draw a picture of the tool.
2. Spend time looking at different objects using the naked eye, a magnifying glass and a microscope. Draw images to record what you see. How does each tool change the appearance of the object? Think of a time when each level of sight would be most useful.
3. Test how well you distinguish colors using this online test. **https://www.xrite.com/hue-test**

Lesson 1

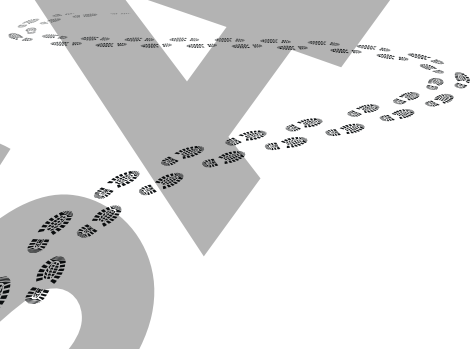
Looking at the Crime Scene



What changed? Match the objects seen in Mrs. Hawkins's classroom to <u>before</u> or <u>after</u> the crime.

before crime

after crime



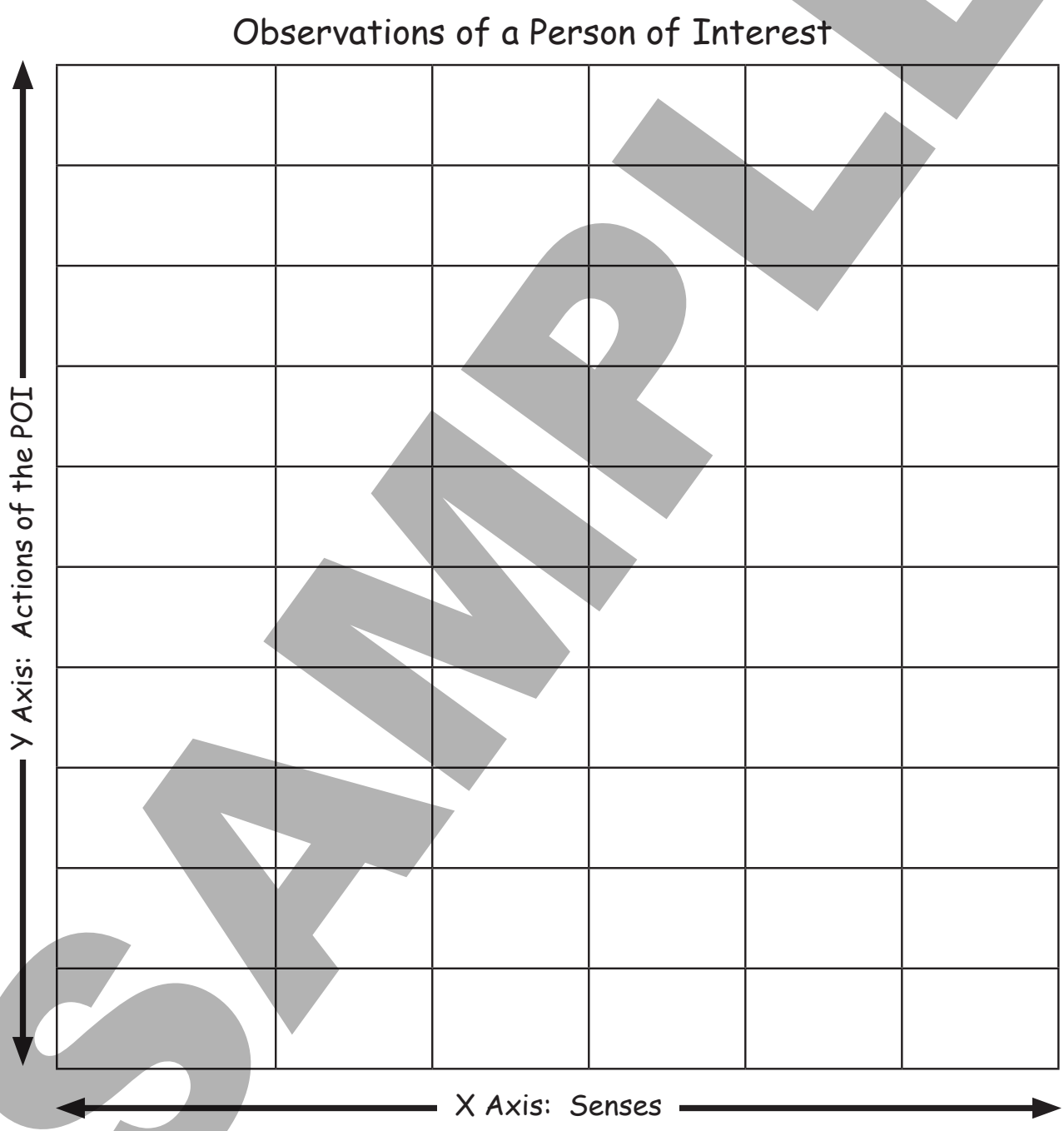
Lesson 1

Observing a Person of Interest

Draw and label what you observed about the POI.

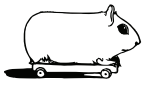
Lesson 1

Parts of a Graph



Lesson 1

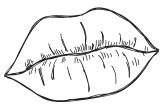
Observations of a Person of Interest



Place an X in the box for the sense used to observe each action.

Observations of a Person of Interest

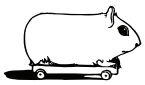
Actions of a Person of Interest

feet shuffling					
talking					
foot tapping					
waving hands					
hand washing					
hand shaking					
water spraying					
	see 	hear 	smell 	feel 	taste 

Senses Used

Lesson 1

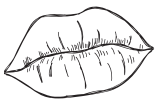
Revisiting the Video



Place an X in the box for the senses used to observe each change.

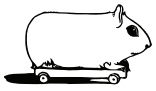
Observations from a Crime Scene

Classroom Changes

	see	hear	smell	feel	taste
open door					
Alice missing					
time 2:45					
skeleton down					
foot prints					
orange paint					
window open					
lemon smell					
					

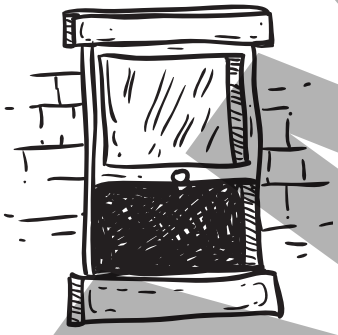
Senses

Looking at the Crime Scene

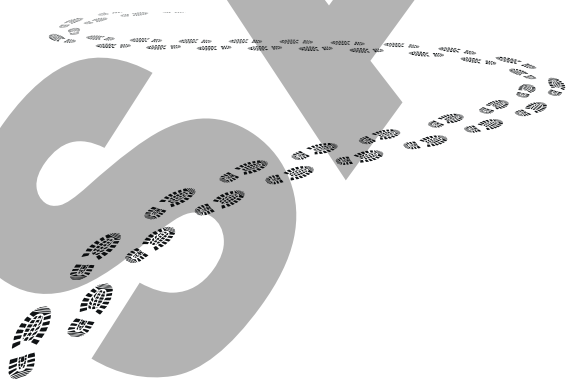


What changed? Match the objects seen in Mrs. Hawkins's classroom to before or after the crime.

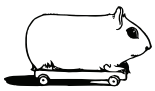
before crime



after crime

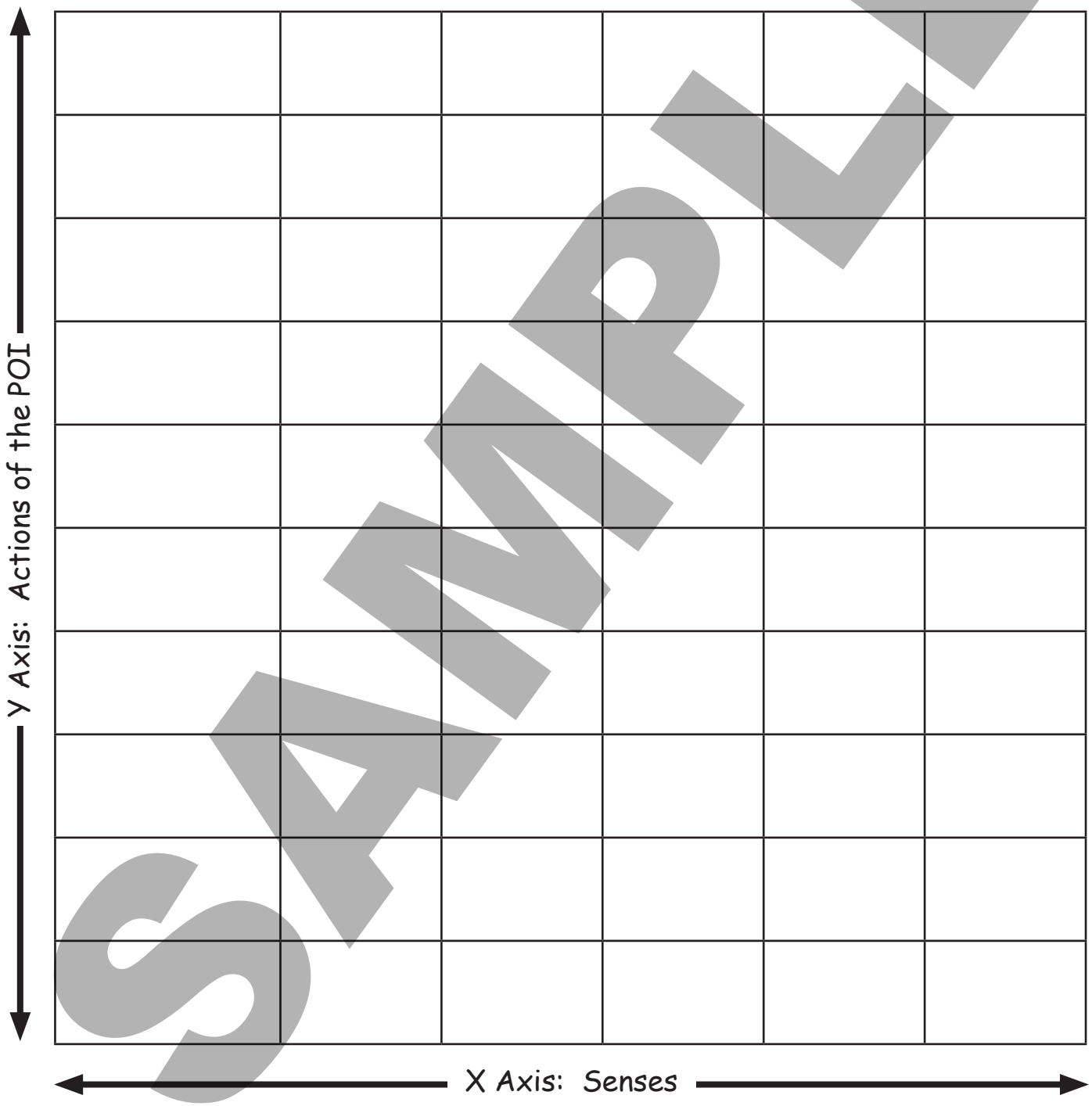


Observing a Person of Interest

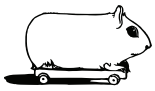


Draw and label what you observed about the POI.

Parts of a Graph



Observations of a Person of Interest



Place an X in the box for the sense used to observe each action.

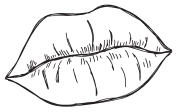
Observations of a Person of Interest

Actions of a Person of Interest

	see	hear	smell	feel	taste
feet shuffling					
talking					
foot tapping					
waving hands					
hand washing					
hand shaking					
water spraying					

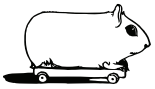






Senses Used

Revisiting the Video



Place an X in the box for the senses used to observe each change.

Observations from a Crime Scene

Classroom Changes

	see	hear	smell	feel	taste
open door					
Alice missing					
time 2:45					
skeleton down					
foot prints					
orange paint					
window open					
lemon smell					





Senses

notes and drawings

Appendix

Rogue Rodent Mystery is a 10-lesson program that helps learners meet the Next Generation Science Standards and the Common Core State Standards (CCSS).

Ideally suited for learners in grades K-2, Rogue Rodent Mystery meets many of the practices, crosscutting concepts, and disciplinary core ideas that comprise the Next Generation Science Standards. The practices, concepts, and disciplinary ideas specifically covered in this unit include:

PRACTICES:

Asking Questions and Defining Problems

- Ask questions that can be investigated within the scope of the classroom, outdoor environment, libraries and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles.

Planning and Carrying Out Investigations

- Make observations and measurements to produce data to serve as the basis of evidence for an explanation of a phenomenon.
- Conduct an investigation to produce data to serve as the basis for evidence that can meet the goals of the investigation.

Analyzing and Interpreting Data

- Analyze and interpret data to determine similarities and differences in findings.

Engaging in Argument From Evidence

- Support an argument with evidence, data, or a model.

Scientific Knowledge is Based on Empirical Evidence

- Science knowledge is based upon logical and conceptual connections between evidence and explanations.
- Science disciplines share common rules of obtaining and evaluating empirical evidence.

CROSS CUTTING CONCEPTS:

Patterns

- Patterns can be used to identify cause-and-effect relationships.
- Graphs, charts, and images can be used to identify patterns in data.

Cause and Effect

- Events have causes that generate observable patterns. (2-PS1-4)
- Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2)

DISCIPLINARY CORE IDEAS:

PS2.A: Forces and Motion

- Pushes and pulls can have different strengths and directions. (K-PS2-1),(K-PS2-2)
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2)

PS2.B: Types of Interactions

- When objects touch or collide, they push on one another and can change motion. (K-PS2-1)

PS3.C: Relationship Between Energy and Forces

- A bigger push or pull makes things speed up or slow down more quickly. (*secondary to K-PS2-1*)

LS1.A: Structure and Function

- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air.

In addition to aligning to the underlying concepts that comprise the Next Generation Science Standards (NGSS), this unit meets Common Core Learning Standards (CCLS) in Mathematics and English Language Arts and Literacy in grades K-2.

Specific CCLS addressed include:

CCSS.ELA-LITERACY.SL.K.5

- Add drawings or other visual displays to descriptions as desired to provide additional detail.

CCSS.ELA-Literacy.CCRA.SL.1:

- Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-Literacy.CCRA.SL.2:

- Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

CCSS.ELA-Literacy.CCRA.R.1:

- Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

CCSS.ELA-LITERACY.CCRA.R.3

- Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

CCSS.ELA-LITERACY.W.K.3

- Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.

CCSS.ELA-LITERACY.CCRA.W.1

- Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

CCSS.ELA-LITERACY.RI.K.7

- With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

CCSS.ELA-LITERACY.RI.2.1

- Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

CCSS.MATH.CONTENT.K.MD.A.2

- Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

CCSS.MATH.CONTENT.1.MD.A.2

- Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.

Standard	Lesson									
	1	2	3	4	5	6	7	8	9	10
Next Generation Science Standards										
Practice: Asking Questions and Defining Problems	*	*	*	*	*	*	*	*	*	*
Practice: Planning and Carrying Out Investigations	*				*	*	*	*		
Practice: Analyzing and Interpreting Data	*	*	*	*	*	*	*	*	*	*
Practice: Engaging in Argument from Evidence	*			*	*	*		*	*	*
Practice: Scientific Knowledge is Based on Empirical Evidence	*	*	*	*	*	*	*	*	*	*
Cross-Cutting Concept: Patterns	*				*	*		*		*
Cross-Cutting Concept: Cause and Effect					*				*	
Disciplinary Core Idea PS2.A: Forces and Motion					*					
Disciplinary Core Idea PS2.B: Types of Interactions					*					
Disciplinary Core Idea PS3.C: Relationship Between Energy and Forces					*					
Disciplinary Core Idea LS1.A: Structure and Function							*			

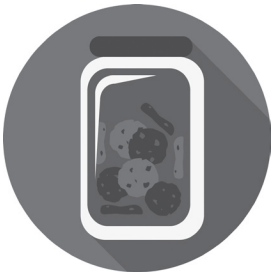
Standard	Lesson									
	1	2	3	4	5	6	7	8	9	10
Common Core State Standards										
CCSS.ELA-LITERACY.SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.		✶	✶	✶				✶		✶
CCSS.ELA-Literacy.CCRA.SL.1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.	✶	✶	✶	✶	✶	✶	✶	✶	✶	✶
CCSS.ELA-Literacy.CCRA.SL.2: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.	✶	✶	✶	✶	✶	✶	✶	✶	✶	✶
CCSS.ELA-Literacy.CCRA.R.1: Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.		✶		✶			✶	✶	✶	
CCSS.ELA-LITERACY.CCRA.R.3: Analyze how and why individuals, events, or ideas develop and interact over the course of a text.		✶		✶			✶			✶
CCSS.ELA-LITERACY.W.K.3: Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.	✶	✶		✶	✶					✶
CCSS.ELA-LITERACY.CCRA.W.1: Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.					✶	✶				✶
CCSS.ELA-LITERACY.RI.K.7: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).		✶	✶			✶				✶
CCSS.ELA-LITERACY.RI.2.1: Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.	✶						✶	✶		✶
CCSS.MATH.CONTENT.K.MD.A.2: Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.						✶			✶	
CCSS.MATH.CONTENT.1.MD.A.2: Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.						✶				

Cracked the Rogue Rodent Mystery?

Dive into More Forensic Science Adventures!

Missing Money Mystery:

An Introduction to Forensic Science for Grades 2-3



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A Study in Forensic Science for Grades 4-5

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