

## Math Awareness Month Competition 2012 Examination for 5th-6th Grades

---

**DIRECTIONS:** [40 Minutes - 5 Questions] Start each new problem on a separate page. **Show your work!** Answers must be exact. You are allowed to use a calculator. You are not allowed to borrow or interchange calculators during the test.

---

1. Jane draws a regular triangle (all three sides have the same length) and a regular hexagon (all six sides have the same length) on her notepad. The length of the perimeter of the triangle equals the length of the perimeter of hexagon. If the area of the triangle is 2 square inches, what is the area of the hexagon?
2. Kathy has a 11 inch  $\times$  11 inch square table divided into 1 inch  $\times$  1 inch squares (there are 121 such squares). She fills each of the squares with a +1 or -1. Then she writes the sum of the row to the right of each row, and the sum of the column below each column. Finally, she adds the 22 numbers around the table. In how many ways can she fill the table so that the sum of the 22 numbers is 0?
3. Jenny, Kelly, Lily, Megan and Nancy play a game. Each player is either a kangaroo or a frog. The frogs never say the truth, and the kangaroos always say the truth. (1) Jenny says that Kelly is a kangaroo. (2) Lily says that Megan is a frog. (3) Nancy says that Jenny is a not a frog. (4) Kelly says that Lily is not a kangaroo. (5) Megan says that Jenny and Nancy are different kinds of animals. How many girls play the role of a frog?
4. Oliver has a brick. The lengths of the edges, measuring in inches, are three different integers. The sum of the length of all edges is 36 inches. How many different values are possible for the volume of the brick?
5. At a party, three times more men than women showed up. After four men with their wives leave, there were four times more men remaining than women. How many women were there when the party started?