“I specifically like the Boreal toads because when they are sitting on their moss, they are a perfect visual example of camouflage”

- Erica Ferguson,

Amphibians are over 350 million years old. They have survived TWO mass extinctions, outliving the dinosaurs!

The word amphibian means two-lives. They begin their life in water with gills and tails. As they grow they develop lungs and legs which allows them to live on land.

Amphibians have smooth skin, no hair, fur, scales or feathers. They are ectotherms — their body temperature, which depends on external sources of heat, is the same temperature as their surroundings.

Examples of amphibians include:
- Frogs
- Toads
- Salamanders

“My favorite thing about working with amphibians is that they live in beautiful places, which means when I am surveying for them - I get to go to beautiful places!”

- Kayleigh Mullen, Wildlife Biologist at Hogle Zoo

APRIL IS NATIONAL FROG MONTH

FROGS AND OTHER AMPHIBIANS

APRIL 2018

THIS MONTH 1: FROGS 2: BLACK HOLES 3: THE TITANIC
**Frog facts**

- Frogs have exceptional night vision and are highly sensitive to movement. Their bulging eyes, which sit high on their heads, allow them to see in almost all directions.

- Frogs rely on their eyes to swallow food. They push meals down their throats by sinking their eyes down, into their skulls, which applies pressure on the roof of the mouths.

- Transparent inner eyelids, known as nictitating membranes, protect their eyes when swimming underwater.

- Frogs drink and breathe through their skin. They have thin, moist skin that gases can easily penetrate. Although frogs have lungs, they depend on additional oxygen absorbed through their skin, especially when swimming underwater.

- Their eardrums are located outside their bodies, just behind their eyes. Males have larger eardrums than females.

- Most male frogs possess vocal sacs, flexible membrane pouches that, when filled with air, amplify calls they make to attract potential mates.

- Coloring is determined by chromatophores, pigment-containing cells that are layered in the skin. By manipulating and moving dark pigment found in certain cells, may frog species can adjust the brightness of their skin.

- Webbed feet help frogs swim by pushing water away, propelling them faster through the water.

- Frog skin can be bumpy. Some of these bumps are mucous glands which lubricate the skin, or granular glands which produce poisons to protect them from predators.

- Frogs are the only amphibians without a tail. Their scientific order, Anura, means “tailless” in ancient Greek.

---

**DIFFERENCES BETWEEN FROGS AND TOADS**

All toads are frogs, but not all frogs are toads

<table>
<thead>
<tr>
<th>FROGS</th>
<th>TOADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth or slimy skin</td>
<td>Warty, dry skin</td>
</tr>
<tr>
<td>Skinny bodies and long legs</td>
<td>Fat bodies and short legs</td>
</tr>
<tr>
<td>Have teeth</td>
<td>No teeth</td>
</tr>
<tr>
<td>Lays eggs in clusters</td>
<td>Lays eggs in long strands</td>
</tr>
<tr>
<td>A group of frogs is called an army</td>
<td>A group of toads is called a knot</td>
</tr>
</tbody>
</table>

**SOURCE:** PBS.ORG/NATURE

**IMAGES:** SHUTTERSTOCK
**THE GOLDEN POISON FROG (PHYLLOBATES TERRIBILIS) IS ONE OF THE MOST TOXIC ANIMALS ON EARTH. ONE TWO INCH SPECIMEN CAN**

**KILL TEN GROWN MEN**

---

**FROGS CAN LAY AS MANY AS 4,000 EGGS IN A FROG SPAWN**

---

**THERE ARE OVER 4,000 KNOWN SPECIES OF FROG LIVING ON EVERY CONTINENT EXCEPT ANTARCTICA.**

---

**A FROG COMPLETELY SHEDS ITS SKIN ABOUT ONCE A WEEK. AFTER IT PULLS OFF THE OLD, DEAD SKIN, THE FROG USUALLY EATS IT.**

---

**THE SMALLEST FROG IS LESS THAN 0.3 INCHES BIG.**

---

**THE WEST AFRICAN GOLIATH FROG CAN GROW TO 15 INCHES BIG AND WEIGH AS MUCH AS 7 POUNDS.**

---

**SCIENTIST BELIEVE THE EARLIEST KNOWN FROGS DATE BACK 250 MILLION YEARS WHEN DINOSAURS WERE STILL ROAMING THE EARTH.**

---

**UTOH’S HOGLE ZOO HAS FIVE AMPHIBIANS:**

- AXOLOTL
- COLORADO RIVER TOAD
- BOREAL TOADS
- BLUE-LEGGED MANTELLA
- TOMATO FROGS

---

**TOADS CAN NAVIGATE BY THE STARS AND THEIR SENSE OF SMELL TO MOVE FROM A POND TO ANOTHER WATER BODY.**

---

**MANY SPECIES OF FROGS CAN JUMP MORE THAN 20 TIMES THEIR BODY LENGTH**

---

**SOURCES:** PBS.ORG, EARTHRANGERS.COM, SMITHSONIAN, UTAH’S HOGLE ZOO

**IMAGES:** SHUTTERSTOCK

---

**CHECK IT OUT**

This month the librarians at The City Library have chosen books with the theme "books about libraries."

- "Schomburg: The Man Who Built a Library," by Carole Boston Weatherford. Arturo Schomburg’s passion was collecting books, letters, music, and art from Africa. When Schomburg’s collection became so big it began to overflow his house, he turned to the New York Public Library, where he created and curated a collection that was the cornerstone of a new Negro Division.

- "Ninja Librarians: The Accidental Keyhand," by Jen Swann Downey. When Dorrie and her brother Marcus chase Moe—an unusually foul-tempered mongoose—into the janitor’s closet of their local library, they make an astonishing discovery: the headquarters of a secret society of ninja librarians.

- "Ban This Book," by Alan Gratz. You’re Never Too Young to Fight Censorship! Fourth grader Amy Anne fights back when her favorite book is taken off the shelves of her school library.

- "Like Magic," by Elaine Vickers. For three ten-year-old girls, their once simple worlds are starting to feel too big. When the girls each find a mysterious treasure box in their library and begin to fill the box with their own precious things, they start to feel less alone.

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**APRIL 2018**

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**NIE director**

Cindy Richards

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**AMPHIBIAN FILL-INS**

All of the animals pictured here are amphibians (am-FIB-ee-unz). That means they lead a double life -- first as water animals and later as land dwellers. Fill in one word from each of their names (the word in all CAPITAL LETTERS) in the rows at left. Use the number of spaces and letter clues to help you.

When these amphibians hatched from eggs in the water, they looked nothing like their parents. As they grew, they developed lungs and legs for life on land. Write the letters from the green boxes on their numbered lines below to find out what this transformation is called.

**AMPHIBIAN FIBBERS**

**BEAR**

A male pig

Sound a lion makes

Another word for street

Toad

**BEAR**

Something a heart does

Greatest

A bird's home

**NEWT**

Hey Readers, we hope you had a great March with National Reading Month and Dr. Seuss’ birthday. Are you ready to continue your reading habits through April? Here’s a few tips for creating a new habit and making it stick.

First, set a reminder. It might be a good idea to write down the things you do every day, without fail, like brushing your teeth or eating breakfast. Those actions can serve as a reminder. For example, after you eat breakfast you could read. Maybe you set a book out where you’d like to read as a reminder. Tell your friends about it so they can help remind you and even join in the challenge! Second, chose a habit that’s easy to start like reading for a few minutes. In the beginning, performance doesn’t matter. Make it a habit that is so easy you can’t say “no” to. You can slowly build upon this habit as the behavior becomes consistent. Third and lastly, celebrate! We want to continue to do things that make us feel good. As you develop a reading habit you’ll also develop a love of reading and discovering new worlds and interesting characters. Reading also helps your brain develop and you’ll find your performance in other subjects will improve as well. So give yourself some credit and enjoy each success.

---

**SOURCE:** National Wildlife Federation
Black holes are not really holes at all. They are the opposite of empty! Black holes have the most matter stuffed into the least space of any objects in the universe. Because they are so compact, they have very strong gravity.

Here on Earth, gravity is what makes things fall down, rather than just float away, when you let go of them. Gravity is what you are measuring when you step on a scale to weigh yourself. Your weight is the amount of force that Earth’s gravity exerts on you. The more matter your body contains, the more you weigh. Likewise, the more matter an object has, the stronger its gravity.

The gravity of a black hole is so strong that not even light can escape. Even if a bright star is shining right next to a black hole, you cannot see the black hole. Instead of reflecting the light as other objects do, the black hole just swallows the starlight forever. Any matter that gets too close to a black hole gets swallowed up as well.

What are black holes anyway?
Would you rather …?

◆ Play video games or earn money for a trip?
◆ Buy many little things often or save for something bigger?
◆ Buy a big house or buy a house with money left to buy other things, too?
◆ Owe someone money or have money in a savings account?
◆ Buy a new bike or buy a toy and some candy?
◆ Go to a movie or the city carnival?
◆ Spend money weekly on ice cream or save to buy a snow cone maker this summer?

There are many ways to spend and save money. Your interests and needs will help you make these decisions. However, once you spend your money, it is gone. So, spend money on things that make you feel satisfied. Just like playing “Would you rather,” some questions can be answered quickly. Others will require more thought. When it comes to spending, think about what you really want before you pull out your wallet. In the end, you’ll spend money on the things that are truly important to you.

BLACK HOLES CONT.

There are at least two kinds of black holes

One kind is called a stellar-mass black hole. You can think of it as a “one-big-star” black hole. This type of black hole forms when a big star burns up all its fuel and explodes (called a supernova). Then what’s left collapses into a super-compact object—a black hole. Stars must contain quite a bit more matter than our sun for this to happen. So our sun, and most stars, will never become black holes.

Stellar-mass black holes are only a few tens of kilometers across — maybe about 40 miles. Just imagine. Our sun is so huge that about one million Earths would fit inside it. A star with enough matter to become a black hole contains maybe 10 times as much matter as the sun. Now imagine a star with that much matter, shrinking into a space no farther across than the distance you can drive a car in less than one hour!

Another kind of black hole is called a supermassive black hole. You can think of this type as a “million-big-star” black hole, because it contains as much matter as one million to 100 million suns! Astronomers think that supermassive black holes are lurking at the centers of galaxies, including our own Milky Way galaxy. They don’t know yet how these humongous black holes are formed.

Learning more about black holes

Scientists really want to learn more about black holes and other strange and massive objects in the universe. One space mission that is helping them do just that is a space telescope called XMM-Newton. It was launched into Earth orbit in 1999 by NASA and the European Space Agency. It observes the universe in high-energy x-rays, a type of light that we can’t see with our eyes. Matter, such as gas and dust particles, near black holes puts out X-rays as it swirls around at light speed just before the black hole swallows it up. By observing these x-rays, XMM can help scientists understand the black hole.

A BLACK HOLE WITH ALL THE MASS OF EARTH WOULD BE ABOUT THE SIZE OF A FINGERNAIL!

FILL IN THE BLANKS

Think of a word to fit each item below, then fill in the spaces in the story to the right.

1. Adjective __________________
2. Verb ending in “ed” ______________
3. Noun _______________________
4. Verb __________________________
5. Adverb _________________________
6. Adjective _______________________
7. Plural noun _____________________
8. Adjective _______________________
9. Food __________________________

Black Hole Travels

I built a spaceship, and I am going to take it to a black hole. The journey will be long and ___________. I am going to need to be careful not to get ___________ into its ___________, or else I will never be able to ___________. My goal is to ___________ orbit around the outside of it. When I look outside my spaceship’s ___________ window toward it, I will see absolute darkness. In that area, nothing can escape, not even ___________. If I get any closer, the gravity would be so ___________ that I would be stretched out into a piece of ___________!
Black holes form at the end of some stars’ lives. The energy that held the star together disappears and it collapses in on itself, producing a magnificent explosion.

Here’s where things get crazy. All of that material left over from the explosion, many times the mass of our sun, falls into an infinitely small point — smaller than the tip of a pin! Some black holes trap more and more material as their mass increases.

The point where all that mass is trapped is called a singularity. It may be infinitely small, but its influence is enormous.

Imagine a circle with a singularity in the middle. The gravity on the inside of the circle is so strong that nothing can escape—it sucks in everything, even light. That’s why it’s black!

This circle is known as the event horizon. An event horizon is probably what you are thinking of when you think of a black hole. Try as you may, you would be hard-pressed to find anything weirder or cooler than a black hole.

---

**FUN FACTS ABOUT BLACK HOLES**

- While most stars end up as white dwarfs or neutron stars, black holes are the last evolutionary stage in the lifetimes of enormous stars that had been at least 10 or 15 times as massive as our own sun.
- Our sun won’t and cannot become a black hole. Only stars with much more mass than the sun can become a black hole.
- According to Einstein’s theories of relativity, nothing can travel faster than the speed of light. Therefore once something is inside a black hole it can never get out.
- Black holes are shaped like a sphere and they can spin.
- Astronomers believe that one black hole is born every day.
- They don’t live forever, but slowly evaporate, returning their energy to the universe.

---

In this illustration, the supermassive black hole at the center is surrounded by matter flowing onto the black hole in what is termed an accretion disk. This disk forms as the dust and gas in the galaxy falls onto the hole, attracted by its gravity.

Also shown is an outflowing jet of energetic particles, believed to be powered by the black hole’s spin. The regions near black holes contain compact sources of high-energy X-ray radiation. This high-energy X-radiation lights up the disk, which reflects it, making the disk a source of X-rays. The reflected light enables astronomers to see how fast matter is swirling in the inner region of the disk, and ultimately to measure the black hole’s spin rate.
Hey, Readers! The weather is slowly getting warmer, the sun is staying up later, the tulips are starting to sprout; all signs that spring has sprung! What are some of the things you love about spring? Is it spring break? Playing in the rain? Playing soccer? Or is it just a sign that summer is nearly here? Well, we have a fun idea for spring reading. How about a spring word search? In your reading this month find out how many of the 20 words listed below you can find in what you read every day. Send us a message on Facebook at www.facebook.com/readtoday/ when you finish and we'll send you something fun! Good Luck!

Spring Tulip Seeds Butterfly Bunny Puddle Umbrella Sunshine Easter Bugs Bird Green Mud Flowers April Bees Rain Rainbow

---

**Quiz**

1. A black hole is similar to a ________ cleaner, cleaning up debris left behind in outer space.
2. A black hole uses ________ to pull things towards it.
3. When a large star runs out of ________ it can no longer support its heavy weight.
4. The pressure from the star’s massive layers of ________ press down forcing the star to get smaller and smaller.
5. Eventually the star will get smaller than an ________.
6. If you make something smaller by squishing it, its gravity becomes ________.
7. If a star is squished into the size of an atom its ________ becomes very powerful.
8. A ________ hole’s gravity becomes so powerful that anything, including light, that gets too close gets pulled in.
9. The middle of a black hole is called a ________.
10. “Singularity” is a big word that means ________-up star.
11. When you get to close to the singularity you will begin to ________ into it.
12. When you begin to fall toward it you will know that you have passed the ________ ________ horizon.
13. If you are at the outer event horizon you can still ________ a black hole.
14. As soon as you pass the ________ ________ horizon, you will not be able to get yourself out of a black hole.
15. You can float around in outer space but if you get too close to a black hole you will be ________ with no way out.

**Word Search**

<table>
<thead>
<tr>
<th>ATOM</th>
<th>BLACK HOLE</th>
<th>COLLAPSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVENT</td>
<td>GRAVITY</td>
<td>HORIZON</td>
</tr>
<tr>
<td>SINGULARITY</td>
<td>STELLAR</td>
<td>SUPERMASSIVE</td>
</tr>
</tbody>
</table>

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**Read Today**

Hey, Readers! The weather is slowly getting warmer, the sun is staying up later, the tulips are starting to sprout; all signs that spring has sprung! What are some of the things you love about spring? Is it spring break? Playing in the rain? Playing soccer? Or is it just a sign that summer is nearly here? Well, we have a fun idea for spring reading. How about a spring word search? In your reading this month find out how many of the 20 words listed below you can find in what you read every day. Send us a message on Facebook at www.facebook.com/readtoday/ when you finish and we’ll send you something fun! Good Luck!

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**KIDSKNOWIT NETWORK**
Titanic disaster
April 15, 1912 - Deseret News

Halifax, N.S., April 15 (1912) — The Canadian government marine agency here at 4:15 p.m. received a wireless dispatch that the Titanic is sinking. The message came via the cable ship Mina off Cape Race. It is said the steamers towing the Titanic were endeavoring to get her into shoal water near Cape Race to beach her.

Wireless dispatches up to noon today showed that the passengers of the White Star liner Titanic, which struck an iceberg off the Newfoundland coast last night, were being transferred aboard the steamer Carpathia, a Cunarder.

Already, 20 boatloads had been transferred and allowing 40 to 60 persons as the capacity of each lifeboat, some 800 to 1,200 passengers have been transferred. Latest reports indicate that the transfer is being carried on safely. The sea is smooth and the weather calm. It is possible that all passengers of the Titanic are safe. While badly damaged, the Titanic still is afloat and is reported to be making her way toward Halifax under her own steam.

The Titanic is the largest steamer ever built. She is 882 feet long and has 46,000 tons' displacement. She was launched last May and this was her maiden trip....
**SURVIVORS/CASUALTIES**

- A total of 1,503 people died, including passengers and crew.
- Only 710 people survived.
- 582 lifeboats were reserved by law.
- 1,178 lifeboats were carried aboard.
- Only 2,208 lifeboats were needed.
- 300 bodies were found after the ship sank.
- Many passengers and crew survived.
- Only 3 children died, while 40 children survived.

---

**THE ICEBERG**

- The iceberg was about the size of a refrigerator.
- There was only a 12-square-foot iceberg altogether.
- The Titanic proceeded ahead and ignored the iceberg laden waters. Just 0.5 knots while cruising through the collision.

---

**COLLISION/DAMAGE**

- The iceberg that the Titanic struck was not very big. It did not even come up as high as the bridge of the ship.
- The iceberg struck the Titanic at about 11:40 pm, causing the ship to capsize.

---

**THE SHIP**

- RMS Titanic was built for looks.
- As the Titanic was leaving the harbor, it was accidentally damaged.

---

**THE FINAL MOMENTS**

- Passengers rode the stationary lifeboats in the darkness to pass time before the ship sank.
- The band played music up to the last few minutes before the ship went under.

---

**TITANIC FACTS:**

- **THE SHIP**
  - RMS stands for Royal Mail Steam Packet Company.
  - It cost $7.5 million to build the Titanic.
  - White Star Line, the company that owned the Titanic, was a British company.
  - The Titanic was the largest passenger ship of its time before the ship sank.

- **Passengers**
  - 2,224 passengers and crew were on board the Titanic.
  - Only 710 people survived.

- **LOCATIONS**
  - The Titanic was located at 41° 46′ 48″ N, 50° 14′ 43″ W.

- **SOURCES**
**How Titanic Was Lost**

<table>
<thead>
<tr>
<th>DESIGN</th>
<th>Titanic designed to float with up to four “watertight” compartments breached, but collision with iceberg causes six compartments to flood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Double hull only at bottom, not along sides</td>
</tr>
<tr>
<td></td>
<td>As each compartment fills, bow sinks deeper and water pours over top of bulkheads, flooding hull</td>
</tr>
<tr>
<td></td>
<td>Iceberg tears six thin gashes along hull</td>
</tr>
<tr>
<td></td>
<td>Fatigue tests on recovered hull plates reveal steel contained high levels of sulphur, making it brittle at low temperatures and liable to fracture rather than deform. Steel quality met industry standard of 1912, when concept of brittle fracture was unknown</td>
</tr>
<tr>
<td>RIVETS</td>
<td>Stronger, steel rivets used on central hull, iron rivets on stern and bow. Some critics say pressure to build Titanic and Olympic at same time created shortage of top quality iron. Iron rivets recovered contain slag, potentially reducing ability to withstand pressure. Manufacturers dispute claim</td>
</tr>
<tr>
<td>RUDDER</td>
<td>Some argue small size of rudder made ship less manoeuvrable. Others say triple screw engine configuration, which allowed only two of three propellers to go into reverse, may have reduced rudder’s effectiveness</td>
</tr>
<tr>
<td>HUMAN ERROR</td>
<td>Includes failure to reduce speed despite ice warnings. Lookout had no binoculars, hampering ability to spot ice</td>
</tr>
</tbody>
</table>

**Titanic Carried 16, plus four collapsible boats, exceeding legal minimum of time but still only enough for 52% of people on board**

**Reading Between the Lines**

According to the National Museums Northern Ireland website, J. Bruce Ismay, chairman and managing director of the White Star Line, was vilified for being a coward and escaping the sinking ship while fellow passengers drowned. However, Ismay did help with loading and lowering several lifeboats. Although Ismay was exonerated by the British inquiry for his actions, he never recovered from the stigma of Titanic. Usually there is more than one side to a story. Look for an article in the Deseret News that can be viewed from multiple perspectives. Read the article and write down the main facts. Then look for areas that may be viewed from another perspective. Write down your thoughts. Be sure to use specific statements from the article to support your ideas. Share your thoughts with your classmates.

**Your Opinion**

Write a short op-ed piece about Titanic. Why are we still fascinated with this story today? What lessons were learned from this disaster?

**First Person**

Many oral histories from passengers have been published. Write a letter or journal entry from the perspective of a Titanic passenger, keeping in mind the class divisions that existed onboard.

**Classroom Connections**

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