3-5 At-Home Learning Resources

(Blue Packet)

Week #5

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:
https://www.rsd.edu/programs/at-home-learning/pre-k-elementary-resources

Objective

The student will identify synonyms.

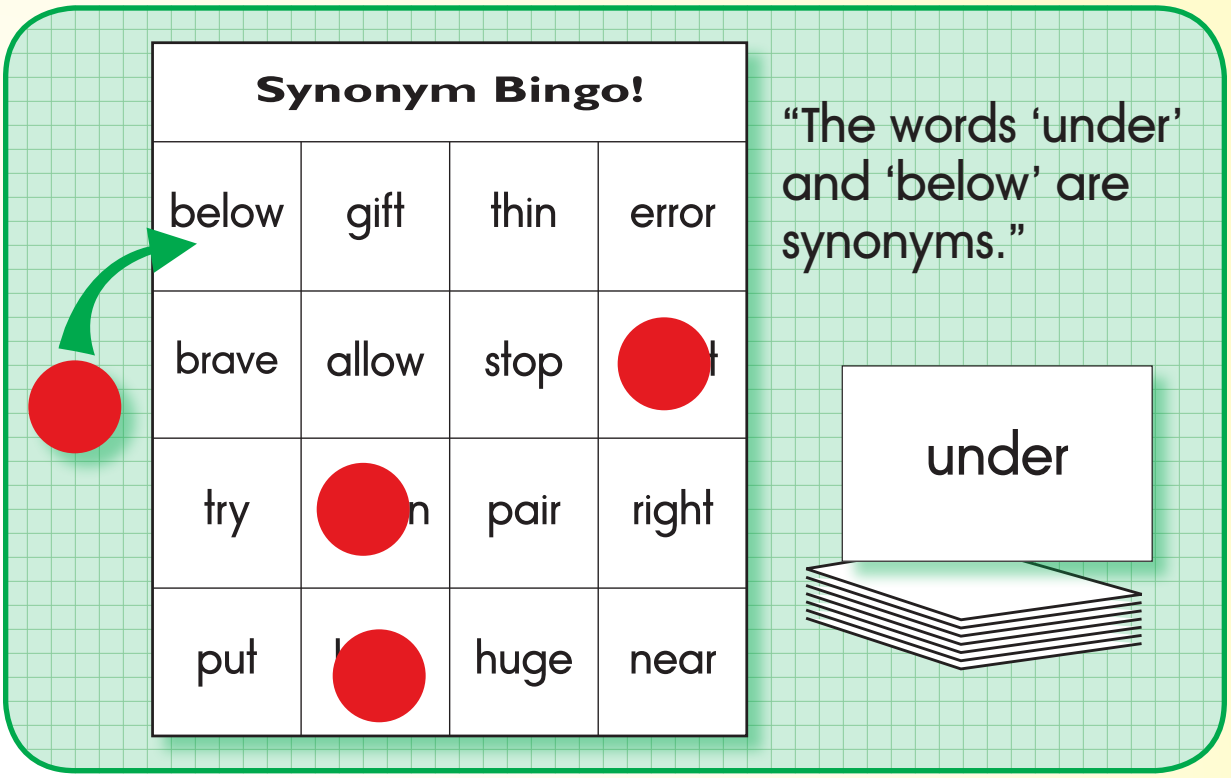
Materials

- Bingo cards (Activity Master V.001.AM1a - V.001.AM1b)
  Each card has different synonyms.
- Synonym cards (Activity Master V.001.AM2a - V.001.AM2d)
- Counters

Activity

Students match synonyms by playing a bingo-type game.

1. Place the synonym cards face down in a stack. Provide each student with a different bingo card and counters.
2. Taking turns, students select the top card and read the word (e.g., under).
3. Look for the matching synonym on the bingo card (i.e., below). If there is a match, place a counter on that synonym and place card in a discard pile. If there is no match, return card to the bottom of the stack.
4. Continue until one card is covered with counters and a student says "Synonym Bingo!"
5. Peer evaluation



Extensions and Adaptations

- Make other bingo cards (Activity Master V.001.AM3) and synonym cards (Activity Master V.001.AM4) with different words.

Synonym Bingo!			
every	ill	shout	close
agree	heal	late	finish
locate	mend	fragile	often
go	own	help	build

Synonym Bingo!			
below	gift	thin	error
brave	allow	stop	want
try	begin	pair	right
put	hide	huge	near

Synonym Bingo! V.001.AM2a

all	sick
yell	shut
consent	cure
tardy	complete

synonym cards

find	fix
breakable	frequent
leave	possess
assist	construct

synonym cards

Synonym Bingo! V.001.AM2c

start	couple
place	correct
conceal	mistake
courageous	permit

synonym cards

V.001.AM2d

Synonym Bingo!

end	close by
desire	immense
slender	present
under	attempt

synonym cards

Bingo!			

V.001.AM4

Synonym Bingo!

blank cards

More Incredible Inferences

Objective

The student will identify inferences.

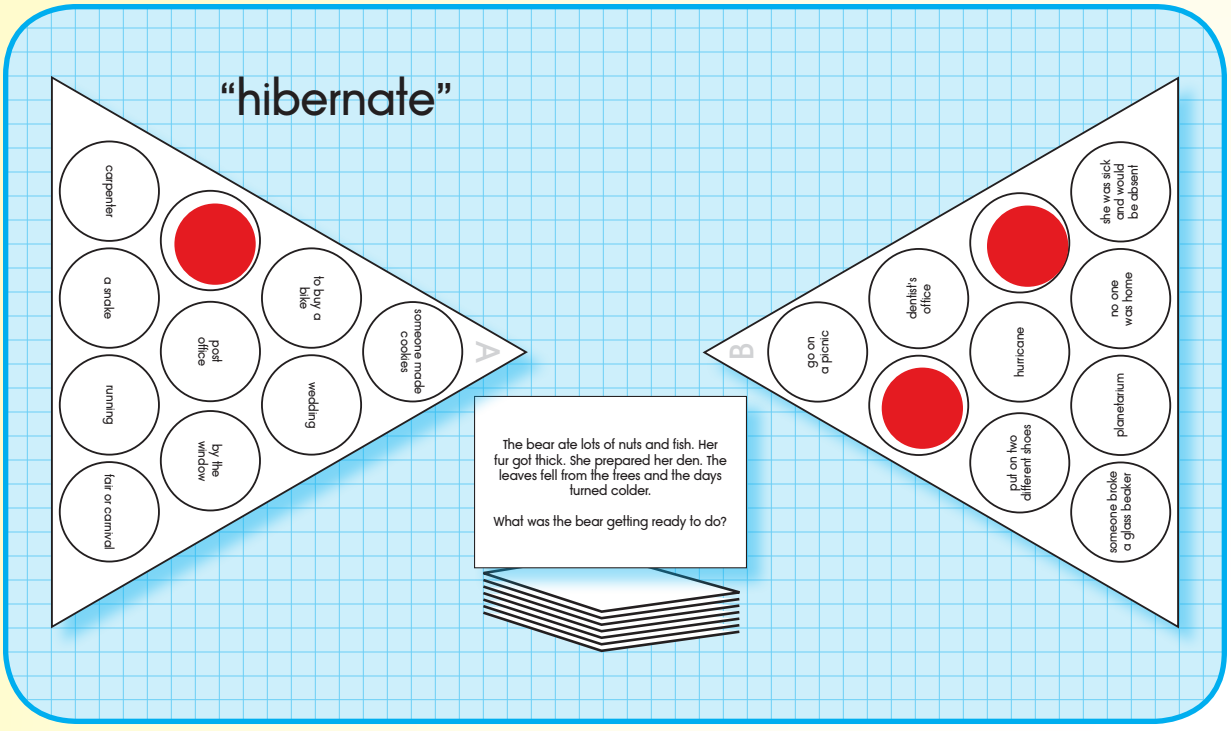
Materials

- Inference triangles (Activity Master C.028.AM1a - C.028.AM1b)
- Inference cards (Activity Master C.028.AM2a - C.028.AM2c)
- Answer key (Activity Master C.028.AM3a - C.028.AM3b)
  An answer key is provided for optional use.
- Game pieces (e.g., counters)

Activity

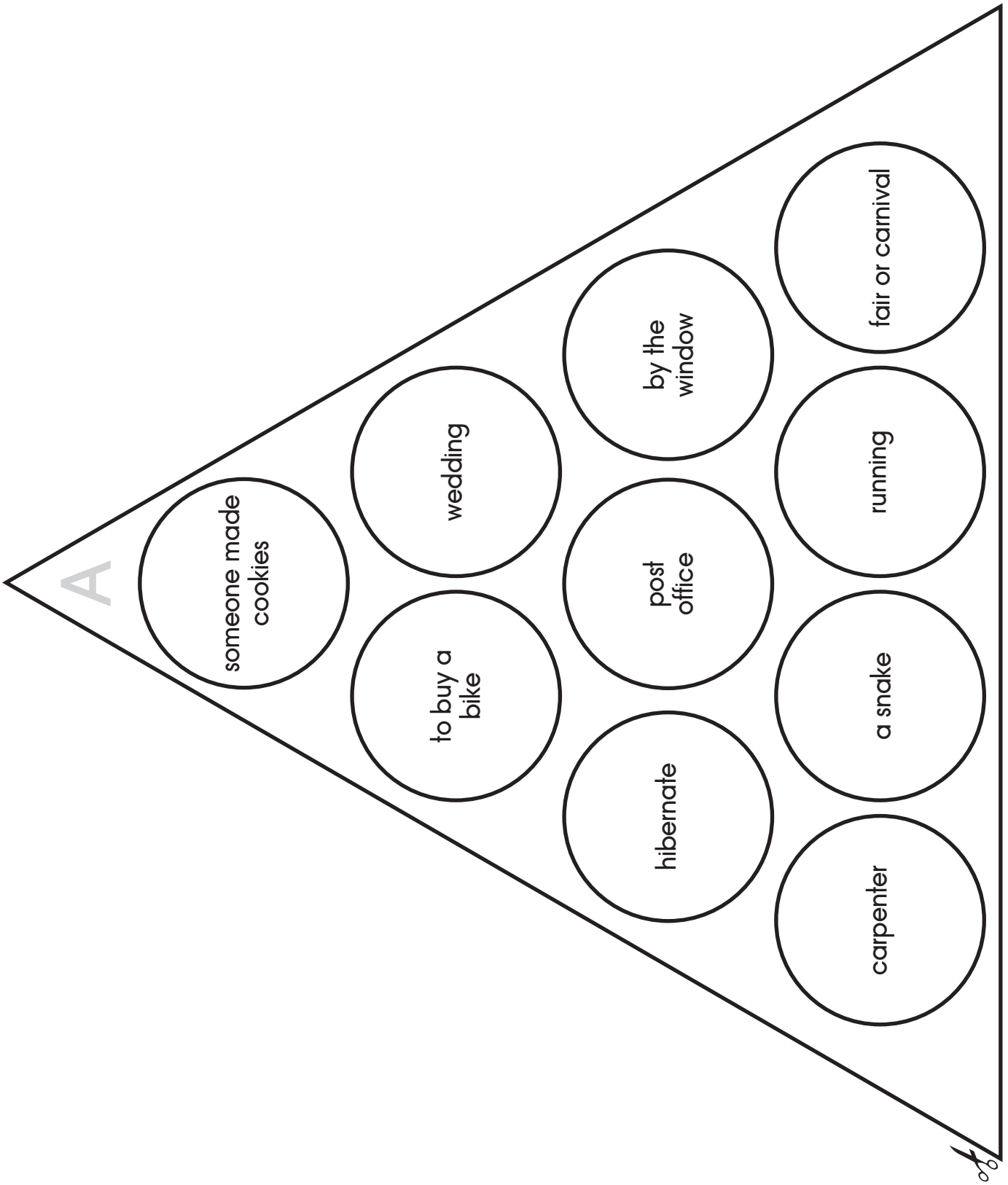
Students identify inferences by reading clues.

1. Place inference cards face down in a stack. Provide each student with a different inference triangle and game pieces.
2. Taking turns, students select a card from the stack and read it.
3. Look for phrase on triangle that answers the question. Read phrase and place game piece on that spot. Place inference card in a discard pile.
4. If no phrase is found which answers question, place trivia card at the bottom of the stack.
5. Continue activity until all matches are made.
6. Peer evaluation

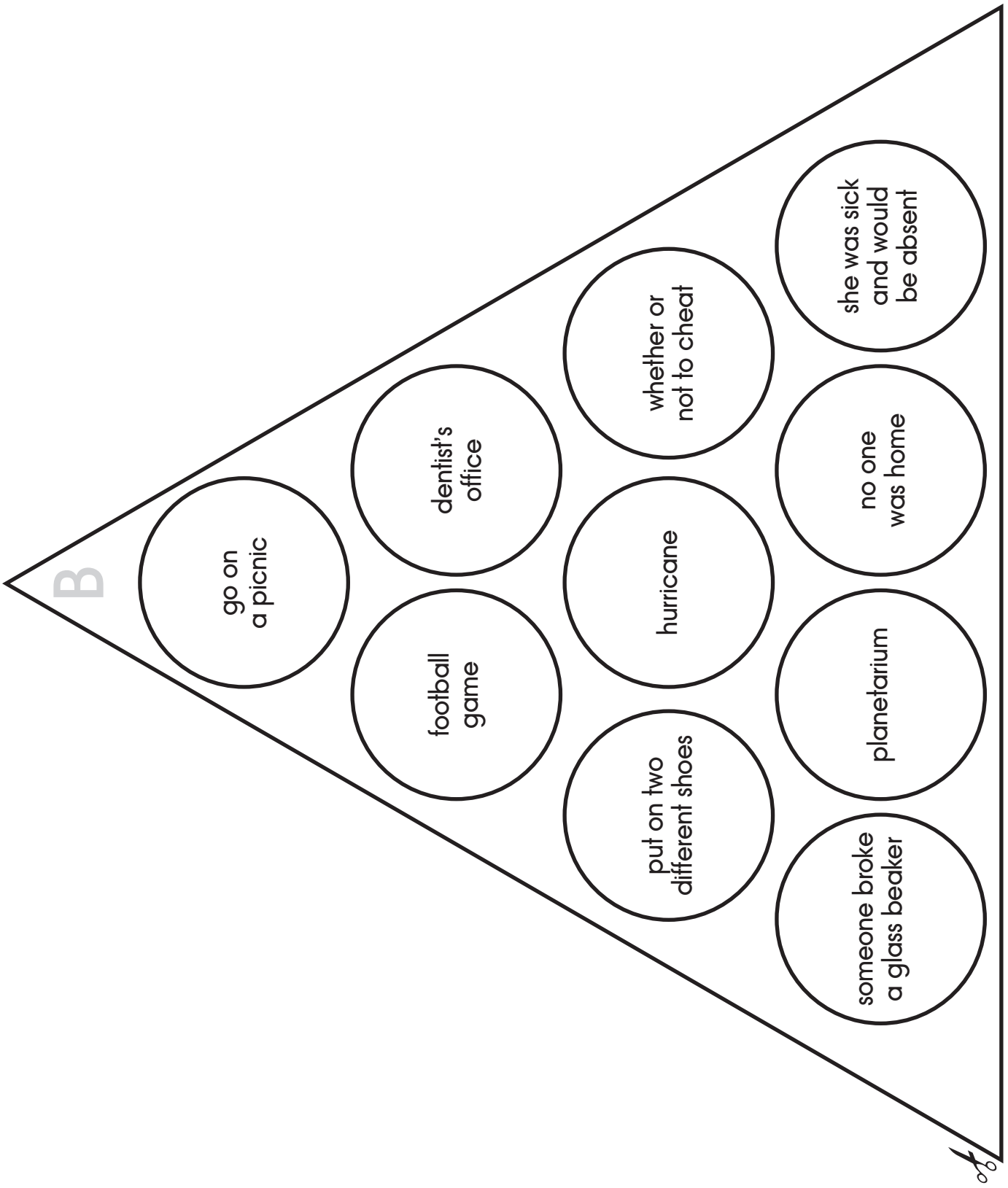


Extensions and Adaptations

- Make other inference triangles and cards (Activity Master C.027.AM4).
- Look at pictures from magazines, books, or other text and write inferences.



inference triangle A



inference triangle B

The room was a mess! Pots and pans were piled in the sink. Drawers and cabinets were flung open. Chocolate chips dotted the floor and empty cartons were on a sticky counter, but the smell was delicious. Why was the room a mess?	The young woman looked down at her long dress. She felt like a princess. She and the others stood in the hall. They listened to the music. Then she heard the cue. She walked down the aisle as she held her flowers. What was this event?
The girl saved all her money. It was exactly what she wanted. She imagined gliding down the road pedaling effortlessly. She finally had enough money to make her dream come true. What was her dream?	The bear ate lots of nuts and fish. Her fur got thick. She prepared her den. The leaves fell from the trees and the days turned colder. What was the bear getting ready to do?
Mailboxes are lined up outside the door. There is a long counter inside with scales. You can buy stamps, envelopes, and boxes. There are slots where you can mail a letter and long rows of boxes where some people go to pick up their mail. What is this place?	The cat stretches and yawns. She strolls over to her favorite spot. The sun shines in and makes it very warm. She watches the birds and squirrels. Sometimes the fresh air blows in on her. She climbs up into her soft bed and looks at the animals for a while. Then she curls up and goes to sleep. Where is the cat's favorite spot?
The man measures the wood and uses a saw to cut it. He puts the wood in place and hammers nails into it. He continues until the entire wall is built. What is this man's job?	The boy found it in the middle of the road on his way home from school. It was very tiny so he picked it up. He fed it food for several weeks. Soon, it grew and got very long. What did the boy find?

inference cards

These athletes train a great deal. They eat a very healthy diet. Some compete in short races and others compete in long races called marathons. What is the sport?	There are many things to see. Many farm animals are on display. The midway is full of people playing games and eating food. There is also a place where you can go on many different rides. What is the place?
The rain was hard and steady. Sue stomped around the room and checked the clock every five minutes. The book that she bought the day before was flung in the corner beside the picnic basket and blanket. She stamped her feet and voiced her displeasure with nature. What plans did Sue have for the day?	The girl showed the lady her ticket. Then she walked down the stairs and found her seat. The players ran onto the field. They got into their positions. The ball went up in the air and the game began. Where was the girl?
Even though the man didn't want to do it he knew it had to be done. He picked up the phone and made the necessary arrangements. A few hours later, he found himself in a brightly lit room. He sat down in the movable chair. The person in charge bent over him as he began. Where was he?	People giggled and pointed at her feet. She didn't understand until she looked down. She turned red with embarrassment. She realized she should not have gotten dressed in the dark. Why shouldn't she have gotten dressed in the dark?
The waves crashed against the beach. Thunder cracked and lightning lit the sky. The wind howled and bent trees over sideways. People put shutters on their windows, bought supplies, and were ready. What were the people expecting?	The decision was difficult. No one would find out. She was the only one that would know. It would guarantee her a good grade, but was it worth it? Would she really feel proud passing this way? What was her struggle?

inference cards

The students were very quiet when the teacher walked over to the science center. The children sat at their desks and looked down at their hands. No one made a sound. The teacher looked around the classroom. Then she saw the pieces on the floor. What happened in the classroom?	The children looked up at the twinkling lights. The background was pitch black. Although the air was a bit cool they didn't mind. They were busy looking at shapes, designs, and even some streaking lights. Where were the children?
The boy rode his bike to his friend's house after dinner. When he got there, he rang the bell. He waited, but no one came to the door. He looked in the driveway. The car was not there. There were no lights on and the windows were all closed. The boy got back on his bike and went home. What did the boy think?	The girl sneezed. Her dad felt her forehead and took her temperature. She told him her throat hurt. He pulled the blankets over her. He told her to try to sleep while he called her teacher. Why did he call her teacher?

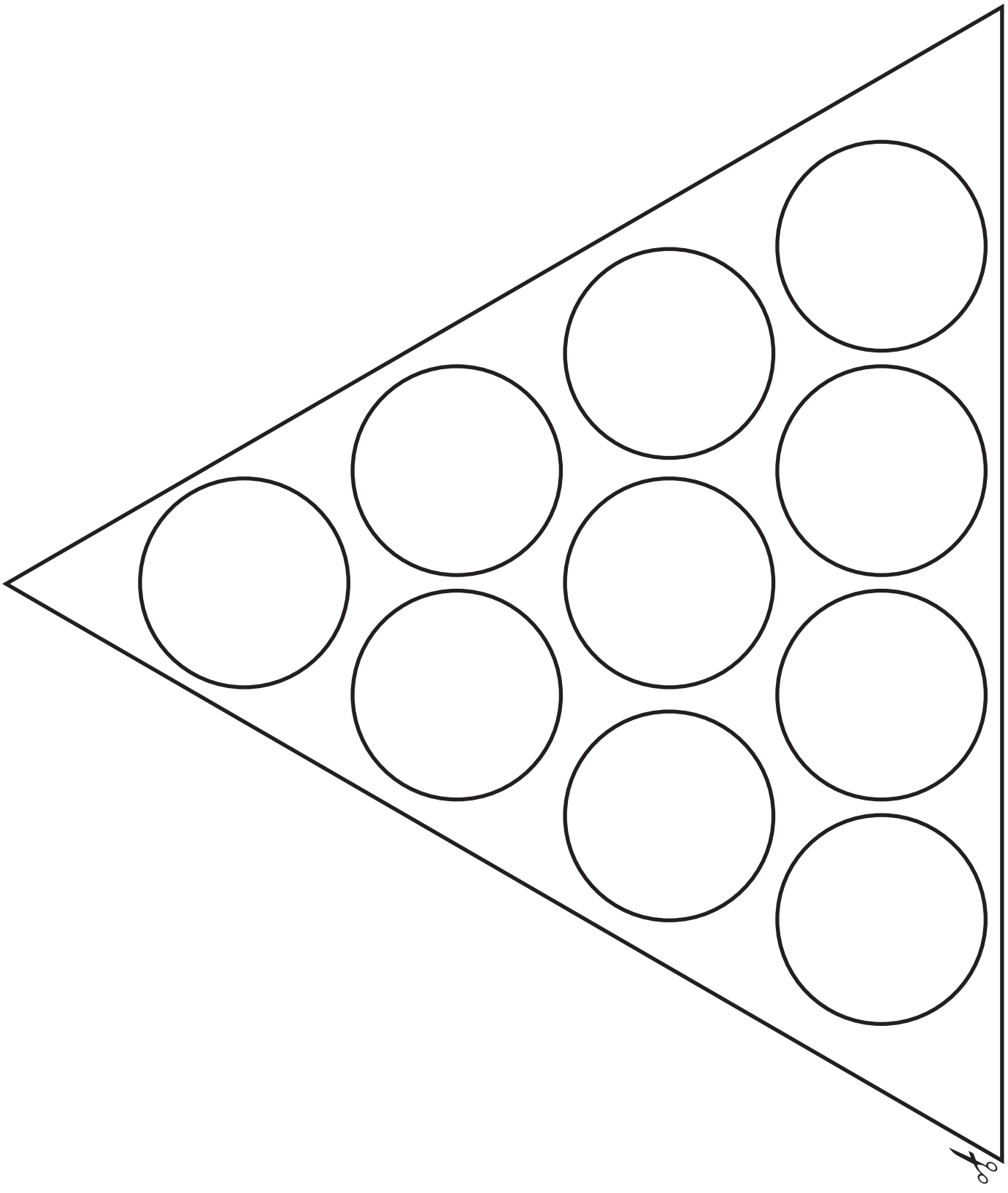
inference cards

Answer Key A

Why was the room a mess?	someone made cookies
What was this event?	wedding
What was her dream?	to buy a bike
What was the bear getting ready to do?	hibernate
What is this place?	post office
Where is the cat's favorite spot?	by the window
What is this man's job?	carpenter
What did the boy find?	a snake
What is the sport?	running
What is the place?	fair or carnival

Answer Key B

What plans did Sue have for the day?	go on a picnic
Where was the girl?	football game
Where was he?	dentist's office
Why shouldn't she have gotten dressed in the dark?	put on two different shoes
What were the people expecting?	hurricane
What was her struggle?	whether or not to cheat
What happened in the classroom?	someone broke a glass beaker
Where were the children?	planetarium
What did the boy think?	no one was home
Why did he call her teacher?	she was sick and would be absent



blank triangle

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?

What is Culture?

Cross-Curricular Focus: History/Social Sciences

Our **culture** is the system we use to build our **identity**. All living creatures are part of a culture. Even animals have a culture! So what is culture? It's the way we behave in a group. It begins with each individual family. Within our families we do things to build relationships with each other. This can include routines for doing things. It also includes traditions. Traditions are activities that are repeated on a regular basis.

Culture is not limited to individual family groups. The real strength of culture is in larger community groups. These larger groups are called **societies**. Every society makes rules for itself.

It decides how people should act in different situations. Some of these rules are written down. Some are just things that are automatically expected of all members of that society. Often, cultures can be identified by what the people believe. Cultures are also known by what they choose to include in their art. Sometimes a society forms around people who speak the same language. Cultures may also be known for their customs, including the foods they make and the things they do.

Our cultures help us understand who we are and what we believe. There are very strong emotions connecting us to our own society. Two different cultures may disagree on something, especially if they both feel strongly about it. When that happens, war is a common result.

People are learning better ways to communicate with each other. The more we learn, the more we appreciate the differences in cultures.

Name: _____

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) Tell about a tradition your family shares.

_____

_____

2) Have you ever had a friend whose family had different beliefs than your own? If so, what was your reaction to the difference? _____

_____

_____

3) What would your art tell someone about your culture? _____

_____

4) Do you speak more than one language? What is the value of learning an additional language?

_____

_____

5) How can we help prevent wars between cultures? _____

_____

Charge It!

Cross-Curricular Focus: Physical Science

Name: _____

Many people do not really understand how **electricity** works. They just know that when they need power to run an appliance, they have to plug it into the wall.

Energy comes from charged particles that are moving around. Have you ever rubbed a balloon against your clothes to make it stick? Have you held a balloon or a comb over someone's head to watch his hair stand up straight? That's static electricity and electrically charged particles. But these particles don't do much unless we control their energy.

Static electricity builds up on certain materials. Other materials, though, let electrical charges flow through them. This creates an electric current. Electric current travels very easily through metals like copper, gold, silver, and aluminum. We call materials that electric current flows through easily **conductors**. Water is also a good conductor of electricity. That's why electrical charges can travel through people, too. There is water in every cell of a person's body. Electric current can travel through these cells.

Since metal is a good conductor of electricity, electrical wires are often made out of metal. Wiring can also be made out of non-metal materials, such as graphite.

Conductors have to be enclosed in a material that is an **insulator**. Insulators do not allow electric current to pass through them. The rubber coating that you see on electrical cords covers the metal. The electric current stays inside the cord so we can direct the current to the appliance that needs power. Other good insulators are glass and some plastics.

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) What are two materials that are good conductors of electricity?

_____

_____

2) How is static electricity different from electric current?

_____

_____

3) What could happen if the rubber coating on a power cord is damaged?

_____

_____

4) Is water a conductor or an insulator?

_____

_____

5) In your own words, explain the difference between a conductor and an insulator.

_____

_____

Down the Hatch

Cross-Curricular Focus: Life Science

A car needs energy to get where it's going. Your body must have fuel to do all the things it needs to do so you can grow up healthy and stong. The **digestive** system takes care of the body's need for fuel. It is made up of a group of organs that work together. They pass fuel in the form of food from one organ to the next until the entire process is complete. Waste products then pass out of the body.

The digestive system goes to work the moment you put food into your mouth. Immediately, the salivary glands in your mouth moisten the food. The saliva begins breaking down the food into smaller and smaller pieces. Your teeth also get involved, biting and grinding the large pieces. Finally, the pieces are small enough to swallow. Your tongue is kind of like a traffic director, pushing food around in your mouth to make the most of your saliva and teeth. Then, your tongue pushes your food to the back of your mouth so you can swallow.

As your food leaves your mouth, it enters a tube called the **esophagus**. Gravity and muscles push your food down to the **stomach.** In the stomach it is greeted by strong acids. During the next couple of hours, acids and enzymes break your food into a soupy liquid.

Believe it or not, your body has still not received energy from your food. Your liquefied food finally passes into the small **intestine**. This is a long tube that is coiled back and forth inside your body. The food will remain there for up to six hours. During that time, special chemicals digest the liquid even further. Nutrients your body needs are pulled from it. The nutrients enter your blood through tiny little finger-like projections called villi that line the insides of your small intestine.

What happens to the leftovers? The things your body does not need pass into your large intestine. Water and minerals are absorbed out of the food and into your blood over the next 10-36 hours. After most of the liquid is removed, the rest of the leftover material passes out of your body as solid waste.

Name: _____

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) Explain what happens to food while it is still in your mouth. _____

_____

_____

_____

_____

2) What is the name for the tube from the mouth to the stomach?_____

3) What are villi?

_____

_____

4) At what point during the digestive process does your body begin to receive energy from the food?

_____

_____

5) Where is your food likely to be two hours after you eat?

_____

_____

They myth that it takes seven years to digest gum? It's just a myth. (Thinkstock)

Five false facts about the human body

By Ask Smithsonian *Smithsonian.com* | March 18, 2020 |

You asked us to debunk some "facts" about the human body. Let's science this!

So here are five popular myths that just are not true.

First, we have five senses, right? Wrong. Depending on how you define a sense, we actually have between 5 and 33 of them.

Beyond the classics, we have a sense of balance and the ability to sense heat and time. That's along with all kinds of other cool spidey senses.

Second, what about the idea that giving kids sugar makes them bounce-off-the-walls hyperactive?

Nope -- the evidence for that cause-and-effect link is surprisingly slim. It's apparently more of a self-fulfilling prophecy than fact.

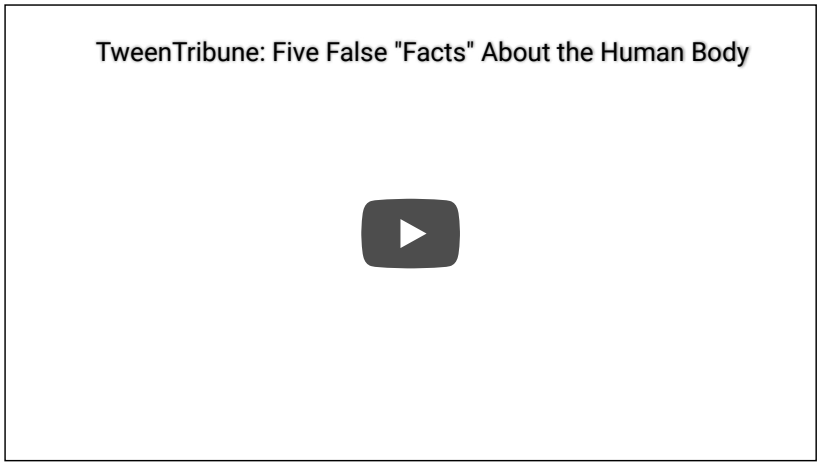
Myth number three. We only use 10% of our brains. This one drives me insane -- it's totally bogus. We use virtually every part of our brain and most of it is active almost all of the time.

Myth number four. Despite all the heavy lifting going on up there, it's totally false that we lose most of our body heat through our heads.

The amount of heat we lose depends on how much skin surface area is exposed to the cold. So, yes, you'll lose more heat through a bald head than a gloved hand, but the opposite is just as true.

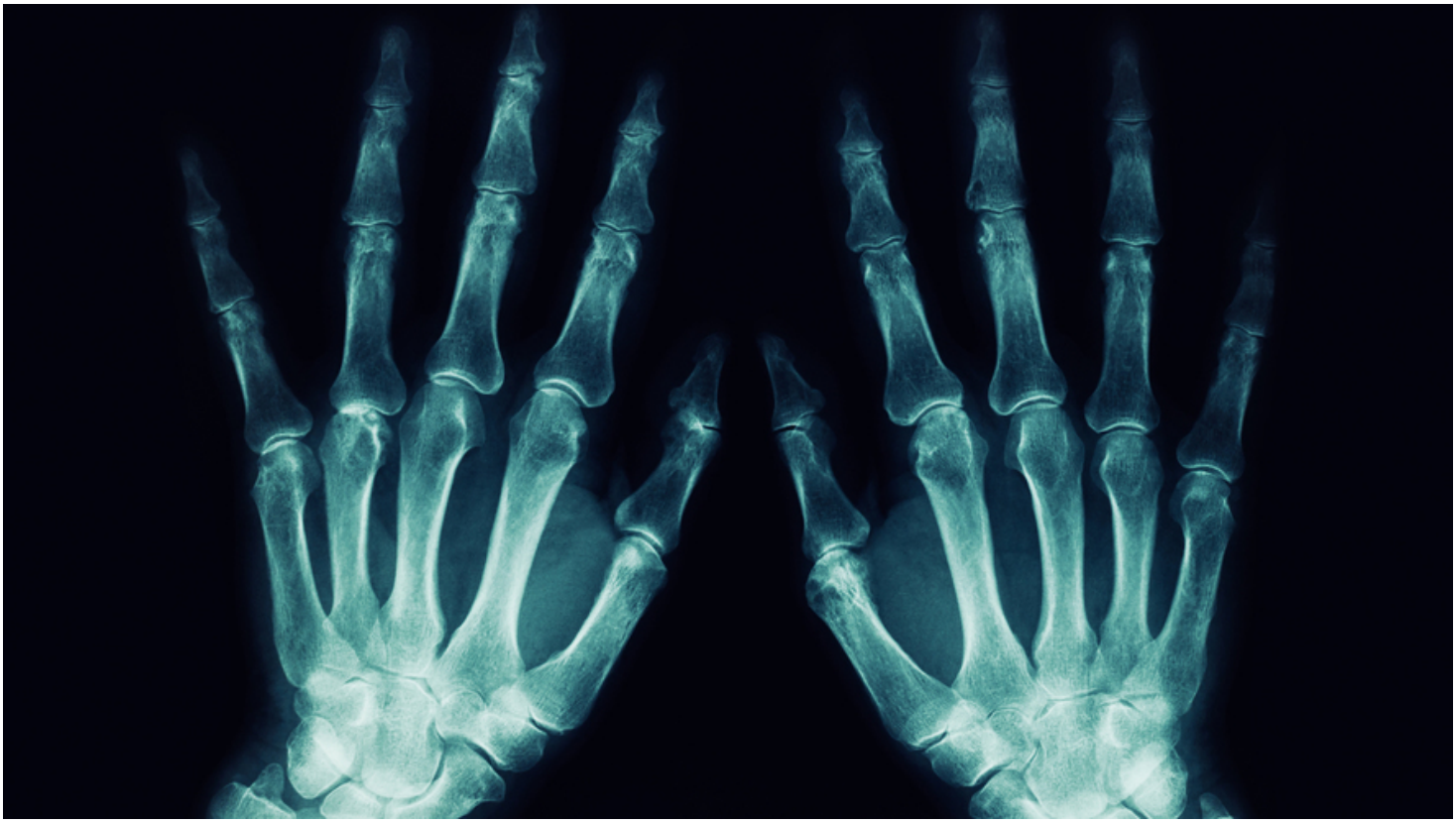
And finally, I know what your mom said. But trust me, I'm a scientist. It doesn't take seven years to digest swallowed gum.

The base element of gum is pretty much indigestible, but it'll still pass through our system within a week if not faster.



Did you know your bones know how to grow?

By The Conversation, adapted by Newsela staff on 08.29.19
Word Count **709**
Level **680L**



This X-ray shows the bones in your hand and they're more complex than you might think. Photo by: Classen Rafael, EyeEm/Getty Images

Your bones are pretty smart. They are light but also strong, and they repair themselves when they break. What's more, your bones renew themselves. They replace old bones with new ones.

The bones aren't the only part of your body that replaces itself. Other tissues and cells, such as skin, do it, too. However, bones do it a little differently. They adjust to meet the body's needs.

How does the skeleton do something so remarkable? New imaging technology is helping scientists answer this question. It shows the cellular network built deep inside the bones. This network is made up of the most abundant cell in bone. It is the amazing osteocyte.

The Power Of Osteocytes

Osteocytes mean "bone cells." They are buried in bone tissue whenever bone is formed. Osteocytes develop long structures called dendritic fingers. They look like tree branches. They reach deep inside the bone to connect with one another.

Bones are rock hard, so the osteocytes hidden inside them have been difficult to study. Scientists know that osteocytes sense when the bones are under strain. Osteocytes also organize the new

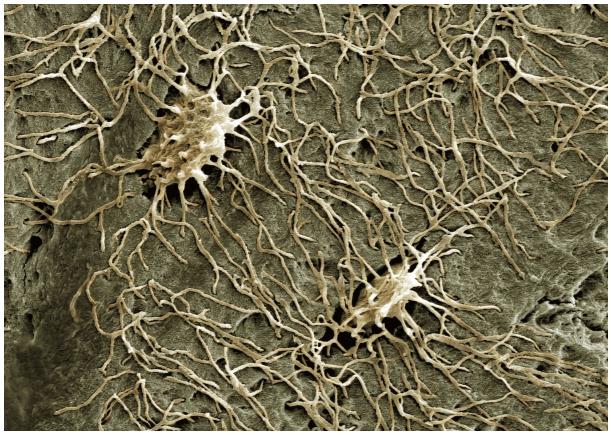
growth of bone. They make sure that calcium in the blood is at the proper level. Calcium is important for building new bones.

Scientists also know that there are many, many osteocytes in your bones. They have never counted up the total number osteocytes — but it's worth doing. Numbers in biology help us discover new insights. In fact, scientists have set up a database of many "bionumbers" across many species.

Why should anyone care about the number of osteocytes? There are a few reasons. Osteocytes control how strong bones are. They release important minerals such as calcium and phosphate into the bloodstream. Now, scientists think these cells might even influence how your body fights off disease. They may also affect how much fat your body has and how your kidneys work.

Numbers, Lengths And Connections

To better understand the size of the osteocyte network, a group of scientists tried to count it. What they found went beyond their expectations. It turns out that the osteocyte network is almost as complex as the neural network of your brain.



The scientists used recent imaging data. They calculated that the human skeleton contains about 42 billion osteocytes. That's about six times the Earth's population. In comparison, the human brain contains 86 billion neurons.

The scientists also calculated the total length of these little cell fingers. They estimated the network to be about 108,000 miles long. That would stretch around Earth more than four times.

Next, the researchers wanted to estimate the number of connections osteocytes make with their neighbors. Connections are important. A brain without connections cannot do anything. Neither can an osteocyte network without connections.

Connections between osteocytes are hard to see directly. However, scientists know that osteocytes and their "fingers" live in little tunnels through the bone. Those can be seen. Based on the tunnels, scientists estimated that there are 23 trillion connections in the osteocyte network.

Bone And Brain Are Similar!

These measurements suggest that your skeleton is a lot like your brain! It has a similar number of cells. They are interconnected in a space about the same size. We do not know why our skeletons need such a complex network. We do know that these cells exchange information, just like neurons in the brain.

Osteocytes communicate with each other. They tell each other where the skeleton is weak and needs to be made stronger. They communicate about damage that needs to be fixed. These messages are sent to cells on the bone surface. Some cells are osteoclasts. They remove damaged bone. Other cells help form new bone. There are called osteoblasts.

We still don't know exactly how these cells communicate. If we did, we could find better treatments for skeletal disorders. We may also be able to help heal broken bones more quickly.

The next time you stand up or walk around, remember your osteocytes. Think about how they respond to the stresses and strains of your movement. Thank them for keeping your skeleton strong and smart enough to support you.

Quiz

1 Read the following sentence from the introduction [paragraphs 1-3].

New imaging technology is helping scientists answer this question.

Based on this sentence, select the statement that is TRUE.

(A) Scientists knew nothing about the skeleton before this year.

(B) Scientists might know even more about the skeleton soon.

(C) Scientists once thought imaging technology would hurt bones.

(D) Scientists have stronger bones than most other people.

2 Which sentence from the article helps the reader to understand that osteocytes help keep you strong in more ways than just protecting your bones?

(A) Calcium is important for building new bones.

(B) Scientists also know that there are many, many osteocytes in your bones.

(C) Now, scientists think these cells might even influence how your body fights off disease.

(D) However, scientists know that osteocytes and their "fingers" live in little tunnels through the bone.

3 Select the statement that summarizes the article.

(A) Scientists think that it is difficult to study the insides of bones because they are rock hard.

(B) Scientists think that osteocytes in your bones could affect how well your kidneys work.

(C) Your bones have dendritic fingers inside them that are long enough to stretch around Earth.

(D) Your bones have special networks inside them that communicate to help keep the skeleton strong.

4 Read the following paragraph from the section "Numbers, Lengths And Connections."

To better understand the size of the osteocyte network, a group of scientists tried to count it. What they found went beyond their expectations. It turns out that the osteocyte network is almost as complex as the neural network of your brain.

How does this paragraph support the MAIN idea of the article?

(A) It explores the differences between a skeleton with osteocytes and one without them.

(B) It explains how long the network of dendritic fingers within odteocytes really is.

(C) It introduces the idea that osteocytes in the skeleton are similar to neurons in the brain.

(D) It indicates that scientists have only counted the neural network of the brain before now.

Icebergs

Up in the Arctic, where the world is quite cold,
The snow never melts, or so I've been told.
Eons and eons of snow keeps on freezing,
Snowing, and freezing. It's true, I'm not teasing.
Up there in that world, where it's storming and storming,
The snow packs together and a glacier starts forming.
As the glacier moves on, a chunk, maybe three,
Floats off on its own in the cold Arctic Sea.
These are the icebergs. Some are small, some are not.
The bottoms of icebergs are quite hard to spot.
So remember my friends, when you're sailing through snow.
"The tip of the iceberg" hides a huge chunk below.

Why is it important for fisherman and boat captains to be informed about icebergs? Have you heard of icebergs before?

_____

_____

_____

_____

_____

_____

_____

English Language Learners 3-5

Reading

- Read the poem “Icebergs” by yourself or with someone in your family.
- Where can icebergs be found?
- Highlight or circle any words in the poem that are new to you.

Speaking

- Read the poem aloud to someone in your family.
- Explain icebergs to someone in your family. Where are icebergs found? How are icebergs formed?

Listening

- Have someone else in your family read the poem aloud to you.
- Close your eyes while you listen to the poem and imagine pictures in your mind that match the words in the poem.

Writing

- Write about why it’s important for captains of boats to be aware of icebergs? What is below the tip of the iceberg?

Writing Ideas 3-5 Elementary Week #5

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

Narrative

- What is one of your favorite cartoon characters? Use that character to write your own story! Be sure to include additional characters, sequence of events, details, descriptions, and the setting. Establish an introduction, middle, and conclusion.

Opinion/Argument

- Write an opinion piece on your favorite outdoor activity and why it is the best. Why is this outdoor activity 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

- Who is the author and/or illustrator of your favorite book? Do some research and find out about that author. Write an informational piece about what you learned. Introduce the author/illustrator and add be sure to add enough facts, information, and/or details so your reader can visualize this place and learn about it. 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!

Write about how the two reading selections **Did you Know Your Bones Know How to Grow?** and **Five false facts about the human body** are similar and/or different.	The human body has amazing systems! Want to learn more about how the heart works, what our livers do, or how our brain works? Do some research and write and informational piece on your findings!	Want to learn more about your culture? Maybe you want to learn about a culture different than yours! Do some research and find more information about a culture. Write an informative piece about your findings.
Want to learn more about the human digestive system? Do some research! You can draw a picture and label the parts of our digestive system. You can write an informational piece on how it works.	WRITER'S CHOICE	What would the world be like if we did not have electricity? Write a story about what life would be like without electricity! Be sure to have an introduction, a conclusion, and details.
Vocabulary words are fun! Write a poem or create some word art with some new or interesting vocabulary from this week's reading! For extra fun, explore https://wordart.com/create	How do we get electricity to our homes? Where does it come from and how does it make things in our homes "run"? Conduct some research on electricity? In a letter to a friend or family member, describe what you found out about electricity.	Create a Prezi, PowerPoint, Poster, and/or infographic about something you learned from the reading selections. Present what you learned to a family member!

What's the Nearest Ten?

Materials: set of numeral cards (0-9) or 3 number cubes

5	3	2

1. Turn over 3 numeral cards (or roll 3 number cubes) to make a 3-digit number.

2. Identify the multiples of ten that your number falls between. Record the multiples of ten and the midpoint between them on a number line.

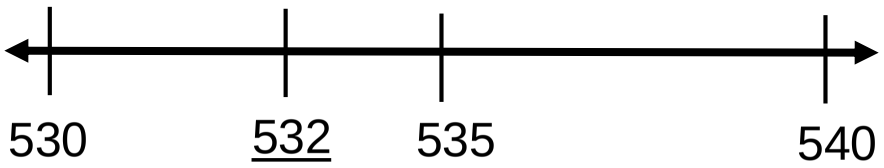
3. Plot your 3-digit number on the number line.

4. Which multiple of ten is your number closer to? Justify your reasoning.

5. Repeat five times.

6. Describe any patterns you find to determine when to round to the lesser multiple of ten or round to the next multiple of ten.

Example:



532 is between 530 and 540. It is 2 away from 530 and 8 away from 540. It is closer to 530. Therefore, 532 rounded to the nearest ten is 530.

What's the Nearest Ten?

Materials: set of numeral cards (0-9) or 4 number cubes

6	5	4	7

1. Turn over 4 numeral cards (or roll 4 number cubes) to make a 4-digit number.

2. Identify the multiples of ten that your number falls between. Record the multiples of ten and the midpoint between them on a number line.

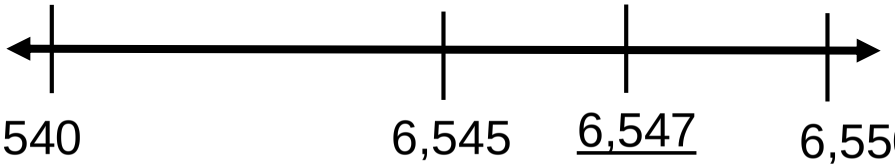
3. Plot your 4-digit number on the number line.

4. Which multiple of ten is your number closer to? Justify your reasoning.

5. Repeat five times.

6. Describe any patterns you find to determine when to round to the lesser multiple of ten or round to the next multiple of ten.

Example:



6,547 is between 6,540 and 6,550. It is 7 away from 6,540 and 3 away from 6,550. It is closer to 6,550. Therefore, 6.547 rounded to the nearest ten is 6,550.

What's the Nearest Hundred?

Materials: set of numeral cards (0-9) or 4 number cubes

3	8	8	5

1. Turn over 4 numeral cards (or roll 4 number cubes) to make a 4-digit number.

2. Identify the hundreds that your number falls between. Record the hundreds and the midpoint between them on a number line.

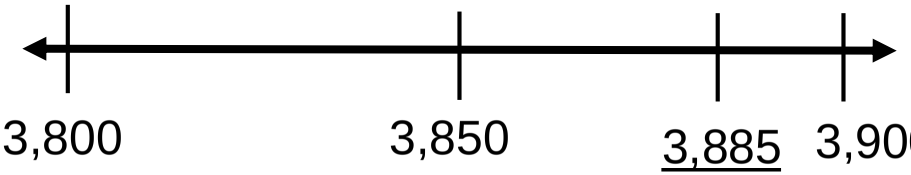
3. Plot your 4-digit number on the number line.

4. Which hundred is your number closer to? Justify your reasoning.

5. Repeat five times.

6. Describe any patterns you find to determine when to round to the lesser hundred or round to the next hundred.

Example:



3,885 is between 3,800 and 3,900. It is 85 away from 3,800 and 15 away from 3,900. It is closer to 3,900. Therefore, 3,885 rounded to the nearest hundred is 3,900.

What's the Nearest Thousand?

Materials: set of numeral cards (0-9) or 4 number cubes

5	8	9	5

1. Turn over 4 numeral cards (or roll 4 number cubes) to make a 4-digit number.

2. Identify the thousands that your number falls between. Record the thousands and the midpoint between them on a number line.

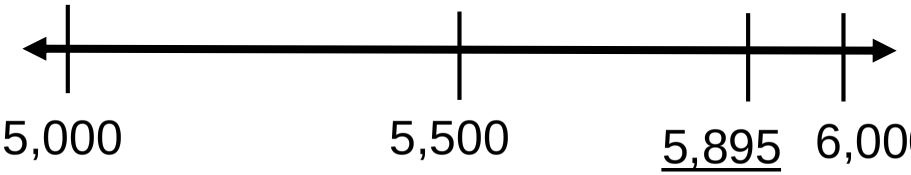
3. Plot your 4-digit number on the number line.

4. Which thousand is your number closer to? Justify your reasoning.

5. Repeat five times.

6. Describe any patterns you find to determine when to round to the lesser thousand or round to the next thousand.

Example:



5,895 is between 5,000 and 6,000. It is 895 away from 5,000 and 105 away from 6,000. It is closer to 6,000. Therefore, 5,895 rounded to the nearest thousand is 6,000.

What's the Nearest Ten Thousand?

Materials: set of numeral cards (0-9) or 4 number cubes

1	8	6	5	2

1. Turn over 5 numeral cards (or roll 5 number cubes) to make a 5-digit number.

2. Identify the ten thousands that your number falls between. Record the ten thousands and the midpoint between them on a number line.

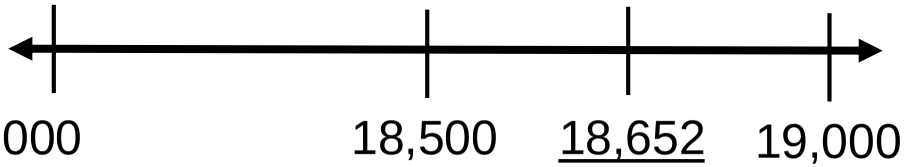
3. Plot your 5-digit number on the number line.

4. Which ten thousand is your number closer to? Justify your reasoning.

5. Repeat five times.

6. Describe any patterns you find to determine when to round to the lesser ten thousand or round to the next ten thousand.

Example:



18,652 is between 18,000 and 19,000. It is 652 away from 18,000 and 348 away from 19,000. It is closer to 19,000. Therefore, 18,652 rounded to the nearest ten thousand is 19,000.

Activity 12

Marching Orders—*Programming Languages*

Summary

Computers are usually programmed using a "language," which is a limited vocabulary of instructions that can be obeyed. One of the most frustrating things about programming is that computers always obey the instructions to the letter, even if they produce a crazy result. This activity gives children some experience with this aspect of programming.

Curriculum Links

- ✓ English: Interpersonal Listening Level 3

Skills

- ✓ Giving and following instructions.

Ages

- ✓ 7 years and up

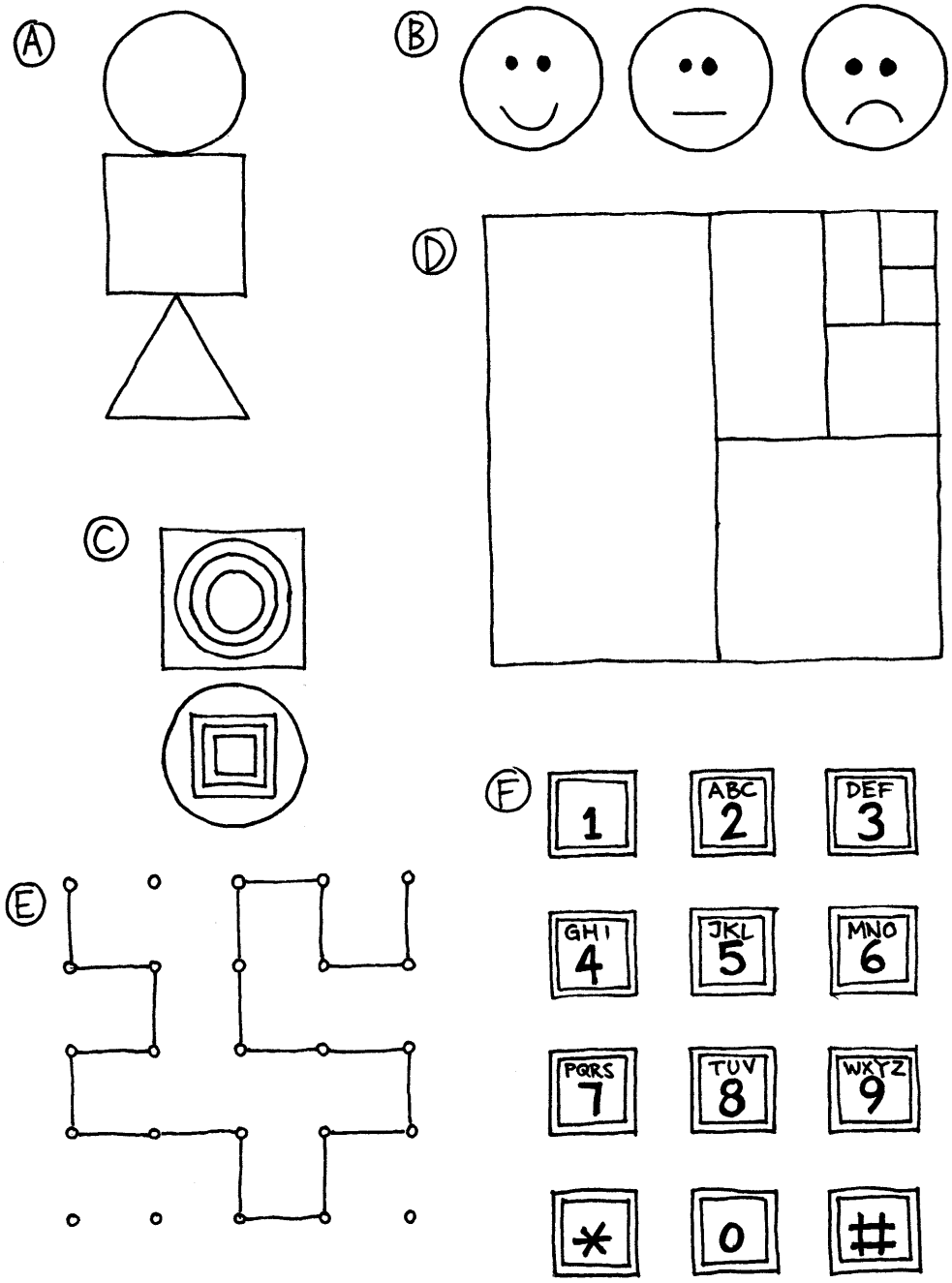
Materials

You will need:

- ✓ Cards with pictures such as the ones shown on the next page.

Each child will need:

- ✓ Pencil, paper and ruler



Marching Orders

Introduction

Discuss whether it would be good if people followed instructions exactly. For example, what would happen if you pointed to a closed door and said, "Go through that door"?

Computers work by following lists of instructions, and they do exactly what the instructions say—even if they don't make sense!

Demonstration Example

See if the children can draw the picture from these instructions.

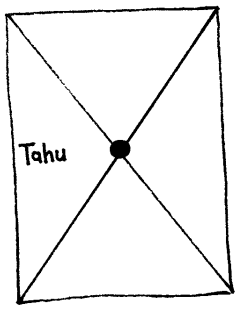
1. Draw a dot in the centre of your page.

2. Starting at the top left-hand corner of the page rule a straight line through the dot finishing at the bottom right hand corner.

3. Starting at the bottom left-hand corner of the page rule a line through the dot, finishing at the top right hand corner.

4. Write your name in the triangle in the centre of the left-hand side of the page.

The result should look something like this:



Activities

Choose a child and give them an image (such as the examples on page 102). The child describes the picture for the class to reproduce. The children can ask questions to clarify the instructions. The object is to see how quickly and accurately the exercise can be completed.

Repeat the exercise, but this time the children are not allowed to ask questions. It is best to use a simpler image for this exercise, as the children can get lost very quickly.

Now try the exercise with the instructing child hidden behind a screen, without allowing any questions, so that the only communication is in the form of instructions.

Point out that this form of communication is most like the one that computer programmers experience when writing programs. They give a set of instructions to the computer, and don't find out the effect of the instructions until afterwards.

Have the children draw a picture and write down their own instructions. Try them out in pairs or as a whole class.

Variations

1. Write instructions to construct a paper dart.

2. Write instructions on how to get to a mystery location around the school using such instructions as "Go forward *x* metres", "turn left" (90 degrees), and "turn right" (90 degrees).

   Children should test and refine their instructions until they have the desired effect.

3. Blind Game. Blindfold a child and have the other children direct them around the room.

What's it all about?

Computers operate by following a list of instructions, called a program, that has been written to carry out a particular task. Programs are written in languages that have been specially designed, with a limited set of instructions, to tell computers what to do. Some languages are more suitable for some purposes than others.

Regardless of what language they use, programmers must become adept at specifying *exactly* what they want the computer to do. Unlike human beings, a computer will carry out instructions to the letter even if they are patently ridiculous.

It is important that programs are well written. A small error can cause a lot of problems. Imagine the consequences of an error in the program of a computer in a space shuttle launch, a nuclear power plant, or the signals on a train track! Errors are commonly called "bugs" in honour (so it is said) of a moth that was once removed ("debugged") from an electrical relay in an early 1940s electronic calculating machine.

The more complex the program, the more errors there are likely to be. This became a major issue when the USA was working on the Strategic Defence Initiative ("Star Wars") program, a computer controlled system that was intended to form an impenetrable defence against nuclear attack. Some computer scientists claimed that it could never work because of the complexity and inherent unreliability of the software required. Software needs to be tested carefully to find as many bugs as possible, and it wouldn't be feasible to test this system since one would have to fire missiles at the United States to be sure that it worked!