4-5 At-Home Learning Resources (Blue Packet)

Week #9

The Richland School District cares deeply about the well-being of our students and families. We highly encourage our students and families to set a daily routine that includes the following:

For our elementary families:

- Read daily with your child
- Play family games (board games, cards, puzzles, charades, pictionary, etc.)
 - Engage in an outside activity
 - Cook/bake with your child
 - Maintain relationships with your child's teacher

These supplemental activities, readings, and other resources are available to students and families to continue learning and exploring while schools are closed in response to the novel coronavirus.

Students are not required to complete and/or turn in any assignments nor will any of these materials be used to assess students academically. Please feel free to use these optional resources as needed. Additional resources are available at: <u>https://www.rsd.edu/programs/at-home-learning/pre-k-elementary-resources</u>

Vocabulary

Word Knowledge

Homograph Hook

Objective

The student will identify the meaning of homographs.

Materials

- Homograph cards (Activity Master V.005.AM1)
- Meaning cards (Activity Master V.005.AM2a V.005.AM2b)
- Student sheets (Activity Master V.005.SS1a V.005.SS1b) There are two different student sheets.
- Pencils

Activity

Students match homographs with their corresponding meanings by playing a sorting game.

- 1. Place homograph cards face up in a column. Place meaning cards face down in a stack. Provide each student with a different student sheet.
- 2. Taking turns, students select the top meaning card from the stack and read it (e.g., inside of a hand).
- 3. Read the words in the column and determine which word best matches the meaning (i.e., palm).
- 4. Place the meaning card to one side of the homograph card. Reread the homograph and meaning.
- 5. Continue until each homograph has a meaning card on both sides (i.e., inside of a hand and a type of a tree).
- 6. Complete student sheets by writing sentences to match identified meanings.
- 7. Teacher evaluation



Extensions and Adaptations

- Make new homograph and meaning cards (Activity Master V.001.AM4).
- Select four other homographs and write corresponding sentences (Activity Master V.005.SS2).
- Use cards to play a memory game that matches a homograph to its two meanings.

V.005



Homograph Hook



homograph cards



Homograph Hook

V.005.AM2a

beak	record of money owed
one who counts	long flat surface in a kitchen
a type of tree	inside of a hand
equal	stick to light fires

meaning cards



rubber need rest around a wheel a hole dug satisfactory for water building unchanging for horses part of student the eye

meaning cards

V.005.AM2b

Homograph Hook

V.005.SSIa

Homograph	Two sentences showing two different meanings
bill	
palm	
counter	
match	

V.005.SSIb

Homograph Hook

Homograph	Two sentences showing two different meanings
tire	
well	
stable	
pupil	

Homograph Hook

V.005.SS2

Homograph	Two sentences showing two different meanings



Comprehension

Monitoring for Understanding

Answer Know-How

Objective

The student will identify question types to comprehend text.

Materials

- Header cards (Activity Master C.036.AM1)
- Passage (Activity Master C.036.AM2)
- Question cards (Activity Master C.036.AM3a C.036.AM3b)

If text in this activity is not appropriate for your students, use text that is more applicable and compose questions for sorting.

Note: The numbers on the cards correspond to headers in the following manner: Right There - 1, 8, 11; Author and Me - 3, 5, 9; Think and Search - 2, 4, 6; On My Own - 7, 10, 12.

Activity

Students determine types of questions and sort.

- 1. Place header cards face up in a row. Place question cards face down in a stack. Provide each student with a copy of the passage
- 2. Taking turns, students read the passage.
- 3. Select the top card from the stack and read it aloud. For example, "What can you learn from Jill?" Decide what type of question it is (i.e., Author and Me).
- 4. Place under appropriate header card.
- 5. Continue until all cards are sorted.
- 6. Peer evaluation



Extensions and Adaptations

- Answer the questions (Activity Master C.036.SS1).
- Copy questions at end of textbook chapter (Activity Master C.008.AM3) and sort using headers.
- Write own questions and answer (Activity Master C.036.SS2).
- Read text, sort questions, and answer (Activity Masters C.036.AM4a C.036.AM4c, C.036.SS3).



Answer Know-How

C.036.AMI



A Moving Story

Marty had lived in Happyville since she was born. Next week, however, Marty and her family were moving over 1000 miles away to Washington. Marty despised the idea of moving for many reasons. She was sad to be leaving her best friend. She played on the soccer team for two years and hated leaving her team. She would not be sleeping in her bedroom which she loved and had decorated all by herself. She just hated the whole thing.

Marty's dad had gotten a new job and said it would be good for the entire family. Her mother told Marty that there would be lots of new things to do and people to meet. Her brother was too young to understand. How could this be good when she would not know anyone and when she would have to go to a brand new school?

The whole situation was worse because they were moving on Marty's birthday! She was going to turn 11 and wanted to spend the day with her friends. Instead, she was going to spend her birthday packing and watching the contents of the house be put on a truck. What about her party? What about spending the day with her friends? What about what she wanted? No one ever asked what she wanted.

One morning Marty woke up and decided to try a new approach. She would make a plan about how this could actually be a good thing. The first thing she did was borrow the camera and take pictures of everything that was familiar to her. This included her house, her bedroom, her friends, and her school. Then she made a list of things she could try when she got to the new town. She would also join the soccer team there. In addition, she would introduce herself to the other kids at school and try to make friends with them. She knew that if she had the right attitude things would turn out fine.

Comprehension

Answer Know-How

C.036.AM3a

How long has Marły lived in Happyville?	Where are Marty and her family moving? 8
What did Marty decide to do to make moving to a new town a good thing?	Did Marty's attitude change? How?
Why did Marty think they should have picked another day to move? 4	What does the word "despised" mean?

Т

question cards 2007 The Florida Center for Reading Research

Comprehension

C.036.AM3b

Answer Know-How

Do you think Marty will like her new home?	What can you learn from Marty? 5
Did Marty think anyone understood her? Why or why not? 9	How would you feel if you had to move to a new town? 7
Why can moving to a new place be an upsetting event?	Does having a good attitude make a difference? Why or why not?

question cards

Answer Know-How

C.036.SSI

How long has Marty lived in Happyville?

Did Marty's attitude change? How?

Do you think Marty will like her new home?

Why did Marty think they should have picked another day to move?

What can you learn from Marty?

What does the word "despised" mean?

How would you feel if you had to move to a new town?

Where are Marty and her family moving?

Did Marty think anyone understood her? Why or why not?

Why can moving to a new place be an upsetting event?

What did Marty decide to do to make moving to a new town a good thing?

Does having a good attitude make a difference? Why or why not?

C.036.SS2

Answer Know-How

Right	There
Question 1	Answer 1
2	2
Think and	d Search
Question	Answer
1	1
2	2
Author	and Me
Question 1	Answer 1
2	2
On My Own	
Question	Answer
1	1
2	2
l	

C.036.AM4a

Comprehension

Answer Know-How

Harry's Hiccups

What started out as a typical day would soon turn into one of the most unusual days Harry ever had. His mom came in and woke him up at 7:00 so he could get ready for school. Breakfast was the same cereal he ate every day along with his banana and glass of juice. As he left, he grabbed his homework and backpack. He reminded his mom that he had a baseball game that night.

He was on the bus when they began. He was involved in a conversation with his friends when, out of nowhere, he began to hiccup. He excused himself and thought that would be the end of it. Instead, it was only the beginning. He hiccupped again and again until, finally, one of his friends said, "Okay, Harry enough. You're starting to bother me and everyone else on the bus." The problem was they weren't small inaudible hiccups. No, they were loud enough for everyone to hear. They also got to be painful.

The hiccups persisted throughout the day. This had never happened to Harry before. His teacher tried to be understanding and suggested he get some water. When that didn't work, one of the students tried to startle him as a way to stop the hiccups. Another student suggested he breathe into a bag. None of these remedies worked. Harry continued to hiccup. When they got to be too loud, everyone decided he should go see the nurse. His classmates did not want to be rude, but no one wanted to sit with him at lunch, so he sat at a table by himself.

Harry thought the hiccups might go away when he started playing baseball. But, instead, he hiccupped and struck out. The coach told Harry it probably would be better if he sat out the rest of the game. That night when he tried to do his homework, all he could do was hiccup. What if he had the hiccups for the rest of his life? Upset and worn out, Harry went to bed. The last thing he remembered was hiccupping. The next morning when he woke up he opened his eyes and inhaled. All was normal. Harry was happy to be quiet that day.

Comprehension

C.036.AM4b	Answer Know-How
What was Harry's problem?	What were some of the remedies people suggested?
What happened at the baseball game?	What does the word "inaudible" mean? 24
Why did a student suggest he breathe into the bag?	Was Harry upset the first time he hiccupped?

question cards — answers: Right There - 14, 17, 22 Think and Search - 24, 13, 18

Comprehension

Answer Know-How

C.036.AM4c

Why didn't anyone want to sit with Harry at lunch? 20	Why was Harry upset and worn out?
Why wasn't this a typical day? 23	How would you try to cure hiccups?
How could hiccups cause someone to strike out when trying to hit a baseball?	Why might listening to hiccups be annoying?

C.036.SS3

Answer Know-How

Why did a student suggest Harry breathe in the bag?

What was Harry's problem?

Why was Harry upset and worn out?

Did Harry have the hiccups the next morning?

What were some of the remedies people suggested?

Was Harry upset the first time he hiccupped?

How could hiccups have caused Harry to strike out?

Why didn't anyone want to sit with Harry at lunch?

Why did Harry think the hiccups might go away at the baseball game?

What happened at the baseball game?

Why wasn't this a typical day?

What does the word "inaudible" mean?

4-5 Student Center Activities: Comprehension

Questions to Ask Before, During, and After Reading

These are questions to help engage students in discussions and conversations about reading. These questions are just suggestions and other questions can be added to this list based upon the type of reading students are involved in.

Before Reading

- What is the title of the book or text?
- What does this title make you think about?
- What do you think you are going to read about? (Make a Prediction)
- Does this remind you of anything?
- Are you wondering about the text or do you have any questions before reading?
- Skim through the article. Do any pictures, key words, and/or text features stand out to you?

During Reading

- What is happening so far?
- What does the word _____ mean on this page?
- What do you think the author is trying to communicate in this part?
- What do you think was important in this section? Why do you think it was important?
- What can you infer from this part of the text?
- Where is the story taking place?
- Who are the characters so far?
- What do you think will happen next?
- What does this part make you think about?
- What questions do you have?
- What words help you visualize what the author is saying?
- Is there a word that you struggled with? What is the word? Let's break the word into parts and look at context clues.

After Reading

- What was this text about?
- What was the main idea? What details from the text helped you determine the main idea?
- What did you learn from this text?
- How did the author communicate his/her ideas?
- What does this text remind you of?
- What was your favorite part and why?
- Did this text have a problem? If so, what was the problem and what was the solution?
- What is your opinion about this text? What are some parts that helped you make that opinion?
- What are some questions you still have about the text?
- Does this text remind you of other texts you have read? How are they alike and/or different?
- What is a cause and effect from the text you read?

	Cross-Curricular Reading Comprehension Worksheets: D-31 of 36
The Metric System	Name:
CLOSS-CALIFICULAR FOCUS: MAINEMALICS	Answer the following questions based on the
There are two basic systems of measurement: metric and customary. The U.S., Liberia and Myanmar are the only countries that still use the customary system Interactionly, the United States was	passage whenever necessary to find or confirm your answers.
U.S. representatives signed the 1875 Treaty of the Meter. Signing the U.S. representatives signed the 1875 Treaty of the Meter. Signing the treaty was a vote to recognize the meter as a standard of measurement. So where did the metric system come from, and why doesn't the U.S.	1) Which system of measurement do you prefer: metric or customary? Explain your answer.
Use It very much? In 1790, the French Revolution had just ended in France. The new French government commissioned the French Academy to develop a simpler system of measurement. They agreed that one <i>metre</i> would be equal to one ten-millionth of the distance between the north pole and the equator, measuring along the Paris meridian. It took almost ten years to	 What three countries still use customary measurements?
In 1800, America was much friendlier with France than with England. The American Revolution was a recent memory on both sides of the ocean. France had helped the U.S. during the war. President Thomas Jefferson enjoyed a good relationship with the French government. During Jefferson's presidency, the U.S. bought a huge area of land in	 What treaty did the U.S. sign that recognized the metric system as a standard of measurement?
North America belonging to France. The Louisiana Purchase greatly enlarged the territory of the U.S. However, despite its friendship with France, the U.S. failed to approve the new, simpler metric system at first. Congress approved a move to the metric system in 1866. Then in 1875, the U.S. signed the Treaty of the Meter in 1875. However, the use of the customary system of measurement continued.	4) Name three professional areas in the U.S. that use the metric system.
The U.S.increased the use of metric measurements in the 1960s. The U.S. is still working toward the goal of using only the metric system. Many medical, military and scientific measurements use the metric system already. However, customary units are still used in many situations, such as marking miles rather than kilometers on roads. The	5) What metric measurement is similar to a mile?
change is made more difficult by the lack of direct comparisons for some units. For example, one inch is exactly 2.54 centimeters. There is no direct comparison for the smaller metric unit, the millimeter.	
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Atmospheric Layers cross-Curricular Focus: Earth Science	Name:
The atmosphere surrounding Earth is made up of several layers of gas mixtures. The most common gases in our atmosphere are nitrogen, oxygen and carbon dioxide. The amount of the gases in the	passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.
mixture varies above the different places on Earth. The atmosphere puts pressure on the planet. The amount of pressure becomes less and less the further away from Earth's	1) Which layer of the atmosphere has most of the air?
of the part that is closest to us. At any moment in time, the overall condition of Earth's atmosphere, including the part we can see and the parts we cannot, is called weather. Weather can change, and it frequently does. That is because the conditions of the atmosphere	2) If you were to send a bottle rocket 15 kilometers up into the air which laver of the atmosphere would it he in?
can change. The four main layers in Earth's atmosphere are the troposphere, the stratosphere, the mesosphere and the thermosphere. The laver	
that is closest to the surface of Earth is called the troposphere . It extends up from the surface of Earth for about 11 kilometers. This is the layer where airplanes fly. We experience almost all weather in	3) What are the most common gases in Earth's
this layer. About three-fourths of our atmosphere's air is also found in the troposphere.	atmosphere
Just above the troposphere is the stratosphere . It extends to about 50 kilometers above Earth's surface. Most of our planet's ozone laver is in this colder, drier laver. Ozone is important to	
the health of our planet because it helps keep some of the sun's dangerous radiation from reaching the Earth's surface.	4) Why is it important to protect the stratosphere?
If we continue upward, the next layer is the mesosphere , which extends up to about 80 kilometers above Earth's surface. The	
mesosphere is extremely cold. It is within this layer that you are most likely to find meteors. Most meteors will completely burn up before	5) Why aren't there many meteors in the troposphere?
they reach Earth's surface. The final layer is the thermosphere , the layer that is closest	
to the sun. Temperatures in the thermosphere can be over 1,500° Celsius.	
Together, the layers of our atmosphere protect Earth. The atmosphere provides the conditions needed to support life.	

Cross-Curricular Reading Comprehension Worksheets: E-32 of 36

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Classic Literature: Little Women

Louisa May Alcott wrote *Little Women* in 1868. It is one of the most beloved children's books of all time. It is the story of the four March sisters: Meg, Jo, Amy, and Beth. They live with their mother while their father is fighting in the Civil War. The family doesn't have much money. They live next door to Mr. Laurence, who is very wealthy, and his grandson, Laurie. The passage below is about Beth, who loves to play the piano. The March family only has a small, out-of-tune piano. The "Mansion of Bliss" is Mr. Laurence's house.

CHAPTER SIX: BETH FINDS THE PALACE BEAUTIFUL

But Beth, though yearning for the grand piano, could not pluck up courage to go to the 'Mansion of Bliss', as Meg called it. She went once with Jo, but the old gentleman, not being aware of her infirmity, stared at her so hard from under his heavy eyebrows, and said "Hey!" so loud, that he frightened her so much her 'feet chattered on the floor', she never told her mother,

and she ran away, declaring she would never go there any more, not even for the dear piano. No persuasions or enticements could overcome her fear, till, the fact coming to Mr. Laurence's ear in some mysterious way, he set about mending matters. During one of the brief calls he made, he artfully led the conversation to music, and talked away about great singers whom he had seen, fine organs he had heard, and told such charming anecdotes that Beth found it impossible

to stay in her distant corner, but crept nearer and nearer, as if fascinated. At the back of his chair she stopped and stood listening, with her great eyes wide open and her cheeks red with excitement of this unusual performance. Taking no more notice of her than if she had been a fly, Mr. Laurence talked on about Laurie's lessons and teachers. And presently, as if the idea had just occurred to him, he said to Mrs. March...

"The boy neglects his music now, and I'm glad of it, for he was getting too fond of it. But the piano suffers for want of use. Wouldn't some of your girls like to run over, and practice on it now and then, just to keep it in tune, you know, ma'am?"

Beth took a step forward, and pressed her hands tightly together to keep from clapping them, for this

was an irresistible temptation, and the thought of practicing on that splendid instrument quite took her breath away. Before Mrs. March could reply, Mr. Laurence went on with an odd little nod and smile...

"They needn't see or speak to anyone, but run in at any time. For I'm shut up in my study at the other end of the house, Laurie is out a great deal, and the

servants are never near the drawing room after nine o'clock."

Here he rose, as if going, and Beth made up her mind to speak, for that last arrangement left nothing to be desired. "Please, tell the young ladies what I say, and if they don't care to come, why, never mind." Here a little hand slipped into his, and Beth looked up at him with a face full of gratitude, as she said, in her earnest yet timid way...

"Oh sir, they do care, very very much!" "Are you the musical girl?" he asked,

without any startling "Hey!" as he looked down at her very kindly.

"I'm Beth. I love it dearly, and I'll come, if you are quite sure nobody will hear me, and be disturbed," she added, fearing to be rude, and trembling at her own boldness as she spoke.

"Not a soul, my dear. The house is empty half the day, so come and drum away as much as you like, and I shall be obliged to you."

"How kind you are, sir!"

Beth blushed like a rose under the friendly look he wore, but she was not frightened now, and gave the hand a grateful squeeze because she had no words to thank him for the precious gift he had given her.







Little Women: Understanding the Passage

I. Order of Events

Put the following events in the passage in the order they happened. Mark the first event with a 1, the second with a 2 and so on.

A	Mr. Laurence visits the Marches.
В	Mr. Laurence talks about music.
С	Beth says she'll play Mr. Laurence's piano.
D	Beth and Jo visit the 'Mansion of Bliss'
Е	Beth listens in a corner.
F	Mr. Laurence invites the sisters to play the piano.
G	Mr. Laurence says "Hey!" to Beth.

II. Short Answer

Answer each question below.

- 1. What caused Beth to overcome her shyness around Mr. Laurence?
- 2. Why did Mr. Laurence talk about music so much during his visit to the Marches?
- 3. Why did Mr. Laurence say, "They needn't see or speak to anyone"?





Little Women: Understanding the Words I. Vocabulary Match

Match each word in Column A with its meaning in Column B

Column A

Column B

1	bliss	A. ignores
2	chattered	B. sincere or meaningful
3	enticements	C. happiness
4	yearning	D. something that encourages or tempts
5	anecdotes	E. shy and afraid
6	neglects	F. weakness or inability
7	infirmity	G. click rapidly
8	artfully	H. wanting or desiring
9	timid	I. short, funny stories
10.	earnest	J. skillfully

II. Meaning in Context

Below are quotations from the passage. Use the context of the sentence to circle the correct meaning of the underlined words.

1. "Bethcould not <u>pluck up</u> courage to go"
A. hope for B. gather or find C. let go D. find time
2. "he set about <u>mending matters"</u>
A. sewing clothes B. asking advice C. caring about a person D. fixing a situation
3. " 'But the piano <u>suffers for want of</u> use.' "
A. is hurt by the lack of B. gets lots of C. has no particular D. needs care more than
4. " 'the servants are never near the drawing room after nine o'clock' "
A. dining room B. kitchen C. artist's studio D. living room or parlor
5. "'I shall be <u>obliged</u> to you'"
A. a comfort B. talking C. grateful D. listening



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Little Women: Find the Supporting Evidence

Below is one of the main ideas of the passage. Find three examples from the text that supports this main idea.







Little Women: The Meetings of Beth and Mr. Laurence

The passage from Little Women tells of two times Beth and Mr. Laurence meet. Compare the two meetings. How did each character act in each meeting? How were the meetings different? What was the difference in the ending of each meeting? Which was the happier meeting?







Little Women Word Search

Circle each word from the list in the puzzle. The words can go in any direction.



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Context Clues: The Secret Garden

Name:

Below is the opening of Francis Hogsdon Burnett's classic story "The Secret Garden." The book was published in 1910 and tells of the adventures of Mary Lennox. After Mary's parents die, she is sent to live with her uncle. There Mary uncovers mysteries, makes friends and finds the importance of nature.

The Secret Garden

When Mary Lennox was sent to Misselthwaite Manor to live with her uncle everybody said she was the most disagreeable-looking child ever seen. It was true, too. She had a little thin face and a little thin body, thin light hair and a sour expression. Her hair was yellow, and her face was yellow because she had been born in India. She had always been ill in one way or another.

Her father had held a position under the English Government. He had always been busy and ill himself. Her mother had been a great beauty who cared only to go to parties and amuse herself. She had not wanted a little girl at all, and when Mary was born she handed her over to the care of an Ayah.

She never remembered seeing familiarly anything but the faces of her Ayah and the other native servants. They always obeyed her and gave her her own way in everything. By the time she was six years old she was as tyrannical and selfish a little pig as ever lived.

The young English governess who came to teach her to read and write disliked her so much that she gave up her place in three months. When other governesses came, they always went away in a shorter time than the first one. So if Mary had not chosen to want to know how to read books, she would never have learned her letters at all.



Meaning Match

Write the letter of the word on the right which has almost the same meaning as the word or phrase on the left. Use the words in the text to understand the meaning.

 1. disagreeable-looking		_6. handed	A. nurse
			B. bossy
 2. expression		_ 7. Ayah	C. gave
			D. entertain
3. ill		8. familiarly	E. sick
 -		_ ,	F. friendly
4 nosition		9 tyrannical	G. teacher
			H. ugly
C. emuse		10 201/070000	I. job
 _ 5. amuse	<u> </u>	_ IU. governess	J. look



What is a black hole?

By NASA.gov, adapted by Newsela staff on 03.02.20 Word Count **765** Level **980L**



TOP: The black hole Cygnus X-1 formed when a large star caved in. This black hole pulls matter from the blue star beside it; NASA/CXC/M.Weiss. BOTTOM: An artist's drawing shows the current view of the Milky Way galaxy. Scientific evidence shows that in the center of the Milky Way is a supermassive black hole; NASA/JPL-Caltech.

A black hole is a region in space where the pulling force of gravity is so strong that light cannot escape. The strong gravity occurs because matter has been pressed into a tiny space. This compression can take place at the end of a star's life. Some black holes are a result of dying stars.

Because no light can escape, black holes are invisible. However, space telescopes with special instruments can help find them. They can observe the behavior of material and stars that are very close to black holes.

How Big Are Black Holes?

Black holes can come in a range of sizes, but there are three main types of black holes. The black hole's mass and size determine what kind it is.

The smallest ones are known as primordial black holes. "Primordial" is a word that means something that existed at the beginning of time. Scientists believe this type of black hole is as small as a single atom but with the mass of a large mountain. The most common type of medium-sized black holes is called "stellar." The mass of a stellar black hole can be up to 20 times greater than the mass of the sun. It can fit inside a ball with a diameter of about 10 miles. Dozens of stellar black holes may exist within the Milky Way galaxy, a large group of stars held together by gravity that is home to Earth and the sun.

The largest black holes are called "supermassive." These black holes have masses greater than 1 million suns combined. Each one would fit inside a ball with a diameter about the size of the solar system.

Scientific evidence suggests that every large galaxy contains a supermassive black hole at its center. The supermassive black hole at the center of the Milky Way galaxy is called Sagittarius A. It has a mass equal to about 4 million suns. It would fit inside a ball with a diameter about the size of the sun.

How Do Black Holes Form?

Primordial black holes are thought to have formed in the early universe, soon after the big bang.



Stellar black holes form when the center of a very massive star collapses in on itself. This collapse also causes a supernova, or an exploding star.

Scientists think supermassive black holes formed at the same time as the galaxy they are in. The size of each supermassive black hole is related to the size and mass of its galaxy.

If Black Holes Are "Black," How Do Scientists Know They Are There?

A black hole cannot be seen because of the strong gravity pulling all of the light into the black hole's center. However, scientists can see the effects of its strong gravity on the stars and gases around it. If a star is orbiting a certain point in space, scientists can study the star's motion. This tells them if it is orbiting a black hole.

When a black hole and a star are orbiting close together, high-energy light is produced. Scientific instruments can see this high-energy light.

Could A Black Hole Destroy Earth?

Black holes do not wander around the universe, randomly swallowing worlds. They follow the laws of gravity just like other objects in space. The orbit of a black hole would have to be very close to the solar system to affect Earth, which is not likely.

If a black hole with the same mass as the sun were to replace the sun, Earth would not fall in. The black hole would keep the same gravity as the sun, so the planets would orbit the black hole as they orbit the sun now.

Will The Sun Ever Turn Into A Black Hole?

The sun does not have enough mass to collapse into a black hole. In billions of years, when the sun is at the end of its life, it will become a red giant star. When it has used the last of its fuel, it will

throw off its outer layers. Then it will turn into a glowing ring of gas called a planetary nebula. Finally, all that will be left of the sun is a cooling white dwarf star.

How Is NASA Studying Black Holes?

NASA is learning about black holes using spacecraft and telescopes. In 2008, the U.S. space agency launched the Fermi Gamma-ray Space Telescope. It is observing a form of light known as gamma rays in search of black holes. Instruments like these help scientists answer questions about the origin, evolution and destiny of the universe.

Quiz

4

- 1 Choose the paragraph in the section "How Big Are Black Holes?" that suggests that a black hole's mass can be much greater than its size.
- 2 Which section highlights the idea that gravity plays an important role in studying black holes?
 - (A) "How Do Black Holes Form?"
 - (B) "If Black Holes Are 'Black,' How Do Scientists Know They Are There?"
 - (C) "Will The Sun Ever Turn Into A Black Hole?"
 - (D) "How Is NASA Studying Black Holes?"
- 3 What is MOST likely the reason the author included the section "Could A Black Hole Destroy Earth?"
 - (A) to disprove an existing idea about black holes
 - (B) to encourage further research of black holes
 - (C) to explain how the orbits of black holes change
 - (D) to show how black holes and the sun are alike

Fill in the blank. The author mainly explains the importance of black hole research by:

- (A) interviewing multiple experts on the significance of black holes in the universe
- (B) providing extensive descriptions of how black holes affect Earth's galaxy
- (C) explaining the causes and effects of black holes on objects in space
- (D) describing how black holes are formed and then classified.



Scientists putting the pieces together of a black hole puzzle

By Los Angeles Times, adapted by Newsela staff on 11.18.13 Word Count **728** Level **830**L



Parallel jets provide astronomers with some of the most powerful evidence that a supermassive black hole lurks in the heart of most galaxies. Some of these black holes appear to be active, gobbling up material from their surroundings and launching jets at ultra-high speeds, while others are inactive. This drawing of the core of Cygnus A shows the dusty donut-shaped surroundings, called a torus, and jets launching from its center. Magnetic fields are illustrated trapping the dust in the torus. These magnetic fields could be helping power the black hole hidden in the galaxy's core by confining the dust in the torus and keeping it close enough to be gobbled up by the hungry black hole. NASA/CXC/M.Weiss

LOS ANGELES — Black holes are regions of space with a very strong gravitational pull. The gravity is so strong that everything around gets sucked into the black hole, including light.

Astronomers have known for years that black holes also shoot matter into the universe. These high-speed streams of matter are known as relativistic jets. However, nobody knew exactly what type of material was in the jets.

Now, that mystery may have been solved.

A team of scientists says it found traces of nickel and iron in the powerful jets shooting out of a black hole called 4U 1630-47. This small black hole is just a few times the mass of our sun.

Positrons Or Normal Matter?

Their discovery may help solve a long-standing scientific puzzle.

"It was one of the unsolved questions about relativistic jets produced in the vicinity of black holes," said astronomer Avi Loeb. The question is what are the jets made of, he said.

Everyone agreed that the jets would contain electrons, which have a negative charge. But the jets did not have a negative charge overall. That suggested there was something else in there with a positive charge that canceled the electron out.

Some models of the jets suggested they were shooting lightweight electrons and positrons from the black hole into the universe. Positrons are positively charged and are the opposite of electrons. Unlike electrons, they are not found in normal matter. Instead, they are a part of so-called antimatter. They can also exist on their own, as can electrons.

But other scientists were not convinced. They thought the jets were made of much heavier normal matter.

Radio Waves And X-Rays

Until now, it wasn't clear what was causing the positive charge, said study coauthor James Miller-Jones. Was it positrons, the "antimatter 'opposite' of electrons?" Or was it positively charged atoms of normal matter?

The researchers' discovery of nickel and iron in the jets seems to have settled that question. "We now know that ordinary matter must be providing the positive charge," Miller-Jones said.

It takes much more energy to move normal matter than to move lightweight electrons and positrons. This made the scientists realize something important: The high-speed jets must be carrying more energy away from the black hole than was previously known.

The study also sheds light on another set of questions. Where do the jets come out of? Are they caused by the spin of the rotating black hole? Or do they come from the disk of matter that surrounds the black hole?

The recent discovery suggests that the jets are coming from the disks. "We are planning further observations" to prove this, Miller-Jones said.

To figure out what was in the jets, the researchers looked at radio waves and X-rays given off by black hole 4U 1630-47. Different things have their own radio wave and X-ray patterns. These are known as their signatures. These signatures fall within the complete range or spectrum of possible wave and ray patterns.

Two-Thirds The Speed Of Light

The first time the researchers looked, the radio wave spectrum suggested the jets were not on. The X-ray spectrum did not show anything unusual.

"The jets are not always on," Miller-Jones said. "It depends a little bit on how fast the black hole is feeding." Black holes can grow — or "feed" — by sucking in matter around them.

But the second time the team looked, the radio waves seemed to show the jets were on. At the same time, the X-ray spectrum picked up the signatures of iron and nickel. That signal, however, was off just a bit.

The scientists believe they know why the signal was off. It was because of something similar to what is called the "Doppler effect."

In the Doppler effect, "a sound wave gets higher as it moves toward you and lower as it moves away from you," Miller-Jones said. The researchers saw the same kind of effect in space. "The energy was shifted a little bit to higher energies when it was moving toward us, and lower when it was moving away from us."

And there was one especially cool result of this effect: It allowed the researchers to figure out how fast the material in the jets was moving. Their finding? A whopping 123,000 miles per second, or about two-thirds of the speed of light.

Quiz

1

- Which of the following is the BEST summary of the article?
 - (A) Scientists learned some helpful things about black holes.
 - (B) There is still a lot of disagreement about whether there are positrons in black holes.
 - (C) Scientists used radio waves and X-rays to determine that black holes release normal matter.
 - (D) The first time scientists looked at the jets from black hole 4U 1630-47, they were off, but the second time they were on.
- 2 Select the paragraph from the section "Positrons Or Normal Matter?" that explains why scientists were looking for positively charged matter in the jets.
- 3 Which section from the article explains some of the difficulties scientists had in making their discovery?
 - (A) Introduction [paragraphs 1-4]
 - (B) "Positrons Or Normal Matter?"
 - (C) "Radio Waves And X-Rays"
 - (D) "Two-Thirds The Speed Of Light"

4 Which of the following sentences from the section "Radio Waves And X-Rays" BEST supports the main idea of that section?

- (A) Was it positrons, the "antimatter 'opposite' of electrons?"
- (B) "We now know that ordinary matter must be providing the positive charge," Miller-Jones said.
- (C) The study also sheds light on another set of questions.
- (D) These signatures fall within the complete range or spectrum of possible wave and ray patterns.

English Language Learner Supplement 4-5

Bed in Summer

By Robert Louis Stevenson

In winter I get up at night And dress by yellow candle-light. In summer, quite the other way, I have to go to bed by day.

I have to go to bed and see The birds still hopping on the tree, Or hear the grown-up people's feet Still going past me in the street.

And does it not seem hard to you, When all the sky is clear and blue, And I should like so much to play, To have to go to bed by day? **Reading:** Read the poem by yourself or with someone at home. Circle any words in the poem that are new to you and look up their definitions.

Speaking: Read the poem aloud to someone at home. Tell them what the poem means in your own words.

Listening; Have someone at home read the poem aloud to you. Close your eyes and try to make pictures in your mind to match the words in the poem.

Poem in the Public Domain

Writing: Why is it harder to go to bed in Summer? Include examples from the poem and from your own experience.

Suplemento para

Estudiantes que Aprenden Inglés 4-5

<u>Cama en Verano</u>

Por Robert Louis Stevenson

En invierno me levanto de noche Y vestirse a la luz de las velas amarillas. En verano, al revés, Tengo que acostarme de día.

Tengo que ir a la cama y ver Los pájaros todavía brincan en el árbol, O escuchar los pies de la gente adulta Todavía me pasa en la calle.

Y no te parece difícil,

Cuando todo el cielo está despejado y azul,

Y me gustaría mucho jugar,

¿Tener que ir a la cama de día?

Poema en el Dominio Público

Se recomienda que los niños completen la página en inglés para practicar las habilidades en inglés.

Lectura: Lee el poema solo o con alguien en casa. Encierra en un círculo cualquier palabra del poema que sea nueva para ti y busca sus definiciones.

Hablando: Lea el poema en voz alta a alguien en casa. Diles lo que significa el poema en tus propias palabras.

Escuchando; Haz que alguien en casa te lea el poema en voz alta. Cierra los ojos y trata de hacer dibujos en tu mente para que coincidan con las palabras del poema.

Escritura: ¿Por qué es más difícil acostarse en verano? Incluya ejemplos del poema y de su propia experiencia.

Writing Ideas 4-5 Elementary Week #9

Students can compose one or multiple paragraphs to respond to the prompts and ideas below. This will vary depending on their age/grade level.

Narrative

• What makes you happy? Think of a time when something or someone made you really happy! Write a personal narrative to tell about that time. You should include when and where it happened and who and/or what was involved. Be sure to include a sequence of events, details, descriptions, and the setting. Establish an introduction, middle, and conclusion.

Opinion/Argument

• What is your favorite holiday? Write an opinion piece on your favorite holiday and why that holiday is the best. Add reasons, examples, and/or details to support your opinion. Be sure to have an introduction and a conclusion that relates to the opinion stated.

Informational/Explanatory

Did you know there are many different kinds of flags! There are state flags, country flags, military flags, and many others. Talk to someone in your family or do some research to find out more about flags. Pick your favorite flag and write an informational piece about it. Learn as much as you can about that flag. Be sure to add enough facts, information, and/or details. Introduce your topic and have a conclusion.

Writing in Response to Reading Bingo

Complete the Bingo board by engaging in various writing ideas from this week's reading selections. Try to get 3-in-a row!

What was the precious gift that Mr. Laurence had given Beth in the reading Little Women chapter six ? Why do you think Beth referred to it as precious? Use evidence from the text to support your reasoning.	Significant passage scavenger hunt! Choose a significant passage from one or more of the reading selections this week! Write about why you selected the passage you and why you feel it is significant.	Write about how the two reading selections What is a black hole? and Scientists putting the pieces together of a black hole puzzle are similar and/or different
Want to learn more about atmospheric layers? Conduct some research and find out more information. Pick two of the five layers of the atmosphere and compare and contrast them. Write an informative piece about your findings. For more information visit <u>https://bit.ly/2LvZkk7</u>	WRITER'S CHOICE	From what we learn of Mary in The Secret Garden , draw a picture of what you think she looks like. Then write about what kind of person you think she is using the clues and evidence from the text.
Black holes are very mysterious! Learn more about black holes and write an informational piece on your findings! For more information on black holes visit <u>https://go.nasa.gov/2X2kPOO</u>	Want to learn more about the metric system? Conduct some research and find out more information. Write an informative piece about your findings. For additional fun, watch the video the metric system at <u>https://bit.ly/3bAqmRW</u>	Vocabulary words are fun! Write a story, song, or poem using some of the words from this week's reading! Want additional fun, create your own game like bingo or memory using this week's words!

Use Partial Products to Multiply

Materials: Multiplication Equations Board (2 x 1-digit or 3 x 1-digit)

- Work with a partner. Choose a line of four problems from the board (vertically, horizontally or diagonally) that you will both solve.
- 2. Solve each problem by multiplying each digit of one factor by each of the digits in the other factor, taking into account the place value of each digit.
- Add the partial products to find the total product.

	(5 x 700)	(5 x 40)	(5 x 6)	
746 x5	3500	200	30	3, 7 3 0
39	$\frac{120}{120}$ (4 x 30)	36 (4×9)	156	0
:xamples:				

4. Check your work with your partner. Then repeat with another line of problems.

28 x 4	64 x 5	27 x 6	82 x 7
8 x 23	9 x 34	3 x 42	6 x 36
15 x 9	18 x 4	22 x 4	31 x 4
7 x 33	4 x 82	3 x 44	6 x 32

212 x 4	126 x 5	232 x 6	148 x 7
8 x 213	9 x 324	3 x 344	6 x 235
137 x 9	215 x 5	262 x 4	131 x 7
7 x 124	8 x 225	4 x 145	2 x 623

3 x 1-digit

Use Partial Products to Multiply

Materials: Multiplication Equations Board (4 x 1-digit)

- Work with a partner. Choose a line of four problems from the board (vertically, horizontally or diagonally) that you will both solve.
- 2. Solve each problem by multiplying each digit of one factor by each of the digits in the other factor, taking into account the place value of each digit.
- Add the partial products to find the total product.

Example:
$$2736$$

 $\times 5$
 10000 (5 × 2000
 3500 (5 × 700)
 150 (5 × 30)
 30 (5 × 6)
 $13,680$

4. Check your work with your partner. Then repeat with another line of problems.

2,281 x 4	1,642 x 5	2,273 x 6	1,824 x 7
8 x 3,235	9 x 1,346	3 x 4,427	6 x 1,368
1,349 x 9	1,581 × 5	6,222 x 4	5,313 x 4
7 x 2,434	8 x 2,345	4 x 4,536	2 x 2,367

Use Partial Products to Multiply

Materials: Multiplication Equations Board (2 x 2-digit)

- Work with a partner. Choose a line of four problems from the board (vertically, horizontally or diagonally) that you will both solve.
- 2. Solve each problem by multiplying each digit of one factor by each of the digits in the other factor, taking into account the place value of each digit.
- Add the partial products to find the total product.

Example:

$$\begin{array}{r}
 25 \\
 \underline{x \ 17} \\
 140 \ (7 \times 20) \\
 200 \ (10 \times 20) \\
 35 \ (7 \times 5) \\
 50 \ (10 \times 5) \\
 425 \\
 425
 \end{array}$$

4. Check your work with your partner. Then repeat with another line of problems.

2 71 × 18	4 61 x 36	2 47 × 31	5 20 x 23
61 x 2	31 x 4	46 x 6	42 X 4
51 × 16	19 x 34	52 x 15	18 x 25
44 x 22	18 x 23	92 x 12	17 x 24

2 x 2-digit

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		Hunt For Decimals 0.27 1.28 8.79 0.04 0.61 6.141
	Hunt for Decimals	0.02 2.073 4.08 9.72 0.25 13.02 2.63 8.381 0.06 0.23 6.57 7.186 0.156 0.73 53.63 2.41 1.58 0.17
Σ	aterials: Hunt for Decimals board for each player, 10 counters	0.78 0.53 3.159 0.65 0.26 0.20 0.081 0.21 1.34 0.10 5.22 0.198 0.69 2.54 5.43 0.82 3.27 4.04
.	Work with a partner. Sit opposite one another with a between you.	divider standing
2.	Each player covers five decimals on his or her boar	with counters.
τ. Υ	Take turns to try and guess each other's covered dethe decimals correctly (i.e. "three and four tenths, ne	cimals. Be sure to read t "three point four").
4	If one of the decimals marked is called out, the play one point. If the player names a decimal that is touc covered, the clue of "close" is given.	er guessing gets ning one that is
5.	The first player to locate three decimals wins the routwo points.	nd and gets an extra
Ö	At the end of five rounds, add your points and comp player with the highest score wins the game.	are your scores. The

Hunt For Decimals

0.27	1.28	8.79	0.04	0.61	6.141
0.02	2.073	4.08	9.72	0.25	13.02
2.63	8.381	0.06	0.23	6.57	7.186
0.156	0.73	53.62	2.41	1.58	0.17
0.78	0.53	3.159	0.67	0.55	0.20
0.081	0.21	1.34	0.10	5.22	0.198
0.69	2.54	5.43	0.82	3.27	4.04

Lesson 5: Simon Says

Overview

In this lesson, students will play a game intended to get them thinking about the way commands need to be given to produce the right result. This will help them more easily carry over to Sprite Lab in the upcoming lessons.

Purpose

This lesson is designed to prepare students to think about one of the core programming concepts in Sprite Lab, behaviors.

Agenda

- <u>Warm Up (10 min)</u>
 - Introduction
- Main Activity (20 min)
 - Simon Says
 - Extension
- <u>Wrap Up (15 min)</u>
 - <u>Reflection</u>

Teaching Guide

Warm Up (10 min)

Introduction

Discussion Goal

Goal: Help students think about times when they must keep track of multiple tasks or instructions simultaneously. The main activity will get students performing silly actions, either in sequence or simultaneously. This will eventually lead to connections about a new way to write programs, but you don't need to get the discussion there yet.

Think-Pair-Share: Think of hobby, sport, or activity that you know how to do well. What does it take to do it well? Are there times when you need think about multiple things or perform different actions at the same time?

- What parts of your body are you using? Does this change at different points?
- Are there times when you need to stop one action before you can begin another? (For example, you must stop dribbling the basketball before you can shoot.)

Remarks

Today we're going to play a game where you'll need to keep track of multiple tasks simultaneously. It's a little bit like Simon Says.

Main Activity (20 min)

Simon Says

Remarks

In the game Simon Says, one player takes the roll of "Simon" or the leader who gives command to other players. Players must follow the leader's commands if and only if they are prefaced with the phrase "Simon Says". The point of the game is to think quickly and to distinguish between real and fake commands. In this version of the game, the rules are a little different.

Rules

All commands should be prefaced with either "begin" or "stop".

When players are told to "begin" a behavior, they should continue it until told to "stop". For example, players should not told be told to clap once, but might be told to "begin clapping". Their clapping should continue until they are told to "stop clapping" even if they are given other new behaviors in between.

The leader can also call for the players to "stop everything".

This should result in everyone just standing at rest regardless of all previous commands.

You as the teacher should take on the role of the leader. You can try make up your own sequences, but here are some you can try. Be sure to give a little space between commands. For each of these sections, consider running through the entire sequence without any discussion and later repeating it again after everyone has had a chance to debrief and process any confusion.

Basic:

- Begin marching in place.
- Stop marching in place.
- Begin clapping.
- Stop clapping.
- Begin marching in place.
- Begin clapping.
- Stop everything.

Debrief: What happened when you were told to clap but you were already marching in place? What happens if you are told to begin two different behaviors at once?

Intermediate:

- Begin waving your arms in the air.
- Begin bobbing your head.
- Stop waving your arms in the air.
- Stop bobbing your head.
- Begin shaking your knees.
- Begin flapping your arms like a bird.
- Stop shaking your knees.
- Begin bobbing your head.

- Begin marching in place.
- Stop flapping your arms like a bird.
- Stop everything.

Debrief:

What kinds of instructions caused people to make mistakes?

What strategies do you think are helpful for making sure you follow instructions correctly?

Why is it important to keep track of each behavior separately?

Challenging

- Begin crouching.
- Begin tapping your head.
- Stop crouching.
- Stop tapping your head.
- Begin jumping up and down.
- Begin tapping your head.
- Stop everything.
- Begin clapping.
- Begin flapping your arms like a bird.
- Stop everything.
- Begin crouching.
- Begin jumping up and down.
- Stop everything.
- Begin tapping your knees.
- Begin tapping your head.
- Stop everything.
- Begin spinning to the left.
- Begin spinning to the right.
- Stop spinning to the left.
- Stop spinning to the right.

Debrief: What happens if two behaviors seem to conflict with each other?

What should you do when told to clap your hands and flap your arms at the same time?

How can you jump up and down while crouching?

What happens if you need to tap your knees and your head at the same time?

When you were told to spin in two opposite directions what did you see people do? What would happen if you were told to spin left and right at the exact same time?

Extension

If you want to make things even more complicated, you can consider changing the rules so that only some players follow some commands. For example, you could try commands like "All girls begin spinning to the left", "All boys begin clapping your hands", or "Everyone stop everything."

Wrap Up (15 min)

Reflection

Journal: Think back to the activity or hobby you discussed at the beginning of class. Using "begin" and "stop" commands write down the instructions you could give someone if you wanted them to act like they were they were doing it. Be sure to remember when they might need to stop something before beginning something new.