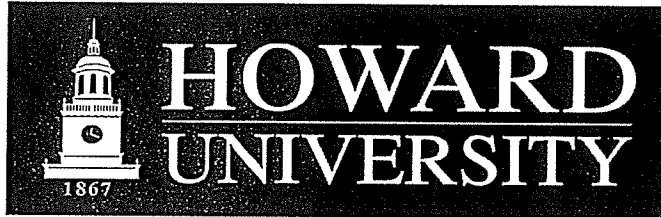


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Howard University

4th Grade ELA

Remote Learning Packet

December 7-11, 2020

Name: _____

Date: December 7, 2020

BCCS-Girls

Howard University

Biographies

Learning Targets	I can identify the types of nonfiction text structures and determine the structure used in a given nonfiction text.
Assignment to Submit	CFU (types of text structures), Text structure passage examples

Input

Follow along with the guided notes on the next page while Ms. Ferguson uses a PowerPoint to teach you about the different types of nonfiction text structures. Be sure to actively listen and fill in your notes when you need to!



Text Structures

Let's first use soccer passages to explore the 5 types.

Type 1: Description

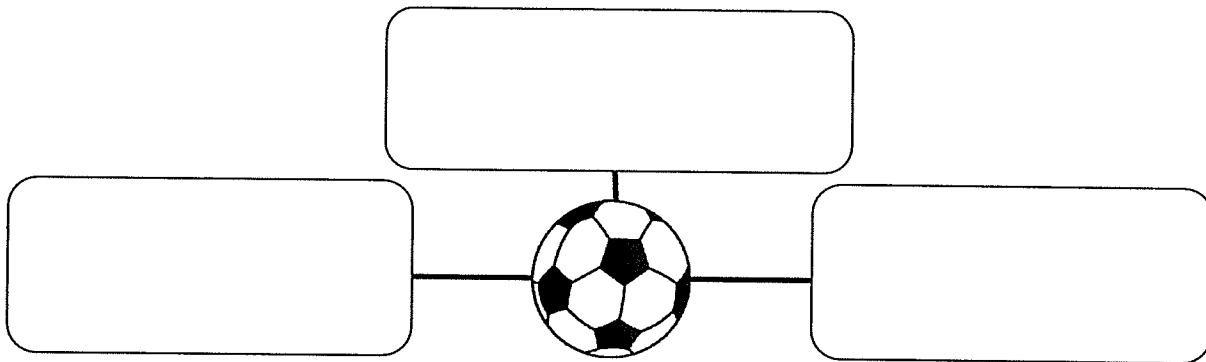
Soccer is one of the most popular sports in the world. Millions of people play soccer.

It is a fairly simple game to learn. Players try to move the ball down the field and kick it into their goal. However, a goalie stands in front of the goal and tries to block any shot the other team makes. If a team gets the ball in the goal, they score one point.

Players need to know the rules. You are not allowed to touch the ball with your hands unless you are the goalie, or you are throwing the ball onto the field from the sideline. You are also not allowed to tackle other players. The referee watches to make sure each player follows the rules.

To play soccer, you need just a few items. You need to have a ball, a large area of grass, and goals. Many players wear special shoes called cleats. These shoes have points on the bottom to help players run without slipping. Many players also wear shin guards. These protect a player's legs from getting kicked.

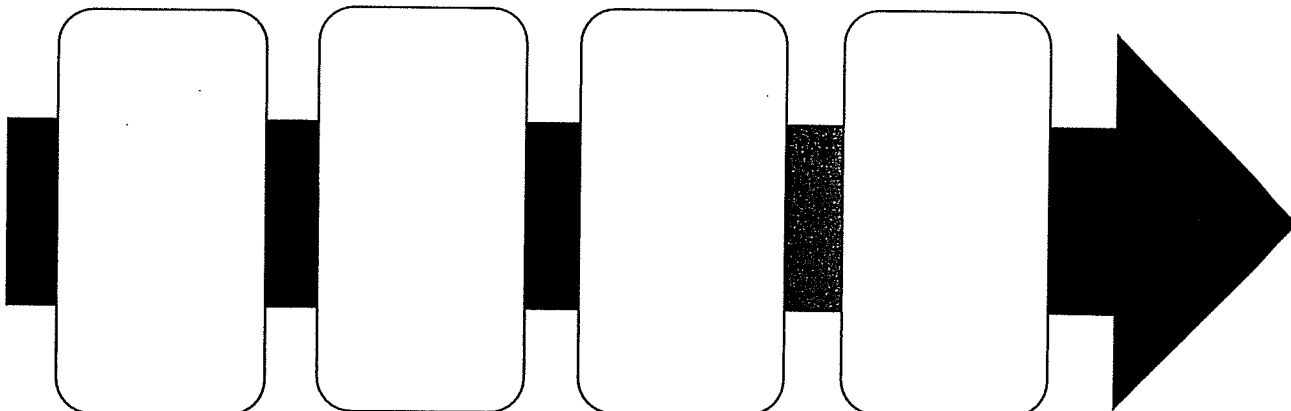
What makes this piece have a description structure?



Type 2: Sequence

Soccer is a game that has been played for numerous years. In fact, many people believe that it began in England over 800 years ago. About 200 years ago, in the early 1800s, boys in England played a sport like soccer, but they called it football. However, each school made up their own rules. In 1863, a group of players met and wrote official rules for soccer. Soccer started spreading to other countries. In 1904, an international group called FIFA formed to make sure that every team around the world followed the same soccer rules. Today, soccer is one of the most popular sports in the world!

What makes this piece have a sequence structure?





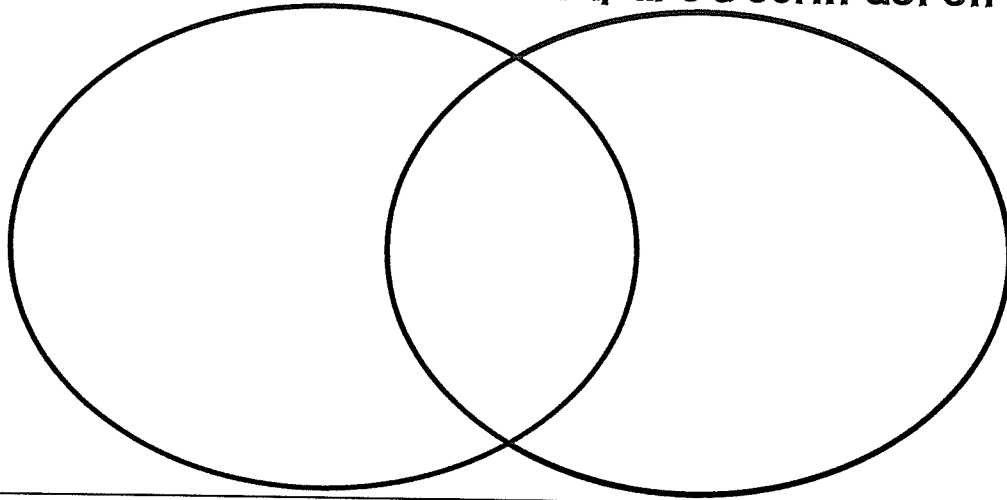
Text Structures

Type 3: **compare & contrast**

Soccer and football are alike in a few ways, but have many differences. One similarity is that there are eleven players on the field at one time in both soccer and football. They are both popular sports in the United States, and they both require the use of a ball and a field.

The differences between soccer and football are numerous. Soccer players use a ball shaped like a sphere, whereas football players use a ball that has two ends. In soccer, players are trying to send the ball in the goal. However, in football, players are trying to get the ball in the end zone or through the goal posts. The rules are also very different. In soccer, players are rarely allowed to touch the ball with their hands, while football players frequently touch the ball. Football players are allowed to tackle, but this is forbidden in soccer. These are just a few ways that soccer and football are different. Nonetheless, most people agree that both soccer and football are fun sports!

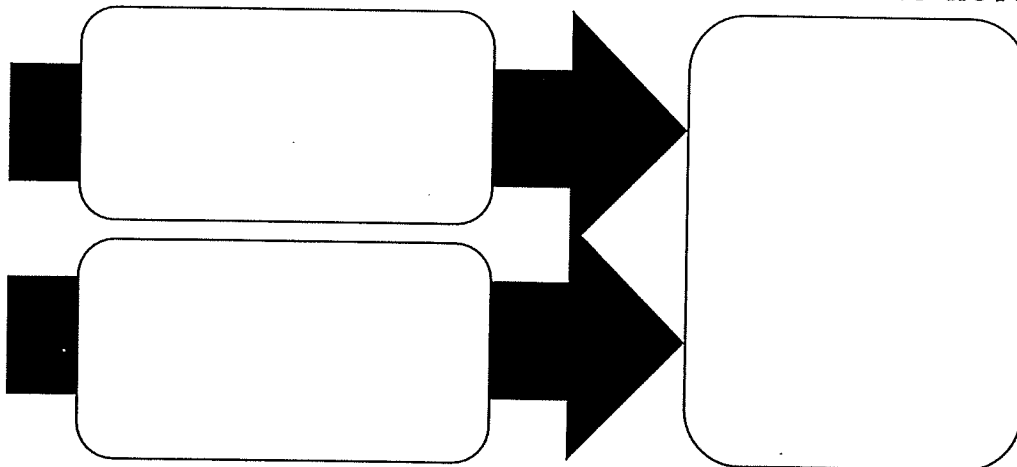
What makes this piece have a compare & contrast structure?



Type 4: **cause & effect**

Head injuries account for between 4% and 22% of all soccer injuries. These can result in concussions. A concussion may occur when someone's head strikes an object. The most common cause of a concussion during soccer is when one player's head strikes another player's head. The second most common cause of a soccer-related concussion is when the ball is kicked from close range and hits a player's head. Heading the ball does not cause head injuries, as long as it is done properly.

What makes this piece have a cause & effect structure?





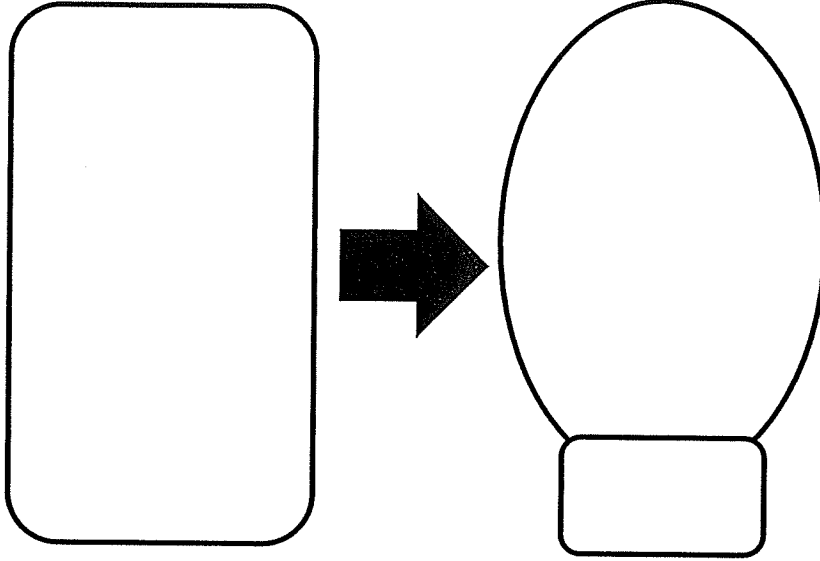
Text structures

Type 5: **Problem & Solution**

Professional soccer players head the ball thousands of times during their careers. Doctors are unsure whether players that repeatedly head the ball are more susceptible to later head injuries. Therefore, many parents and coaches are choosing to take steps to protect young players. What are some possible protections?

- Make sure children learn how to properly head the ball.
- Use the appropriate size ball for the age of the players. (Smaller balls are less likely to cause injuries.)
- Make a "no heading" rule for the younger players.

What makes this piece have a problem & solution structure?



Now read the following passages about bubble gum! Determine the text structure used.

Description

It is easy to get gum stuck in your hair. It's not so easy to get it out! If you happen to get gum stuck in your hair, do NOT reach for the scissors. There are several ways to remove gum from hair without getting a new haircut! The least messy method is the ice cube method. Put several ice cubes in a plastic bag and hold it against the gum. The gum should harden, making it easy to break off. Another effective method (but messier) is to work peanut butter into the gum. Egg whites, vinegar or mayonnaise are other solutions to a gum-in-the-hair catastrophe.

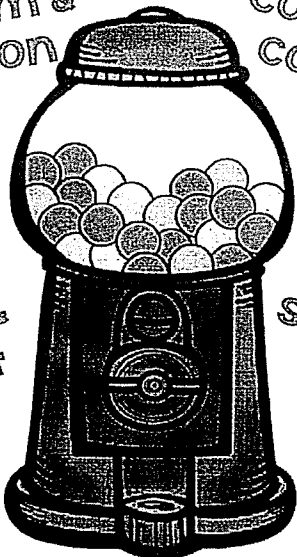
The text structure used for this passage is:

Problem & Solution

Compare & Contrast

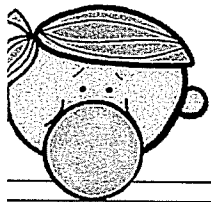
Cause & Effect

Sequence



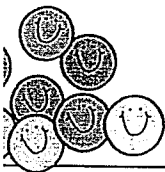
Chewing gum has a long history in the United States. Native Americans chewed the sap from spruce trees and passed the habit to settlers. The settlers added beeswax to make a chewing gum. In 1848, John B. Curtis made and sold a gum called The State of Maine Pure Spruce Gum. In 1871, Thomas Adams patented a machine to manufacture gum. In 1914, Wrigley Doublemint brand was created. This was the first gum to have mint and fruit flavors added. In 1928, Walter Diemer invented the pink Double Bubble bubble gum. Today, millions of pieces are chewed each day.

The text structure used for this passage is:



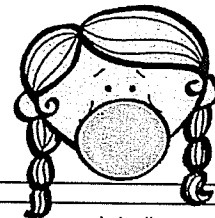
Bubble gum is a type of chewing gum. Most people like to blow bubbles with bubble gum. There are numerous flavors of bubble gum. Some of the more popular flavors include grape, strawberry, watermelon, cinnamon, fruit punch, and blue raspberry. Some of the more unusual flavors are bacon and popcorn. In taste tests, children seem to prefer strawberry and watermelon flavors. What flavor of bubble gum is your favorite?

The text structure used for this passage is:



You might be surprised to know that chewing gum may actually be good for you! Scientists have discovered that chewing gum can help your memory. This increase in memory might be due to the chewing action by your jaw. When you chew gum, your hippocampus is stimulated. The hippocampus is the memory part of the brain. Chewing gum also results in more blood flow and oxygen delivery to the brain. So... the next time you are preparing to take a test, you might want to pop a piece of gum in your mouth!

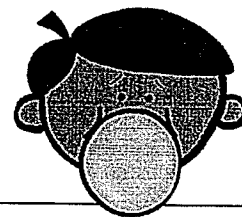
The text structure used for this passage is:



The differences between chewing gum and toothpaste are obvious. For example, people can chew gum for hours, but people keep toothpaste in their mouth for two minutes or less. You can blow big bubbles outside the mouth with gum. However, you cannot blow a bubble with toothpaste.

You might be surprised to know that chewing gum and toothpaste are alike in some ways, too. Both chewing gum and toothpaste can relieve the symptoms of bad breath or gum disease. Like toothpaste, sugar free gum has been found to protect tooth enamel and lessen the number of cavities in teeth.

The text structure used for this passage is:



Name: _____

Date: December 8, 2020

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Biographies and Main Idea

Learning Targets	I can determine the main idea of a text and explain how it is supported by key details.
Assignment to Submit	CFU (main idea/detail), independent passage/questions

Input

Today, we are going to read about Martin Luther King, Jr and his amazing accomplishments. We are going to apply our skills of determining main idea and supporting details as we read his biography.

Martin Luther King Jr. Biography

Sign of the Times

Although slavery was abolished in 1865, African Americans continued to be treated unfairly. Up until the 1960's, African Americans and white Americans were often separated, especially in southern states. City busses, restaurants, schools, barbershops, and even public bathrooms were not allowed to be shared by people of different races. Segregation continued for many years until activists such as Martin Luther King Jr. spoke up against racism and fought for equality. In 1955, a seamstress named Rosa Parks was riding a bus on her way home from work. Parks took her seat in the "colored" section of the bus. Soon, the bus filled with white passengers and the bus driver told Parks to give up her seat. She refused and was arrested. In the days to come, many African Americans, and white Americans, boycotted the public busses and refused to ride them. Parks' brave actions lead to increased attention on the unfair laws of segregation. In many ways, Parks opened the door for the Civil Rights Movement.



King in Washington DC

Childhood



King's childhood home

Martin Luther King Jr. was born on January 15, 1929 in Georgia. King was the middle child, having an older sister named

Christine and a younger brother named Alfred. His dad was a minister at the local church. King as a very good student at school and skipped both ninth and eleventh grade! In fact, King attended college when he was only fifteen years old. In college, he took a class about religion and decided to enter the ministry. King later became a pastor in a church in Montgomery, Alabama.

A Legacy

King died in April of 1968 while in Memphis, Tennessee helping a group of hardworking men and women. As word spread that this brave Civil Rights leader had been killed, riots sparked across the country. Today, Dr. King is known as an American hero and is honored for his achievements in equality and justice. A memorial stands in Washington DC to honor his accomplishments. King left behind four children and his wife, singer Coretta Scott King. In 1983, President Reagan recognized Martin Luther King Day as a national holiday.

March on Washington

At the age of 26, King was elected to head the Montgomery bus boycott to defend Rosa Parks. King gave many speeches about justice, freedom, and equality. After a year's work, the city of Montgomery banned segregation on city busses.

After achieving success in Montgomery, King traveled around the country to meet with other activists, or leaders, and discuss civil rights for all people, regardless of their skin color. King believed in achieving his goals peacefully and did not participate in violent protests.

In 1960, King joined a group of African American men who insisted on eating lunch at a restaurant that was only for whites. The men staged a 'sit-in' and refused to leave until they were served.

In 1963, King organized a group to protest against racism and segregation. He was arrested that day, but his efforts gained national attention. Later that year, King arranged a march in our nation's capital. On August 28, more than 200,000 people gathered in front of the Lincoln Memorial to hear King's most famous speech. King's "I Have a Dream" speech shares his wish that someday all men and women could be treated equally, despite the color of their skin. By 1964, the government passed the Civil Rights Act, which banned segregation across the country. King won a Nobel Peace Prize that same year.

"I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin, but the content of their character." - Dr. King

Martin Luther King, Jr Biography: Main Idea Questions

1. What is the main idea of the section "Sign of the Times"?
2. What are two details from this section that support the main idea?
3. What is the main idea of the section "Childhood"?
4. What are two details from this section that support the main idea?

5. What is the main idea of the section “March on Washington”?


6. What are two details from this section that support the main idea?

7. What is the main idea of the section “A Legacy”?

8. What are two details from this section that support the main idea?

The Story of Ruby Bridges

Segregation



On January 31, 1865, President Abraham Lincoln helped to pass a law that ended slavery. The new law was the 13th Amendment to the Constitution. African Americans were legally free, but were not treated fairly in many states. Laws said that African Americans and whites needed to be segregated, or separated. African Americans were not allowed to eat in the same restaurants, ride the same train cars, or go to the same schools. To make matters worse, the Supreme Court decided that these rules were legal and approved of the laws.

African Americans continued to live with these unfair laws until 1954, when a man named Oliver Brown helped to change everything.

Brown vs Board of Education

Linda Brown was a third grader growing up in Kansas during the 1950's. Linda was African American and she was not allowed to go to a white school. Her father, Oliver Brown, believed that Linda would get a better education at the school created for white children. In many states, schools for white children were given twice as much money. Many African American schools could not afford new books and had to settle for old, outdated, hand-me-down books from the white schools. Brown was also worried that his daughter had to travel on a long bus ride all the way across town to go to an African American school, while a white school was just down the block. Brown decided to file a lawsuit. By May 17, 1954, the Supreme Court made a decision to combine all races in American schools. The court told schools to merge quickly.

It took years until all schools in America united races. Some schools chose to shut down because they didn't want to merge. National Guard soldiers protected some African American students as they entered a white school for the first time. Some African American students were accepted to colleges, only to be expelled during the first week. It wasn't until 1970 when all public schools in Mississippi began to serve both African American and white children.

The Big Day

Ruby Bridges was not the first African American child to attend a white school. Her story is famous because of where it takes place. Bridges lived in Louisiana, a southern state where most people believed that schools should stay separate.

On Monday, November 14, 1960, Bridges walked up the steps of a white elementary school to begin her year in first grade. Four national police officers walked Bridges into her school that morning. She crossed through a crowd of angry parents who yelled at her as she walked. Bridges never got to her classroom on that first day. Instead, she spent the day in the principal's office as furious parents came to take their children out of school. Many people were unhappy and blamed Bridges for the changes in the schools. Bridges' father lost his job. Her mother was told she could no longer shop at her favorite grocery store. Her grandparents were asked to move away.

Mrs. Henry was Bridges' teacher that year. She was a white woman who hugged Bridges every morning before her daily lessons. Bridges was the only student in Mrs. Henry's classroom that year. By June, the crowd of angry parents disappeared. The next school year was calmer and more peaceful.

Today, Bridges and Mrs. Henry travel to schools around the country and talk with students about treating each other with respect and acceptance.

The Impact

In the years after Ruby Bridges, many laws in America changed. In 1955, Rosa Parks stood up for her rights by refusing to give up her seat on a bus. In 1963, Martin Luther King Jr. gave his famous "I Have a Dream" speech. Many people believe that Ruby Bridges' brave story opened doors and helped change America's ideas about segregation.

"Don't follow the path. Go where there is no path and start a trail." - Ruby Bridges

Application

Ruby Bridges Biography: Main Idea Questions

1. What is the main idea of the section "Segregation"?
2. What are two details from this section that support the main idea?
3. What is the main idea of the section "Brown v. Board of Education"?
4. What are two details from this section that support the main idea?

5. What is the main idea of the section “The Big Day”?

6. What are two details from this section that support the main idea?

7. What is the main idea of the section “The Impact”?

8. What are two details from this section that support the main idea?

Name: _____

Date: December 9, 2020

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Biographies

Learning Targets	I can identify the theme of a biography and give details from the text to support my answer.
Assignment to Submit	CFU (find a theme and support), Application questions

Common THEMES Across the BIOGRAPHY GENRE

What are some important Life Lessons we have learned from READING CLOSELY?

The Contract by Derek Jeter

BIOGRAPHY	AUTOBIOGRAPHY	MEMOIR
1. If you stick to your plan you will "do" it.	1. Don't be afraid to set goals and work hard to achieve them.	1. Set your goals high.
2. Never give up even when something is in the way.	2. Hard work pays off	2. Deal w/ growing pains
3. It helps to be daring. (to take risks)	3. Stand up for what you believe in even if no one is with you.	3. Find the right Role Models
4. Be yourself, don't change so people like/accept you.	4. Depend upon those to support you to help you achieve great things.	4. The world isn't always fair
5. Your mistakes can lead you closer to success		5. Don't be afraid to fail
6. Hard work pays off		6. Be serious, but have fun
		7. Have a strong supporting cast
		8. Think before you act
		9. Be a leader, Follow the leader
		10. Life is a daily challenge

Input

Just like stories and poems that we read, biographies have a theme, too! When we read about the lives of others, we are often being given messages of inspiration from the author. As you're reading a biography, think about what inspiring message the author might be trying to give you. What lesson does he or she want you to learn from reading the biography? The anchor chart on the last page shows different examples of common themes found in different types of biographies.



Olivia Hallisey shows off her 2015 Google Science Fair trophy made of LEGOs.

Meet Olivia Hallisey

In 2014, Olivia Hallisey was a high school student from Connecticut. When she read about a recent Ebola epidemic that was taking lives across Africa, she wanted to help.

The Ebola virus was first found in Africa in 1976. Ebola causes flu-like symptoms and bleeding. Ninety percent of patients die within days of catching the virus. Ebola spreads quickly through contact with a patient's blood or dirty medical equipment.

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Scientists think that the Ebola virus was originally transmitted to humans from fruit bats.

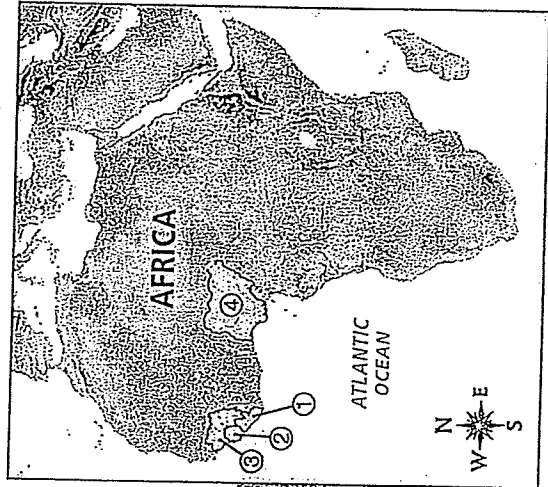
Doctors could not stop Ebola from spreading. Most people with Ebola didn't know they had it until they got sick. Doctors had to find those people early, but that was difficult. A special diagnostic test was developed. Ebola tests had to be kept cool at all times to avoid contamination. Some parts of Africa did not have the electricity needed to keep the tests cool.

Olivia did some research and learned something interesting. Liquid silk fibers could be used to make an Ebola test that did not need to be refrigerated. She tried using liquid silk fibers with the Ebola tests. They worked!

Olivia's exciting design won the 2015 Google Science Fair Grand Prize. Her new Ebola test is safe to transport and easy to use. Olivia turned her idea into a way to save many lives.

Ebola Cases in West Africa as of January 2016

- ① Liberia 4,809
- ② Sierra Leon 3,955
- ③ Guinea 2,536
- ④ Nigeria 8



Olivia Hallisey

We are going to read the biography of Olivia Hallisey as a class. Together, we will work to find a possible theme of her biography and support it with evidence from the text. Then you will close read again, independently, to answer questions and find another possible theme.

1. Who was Olivia Hallisey?
2. What did Olivia do when she learned about the Ebola virus in Africa?
3. Why is the Ebola virus so dangerous?

CFU (Submit in Chat):

1. What is another possible theme of Olivia Hallisey's biography? What inspirational message was the author trying to deliver to the readers? Think about the common themes in biography that we've discussed. Support your theme with two details from her biography.

Close Read Questions

1. What qualities does Olivia have that helped her with her invention?
2. Why did doctors struggle to stop Ebola from spreading? How does this relate to the importance of Olivia's invention?
3. How did what Olivia learned in school impact her future actions?

Name: _____

Date: December 10, 2020

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Howard University

Main Idea and Theme in Biographies

Learning Targets	I can determine the main idea of a text and explain how it is supported by key details.
Assignment to Submit	Theme/main idea chart completed with partner(s)

Dr. Seuss Biography

Little Seuss

Theodore Seuss Geisel, better known as Dr. Seuss, was born on March 2, 1904 in Springfield, Massachusetts. Ted's mother, Henrietta would often sing Ted and his sister Marnie to sleep at night with silly songs she had made up throughout the day. Ted thanked his mother for his creativity and originality.

After high school, Ted attended Dartmouth College in New Hampshire where he began writing for the school magazine. Ted began using the pen name of Seuss rather than signing his real name. Seuss was Ted's middle name and his mother's maiden name. After earning a bachelor's degree in English from Dartmouth, Ted attended Oxford University in England. Here he met a woman named Helen Palmer. She sat next to him in class and noticed that he was drawing a flying cow in his notebook. She complimented his drawing and the pair later married.

Creating Cartoons

Ted admits that he never took a single drawing lesson. Instead, he spent his days doodling cartoon characters in his school notebooks. His first cartooning job was with the *Saturday Evening Post*, a magazine started by Ben Franklin in 1728. This job led to a career in advertising with the Standard Oil Company, where he created advertisements for bug spray. By the age of 38, Ted found himself creating cartoon movies to train U.S. Army soldiers during World War II. When his workday was done, Ted often painted at home. Many of his paintings and sculptures are in museums across the country. In fact, Ted is most proud of his painting, *Lion Wading Pool*, which now belongs to the San Diego Zoo.

Becoming a Writer

In 1936, Ted was on a ship returning home from Europe when he noticed the rhythm of the ship's engine. The beat was stuck in his head for days after the trip was over. Ted decided to write words to match the beat, and after a few weeks, he finished his first book, *And To Think That I Saw It On Mulberry Street*. The story was turned down by 27 publishing companies before finally being released in 1937.

Ted's next big break would come from the strangest of places. In the 1950's, parents, teachers, and reading specialists noticed that children were having a hard time learning to read. They blamed the struggle on boring children's books. Ted's publishing company asked him to write a fun story using words that young children could easily read. His efforts resulted in *The Cat in the Hat*, which only has 220 words. Years later, Ted made a bet with a friend that he could write an entire book using 50 words or less. Ted won the bet by writing *Green Eggs and Ham*. These simple stories turned Ted Geisel into the famous Dr. Seuss!

Ted and his wife bought a home in California. He spent his time in a tower overlooking the ocean, where he would spend eight hours a day writing his silly tales.



"Why fit in when you were born to stand out?" – Dr. Seuss

Celebrating Success

Since beginning his career as a children's author, Ted has written and illustrated 44 children's books. He has won many awards including the Pulitzer Prize, three Caldecott Medals, and he has been honored by the American Library Association. Ted even has an award named after him! This award goes to the most creative children's authors in America.

In 1966, *How the Grinch Stole Christmas* was created into a holiday movie classic. Over 30 of his stories have been told on screen.

Ted passed away on September 24, 1991 at the age of 87. Readers may be surprised to learn that this great American children's author never had any children of his own.

"You have brains in your head. You have feet in your shoes. You can steer yourself any direction you choose." – Dr. Seuss

Input

Directions: Work with your partner(s) in your breakout room. Together, read your biography and complete the questions below.

Title of biography:	
What is the main idea of the section <i>Little Seuss</i> ?	What are two details from the section to support this?
What is the main idea of the section <i>Creating Cartoons</i> ?	What are two details from the section to support this?
What is the main idea of the section <i>Becoming a Writer</i> ?	What are two details from the section to support this?
What is the main idea of the section <i>Celebrating Success</i> ?	What are two details from the section to support this?
What is a possible theme or inspirational message from this biography?	What are two details from the biography that support this theme?

Write a summary of the biography of Dr. Seuss using the information about main idea and supporting details in the text.

Name: _____

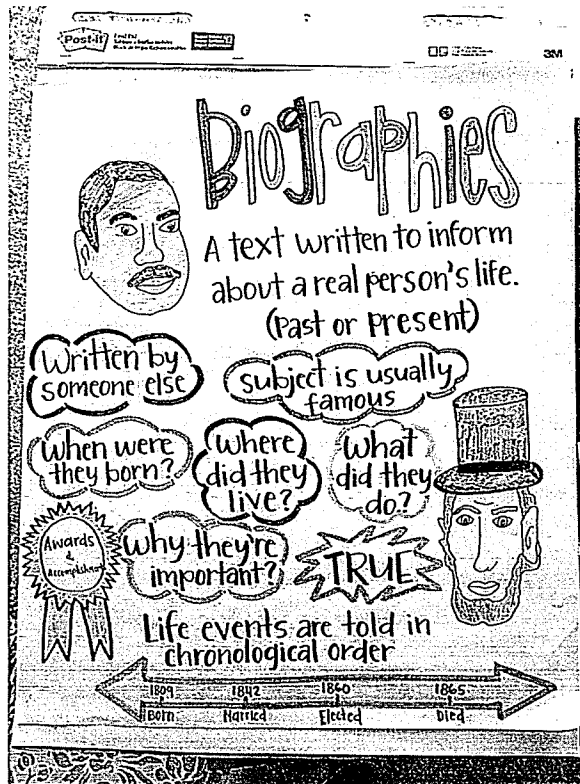
Date: December 11, 2020

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Learning Targets	I can determine the main idea of a section of “Albert Einstein” and provide examples from the text to support it. I can use my knowledge of common themes in biography to determine a theme of “Albert Einstein” and support it with details from the text.
Assignment to Submit	CFU, Theme Response (Google Classroom)

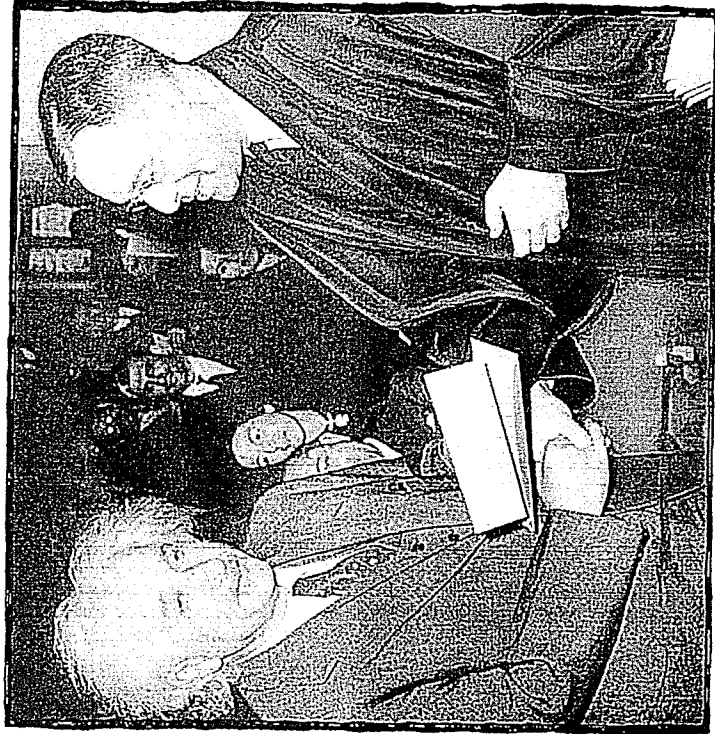
Input



Albert Einstein

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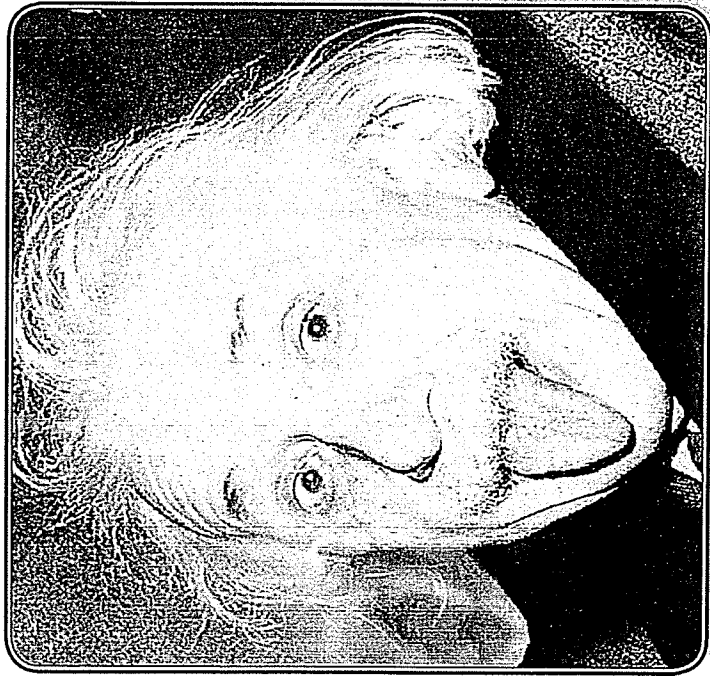


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Back cover: Einstein receives a certificate of U.S. citizenship from Judge Phillip Forman in 1940.

Written by Michael Emerson

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Deeply Hidden Things



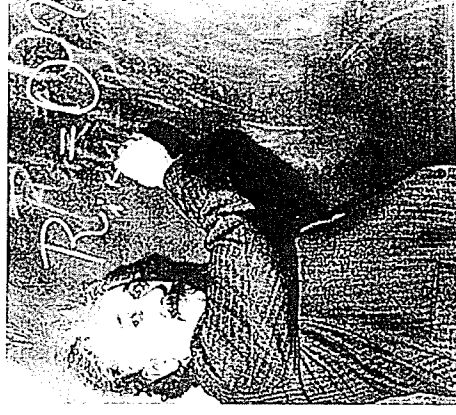
"Knowledge of what is does not open the door directly to what should be."

When Albert Einstein was five years old, his father showed him a magnetic compass. Watching its floating movement aroused his curiosity. What did it mean? Why did the compass's needle stay still while his father turned its casing around and around?

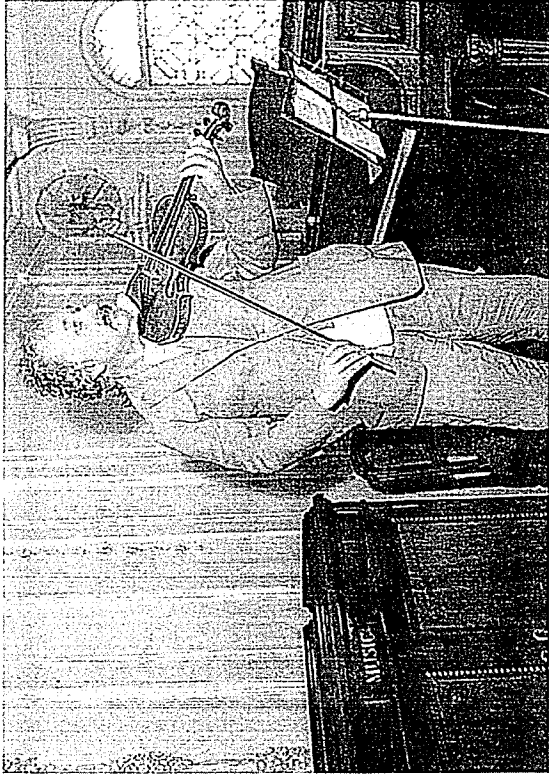
At the time, Einstein was too young to understand the answer, but he never forgot that feeling of wonder and mystery.

Later, he wrote that watching the compass had taught him an important

lesson—that "something deeply hidden" had to be "behind things." That curious little boy grew up to become a curious scientist who spent his life trying to identify that "something." By continuing to pursue his curiosity, Albert Einstein forever changed the way people think about the universe in which they live.



Einstein's curiosity about complex problems led to great discoveries.



Einstein played the violin from childhood through adulthood.

A Talented, Curious Boy



“A table, a chair, a bowl of fruit, and a violin; what else does a man need to be happy?”

Albert Einstein was born on March 14, 1879, in the small town of Ulm, Germany. The next year, the family moved to the larger city of Munich. There, Albert’s younger sister, Maja, was born. She would become his closest childhood friend.

Einstein’s family had a strong influence on his life. His mother, Pauline, played the piano. When Albert was six, she encouraged him to take up the violin. Although he didn’t enjoy the structured lessons of his music teacher, he loved playing the instrument. His violin would be a constant companion for the rest of his life.



Albert Einstein with his sister, Maja

Do You Know?

As a child, Einstein had a common childhood speech habit that worried his parents. Whatever the young Einstein said aloud, he would often repeat to himself in a very quiet voice. It was as if he was “rechecking his words” to see if they sounded right. Eventually he outgrew this habit and became an accomplished public speaker.

Other family influences also shaped his future. Einstein’s father and two of his uncles were electrical engineers. They introduced Einstein to math and science at an early age. One of his uncles taught him the basics of algebra by making it into a game. A family friend brought him science books. Einstein would pore over the books for hours at a time. He especially liked a book about geometry. Even as a child, Einstein had the ability to concentrate deeply. He would pursue complicated problems until he was satisfied that he had considered every solution.



“Teaching should be such that what is offered is perceived as a valuable gift and not as a hard duty.”

In school, Einstein’s talent for math and science was apparent immediately, but so was his individuality. He questioned the way his school’s instructors taught him. German schools, like much of life in Germany at the time, were run with strict discipline. To young Einstein, the teachers seemed like army sergeants who only drilled their students to memorize useless information and lifeless facts. Einstein preferred thinking creatively.

When he was only 17 years old, Einstein was accepted at one of the finest scientific universities in Europe. Once again, Einstein’s curiosity about how and why things worked led him to determine his own course. He often skipped routine lectures to spend more time in a laboratory developing his own ideas. Most of his university professors agreed that their brilliant young student might have a very bright future if only he would do as he was told.



“Imagination is more important than knowledge.”



“I never think of the future. It comes soon enough.”

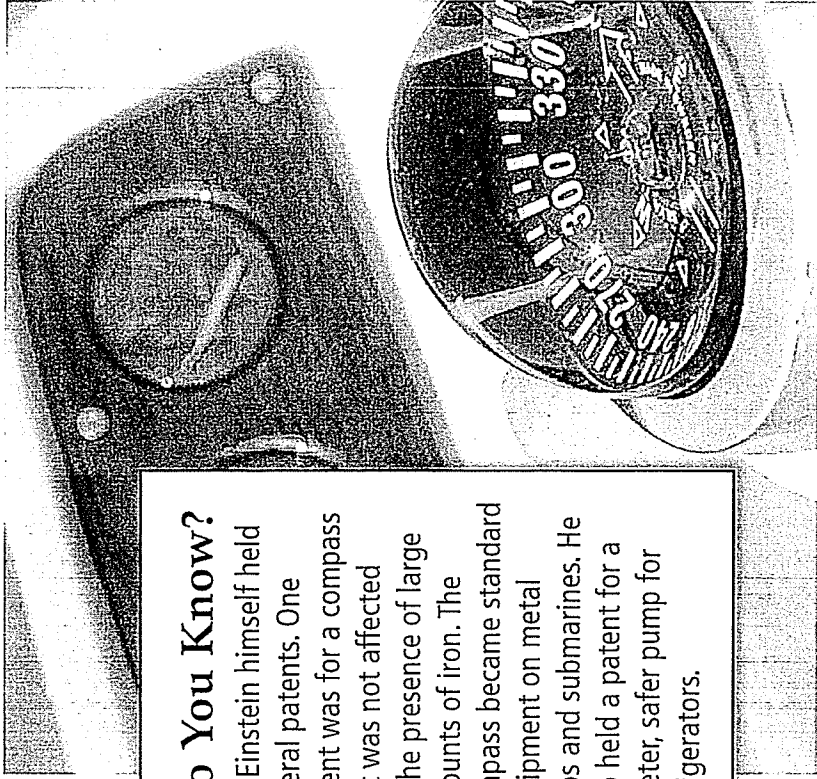
Surprisingly, Einstein had trouble finding a job after finishing school in 1900. He had been a bright student. He had graduated from one of the finest universities in Europe. However, his strong sense of independence and his curiosity had made him unpopular with the same teachers who could help him find work. A teaching position would have given him the freedom to pursue further study. While he felt the lack of one was a setback, he did not give up his interest in science. He had ideas that he wanted to think through and test. He just needed to find the time and place to pursue them.

Einstein found that time in 1902. That year he took a job in a patent office in Bern, Switzerland. His unusual job was to make sure that new devices submitted for patent **certification** worked the way their inventors said they did.

The job in the patent office allowed Einstein to do what he did best—pursue his curiosity and question the ideas of others. On his first day at work, Einstein’s boss told him, “When you pick up an application, think that anything the inventor says is wrong.”



Einstein’s creative thinking was honored with a U.S. stamp.



Do You Know?

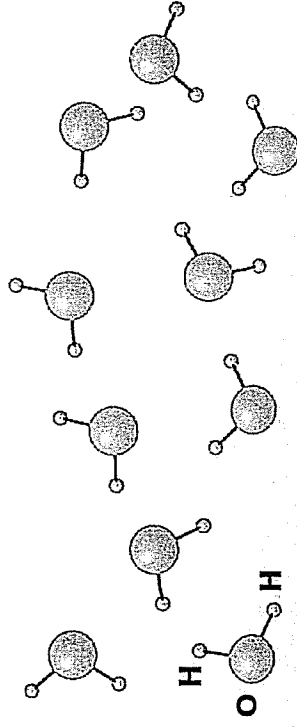
Einstein himself held several patents. One patent was for a compass that was not affected by the presence of large amounts of iron. The compass became standard equipment on metal ships and submarines. He also held a patent for a quieter, safer pump for refrigerators.

The secure income and regular working hours gave Einstein the freedom to work on his own ideas. In his spare time, he met with a group of friends who shared his curiosity about the scientific ideas of the day. They called themselves the Olympia Academy. Their enthusiastic group often met until late in the evening, talking and socializing in cafes or in Einstein's apartment. It was during those years of steady work and strong friendships that Einstein began to develop ideas that would change science forever.

The Miracle Year

By 1905, Einstein had worked in the patent office for three years. During that time his curiosity thrived, and he applied a great deal of thought to new scientific theories. He soon felt confident enough in his ideas to share them.

Einstein sent papers explaining his ideas to the leading German scientific journal of the time. The journal published the first of these papers in March 1905, and four additional papers soon followed. Einstein's first paper explained his theory about the nature and behavior of light. The second and third papers proved the existence of tiny parts of matter, called **molecules and atoms**, and described how they moved. The final two papers offered new explanations for understanding the relationships that existed among space, time, and objects in motion.



Water molecules contain two hydrogen atoms and one oxygen atom.

Scientists were **astounded** by what they read. In six months, Einstein changed the way they had thought about the universe for over two hundred years! They were equally amazed that these ideas came not from a professor of **physics** at a major university, but from a curious, 26-year-old patent clerk.

As a direct result, Einstein's scientific career took off in many directions. He was energized by the attention his work received from the scientific community and by the opportunities he gained. He received invitations to speak at scientific meetings and to explain his new ideas. The 1905 Nobel Prize winner in physics contacted Einstein to congratulate him. A well-known professor of physics named Max Planck even began to teach Einstein's ideas to his students. In time, 1905 came to be known as Einstein's "miracle year."

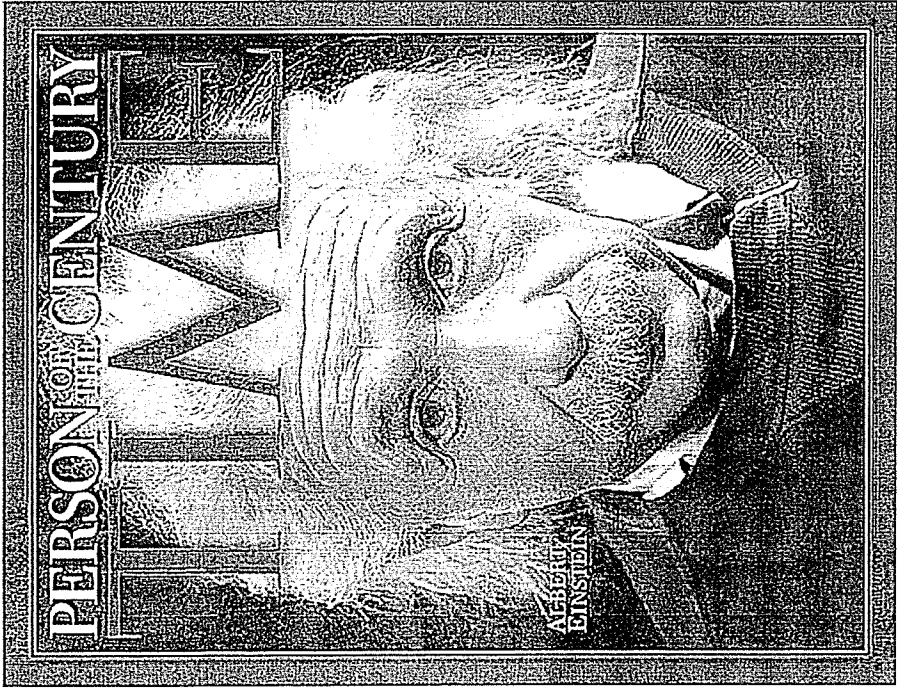


Physics professor Max Planck even taught Einstein's theories in his university classes.

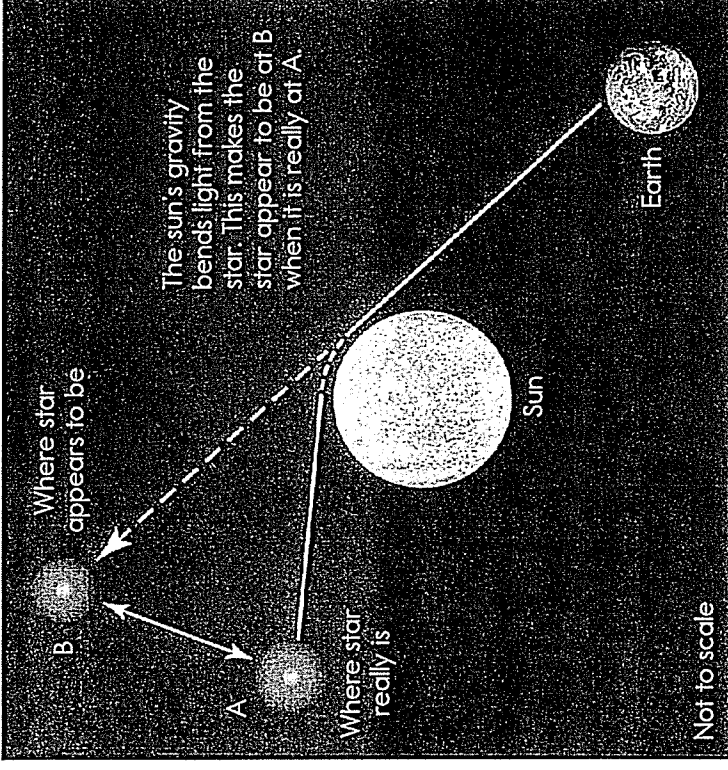
Einstein continued to work at the patent office until 1909. That year, he finally received an offer of a full-time job at a university. Einstein took the job, but then jumped from school to school for the next few years while he searched for the ideal place to pursue his research.

Meanwhile, he continued to develop and refine his earlier ideas in new ways. It was difficult work, and Einstein often thought he was on the wrong track. In fact, his ideas were so new and so unfamiliar that he said they almost drove him insane. Then, in 1915, he had a breakthrough. He finally figured out how to unite his earlier ideas into one system, which he called the General Theory of Relativity.

Einstein's ideas once again excited scientists around the world. Before long, his ideas would begin to reach a much wider audience than he ever thought possible. In 1919, British scientists tested Einstein's theory of relativity by measuring the position of a star during a solar eclipse. If Einstein's theory was correct, the star would appear to be in one position while it was actually in another. The star appeared almost exactly where Einstein said it would be!



Newspaper headlines around the world announced the findings. A British newspaper declared, "**Revolution in Science—New Theory of the Universe.**" A German newspaper called Einstein a "new celebrity in world history" and said that his ideas were "a complete revolution in our concepts of nature." Overnight, Albert Einstein became one of the most famous people in the world.



Despite his success, not everyone was pleased with Einstein. Many scientists had built their careers on the ideas that Einstein had tossed aside. Others did not want to believe Einstein's theories because they would be difficult to test in a laboratory. Some people were simply prejudiced against Einstein because of his cultural background.

Einstein took this criticism in stride. He knew that his theories were not perfect. Yet with each new paper, more and more people came to believe in the importance of his work.



News reporters greet Albert Einstein and Elsa, his wife, arriving in New York in 1921.

The Uses of Fame



*“Try not to become a man of success
but a man of value.”*

As Einstein’s fame grew, so did the demand for interviews, photographs, speeches, and new writings. Einstein had mixed feelings about all this distracting attention. These demands took up time that he could have spent pursuing new research. He also knew that many people would misunderstand his ideas no matter how carefully he explained them.

Despite his concerns, Einstein knew that his fame could be used to open other people’s minds and to bring his ideas to a wider audience. The more speeches and interviews he gave, the more people would hear and try to understand the world as he saw it.

Einstein also knew that he could use his fame to draw attention to issues he cared about outside of science. One of Einstein’s most deeply held beliefs was that war should be avoided if at all possible. In

1914, he was one of only three scientists who signed a letter opposing Germany’s participation in World War I. More than 100 scientists had signed a letter in support of Germany entering the war. Now that he had the world’s attention through his scientific work, he stepped up his antiwar efforts. He worked with international groups working for peace and wrote about his antiwar beliefs. When Germany began preparing for war again in the 1920s and 1930s, Einstein continued to speak out.

Einstein also believed strongly in creating a new Jewish country, to be called Israel, in the Middle East. Beginning in 1921, he became more visible in his support of the Jewish national cause. In 1952 he was offered the presidency of the new country of Israel, which he respectfully declined.

Do You Know?

In the 1930s Einstein began to publish a series of articles for general audiences titled *The World as I See It*. The collection covered topics from war and liberty to progress and education—not just science.

Coming to America

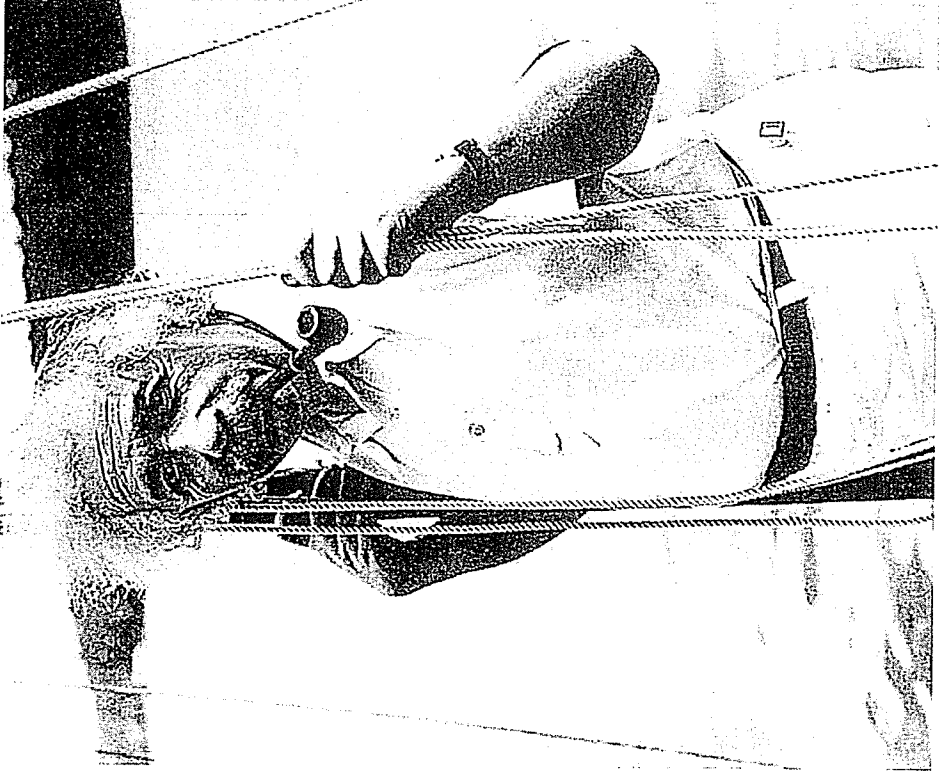


"The most important motive for work in school and in life is pleasure in work, pleasure in its result, and the knowledge of the value of the result to the community."

Despite the efforts of Einstein and others to promote peace, Germany moved closer to war in the 1930s. Until that point in time, the German government had merely tolerated Einstein and his criticism of its plans. Einstein knew that this tolerance would not last. In 1933, he left Germany and took a job at Princeton University in the United States.



Einstein meets with Jawaharlal Nehru, prime minister of India, at Einstein's home in Princeton, New Jersey, in 1949.



Einstein enjoyed sailing, and often took his boat out on Princeton's Lake Carnegie.

At Princeton, Einstein moved his family into a house close to his office. They soon became part of Princeton's close-knit community. When out-of-town visitors wanted to know where the great man lived, townspeople would ask, "Are you expected?" This question prevented strangers from bothering Einstein at home.

For the next 29 years, Einstein continued working to expand his ideas into new areas. Some people thought his efforts showed that he was losing touch. Einstein didn't pay much attention to this criticism. He believed that he could develop a new theory that would unify his original ideas with the latest theories. He remained dedicated to his work and ideas, yet he never achieved the sort of breakthroughs he'd had during the "miracle year" or with his General Theory of Relativity. Always in demand, he continued to give speeches, write articles, and meet regularly with fellow scientists.



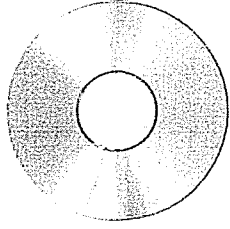
Albert Einstein goes over matters with secretary Helen Dukas, who worked with Einstein from 1928 until his death in 1955.

Einstein's Influence



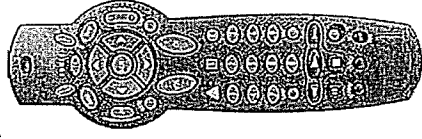
"Few are those who see with their own eyes and feel with their own hearts."

Einstein was not an inventor. Yet his curiosity led to the creation of many useful products. For example, Einstein's ideas about the nature and behavior of light led scientists to develop new ways to control light.

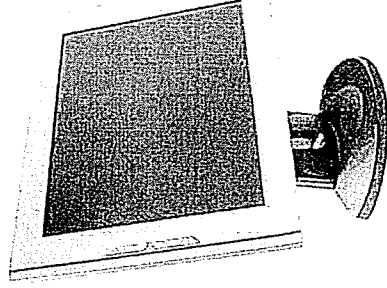


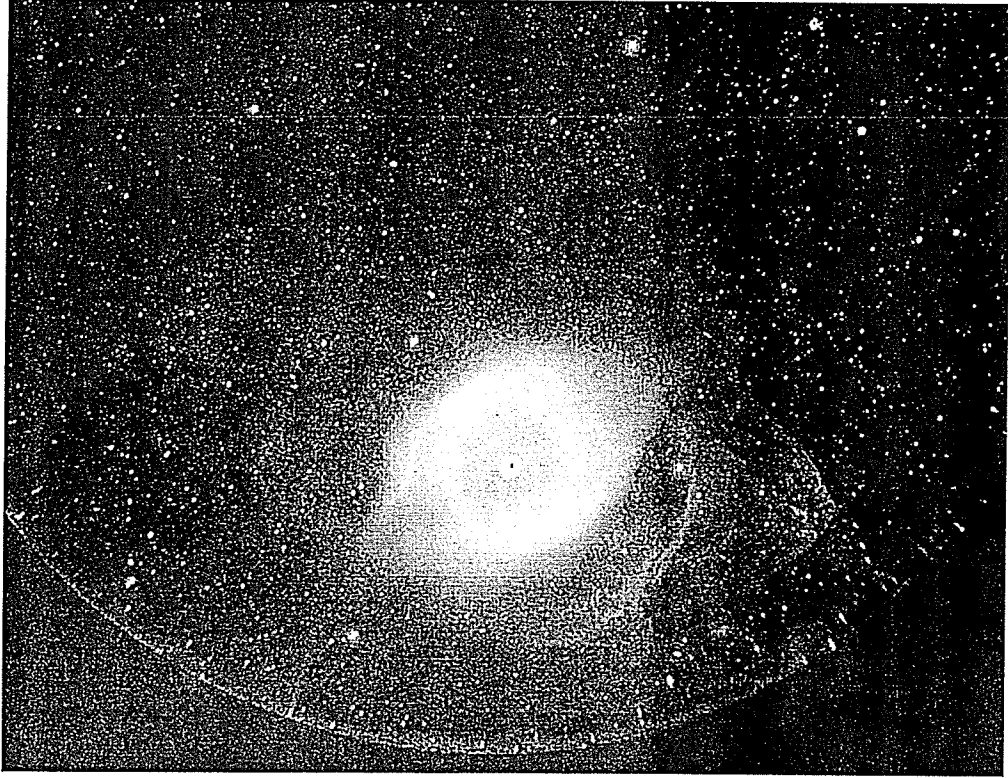
These technologies eventually led to television cameras, remote controls for home electronics, and flat-screen computers.

Einstein was also the first person to think of laser light. This technology is now used in compact discs (CDs), digital video discs (DVDs), and supermarket checkout equipment. His proof of the existence of atoms and



molecules led to the creation or improvement of a wide range of everyday products. Those products include shaving cream, toothpaste, personal computers, and portable phones.





Einstein's theories provide scientists with a framework to study space objects, such as the Helix Nebula.

Einstein's scientific ideas continue to influence new theories. Current ideas about the origins of the universe, the nature of space, and strange objects called black holes all owe a large debt to Einstein's work.



A Life Well Lived

Einstein once said, "The most beautiful experience we can have is the **mysterious**. . . . It is enough to try to understand a little of this mystery every day."

Until his death on April 18, 1955, Einstein's curiosity led him to work to understand nature's greatest mysteries. In doing so, he changed the way people think about time, space, energy, and matter—the foundations of the universe.

Glossary

- algebra** (*n.*) a branch of math in which symbols, usually letters, are used to represent unknown numbers (p. 6)
- astounded** (*v.*) greatly amazed or surprised (p. 11)
- atoms** (*n.*) tiny pieces of matter (p. 10)
- certification** (*n.*) the process of receiving an official document showing that something works as claimed (p. 8)
- criticism** (*n.*) the act of finding fault, or carefully judging for review (p. 14)
- compass** (*n.*) a direction-finding tool with a needle that always points north (p. 4)
- molecules** (*n.*) the smallest parts of a substance that are still identifiable as that substance (p. 10)
- mysterious** (*adj.*) not easily understandable (p. 22)
- patent** (*n.*) a document that grants an inventor the right to make money from an invention (p. 8)
- physics** (*n.*) the scientific study of matter and energy (p. 11)
- pore** (*v.*) to read with great attention (p. 6)
- revolution** (*n.*) an overthrow of previous ideas or ways of doing things (p. 13)
- theories** (*n.*) possible explanations (p. 10)
- universe** (*n.*) all things that exist in space (p. 4)

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Name _____ Date _____

Instructions: Read each question carefully and choose the best answer.

1. How did the job at the patent office help Einstein?
 - (A) He learned how to create new things.
 - (B) He saw new ideas of others and revised them.
 - (C) He met people who helped him solve problems.
 - (D) He had the freedom to work on his own ideas.
2. Why were scientists astounded by Einstein's writing in 1905?
 - (A) He was a twenty-six-year-old patent clerk.
 - (B) He changed the way they thought about the universe.
 - (C) He did not work in the physics department of a university.
 - (D) All of the above
3. Why did Einstein's boss at the patent office tell him, "When you pick up an application, think that anything the inventor says is wrong"?
 - (A) He didn't think any of the applicants could invent anything.
 - (B) He knew that Einstein thought that inventors only ever had good ideas.
 - (C) He needed Einstein to test things to find flaws and mistakes.
 - (D) He wanted to tell Einstein a joke.
4. In order to protect and sell an invention, an individual must be granted _____.
 - (A) a job
 - (B) a patent
 - (C) a Nobel Prize
 - (D) an award

Quick Check continued on following page

Name _____ Date _____

5. Which of the following words best defines Einstein?
 - (A) curious
 - (B) patient
 - (C) careful
 - (D) friendly

6. Which of the following happened before Einstein changed how scientists thought about the universe?
 - (A) Einstein moved to the United States to avoid World War II.
 - (B) Einstein's writing was published in a leading German scientific journal.
 - (C) Einstein's professors helped him get a job at a good university.
 - (D) Einstein received patents for many things such as computers and CDs.

7. After Germany declared war, Einstein _____.
 - (A) graduated from a top German science university and easily found a job
 - (B) developed the Theory of Relativity while studying at Princeton
 - (C) proved the existence of atoms and molecules
 - (D) took a job at Princeton University in the United States

8. How did British scientists test Einstein's Theory of Relativity?
 - (A) by analyzing molecules and atoms
 - (B) by measuring the position of a star during a solar eclipse
 - (C) by observing the speed of moving objects
 - (D) by reworking his formulas

Quick Check continued on following page

Name _____ Date _____

9. Which of the following is a fact about Einstein?
- Ⓐ Einstein was the smartest person who has ever lived.
 - Ⓑ Einstein only needed a table, a chair, a violin, and a bowl of fruit to be happy.
 - Ⓒ Einstein's mother encouraged him to take up the violin.
 - Ⓓ Einstein was a great violinist.
10. This book is a biography because _____.
- Ⓐ it tells you about Einstein's Theory of Relativity
 - Ⓑ it describes the life and talents of a person
 - Ⓒ it persuades you to get a good education to have a better life
 - Ⓓ it tells you how to apply for a patent
11. **Extended Responses:** Explain how Einstein's life changed in 1905.
12. **Extended Response:** What are three ways Einstein's ideas have affected your life?

