Pandas for Germany

China owns and loans all the pandas in the world. p14
Fire Season Cools Off

This soaring plane isn’t on fire. It’s flying over Mariposa, California, and dropping fire retardant—a brightly-colored material meant to slow down a raging fire. Summer wildfire season is slowing down too. Soon it will be over.

America’s West got lots of heavy rain this winter. A good crop of grass grew. But that became dangerous when the sun started to sizzle. Little rain fell. The grass dried out. When lightning struck, the grass caught fire. More than 39,000 wildfires have burned in the West since the beginning of this year. They scorched lots of land—millions of acres. People in the West can’t wait for the season to end. Thanks to wildfires, many had to leave their communities and homes. It seemed like as soon as one fire stopped, another one started!
You’re a Mindreader!

Write the number 26 on a piece of paper. Put it in your pocket. Tell a friend to think of a number. Then tell your friend to do this math:
• Add 9 to the number they are thinking of.
• Subtract 2.
• Subtract the original number.
• Multiply by 4.
• Subtract 2.

Take the paper from your pocket and ask: “Is this the answer to that math problem?”

The trick works because it seems like you are guessing an unknown number. But the unknown number has been removed mathematically. X stands for your friend’s number.

\[(X + 9 - 2 - X) \times 4 - 2 = 26\]

Read about North and South Korea on pages 26-29. To put each flag back together, which piece is not needed?

Arrange matches like these puzzles. Then:
A) Move 3 matches to create 2 squares. (Hint: People say, “Think outside the box.” In this case, “Think inside the box.”)

B) Do you see the fish, with its fins and tail? Move 3 matches to flip the direction the fish is swimming.
You’ve probably never heard an orchestra like The Tap Tap before. No one has! The band comes from a school for the disabled in Prague, Czech Republic. Many of its members are in wheelchairs. They have serious handicaps. You can see that with your eyes. But you can’t hear it in their professional sound.

That’s just what director Simon Ornest wants. He knew his band members could make excellent music. But even he is surprised by their huge success. The Tap Tap has made famous music videos about life with disabilities. They have played concerts all over the world!

Does your cow need a day at the spa? Dairy researchers at the University of Wisconsin say yes. They visit farms to give advice about how to ease cow stress. They say: Feed cows at the same time, since herd animals like to do things together. Give cows a good resting place so they don’t stand too long and become lame. Provide a deep, soft bedding of sand so they can rest for half the day. It’s not quite the beach, but it might be enough to please a cow!

One farmer took the team’s advice. He spent over $100,000 to make his cows happier. He even added an automatic brush to his barn that constantly cleans off his cows. Now each cow gives two gallons more milk per day. They have fewer injuries and live about a year longer.
Next June, Russia will host the World Cup—a huge, international soccer competition. That means lots of getting ready. Russia is busy building a stadium—a very, very costly one. The builders spent $720 million. That wasn’t enough! They are still spending.

A Russian farmer made fun of the huge expense. He built his own stadium out of straw. He used 4,500 bales. It cost just $675. Three hundred fans came to the straw stadium to watch a local soccer match.

The builders of the real stadium appreciated the joke. They offered the farmer a World Cup ticket for free.

Veggie Trick

Which one would you scoop onto your plate—“reduced-sodium carrots,” or “twisted citrus-glazed carrots”?

Researchers used a big serving of food psychology—and a dollop of trickery—to get people to eat their veggies. They served “zesty ginger-turmeric sweet potatoes” and “tangy lime-seasoned beets.” People ate them up! The researchers offered people the exact same dishes with boring or healthy-sounding names. Did people want “sugar-free sweet potatoes” or just plain “beets”? No way!

The experiment showed that simply changing the names of dishes could encourage people to choose healthier foods. Would the naming “trick” work on you?
Grumpy Cat stares out of your computer screen. On YouTube, a famous yellow tabby cat in a blue shirt pounds on a piano. A white cat with thick, black eyebrows becomes an internet sensation too. Yes, cats have taken over the web. But did you know that long, long ago, they took over the world? At least, they spread around the world. But how did they move from place to place? And why did they stop living in the jungle and move to the couch instead? To find out, researchers studied ancient Romanian cat remains,

Eva-Maria Geigl works in her laboratory in Paris, France, where she and other researchers studied the DNA of cats.

Cat bones are tagged for the DNA study.

An ancient Egyptian drawing on limestone shows a scene with a cat and mouse.

The burial case for Prince Thutmose’s cat from ancient Egypt.
Watch out—there may be a wild beast living in your house. It’s stretching its legs. It’s licking its paws. It’s standing at the backdoor but refusing to go out. Your cat is a wild animal.

“Domesticating” means breeding or training animals to need and accept the care of humans. Humans have domesticated only a few animals. Dogs, sheep, chickens, cows, and goats sometimes depend on humans. The researchers in the cat study looked at DNA to find out how cats came to live alongside humans. But cat DNA tells them something else too. Cats aren’t totally domesticated. They have a serious wild side!

Do you know what a genome is? It’s all the DNA in your body added together. You can think of it as a blueprint design that makes you you. All living creatures with more than one cell have genomes. In 2014, scientists compared the genome of an Abyssinian cat named Cinnamon with the genomes of tigers and other creatures. They also recorded the cat’s behavior.

That drew rodents. The rodents attracted cats. Cats started to get used to people. People even started to bring cats along as mice catchers when they moved to new places.

Here’s proof: In an earlier discovery, people found a cat buried beside a human in a grave scientists estimated was 9,500 years old. That was in Cyprus, an island in the Mediterranean Sea. Cats don’t live around there naturally. And you can bet the cat didn’t swim across the ocean to get there! People moved it. Also, Egyptian paintings from about 3,500 years ago show cats beneath chairs. That tells us that cats were tamed way back then—and living in the house.

The researchers tracked the spread of specific cat DNA markers. They found similar DNA instructions in cats from different places and parts of history. That’s more evidence that people took them along when they traveled. Here’s something else the researchers found. Around the year 1300, many cats began having DNA that gave this direction: No more wild tiger stripes. Give this creature blotchy, housecat fur.

Why does my cat do that?

Wonder why your cat kneads your stomach, brings home dead animals, or stretches so much? It’s the wild in her. We have some possible explanations for cat behaviors. Go to Science Soup, Explore It, at kids.wng.org

Not-So-Tame Cats

Watch out—there may be a wild beast living in your house. It’s stretching its legs. It’s licking its paws. It’s standing at the backdoor but refusing to go out. Your cat is a wild animal.

Egyptian cat mummies, and modern African wildcats. They looked deep down—the deepest down you can get. They studied the cats’ DNA.

Teeny-tiny DNA molecules in cells give instructions for how a living thing will look and function. Each strand looks like a twisted ladder. Scientists spend lots of time studying human DNA. But poring over thousands of years of cat DNA? That’s a first!

Here’s how the cat story goes—as far as scientists can tell. At first, cats were totally wild. But things changed. People living long ago near the Mediterranean Sea stored grain. That drew rodents. The rodents attracted cats. Cats started to get used to people. People even started to bring cats along as mice catchers when they moved to new places.

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The cat hunted, sensed, ate, and digested just like cats in the wild. Housecats eat mostly meat. They can survive just by hunting. For many years, they did.

Cinnamon’s genome shows only a couple major differences from wild cats. First, her genome instructions give her a tabby cat’s coat. They also tell her to act less aggressively. They tell her: “When someone offers you a reward (like food), stick around.” So you don’t have to be afraid of your beast. But remember, she probably doesn’t really need you.
Your body has about 200 types of cells. Each cell has a job. Some help you see. Some help you hear. Some absorb food. Some transport oxygen. Some carry messages from your brain (also made of cells) to other parts of your body. All these cells need to know what to do and how to do it. That’s DNA’s job. It’s the Big Boss of your body.

God designed your body—and, for that matter, your cat’s body—to work according to DNA’s very specific blueprint. (A “blueprint” is a drawn-out design used while building a house.) DNA is very small—so small it’s hard to find the right words to describe how small it is! If you unwound all the DNA in just one of your cells, it would stretch six feet long. If all the DNA in your whole body were linked together, it would stretch to the Sun and back—around 600 times!

Do you look a little bit like your dad and a little bit like your mom? That would make sense, because you get half your DNA from each of your parents. Just think of how different one person can be from another person. The world seems to have an endless variety of people! That’s DNA at work. But here’s something surprising: When it comes to DNA, people are all 99.9 percent alike. That itty-bitty fraction of a percent makes all the difference in the world. When God planned out what you would be like, he did it on purpose—down to the teeniest, tiniest details. And all those details started with something way too tiny to see—your DNA. This set of instructions is all over you! A scientist could find it in your spit—or in a single one of your skin cells.

DNA is arranged like a spiral ladder. It holds all the instructions that make you like you are—and probably a lot like your parents.

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**Cat DNA Quiz**

1. A domesticated animal is __.
   - a) very small
   - b) tamed
   - c) wild
   - d) striped

2. What is NOT true about housecats?
   - a) They eat mostly meat.
   - b) They have tabby cat markings.
   - c) They are less aggressive than wild cats.
   - d) They cannot survive just by hunting.

3. A genetic mutation is __.
   - a) DNA of only the mother
   - b) DNA of only the father
   - c) naming of traits
   - d) change in DNA

4. Where does your DNA come from?
   - a) your mother
   - b) your father
   - c) your mother and your father
   - d) only you

5. When we look at people, we see endless variety. But we all have very similar DNA. What does that show us about God?
All Kinds of Cats

Japanese Bobtail—These Japanese street cats have large patches of yellow, black, and white fur. Their short tails look like they have been bent and broken.

Bengal—Talk about wild! The Bengal breed started when a tiger and a tabby cat mated. Now people get more Bengals by breeding Bengals—not tigers and tabbies.

Persian—The Persian cat breed started as a combination of Turkish and Italian longhaired cats. Its bushy fur makes it look bigger than it really is.

British Shorthair—These cats started as mouse catchers on farms in England. Their muscular necks and bodies make them suited for the job.

Egyptian Mau—The Mau has M-shaped markings on its head and rings on its tail. He comes from ancient Egypt. He can run 30 miles per hour—the fastest domestic cat in the world!

Maine Coon—one leg-end says this big, fuzzy American cat breed is part raccoon and part cat. That’s a myth. But it’s true that these cats aren’t very catlike. Like raccoons, they love the water!

Munchkin—A genetic mutation (change in DNA) causes these cats to have very short legs. A Munchkin named Lilieput was named the shortest living cat in 2013. She was just 5.25 inches tall.

Birman—These large Asian cats have four white paws, silky long fur, and bright blue eyes. They like their privacy but often become jealous for the attention of their favorite person.

Abyssinian—These intelligent cats came from parts of Southeast Asia and coasts along the Indian Ocean. It seems like busy Abyssinians never sleep—and they like to be as high up as possible.

Sphynx—Instead of hair, a coat of down covers the Sphynx. Its skin feels like warm leather. It rubs against people or other animals to keep warm.
Watch your head! Watch your step! This dark tunnel has a low ceiling and uneven floors. Stay close to your guide too. You are walking through the Domitilla catacombs in Rome. (Catacombs aren’t combs for cats, though the words sound the same. They are vast, underground mazes of tombs!)

People were buried in these catacombs long, long ago—just a few hundred years after Jesus lived on Earth. What was it like to visit the catacombs back then? Archaeologists can help us find out. Right now, they are busy cleaning up in the catacombs. As they do, they study frescoes (wall paintings) in the labyrinth. The frescoes need some serious help. Over hundreds of years, algae has grown on them. The mineral calcium has built up on their surfaces. Oil lamps have left smoke stains. The archaeologists use lasers to clear the grime away. A painting of Jesus and His apostles shows clearly underneath. The researchers uncover paintings of Daniel and the lions and Noah’s ark too.

Tombs near these paintings belonged to Christians. Christians in early Rome were often poor. They did not always have money for burial. In the catacombs, they could bury people close together less expensively. They used frescoes to show who they were and what they valued: the true stories revealed in the Bible. But many of the crypts have frescoes that are blotted out. During the Middle Ages, people cut them out and stole them!

Archaeologists will fix up only a few parts of the Domitilla catacombs. Restoring the whole maze would take a very long time. It stretches more than seven miles under the city. It goes four levels down. More than 26,000 people are buried inside!
During early days in Rome, Christians were mistreated for their faith. Some were even killed for it. But some rich, land-owning Romans became Christians too. Suddenly, they didn’t want to share their tombs just with their biological families, but with their needy brothers and sisters in Christ too.

The city of Rome is built on soft, volcanic rock called tufa. That rock is sturdy. But it’s also easy to dig through. Gravediggers dug the first layer of the catacombs into the tufa. But they needed more space. They dug deeper. They made stairways to connect the stories. Time went by. The tombs’ owners bought or were given more land. The family graves sprawled farther and went deeper into the ground.

Eventually, Christians in Rome were not mistreated for their faith in Jesus anymore. They were allowed to build churches. They could buy land without fearing someone would take it away. But people still used the catacombs for a while. Some of them wanted tombs near famous martyrs who had died in the persecution.

At the beginning of the fifth century, catacomb burials finally stopped. Plants grew around the entrances. Landslides blocked the ways in. By the late Middle Ages, few people even knew where the catacombs were anymore! Then an Italian named Antonio Bosio came along. He was not even 20 years old yet. But he had made a decision. He wanted to study archaeology for the rest of his life. In 1593, he took a journey in Italy—an underground journey. Asking peasants for help, he found 30 entrances. Those entrances led to the legendary city of tombs. For his discovery, people gave him a nickname: “the Columbus of the catacombs.”
It’s no surprise that frescoes are found in the catacombs of Rome. Ancient Romans were known for fresco art. It’s also not surprising that those paintings have survived so long. Fresco is probably the most durable painting medium. A fresco is painted into a wall surface instead of onto canvas or panel. Wet paint soaks into wet plaster. As the plaster hardens, it locks the colors in. The painting is literally part of the wall!

Doesn’t painting on the walls sound fun? Artists think so too. But they do a lot of preparation before the actual painting begins. They make sure the wall is clean and even. They apply layers of plaster and sand mixture and allow them to harden.

Fresco painters have to plan their art too. When it comes time to apply paint, they have only one chance to get it right! They sketch and do colored drawings first. To plan a fresco, a cartoon is created. Seriously! The word “cartoon” actually comes from fresco cartoons—full-sized drawings of planned paintings.

Next, an artist needs to prepare the colors he or she plans to use. Dry, colored powder (pigment) is mixed with water. The final layer of plaster that will be painted on is called the intonaco layer. This fine, smooth coat is troweled onto an area no bigger than the artist expects to work on for the day. The plaster will stay moist for several hours as the painter works.

The lines of the cartoon must be transferred to the damp surface. To do this, some artists lay their sketch over the surface and poke little holes along the lines of their drawings. Others roll over the lines with a dressmaker’s wheel. Then they pat a charcoal-filled bag against the paper. Charcoal dust goes through the holes and leaves an outline of the cartoon on the plaster. Other artists draw firmly over their lines with a tool. That leaves light dents in the plaster. Today, most artists use a projector to shine their drawing onto the wall. They trace it onto the plaster.

Finally, it is “the golden hour.” The painting comes alive as colors are brushed on and soak into the plaster.

Sound like a fun project? Research. You will find lots of simple instructions on creating frescoes with inexpensive materials.
“This place is creeeeepy.”
Do you think visitors to the catacombs say that? It certainly wouldn’t be surprising, in a place full of bones and skulls!

But for many of the Christians buried in the catacombs, death wasn’t creepy. In fact, they chose to be buried there partly because they had hope.

At the time, most Romans chose to have their bodies burned when they died. That seemed to make sense. The city was very full of people. Not much extra space was left for burial, and ashes took up less room.

But Christians wanted to show their faith when they died. They wanted to send this message: “We believe Jesus is coming back for our bodies one day.”

Not everyone buried in the catacombs was a Christian though. That is an important part of what the archaeologists are learning while they work in the tombs. They don’t just find pictures of Bible accounts. They find pagan art too. Grape vines—symbols for Roman gods—show up on vaults. Cupids, other false gods, decorate smaller tombs. In one area, known as the “room of bakers,” the art tells the story of the life of a baker in Rome. The images also show Jesus with His apostles. The mix of artwork shows that bread was important in Christian and unchristian symbolism.

Christians have always lived among people who do not yet know God. People of faith stand out. Their lives (and deaths!) show this truth to the world: Everyone dies. But on the cross, Jesus defeated death. We don’t have to be afraid of it anymore.

O death, where is your victory?  
O death, where is your sting?  
—1 Corinthians 15:55

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Catacombs Quiz

1. vast
   - a) deep
   - b) narrow
   - c) extensive

2. biological
   - a) animal
   - b) blood-related
   - c) spiritual

3. pigment
   - a) fresco brush
   - b) plaster powder
   - c) color powder

4. pagan
   - a) unchristian
   - b) Christian
   - c) uncivilized

Answers page 5
Two giant pandas, Meng Meng and Jiao Qing, chomp on bamboo and cookies . . . in an airplane. They are flying first class from China to Germany—and really getting the royal treatment!

Meanwhile, it’s panda-monium in Berlin, Germany. People are going nuts preparing for the impossibly cute bears. They built the bears a brand new home in the Berlin Zoo. The ritzy new habitat cost $10 million. It has Chinese-style pavilions, red lanterns, a climbing area, and a mountain landscape.

Once they land, the pandas are taken from the airport to the zoo with police protection. Their driver doesn’t even have to stop for red lights! Soon after they arrive, German Chancellor Angela Merkel attends a ceremony welcoming them to their new country.

Did you know that China owns all the giant pandas in the world? When China sends a panda to another country, it’s a way of saying, “Our countries are friends.” China has given three pandas to Germany in the past. The last one was named Bao Bao. He died in 2012.

But don’t be fooled—Germany doesn’t get to keep Meng Meng and Jiao Qing. The bears are just a loan. And Germany will pay through the nose! It costs $15 million to keep the bears for 15 years.

For now, the bears are busy roaming around their “living room.” That indoor part of their zoo habitat has wooden obstacles to climb, a wooden chair fit for bears, and bamboo for munching.

Jiao Qing, whose name means “darling,” is a seven-year-old male. He weighs 238 pounds. Meng Meng’s name translates as “sweet dream.” She is three years old and weighs 169 pounds. Meng Meng isn’t old enough to have cubs yet. But zoo-goers can hardly wait till she is!
“Pleeeeeease?”
“No!”
“Pleeeeeeaaase?”
“No!”
“What if I give you a cuddly panda? Will you say yes then?”

It’s hard to resist a giant panda. They’re cute. They’re fuzzy. They make you melt. They look like no other bears in the world. No wonder they are national treasures in China!

National leaders know that pandas are a symbol of peace. In fact, something called “panda diplomacy” may have started as early as the seventh century in China. Way back then, Empress Wu Zetian gave a pair of bears to Japan. The custom started up again in 1941. China sent two pandas to the Bronx Zoo in New York to thank the United States for helping China.

In the 1950s, leader Mao Zedong sent pandas to other communist countries like North Korea and the Soviet Union. But countries like the United States and Britain were not at peace with Mao Zedong’s China. They didn’t support Communism. So guess what? No more panda bears for them!

That changed in 1972. President Richard Nixon took a trip to China. After 25 years of distrust, the United States and China became friends again. The giant pandas Hsing-Hsing and Ling-Ling came to live in the United States. Seventy-five thousand people rushed to the zoo to see the bears. The pandas showed up all over magazine covers. Toy-makers made bundles of money with stuffed animal pandas. The United States sent back a thank you gift: a pair of musk oxen named Milton and Matilda. (We don’t know about you, but we’d prefer pandas!)

In 1984, China changed panda diplomacy. Instead of giving the bears away, they loaned them out for a fee. The United States eventually made a deal with China. They would pay the price for pandas—but only if China used half the money to help pandas survive in the wild.
It can be really hard to make peace with another country. People from other places think differently from you. They probably don’t even speak your native language. So how would you say “Let’s be friends”?

Well . . .

carry a message stick?
Even societies without national governments need diplomacy. Long ago, tribes needed to plan out marriages. They had to decide: “How will we trade? What are the rules for hunting?”

Messengers between tribes were given lots of respect. They carried some object, such as a message stick, to show their purpose. When they showed up, people held carefully-designed ceremonies to celebrate their arrival. Message sticks are still used in some parts of Australia. The symbols carved or painted on the sticks tell what tribe the carrier comes from. They show that the message they carry is true.

. . . call a ping-pong match?
Just before China gave the United States pandas in 1972, Chinese officials invited a U.S. table tennis (ping-pong) team into China for a visit. That was a huge surprise! No American had gotten a look behind the “bamboo curtain” (China’s borders) since 1949. The invitation was a clue. It showed that China’s loyalties might change.

. . . give unusual gifts?
Colombia gave the United States a silver figure of an oversized coffee bean. Bulgaria gave Russia a 10-week-old Bulgarian shepherd puppy. The Soviet Union gave North Korea a bulletproof limousine. Mali gave France two camels. The first camel was crabby, and was eaten in a stew! Mali sent a new one to replace it.

The Statue of Liberty was a gift from France in memory of that nation’s friendship with the United States during the American Revolution.

Left: Table tennis paddles decorated with caricatures of the leaders of America (left: Richard Nixon) and China (Mao Zedong).

Below: The White House’s Resolute Desk was a gift from England. It was made from the timbers of a British ship.

Russia’s president holds a gift from the Bulgarian president.

Each year since 1945, Canada has received 20,000 tulip bulbs from the Netherlands. The gift is a thanks for Canada’s help during World War 2.
In panda diplomacy, China gives pandas as gifts to other countries. Other countries practice diplomacy in other ways.

What is diplomacy, anyway? Why is it needed?

Imagine this. You are a diplomat from your home country. You have to work with leaders from other nations to solve problems or keep peace. Here are some issues you might need to work on: How should we use the oceans? How should we explore outer space? How can we share resources, do business across borders, and prevent wars?

Whoa! Those are HUGE questions! As a diplomat, you represent the people of your country. So you will need to have a rock-solid understanding of what will do your home country the most good. But that isn’t enough. You also need respect for the people you will be working with. You must know what their cultures are like, what might hurt their feelings, and what will give them honor. You’ll even need to know their customs and manners. For example, when you meet with a Japanese diplomat for dinner, you’ll want to slurp your soup loudly. In America, that’s rude. In Japan, it means “yum!” You’ll have to use chopsticks to put noodles into your mouth. And don’t bend down toward your bowl! Bring your bowl to your face with your hands. You’ll have to learn other rules too—and probably give them lots of practice.

Here’s another important part of diplomacy. When you deal with such complicated issues, you will not be able to make everyone happy all the time. So you will probably have to know how to say “no” with graciousness. And you will have to learn to listen to others very well.

You might not be headed to a dinner with a foreign president or king any time soon. But a little diplomacy will do you good in every part of your life. Being diplomatic is treating others with respect. It’s trying hard to keep peace but sticking to the truth at the same time.

If possible, so far as it depends on you, live peaceably with all. — Romans 12:18
Touring From Beans to Bars

Guests on the A Slice of Brooklyn tour hop on a bus. They are about to visit fancy chocolate producers around New York City. Here are some flavors they might try in their travels: chocolate with pink sea salt, chocolate with chai spices, and chocolate with super-hot ghost peppers. Yum! But the tourists want more than a satisfied sweet tooth. They want answers! Where does that chocolatey goodness really come from, anyway? (Hint: It isn’t a cow that gives chocolate milk.)

These tourists are part of a bigger trend. More and more, people care about what they put in their mouths. They want to know: Where does my food come from? How was it made? Most people know a little about fine foods like wine and cheese. But here’s something people rarely know: Chocolate, another fine food, comes from the beans of the cacao tree. Like with wine and cheese, the way cacao beans are prepared determines the quality of the chocolate.

Here’s how chocolate-making starts. Chocolatiers receive dried beans from far away cacao farms. They roast and skin the beans. What’s left is called a nib. Nibs get ground into paste. Chocolate makers use different recipes—ingredients, length of roasting time, and type of bean—for the paste. Then, to make high quality chocolate, they take another step. They put the paste into a conche machine. It scrapes and mixes the chocolate—sometimes for as long as 78 hours. The longer the better!

Guests on the Brooklyn tour get a sneak peek into that process. And they’re not the only ones. Hershey’s Chocolate World in Pennsylvania has hosted more than 100 million guests. The free tour there takes guests on rides. They learn the history of chocolate and how it is made. They get a treat at the end and even meet some (pretend) singing cows. Tours at other factories, like Taza in Massachusetts, show how artisanal chocolate is made. Taza chocolatiers grind cacao beans the old-fashioned way. They use granite stones.

By the end of the Brooklyn tour, the curious chocoholics have seen the whole chocolate-making process—from bean to packaged bar. They’ve gotten some good views of New York while they were at it. That’s a wrap! Back on the bus!
Chocolate tastes yummy. You don’t need to be told that! But here’s a tip: To taste the deep-down flavors of individual chocolates, use all your senses. **Sniff.** Much of chocolate’s flavor is **aroma.** Look. Darker chocolate isn’t always better. But good chocolate is glossy. **Listen.** Break a piece and listen for a good snap. That’s a sign of quality chocolate. **Touch.** The chocolate should feel silky and start to melt on your finger.

Now it’s time for the last (and when it comes to chocolate, best) sense: **taste.** Some cacao beans have more fat than others. That makes them taste extra fudgy. Some taste smoky because they’re dried using fire. Cacao absorbs chemicals from the soil it grows in. These combined factors can make chocolate taste like all kinds of things! Let a piece of chocolate melt on your tongue. Do you taste butterscotch, or plum, or nutmeg, or coffee? All those flavor notes can come from the cacao bean. Some less tasty-sounding flavors can too: vinegar, blue cheese, dirt, and wet wood, to name a few! Serious chocolatiers know that even the smallest choices they make will change the chocolate they produce. Their finished products often deserve careful tasting (and smelling . . . and touching . . . and listening . . .).

Chocolate—a good thing that God made and gave to us—is an everyday treat that gives you a hint about how generous and good He is. To understand that better and better, you have to “taste and see” for yourself by studying and enjoying Him through the Bible.

*Oh, taste and see that the Lord is good!*
—Psalm 34:8
Tourists like to see cacao beans turn into treats. But few people get the full chocolate tour. To do that, they would have to travel to some very hot, sticky, wet places. That’s the only way to truly see how chocolate gets its start.

You see, the best climate for cacao trees is near the equator in Africa and Indonesia. There, potted seeds become seedlings in just a few months. On small farms, spindly stems are transplanted among larger trees like banana, rubber, and coconut. These “mother trees” provide shade and protection from wind.

They also drop leaves that rot and enrich the soil. Little bugs called midges grow in that rich dirt. You wouldn’t want itchy midges to crawl on you. But on cacao trees, they are a good thing. They pollinate the cacao blossoms. (Fun to know: Cacao tree flowers grow from the tree trunk and not just the outer twigs of the tree.)

A cacao farmer has to be patient. It takes the trees five years to mature and begin growing pods that can be harvested. But once a tree gets going, it can produce 20 pods per year.

An experienced farmer knows just when harvest time arrives. It happens twice a year. Laborers work by hand to avoid damaging the shallow-rooted, delicate trees or bruising the young blossoms. After all, those flowers will become a future harvest of pods.

Finally! It’s time to spill the beans! Harvested pods are cut open with sharp machetes. The two or three dozen beans from each pod are scooped out, made into big heaps, and covered to ferment. (Fermentation is a sort of rotting process that changes the chemical makeup of the beans.) When beans are good and brown, they are spread out in the sun to dry for days or weeks. When they have lost 90 percent of their moisture, they are finally loaded into sacks for shipping to chocolate factories—and their tours.
A Sweet (and Not-So-Sweet) History

An ancient manuscript shows Aztec Indians sharing a chocolate drink during a celebration.

Do you eat 12 pounds of chocolate each year? The average American does! That’s like eating a small bowling ball of chocolate. But people didn’t always munch on chocolate in the same ways we do today. In fact, the sweet history of chocolate didn’t start out sweet at all. And people didn’t *eat* chocolate. They drank it!

Etymologists (word studiers) think the word “chocolate” comes from the Aztec word “xocolatl.” That’s what Aztecs called a bitter drink they made from cacao beans. They noticed that cacao made them feel better. (As the Bible says in Ecclesiastes 1:9, “There is nothing new under the sun”!) But foreigners didn’t agree. They came to the Aztecs’ home in what is now central Mexico in the 1500s. As it turned out, bitter drinking chocolate wasn’t their cup of tea—err—chocolate. The Spanish explorer Hernando Cortes wrote about its taste. He called it “a bitter drink for pigs!” But soon, honey and cane sugar were added to chocolate. Rich people in Europe began to love it. The Europeans built cacao plantations in regions around the equator. Their presence exposed native workers to European diseases. Those workers died. The Europeans replaced them with African slaves.

In 1828, a Dutch chemist invented the cocoa press. The press could squish fatty cocoa butter out of the roasted beans. You would probably recognize the substance it left behind: cocoa powder! The powder could be added to other ingredients and poured into molds. Suddenly, all kinds of people could afford this inexpensively produced chocolate.

As time passed, people worked to make chocolate cheaper and cheaper. Today, the word “chocolate” is used for all kinds of low-cost treats. But sometimes these foods have almost no cacao in them. They are often full of unfamiliar ingredients that produce a flavor similar to chocolate. That isn’t the end of chocolate’s story though. Many chocolatiers still use high-quality ingredients. They are working to make chocolate better—even if it means making it by hand!

Chocolate Quiz

1. artisanal
   - a) traditionally made
   - b) machine made
   - c) ground

2. aroma
   - a) feel
   - b) sound
   - c) scent

3. spindly
   - a) weak and thin
   - b) thick and strong
   - c) fermented

4. substance
   - a) material
   - b) powder
   - c) butter

Answers page 5

Sept/Oct 2017 • WORLDkids 21
Dead sharks wash up on the shores of South Africa. What killed them? To find out, biologists cut the stinky fish open. Sliiiice!

Inside each shark, scientists find something surprising. All the sharks are missing their livers!

Great white sharks like these normally have huge livers full of fat. These oily organs help them float. The scientists do the work of detectives. “Whatever killed these sharks wanted a fatty snack,” they think. “But it didn’t want the rest of the sharks’ bodies.” They check out the bite marks and gaping wounds on the sharks’ undersides. These clues help them solve the mystery. The killer is . . . drumroll . . . a killer whale!

You might be thinking, “What?! Killer whales are friendly creatures!” That’s how these big, intelligent mammals seem in movies—even though they have a scary name. No one goes to the beach and says, “I hope there are no whales around.” But they do say, “Shark in the water! Everybody OUT!” Can gentle orcas really kill ferocious sharks?

They can. In fact, orcas can kill anything in the ocean—if they want to. They have large brains. They can use sound waves to locate other sea creatures. Orcas live in groups. They can work together to outsmart almost any prey—even large, powerful great white sharks.

Orcas aren’t the only enemies great whites have to worry about either. Sharks in the movies are portrayed as almost unbeatable enemies. But in real life, shark nets, fishing, and poaching kill sharks all the time. These factors are even greater threats than orca whales. The orcas don’t eat great white sharks often, anyway. If they did, they’d have to visit the underwater dentist. The rough texture of shark flesh grinds down the enamel on their teeth.
They’re terrible! We don’t mean in the “you really need braces” way. We mean in the “please don’t bite me” way. Orcas have 40 to 50 teeth shaped like cones. These interlocking choppers can tear apart anything from salmon to sharks. Great whites have about 50 teeth too... in the first row. Multiple rows of teeth grow behind to replace them when they break or fall out. And they will break and fall out. Yours would too if you devoured whole seals for dinner!

**size.** Killer whales can grow up to 32 feet long and weigh up to six tons—as much as six small cars! Sharks can grow longer than 20 feet. But they weigh less than three tons (three small cars).

**teeth.** They’re terrible! We don’t mean in the “you really need braces” way. We mean in the “please don’t bite me” way. Orcas have 40 to 50 teeth shaped like cones. These interlocking choppers can tear apart anything from salmon to sharks. Great whites have about 50 teeth too... in the first row. Multiple rows of teeth grow behind to replace them when they break or fall out. And they will break and fall out. Yours would too if you devoured whole seals for dinner!

**speed.** “Sir, do you know how fast you were going?” A shark doesn’t have the brain power to answer that question. But if it did—and it didn’t take a bite of you first—it would probably say about 15 miles per hour, or 35 if it was really in a hurry. Killer whales, on the other hand, travel a slow, steady, eight miles per hour—unless they want to sprint. They can go 35 miles per hour at top speed.

**technique.** When it comes to hunting—and living—sharks are normally a solo act. They sneak up on prey from above or beneath. But killer whales work in groups. They use their combined body power to make waves, knocking tasty seals off sheets of floating ice. When hunting sharks, they flip the dangerous fish over in the water. Great white sharks go into a paralyzed state when they are upside down. The whales escape the sharp shark teeth, winning the showdown—and a big dinner.

On a beach in South Africa, researchers examine the bite where a killer whale attacked a great white shark.

Great white or killer whale—which do you think would win in a showdown? To make a guess, compare their...
It's a shark and whale showdown! But it's also a fish and marine mammal showdown. Marine mammals include species like whales, dolphins, seals, and walruses—non-fish creatures that rely on the ocean for food and a place to live. God gave both mammals and fish some incredible features!

**Hair:** Fish don't have fur. Marine mammals do—though usually not much. Some whales have fine hair, especially on their head. Whale babies have a small amount of fur before they are born.

**Breathing:** Just like you, whales and other marine mammals take air into lungs. Some use blowholes at the tops of their heads. Fish extract oxygen from water using their gills.

**Blood:** When water gets cold, mammals need to keep warm. A mammal's warm blood does that job. A thick layer of blubber insulates the mammal too. But fish are cold-blooded. When the water is cold, a fish's blood and body are cold too. Brrr!

**Birth:** Marine mammals are born alive. Fish hatch from teeny, tiny globs—fish eggs. Most baby marine mammals are taken care of, protected, and fed milk by their mothers for several months. Some fish build nests and guard their young, but most do not care for their young at all. They hatch and live on their own immediately. That's no surprise. Most fish lay hundreds or thousands of eggs each year! That's way too many to pack lunches for and take to violin lessons!

**Swim:** To move through the water, many marine mammals use their tails and flukes to move up and down. When fish swim, their spines and tail fins move from side to side.

**Limbs:** Have you ever seen a fish with arms and legs? Neither have we. But a mammal's flippers can work a little like arms or hands. The bones of an orca flipper even look like finger bones. Did you know that polar bears are counted as marine mammals too? They doggy paddle through cold water with their webbed feet!

*Marine Mammal vs Fish*

**Fish ears:**
- Fish have scales.
- Most fish have a swim bladder. This sack fills or releases gas to keep the fish at the right depth under water. (Sharks have no gas bladder. They keep swimming to stay at the right depth.)
- Some marine mammals take oxygen into their lungs through a blow hole.
- Shark eggs, known as "mermaid's purses."
- Shark ears
- Arrows point to artery, heart, lungs.
1. What killed the sharks in South Africa?
   ■ a) shark nets
   ■ b) fishing
   ■ c) pollution
   ■ d) killer whales

2. Which is true of killer whales?
   ■ a) They become paralyzed when upside down.
   ■ b) They hunt in groups.
   ■ c) They hunt alone.
   ■ d) They grow rows of replacement teeth.

3. Which animal is not a marine mammal?
   ■ a) seal
   ■ b) whale
   ■ c) polar bear
   ■ d) catfish

4. Why are whales difficult to study?
   ■ a) They eat humans.
   ■ b) They are hard to locate.
   ■ c) None live in the wild.
   ■ d) There is no easy way to capture them.

5. There will always be more to learn about God’s creation. What are some creative ways scientists study whales?

Answers page 5
This little restaurant isn’t much to look at. It sits across the street from an empty lot. Boxes of dried fish are stacked by the front window. A dirty mop stands in the corner. But people come to eat here from all over South Korea. They come for the potato pancakes and blood sausage—food that reminds them of home.

North Korea and South Korea used to be one country. Then Japan took control of the Korean peninsula in 1910. When Japan was defeated in World War 2, Korea was split in two. North Korea established a communist government like Russia’s. South Korea adopted a democracy like the one in the United States. In the years since the split, the South has flourished. The North has struggled.

North Korea’s struggle was particularly hard during the 1990s. The North suffered from a widespread famine. Hundreds of thousands of people died.

Today, more than 30,000 North Koreans live in the South. Some fled poverty and hunger. Others wanted to escape communism and live in a more free society. But in over 70 years since the split, the two Koreas have become very different places.

Imagine having to leave the country you grew up in. People in the place you move to have different ways of living and eating. You speak the same language, but no one understands your accent. Wouldn’t you miss home? North Koreans do too.

Life was hard in North Korea. But life is not easy for refugees when they escape either. This restaurant gives them comfort—on a plate.

“This is the taste of where they came from,” says the restaurant’s owner, Ms. Choi. “The food here tastes the way it does in North Korea.” Ms. Choi gave her little restaurant a big name: Howol-ilga. In English, that means, “People from Different Homelands Come to Gather in One Place.”

All Koreans are welcome at Howol-ilga. But Ms. Choi says a South Korean could never become a cook in her kitchen. She needs workers who know and love North Korean food—and can share that love with her North Korean customers.

“Our lives here can be so difficult,” says a North Korean now living in the South. “But finding that restaurant made me so happy.”
Diners at Ms. Choi’s restaurant love one North Korean dish more than all the others. It’s called injogogibap. Yikes! Now that’s a mouthful!

Injogogibap—can you say it yet?—is a street food invented during the famine in North Korea in the 1990s. Back then, injogogibap was the closest thing to meat people could afford. To make it, Ms. Choi uses bits of leftover fried tofu (curd made from soybeans). Normally, those bits would be thrown away. Not during famine! Then people needed every scrap they could get. Ms. Choi scrapes the leftover tofu from pots. She presses it into hot dog-sized tubes. Then she stuffs them with rice. Injogogibap gets its flavors from random pots and does a good job filling hungry bellies.

Even after escaping to South Korea, North Koreans live difficult lives. They often have little education. Their South Korean neighbors call them “chon-nom,” which means “bumpkin.” They don’t belong. They are hungry for a safe place that feels and tastes like home.

What food tastes like home to you? It is a warm chocolate chip cookie with milk, a gooey bowlful of macaroni and cheese, or your mom’s mashed potatoes? When God made our bodies and food, He had good mind for us. He uses food not just to keep us alive and healthy but to give us comfort. Can God comfort you through a bowl of ice cream? You bet!

God also uses our hunger to point to a bigger reality. We have spiritual hunger and thirst that only He can satisfy. Like the North Koreans in South Korea, Christians are pilgrims. We live on Earth. But we don’t really belong here. We are going to our real home—heaven. We will be with God there. He will satisfy every longing we have.

Jesus said to them, “I am the bread of life; whoever comes to me shall not hunger, and whoever believes in me shall never thirst.” — John 6:35
**1945** Japan has controlled Korea for a long time. But Japan is defeated in World War 2. Control of Korea is divided between Russia in the north and the U.S. in the south.

**1946** The Soviet Union (Russia) makes Kim Il-sung the communist leader of North Korea.

**1948-50** The North declares all of Korea to be the Democratic People’s Republic of Korea. The South responds by declaring itself to be a separate nation. The North invades the South in 1950, beginning the Korean War.

**1953** An armistice is signed, bringing an unofficial end to the Korean War. Hundreds of thousands have died in the fighting.

**1968-69** North Korea captures a U.S. spy ship and shoots down a U.S. spy plane.

**1972** Secret talks between North and South fail to bring Korea back together.

**1992** Despite promises, nations worry that North Korea is still working on nuclear weapons. North Korea blocks inspectors from suspected nuclear sites.

**1994** Kim Jong-il takes over after the death of his father, Kim Il-sung. He promises to stop working on nuclear weapons if he is given $5 billion worth of fuel and two nuclear power plants.

**1996-98** North Korea has a severe famine and unstable leadership. Kim sends troops into the DMZ (demilitarized zone—the border area between the two countries). North Korean mini-subss are seen in South Korean waters.

**2002** North Korea admits that it lied about halting its nuclear program. U.S. cuts off oil shipments. Kim sends nuclear inspectors out of the country.

**2003** Six nations begin talks in an effort to stop North Korea’s work on nuclear weapons.

**2006** North Korea tests a long-range missile capable of reaching the U.S., then tests a nuclear bomb.

**2011** Kim Jong-il dies. His son Kim Jong-un takes over. He proves to be as much a dictator as his father and grandfather, and gets along with other nations no better.

**2014 - 2017** North Korea continues to test-fire missiles and works even harder at making nuclear weapons that the missiles could carry.

**2002** North Korea wants nuclear power and nuclear weapons.

**1992** Despite promises, nations worry that North Korea is still working on nuclear weapons. North Korea blocks inspectors from suspected nuclear sites.

**2014 - 2017** North Korea continues to test-fire missiles and works even harder at making nuclear weapons that the missiles could carry.

**Current North Korea leader Kim Jong-un and his generals watch the launch of a missile that might be able to reach another continent and carry a nuclear weapon.**

**A Timeline of Troubles**
The Hermit Kingdom

Graceful swimmers glide through a pool. They move their arms and legs at the exact same time. An arena of people watches. The watchers wear brightly colored, traditional clothes. They have gathered in North Korea’s capital, Pyongyang, to celebrate the birthday of a dictator who once ruled there.

More than 25 million people call North Korea home. But outsiders have another name for the country: the hermit kingdom. The hermit kingdom and the hermit crab get their names for the same reasons. They live separated from the outside world. Neither one likes it when strangers come poking around. A hermit crab doesn’t say, “Come on in. See the inside of my home!” Neither does the North Korean government. When members of the government do let foreigners in, they show them Pyongyang. There, high-rise apartment buildings fill the skyline. People dress well. They use modern technology (but not outside internet sites). On political holidays, children carry flowers to statues of North Korea’s leaders.

About three million people live in Pyongyang. That’s just over 10 percent of North Korea’s population. Another 70 percent of people live in other cities that aren’t showcased like Pyongyang. Fewer than 20 percent live in rural areas.

We know from people who escape that many North Koreans are struggling under a harsh government. We know that far away from Pyongyang—and far from the eyes of foreigners—thousands of North Koreans labor in remote prison camps. Prisoners here may be criminals, people who tried to escape the country, or Christians. Persecution of Christians is reported to be higher in North Korea than any other country.

Photos of North Korea usually make the nation appear healthy and normal. That’s because the North Korean government members picked the photos out. Like people from any country, they want their homeland to look good to outsiders. They want people to think North Koreans love their government.

But people who have escaped will tell you: We are seeing just the shell of this hermit.

North Korea Quiz

1. Why do so many North Koreans now live in South Korea?
   a) They are on vacation.
   b) They are fleeing their home country.
   c) North Korea no longer exists.
   d) They all wanted to start restaurants.

2. Why is North Korea called the hermit kingdom?
   a) Many hermit crabs live there.
   b) It is full of small, wealthy towns.
   c) North Koreans live separated from the outside world.
   d) It is full of large, wealthy cities.

3. What most concerns other nations about North Korea?
   a) nuclear power plants
   b) nuclear weapons
   c) buying North Korean oil
   d) North Korean fake news

4. What is injogogibap made of?
   a) rice and leftover tofu
   b) macaroni and cheese
   c) milk
   d) cookies

5. What bigger reality does our hunger and thirst point to?

Answers page 5
Fuzzy Store

The hot dogs in this New York City grocery store feel a little soft and squishy. But don’t worry—and don’t take a bite either. They’re made of felt!

British artist Lucy Sparrow made this whole bodega (little grocery store) out of felt. She created 9,000 grocery items. She sewed peanut butter and jelly jars, ice cream, meat, and much, much more. Buyers loved her art. She sold out!

Ms. Sparrow says bodegas are disappearing from New York City. She hopes her artwork will make people ask: What will happen when all bodegas are replaced by big stores?

Flesh Eaters at Work

Ken Hansen works every day in a shop with 400,000 bugs. Do you have the willies yet? Get this: They are flesh-eating beetles!

Mr. Hansen’s business is called Kodiak Bones & Bugs Taxidermy. He uses flesh-eating beetles to clean up animal bones and skulls for display. The beetle larvae look like small centipedes. It takes about 10 days for 1,000 larvae to clean a deer skull.

The beetles don’t carry diseases. They don’t bite people either. Mr. Hansen says they love to eat hotdogs!

Roadkill Rules

CRASH! There’s supper!

People in Oregon are ready for a heaping helping of roadkill. Their lawmakers made a decision: When drivers hit animals, they can keep the meat for food.

Roadkill might not be good for people’s cars. But it’s good for people’s bodies. Clean, cold, roadkill usually contains no antibiotics or extra hormones—unlike some meat from the grocery store.

Some Oregonians say they didn’t need a law anyway. They have been harvesting roadkill all along.
Joey the squirrel became famous in February. When a thief came into his owner’s house, Joey attacked him and scared him away!

A man named Adam Pearl rescued Joey after he fell out of his nest in Idaho and was abandoned. Joey used a litterbox. He ate from a bowl of nuts. Joey let everybody pet him—until the burglar showed up.

This summer, Mr. Pearl set Joey free in the wild. Joey will probably do well and find a mate. Mr. Pearl just hopes he doesn’t bring any little Joeys back into the house.

In July, a truck hauling 7,500 pounds of slime eels tried to stop too fast. The eels spilled all over the road. Bulldozers lifted the eels from the highway. Slime eels, or hagfish, let out their slime when they get stressed out. Ew! Time for a serious car wash!

Houston, we have an update!
Do you remember when the spacecraft Juno reached Jupiter? That was more than a year ago. Here’s what we’ve learned from Juno’s journey so far: Jupiter has a really strong magnetic field—about 10 times as strong as Earth’s. A planet’s magnetic field protects it from the Sun’s harmful rays. At the huge planet’s poles, cyclones swirl. Some seem to be more than 900 miles wide! Now those are some serious storms!

Juno is scheduled to crash into Jupiter’s surface in February 2018. There are just a few months left for more discoveries.
It's game day. As these people drive past a store window, they see their reflection.

But wait. Some things are not right. Can you find 13 differences? Hint: Look in a mirror to remind yourself how things like shapes and letters should appear in a reflection.