Win the 2013-2014 STEMatician Award!

When you send in solutions, we score and keep track of your score. Solutions for this issue are due **October 10, 2013**. Awards are in July 2014.

3 ways to submit:

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**Vice Versa**

When you reverse the digits of Jack’s 2-digit number, the new number is 36 less than Jack’s number. The sum of the two digits of Jack’s number times the product of the two digits is 210.

Jack’s number is? __________

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**Tinker Totals**

Use all of the numbers 2 – 10. Place the numbers in circles so that the sum of the three circles in each line is 21.
Letter ID

Use the clues. Replace each letter with a number 9 or less.

**Clues:**
- The sum of the first column is 8.
- The second column contains only even numbers.
- D is greater than both E and F.
- G + F x F = H

**Triangle Torment**

What is the probability that if you pick any 3 dots in the arrangement above, that the 3 dots will form an equilateral triangle?

**Palindrome Puzzles**

121 is a palindrome. It reads the same forwards as backwards. 121 is also a square number ($11^2 = 121$).

What is the difference between the largest and smallest 3-digit palindromic numbers that are also square numbers?

What is the difference between the largest and smallest 5-digit palindromic numbers that are also square numbers?
Math in History

Hans Geiger was a German physicist who co-invented the Geiger counter that detects the emission of nuclear radiation. Geiger was born on

**September ______, __________.**

(Date) (Year)

Use the clues to figure out the date and year of his birth.

Clues: Date of birth

- The sum of the digits is the first odd prime number.
- The product of the two-digit number is 0.

Clues: Year of birth

- The sum of the digits of the year is a prime number.
- All of the digits of the year are powers of 2.
- The product of the digits of the year is a power of 2.
- Geiger was born in the last quarter of the century.

Social Security Numb-Er!

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Use the 9 clues to figure out the 9 numbers:

- \( C \times I = \) the two-digit number formed by GE.
- \( H \times I = \) the two-digit number formed by BA.
- \( A \times B = \) the two-digit number formed by DE.
- \( D \times B = B \)
- \( F^2 = I \)
- \( C + F = I \)
- \( B - A = G \)
- \( D + E = G \)
- \( E^2 = 16 \)
Balzano is a puzzle that will tap into your logical reasoning abilities. Read the directions carefully, then try your hand at Balzano Shapes.

**Directions:**

Your job is to figure out the Desired Arrangement of three or more shapes from clues that provide information about the shapes and their locations. Each clue consists of two parts.

The **Arrangement Column** shows sets of shapes in rows. In the Balzano below, the second row is arranged in order from left to right, triangle, square, hexagon.

**Correct Shape in the Correct Place** identifies the number of shapes that are in the Desired Arrangement AND in the right positions. The second row has one shape that is in the Desired Arrangement and in the right position.

**Correct Shape in the Wrong Place** identifies the number of shapes in the Desired Arrangement that are the right shapes BUT in the wrong positions. There are two of these in the second row.

**Incorrect Shape** identifies the number of shapes that are not in the Desired Arrangement. There are no incorrect shapes in the second row.

<table>
<thead>
<tr>
<th>Arrangement</th>
<th>Correct Shape in correct place</th>
<th>Correct Shape in wrong place</th>
<th>Incorrect Shape</th>
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