Win the 2013 STEMatician Award!

When you send in solutions, we score and keep track of your score.

Solutions for this issue are due September 1, 2012. Awards are in July 2013.

3 ways to submit:

Email: lesley.le@asu.edu
Fax: 480-727-0910
Mail: Lesley Le, Editor at PRIME MATHgazine
PO Box 875703
Tempe, AZ 85287-5703

Balance Me!

To be in balance, the moment of one side of the balance point must be equal to the moment on the other side. Use the numbers 1, 2 and 3. Write one number on each circle to balance the mobile. Numbers may be repeated.

What is a moment?

A moment is the product of the weight of an object with the distance from the balance point.

1.

2.

3.
Misplaced Labels

One box contains frosted donuts.
One box contains chocolate donuts.
One box contains both frosted and chocolate donuts.
BUT the labels are on the wrong boxes.

If you go to one of the boxes and without looking, remove one donut from that box, you should know how to relabel the boxes.

From which box will you remove one donut? How will you relabel the boxes?

Hugging Cousins

At a family reunion, each cousin hugged each of the other cousins once and only once. There were 190 at the reunion. How many cousins were at the reunion?

Probably MATHS

Suppose you have a bag of refrigerator magnets, one magnet for each letter of the alphabet.

What is the probability that the first five letters you pick from the bag (no looking!) can be arranged to spell MATHS?
Magical Circle

In these overlapping circles, place the numbers 3 to 8 in the small circles where the large circles intersect, so that the sums of the four numbers on each large circle are the same.
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, square, circle, hexagon, D-shape.

**Correct Shape in the Correct Position** identifies the number of shapes that are in the Desired Arrangement AND in the right positions. The second row has two shapes that are in the Desired Arrangement and in the right position.

**Correct Shape in the Wrong Position** identifies the number of shapes in the Desired Arrangement that are the right shapes BUT not in the right positions. There is one of these in the second row.

**Incorrect Shape** identifies the number of shapes that are not in the Desired Arrangement. There is one of these 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>
</tr>
</thead>
<tbody>
<tr>
<td>□ △ ◇ □</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>□ ◇ ◇ □</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>◇ □ ◇ △</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>◇ □ ◇ △</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>