DID YOU NOTICE THAT?

SCIENCE ACTIVITIES

SUPPLEMENTARY ACTIVITIES FOR OTHER CONTENT AREAS

FOCUS WORDS

Overview
Unit 6.1

Each unit begins with a Reader's Theater where students face an everyday problem that involves the scientific principles introduced later in the unit. While the students use everyday language to introduce the concepts, the narrator of the passage will use scientific language.

In this unit, students will learn about making observations and the different types of observations that are made in science class. They will also be able to recognize the difference between an observation and an inference.

Materials for this unit:

Speaking Scientifically - Session 1

- An object that is unfamiliar to most students

In the Lab - Session 3

- baking soda
- powdered sugar
- cornstarch
- plaster of paris
- small dishes or pieces of wax paper
- plastic spoons
- water
- vinegar
- iodine
- eye droppers or straws
- toothpicks or popsicle sticks for mixing powders

Reader's Theater

Learning Without Labels

Setting: Cassie was sitting in the living room of her grandmother's apartment. Her grandmother had gone out and Cassie was waiting for her friends to come over. The doorbell rang and she jumped up to open the door for Tiana and Huang.

Cassie: Thanks for coming. I forgot my grandma's birthday is tomorrow. I want to bake her a cake as a surprise. She's out for a few hours so we have to work quickly.

Huang: Good thing you called us. I remember the last time you tried to bake a cake. It was awful. Please tell me you have a recipe this time.

Tiana: Give her a break. I'm sure she just needs a little help. Let's go to the kitchen. What's in the recipe?

Cassie: We need flour, sugar, and baking soda. Grandma keeps baking supplies on the third shelf. Huang, can you hand me the right ingredients?

Huang: There are just a bunch of plastic containers and the labels are definitely not in English!

Cassie: Grandma usually speaks Russian. That must be what's on the labels. We'll just have to figure out which container holds which ingredient.

Tiana: How do we do that? What if we mess up? Cassie, you can't even bake a cake when you know what's what!

Huang: Come on. Let's open all of them. I bet we can figure it out.

*He took the containers off the shelf, put them on the counter, and opened each one. Tiana took two containers and carefully **compared** them.*

Tiana: This is not going to work. The containers each have a white powder in them. Flour is white and so are baking soda and sugar. Now what?

Cassie: Well, sugar should feel different from flour. Let's see if we can at least figure out which is sugar.

*Huang thought this would be a good **qualitative** observation. Cassie put her hand in the first container and the **substance** felt rough. In **contrast**, the powder in the second container felt smooth.*

Cassie: I bet the first container is sugar.

Tiana: How can you know? You only tried two containers. What about the others?

*Huang agreed that Cassie shouldn't make an **inference** about the containers until she had tried all of them. Cassie touched the powders in each container. Only one felt grainy.*

Cassie: The first container is definitely sugar.

Tiana: Three containers to go! What now?

Cassie: Grandma said we were running out of baking soda. Let's look at how much is in each container.

Tiana looked in the three remaining containers. She noticed that the middle container was filled only halfway. Tiana decided the half empty container was baking soda.

Tiana: So which of the containers left is flour?

Huang: What if we tasted them?

Cassie: NO! NO! NO! My grandma told me once that she sometimes keeps rat poison in the pantry. Don't taste anything!

Tiana: GROSS! I don't want to eat rat poison.

Huang: We've figured out two containers. There must be other ways we can figure out the last two. Let me think for a few minutes.

Cassie: Think fast because my grandma will be home in two hours!

Being able to carefully make observations in science is very important. You might need to figure out what a mystery **substance** is or just tell your friend what the weather is like outside. You can make **qualitative** observations like color, shape, and smell. To learn more, sometimes you might have to make **quantitative** observations like weight or temperature. By observing closely and then making **inferences**, you can find out all kinds of things about the world. That's what scientists do.

Teacher Directions, Session 1

pages 2-3

Reader's Theater

In this week's Reader's Theater, Cassie wants her friends to help her bake a cake for her grandmother's birthday. The three friends discover that Cassie's grandmother stores her dry ingredients in containers that are only labeled in Russian, and none of the friends speak Russian. They try to identify the mystery ingredients but run into trouble after they discover that one of the powders might be rat poison, eliminating the possibility of using taste to determine the powders. The Reader's Theater ends with the friends trying to think of a way to solve their problem.

Learning Objective:

Students are introduced to the scientific language used when making observations and inferences. Students demonstrate careful reading by identifying accurate details. Students consider the perspectives that each character brings to the situation and determine which perspective is most similar to their own.

Procedure:

Introduce focus words at the top of the page. Show students the word chart at the back of this unit and remind them that they should use this chart as a resource. Assign roles to students before reading. Teacher should read the part of the narrator and the box at the bottom of the passage. After reading the Reader's Theater once aloud as a class, ask students to read it again in groups of four.

Teaching Tips:

Before reading, ask students: What are the ingredients necessary for making a cake? Based on your experience, how many of those ingredients look alike? If there were no labels, how might you know what the different ingredients are?

Vocabulary:

Write the word and definitions on the board.

- **compare**—to examine two or more things to tell how they are the same and how they are different
- **contrast**—to compare two or more things, focusing only on the differences
- **substance**—a physical material that you can see or touch, like a powder or a gel
- **inference**—a conclusion based on evidence
- **qualitative**—describes observations that do not have numbers; for example: size, color, shape
- **quantitative**—describes observations that use numbers; for example: weight, time, height, volume

Reader's Theater

Identifying Perspectives

1. This person wanted to surprise her grandmother with a cake.
   - ☐ Cassie
   - ☐ Huang
   - ☐ Tiana
2. This person noticed that the labels on the containers were not written in English.
   - ☐ Cassie
   - ☐ Huang
   - ☐ Tiana
3. This person thought that they could identify the powders by making observations.
   - ☐ Cassie
   - ☐ Huang
   - ☐ Tiana
4. This person was doubtful that they could identify the powders by making observations.
   - ☐ Cassie
   - ☐ Huang
   - ☐ Tiana
5. This person warned the others not to taste anything because of the danger that a powder could be rat poison.
   - ☐ Cassie
   - ☐ Huang
   - ☐ Tiana
6. Which character is most like you?
   - ☐ Cassie
   - ☐ Huang
   - ☐ Tiana

   Why? _____

Using clues from the reading, begin describing and/or identifying what is in each container. You may not be able to determine all four.

Reader's Theater, continued

Procedure:

Answers to questions about the characters:

Question 1: Cassie

Question 2: Huang

Question 3: Cassie

Question 4: Tiana

Question 5: Cassie

Question 6: Answers will vary

For each of the following, ask students to provide their evidence.

Container #1 – Sugar (the first container is likely sugar because it is rough)

Container #2 – unsure

Container #3 – Baking Soda (the third container is likely baking soda because she knows that her grandmother is running out of baking soda and the other containers are full)

Container #4 – unsure

Speaking Scientifically

Observation and Inference

Cassie observed that the powder was white and grainy. She then **inferred** that the powder was sugar. But what does that actually mean?

Observation: Basic information you get by seeing, feeling, hearing, tasting, or smelling.

Inference: Something you think is true based on observations.

Examples of **OBSERVATIONS**		Examples of **INFERENCES**
The powder is white and grainy. Observations based on: seeing - feeling - hearing - tasting - smelling	→	The powder is sugar.
The animal has four legs and barks. Observations based on: seeing - feeling - hearing - tasting - smelling	→	It's a dog.
There is a smoky smell outside. Observation based on: seeing - feeling - hearing - tasting - smelling	→	The neighbors are having a barbecue.
Erin is not in class today. Observation based on: seeing - feeling - hearing - tasting - smelling	→	Erin has the flu.

Your teacher is going to present you with an object to practice making observations using your senses.

List the observations you make:

_____

_____

_____

_____

_____

After you make several observations, discuss what you observed to see if you are prepared to make an **inference**.

If you have enough information to make an **inference**, write it here:

_____

_____

_____

_____

Teacher Directions, Session 2

pages 4-5

Speaking Scientifically

The "Speaking Scientifically" session focuses on the academic language of science.

Learning Objective:

Students review the role of the five senses in making observations. Students practice making inferences based on observations. Students learn the difference between qualitative and quantitative observations. Students practice making both qualitative and quantitative observations.

Procedure:

Give students definitions for observation and inference. Remind students that we use our five senses to make observations. Based on those observations, we make inferences. Use the chart to demonstrate how an observation can lead to an inference. You may want to ask students to evaluate the strength of the inferences. For example, the inference that Erin has the flu based on the observation that she was not in school may not be a valid inference.

Present an item to students and ask them to make observations about the item. The item does not need to be unfamiliar to the students; however they should practice observation as if the item is unfamiliar. Then, they can make an inference about the item's purpose based on those observations.

Note: Students draw inferences when reading. They learn that authors give them only a certain amount of information and rely on the reader to use what they already know to fill in the missing pieces. If authors didn't rely on readers to make proper inferences, they would have to write books and stories that are too long and very boring. When reading, we don't stop and evaluate all of our inferences. If we did, we would learn to hate reading. When we make inferences in science, we have to be very careful and question the validity of those inferences.

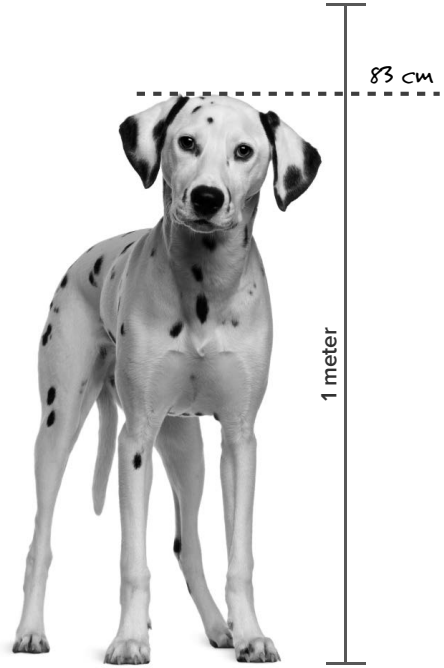
Speaking Scientifically

Types of Observations

Two types of observations:

Qualitative observations are those that describe the situation using anything that does not use a number or measure. For example, the sun is bright today.

Quantitative observations are those that use a number in the description (weight, time, number of items, height, volume, etc.). For example, the temperature is 78 degrees Fahrenheit right now.



Practicing qualitative vs. quantitative Examine the image of the dog above. Can you make some additional observations? If so, write them down and then classify them as **qualitative** or **q antitative**.	**qualitative**	**quantitative**
has four paws		✔
fur is mostly white	✔	

Speaking Scientifically, continued

Procedure:

Read descriptions of qualitative and quantitative observations.

Students practice making observations using the picture of the dog and the ruler. Check qualitative or quantitative next to the observations.

Additional observations may include:

83 cm tall (quantitative)

black covering edges of both ears (qualitative)

Extension:

Ask students to make both quantitative and qualitative observations using items in the classroom.

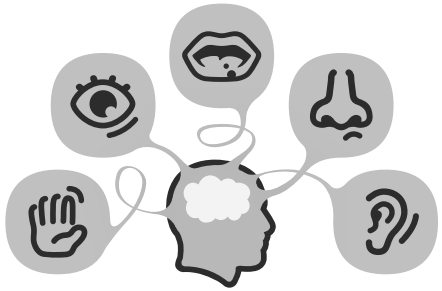
In the Lab

What can you learn simply by observing the powders?

LAB TASK #1

Directions:

You have four powders. They are: baking soda, cornstarch, powdered sugar, and plaster of paris. Your job is to figure out which one is which. You must make careful observations of each powder to try to determine its identity.



You may observe them in any of the following ways:

- What do they look like? (Try using a magnifying glass.)
- What do they feel like? (Put some between your fingers.)
- What do they smell like? (Be careful not to inhale them up your nose.)

YOU MAY NOT TASTE THEM!

POINTER:
→ LABEL EVERYTHING AS YOU GO!

Fill in the observation table below.

	Powder #1	Powder #2	Powder #3	Powder #4
Looks like?				
Feels like?				
Smells like?				

Turn to a partner and discuss your thinking at this stage.

Teacher Directions, Session 3

pages 6-8

In the Lab

The mystery powders activity is designed to have students use careful observations in order to solve a problem. It builds on the problem presented in the launch text where the kids have to determine the identity of the ingredients in the cupboard. The first part involves only observations of the powders themselves in order to determine their identities.

Materials:

- baking soda
- powdered sugar
- cornstarch
- plaster of paris
- small dishes or pieces of wax paper (four per group)
- magnifying glass (optional)

Procedure:

Place a small amount of each powder (baking soda, powdered sugar, cornstarch and plaster of paris) on a square of wax paper or in a weigh boat. It is important that you label the square as “Powder #1”, “Powder #2” , “Powder #3”, and “Powder #4” and be consistent with the corresponding powders for both parts of this lab.

Students record observations of each powder according to the suggestions in the workbook. A magnifying glass is useful for doing a close observation of what each powder looks like.

Ask students to turn and talk to their partner and discuss what they think the powder might be.

In the Lab

Can o mbining powders with liquids provide you more to observe?

LAB TASK #2

Materials:

- Powders #1, #2, #3, and #4
- 12 little dishes (or pieces of wax paper)
- plastic spoons or scoops
- water
- vinegar
- iodine
- eye droppers or plastic pipettes (even straws will work)
- toothpicks or popsicle sticks for mixing the powder and the liquid

Procedure:

1. Take a small amount of each of the powders and place it in a small dish.
2. Add 3 drops of water to each powder.
3. Mix the liquid and the powder together and observe what happens.
4. Write your observations in your table.
5. Repeat steps 1–4 for vinegar and iodine.

Example of a possible **qualitative** observation:

- color changes to black

Possible **quantitative** observations:

- fizzes for 12 seconds

POINTER:

→ LABEL EVERYTHING AS YOU GO!

	Powder #1	Powder #2	Powder #3	Powder #4
water				
vinegar				
iodine				

In the Lab, continued

Learning Objective:

Students will see that it is not enough to do a simple set of observations to make a complete inference. By mixing the powders with different liquids, students will be able to determine the identity of each powder by matching their observations with facts about the reactions.

Materials:

- 4 powders from Lab Task #1
- plastic spoons or scoops
- water
- vinegar
- iodine
- eye droppers, straws, or plastic pipettes
- toothpicks or popsicle sticks

Procedure:

Provide each group with three wax paper squares of each of the four powders (12 total). Again, it is important that powders are labeled and consistent with Part 1.

Each group should also get a small amount of each of the liquids that can be provided in cups at each table. The liquids must be labeled.

Students should follow the procedures from their workbook. They carefully record their observations in the chart. Tell them to be very specific and as accurate as possible with their descriptions. Most of their observations will be qualitative; however you can encourage quantitative observations such as the amount of time it takes for a reaction to occur.

In the Lab

Can combining powders with liquids provide you more to observe?

LAB TASK #3

Use the table below to help you determine the identity of each of your mystery powders.

Facts about powders and their reactions with liquids

	cornstarch	baking soda	powdered sugar	plaster of paris
 *water*		baking soda and water turns white and thick like glue	powdered sugar dissolves in water	plaster of paris and water turns sticky
 *vinegar*	cornstarch and vinegar turns hard, like a broken cookie	vinegar and baking soda bubbles		
 *iodine*	starch turns black when iodine is added	iodine and baking soda turns orange/ brown	iodine and powdered sugar turns very sticky	iodine and plaster of paris turns orange

Powder #1

Based on our observation that _____ ,

we **infer** that powder #1 is _____ .

Powder #2

Based on our observation that _____ ,

we **infer** that powder #2 is _____ .

Powder #3

Based on our observation that _____ ,

we **infer** that powder #3 is _____ .

Powder #4

Based on our observation that _____ ,

we **infer** that powder #4 is _____ .

In the Lab, continued

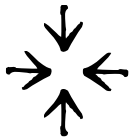
Procedure:

Use the fact chart to identify the mystery powders. By carefully comparing the observation chart with the facts, students can make inferences about the identity of their powders.

Students should use sentence frames at bottom of the page.

When finished, reveal the mystery powders to the class. Celebrate successful matches and reinforce the fact that careful quantitative and qualitative observations led to accurate inferences. Students will need to continue to make careful observations and accurately chart, graph, and record the data from these observations.

Meeting of the Minds



Fill in the chart below to prepare for the meeting:

List two examples of **qualitative** observations that you made.	List an example of a **quantitative** observation that you made.
What observation helped you figure out which powder was baking soda?	Why did you have to do more than one kind of test to figure out which powder was which?

Share your ideas with someone next to you:

Compare your answers. What is the same?	**Contrast** your answers. What is different?

Teacher Directions, Session 4

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Meeting of the Minds

The "Meeting of the Minds" is an opportunity for students to discuss their experience in the lab. Encourage students to use the new scientific vocabulary that was introduced earlier in the week. You can think of this as the "mind's on" part that follows the "hands on" activities in a science class.

Today's discussion should include:

- the distinction between quantitative and qualitative observations.
- the difference between an observation and an inference.
- the value of doing multiple tests in order to get useful data.

Prior to discussion:

- Students should use their observation charts as they think about the questions.
- Fill in the chart.

Discussion:

- Discuss the questions as a whole class, small groups, or partners.

Teaching Tips:

Some students may benefit from one or more of these sentence frames during the discussion.

For example:

"An example of a qualitative observation that I made is _____ . An additional qualitative observation was _____. "

"Based on our observation that powder #_____ became _____ when we added _____, we were able to infer that it is _____.

"It was necessary for us to do multiple tests in order to _____ because _____."

"My observation was similar to _____'s observation; however we thought that it was _____ due to _____."

Writing

Several years ago, a member of Congress received a letter that contained a dangerous powder.

After that, people thought it would be funny to play jokes and put powders in the hallways or bathrooms. Imagine your class is visiting your Congress member in Washington, D.C., when someone played one of these jokes. Your member of Congress is stuck in his or her office with your class until the mystery powder in the hallway is identified. The congressperson is supposed to be in an important meeting and is wondering why it is taking so long to identify the mystery powder. What would you say to your member of Congress about what is involved in identifying a mystery powder?

In your response, be sure to include:

- The difference between observations and **inferences**
- How to do careful observations and what kinds of things to look for
- What information **qualitative** and **quantitative** observations can provide
- Why it is important to do several tests before making an **inference**
- The focus words of the week

Teacher Directions, Session 5

pages 10-11

Writing

Option #1: (printed in student materials) The student essay provides an opportunity for students to apply what they learned in this unit to a new situation. Encourage students to use an authoritative stance. They should include the focus words and provide examples to support their point.

Option #2: (not printed in student materials) Students can write a lab report rather than respond to the essay question.

Students should be able to complete this essay in 20-25 minutes.

Writing

Science on TV

Can popular TV shows and books get kids interested in science? And should they?

A popular TV shows for teens, *Pretty Little Liars*, is based on a series of books by Sara Shepard. The show is about four best friends who try to solve the mystery of how the fifth best friend died. Some fans of *Pretty Little Liars* might not realize how much science is in the show. In many of the episodes, the girls use clues or "data" to make **inferences** about the mysterious things that happen. For example, the girls **compare** and **contrast** different pieces of evidence like x-rays and autopsy reports to figure out how their friend might have died.

In other popular TV shows such as *Bones* and *CSI: Crime Scene Investigation*, the characters use science to solve crimes. The kind of science used to solve crimes and catch criminals is called "forensic science." Many schools have started teaching kids how to do forensic science. The students start with some kind of mystery, like a made-up story about a thief who steals a famous diamond from a museum. Then, the teacher shows students how to look at **qualitative** data like the shapes of fingerprints or the colors of different **substances**. Students also look at **quantitative** data, such as the number and length of footprints. The students **compare** and **contrast** the different pieces of data. Then, they make an **inference** about who might have stolen the diamonds.

In some schools, forensic science is so popular that students create CSI clubs. They compete in forensic science competitions against other schools, just like sports teams. People argue that students are interested in forensic science because TV shows and books like *Pretty Little Liars*, *Bones*, and *CSI* are so popular. They think it is great that kids are excited about science, particularly young girls. This is because women have not had the same chances as men in the past to choose a career in science.

In **contrast**, other people argue that these shows are too violent for kids. They think that looking at crimes, including murders, in school sends a bad message to teens. Also, they argue that the science in these shows is not realistic because detectives and police officers usually don't have access to the expensive equipment used in the shows.

What do you think? Are kids becoming more interested in science because of the forensic science in TV shows and books? If so, is it a good thing for kids to get interested in science through shows and books like *Pretty Little Liars* and *CSI* even if they are violent or unrealistic?

Teacher Directions, Supplementary Activities

pages 12-14

ELA Activity

In science class this week, students are learning about observations and inferences. One of the places that students often see scientists engaged in observations is in the context of television shows where people are solving crimes. This passage discusses whether some popular TV shows that involve crime solving might be too violent for teenagers to watch.

Procedure:

Read the passage aloud to the class. Students may still be struggling with the focus words and it is helpful for them to hear them used several times. Other words from the passage that might be difficult for students include:

- forensics
- mysterious
- competition
- realistic
- equipment

These words can be defined separately if the students need additional help.

Once the students have heard the passage, use the questions at the end of the passage to engage students about their views on the issue.

Teaching Tips:

During a class discussion, if students seem to have blank faces or only a couple of hands are raised, give them more time to think. Give students a minute to jot down some thoughts and then a minute to turn-and-talk with a partner. Then, ask the question again.

Observations and Detective Work

Detectives and police officers have a difficult job. Their job is to solve crimes based on evidence that they find. They must make careful observations at a crime scene and then make **inferences** about what might have happened. It is important for them to make **qualitative** observations and **quantitative** observations so that they can figure out the answer to "Who did it?!"

Option 1

A team of police officers arrives at a house where a bicycle has been stolen. They need to put up police tape all around the driveway to make sure that no one enters the crime scene. If the driveway is 15 ft. long and 8 ft. wide, how much tape do they need?

A) 120 ft.
B) 46 ft.
C) 64 ft.
D) 23 ft.

Option 2

A detective arrives at a crime scene but it is too late. The thief has already run away! The detective estimates that the thief can run 1 mile in 10 minutes. If the thief has been gone for one hour, how far away could he have run?

DISCUSSION QUESTION

In addition to police officers and detectives, there are often people called forensic scientists that help with solving crimes. These people help to identify mystery objects found at a crime scene. Is the white powder a poison? What kind of car made skid marks? Who does the hair belong to?

What kind of observations do you think a forensic scientist might make? Why is it important for them to make **qualitative** and **quantitative** observations?

Math Activity

In science class this week, students are learning about observations and inferences. In this activity, students complete math problems related to crime solving.

Answers

Option 1

If the driveway is 15ft long and 8 ft wide, how much tape do they need?

The perimeter of the driveway.

15+15+8+8=46ft

*Encourage students to draw a picture of the driveway if they are having trouble.

Option 2

If the thief has been gone for one hour, how far away could he have run?

1 mile in 10 minutes

60 minutes in an hour

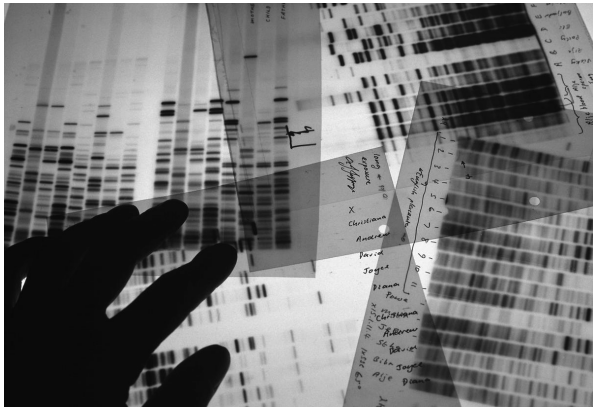
6 miles in one hour

If students have trouble with the ratio, they can make a table to see how far the thief will run.

Time	Distance
10 min	1 mile
20 min	2 miles
30 min	3 miles
40 min	4 miles
50 min	5 miles
60 min	6 miles

New Technologies Bring New Rules

Technological Advancements in Solving Crimes



On an episode of the popular TV show *Hawaii Five-O*, a crime was solved due to a splinter of wood found on a victim. Computers and scanners quickly analyzed the splinter of wood. The splinter was from a special kind of wood used in the 1950s to make baseball bats. One of the suspects was a bat collector. A quick **comparison** of the splinter and the collector's bat showed a clear match. Many crimes in the real world are solved using similar technology.

Technological changes have led to advancements in detective work over the past 150 years. We have seen pictures of fictional Sherlock Holmes with his magnifying glass that he used to collect clues missed by the human eye. Sometimes this led to **quantitative** evidence like the number of cuts found in a leather shoe or the size of a footprint. However, Sherlock Holmes was mostly known for his close observations of other details related to a crime. For example, in *The Hound of the Baskervilles*, Holmes uses **qualitative** evidence like the scent of perfume on an anonymous letter. He used this evidence to make an **inference** that the letter was sent by a woman.

Perhaps the greatest advancement in criminology (the study of crime and criminals) came when fingerprints were used as a way to link a suspect to the scene of a crime. Scientists discovered that no two fingerprints were identical. It wasn't until about 1905 that fingerprints found at a crime scene were matched to suspects and used as evidence in court. In fact, juries were responsible for **comparing** and **contrasting** the images of the fingerprints. Today, large databases of fingerprints from convicted criminals throughout the world are connected through the internet. Fingerprints found at the scene of a crime in London can be matched to those of a criminal who lives in Arizona.

Today, detectives use DNA as another way to match evidence at a crime scene with possible suspects. DNA is the very small **substance** in our cells that determines all of our physical characteristics. Like a fingerprint, DNA is unique to each individual. However, unlike a fingerprint, it is very difficult to prevent DNA from being left behind at a crime scene. DNA can be found in hair, saliva, and blood. So while criminals can wear gloves to prevent themselves from leaving behind fingerprints, they can't guarantee that a tiny piece of their hair won't be left behind. Technology can match DNA to a suspected criminal; however, it is still up to a jury to decide whether to send someone to jail.

Some people think we have a fairer justice system today because of technology. Other people think technology makes it easier to frame someone for a crime they didn't do. Should we rely on technology to convict people of crimes? What do you think?

Social Studies Activity

In science class this week, students are learning about observations and inferences. In this passage, students learn about some of the advancements in technology that assist in solving crimes. Engage students in a discussion about the role of technology in solving criminal cases.

Teaching Tips:

Since there will be different opinions on the topic, use this as an opportunity to model how students can contradict or disagree.

"That's a good point, but I think…"

"We have all heard that…, but I propose a new way of looking at…"

"That's a valid point, but I feel…"

"On the other hand…"

"True, but I would like to point out…"

Examining the Focus Words Closely

SciGen Unit 6.1

Focus Word and Definition	*Example of Use*
compare *verb* – to examine two or more things to tell how they are the same and how they are different Related form: **comparison** *(noun)* in Spanish: comparar	In English class, we **compared** the main characters by using a Venn diagram.
contrast *verb* – to compare two or more things, focusing only on the differences *noun* – the difference between two or more things in Spanish: contrastar or contraste	The essay question on the quiz asked us to **contrast** the two poems: One was a happy, upbeat poem and the other was a sad, somber poem. Miguel thought the quiz was really easy; in **contrast**, Shayla thought the quiz was impossible!
substance *noun* – a physical material that you can see and touch, like a powder or a gel in Spanish: sustancia	One of the most common **substances** that detectives collect at crime scenes is blood because it contains DNA.
inference *noun* – a conclusion based on evidence Related form: **infer** *(verb)* in Spanish: inferencia	Sven made an **inference** that his friends were home because he could see lights on in their apartment window.
qualitative *adjective* – describes observations that do not have numbers; for example: size, color, shape in Spanish: cualitativo	In science class, my partner Javon collected **qualitative** data by writing down the color and texture of the three different substances.
quantitative *adjective* – describes observations that use numbers; for example: weight, time, height, volume in Spanish: cuantitativo	I collected **quantitative** data by measuring the volume and weight of the three different substances.

Teacher Directions, Focus Words

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Examining the Focus Words Closely

Students may have been exposed to these words and definitions throughout the week. Multiple exposures to the words reinforce understanding; however polysemous words such as these can be confusing to students. The purpose of this chart is to help students see that these words have different meanings across content areas.

Procedure:

1. Say the word and part of speech.
2. Read the word and the part of speech to the students. For a word like inference, it may be helpful to mention the fact that students may have heard the verb “infer.”
3. Read the definition.
4. Read the definitions aloud to the class. Emphasize how these words might be used in a science context and how they might be used in other contexts.
5. Use in an example.
6. Share the example sentences. For English learners, you may ask them to repeat the sentence or share with a partner. Ask students to use the word in a sentence on their own and share with a partner. If time permits, share some student sentences with the class on overhead or document reader.