

2006 Middlementary Math Bonanza  
Individual Test Excerpt

1. When two standard six-sided dice are rolled, what is the probability that the numbers shown on their upper faces are equal?
2. What is the remainder when 142 is divided by 11?
3. Evaluate:  $1971 \div 9$
4. In how many ways can four people be divided to play two-on-two basketball?
5. Evaluate:  $37 \times 73$
6. What is the volume, in cubic centimeters, of a cone with a base radius of 9 cm and a height of 8 cm?
7. Express 1781 **in scientific notation**.
8. How many positive integers are factors of 84?
9. What is the mode of the data set 7, 5, 12, 4, 5, 0, 3, 9, 3, 4, 3?
10. When a positive two-digit integer has its digits reversed to form a new positive two-digit integer, the new number is 45 greater than the original. What is the largest possible value of the original number?
11. How many triangles of any shape, size, or orientation are there in the figure to the right?
12. What is the distance between the points  $(3,8)$  and  $(7,4)$ ?
13. What value of  $a$  satisfies  $3a - 11 = 25$ ?
14. A circle is inscribed in a square, which is inscribed in a second circle. What is the ratio of the area of the smaller circle to that of the larger, expressed as a reduced fraction?
15. If  $d$  dollars can purchase  $b$  balloons, how many nickels, expressed in terms of  $b$  and  $d$ , would be needed to buy 8 balloons?

