News Shorts: Tomb Raiders

a part of the Valley of the Kings in Egypt

American archaeologists recently did something that would make their mummies proud: They discovered a hidden Egyptian tomb!

Otto J. Schaden and his team found the burial chamber underground in Egypt's Valley of the Kings. It holds five mummies in *sarcophagi* (sar-KAH-fuh-gigh), or coffins. The tomb also contains 20 jars in which Egyptians stored food and drink for the afterlife.

This marks the first time an intact tomb has been discovered in the valley in 84 years. The last tomb found there was that of Tutankhamen, the boy king. Tut's tomb is just feet from the newly found chamber.

"It was just so amazing to find an intact tomb here after all the work that's been done before," Edwin Brock, one of the project leaders, told reporters.

Archaeologists suspect that the tomb is about 3,000 years old. The scientists will study the sarcophagi to determine the mummies' identities and social status.

One of the sarcophagi has the features of a woman with black hair, dark-lined eyes, and a gold necklace.

Schaden says the mummies may be members of a pharaoh's court, but some people have speculated that the tomb may hold the mummy of Nefertiti-one of Egypt's most beautiful and powerful queens. Even if the tomb doesn't hold Nefertiti's remains, it's still the find of a lifetime, archaeologists say. "This cache... proves that the Valley of the Kings is not exhausted," Mansour Bouriak, an Egyptian official, told reporters.

Name: _____ **Date:** _____

1. The newly found tomb contains all of the following EXCEPT

A. a gold necklace

B. the mummy of King Tut

C. 20 jars in which food was stored

D. five mummies in sarcophagi

2. How do archaeologists describe the tomb?

A. as a tomb that has been raided

B. as the find of a lifetime

C. as an ordinary burial chamber

D. as a place where people live

3. In the first paragraph ("American archaeologists recently did something that would make their mummies proud..."), why did the author choose the phrase "make their mummies proud"?

A. The author knows what an important role mothers play.

B. The author was being funny by using a play on words.

C. The author thought that the mummies were happy to be found.

D. The author wanted to show how serious the discovery is.

4. Read this sentence from the passage:

"Schaden says the mummies may be members of a pharaoh's court, but some people have speculated that the tomb may hold the mummy of Nefertiti-one of Egypt's most beautiful and powerful queens."

In this sentence, the word **speculated** means

A. thought

B. forgotten

C. discovered

D. broadcast

5. Which statement best describes the main idea of this passage?

A. Scientists recently found a hidden Egyptian tomb.

B. Being an archaeologist is challenging but rewarding.

C. Egypt's Valley of the Kings is a place rich with history.

D. Queen Nefertiti was a beautiful and powerful ruler.

6. What are sarcophagi?

7. How do you think the author feels about the discovery? How do you know? Cite an example from the text.

8. The question below is an incomplete sentence. Choose the word that best completes the sentence.

_____ many archaeologists had been to the site before, this was the first time the hidden tomb was discovered.

A. Although

B. During

C. Because

D. When

How The Maya Lived

This text is adapted from an original work of the Core Knowledge Foundation.

The Maya were an American Indian people who lived in Mesoamerica. Their civilization thrived between the years 200 and 900 CE.

Maya farmers raised food for the people of their large cities. In the lowland areas, farmers created waterways to redirect and save water.

How did the Maya Live?

Most Maya people made their living as farmers. Their main crop was corn. One of their main foods was something you may have eaten-a flat bread called a tortilla (/tor*tee*uh/). Farmers also grew beans, squash, sweet potatoes, tomatoes, and pumpkins.

Maya farmers lived in one-room huts made out of mud and grass. Families lived in walled areas that had several huts. Men and boys did the farming. Women and girls took care of the house, cooked, and made clothing and pottery.

Every culture has practices that seem odd to other people. The Maya did two things that may seem a little strange to you. They considered crossed eyes to be beautiful. So mothers would hang something in front of a baby's nose to help the baby develop crossed eyes. The Maya also viewed a flat head as a symbol of beauty. They would strap a long board to the backs of newborn babies. As the babies' heads rested against the board, the board gradually flattened the back of the babies' soft skulls.

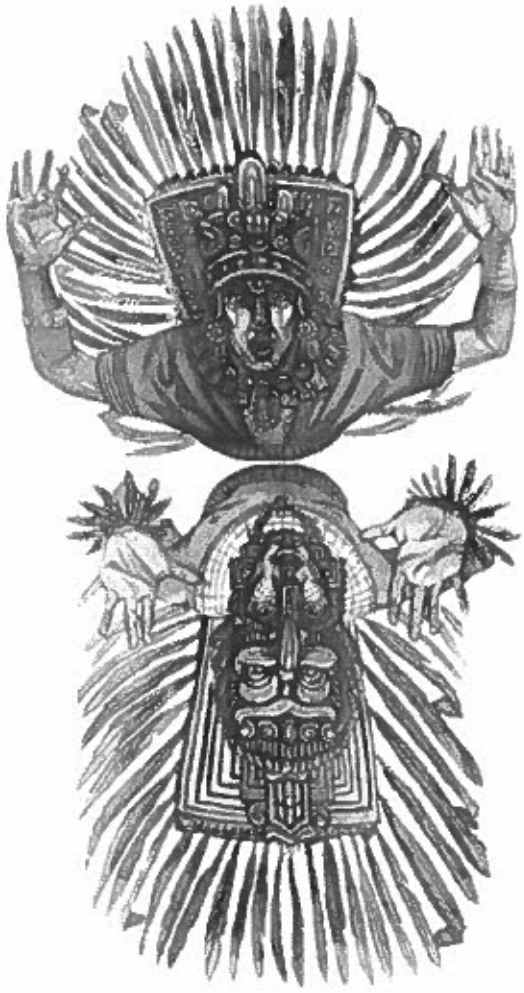
Coming of Age

Before age five, Maya children were cared for by parents and other relatives. At age five, they took on new responsibilities, such as helping with farming and household chores. A boy had a white bead braided to his hair. A girl had a string tied to her waist with a red shell attached.

These symbols remained in place until the children reached the age of fourteen. At this point, an initiation ceremony was performed to mark their passage to adulthood. A priest would pick a day when the stars were favorable. Then the priest would cut the bead from the boy's hair. A girl's mother would cut the string from her daughter's waist. Then the parents would have a celebration with family members and neighbors.

After these ceremonies, boys moved into a house for unmarried men. There they would remain until they got married. Marriages were arranged. In the hard life of Maya farmers, marriages were not romantic affairs. They were more like business deals between families.

As with the initiation ceremonies, priests picked marriage dates. They checked with the stars and the gods to find a day that would bring good fortune. However, no Maya couple expected married life to bring only good fortune. The Maya believed that every aspect of life was controlled by the gods. Because some gods were good and some were bad, they expected life to include both joy and sorrow.



The Maya believed that the gods controlled all aspects of life, and they consulted the stars for guidance.

Name: _____ **Date:** _____

1. What did most Maya people do to make a living?

A. they traded

B. they farmed

C. they hunted

D. they stole

2. What does this text describe?

A. This text describes how the Maya lived and some of their important traditions and ceremonies.

B. This text describes what the Maya people thought was the most beautiful way to look and dress.

C. This text describes the way Maya marriages were arranged and how they were more like business deals between families.

D. This text describes the way the Maya people built their one-room huts using mud and grass.

3. At age five Maya children took on new responsibilities.

What evidence from the text supports this statement?

A. Maya children were cared for by parents and other relatives.

B. A girl had a string tied to her waist with a red shell attached.

C. Children started helping with farming and household chores.

D. The Maya believed that every aspect of life was controlled by the gods.

4. Read these sentences from the text:

Priests picked marriage dates. They checked with the stars and the gods to find a day that would bring good fortune. However, no Maya couple expected married life to bring only good fortune. They Maya believed that every aspect of life was controlled by the gods. Because some gods were good and some were bad, they expected life to include both joy and sorrow.

Based on this information, what can you conclude about what Maya people thought when they felt sorrow?

A. They believed the sorrow was their own fault.

B. They believed the sorrow was random.

C. They did not believe in sorrow.

D. They believed the sorrow was controlled by the gods.

5. What is the main idea of this text?

A. When Maya people got married, a priest would pick the marriage date to make sure that it would bring good fortune. They knew, however, that like would include both joy and sorrow, because some gods were good and some were bad.

B. The Maya people did very weird things to their infants. Mbthers would hang something in front of a baby's nose to help the baby develop crossed eyes. They also would strap a long board to the backs of newborn babies.

C. Most Maya people were farmers who lived in one room huts. From birth to marriage, the Maya people had many unique traditions and ceremonies that symbolized things such as beauty, growth, and good fortune.

D. A priest would cut a bead from the boy's head at age 14to mark their passage to adulthood. After this ceremony, boys moved into a house for unmarried men. There they would remain until they got married.

Lost & Found

by Charles Piddock

Percy Harrison Fawcett

A vanished culture is unearthed in the Amazon rain forest.

A *real-life Indiana Jones.* That's how people remember British explorer Percy Harrison Fawcett (1867-1925). Like Indy, Fawcett plunged deep into tropical forests where he battled hungry predators and dodged poisoned arrows shot by angry natives. Like Indy, too, Fawcett sought to turn the world of science on its head with an amazing discovery from a lost world.

In 1925, already famous, Fawcett set out into the vast and largely unexplored Amazon rain forest. Accompanying him were his 21-year-old son, Jack, and Jack's best friend, Raleigh Rimell. Fawcett's goal was to find what most scientists at the time said did not exist: the half-buried ruins of a once-mighty ancient city. Since 1542, when European explorers first entered the Amazon region of South

America, stories had emerged of a rich city ruled by a king called El Dorado (the gold-covered one) somewhere in the forest. For centuries, dozens of explorers searched for the city, but no trace was ever found.

No trace, that is, until Fawcett's expedition. He sent messages home that he had found evidence of a city that once existed in the forest along the Xingu River. The Xingu is one of the Amazon River's many *tributaries* (streams and rivers that flow into a larger body of water). Fawcett called the lost city the City of Z for reasons known to him alone. His search for the city is documented in the best-selling book *The Lost City of Z* by David Grann.

Thin Soil

Scientists back home believed that the British explorer was simply chasing after a myth. In 1925, the societies in the Amazon were small and isolated, eking out a primitive existence in tough conditions. *Anthropologists* (scientists who study the development of human cultures) saw the local people as a perfect example of *environmental determinism*. Environmental determinism is the belief that physical environment determines culture. Complex societies capable of building cities and supporting a large population, the theory goes, need certain environmental conditions to develop. They need good soil to produce crops; protection from predators and disease-carrying insects; and leisure time to develop writing and other hallmarks of civilization. The Amazon rain forest provides none of those things. Despite the forest's thick vegetation, the soil is poor in the nutrients that crops need. Clouds of disease-carrying insects make living there an ordeal, and large predators lurk in the forest's darkness.

Fawcett's quest was widely publicized in newspapers and magazines. Readers eagerly followed his progress. Then, suddenly, Fawcett stopped sending messages. All contact with his expedition was lost.

Weeks turned into months and months into years. Expedition after expedition went into the rain forest to locate Fawcett-without success. Fawcett's vanished expedition has been called the greatest exploration mystery of the 20th century.

Buried Settlement

Until now, historians believed that Fawcett lost his life pursuing a myth. But new evidence shows that the ill-fated explorer may have been onto something after all.

A team of scientists led by University of Florida *archaeologist* Michael Heckenberger has been studying a region of the upper Xingu River for 13 years. An archaeologist studies ancient cultures by examining their material remains. Recently, the team revealed that it had made a big discovery-what Heckenberger believes may be the lost City of Z. Using satellite imagery and ground-penetrating radar, as well as information provided by people in the region, Heckenberger has found the remains of roads, bridges, and *plazas* (public open spaces) that had been used between A.D. 800 and 1600.

"The roads were as wide and straight as modern four-lane highways," Heckenberger told *Current Science*. "And they seemed to connect settlements that once covered an area of 150 to 200 square

miles. The settlements, which I would call garden cities, were set in clusters, or groups of cities, each surrounded by a wall and a deep ditch. The ditches were up to 15 feet deep and more than 30 feet wide. The entire area was carefully engineered and managed. It is clear that these people liked to have beautiful roads and plazas and bridges."

Heckenberger says specialized farming and hunting allowed the people who built the towns and villages to support a population probably 10 times larger than what exists in the region today. His team has found 19 such settlements, at least four of which were major residential centers.

A Vanished People

What happened to the people who built the garden cities? They were probably wiped out by the infectious diseases unintentionally brought to the region when the Europeans arrived, says Heckenberger.

Heckenberger says he thinks continued research will bring even more startling discoveries about the Amazon's early civilizations. "There are many remarkable discoveries yet waiting in the Amazon," he told *Current Science*. "We can expect to find things that are uniquely Amazonian. And some of these are bound to be more complex and advanced than expected."

Name: _____ **Date:** _____

1. Along which tributary of the Amazon was the lost City of Z located?

A. the Z River

B. the Xingu River

C. El Dorado Stream

D. the Little Amazon

2. The author describes a theory known as "environmental determinism". Which of the following *best* describes this theory?

A. Ancient civilizations believed that the environment was determined by the Gods.

B. The impact of humans on the environment can determine the climate.

C. The environment determines the type of housing structures people must create to protect themselves from natural elements.

D. The success of a civilization depends on specific environmental features such as quality soil and the ability to produce enough food.

3. What is the best explanation for Fawcett's sudden disappearance?

A. He was abducted by people that lived in the rain forest, and went on to live with them for the remainder of his life.

B. He decided to join the people of the lost City of Z who had moved underground to continue building their civilization without the threat of predators and scientists.

C. He died from the harsh natural elements of the Amazon rain forest, such as vicious predators or disease-ridden insects.

D. He found King El Dorado's hidden gold, changed his identity, and moved to another country to live in wealth and seclusion.

4. Read the following sentence: "Expedition after expedition went into the rain forest to locate Fawcett-without success."

In this sentence the word **expedition** means

A. a vacation trip to a far away land

B. a journey around the world

C. efficient promptness or speed

D. an organized journey for a specific purpose

5. The primary purpose of this passage is to

A. help people plan a vacation trip to the Amazon

B. describe an exciting archeological discovery

C. warn people of the life-threatening elements of the Amazon rain forest

D. promote the film, *Indiana Jones and the Raiders of the Lost Ark*

6. According to the author, what most likely caused the extinction of the people of the Lost City of Z?

7. How would the author likely describe Fawcett? Use evidence from the text to support your response.

8. The question below is an incomplete sentence. Choose the word that best completes the sentence.

_____ the Amazon was full of dangerous predators and insects Fawcett boldly set off to explore the region.

A. After

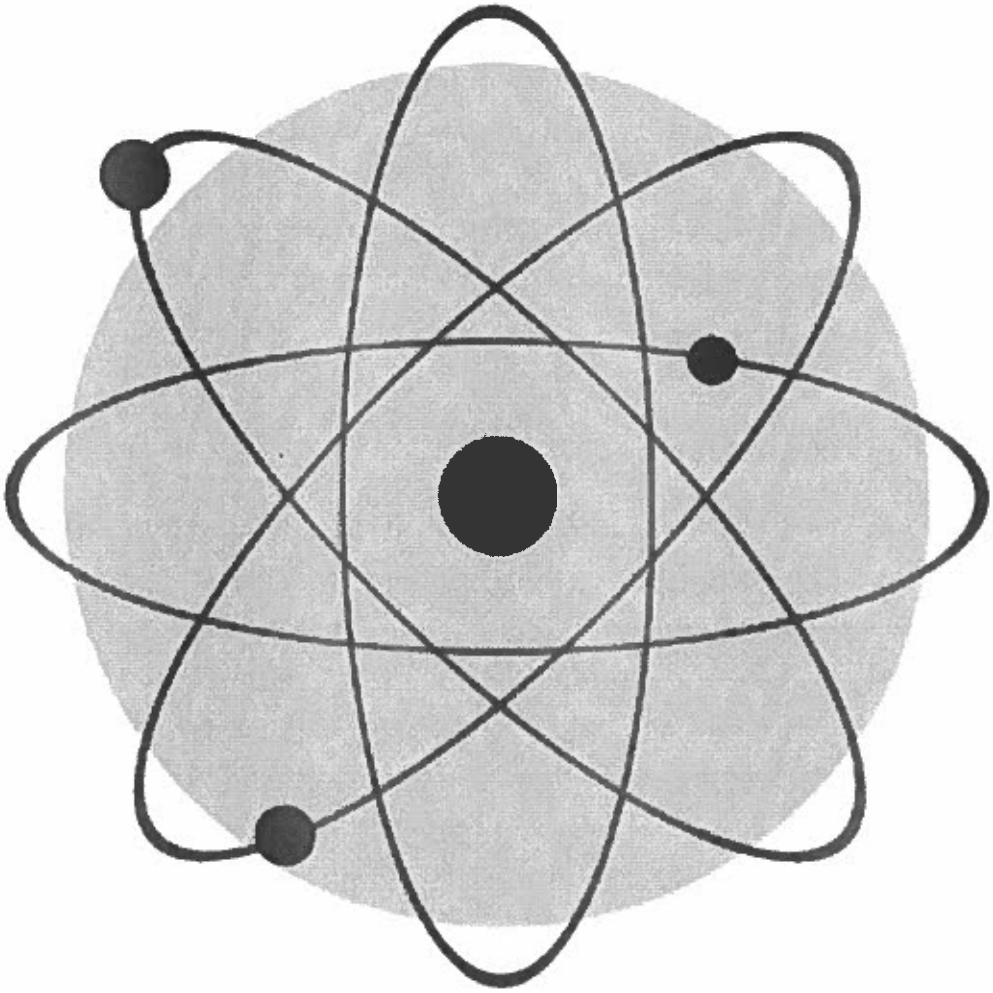
B. Although

C. Because

D. Before

Matter Is Everywhere!

by ReadWorks



Everything around us is made of matter-your clothes, the trees, even the water you drink! We divide matter into four major categories, which are called the four states of matter: liquid, gaseous, solid, and plasma. However, we will focus on the first three. Whatever the state of matter may be, all matter is made of tiny particles called atoms. These particles are too tiny to see with the naked eye; they're even too small to see with a regular microscope. If you line up a million atoms next to each other, they will be as thick as a single piece of human hair. So, we can only look at atoms through very powerful tools, one of them being the "scanning tunneling" microscope.

How Do We Know?

We can easily see liquids and solids around us, but most gases aren't visible. We can't see the air around us, but it is still made of atoms that constantly move around freely in space. How can we tell?

Take a balloon, for example. When we pump air into a balloon, it visibly inflates. That means that gaseous matter is filling the balloon and taking up space. The more air we blow into the balloon, the bigger it gets. Therefore, we can observe the way gas moves around space. In the same way, inflatable pool toys also fill with air so that they can float on water. When we fill the plastic shells with air, the toys take shape. Since air is lighter than water, the pool toys can rest on the water without sinking. And then we can enjoy a sunny day while floating in a pool!

Moving Atoms

Atoms are constantly moving. However, atoms move at different speeds within different states of matter. We have been able to determine that atoms move slower in solids than they do in liquids. That's because atoms in solids are tightly packed, and there is less space to move around freely. The atoms in gas move the fastest. Since the atoms move more freely in liquids and gases, they can undergo a process called diffusion. (Solids can diffuse as well, although it's a much longer process.) Diffusion is the movement of particles from a higher concentration to a lower concentration. That's why, when you spray perfume in a corner of a room, you will eventually smell it on the other side of the room. The atoms from the perfume diffuse through the air. Because of this diffusion, the perfume scent is spread.

Identification

We can identify materials according to a variety of properties. Scientists have determined several different measurements to help label materials. Some examples are temperature, hardness, color and length. Usually, these are used to measure solids, like rocks and minerals. However, temperature can be used to measure liquids as well. When geologists study rocks, they often use the Mohs scale of mineral hardness. This scale allows us to characterize the scratch resistance of various minerals. A diamond is described as hard because it is extremely difficult to scratch. Scientists can measure hardness with the Mohs scale and compare minerals to other minerals.

Scientists always use various methods to group materials together-that way, it's easier to study and compare them. That's another reason why we differentiate between liquids, gases, solids and plasmas!

Name: _____ **Date:** _____

1. Everything around us is made of

A. liquids

B. matter

C. plasma

D. gas

2. Why does the author describe the balloon and inflatable pool toys filling up with air?

A. in order to explain that it is impossible to observe the way gas moves around space

B. in order to explain that air is not made of atoms that take up space

C. in order to explain that air is made of atoms that take up space even though air is invisible

D. in order to prove that these are fun objects to inflate

3. Atoms move slower in solids than they do in liquids. Which evidence from the passage best supports this statement?

A. Solids, liquids, and gases can all undergo the process of diffusion.

B. Diffusion is the movement of particles from a higher concentration to a lower concentration.

C. The atoms in gas move the fastest.

D. Atoms in solids are more tightly packed than atoms in liquids, so there is less space to move around freely in solids.

4. Based on the passage, the corner where a perfume is initially sprayed has

A. has no concentration of perfume particles

B. has the same concentration of perfume particles as the rest of the room

C. a lower concentration of perfume particles than the other corners of the room

D. a higher concentration of perfume particles than the other corners of the room

5. What is this passage mainly about?

A. matter and the properties it has in certain states

B. the process of diffusion

C. the different measurement scientists use to label materials

D. the inflation of balloons and pool toys

6. Read the following sentences from the passage: "Whatever the state of matter may be, all matter is made of tiny particles called atoms. These particles are too tiny to see with the naked eye; they're even too small to see with a regular microscope. If you line up a million atoms next to each other, they will be as thick as **a single piece of human hair**."

The author uses the example of **"a single piece of human hair"** to illustrate

A. how atoms can be seen with a regular microscope

B. how tiny atoms actually are

C. how hairy atoms actually are

D. how much they look like hair

7. Choose the answer that best completes the sentence below.

Scientists group materials together _____ it is easier to compare and study them that way.

A. however

B. but

C. although

D. because

8. Explain why atoms move at different speeds depending on whether they are in liquids or solids.

9. What is diffusion?

10. Explain whether smoke filling up a room is diffusion or not.

Magnetic Fields and the Magnetic Compass

by ReadWorks

If you were in a forest, chances are there wouldn't be any street signs to help direct you! That's why you need a compass to help you find your way using the power of a magnetic field.

What Is a Magnetic Field?

Magnets are objects that produce an area of magnetic force called a magnetic field. Magnetic fields by themselves are invisible to the human eye. Magnets attract, or pull, objects made of materials that are very attracted to magnets. These materials include iron and nickel. A magnet also reacts to another magnet when they are close enough to each other.

What Are Magnetic Poles?

Magnets come in different shapes, strengths, and sizes. However, they all have a north pole and a south pole. The south pole of one magnet is attracted to another magnet's north pole. However, the north poles of both magnets would repel, or push, each other away.

What Are the Earth's Poles?

The earth is like a huge magnet. It has a magnetic field, and it has magnetic North and South Poles. The earth's magnetic poles are not to be confused with its geographic poles, though.

The earth is tilted on an axis. The geographic North Pole is located at the most northern end of the axis. This place is in the middle of the Arctic Ocean. The geographic South Pole is located at the most southern end of the axis, and this can be found in Antarctica.

The earth's magnetic poles are in the general direction of the planet's geographic poles. However, unlike the geographic poles, the magnetic poles are not always in the same place. They are moving slowly.

How Does a Compass Work?

A compass is used to show direction. There are different types of compasses. They include the magnetic compass, the solar compass, and the gyro compass. When people talk about a compass, they often think of the magnetic compass.

A magnetic compass is usually comprised of a magnetized needle and a card with north, south, east, and west printed on it. One end of the needle is attracted to the earth's magnetic north pole. This end is often painted red. With one end showing you the direction of north, you can use the compass to figure out the other directions, too.

Name: _____ **Date:** _____

1. What is a magnetic field?

A. the geographic poles of the earth

B. the shape, strength, and size of a magnet

C. an area of magnetic force around a magnet

D. a street sign to help direct you

2. What does the author describe?

A. the characteristics of magnets and magnetic fields

B. the reasons why some materials are attracted to magnets

C. the different shapes, strengths, and sizes of magnets

D. the ways different compasses work to tell direction

3. Read these sentences from the text.

> Magnets are objects that produce an area of magnetic force called a magnetic field. Magnetic fields by themselves are invisible to the human eye. Magnets attract, or pull, objects made of materials that are very attracted to magnets. These materials include iron and nickel. A magnet also reacts to another magnet when they are close enough to each other.

Based on these sentences, what can you conclude about the attraction of iron to a magnet?

A. When the iron is farther from the magnet, the attraction is stronger.

B. When the iron is closer to the magnet, the attraction is stronger.

C. When the iron is closer to the magnet, the attraction is weaker.

D. When the iron is close to the magnet, there is no attraction.

4. Read these sentences from the text.

> The earth's magnetic poles are in the general direction of the planet's geographic poles. However, unlike the geographic poles, the magnetic poles are not always in the same place. They are moving slowly.
>
> [. . .]
>
> A magnetic compass is usually comprised of a magnetized needle and a card with north, south, east, and west printed on it. One end of the needle is attracted to the earth's magnetic north pole. This end is often painted red. With one end showing you the direction of north, you can use the compass to figure out the other directions, too.

Based on these sentences, what does a magnetic compass show someone?

A. the exact direction of the earth's geographic South Pole

B. the general direction of the earth's geographic South Pole

C. the exact direction of the earth's geographic North Pole

D. the general direction of the earth's geographic North Pole

5. What is the main idea of the text?

A. There are different shapes and sizes of magnets. Iron and nickel are some of the materials that are very attracted to magnets, so they can get pulled toward magnets.

B. The earth is like a big magnet. People can figure out directions by using a magnetic compass, which has a needle that is attracted to the earth's magnetic North Pole.

C. The earth has a geographic North Pole, which is located in the middle of the Arctic Ocean. The planet also has a magnetic North Pole, but it is always moving slowly.

D. There are different types of compasses. One type of compass is the magnetic compass, and it is made up of a magnetized needle and a card with directions printed on it.

6. Read these sentences from the text.

> The earth's magnetic poles are in the **general direction** of the planet's geographic poles. However, unlike the geographic poles, the magnetic poles are not always in the same place.

As used in the text, what does the phrase "**general direction**" mean?

A. different but the same exact way

B. similar but complete opposite way

C. similar but not the same exact way

D. different and complete opposite way

7. Choose the answer that best completes the sentence below.

The earth has a magnetic field and magnetic North and South Poles, _____ it's like a magnet.

A. but

B. so

C. if

D. although

8. What is one end of a magnetized compass's needle attracted to?

9. Based on the text, what other direction or directions can someone figure out if the person knows the direction of north?

10. A person is lost and needs to go south. How might a magnetic compass help the person? Use evidence from the text to support your answer.

Energy Screams

by ReadWorks

Click.....click.....click.

You're on a roller coaster.

It's climbing slowly up a hill.

All you see is the top of the hill and open sky.

"Ugh," you think to yourself.

Click...click...click.

You're 40 stories up.

With only a metal bar for safety.

CLICK, CLICK, CLICK!

You're at the very top of the hill.

Silence.

All you see is the bottom of the hill.

It's very far away.

You're scared.

"I want to go home."

WHOOOOOOOOOOOOOOOOOOOOSSSSSSSSSSSSSHHHHHHHHH!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

You pick up speed as your stomach lifts up and out of its usual, happy place.

Halfway down the hill, you're already going 70 miles per hour. Your screams (if they can claw their way out of your mouth) are almost behind you by the time they leave your mouth.

You reach the bottom of the hill but immediately start to climb another big hill. Your stomach takes a second to feel alright again.

You drop again, and your intestines also take a stroll.

The bottom of this hill yields no breathing room as you realize you are about to go upside down.

A loop-the-loop.

Yes, your feet are now above your head and you're so disoriented you don't see what the loop-the-loop feeds into.

A corkscrew. Not only are you upside down again, but you're spinning at the same time.

The corkscrew feeds into a spiral, which pins you to the seat. It's a good thing because you're sideways.

"I waited in line for 50 minutes to be tortured?!"

When you come out of the spiral, you shoot straight back up and down a smaller hill.

This hill is child's play, but uh-oh, you can't see the bottom.

All you see is a black hole.

Lights flash.

People scream.

You scream.

All the screams bounce around inside the dark, cramped tunnel.

It's loud.

It's scary.

More lights flash.

"Why am I here?!"

You see a light at the end of the tunnel. It's above you.

You shoot up and out of the tunnel.

You hear brakes activate, and you slow to a stop.

The ride is over.

You're alive.

You're back where you first got into this death trap and see a hungry line of people salivating over your seat.

"You can have it."

The amusement park tries to sell pictures of you screaming your head off.

"You can have them."

You need to sit down.

In a chair that doesn't move.

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After surviving a roller coaster, most riders would say they just had a thrilling ride. Some would mention how scary it was. Some wouldn't say anything as they focused on racing back to the end of the line, ready to wait 50 minutes for another chance to feel like their stomach was in their mouth.

But how many riders would mention the great application of potential energy to generate a massive amount of kinetic energy with the sole intention of delivering an exhilarating two-minute roller coaster ride?

Very few, and yet, that's all a roller coaster is.

As you go up and down, you and the roller coaster are just experiencing changes in potential energy and kinetic energy.

As you click up the first big hill, you are moving forward and have a certain amount of kinetic energy. As you climb, you are also building potential energy. The higher you go, the greater your potential energy. If the roller coaster never went down the hill and just stayed up there, your potential energy would still be there, but it would never be converted to kinetic energy.

Don't worry. Almost all roller coaster designers build a track that brings you back down.

At the top of the first and tallest hill, your potential energy is at its highest it will ever be on this ride. As you begin to descend, your potential energy decreases until it's all gone at the bottom of the hill.

At the bottom of the first hill, your kinetic energy is at its highest point. You're going as fast as you'll ever go on this roller coaster ride.

To ensure the fun keeps going, the roller coaster's designers put in the second hill. If the first hill were the ride's only one, the fun would be over sooner. Without going back up another hill to increase potential energy again, this gravity-driven roller coaster could still do a few things with its remaining kinetic energy, but just not as much. One of the marvels of a well-designed roller coaster is its ability to harness the energy built with the first hill as long as possible. The second hill picks up where the first one left off and builds potential energy on the way up, and converts that to kinetic energy on the way down.

The loop-the-loop works the same way in that the highest point of the loop is where the roller coaster's potential energy is at its highest. On the way down and out of the loop-the-loop, it converts into kinetic energy and rolls onto the next stomach-churning thrill.

That last hill with the dark tunnel-bottom is a segment of the roller coaster designed to extract one last scream, but to also burn off some kinetic energy. The fact that you are looking up at the exit of the tunnel means you've hit the bottom of that hill. Once you're past the bottom, the roller coaster is fighting gravity to go up and therefore decreasing in kinetic energy. This helps lower the power and energy to slow the roller coaster to a smoother stop.

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Some people love roller coasters. Others loathe them. Wherever you fall on the roller coaster love/loathe spectrum, it is this mix of potential energy and kinetic energy that affects your feelings toward roller coaster rides. Whether the roller coaster is made out of metal or wood, or you're sitting, standing, or lying on your stomach, the roller coaster is still delivering that mix.

Different materials or where you're sitting on the roller coaster do actually affect how you experience the potential energy and kinetic energy. Roller coaster tracks made of steel, as opposed to wood, can create less friction and therefore offer a smoother ride. This means that the potential and kinetic energies created are delivered more efficiently to the roller coaster and ultimately, to you. Where you are sitting in the roller coaster can affect your ride as well. If you're sitting in the back, you will feel weightless. If you're sitting in the front, you will see everything that's designed to make you scared, like the first big drop.

All of the rides at amusement parks have a mix of potential energy and kinetic energy. It's just that with roller coasters, the extreme heights and speeds make the energies extremely apparent and unforgettable.

Make sure you're healthy enough to ride a roller coaster. Some people's bodies aren't fit to experience a roller coaster and that's fine. If you can ride a roller coaster, try to enjoy it!

Name: _____ **Date:** _____

1. How does the passage define a roller coaster?

A. the application of kinetic energy to generate massive amounts of potential energy in order to create an exciting experience

B. an amusement park ride that does not rely on gravity

C. a thrilling ride that almost everyone enjoys

D. the application of potential energy to generate massive amounts of kinetic energy in order to create an exciting experience

2. What does the author describe in the passage?

A. a merry-go-round ride

B. potential and kinetic energy in a roller coaster ride

C. the rising popularity of amusement parks

D. famous roller coasters around the world

3. Read the following sections from the passage:

"At the top of the first and tallest hill, your potential energy is at its highest it will ever be on this ride. As you begin to descend, your potential energy decreases until it's all gone at the bottom of the hill."

"At the bottom of the first hill, your kinetic energy is at its highest point. You're going as fast as you'll ever go on this roller coaster ride."

Based on this evidence, what conclusion can be made?

A. A roller coaster is fastest at the front of the train.

B. The shorter the hill the roller coaster climbs, the greater its kinetic energy.

C. Potential energy is converted to kinetic energy as the roller coaster goes down the hill.

D. No conclusion can be made from this evidence.

4. Why is it necessary for a roller coaster to go up a hill?

A. The potential energy of the roller coaster increases as the coaster goes up a hill and can be converted to kinetic energy. This kinetic energy allows the coaster to do different things.

B. The kinetic energy of the roller coaster increases as the coaster goes up a hill and can be converted to potential energy. This potential energy allows the coaster to do different things.

C. The kinetic energy and potential energy increase as the coaster goes up a hill. This increase in kinetic and potential energy allows the coaster to do different things.

D. The kinetic energy and potential energy decrease as the coaster goes up a hill. This decrease in kinetic and potential energy allows the coaster to do different things.

5. What is this passage mostly about?

A. a day at an amusement park

B. a boy who hates roller coasters

C. how to build a roller coaster

D. how roller coasters use potential and kinetic energy

6. In the first section of the passage, what does the author use to create a sense of momentum and to mimic the motions of a roller coaster?

A. the author's internal monologue

B. short sentences and active verbs

C. different images of roller coasters

D. long, run-on sentences

7. Choose the answer that best completes the sentence below.

All of the rides at an amusement park have a mix of potential and kinetic energy, _____ the energies are most noticeable on roller coasters due to their extreme heights and speeds.

A. finally

B. thus

C. although

D. certainly

8. Where is the kinetic energy of a roller coaster at its highest?

9. Why do roller coaster designers include a second hill on the ride? What would happen to the ride if there were only one hill?

10. Explain how potential energy converts to kinetic energy in the loop-the-loop section of the roller coaster. Make sure to note when the potential energy of the coaster is at its lowest in the loop-the-loop and when the kinetic energy of the coaster is at its highest.

Parents,

I have provided some Math, Reading, Science, and Social Studies lessons for your child if they would like to do them.

Here are websites that your child knows how to access:

https://www.lexiacore5.com/

https://www.zearn 5th grade

https://www.mathgames.com/

https://mysteryscience.com/school-closure-planning - go to 5th grade lessons

If you have questions please contact me at shester@ecsdnv.net