Probability and Counting Problems   Name _____
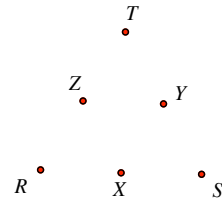October 3, 2009

1. Two dice are thrown. What is the probability that the product of the two numbers is a
multiple of 5?
(A) 1/36   (B) 1/18   (C) 1/6   (D) 11/36   (E) 1/3

2. Points *R; S* and *T* are vertices of an equilateral triangle, and points *X; Y*
and *Z* are midpoints of its sides. How many non-congruent triangles can be
drawn using any three of these six points as vertices?
   (A) 1   (B) 2   (C) 3   (D) 4   (E) 20

3. Each half of this figure is composed of 3 red triangles, 5 blue
triangles, and 8 white triangles. When the upper half is
folded down over the centerline, 2 pairs of red triangles
coincide, as do 3 pairs of blue triangles. There are 2 red-white
pairs. How many white pairs coincide?
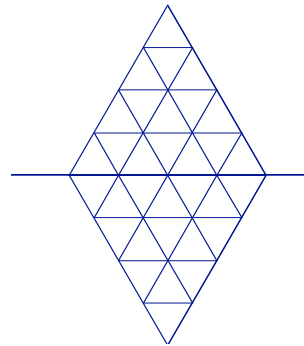
How many distinct triangles can be drawn using three of the
dots below as vertices?

   (A) 4   (B) 5   (C) 6   (D) 7   (E) 9

4. There are 24 four-digit whole numbers that use each of the four digits 2, 4, 5 and 7 exactly once.
Only one of these four-digit numbers is a multiple of another one. Which of the following is it?
   (A) 5724   (B) 7245   (C) 7254   (D) 7425   (E) 7542

5. Harold tosses a nickel four times. The probability that he gets at least as many heads as tails is
   (A) 5/16   (B) 3/8   (C) 1/2   (D) 5/8   (E) 11/16