2018-19 Puzzle Contests
Puzzle Contest #2
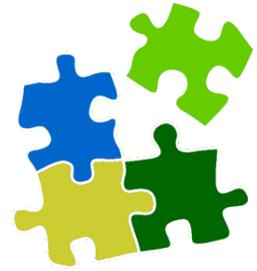
Parents and Grandparents Puzzles:

1. **Warlock, Vampire, Sorceress, Ghoul and Witch** spent the evening before Halloween drinking in one of the five taverns around Sinville. Sinville Taverns did not boast variety – they sold either Black Toad Gin or Bloodroot Ale.   And all the 5 taverns were on different streets. It so happened that Warlock, Vampire, Sorceress, Ghoul and Witch happened to wear different color cloaks on that day. Determine the name of each creature, what they drank, which street their tavern was located, and the color of their cloaks, if it is known that

- ✓ The witch did not wear purple. The Creature wearing purple and the Ghoul drank Black Toad Gin.

- ✓ Grinwald did not drink the Black Toad Gin dressed in green. The vampire was at the tavern in Ghosts Way.

- ✓ Matilda was not at the Dragon Alley tavern. Gwendolyn was not a Sorceress.

- ✓ One of the five was drinking Black Toad Gin at a tavern in Hangman's row. Gwendolyn wore an orange cloak. Victor did not wear black.

- ✓ Grinwald the Warlock was not at the tavern in Deadman's Road. The creature who drank Bloodrot Ale at a tavern in Black Crescent Street wore a red cloak.

- ✓ The Ghoul was at the tavern in Dragon Alley. Raven, who was not a Sorceress, drank bloodroot Ale. **(25 pts.)**

Solutions deadline is November 25
Please submit your solutions to anna.charny@metrowestschool.com
or bring them to the office

2. Ghosts Grumzensel and Bruxdernstein were getting on in years. Grumzensel died in the 20ᵗʰ century in a brawl, while Bruxdernstein was poisoned in the 19ᵗʰ century. When they ran into each other on Halloween night, they started reminiscing over the circumstances of their deaths. But their memories were getting dim, and neither of them could remember the exact date they were killed. Coincidentally however they both remembered that each was killed as many years ago as the sum of digits of the year each was killed. How much longer has Bruxdernstein been dead than Grumzensel? **(35 pts.)**

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3. Professor Warlock, in his lecture at the School for Gifted and Talented Vampires, defined the set of all rational numbers such that $x \neq 0, x \neq 1$ *Cursed*, and denoted this set C. He further introduced a Ghastly function $y = G(x)$ for which

1. $x \in C$, $y \in R$ (R is the set of Real numbers)
2. $G(x) + G\left(1 - \frac{1}{x}\right) = \log|x|$

Find $G(2018)$ **(40 pts.)**