Halloween Math

October 30, 2016
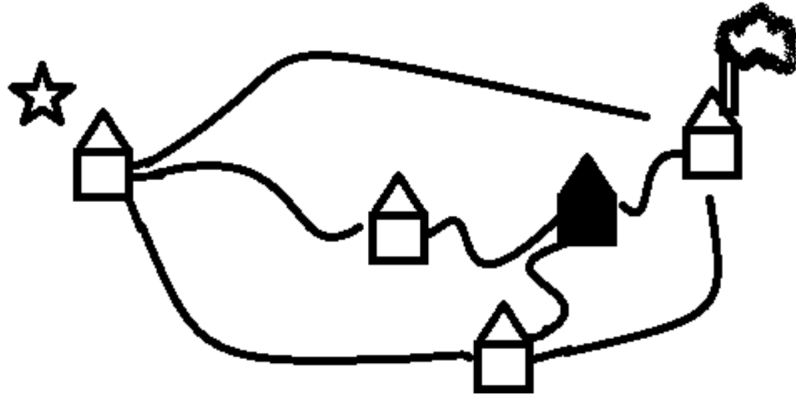
1. You have 3 Tootsie Rolls, 8 pieces of candy corn, and 5 Jolly Ranchers in your trick-or-treat bag.

   (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 and one Jolly Rancher?

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.

   Will they ever meet? If so, at which house?

3. Here is a map of some streets and houses.

(a) Andrew lives at the house with the star, and he knows the house with the chimney has the best trick-or-treating candy. How many different paths can he take from his house to the chimney house without revisiting a house or a street?

(b) Andrew actually has to pick up his trick-or-treating friend who lives at the black house first. How many different paths to the chimney house can he take now?

4. A trickster gets to your candy! First they took a third of your candy before putting 10 pieces that they didn't like back. But then they took all your remaining 90 pieces of candy anyway. How much candy did you have to begin with?

5. Two witches fly towards each other starting 30 miles apart, both at 5 miles per hour.
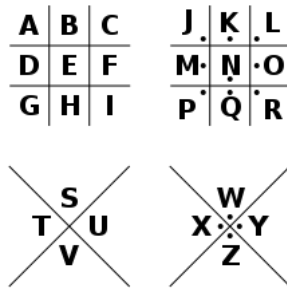
   (a) At what time will hey meet?

   (b) While the witches are flying, a bat circles around with the speed of 25 miles per hour. What is the distance the bat covers during this time?

6. Solve the following cryptarithm.

```
    G  H  O  S  T
 +  G  H  O  S  T
 ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
    H  O  U  S  E
```

   G=   , H=   , O=   , S=   , T=   , U=   , E=

7. Using the Pigpen cipher, decode the following messages.

A	B	C
D	E	F
G	H	I

J	K̇	L
Ṁ	Ṅ	Ȯ
Ṗ	Q̇	Ṙ

```
  S            W
T   U       X ··· Y
  V            Z
```

⊐⌐>⊓ L⌐·⌐L⌐·□ ⌐V V⊏ ⊐<L⊓ ⊏<□.

4

8. 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:

   - 2 eggs
   - 23 liters of condensed milk
   - 15 tablespoons of sugar
   - 112 teaspoons of cinnamon
   - 4 cups of pumpkin

   Does Peter have enough to make two pumpkin pie? If yes, show that he has enough. If not, list what he needs to buy.

9. Five friends went trick-or-treating together for Halloween! Later the friends met up to exchange candy so that each could have their favorites. Can you figure out who wore what 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 or a vampire.
- Max likes Reese's.
- The mummy likes Milky Way.
- The witch does not like M&Ms.

(Hint: Use the following two grids below to help you answer the problem by placing X's where a combination does NOT work.)

Name	Witch	Vampire	Mummy	Cat	Skeleton
Andy					
Jane					
Max					
Pam					
Samuel					

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

Name	Costume	Candy
Andy		
Jane		
Max		
Pam		
Samuel		