Phantom Lake Math Challenge
December 2018 / January 2019
Pandas Galore

The Phantom Lake Math Challenge is an open invitation to have fun solving problems at home with family. It's an opportunity for students to discover different ways to approach problems and a chance for students to share their math thinking and ideas with others. Anyone can participate. Choose the problem that fits your math ability/interest. These problems are generally in an order of increasing difficulty. Please submit your answer using the response form attached or available at http://phantomlakepta.org/Doc/Monthly%20Math%20Challenge/Math%20Challenge%20Response.pdf. You should turn in one form for each problem you solve. Feel free to showcase your creativity and design a poster or chart to show your work as well. Sometimes acting out problems and using objects can help students develop a deeper understanding of the problem. Please put the letter or title of your problem, your first and last name and your teacher's name on the form when you submit it. All solutions are due by the last school day of the month. Bring your completed form(s), charts, and posters to your teacher. Students who successfully complete the challenge with the correct answer and an explanation of their mathematical thinking will receive a certificate and a prize. Happy problem solving!

Problem A
Zoo keepers offered a panda 2 pounds of sweet potatoes, 3 pounds of sugar cane, and 5 pounds of apples. She ate 1 pound of each food. How many pounds of treats did they give her in total? How much food did she have left over after she ate 1 pounds of each food?

Problem B
The chart below shows the ages of a family of giant pandas. Arrange the 5 bears by age, from youngest to oldest. Share with a friend what you notice about the panda bears' ages.

Bear's Name	Age of bear (in years)
Mei Xiang (mother)	18
Tian Tian (father)	19
Tai Shan (big brother)	12
Bei Bei (baby brother)	3
Bao Bao (baby sister)	1

Problem C
Most of the world's pandas live in the wild, but sometimes zoos rent them from China. If North America rents 12 pandas, Asia rents 3 pandas, Europe rents 4 pandas, and Australia rents 2 pandas, how many pandas are rented altogether? Which of the 4 continents rents the most?

Problem D
A newborn panda cub is born blind, hairless, pink, and tiny. The average size of a newborn panda is 100 grams. The average size of a newborn human is 3500 grams. How much bigger is a newborn human than a newborn panda?

Problem E
One of the most beloved residents of the National Zoo in Washington, D.C., was the female panda Bao Bao. SHe left the United States at 1:55 PM on a 16-hour nonstop flight to her new home in Chengdu, China. What time was it in Washington, D.C. when Bao Bao arrived in China?

Problem F
The zookeeper has been keeping track of the panda's diet with a pictograph to show the amount of each type of food the panda eats during the week. WHat did the panda eat the most of? How many pounds of bamboo leaves did the panda eat in a week? Use the information from the pictograph to create a bar graph. Be sure to include a title and labels.

Type of Food	Amount of Food
Bamboo leaves	🎋🎋🎋🎋🎋
Bamboo stems/shoots	🎋🎋🎋🎋🎋🎋
Fruit	🎋
Small rodents	🎋
Eggs and fish	🎋
Each 🎋 = 20 pounds of food	

Problem G
The average adult panda spends up to 16 hours a day eating bamboo shoots. The rest of the time it sleeps. About how many weeks in a year does the panda spend eating?

Problem H

Pandas are animals that like to be alone. If 1 is within a certain proximity of another, the 2 of them might fight and bite each other. The are happy as long as another panda is not within 4.92 kilometers. If 1 panda is 5,130 meters south of a panda named Tai, a 2nd is 3,810 meters north of Tai, and a 3rd is 22,120 meters east of Tai, does Tai have enough space? If not, which panda is in his territory?

Problem I

Pandas digest only ⅕ of what they eat because of the high amount of water in bamboo. If Ling Ling eats 25 pounds of food a day, Funi eats 36 pounds of food a day, and Yang eats 34 pounds of food a day, how many pounds of food are they actually digesting between the three of them?

Problem J

The panda Tai Shan traveled from his home in the National Zoo in Washington D.C., to his new home in Chengdu, China. The distance between the 2 cities is 7,643 miles. IF we were to line up pandas end-to-end between the 2 cities, how many pandas would we need, if an adult giant panda is about 5 feet long?

Problem K

On a busy weekend, 60,000 people visited the National Zoo in Washington, D.C. The visitors included adults, school-age children, and children under 3. Half the visitors were adults. The number of adults and school-age children was 5 times greater than the number of children under age 3. What is the ratio of adults to children under age 3?