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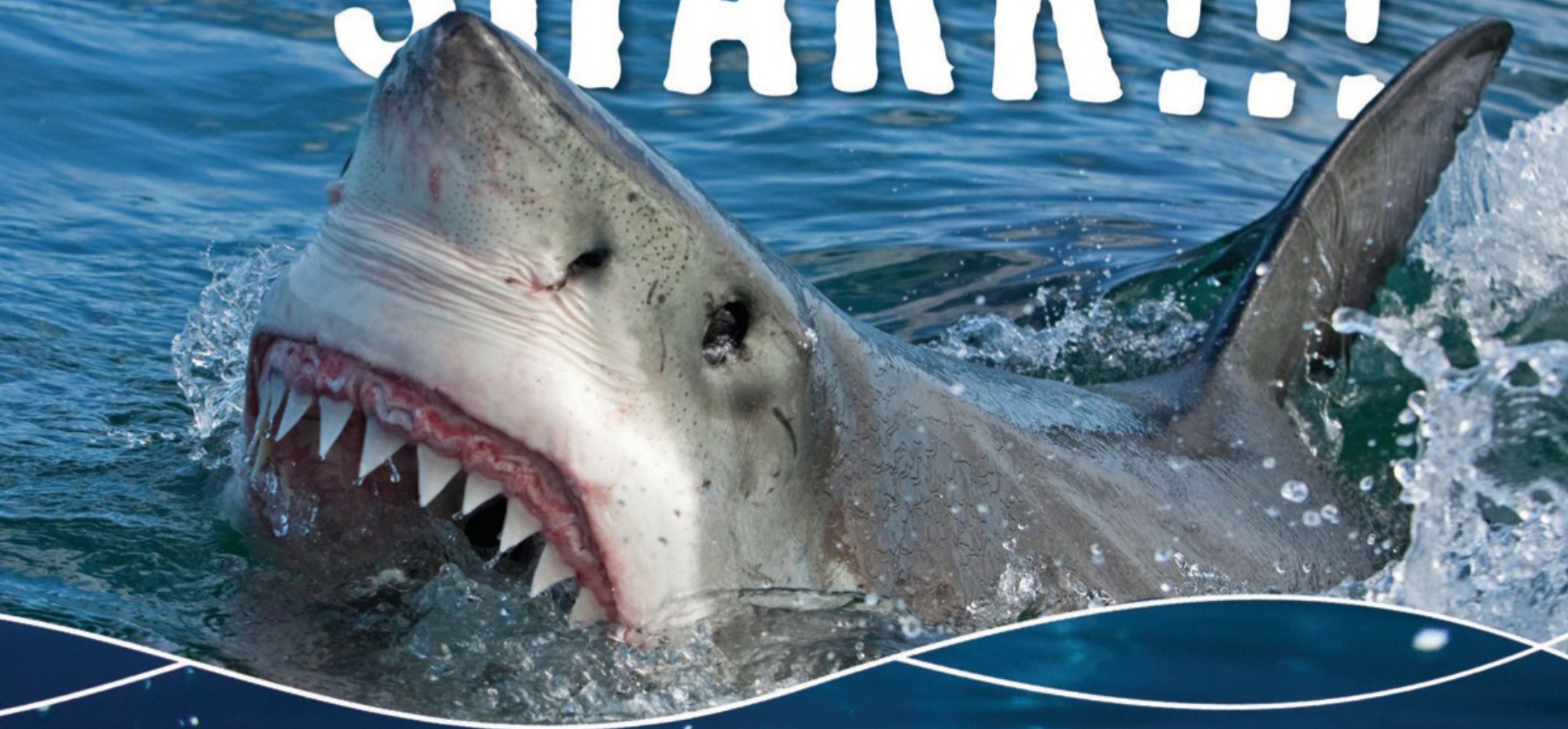
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09>

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SPECIAL FUTURE ISSUE



Discover what your life might look like when you grow up! Find out what you'll wear, where you'll live, and even what future theme parks might be like. Plus, check out how future scientists could protect our planet. First, **take a cool quiz on pages 12-13** to find out which job of the future is right for you.



CHECK OUT THE BOOK!

CITY LIFE

Soon, urban areas will have fewer cars and more drones. Check out what else city dwellers of the future can expect.

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CLOTHING

Future fashion won't be just for wearing—clothes will check the weather, give directions, and even wash themselves.

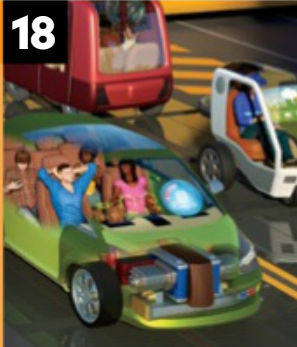
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CARS

You might spend almost 300 hours in the car each year—good thing vehicles of the future will be safer and greener.

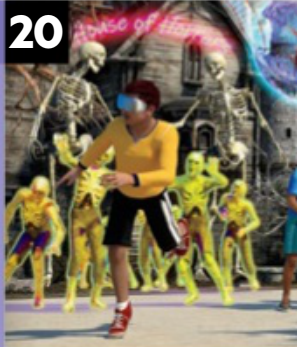
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THEME PARKS

Rider-controlled roller coasters and no lines ever? Put your hands in the air for the supercool theme parks of the future!

20



CLIMATE TECH

Scientists are dreaming up ways to cool down the Earth. Discover a few of their brainiest ideas to slow climate change.

22



LIFE ON MARS

You could be one of the first people to travel to the red planet. Here's what life on a Mars colony might be like.

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COVER: MONDLITHIC STUDIOS (ALL). PAGE 3: MONDLITHIC STUDIOS (ALL)

JUST FOR PARENTS

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Check out these outrageous facts.

BY JULIE BEER AND MICHELLE HARRIS



CHECK
OUT
THIS
BOOK!

JAPAN
HAS MORE
VENDING
MACHINES
THAN NEW
ZEALAND
HAS
PEOPLE.



Oology
is the study of
BIRD EGGS.



**KANGAROO
RATS CAN
MOVE 9 FEET
IN A SINGLE
JUMP.**



WANNA
RACE?

Pudus—the
SMALLEST
TYPE OF DEER—
run in a
zigzag pattern
to escape predators.

AN OCTUPUS CAN
DETACH AN ARM
ON PURPOSE TO
DISTRACT A PREDATOR.



IN ENGLAND,
PEOPLE WERE
ONCE PAID TO ACT
AS **ALARM CLOCKS**,
KNOCKING ON
WINDOWS TO WAKE
HOUSEHOLDS.

One person wrote an **ENTIRE NOVEL**
without using the letter **E**.

Fingerprints last up to **40 YEARS** on paper.



The Vesta asteroid
has a mountain more
than twice the size of
Mount Everest.

Moment of Yum!

These pics might make your tummy rumble. BY ALLYSON SHAW



Plant Power

American pikas gather mouthfuls of **small shrubs**, clovers, grasses, wildflowers, and other plants to add to their hay pile. The rodent-like mammals will eat this mound of vegetation all winter long. One large salad, please.

Extra Spicy

Check out these table manners: When a **meerkat** finds a **scorpion**, it grabs the arachnid with its forepaws, bites off and spits out the deadly stinger, removes the venom by dragging the squirming critter through the sand, then finally chows down. *Crunch!*



Go Bananas!

Bornean orangutans spend about three hours each morning gathering their fave food: fruit like **bananas**, durians, and mangoes. Looks like this youngster's work is already done.



THIS WILD ORANG GRABBED BANANAS FROM A RESEARCH STATION IN BORNEO'S TANJUNG PUTING NATIONAL PARK.

Gulp!

The throat pouch of a **brown pelican** expands to help it scoop up **fish**. Once a fish is trapped, the pouch gets smaller to empty the water. Then the pelican jerks back its head and swallows the swimmer whole.



SEE MORE PHOTOS!
natgeokids.com/moment-of

GUINNESS WORLD RECORDS

NO
TRAINING
WHEELS
NEEDED!

BY KAY BOATNER

TORTOISE ROCKS

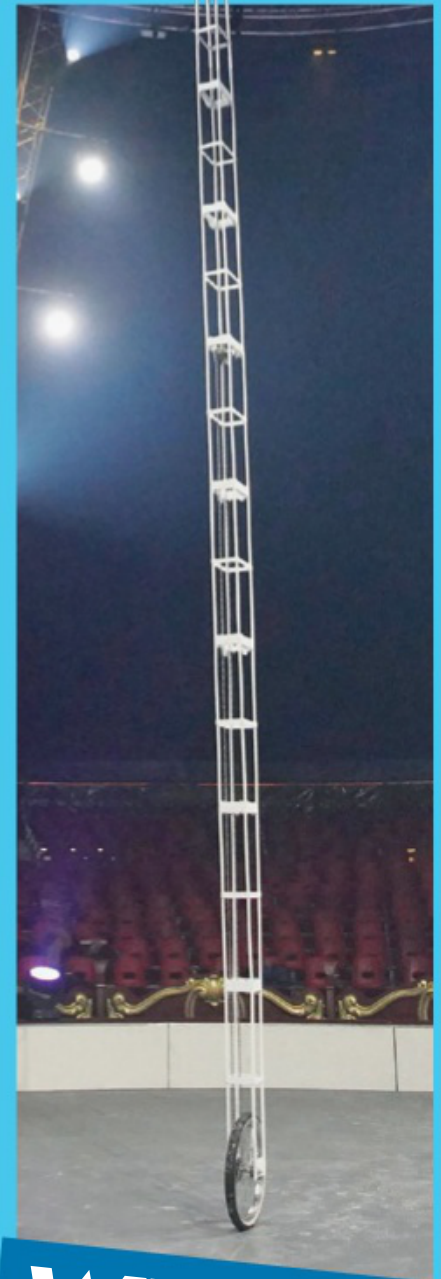
3D SHELL

Kind humans had this tortoise's back—literally. When Fred the red-footed tortoise lost 85 percent of her shell in a forest fire, volunteers went to work creating a new one: the world's first 3D-printed tortoise shell. The replacement shell was made by printing out four separate sections of corn-based plastic, which were then painted to appear more natural. Fred's new look certainly fooled us.



OCEAN ART SHOW

You'll need a bathing suit to check out *this* art show. Located off the coast of France, the Underwater Museum of Cannes is home to six submerged sculptures from Jason deCaires Taylor, who holds the record for the most underwater art installations. Taylor, who's completed 12 aquatic installations around the world, uses only eco-friendly materials in his work. His sculptures are also designed to provide habitats for native plants and animals.



WHEELY TALL UNICYCLE

This guy really pedaled his way into the record books. The tallest rideable unicycle towers 29 feet above the ground. That's like 15 bicycles stacked on top of each other! Wesley Williams's nickname now makes sense: He's been dubbed the "One Wheel Wonder."

**Bet You
Didn't
Know!**

7 adorable facts about desert animals

BY PAIGE TOWLER

1

A fennec fox's **extra-furry** paws help prevent it from **sinking** into shifting desert sands.

2

Meerkats have a special third **eyelid**, known as a nictitating membrane, that helps keep out **sand**.

3

Sand cats **hunt vipers** and other snakes.

4

The desert hedgehog is about the size of a small **grapefruit** when it's curled up.

A FENNEC FOX STANDS BY THE ENTRANCE TO ITS BURROW IN NIGER, A COUNTRY IN AFRICA.

5

When food is scarce, **scorpions** can live off just **one** insect a year.

6

The gerenuk, an antelope that lives in Africa, **never needs** to drink water.

7

During hot **summers**, African bullfrogs burrow **underground** and make a cocoon out of their dead skin.

1

THEY'RE OUTTA THERE

A stormy chase in 1980 caused the *Panagiotis* to run aground on the Greek isle of Zakynthos. The stranded crew of smugglers supposedly abandoned their ship to avoid capture by the Greek Navy, leaving behind a now rusty souvenir for beachgoers.



STRIKING SHIPWRECKS

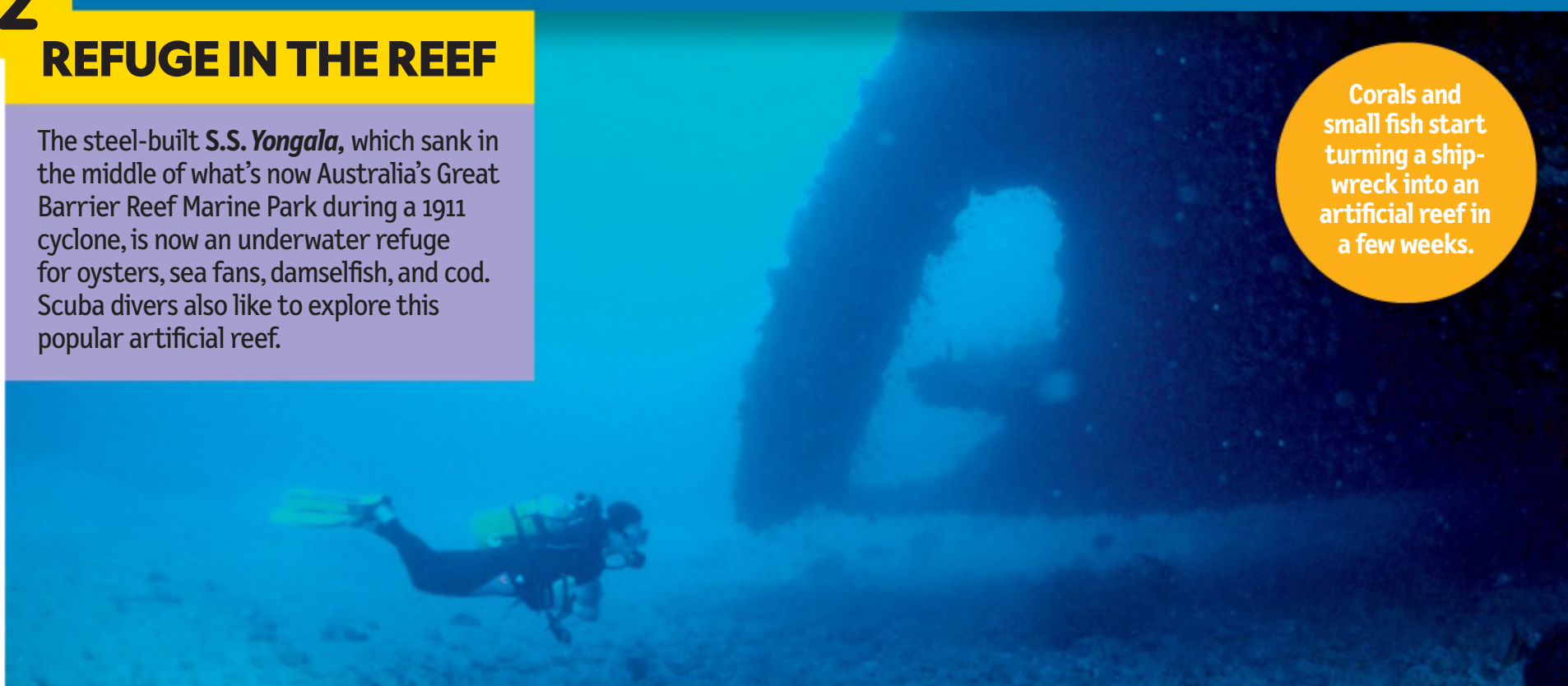
UNEXPECTED EVENTS MEANT TROUBLE AT SEA FOR THESE UNLUCKY VESSELS.

2

REFUGE IN THE REEF

The steel-built *S.S. Yongala*, which sank in the middle of what's now Australia's Great Barrier Reef Marine Park during a 1911 cyclone, is now an underwater refuge for oysters, sea fans, damselfish, and cod. Scuba divers also like to explore this popular artificial reef.

Corals and small fish start turning a shipwreck into an artificial reef in a few weeks.



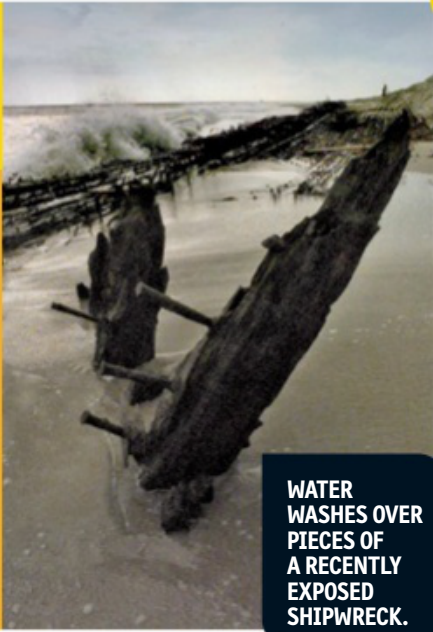


CHECK
OUT
THE
BOOK!

3

DIGGING FOR HISTORY

Treacherous currents, storms, and sandbars have wrecked an estimated 1,000 ships off of **Hatteras Beach** in North Carolina. Tides and wind pull back the sand for beachgoers and archaeologists, who can then explore this “graveyard of the Atlantic.”



WATER
WASHES OVER
PIECES OF
A RECENTLY
EXPOSED
SHIPWRECK.

4

POINT OF PERIL

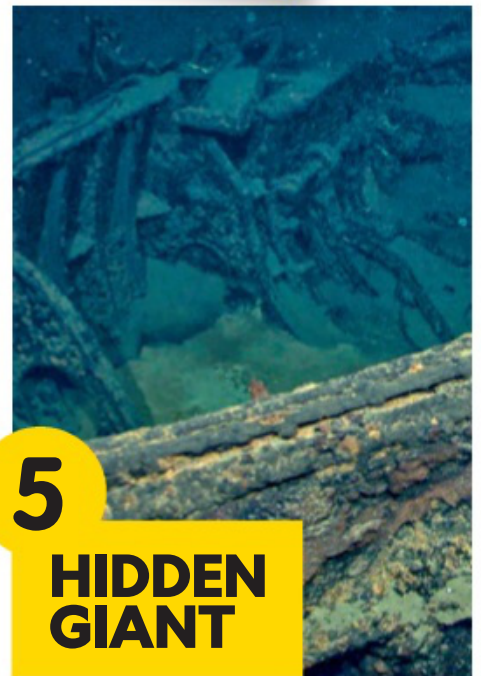
Just north of San Francisco, California, **Point Reyes** reaches 10 miles into the ocean, waiting for ships like a treacherous claw. This rocky coast has claimed more than 50 shipwrecks and continues to snag small vessels like the one below with bad weather, unforgiving currents, and jagged shorelines nearly every year.



5

HIDDEN GIANT

It was one of the biggest and most heavily armed vessels of the time. But after many torpedo and bomb hits from U.S. military forces during World War II, the Japanese battleship **Musashi** caught fire and sank. The ship remained hidden in darkness for more than 70 years until researchers spotted it in 2015 near the Philippines.



6

THAR SHE BLOWS!

This former cargo ship was pulled off course by the 145-mile-an-hour winds of Hurricane Frances in 2004. Now **La Famille Express** rests as a tourist attraction in shallow water off the coast of Turks and Caicos, just northwest of Puerto Rico.



7

HIGH AND DRY

What happens when you drain a river? These boats, moored in what's known as the **Aral Ship Graveyard**, show one result: They're all that's left of a small fishing town in Uzbekistan after the former Soviet Union diverted river water to irrigate crops.

8

BURIED BONEYARD

Ships passing Namibia's **Skeleton Coast** in Africa must withstand thick fog, strong currents, and driving winds that push ships toward shore. Vessels that couldn't handle the forces of nature became—and remain—stuck in the sand.



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AMAZING ANIMALS

Squirrel Goes Nuts

Fargo, North Dakota

A North American red squirrel picked a surprising spot to stash its walnuts: a pickup truck.

The truck's owner, Bill Fischer, has tried parking in different spots for eight years but always ends up plucking the lime-size nuts from his vehicle. Last year, after returning from a four-day trip, Fischer found a bigger mess than ever before: His truck was full of 300 pounds of walnuts! They were stuffed around the engine, in the front bumper, by the wheels, and in parts of the frame.

These squirrels are larder hoarders, which means they keep their treasured treats in one or a few places that they carefully guard instead of spreading out the haul. But why *this* truck?

"It appears to be in the squirrel's territory and a good spot to defend from other squirrels," wildlife ecologist John Benson says. "And if this animal has had good luck defending the truck, it will probably defend it for life." Somebody give this squirrel a parking ticket! —Alli Dickey

THINK I
PACKED
ENOUGH
SNACKS?



THE SQUIRREL
CRAMMED
ITS WALNUTS
UNDER THE
TRUCK'S HOOD.



SAFETY
FIRST!
SNUGGLES
SECOND.



Chicken 'Crossing Guard'

Newstead, New Zealand

Why did the chicken cross the road? Because she “works” in the parking lot!

Decked out in a yellow safety vest, a hen named Henry patrols the lot at Newstead Country Preschool. Each morning she greets the arriving students, and her presence reminds motorists to drive slowly and carefully. That helps the kids stay safe.

The school’s owner, Tracy Trigg, rescued the hen when she appeared at her friend’s house, looking thin and lost. Trigg, who also teaches at the school, brought the friendly

bird to the farm attached to the preschool. (Students interact with farm animals as part of their lessons.) But Henry didn’t want to stay in the field.

“The parking lot was where all the people were, so that’s where Henry would turn up in the mornings,” Trigg says. “She would rather hang out with us than the other chickens.”

After a few days, Trigg let Henry take on the job permanently. Her payment? Cuddles and a bit of tasty cheese. —Alli Dickey

SQUIRREL
Fargo,
North Dakota

JAGUAR
Sonora, Mexico

CHICKEN
Newstead,
New Zealand



Comeback Critter: Jaguar

Sonora, Mexico

A young jaguar named El Bonito strolls up to a camera trap and sniffs the lens. Scientists were excited to see this cat—whose name means “the beautiful” in Spanish—so close to the Arizona border. Why? It could be a sign that jaguars are reclaiming old territory.

Jaguars once roamed throughout Arizona and New Mexico, but hunters wiped out the entire U.S. population over the past century. But for 15 years, conservationists in Sonora—a state in Mexico that borders those two U.S. states—have worked to protect jaguar habitat and keep the cats alive. (Ranchers sometimes kill jaguars that they blame for eating their cattle.)

Although male jaguars occasionally cross into the United States, the cats can only make a comeback in their former territory if females cross over, too. The problem? Female jaguars rarely travel far from their mothers’ home range. So discovering a young jaguar like El Bonito, who still sticks close to Mom, might mean that his mother is close by—and exploring new territory.

—Douglas Main

MAKE SURE
TO GET MY
GOOD SIDE.

EL BONITO
WALKS PAST A
VIDEO CAMERA
IN NORTHEAST
SONORA, A STATE
IN MEXICO.



PLANET
POSSIBLE

Check out more stories, tips, and
crafts to help the planet!

natgeokids.com/planet

Welcome to the

SPECIAL FUTURE ISSUE

PERSONALITY QUIZ

BY KAY BOATNER

Welcome to the future! This **special issue** is crammed with tons of information from the *Ultimate Book of the Future* to give you a peek at what scientists and other experts think your life might look like **when you grow up**.

Discover what you'll **wear and drive**, where you'll **live**, and even what **future theme parks** might be like. Plus, check out some **mind-blowing ways** future scientists could **protect our planet** from global warming.

But first: Take this **personality quiz** to see which **job of the future** is the best fit for you. Then start flipping to find out **what your future** might hold!

START HERE!

MAKING
MAJOR
DISCOVERIES
IN A LAB

Your
ultimate
dream job
would
involve ...

TRAVELING
TO COOL
LOCATIONS

Pick a
dessert.

OWL

DOLPHIN

Would
you rather
skydive or
snorkel?

SKYDIVE

SNORKEL

Choose
a suitcase
for your
next trip.

A BRAZILIAN
BEACH

Which
historical figure
would you rather
hang with?

Choose
a summer
spot.

ICE-CREAM
SUNDAE

PIE

THE SWISS
MOUNTAINS

JIM CUMMING / ALAMY (BIRD); © HIROYA MINAKUCHI / MINDEN PICTURES (DOLPHIN); 2HAPPY / ALAMY (SKYDIVER); ARTISTEER / GETTY IMAGES (SNORKEL MASK); ARTYSTUDIO / GETTY IMAGES (SILVER SUITCASE); AFRICA STUDIO / GETTY IMAGES (YELLOW SUITCASE); GARY BELL / OCEANWIDE / MINDEN PICTURES (SEA TURTLE); JUERGEN & CHRISTINE SOHNS / MINDEN PICTURES (ELEPHANT); FIONA ROGERS / NPL / MINDEN PICTURES (CHIMPANZEE); THECRIMSONMONKEY / GETTY IMAGES (SUNDAE); MPHILLIPS007 / GETTY IMAGES (PIE); GIORANO CIRRIANI / GETTY IMAGES (BEACH)

YOUR FUTURE JOB COULD BE ...

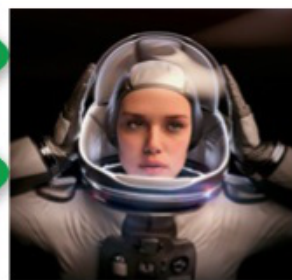
If these descriptions don't match your personality, don't worry. This quiz is just for fun!

AN UNDERSEA MEDICAL RESEARCHER!



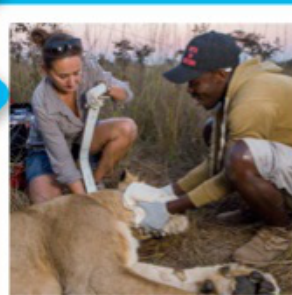
The ocean is mostly unexplored, and scientists think it hides things like unusual chemicals that could help cure deadly diseases. In the future, medical researchers will swap lab coats for wet suits to swim in search of new medicines. You would do well in this role thanks to your adventurous spirit and appreciation of aquatic animals.

A SPACE PILOT!



In the future, Earth will need more astronauts. As space tourism takes flight, companies will need fearless pilots to command the rockets and space planes that will take visitors to their galactic destinations. Your love of exploration—plus your hope that we're not alone in the universe—would make you a great space pilot.

AN ANIMAL CONSERVATION TECHNOLOGIST!



Conservationists of the future will need to understand *why* animals become endangered. They'll also need training in artificial intelligence to program drones to find poachers. Whether you're passionate about endangered animals or backyard critters, you're wild about saving wildlife. With your big heart, you'd be happy working in a conservation-focused field.

A ROBOT-HUMAN COMMUNICATOR!



Right now, robots operate in the background, vacuuming floors and adjusting the thermostat. But in the future, people and robots might work side by side. Robot-human teams could work together to perform rescue operations or run scientific experiments. Organized and friendly, your leadership skills could totally translate to managing robots.

A DRONE DRIVER!



Many experts think that city skies will soon be full of delivery drones. Someday, they could even fly themselves. But first, they'll need pilots. Experts predict that drone technology could create more than 100,000 jobs by 2025. You're super analytical and have great problem-solving skills—you'd make an excellent drone pilot.

CHECK OUT THE **FUTURE TECH HUB!**
natgeokids.com/tech

ANDRIJ VATSYK / ADOBE STOCK (MOUNTAINS); HULTON ARCHIVE / GETTY IMAGES (GEORGE WASHINGTON CARVER); EVERETT COLLECTION / SHUTTERSTOCK (AMELIA EARHART); PROSTOCK-STUDIO / GETTY IMAGES (VR HEADSET); CHARN-SITR / SHUTTERSTOCK (SMART WATCH); ZOE HYLAND / SHUTTERSTOCK (CAP); RICH CANO / GETTY IMAGES (UNDERSEA MEDICAL RESEARCHER); HUTANGAC / GETTY IMAGES (SPACE PILOT); SEBASTIAN KENNERKNECHT / MINDEN PICTURES (ANIMAL CONSERVATION TECHNOLOGIST); EVGENIYSHKOLENKO / GETTY IMAGES (ROBOT-HUMAN COMMUNICATOR); JAYMI HEIMBUCH / MINDEN PICTURES (DRONE DRIVER)





SPECIAL FUTURE ISSUE

CITY LIFE

Soon, urban areas will have fewer cars and more drones. Here's what else future city dwellers can expect.

BY STEPHANIE WARREN DRIMMER
ART BY MONDOLITHIC STUDIOS

GREEN BUILDINGS

Gardens will go vertical, tucked outside of building walls and on top of roofs. Food grown close to the people who will eat it can be picked fresh, making for tastier fruits and veggies. And because the food doesn't need to be transported by polluting trucks, it's better for the planet.

ROOM FOR WILDLIFE

There's space for people *and* animals! Future cities will support wildlife, with protected areas for native plants and open areas for animals to roam.

RETHINKING RAINWATER

Not a drop of rain will be wasted. Instead of roof gutters, hills called bioswales collect and send water to the city's green spaces.

WALKWAYS, NOT ROADWAYS

In the future, drones and high-speed transit will mean most people never have to drive. Cities will be designed for pedestrians, swapping roads and parking lots for walking paths and green spaces.

A vibrant, futuristic city scene. In the foreground, a diverse group of people, including a man in a red shirt, a woman in a purple tank top, and a young boy with a soccer ball, are walking on a reflective surface. In the background, a large, multi-level building with glass elevators and balconies is visible. A yellow drone is flying in the sky, and a red parrot is perched on a balcony. A white robot with a blue recycling bin is also present. The scene is set in a lush, green park area with trees and a clear blue sky.

DRONE DELIVERY

It's a bird, it's a plane, it's ... a pizza? Pilotless drones will flock above urban skies, making deliveries of supplies and food orders. Eventually, they'll even transport people from place to place.

ALL-WAY ELEVATORS

Going up ... and over, and everywhere in between! One day, elevators might go up and down *and* side to side. That could change the way skyscrapers are designed, with some elevators moving outside of buildings instead of taking up space inside.

RECYCLING ROBOTS

"Is this recyclable?" Never wonder that again. City waste centers will have machines that will sort, clean, and recycle *everything* so materials can be used again and again.



CHECK OUT
THE BOOK!

SPECIAL FUTURE ISSUE

CLOTHING

Future fashion won't be just for wearing—clothes will monitor the weather, give directions, and even wash themselves.

WEATHER REPORT

Through a connection with your smartphone, this umbrella can alert you when it's about to rain and even let you know if you've accidentally left it behind.

SMART CLOTHES

What do you do if you need directions while you're on your bike? This top looks like a normal denim jacket. But sensors built into the sleeve will allow cyclists to simply touch a cuff to safely pause their music, answer a call, or check that next turn.

NICE AND TOASTY

The temperatures were below freezing when U.S. athletes put on their team uniforms for the 2022 Winter Games in Beijing, China. But the competitors were warm. The fabric on their parkas contained materials that adapt to changes in temperature. As temperatures drop, the materials contract at different rates. This forms an air pocket, which creates insulation. So the jacket becomes a puffer when it's cold and a regular parka when it warms up. And this technology could be part of your wardrobe soon.

24hr METRO FITNESS

LATER, LAUNDRY

Say goodbye to sweaty sports uniforms. Researchers are developing clothes covered with special microscopic structures to keep them clean. When exposed to light, the structures release a burst of energy that breaks down everything from soil to paint to tomato sauce.

A CONTACT LENS TOOK THIS PHOTO!

IT'S A SNAP

These contact lenses help the wearer take a picture in the blink of an eye—literally. They come with a built-in, microscopic camera that can be controlled by eye movements and blinking.

POWER UP

Device about to die? No problem: Simply plug it into your outfit. A Dutch designer has already sent a line of sunlight-capturing clothes down the runway. Small, flexible solar panels collect energy when worn in direct sunlight, storing power for charging smartphones and more.

SEE WHAT YOUR CLOTHES SAY ABOUT YOU.
natgeokids.com/september

SPECIAL FUTURE ISSUE

CARS

You might spend almost 300 hours in the car each year—good thing the vehicles of the future will be safer and greener.

FINER FRAME

Race cars are built using a high-tech material called carbon-fiber-reinforced plastic that's stronger than steel—and lighter, too. That means safer, faster cars. But until recently, the technology was too complicated to put in regular cars. Soon, more and more car models will have carbon-fiber bodies to get you where you're going faster and safer.

NEW VIEW

Drivers sometimes have to quickly look away from the road to check fuel levels or directions. But what if that information was right in front of their eyes? Automakers are researching tech that would project this useful info onto the windshield.

RIDESHARE

Some experts think that people won't own cars in the future. Instead, they'll hail one from a fleet of driverless vehicles roaming the streets. With no cars to store, garages and parking lots could become parks, game rooms, and more.



CARTALK

You're driving around a sharp curve when suddenly a truck is blocking the road—you might crash! Luckily, your car breaks on its own, avoiding disaster. How did it know? In the future, all cars could be built with a technology called car-to-car communication that lets vehicles share information about things like their position and speed.

GOING DRIVERLESS

Cars that automatically steer and brake are already on the road—but human drivers still need to pay attention and take charge sometimes. In the future, when self-driving technology becomes so advanced that humans don't need to be at the controls, cars might lose the steering wheel and brake pedals.

POWER UP

What will fuel the cars of the future? Some think every vehicle on the road will be electric. But others are predicting another power source: hydrogen. Hydrogen fuel cells create a chemical reaction between hydrogen in the car and oxygen in the air to produce electricity. The only emission is water. With this reaction, you wouldn't need to plug in your car to charge it.

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**SPECIAL
FUTURE
ISSUE**

THEME PARKS

Rider-controlled roller coasters and no lines ever? Put your hands in the air for the supercool theme parks of the future!

House of Horrors

A NEW RIDE, EVERY TIME

Maybe your favorite attraction at a theme park is the haunted house ... but having the same experience over and over is boring. Luckily, in the future, attractions and rides will use face recognition to identify individual visitors and change the adventure each time—so people never experience the same ride twice.

NO MORE LINES

High-speed rides are thrilling. Waiting for them in long lines? Not so much. Some theme-park experts think lines will soon be a thing of the past. Using their mobile devices, visitors will be able to book a ride in advance. You'll show up at the time you reserved and walk right onto the ride.



A WHOLE NEW WORLD

Some theme parks won't have rides at all. Instead, they'll be like video games brought to life, where visitors will walk through the gates into a totally new world. They'll meet high-tech robots, chat with fairies, and go on quests.

GAME ON

Visits to future theme parks will be like playing a game. You might earn points by driving bumper cars over an image or finding a hidden object. Riders can experience roller coasters solo or with friends so that *you* control the coaster: Your group will have the ability to stop, slow, or turn the car with their voices or gestures. Sounds like a wild ride!

VIRTUAL VISUALS

Some traditional rides send you past robotic animals or swashbuckling pirates. But experts say theme parks of the future will mix physical experiences—like animatronic characters or water and fire effects—with digital effects. Virtual reality headsets will put visitors in the middle of an intergalactic battle or steps away from attacking zombies.

PLAY A FUTURISTIC GAME!
natgeokids.com/september



SPECIAL FUTURE ISSUE

CLIMATE TECH

Scientists are dreaming up ways to cool down the Earth. Check out a few of their brainiest—and zaniest!—ideas to slow climate change.

PAINTING MOUNTAINS

Glaciers help keep the planet cool because their icy white color reflects light and heat from the sun. But as Earth warms, glacier ice melts, which then heats the planet even more. One Peruvian inventor came up with a possible solution: painting a former glacier—now a dark mountain—bright white. Like snow and ice, the white paint would reflect light and heat to help keep the planet cool.

CARBON EATERS

Carbon dioxide—a heat-trapping gas released by burning coal, oil, and natural gas—is dangerously warming the planet. Luckily, phytoplankton (microscopic plant-like creatures that live on the surface of the ocean) suck small amounts of this gas out of the air for food. So scientists dumped iron, which phytoplankton need to grow, into an area of the ocean. The result? A huge growth of hungry phytoplankton that gobbled up the CO₂, causing levels in the area to drop.



CREATING CLOUDS

When volcanoes erupt, the ash can form a shield that reflects the sun's heat into space and lowers Earth's temperature by one degree Fahrenheit for a little bit. This inspired scientists to look into spraying sea salt into the sky from airplanes. There, water vapor would collect on the salt particles and form clouds that would help reflect the sun's heat. But once started, the process would have to go on forever, or the planet would quickly rewarm.

SPACE UMBRELLA

When you get too hot at the beach, you sit under an umbrella ... so why not do the same for the planet? Scientists estimate we would need to decrease the sun's glare by only 2 to 4 percent to make the planet's temperature healthy again. One idea is to deploy trillions of butterfly-size robots that would form a sunshade 60,000 miles wide. But how to launch them is a puzzle—this technology doesn't exist yet.

S.S. Ironheart

YOU CAN HELP SAVE THE EARTH! CHECK OUT IDEAS AND TIPS.
natgeokids.com/SaveTheEarth

SPECIAL FUTURE ISSUE

LIFE ON MARS

You could be one of the first people to travel to the red planet. Here's what life on a Mars colony might be like.

LANDING GEAR

Your first glimpse of your new home is through the tiny port-hole window in your thousand-square-foot, gumbdrop-shaped lander. As more landers touch down, inflatable tunnels connect them, creating a network of living spaces for the brand-new Martians. (That's you!)

WATER WISE

Mars is drier than Earth's driest desert. So the machines in your space base will be designed to conserve every drop of water—even in toilets! In one invention, water for flushing later goes to the sink for handwashing. If that sounds gross, don't worry: The water is filtered through a system that makes it clean enough to drink.

SOLAR POWER

You'll have to power everything, from your computers to the heaters that will keep you warm during Mars's minus 100°F nights. Earthlings often burn fuel like coal, oil, and natural gas for energy. But on Mars, solar panels will likely power your entire space base.

DRIVER'S SEAT

The Apollo Lunar Roving Vehicle from the 1970s was the last landing vehicle that could carry humans. The day-tripping moon buggy had space for two astronauts but not for long-term supplies. For road trips on the red planet, scientists are developing Chariot, a "space RV" with storage for scientific equipment, benches for sleeping, a bathroom, and even a small kitchen.

MARS MENU

In 2014, astronauts on the International Space Station planted lettuce seeds in fertilizer-filled pillows, put them under energy-efficient lights, and carefully watered them. One month later, they ate the first space salad! Mars astronauts might someday grow their own fresh food in a Martian greenhouse. After all, this planet has zero grocery stores.

KEEP EXPLORING SPACE!
natgeokids.com/space

FROM
THE
PAGES
OF

EXPLORER ACADEMY

THE FORBIDDEN ISLAND

BY TRUDI TRUEIT

In this excerpt from *Explorer Academy: The Forbidden Island*, Cruz Coronado and his classmates are back at school headquarters. Their challenge: Investigate the names carved on the North Star pyramid for possible clues to find the final piece of the cipher. As they read the walls, the pyramid begins to glow. Then Cruz sees his mother's name appear ...

The Explorer Academy students are reaching the end of their first year aboard the ship *Orion*. Now 13-year-old Cruz is scrambling to complete the last piece of a cipher and recover his mother's world-changing formula. But Nebula agents are on his tail. Will Cruz solve the puzzle in time?

CRUZ PLACED THREE ICY FINGERS on his mom's name. "Here goes." He gently pushed on the glass, expecting a drawer to pop out. None did. Instead, a tremor shook his boots. A second later, the entire side of the pyramid began sliding up! The triangular pane of glass moved about four feet toward the apex before stopping. A wispy cloud floated through the space in the glass structure.

"My mind is officially blown," whispered Lani.

Cruz bent in front of the trapezoidal opening. Sailor edged closer, too.

"Careful, Sailor," warned Emmett. "It's meant for Cruz. If the program thinks an intruder is trying to gain access, it could shut down."

Sailor backed off.

Cruz extended his hand, putting it through the entry. He held his wrist there for a few tense seconds before pulling it out. The reading on his OS band reported no toxins. With one final look at Nyomie, Lani, Emmett, and Sailor, Cruz crept into the North Star pyramid.

At first, he couldn't see much through the haze, but the farther in he went, the clearer the air became. The fog was drifting to the walls of the pyramid, making it hard for anyone to see in. Or out. Was this by design? he wondered.

Crawling toward the center, Cruz saw the floor was imprinted with a large chessboard. Instead of being black and white, however, the squares alternated between frosted and mirrored. Pausing at the rim of the board, Cruz touched one of the frosted squares.

Immediately, a holographic 3D black chip appeared where his finger had been. Black circles began to materialize on every frosted square in the first three horizontal rows.

Likewise, a dozen white chips began popping up on all the opaque squares in the last three

rows. This left two full rows in the middle of the board without any chips. Ah, a game of checkers! Near Cruz's knees, a sentence appeared, as if written by an invisible hand: *Your move.*

When Cruz was four, his mother had taught him to play checkers. Well, she'd *tried* to. Instead of moving the pieces according to the rules, he'd wanted to build a fort, so that's what they'd done. From then on, their version of checkers involved constructing castles, bridges, and towers, which Cruz got to demolish when they were finished.

What should he do here? Play the right way? Or their way? His gut said fort, but if he was wrong ...

Cruz selected one of his black pieces and carefully placed it on top of one of the white ones in his mom's front row. Nothing happened. The two markers sat there. He was beginning to regret his decision when a white piece floated up to settle on his piece. *Yes!* Cruz placed another black piece on the white one and his mom's program did the same. They'd formed a four-piece tower.

They made three more similar towers, positioning them to serve as the corners of the fort. Between these, they built four small towers, each two pieces tall. They were all out of checkers. Normally, they'd break out another box, but there wasn't one here. Instead, a new message was being scrawled near Cruz's knees: *Finish the game.*

Did she mean the way they'd done it when he was little?

Cruz stared at the board, the minutes ticking by. He knew he needed to make a decision, but what if it was the wrong one?

Cruz took a deep breath. With one swipe of his hand, he toppled the fortress. The black and white chips scattered across the board.

PLAY!

CRACK THE CODE!

Throughout the seven books in the *Explorer Academy* series, Cruz must use a cipher to solve mysterious messages. Try it yourself! Go to **ExplorerAcademy.com** to find the cipher that will solve the message below.

ANSWER ON PAGE 35

⊖	⊖	⊖	⊖
—	—	—	—
⊖	⊖	⊖	⊖
—	—	—	—
⊖	⊖	⊖	⊖
—	—	—	—
⊖	⊖	⊖	⊖
—	—	—	—
⊖	⊖	⊖	⊖
—	—	—	—
⊖	⊖	⊖	⊖
—	—	—	—
⊖	⊖	⊖	⊖
—	—	—	—
⊖	⊖	⊖	⊖
—	—	—	—

HINT
Solve the puzzle from top to bottom.

CRUZ CRAWLS ONTO THE CHESSBOARD INSIDE THE NORTH STAR PYRAMID.

Did Cruz make the right choice?
Will his move help him find the final piece of the cipher?

Find out in
**EXPLORER ACADEMY:
THE FORBIDDEN ISLAND**
ExplorerAcademy.com



FUN STUFF

GAMES,
LAUGHS,
AND LOTS
TO DO!

STUMP YOUR PARENTS UNITED STATES EDITION

If your parents can't
answer these questions
about the United States,
maybe *they* should go to
school instead of you!
ANSWERS ON PAGE 35

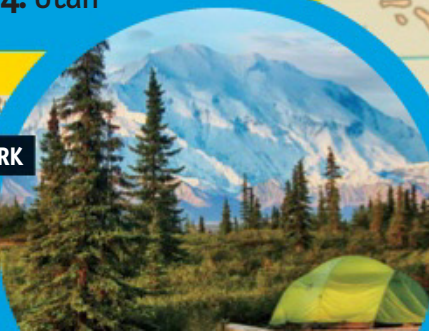
- 1** On nights with a full moon,
what sometimes appears over
Kentucky's Cumberland Falls?
- A. moonbows
 - B. werewolves
 - C. the aurora borealis
 - D. reindeer



- 2** Match the state to its official sport.
- | | |
|-------------------|---------------------|
| A. Maryland | 1. stock-car racing |
| B. Delaware | 2. jousting |
| C. New Hampshire | 3. skiing |
| D. North Carolina | 4. bicycling |

- 3** Match the national park to the state
where it's found.
- | | |
|------------------------------|-------------|
| A. Zion National Park | 1. Arkansas |
| B. Crater Lake National Park | 2. Alaska |
| C. Hot Springs National Park | 3. Oregon |
| D. Denali National Park | 4. Utah |

DENALI NATIONAL PARK



- 4** What were immigrants
served as part of
their first American
meal after arriving to
Ellis Island, in New York?
- A. ice cream
 - B. hot dogs
 - C. hamburgers
 - D. macaroni and cheese



- 5** Match the state to its capital city.
- | | |
|-------------------|---------------|
| A. West Virginia | 1. Trenton |
| B. Montana | 2. Helena |
| C. New Jersey | 3. Charleston |
| D. South Carolina | 4. Columbia |

- 6** Match the state to its official flower.
- | | |
|-----------------|----------------------|
| A. Texas | 1. red clover |
| B. North Dakota | 2. wild prairie rose |
| C. Mississippi | 3. magnolia |
| D. Vermont | 4. bluebonnet |



WILD
PRAIRIE ROSE

- 7** What's the shape of one
mound built by prehistoric
people in Ohio?
- A. a dog chasing a cat
 - B. a snake swallowing an egg
 - C. an eagle soaring through the sky
 - D. an alligator eating a shark

- 8** Match the invention to the state
where it was invented.
- | | |
|-----------------|-----------------|
| A. Kool-Aid | 1. Minnesota |
| B. Rollerblades | 2. Tennessee |
| C. Ferris wheel | 3. Nebraska |
| D. cotton candy | 4. Pennsylvania |



- 9** Match the state with its nickname.
- | | |
|----------------|---------------------------|
| A. Oklahoma | 1. the Badger State |
| B. Nevada | 2. the Sooner State |
| C. Wisconsin | 3. the Constitution State |
| D. Connecticut | 4. the Silver State |



CHECK
OUT
THE
BOOK!



10

Before the pandemic, how many passengers flew through the world's busiest airport, located in Atlanta, Georgia, each year?

- A. 1 million
- B. 10 million
- C. 100 million
- D. 1 billion

11

In Idaho, there's a hotel shaped like which animal?

- A. elephant
- B. flamingo
- C. beagle
- D. bear

12

Match the state to the year in which it became part of the United States.

- | | |
|--------------|---------|
| A. Maine | 1. 1788 |
| B. Louisiana | 2. 1812 |
| C. Arizona | 3. 1820 |
| D. Virginia | 4. 1890 |
| E. Wyoming | 5. 1912 |

13

Match these famous people to the state where they were born.

- | | |
|----------------------|------------------|
| A. Wilbur Wright | 1. Alabama |
| B. Serena Williams | 2. Massachusetts |
| C. Benjamin Franklin | 3. Michigan |
| D. Helen Keller | 4. Indiana |



14

The Tribune Building in Chicago, Illinois, does *not* contain rocks from which source?

- A. the Great Wall of China
- B. the Great Pyramid of Khufu in Egypt
- C. the Colosseum in Italy
- D. Mount Everest in Asia



15

What would you find on display at Stratocaca, an underground museum in Kansas?

- A. coal
- B. salt
- C. fossils
- D. worms

16

Washington National Cathedral in Washington, D.C.—a federal district that serves as the U.S. capital—includes a gargoyle of which character?

- A. Superman
- B. Snoopy
- C. Darth Vader
- D. Peppa Pig

17

Match the state to its official bird.

- | | |
|---------------|-----------------------|
| A. New Mexico | 1. nene |
| B. Florida | 2. mockingbird |
| C. Iowa | 3. greater roadrunner |
| D. Hawaii | 4. eastern goldfinch |



GREATER
ROADRUNNER

18

Match the landmark to the state where it's found.

- | | |
|-----------------------|-----------------|
| A. Mount Rushmore | 1. California |
| B. Golden Gate Bridge | 2. Washington |
| C. Space Needle | 3. Missouri |
| D. Gateway Arch | 4. South Dakota |



19

How long would it take to drive across Rhode Island, the smallest U.S. state?

- A. 10 minutes
- B. 1 hour
- C. 3.5 hours
- D. 8 hours

20

Who first found a rare 66-million-year-old *Torosaurus* in Colorado?

- A. a father and son
- B. a team of archaeologists
- C. a Girl Scout troop
- D. a construction crew



Whatcha Think?

Check out how *Nat Geo Kids* readers responded to this poll, then go online to vote in the next one!

natgeokids.com/whatchathink



26%

UNDERWATER
VEHICLE



12%

FLYING TAXI

10%

SUPERFAST
TRAIN



Which
futuristic
transportation
are you most
excited to
ride?

33%

SPACE
ELEVATOR



19%

SELF-DRIVING
CAR



THE KOOKY INVENTOR

BY JILL FANSLAU

Ask a friend to give you words to fill in the blanks in this story without showing it to him or her. Then read out loud for a laugh.



I was going to be rich! I had just invented the first electric _____. Using a(n) _____
 from _____'s toolbox, I built it out of old _____, metal _____,
 and rubber _____. The first time I turned it on, the machine worked _____. I
 couldn't believe it! "_____!" I yelled, _____ up and down. I quickly invited a(n)
 _____ billionaire to check out my invention. I couldn't wait to sell it for _____
 million dollars and live like _____. But when I turned it on, something went terribly
 _____. The machine started _____ and _____. Suddenly it
 spewed _____ and shot slices of _____ in all directions. The billionaire started
 screaming at the top of his _____ and _____ out of my lab. Good thing I still get my
 weekly allowance.



CRITTER CHAT

If animals used social media, what would they say? Follow this silky anteater's day as it updates its feed.
BY ALLYSON SHAW

SILKY ANTEATER

SCREEN NAME: AntsBeware

LIVES IN: Forests from southern Mexico to South America

FRIENDS ➤



HARPY EAGLE

FeatherCrown



OCELOT

TreeCat



GREEN ANACONDA

BigSnake

START

7 p.m.



AntsBeware

#WhoWoreItBetter: me or the fluffy seed pods of the kapok tree?



You know I'm bad at this game—it's why I can't ever find you!



FeatherCrown

Great camo, @AntsBeware—gotta stay hidden from @FeatherCrown. #ThatBirdIsTooBig #6FootWingspan



TreeCat



Good thing I don't only look for prey—I also smell and feel their body heat.



BigSnake



AntsBeware

I know @BigSnake spends most of his time in the water ... I wish he'd stay there forever.

10 p.m.



AntsBeware

Cute alert! My mate just picked up our baby from its tree-hole nest.



Non-cute alert: Pretty soon you'll puke up some half-digested insects for its dinner. 🤢



TreeCat

You *both* raise your baby? Mama anacondas sometimes eat the dads.



BigSnake

Scary! My partner and I are bonded for life. We even "kiss" by rubbing our bills.



FeatherCrown



Mates are overrated. I raised my kitten just fine on my own.



TreeCat

6 a.m.



AntsBeware

I'll give a prize to whoever guesses how many ants I slurped up tonight.

One really big ant? I only swallow one meal a month: a caiman, tapir ... or ocelot.



BigSnake

Don't forget I'm a predator, too. @AntsBeware, I'll guess "a few." That's how many critters I eat a night.



TreeCat



AntsBeware

You're both way off—try 8,000!



My raised head feathers = I'm shocked! But what was the prize?



FeatherCrown



AntsBeware

What else? Ants! 🐜

TAIL ME ABOUT IT.



ZIZZA GORDON - PANAMA WILDLIFE / ALAMY (ANTEATER LARGE IMAGE); MICHAEL & PATRICIA FOGDEN / MINDEN PICTURES (ANTEATER PROFILE, ALL); LEE DALTON / ALAMY (HARPY EAGLE PROFILE, ALL); PETE OXFORD / MINDEN PICTURES (OCELOT PROFILE, ALL); GERARD LACZ / ALAMY (ANACONDA PROFILE, ALL); AKIMA FUTURA / ALAMY (SEED POD); TONY CROCCETTA / BIOS-PHOTO / MINDEN PICTURES (ANACONDA SNIFFING); CHIEN LEE / MINDEN PICTURES (ANTEATER WITH BABY); THOMAS MARENT / MINDEN PICTURES (OCELOT KITTEN); ROY TOFT / NATIONAL GEOGRAPHIC IMAGE COLLECTION (HARPY EAGLE RAISED FEATHERS); TURGAY MALIKLI / SHUTTERSTOCK (FACE AND HEARTS); CARBOXYLASE / SHUTTERSTOCK (ANT)

WHAT IN THE WORLD?

SCHOOL DAZE

These photographs show close-up views of things at school. Unscramble the letters to identify what's in each picture.

ANSWERS ON PAGE 35



ULRRE



RAETW
NIFONTUA



RSREAE



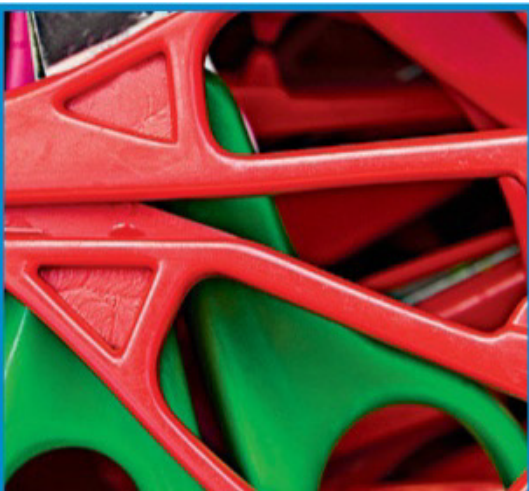
NLALOPBIT EPN



LOHCSO USB



NTAOBNMIIOC
CLKO



IRSCSOSS



CCPAKKB



NLEPCI
NPSHEERRA

TOP ROW (LEFT TO RIGHT): STOCKBYTE / PHOTOGRAPHY; ROB CASEY / GETTY IMAGES; © DYNAMIC GRAPHICS / CREATA IMAGES / JUPITERIMAGES.
MIDDLE ROW (LEFT TO RIGHT): © SCOTT PHOTOGRAPHY / ALAMY; CRAIG BARHORST / SHUTTERSTOCK; HOMESTUDIO / SHUTTERSTOCK.
BOTTOM ROW (LEFT TO RIGHT): © IMAGE SOURCE BLACK / JUPITERIMAGES; © CORBIS / CORBIS; © PHOTOSINDIA.COM LLC / ALAMY.

ARTZONE

OCEAN ANIMAL

For the 2022 Almanac Challenge, *Nat Geo Kids* readers showed off their favorite sea creatures. Ready to dive in?



Take a look at the winning entry and some of the runners-up from the **Awesome Ocean Challenge**.

THE WINNER!

Go online to see more winners and runners-up from the **Awesome Ocean Challenge**, then get the details about this year's contest.

natgeokids.com/almanac

▶ **Sea Turtles**
Aditi S., 11
Belmont, California



▶ **Cuttlefish**
Amelie F., 12
Berkeley, California

Spinner Dolphins ▶
Anabelle R., 10
Overland Park,
Kansas



Draw your favorite thing in nature.

Send us your original drawings:

Nat Geo Kids—
Nature Art Zone
P.O. Box 98002
Washington, DC
20090-8002

Include your name, address, phone number, date of birth, a title for your drawing, a statement that it is your own work, and the name of your parent or guardian. Your parent or guardian must sign a release for publication if your illustration is selected. Submissions become the property of National Geographic Partners, and all rights thereto are transferred to National Geographic Partners. Submissions cannot be acknowledged or returned. Selection will be at the discretion of Nat Geo Kids.

ALMANAC CHALLENGE:
Me as a Tree

Send us what you'd be like as a tree. Explore the arboreal world from roots to canopy to unearth the various features of different species, then imagine the kind of tree *you'd* want to be. Tell us about your creation by writing a mini autobiography and drawing a tree selfie. Your art could be featured in the *Nat Geo Kids Almanac 2024*.

Grab a parent and go online for the official rules and submission form.

natgeokids.com/almanac



Did you know that: Coral is a tiny marine animal that often lives in colonies. Huge colonies of hard corals form coral reefs

▼ Jellyfish
Shana W., 12
Millbrae, California

▲ Coral
Sharadha P., 10
Winston-Salem,
North Carolina



▼ Sea Lions
Blake H., 12
Saginaw, Michigan

Pyramids hide many secrets. (page 27):
"Crack the Code" (page 27):
"Stump Your Parents" (pages 28-29):
1. A, 2. A, 2. B, 4. C, 3. D, 1. 3. A, 4. B, 3. C, 1. D, 2. 4. A, 5. A, 3. B, 2. C, 1. D, 4. 6. A, 4. B, 2. C, 3. D, 1. 7. B, 8. A, 3. B, 1. C, 4. D, 2. 9. A, 2. B, 4. C, 1. D, 3. 10. C, 11. C, 12. A, 3. B, 2. C, 5. D, 1. E, 4. 13. A, 4. B, 3. C, 2. D, 1. 14. D, 15. B, 16. C, 17. A, 3. B, 2. C, 4. D, 1. 18. A, 4. B, 1. C, 2. D, 3. 19. B, 20. D.
"What in the World?" (page 33):
Top row: ruler, water fountain, eraser. Middle row: ballpoint pen, school bus, combination lock. Bottom row: scissors, backpack, pencil sharpener.

Answers

Prepare Your Ship To Be Boarded!



Of marauding men at sea, many books have told the tale.
But of all the pirates in all the world, the most
FEARSOME were **FEMALE**.

