First Name: _____	**Last Name:** _____	**Grade:** _____
Teacher: _____	**Parent's email:** _____	

Autumn Medley

Welcome to the Math Challenge #3. In this challenge, we will solve problems involving autumn, its beauty, and fun and joyful holidays. Autumn, also known as Fall, is one of the four seasons. In North America, autumn traditionally starts with the September equinox. Many cultures feature autumnal harvest festivals, often the most important on their calendars. Thanksgiving holiday of the United States and Canada, and the Jewish Sukkot holiday with its roots as a full-moon harvest festival. There are also the many festivals celebrated by indigenous peoples of the Americas tied to the harvest of ripe foods gathered in the wild. There are also the Chinese Mid-Autumn or Moon festival, Diwali and many others.

In North America, most foods are harvested during the autumn, and foods that are usually associated with the season include pumpkins and apples.

Every autumn we also enjoy the beauty of the fall colors. The mixture of red, purple, orange and yellow is the result of chemical processes that take place in the tree as the seasons change from summer to winter. These are just some fun facts about fall leaves.

Leaves contain various chemical pigments that affect their color. The main ones are:

- Chlorophyll – responsible for the color green,
- Xanthophyll – responsible for the color yellow,
- Tannins – responsible for the color brown,
- Carotene – responsible for the color orange and yes, present in carrots.

The redder is the leaf, the more sugar that leaf is storing. That is why Maple trees are so vibrant. Evergreens don't change because their leaves have a thick wax covering that protects the chlorophyl (green) in the leaves.

Kinder & First Grade: solve <u>at least</u> 3 problems.
Second & Third Grade: solve <u>at least</u> 7 problems.
Fourth Grade and above: solve <u>at least</u> 12 problems.

		Answer
1.	How many **vowels** are between the first and the last letter of Halloween?	
2.	Megan is making patterns with leaf stamps, stamping them in a line. Oak leaf was 4th from the one end, and 7th from the other end. How many leaves were stamped in a line? 	
3.	There are 10 houses on your street and all but 1 expect trick-o-treaters. How many houses have candies, are decorated, and ready to greet trick-o-treaters?	
4.	September has 30 days, October 31 days. How many months in a year have at least 28 days?	
5.	Thirty one fourth-grade students are going to a pumpkin patch. Each van can hold ten people. Five chaperones are going on the trip with the students. How many vans are needed to take the students to the pumpkin patch?	

6. Marsha and Vicki are selling apple cider. Each pitcher of apple cider can fill 10 cups. They are selling each cup for 50 cents. If they sell 3 pitchers full of apple cider, how much money they make from selling the apple cider?

7. At the Halloween parade there were 12 creatures with horns: unicorns, two-horned bisons, and three-horned deer. Together there are a total of 25 horns. If there are 2 unicorns, how many two-horned bisons and how many three-horned deer are in the Halloween parade? Hint: try to guess and check.

8. You enter an elevator and go up 5 floors, then down 3 floors, up 8 floors, down 10 floors, up 5 floors, and then down 7 floors. You are then on the ground floor. On what floor, did you get on? Hint: work backwards

9. How many ghosts are in the haunted house?

Here are some clues:

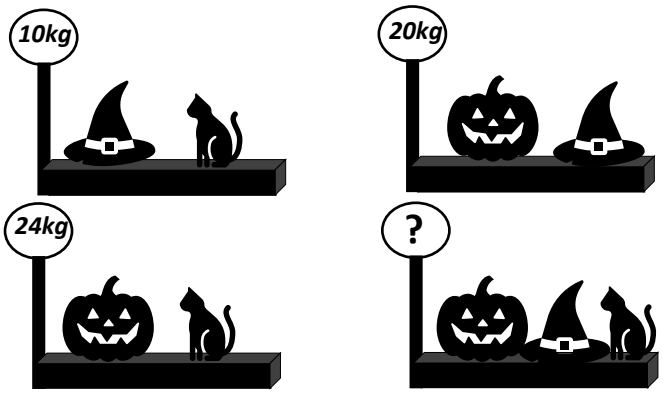
- There are more than the number of days in October
- There are less than the product of 7 and 5
- The answer is an odd number

10. Lisa's mom went to buy some treats and toys for Halloween. Treats were on sale; each bag cost $12. Toys were also on sale; each toy cost $7. Lisa's mom spent exactly $100 at the store.
    a. How many bags of Halloween treats did she buy?
    b. How many toys did she buy?

a.

b.

11. Find the total weight of the hat, pumpkin and cat in the picture below:



12.	At the end of the Halloween, after trick-o-treating the kids knew that they have 60 total candies in 4 bags. The first and the second bags hold a total of 34 candies together; the second and the third bags had a total of 22 candies; and the third and the fourth bags has 26 in total. The first bag has 1/3 of all candies. How many candies are in each bag? 	*1st bag:* *2nd bag:* *3rd bag:* *4th bag:*
13.	Lisa and Andy wanted to buy pumpkin carving kit with their own pocket money. Lisa was 20 cents short. Andy also didn't have enough money; he was 30 cents short. But when they joined their pocket money, it was enough for the carving kit plus there was 60 cents left over. How much was the pumpkin carving kit?	
14.	 Jar with honey weighs 16 ounces. The same jar with apple juice weighs 10 ounces. Apple juice is twice lighter than the honey. How many ounces does the empty jar weigh?	
15.	5 bartlett pears weigh the same as 2 golden delicious apples. 1 golden delicious apple is 120 grams heavier than a bartlett pear. How many grams is one bartlett pear?	
16.	The prize money for the best Halloween costume was divided the following way. The ratio of first place to second place is 2:1. The ratio of second to third is 3:1. The ratio of third to fourth is 4:1. If fourth place prize money is $5 what is first place prize money?	
17.	One box has 48 pears in one layer, second box has 30 apples in one layer. How many rows of pears are in the first box and rows of apples in the second box, if there are 18 rows in total in two boxes, and there are twice more rows in box with pears than in box with apples?	
18.	Three estimates of the height of a scarecrow were 344 cm, 362 cm and 352 cm. The estimates were off by 6 cm, 12 cm and 4 cm (could be not in order). How tall was the scarecrow? 	

Solution is available on November 5, 2021

Student Registration for Fall 2021 Math Challenge Tournament opens on October 26, 2021.