Halloween Math!

JUNIOR CIRCLE 10/29/2017

1. You have 3 Tootsie Rolls, 8 pieces of candy corn, and 5 Jolly Ranchers in your trick-or-treat bag.

   (a) If you reach into the bag, what is the probability you will select a Tootsie Roll?

   (b) How many candies must you pick to make sure that you have at least one piece of candy corn?

   (c) How many candies must you pick to make sure that you have at least one piece of each kind of candy?

   (Hint: What is the worst case scenario?)

2. Two groups of trick-or-treaters go into a neighborhood with a row of 51 houses. One group starts on the left and visits every 6th house while another group starts on the right and visits every 8th house.

   (a) Will they ever meet?

   (b) If so, at which house will they meet at?

3. Find all the solutions of the following cryptarithm.

$$\begin{array}{cccccc} & G & H & O & S & T \\ + & G & H & O & S & T \\ \hline & H & O & U & S & E \end{array}$$

$G =$ $\quad, H =$ $\quad, O =$ $\quad, S =$ $\quad T =$ $\quad, E =$ $\quad, U =$

4. The Pumpkin Pie Problem: Peter, the pumpkin eater, wanted to make two pies for a party. His mother, a professional pie maker, had a recipe for him to use. However, she always made 80 pies at a time.

   She used:

   - 10 dozen eggs
   - 27 liters of condensed milk
   - 480 tablespoons of sugar
   - 100 teaspoons of cinnamon
   - 140 cups of pumpkin

   Peter looked in the cupboard and found:

   - 4 cups of pumpkin
   - 2 eggs
   - $1\frac{1}{2}$ teaspoons of cinnamon
   - $\frac{2}{3}$ of a liter of condensed milk
   - 15 tablespoons of sugar

   Did Peter have enough ingredients to make two pumpkin pies for the party or did he need to buy more?

5. Four teachers will be doing face painting. Each teacher can paint one child's face in three minutes.

   (a) How many faces will all four teachers be able to paint in an hour?

   (b) In three hours?

6. Five friends went trick-or-treating together for Halloween! Later, the friends met up to exchange candy so that each could have their favorites. Each of them only likes ONE type of candy. Can you figure out who wore which costume, and what each person's favorite candy is?

   FRIENDS: Andy, Jane, Max, Pam, Samuel

   COSTUMES: witch, vampire, mummy, cat, skeleton

   CANDY: Reese's, M&M's, Snickers, Starburst, Milky Way

   - The 5 friends are Max, the witch, the girl who likes Starburst, the boy who dressed as a mummy, and Andy.
   - The skeleton is a boy and does not like Reese's.
   - Pam is not a witch, nor is she a vampire.
   - Max's favorite type of candy is Reese's
   - The mummy likes to eat Milky Way
   - The witch does not like M&M's.

   (Hint: Use the following the three tables below to help organize your work. Come up with a method to help eliminate answers and mark them on these tables.)

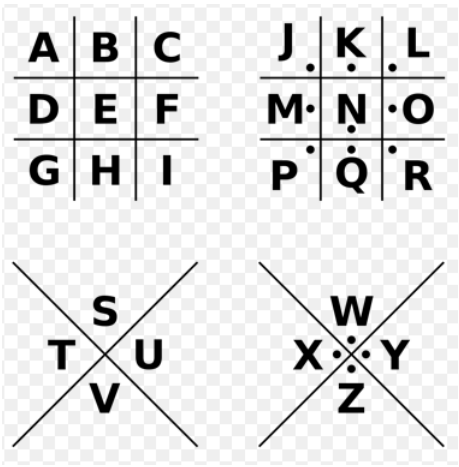
	Witch	Vampire	Mummy	Cat	Skeleton
Andy					
Jane					
Max					
Pam					
Samuel					

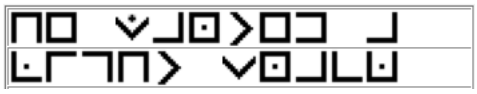
	Reese's	M&M	Snickers	Milky Way	Starbursts
Andy					
Jane					
Max					
Pam					
Samuel					

   Place your final answer in the table below:

Name	Costume	Candy
Andy		
Jane		
Max		
Pam		
Samuel		

7. (Kaley) Pigpen Cipher Halloween Riddle: Why did the vampire eat a light bulb?



Decode: 

Answer:

8. Witches and wizards came to a Halloween party. Each of 5 wizards gave a spider to 8 of the witches. As a result, every witch got 4 spiders.

   How many witches came to the party?

9. Three wizards drink a bucket of brew in 4 hours. How many wizards will it take to drink the bucket in 12 hours?

10. You came to a haunted house and saw 6 piles of coins on the table. The first one had only 1 coin, the next had 2, etc., so that the last had 6 coins. The witch in the haunted house tells you that you can take all of this gold if you can first make all of the piles equal. The only operation she allows you to perform is to take 2 coins from a huge bag and put each of them into a different pile on the table. Can you do this operation several times and make all the piles equal? If not, the witch is clearly tricking you!

    (a) How many coins is there on the table when you first walk in the room?

    (b) As you continuously add two coins to the 6 piles, what do you notice consistently about the number of total coins?

    (c) Can you make all of the piles equal? Why or why not?