



acadience® reading k–6

Student Materials

Grade 5 | Benchmark Assessment

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The Land Bridge

► During the last ice age, the world looked much different than it does today. Nearly all the land was covered with huge sheets of ice or glaciers. Most of the world's water was trapped in these glaciers, and the water level of the seas was low. A vast amount of land was above the water.

The narrow waterway between Asia and North America, the Bering Strait, was mostly exposed land at that time. The land formed a narrow bridge that connected Asia with North America. This land bridge was cold and flat, and was covered by grass and shrubs. Before the formation of the land bridge, early people who wanted to travel to North America had to go by boat. Very few people actually made the voyage over the water. Many more people traveled to North America when they were able to walk across the land bridge.

After crossing the land bridge, the earliest people found themselves in an unfamiliar land where there were no other inhabitants. These first people had to search for food and water. If they were to survive, they also had to locate materials that they could use to fashion tools.

There are no written accounts of these early people. Scientists who want to know how they lived must seek clues in the things they left behind. Today, it is believed that the movement to the new world took place over a long period of time. The earliest people most likely came to the new world as they followed migrating animals.

After many thousands of years, the climate began to change, causing much of the ice to melt. The land bridge flooded and the Bering Strait became a waterway once again. The two continents became separated and the land bridge was no more. Those who wanted to journey between the continents would have to travel by boat or find a new way to travel.

The Crow and the Pitcher

► Once there lived a sleek, black crow. Crow’s shiny feathers glistened in the sunlight, and his yellow eyes sparkled like precious jewels. Crow was so strong that he frequently flew for hundreds of miles without stopping.

One day, Crow was flying along when he started to feel thirsty. He dropped to a low altitude to search for something refreshing to drink. Suddenly, he spied a pitcher of water sitting on a barnyard fence. The fence was in the shade, shielded from the sun by a towering oak tree. “That water should make a nice, cool drink,” thought Crow.

Crow landed on the fence and examined the tempting pitcher. He saw that it was about half full of water. However, no matter how hard he tried, he could not reach the water with his beak. Crow was frustrated, but he wasn’t ready to give up. He knew if he considered the situation carefully he would be able to find a solution.

Crow considered overturning the pitcher, hoping that the water would spill so he could drink it. He rejected that idea, fearing that all the water would flow away before he could get any. “It would be a shame to waste this treat,” Crow thought. He looked all around for some more ideas, and saw some shiny pebbles lying on the ground. Looking at them, Crow finally had the inspiration he had been looking for.

Crow picked up the pebbles one by one with his beak and dropped them into the pitcher. Every time he dropped a pebble into the pitcher, the water level rose higher. Eventually, the water level was high enough for Crow to take a long, refreshing gulp of water. He was very pleased with himself. “No obstacle is too challenging if I think long enough and hard enough about how to resolve it,” thought Crow.

Recycling Tires

► If you look around, you will see tires everywhere. There are tires on automobiles and trucks, and there are tires on motorcycles and airplanes. Eventually, all these tires will be thrown away, creating a huge mountain of tires. You might be surprised to learn that old tires are one of the biggest and most challenging sources of trash. The piles of old tires frequently become home to mosquitoes and other insects that carry disease. Discarded tires are a dangerous fire hazard. The pollution caused by tire fires is very harmful to the environment. Because old tires don't decay, they are a problem that will be around for a long, long time.

Those who care about the environment are worried about the large volume of old tires. They are researching ways to recycle and reuse the rubber in tires. That way they can keep old tires out of landfills and protect the environment. One way to recycle the rubber is to heat the tires in a special oven. The oven does not allow any oxygen in and allows few pollutants out. The recycled rubber can then be used for new products like shoes and even sweaters. Recycling the rubber also produces oil that people can use as fuel. Fuel from tires can produce as much energy as coal or oil and is often used to power major factories.

Not all tires need to be recycled, many can be reused. Scrap tires can be placed around bridges to protect them from flood damage. Some tires are cut into pieces and fashioned into sandals or used in roads. Shredded tires can be used to make walls that reduce the noise from highways for people who live nearby. Shredded tires can even make railroad ties to reduce our need for trees.

I hope you will see tires in a whole new light. The tire on your automobile might eventually be used for the shoes on your feet or the asphalt on the road you walk on to get to school.

A Genius at Work

► The boy was seven years old and starting school for the first time. He was the only son of a poor family who lived in what is now part of Germany. To look at this child, he seemed like an ordinary boy; however, he had an amazing talent in math and science. In fact, he would go on to become one of the most important mathematicians in the world.

The boy's name was Carl Gauss. He reportedly was able to calculate in his head by the time he was three years old. The youngster was so good in math that he corrected mistakes that his father made when computing the family budget.

Carl also showed his superior abilities in math at school. One time, his teacher asked the students to add the list of numbers from one to one hundred. The teacher thought that this would take the students a long time. To his surprise, young Carl arrived at the correct answer almost instantly. The boy explained that he had found a clever way to pair the numbers that allowed him to turn the problem into a simple multiplication calculation. He could use this method to add a long string of numbers very quickly.

Carl's mother and father had different views about their son's education. His father was a mason who built things with brick and stone. Carl's father wanted Carl to become a mason, too. The boy's mother, though, strongly supported Carl's schooling in math and science because she realized that he had a special talent in these areas. Carl continued his studies in math and science and went on to make many important discoveries. Some of his first discoveries were made while he was still a teenager.

Carl Gauss became known throughout the world as the "Prince of Mathematicians." Although he lived long ago, his keen understanding of math continues to have a remarkable influence on the field of math today.

A Special Song

► The boy searched through the pieces of bamboo that his mother had cut. He ran his hands over numerous pieces to know what each would feel like when he held it. He narrowed down his choice to three pieces. He looked down the hollow centers of those pieces. Finally, he picked the one that he thought would make the best flute.

As Zachary presented the piece of bamboo to his mother, she admired his selection. She proceeded to turn the bamboo into a flute with six perfect holes in a straight line and a hole for the mouth. She provided some special oil, which her son gently applied to his fabulous new instrument.

Zachary anticipated making lovely melodies with his flute. He pressed the instrument firmly against his lips and blew into it with a deep breath. He made a sharp squealing noise, which caused him to giggle. Mama smiled and instructed him to blow with a gentle, even breath. She showed him how to cover the holes with his fingertips. Mama explained that he could play various notes by doing this. Zachary experimented and was thrilled to hear how the different notes sounded.

Every afternoon Zachary practiced playing his flute. He was delighted to make up little songs, but he wanted to do something special to express his appreciation to his mother for making this musical instrument. He remembered her favorite song and figured out for himself how to play it. Then, one day, while Mama was washing the dinner dishes, he asked if he could perform something special. She turned off the faucet and stood by the sink as Zachary grasped his flute and began to play. She was captivated by her favorite song, which was more beautiful than she had ever heard it before. When the music had concluded, Mama walked over to her son and gave him an enormous hug.

The Chunnel

► The body of water between France and Britain is called the English Channel. If you want to cross from one side of the English Channel to the other, there is no bridge you can cross. Instead, you can take a train through an underwater tunnel. This channel tunnel is known as the Chunnel.

The Chunnel consists of three tunnels that allow trains to run under the water from one side of the channel to the other. Trains that carry people and goods use the two outer tunnels. The middle tunnel is smaller than the other two tunnels. It is used for ventilation and to make sure maintenance and emergency vehicles can reach the other tunnels.

The Chunnel was dreamed of long before it was finally built. More than two hundred years ago, an engineer first talked about building a tunnel under the English Channel. He believed that people could travel in carriages drawn by horses through the tunnel. The tunnel would have oil lamps since they did not have electric lights back then. He imagined an island in the middle, where people could change to fresh horses. Over the years, many people drew up plans for the tunnel. Although one attempt at digging was made, none of the early plans ever made it to completion.

Almost forty years ago, construction work finally began on what would become the Chunnel. The governments of England and France soon became worried about how much money the tunnels would cost, though, and in less than a year, the work was stopped.

It took a long time before the building project was resumed. Numerous construction companies worked on the big project. It took seven years, but finally the tunnels were completed and trains traveling at very high speeds were allowed to use them. Today, people enjoy traveling through the Chunnel, which is the world's second longest underwater tunnel.

Build a Thermometer

► If you walk outside on a summer day, you will usually feel warm. However, if you walk outside in the wintertime, you will usually feel much colder. How could you find out the exact temperature? You could use a thermometer, which is a tool that measures temperature.

To better understand how a thermometer works, you can construct your own. Begin by filling a small soda bottle with cold water. Make sure the bottle is filled to the brim. Next, add four drops of food coloring to the water to make it more visible.

Make a ball of modeling clay that is large enough to form a stopper for the bottle. Flatten the clay to create a long thin ribbon, and wrap it around the middle of a straw.

Position the straw in the bottle so the clay forms a stopper at the top of the bottle with the straw through the middle of the clay. Carefully seal the bottle with the clay without pinching to ensure the straw remains completely open. To prevent water from escaping, confirm that there are no holes or cracks in the clay. You will notice that half of the straw is submerged in the water, while the other half is outside the bottle. Gently force the clay plug into the top of the bottle until the level of the water moves up into the straw above the bottle.

Now it is time to utilize your bottle thermometer to measure temperature. Place it in a larger bottle that is filled with hot water. Every two minutes for the next ten minutes, take a reading by marking the straw water line. Use a ruler to calculate the difference between each mark and the original water mark.

Next, fill the larger bottle with cold water and ice. Place your bottle thermometer into the icy water. Take the same kinds of measurements that you did with the hot water, and compare your results.

How Kangaroo Got Her Pouch

▶ On a lovely sunny day, a mother and her youngest son were taking a relaxing walk through the outback. Suddenly, Mother Kangaroo lost sight of her offspring, and she started searching for him. She peered under some bushes and in the emerald grass.

Joey suddenly bounded up and shouted that he was right behind her. Mother was startled and leaped into the air. The young kangaroo apologized for surprising her.

The two ambled along on their journey, pausing after a while to munch on some delicious grass. When Mother glanced up, she was alarmed to see that Joey had vanished again. She started searching, but, instead of finding her son, she discovered her old friend Wombat. They greeted each other, and Mother said, “My rascal son has wandered off again. Did you happen to see him?”

Wombat said that he was very sorry to see her distressed, but he had not seen the youngster. He did, however, have a suggestion she could consider. “I am extremely thirsty,” he said, “so why don’t you help me search for water, and then when I’m refreshed we can search together for your meandering son.” Mother agreed to the arrangement, and then shielded her eyes from the sun and peered into the distance. She was much taller than Wombat, so she could see over the grass. Before long, Mother saw a pool of sparkling water, so she had Wombat grab her tail, and she led him to the water.

As Wombat took a drink of the cool water, Joey came bounding up to his mom. She shook her head ruefully at her playful son. Wombat decided he should do something to help Mother so she would not have to keep searching for Joey. He created a pouch out of blades of grass, and then he tied it around Mother’s waist. As soon as Mother opened the pouch, Joey jumped inside it. Mother thanked her friend for the inventive solution. Since that time, Mother Kangaroo always wears her pouch so she does not have to go searching for Joey.

An Amazing City

► Every day, tourists flock to see special places around the world. One place that is special because it is so old is the site of the ruins of an ancient city in Mexico.

The Mayan people built this ancient city more than one thousand years ago. The site covers four square miles. The structures that were left behind show that this community was once thriving. Many scientists have come to this location and tried to solve the mysteries of the city. They have excavated the ruins and carefully restored as much as they could.

One question that is still unanswered is why there are two styles of architecture in the city. Some buildings look like ones found in other Mayan cities. However, other buildings, such as the pyramid, temple, and ball court, have a different design. They look like structures built by a group of people called the Toltecs. One theory is that the Toltecs took over the city. Another theory is that the Maya learned about the Toltecs' style by trading with them. If the Maya liked the buildings they saw, they might have tried to imitate them.

The pyramid at this site has been completely restored on two of its four sides. It towers over the other buildings. Visitors climb ninety-one steps to reach the top platform for a grand view of this amazing place. The total number of steps on all sides of the building adds up to three hundred and sixty-five, which means there is one step for every day in the year. At the top of the pyramid, there is a temple. Inside, there is a statue of a jaguar that is painted red and has green eyes.

The pyramid attracts the most visitors at the autumn and spring equinoxes. On those days, the sun on the stairs casts a shadow that looks like a giant feathered serpent. As the sun moves through the sky, the snake appears to slither down the sides of the pyramid. Thousands of tourists watch as the shadow of the ancient figure returns to its home.
