

Name: _____

PREDICT, READ, REFLECT

Use this skills sheet to study the article "Battling Ebola" (p. 6).

BEFORE READING

1. Look at the text at the top of page 6. What area of science will the article cover? _____

2. Quickly look over the article's images, captions, and subheads (headlines of each section of text). Write a one- to two-sentence prediction about what the article will be about. _____

3. Write down two or three things you know or have heard about this topic. _____

DURING READING

4. Read the first four paragraphs on pages 6-8. Which of the following text structures best describes how the introduction is organized: compare and contrast, problem and solution, or chronological? _____

5. Read the section "A Horrifying Disease" on pages 8-9. What facts help explain why this Ebola outbreak is so widespread? _____

6. Look at the sidebar "Anatomy of an Outbreak" on page 7. Summarize the information in the sidebar in one or two sentences. _____

AFTER READING

7. The article closely follows the personal experiences of Dr. Lance Plyler. Why do you think the author chose to write the article in this way? _____

Name: _____

SEARCHING FOR A SOLUTION

In "Battling Ebola" (p. 6), you learned that thousands of people have died in West Africa in the recent Ebola outbreak. Read the following passage to find out how scientists are trying to develop drugs that could help people survive the deadly disease. Then use complete sentences to answer the questions that follow.

EXPERIMENTAL DRUG TREATMENT

When the largest Ebola outbreak in history hit in 2014, researchers at pharmaceutical companies stepped up their search for drugs to fight the virus. Currently, no drugs are approved to treat the disease. But new medications may soon help more people survive.

The most promising candidates so far are drugs that contain *monoclonal antibodies*. These laboratory-produced molecules are designed to mimic the chemicals the body normally produces as part of its *immune system* response. (The immune system is responsible for fighting off infection.) The antibodies bind to harmful virus particles and render them harmless. The Ebola drugs being tested contain monoclonal antibodies specifically engineered to bind to proteins in the Ebola virus—preventing it from spreading into new human cells.

One such drug, called ZMapp, was given to seven infected patients during the fall of 2014 in an effort to save their lives. ZMapp had never been tested on humans. Five survived, but scientists don't know for sure that ZMapp was the reason. Now, supplies of the drug have run out, and it will take time to create more. Meanwhile, other scientists are studying similar drugs that could help.

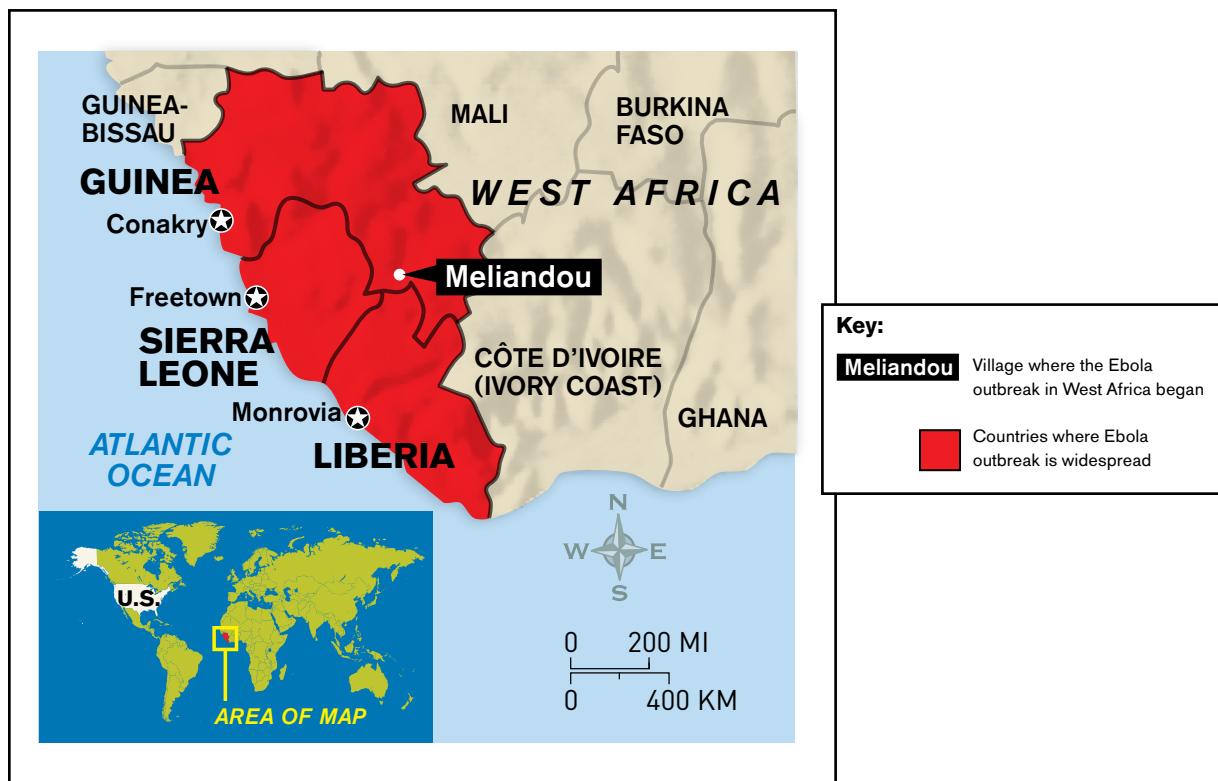
QUESTIONS

1. What is the central idea of the passage?
2. What is a monoclonal antibody?
3. Describe how ZMapp could help treat Ebola.
4. What evidence suggests that ZMapp may be effective in humans?
5. It can take years for drugs to get approval for use in humans. What do you think are some of the factors scientists must study before a drug is approved for use in people?

Name: _____

MAPPING THE OUTBREAK

In "Battling Ebola" (p. 6), you read about the recent outbreak of the Ebola virus in West Africa. The map below shows the main regions where Ebola has spread there. Study the map and then answer the questions that follow.



QUESTIONS

1. In which country did the Ebola outbreak begin?
2. In the story, you read about Dr. Lance Plyler's experience with treating Ebola in Liberia. Is Liberia northeast or southeast of Sierra Leone?
3. On the world map, where is the U.S. located in relation to West Africa?
4. Which West African countries have widespread cases of Ebola?
5. How do you think the ability of a disease to spread from country to country is different today than it was 100 years ago? Explain your answer.

Name: _____

SAFE FLIGHT

In "Battling Ebola" (p. 6), you learned about the recent outbreak of Ebola in West Africa. Read the following passage to find out about a specially designed system that allows doctors to safely transport patients infected with the contagious disease. Also examine the "Airplane Biocontainment Unit" diagram on page 9 of your magazine. Then answer the questions that follow.

QUARANTINE IN THE AIR

In August, two American health-care workers infected with Ebola were transported from West Africa to the U.S. for treatment. To safely take the highly contagious patients on the 14-hour flight, doctors turned to the Aeromedical Biological Containment System (ABCS).

Scientists from the Centers for Disease Control and Prevention (CDC) originally helped design the ABCS to transport patients infected with SARS, a highly contagious respiratory disease that spreads through the air. The system is designed to prevent contaminated air and fluids from entering a plane's cabin, where they could infect other passengers.

The system consists of an enclosed plastic tent that holds a foam stretcher and medical equipment. The tent has a ventilation system with a filter that removes tiny particles from the air. The system also creates lower air pressure in the tent. Since air moves from areas of high pressure to areas of low pressure, that causes air to continuously flow into the tent and not into the plane's main cabin.

Once patients safely reach their destination, the tent can be collapsed and taken to a medical waste company to be burned.

QUESTIONS

1. Why was the ABCS originally designed?

- (A) to transport patients infected with Ebola
- (B) to transport patients infected with SARS
- (C) to take injured soldiers out of war zones
- (D) to fly CDC workers into dangerous areas

2. How does the ABCS keep air flowing into the tent?

- (A) The air pressure in the tent is kept lower than it is outside.
- (B) A filter pushes air inward.
- (C) A fan outside the tent pushes air inward.
- (D) The tent's air pressure is raised until it is higher than the air pressure outside.

3. According to the diagram on page 9, why is the protective gear important?

- (A) It helps keep health-care workers on the plane safe from infection.
- (B) It helps shield the patient from dangerous particles on board the plane.
- (C) It keeps the patient warm.
- (D) Health-care workers wear it to shield themselves from dangerous virus particles.

4. What is the purpose of the passage above?

- (A) to explain why it isn't safe for Ebola patients to fly
- (B) to describe how the ABCS keeps diseases from spreading on flights
- (C) to describe how diseases spread
- (D) to explain how air flows

5. Why do you think the containment tent is burned after it is used?

Name: _____

NATURE'S DESIGN

In "Inspired by Nature" (p. 14), you learned that some new inventions were inspired by characteristics of organisms in nature. Use this graphic organizer to explain how observing nature helped engineers improve their designs.

	Robot Crab	Water Catcher	Snakebot	Robo-Fish
What problem was the invention designed to address?				
What characteristic of an organism inspired the design?				
How has the inspiration helped engineers improve a design?				

Name: _____

DESERT SURVIVAL

In "Inspired by Nature" (p. 14), you learned how the Namib Desert beetle collects water on its back. Many desert organisms have unusual adaptations that allow them to survive in these dry regions. Read the following passage to learn how the kangaroo rat survives without drinking water. Then answer the questions that follow using complete sentences.

NEVER THIRSTY

A typical human could survive only three days in the desert without a drink of water. Compare that with the desert-dwelling kangaroo rat, which can live its entire three- to five-year life without taking a single sip!

Instead of drinking water, a kangaroo rat obtains water through its food and *metabolism*, or the chemical reactions that occur in the body's cells to turn food into energy. The water released by these reactions is enough for the rat to survive.

The rodents are also experts at conserving the water in their bodies. Unlike many animals, they don't sweat or pant to stay cool. These processes cause water loss through evaporation. Instead, kangaroo rats spend the day underground and come out at night, when it's cooler.

They also conserve water by releasing ultra-concentrated urine. Urine contains water and *urea*, a nitrogen-rich waste product. Kangaroo rats' urine contains very little water because they have longer *loops of Henle* in their kidneys than most mammals. Loops of Henle are tubes through which urine travels to get reabsorbed into the body. The rat's extra-long loops allow more water to be recovered.

QUESTIONS

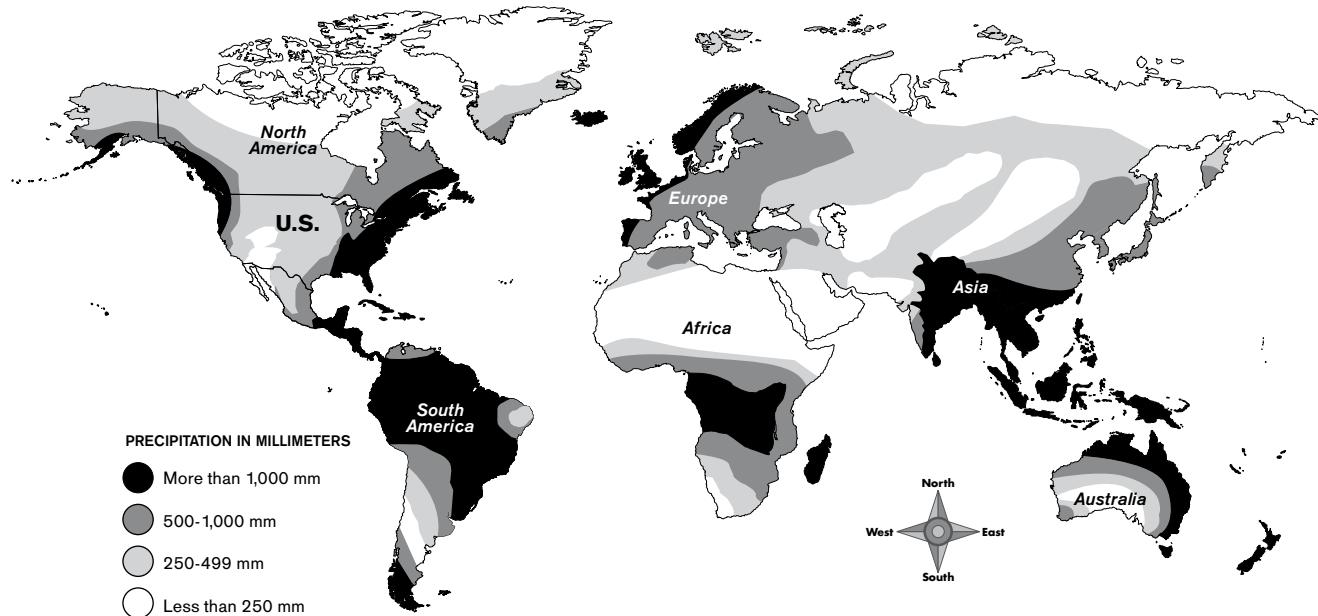
1. What is the central idea of the passage?
2. What is metabolism?
3. How are kangaroo rats' kidneys different from those of other mammals?
4. Describe two ways kangaroo rats prevent water loss.
5. Why should you drink more water when you sweat?

Name: _____

WET OR DRY?

In "Inspired by Nature" (p. 14), you learned how the Namib Desert beetle collects water in one of the world's driest places on Earth. The map below shows the approximate amount of *precipitation* around the planet. The annual precipitation rate is measured as the total depth of water in liquid or solid form that falls in an area in one year. Study the map and then answer the questions that follow.

Approximate Annual Precipitation Around the World



SOURCE: FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS

ANALYZE IT

- How much precipitation does a region receive each year if it is classified in the lowest category in the legend?
- What is the range of annual precipitation for most of Europe?
- Which part of the U.S. receives the least precipitation during a typical year?
- Describe how the pattern of annual precipitation in Australia changes as one moves from west to east.
- In general, how would you compare the climate on the coasts of North America with that of the interior of the continent?

Name: _____

WATERPROOF

In "Inspired by Nature" (p. 14), you learned how the Namib Desert beetle collects water using its textured shell. Try this activity to learn how water behaves on different types of surfaces.

PREDICT:

Which material will repel water better: a lettuce leaf or a kale leaf?

MATERIALS:

2 plastic plates • 2 large leaves of iceberg lettuce* • 2 large leaves of kale* • Cup of water • Eyedropper • Ground pepper

*Leaves should be fresh and refrigerated until use.

PROCEDURE:

1. Place a lettuce leaf, with the outside facing up, on one plastic plate and a kale leaf on the other plastic plate in the same way.
2. Observe the surfaces of each leaf. How are they similar? How are they different?
3. Use an eyedropper to place a few drops of water on the lettuce leaf. Observe how the water behaves. Does it form beads or pool together?
4. Repeat Step 3 with the kale leaf. Does the water behave differently?
5. Repeat Steps 3 and 4, this time holding each leaf at a slight angle.
6. Replace the lettuce and kale leaves with the unused leaves.
7. Sprinkle each leaf with a light coating of ground pepper.
8. Hold the lettuce leaf at a slight angle and use the dropper to sprinkle water on it. Observe what happens to the pepper.
9. Repeat Step 8 with the kale leaf.

CONCLUSIONS:

1. Describe how the water behaved on the lettuce leaf compared with on the kale leaf.
2. Describe what happened to the pepper on each leaf when water was applied.
3. Scientists have studied the behavior of water on leaves to learn how to make self-cleaning materials. Which leaf would be the better inspiration for these materials? Explain your answer.

Name: _____

THAT'S A FACT

You read about an explorer's journey into a fiery crater in "Into the Flames" (p. 18). What are the most important details in the article? These facts should support the article's central idea and may include answers to the questions of who, what, where, when, how, and why. Use the chart below to list five important details from the article. In the second column, explain why the chosen facts are important and in the final column, describe your personal response to the details. This may include a reaction to the information or additional questions you have.

Important Detail	Why is it important?	Personal Response

Name: _____

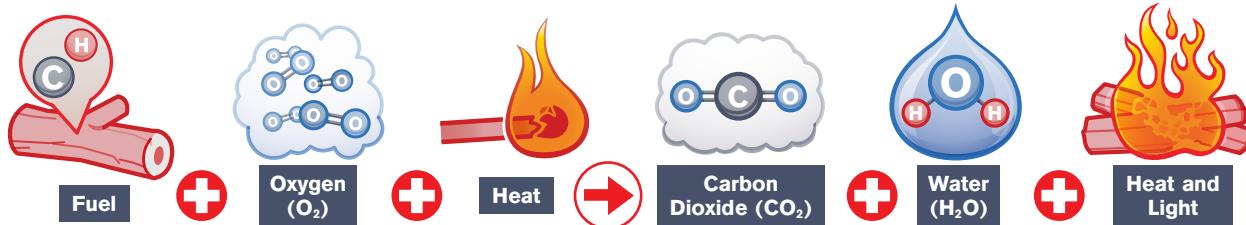
ON FIRE

In "Into the Flames" (p. 18), you read about a natural-gas-filled-crater that's been burning for more than 40 years. The fire is an example of a *combustion* reaction that releases heat and light. The diagram below shows two different versions of a combustion reaction. Use the diagram to answer the questions that follow.

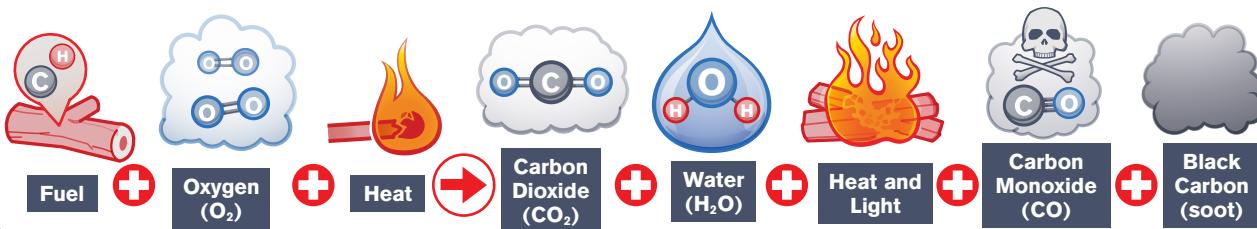
COMBUSTION BASICS

Fuels such as charcoal, wood, and natural gas burn well because they contain hydrocarbons—molecules of hydrogen and carbon that store a lot of energy. For instance, methane is a hydrocarbon with the formula CH₄. Combustion is an *exothermic* reaction that releases energy stored in the molecules in the form of light and heat.

COMPLETE COMBUSTION: When fuel burns, the hydrocarbon molecules in the fuel break apart, releasing energy. The hydrogen and carbon mix with oxygen in the air to form carbon dioxide and water vapor.



INCOMPLETE COMBUSTION: When there isn't enough oxygen to combine with all the hydrogen and carbon, the fire produces soot—also known as black carbon—and dangerous gases such as carbon monoxide.



QUESTIONS

1. What is an exothermic reaction?
2. Reactants are the substances that undergo change in a reaction. What are the reactants in the combustion reaction?
3. Products are the compounds formed when a reaction is completed. How are the products of the complete combustion reaction different from those of the incomplete combustion reaction?
4. What leads to incomplete combustion?
5. What is the fuel in the combustion reaction in the Darvaza Crater?

Name: _____

TINY SURVIVORS

In "Into the Flames" (p. 18), you learned that bacteria were found living deep inside a fiery crater. The following passage explains why scientists are interested in organisms that can survive in extreme conditions. Read the article and then answer the questions that follow.

LIVING ON THE EDGE

Imagine if your home was filled with toxic acid or the temperature was a scorching 122°C (252°F). In many places on Earth, microorganisms endure seemingly uninhabitable conditions like these.

Extremophiles, creatures that can survive in extreme conditions, were first discovered roughly 40 years ago. Now scientists have found them in countless places, including in nuclear waste and amid the scorching, toxic fluids that spew out of hydrothermal vents on the ocean floor.

Researchers study extremophiles to learn more about the conditions under which life can survive. Scientists believe the creatures may hold clues about how life first formed on Earth or about life on other planets.

Scientists are also interested in the *enzymes* that help extremophiles thrive in toxic conditions. Enzymes are proteins that are crucial for life to exist. They speed up chemical reactions. Without them, processes such as cell growth would occur too slowly for organisms to survive. The enzymes in extremophiles continue to work under punishing conditions that would destroy most other proteins. Scientists believe these "extremozymes" may prove useful in industrial processes that occur at high temperatures, such as reactions used to make food and detergent.

QUESTIONS

1. Which of the following words is a synonym for endure?

- (A) survive
- (B) change
- (C) fail
- (D) depart

2. Which of the following statements best describes how extremophiles are unusual?

- (A) They have enzymes.
- (B) They are microorganisms.
- (C) They live in extreme environments.
- (D) They live in the ocean.

3. What are enzymes?

- (A) substances that are formed through chemical reactions
- (B) proteins that speed up chemical reactions
- (C) proteins that provide food for microorganisms
- (D) chemicals that survive at high temperatures

4. Select the sentence from the passage that BEST supports the following statement: Enzymes are critical for life to exist.

- (A) Scientists are also interested in the enzymes that help extremophiles thrive in toxic conditions.
- (B) The enzymes in extremophiles continue to work under punishing conditions that would destroy most other proteins.
- (C) Without [enzymes], processes such as cell growth would occur too slowly for organisms to survive.
- (D) Scientists believe these "extremozymes" may prove useful in industrial processes that occur at high temperatures.

5. What are two reasons scientists are interested in studying extremophiles?

Name: _____

STAY COOL

In "Into the Flames" (p. 18), you learned that George Kourounis wore a heat-resistant suit to venture into the Darvaza Crater. This suit is similar to ones industrial workers and firefighters use when they have to get very close to fires or extreme heat. The suits have an outer aluminum layer that *reflects*, or bounces away, heat. An inner layer of *insulation* slows the movement of heat energy from the outside of the suit to the inside.

The chart below shows how well different materials insulate, measured in *R-values*. The higher the R-value, the slower heat travels through the substance. A material's R-value depends on its thickness and density. Study the chart and then answer the questions that follow.

INSULATION FACTORS

MATERIAL	INSULATION FACTOR (R-VALUE) per inch of material
Fiberglass batts (material made from very fine glass fibers)	3.14-4.3
Cellulose (recycled-paper products)	3.6-3.9
Plastic fiber (recycled-plastic milk bottles)	3.8-4.3
Cotton (85% recycled cotton, 15% plastic fiber)	3.4
Straw bales	2.4-3.0
Concrete	0.08
Plywood	1.25
Brick	0.2

SOURCES: COLORADO ENERGY.ORG; ENERGY.GOV/ENERGYSAYER

QUESTIONS

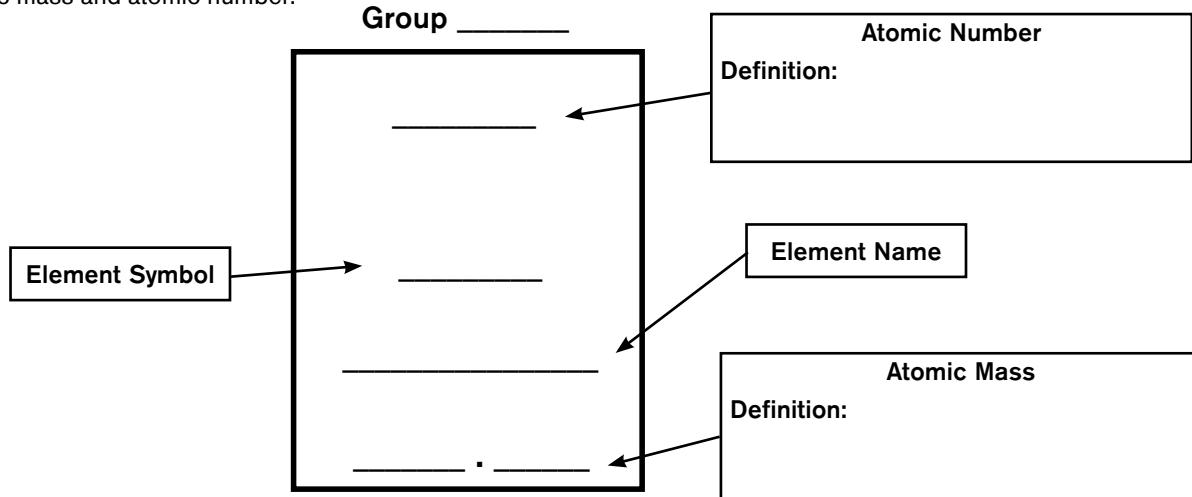
1. What happens to heat when it travels through Kourounis's insulated suit?
2. Some fireproof suits use fiberglass as insulation. What is the range of the R-value for a 1-inch layer of fiberglass batt?
3. Which material in the chart is the worst insulator?
4. By how much can the R-value for straw bales vary?
5. Other than being a good insulator, what is one important property for a suit like the one Kourounis wore?

Name: _____

EXPLAIN THAT ELEMENT

In "Name That Element!" (p. 20), you read about a mystery element. Use this skills sheet to summarize what you learned about the element.

1. Complete the box so that it represents the mystery element's box in the periodic table. Use your own words to define atomic mass and atomic number.



2. Describe three other basic properties (such as color or abundance) of the mystery element that you learned about in the article.

A. _____

B. _____

C. _____

3. Explain the following:

A. Why is an element's atomic number a good way of distinguishing between different elements? _____

B. The mystery element, manganese, and silver are which type of metal? _____

Name: _____

EATING ELEMENTS

In "Name That Element!" (p. 20), you read about the element copper. Like many elements, copper is an important dietary *mineral* that is needed for a healthy diet. These minerals play a vital role in many processes in the body. *Macrominerals* are elements your body needs in larger amounts. *Trace minerals* like copper are needed in much smaller amounts. The chart below shows some minerals that are important to human health. Study the chart and then answer the questions that follow.

DIETARY MINERALS

MINERAL	RECOMMENDED DAILY ALLOWANCE (RDA)*	USES IN THE BODY	BEST SOURCES
Potassium	4,700 mg	Potassium is a critical component of cells. It helps muscles contract and aids in maintaining fluid balance in the body. Potassium also helps your body maintain a healthy blood pressure.	Meats and fish, vegetables (including potatoes with the skin), fruits (citrus and bananas), dairy (milk and yogurt)
Calcium	1,000 milligrams (mg)	Most of the calcium in your body is used to build strong bones and teeth. It is also used in other processes, such as helping muscles and blood vessels expand and contract.	Dairy products (milk and yogurt), green leafy vegetables (spinach), small fish with bones you can eat (sardines)
Magnesium	320 mg (female) 420 mg (male)	Magnesium is used in many chemical reactions in your body, including those that produce energy and those that create proteins. It is also needed to make DNA molecules.	Fruits and vegetables, nuts (almonds and cashews), beans, soy, whole grains
Iron	18 mg (female) 8 mg (male)	Iron is a part of hemoglobin, the protein in red blood cells that carries oxygen through the body. It is also a component of myoglobin, an important protein in muscles.	Beans, dried fruits, eggs, red meats, seafood, iron-fortified cereals, whole grains
Copper	900 micrograms (mcg)	Copper helps drive the reactions that form hemoglobin in red blood cells. It is also needed to build collagen—a protein in the body's connective tissues and in your nose and earlobes.	Organ meats (liver), seafood (oysters), nuts, seeds, whole-grain cereals
Iodine	150 mcg	Iodine is used by the thyroid gland to power metabolism, which turns food into energy that can be used by the body.	Iodized table salt, fish (cod, haddock, perch), kelp

*ESTIMATED AMOUNT NEEDED EACH DAY FOR AN ADULT TO STAY HEALTHY. CHART IS ORDERED FROM LARGEST TO SMALLEST RECOMMENDED DAILY ALLOWANCE.

QUESTIONS

1. How many milligrams of potassium does an adult need each day?
2. Elements are classified as macrominerals if the minimum dietary requirement is greater than 100 milligrams. Which minerals in the chart are macrominerals?
3. Meat is a good source of which element(s)?
4. Which element(s) is/are involved in creating hemoglobin?
5. Based on what you learned in the chart, what is one health risk a person might have if his or her diet doesn't include enough calcium?

Name: _____

COLLECTING COPPER

In "Name That Element!" (p. 20), you learned about the element copper. Read the following passage to find out how the shiny reddish-brown metal is extracted from rocks. Then answer the questions that follow.

MINING FOR METAL

From coins to electrical wires, copper is one of the world's most commonly used metals. But collecting copper from Earth's crust is no easy task.

On average, every 1,000 kilograms (2,205 pounds) of Earth's outer rock layer contains only 33 grams (1.1 ounces) of copper. It's too expensive to separate the metal from these rocks. Ores are deposits with high enough concentrations of the metal to make mining feasible. A typical copper ore contains between 0.5 and 2.0 percent of the metal.

The vast majority of copper is collected in open-pit mines. Workers use explosives and machines to remove the ore—leaving behind massive holes. The collected ore is refined. The rock is brought to factories, where it is crushed. Chemicals, heat, and other techniques are used to separate pure copper from the rock.

Mining has major environmental impacts. Open-pit mines disrupt ecosystems, and chemicals used in mining can contaminate groundwater. Today, more copper is being recycled from sources like discarded wiring and pipes. Recovering used copper also uses 5 percent less energy than mining and reduces the environmental damage.

QUESTIONS

1. Which of the following is the BEST definition of Earth's crust?

- (A) Earth's outer layer of rock
- (B) rock that contains copper
- (C) rocks on Earth
- (D) rocks left on Earth's surface after mining

2. Which of the following deposits would be classified as a copper ore? Rocks with:

- (A) 33 grams of copper in every 1,000 kilograms of rock.
- (B) 55 grams of copper in every 1,000 kilograms of rock.
- (C) 0.03% copper.
- (D) 0.5% copper.

3. Which of the following is the purpose of refining?

- (A) to remove ore from the ground
- (B) to separate pure copper from ore
- (C) to create ore deposits
- (D) to reduce the amount of mining needed

4. What is the purpose of the last paragraph?

- (A) to explain how copper is recycled
- (B) to describe how copper mining works
- (C) to encourage readers to use more copper
- (D) to explain the disadvantages of copper mining

5. The demand for copper continues to rise every year. Use evidence from the text to explain why recycling this metal is becoming more important.

Name: _____

THE VALUE OF COPPER

In "Name That Element!" (p. 20), you read about the element copper. The properties of this element make it ideal for use in many different industries. The chart below shows some common uses of copper. Study the chart and then answer the questions that follow.

COMMON COPPER USES

USES	ADVANTAGES
Buildings	Copper and <i>alloys</i> made of the element combined with other metals are often used on the outsides of buildings because they are strong and have a unique reddish color. The metals have to be sealed to preserve the bright color. But many building designers prefer to let the copper weather naturally so that a characteristic greenish <i>patina</i> forms.
Electrical wiring	Of all metals, copper is the second-best <i>conductor</i> of electricity, behind silver. More electricity can flow through a thin copper wire than through wires made from other metals. That means less material is needed. Because copper has a high melting point, it can handle large loads of electricity without becoming damaged.
Plumbing	Many homes and buildings have copper plumbing pipes. Copper doesn't corrode as easily as other metals. It also has properties that kill bacteria. The sun's ultraviolet rays don't corrode copper, so it can be used for water pipes outside.
Automobiles	Nearly all cars have copper wiring to carry electric signals. The material is ideal for electric cars, which rely on electricity to power the motors. Because copper conducts electricity so efficiently, the cars can have smaller motors, go faster, and drive longer.
Marine industry	Seawater is highly corrosive to many materials. Alloys made from copper and nickel are resistant to salt deterioration. The alloys are often used to build ships, pipes in the ocean, and piping in <i>desalination plants</i> , where salt and minerals are removed from seawater to produce freshwater.

QUESTIONS

1. What property of copper is the main reason it is a common material for electrical uses?
2. What is a copper alloy?
3. Why might two similarly designed copper buildings look very different from one another after 10 years?
4. The motors in some electric cars have aluminum parts. What disadvantages might these cars have compared with those that have copper parts?
5. What other factors do you think affect which metals are used in these industries?

Name: _____

SCIENCE NEWS

DIRECTIONS: Read the “Science News” section on pages 2–7.
Then test your knowledge, filling in the letters next to the correct answers below.

1. Google's Trekker was attached to a _____ to map the desert.

- (A) horse
- (B) camel
- (C) jeep

2. Where was Google capturing images with its Trekker?

- (A) a desert in southern Africa
- (B) a desert in California
- (C) a desert in the Middle East

3. Scientists have combined kale and _____ to create a new superveggie.

- (A) brussels sprouts
- (B) broccoli
- (C) Swiss chard

4. Facebook co-founder, Mark Zuckerberg, donated \$25 million dollars to help fight which disease?

- (A) enteroviruses
- (B) Malaria
- (C) Ebola

5. Thirty-five thousand walruses hauled themselves onto a beach in _____.

- (A) California
- (B) Canada
- (C) Alaska

6. Why don't more animals eat the same grass that reindeer eat?

- (A) It doesn't taste good.
- (B) It's hard to find.
- (C) It's toxic to many animals.

7. The saliva in reindeer drool detoxifies grass by slowing _____ growth.

- (A) fungus
- (B) moss
- (C) bacteria

8. Kale is known as a “superfood” because it has vitamins, _____, and antioxidants.

- (A) fiber
- (B) minerals
- (C) protein

9. How many scientists won the 2014 Nobel Prize in physics?

- (A) 1
- (B) 2
- (C) 3

10. The force-sensing device that Deborah King developed attaches to which part of the ice skate to take measurements?

- (A) metal blade
- (B) sole of the skate
- (C) near the shoelaces

reset answers

Name: _____

BATTLING EBOLA, Page 6

DIRECTIONS: Fill in the blanks in the following sentences. Use the words in the word bank below.

antibodies	Ebola One	humans	multi-organ failure	vaccine
Central Africa	electrolytes	medications	patient zero	virus
Ebola	flu-like symptoms	monkeys	quarantine	West Africa

1. Ebola is an extremely deadly _____.
2. Infected patients are placed in _____ because the disease spreads easily.
3. The recent Ebola outbreak has hit countries in _____ the hardest.
4. The first signs of Ebola are _____.
5. _____ are minerals contained in body fluids.
6. ZMapp is a drug that contains _____ to fight Ebola.
7. Until recently, ZMapp had not been tested in _____.
8. A _____ is a drug that can prevent people from getting a disease.
9. Scientists first identified Ebola during an outbreak in _____.
10. _____ is the name given to the first person infected in an outbreak.

INSPIRED BY NATURE, Page 14

DIRECTIONS: Answer the following questions in complete sentences.

1. What is evolution? _____
2. Why do ocean currents present a challenge for scientists using submersibles? _____
3. What was the snakebot's main limitation before it was recently updated? _____
4. Describe how the Robo-fish alerts people of pollution. _____
5. How could a material based on the Namib Desert beetle's back be useful? _____

Name: _____

INTO THE FLAMES, Page 18

DIRECTIONS: Correct the following sentences by crossing out or adding words or numbers as necessary.

1. The Darvaza Crater is located in Poland.
2. The crater is 69 meters deep.
3. Details of how the fiery pit formed are well-known.
4. Samples collected from the bottom of the pit contained no signs of life.
5. The U.S. has the world's largest natural-gas reserve.

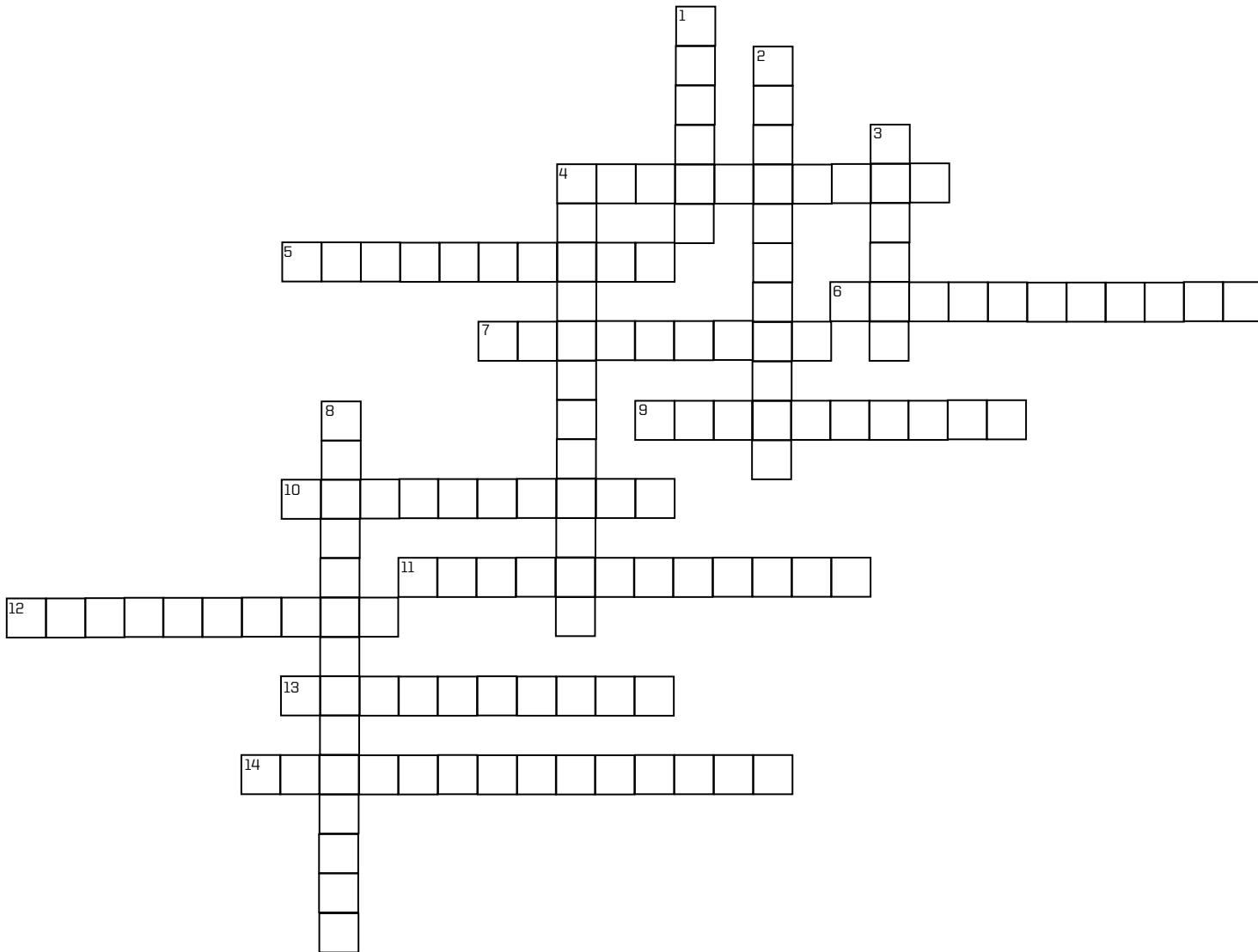
NAME THAT ELEMENT!, Page 20

DIRECTIONS: Match each item in the left column below with its definition in the right column.

- | | |
|---------------------|--|
| _____ 1. mineral | a. element with the highest conductivity on the periodic table |
| _____ 2. silver | b. a compound in crabs that makes its blood turn blue when exposed to oxygen |
| _____ 3. hemoglobin | c. iron-containing compound found in red blood cells |
| _____ 4. zinc | d. a naturally occurring solid with a uniform structure |
| _____ 5. hemocyanin | e. element from which pennies minted after 1982 are largely made |

Name: _____

DIRECTIONS: Use the clues below to fill in the crossword puzzle. All answers can be found in this issue.



ACROSS

4. Proteins in the immune system that identify and neutralize foreign invaders such as bacteria or viruses
5. Symptoms become unbearable after the Ebola virus _____ and spreads through the body.
6. A name given to the first person to be infected with a disease
7. Small changes to a species between generations that can lead to bigger changes over time
9. A compound found in some animals' blood cells that gives blood a blue color when exposed to oxygen
10. This trait helps an animal blend in with its surroundings.
11. Minerals contained in bodily fluids
12. Ebola patients are put into _____ to prevent the spread of disease.

13. Animals that eat only plants

14. A scientist who studies the fossilized remains of ancient animals

DOWN

1. A cross between two types of organisms
2. A flying dinosaur that looks like a bizarre dragon with a long tail that has a fin at the end
3. A superstrong, heat-resistant material
4. Kale is known as a "superfood" because it has high levels of vitamins, minerals, and _____
8. A second jaw in the mouths of many fish that pull prey into their stomach