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Warm-Up

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Name _____

The World's Tallest Building

The world's tallest building is Burj Khalifa. It is a skyscraper in the Middle East. It stands in Dubai. Dubai is a city in the nation of United Arab Emirates. It is more than half a mile high! It is twice as tall as the Empire State Building in New York City. In fact, at 2,717 feet, it is the tallest thing humans have ever built. What is all that space used for? It's used for a mixture of hotel rooms, apartments, and offices.

Burj Khalifa holds a lot of world records, too. It is the building with the most floors. It has 160. It has the highest mosque (on the 158th floor). It has the highest swimming pool, too. It's on the 76th floor.

It has the tallest and fastest elevators, as well.

The building has an outdoor lookout deck. It is the highest in the world. Its name is At the Top. It opened in January 2010. However, it is located on the 124th floor, which is nowhere near the top.

This building knocked Taipei 101 off its pedestal. Located in Taiwan, it had been the world's tallest building. It had that honor for just three years. Its design has withstood high winds and earthquakes.

Check Your Understanding

- How many floors does the Burj Khalifa have?
 - 101
 - 124
 - 158
 - 160
- In what year did Burj Khalifa's observation deck open?
 - 1999
 - 2007
 - 2008
 - 2010
- How tall is this building?
 - 2,101 feet
 - 2,458 feet
 - 2,717 feet
 - 2,801 feet
- Right before Burj Khalifa was built, the tallest building on Earth was
 - the Empire State Building.
 - Taipei 101.
 - United Arab Emirates.
 - At the Top.

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Warm-Up

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Name _____

Earthworms Improve Soil

Have you ever seen earthworms on a road or sidewalk after it rains? First, rain soaked into the ground. The earthworms live underground. They could not breathe. So they wriggled up to the surface. Some flowed with the rain onto the hard surface of the road. If they don't get back to the soil, they will die. Why? Earthworms need dirt. It is not only where they live but also what they eat.

Earthworms can tunnel through dirt at the amazing rate of 10 inches per minute. Their entire bodies are made of muscles. They use them to wriggle. They eat the dirt as they go. They get energy from bacteria and rotting roots and leaves. They eat one-third of their body weight

each day. They pass the rest as waste called *casts*.

Earthworms are helpful. Their movements bring air into the dirt. And their casts make the soil more fertile for growing things. Earthworm casts are five times richer in nitrogen, seven times richer in phosphates, and eleven times richer in potash than the surrounding dirt. This means worm casts are one of the best fertilizers. Some people buy earthworms to add to their gardens. In a farmer's field, there may be one million earthworms eating ten tons of dirt each year in one acre of soil.

Check Your Understanding

- What is an earthworm's waste called?
 - potash
 - phosphate
 - nitrogen
 - casts
- How do earthworms improve the soil in which they live?
 - They remove air from the soil.
 - Their casts contain nutrients that plants need.
 - They increase the bacteria in the soil.
 - They keep the soil moist.
- What part of the dirt is actually providing food for the worms?
 - bacteria
 - dead leaves
 - rotting plants
 - all of the above
- If earthworms do not surface when it rains, they will
 - drown.
 - have no food to eat.
 - be more obvious to birds.
 - have better nests.

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Warm-Up

Name _____

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Making Glass

People have made glass for thousands of years. Glass is made of sand (75 percent), soda ash (15 percent), and lime (10 percent). These ingredients are mixed together. Then, they are heated to 2,400°F in a furnace. All glass was hand-blown. A man stuck a long iron rod into a blob of hot, molten glass. Then he blew into the rod to create a bottle. He would blow the glass like you blow through a straw. As the glass was cooling, he would swing it back and forth to lengthen the bottle. Often, hand-blown bottles had little air bubbles in them.

The glass press was invented in 1826. It let liquid glass be poured into molds. When the glass hardened, it took the

shape of the mold. Glass items like dishes and bottles were mass-produced for the first time. It had cost one cent to make a hand-blown glass bottle. Fifteen machine-mold bottles could be made for one cent!

Windows were still hand-blown. First, men blew the glass into eight-foot-long tubes. While these tubes were still hot, they were sliced down one side, put back into a furnace, and then rolled flat. The glass sheets cooled. Then they were cut to measure, packed in straw in wooden boxes, and sent by rail to stores. In 1924, a machine could roll window glass flat. No blowing was needed.

Check Your Understanding

- Glass is a melted mixture of
 - sand, lime, and soda.
 - lime, sand, and ash.
 - ash, salt, and lime.
 - soda ash, sand, and lime.
- Which event occurred second?
 - The glass press was invented.
 - Everything made of glass was hand-blown.
 - Windows were mass-produced.
 - The cost of making bottles dropped.
- About how much time passed between when bottles and windows were hand-blown and when they could be mass-produced?
 - 40 years
 - 60 years
 - 80 years
 - 100 years
- You can tell that hand-blown glass windows
 - did not take much skill to make.
 - were rolled flat in the first step.
 - may have had little air bubbles in them.
 - did not cost very much money.

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Name _____

5**Argan Oil**

Argan trees grow in Morocco, a nation in northern Africa. These trees are endangered. People have cut too many for firewood. Today, the number of trees is less than half of the number 50 years ago. Yet these trees are survivors. They can survive droughts. A drought is a long period without rain. The trees can live 200 years.

Argan trees have thorns on their wide, spreading branches. They bear fruit that goats like to eat. Each fruit's pit has two or three kernels that contain valuable oil. Argan oil is one of the rarest oils in the world because these trees only grow in a few semi-desert areas.

The Berber women of Morocco harvest the oil. But they do it in an odd way. First, goats

climb the argan trees. They do not mind the thorns. They eat all the fruit and either spit out or swallow the pits. But the goats cannot digest the fruit pits.

Next, workers pick up the pits that were spit out. Those pits that were swallowed are gathered from the goat droppings. They remove the pits, break them open, and get the kernels. They roast the kernels, then grind them and press them to get the oil. It takes 70 pounds of kernels to get just one quart of oil. That's why the oil is so costly.

People around the world buy this oil. Because it has a nutty flavor, some put it on salads or on bread. Other people use it on their skin or hair.

Check Your Understanding

- Argan trees grow only in
 - Arganland.
 - Berber.
 - Morocco.
 - West Africa.
- How many pounds of kernels yield a quart of argan oil?
 - 50
 - 70
 - 100
 - 200
- Each argan fruit has a pit with
 - one kernel.
 - two or three kernels.
 - four kernels.
 - five or six kernels.
- Argan trees are in danger because people
 - have cut down too many of them.
 - harvest oil from their fruit pits.
 - allow their goats to eat the tree's fruit.
 - cause droughts the trees can't survive.





Name _____

9

Charles Schulz and the *Peanuts* Gang

You know Snoopy, Charlie Brown, Lucy, and the rest of the gang. But you may not know their creator. His name was Charles Schulz. He was born in 1922. In high school, he knew that he wanted to be a cartoonist. Yet the cartoons he sent to magazines and newspapers were turned down.

Schulz served in World War II. When it was over, he tried to find work as an artist. An art school hired him to correct lessons. Schulz kept mailing his cartoons to major publishers. At last, an editor asked him to come to his office. He looked at Schulz's samples. Then he agreed to publish the *Peanuts* cartoon strip in 1950.

From the start, *Peanuts* was a big hit. In fact, it is one of the most popular cartoons ever. In 1965, CBS asked Schulz to write *A Charlie Brown Christmas* and *It's the Great Pumpkin, Charlie Brown*. His animated cartoons became classics. They are still aired on TV each year.

Although Schulz died in 2000, the *Peanuts* cartoon still appears in newspapers. But no one else draws the cartoons. Schulz took just one vacation in nearly 50 years of work! He made so many *Peanuts* comic strips that they can be printed for 47 years before they start over again.

Check Your Understanding

- When did the *Peanuts* gang first appear in newspapers?
 - 1922
 - 1950
 - 1965
 - 2000
- Who is not a character in the *Peanuts* comic strip?
 - Charlie Brown
 - Lucy
 - Snoopy
 - Pumpkin
- The *Peanuts* comic strip that you see in the newspaper today was created by
 - Lucy Schulz.
 - Charles Schulz.
 - Charlie Brown.
 - Charles Schulz's son.
- How much time has passed since *It's the Great Pumpkin, Charlie Brown* was made?
 - about 25 years
 - about 35 years
 - about 45 years
 - about 65 years

