

2017-2018 Puzzle Contests

Puzzle Contest #3



Grades 5up Puzzles:

1. Snow Queen's Castle has several Ice Towers where the cruel Snow Queen keeps her prisoners. Each Ice Tower (and there are more than one of them) has the same number of ice cells, and each ice cell holds the same number of prisoners. The number of ice cells in each Ice Tower is more than the number of prisoners in each cell, and the number of prisoners is more than the number of Ice Towers. How many ice cells are there in all Ice Towers of the Castle altogether, if there are 105 prisoners in all Towers? (25 points)



2. Each of the letters S, N, O and W in this multiplication stands for a different digit.



$$\begin{array}{r}
 \text{S N O W} \\
 \times \text{S N O W} \\
 \hline
 * * * * \text{S} \\
 * * * * \text{N} \\
 * * * * \text{O} \\
 * * * * \text{W} \\
 \hline
 * * * * * * * *
 \end{array}$$

What are the values of the letters of S N O W? (35 points)

Solutions deadline is January 15
 Please submit your solutions to anna.charny@metrowestschool.com
 or bring them to the office

3. Snow Queen challenged Gerda to a game of ice cubes.

The game of ice cubes is played as follows.

There is a heap of 2018 ice cubes. Players take turns taking ice cubes out of the heap. Each player can take 1, 2, or 3 ice cubes on each move. The player who takes the last ice cube wins.



Gerda's is allowed the first move. Help Gerda find a winning strategy that will help her win and free her little brother Kai, regardless of how the Snow Queen plays the game. **(40 points)**

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