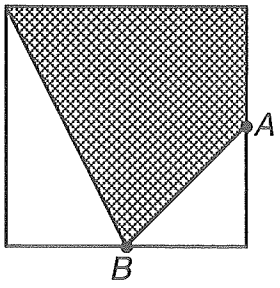
Test of Genius

1. Farmer John puts his chickens into cages. He finds that if he puts 4 chickens into each cage, he has two chickens left over. But if he puts 6 chickens into each cage, he has two cages left over. How many cages and how many chickens does Farmer John have?

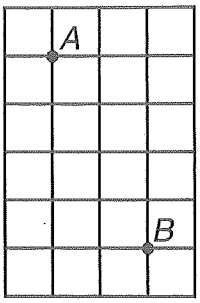
2. Arrange the whole numbers from 1 to 15 in the boxes below so that no number is repeated and the sum of the numbers in any two adjacent boxes is a perfect square.

3. A boy agreed to work one year for $1200 and a horse. At the end of six months, he quit and received $400 plus the horse. What was the value of the horse?

4. Suppose the square piece of gold shown below is worth $1000. Points *A* and *B* are the midpoints of adjacent sides of the square. What is the value of the shaded part?



5. On the grid to the right, label the position of *A* as (1, 5) and the position of *B* as (3, 1) . If you measure only along the grid lines, what points on the grid are equidistant from *A* and *B*?



6. Bubba ran a 3-mile race. He ran the first mile at a speed of 4 mph, the second mile at a speed of 5 mph, and the third mile at a speed of 6 mph. How long did it take Bubba to run the three miles?

7. Four chefs can prepare 20 desserts in 10 minutes. At this rate, how many chefs are needed to prepare 75 desserts in 15 minutes?

8. Substitute a different digit for each letter to make the following statement true:

$$\begin{array}{r} \text{H A L F} \\ +\ \text{H A L F} \\ \hline \text{W H O L E} \end{array}$$

9. Compare the expressions below. Write >, < or = in the box.

$3^{99} + 3^{99} + 3^{99} \square 3^{100}$