Half and Half

1. You have a square piece of paper, 8 inches on a side. Imagine that you:
   - Fold the piece of paper in half
   - Fold the half in half.
   - Fold that half in half.
   - Fold that half in half.
   - Open the paper.
After 4 folds,
   a. How many small congruent rectangles did you create?
   b. What is the area of each small rectangle?

2. You have a square piece of paper, 10 inches on a side. Imagine that you:
   - Fold the piece of paper in half.
   - Fold the half in half.
   - Fold that half in half.
   - Fold that half in half.
   - Open the paper.
After 4 folds,
   a. How many small congruent rectangles did you create?
   b. What is the area of each?
**Digit Dilemma**

Use all of the digits 2, 3, 5, and 8 once and only once, to make each number.

What is the
1. Greatest number you can form?
2. Least number you can form?
3. Greatest number that is a multiple of 2?
4. Least number that is a multiple of 5?
5. Greatest number that is a multiple of both 2 and 3?
6. Least number that is a multiple of 9?

**Messy Multiples**

Name the numbers.

From 1 to 100, what is the greatest
1. Even number that is a multiple of 4?
2. odd number that is a multiple of 11?
3. Number that is one less than a multiple of both 2 and 3?
4. Number that is one more than a multiple of both 3 and 5?
5. Number that is one less than a multiple of 2, 3 and 5?

**Dizzy Discounts**


Compare prices.
1. What percent greater is the Canadian price than the price in the US?
2. What percent greater is the US price than the discount store price?
3. How many more paperbacks can you get for $100 if you purchase them at the discount store than at
   - a Canadian bookstore?
   - a bookstore in the US?

**Tricky Triangles**

Use 3 toothpicks to form Triangle A. The area of Triangle A is 1 square unit.

1. Use 6 toothpicks, 2 on a side, to form Triangle B. The area of B is ______ square units.
2. Use 9 toothpicks, 3 on a side, to make Triangle C. The area of C is ______ square units.
3. How many toothpicks do you need to make an equilateral triangle with an area of 49 square units?
Math Machine Madness

Start with the Input. Follow the arrows. Figure out the Output.

1. Input

   72 \rightarrow \div 8 \rightarrow \text{square this number} \rightarrow
   \frac{1}{4} \text{ of this number} \rightarrow -7^2

   \text{Double this number} \rightarrow \sqrt{\text{this number}} \rightarrow \text{Output} \rightarrow ?

2. Input

   100 \rightarrow \div 10 \rightarrow \frac{1}{5} \text{ of this number} \rightarrow
   \times \frac{1}{4} \rightarrow \times 3 \rightarrow \text{cube this number} \rightarrow
   \text{square this number} \rightarrow \text{Output} \rightarrow ?
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 (the solution) of three shapes from clues that provide information about the shapes and their locations. The possible shapes are star, pentagon, square and triangle. No shape is repeated.

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

Correct Shape in the Correct Place identifies the number of shapes that are in the Desired Arrangement AND in the right place. The second row has 2 shapes that are in the Desired Arrangement and in the right place.

Correct Shape in the Wrong Place identifies the number of shapes in the Desired Arrangement that are the right shapes BUT in the wrong place. There are none of these in the second row.

Incorrect Shape identifies the number of shapes that are NOT in the Desired Arrangement. There is 1 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>
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<tr>
<td>⭐ △  □</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
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