Math Kangaroo 2012 Sample Questions - Levels 7 & 8

4. Mary has a pair of scissors and five cardboard letters. She cuts each letter exactly once (along a straight line) so that it falls apart into as many pieces as possible. Which letter falls apart into the most pieces?
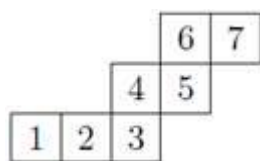

A) O B) F C) S D) H E) M

5. A dragon has five heads. Every time a head is chopped off, five new heads grow. If six heads are chopped off one by one, how many heads will the dragon have at the end?

A) 25 B) 28 C) 29 D) 30 E) 35

19. A magical talking square originally has sides of length 8 cm. If he tells the truth, then his sides become 2 cm shorter. If he lies, then his perimeter doubles. He makes four statements, two true and two false, in some order. What is the largest possible perimeter of the square after the four statements?

A) 28 B) 80 C) 88 D) 112 E) 120

20. A cube is rolled on a plane so that it turns around its edges. It begins at position 1, and is rolled so that one of its faces touches the plane in positions 2, 3, 4, 5, 6, and 7, in that order, as shown. Which two of these positions were occupied by the same face of the cube?
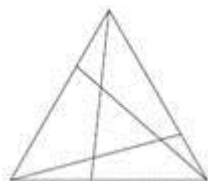

A) 1 and 7 B) 1 and 6 C) 1 and 5 D) 2 and 7 E) 2 and 6

28. A rope is folded in half, then in half again, and then in half again. Finally the folded rope is cut through, forming several strands. The lengths of two of the strands are 4 m and 9 m. Which of the following could not have been the length of the whole rope?

A) 52 m B) 68 m C) 72 m D) 88 m E) All the previous are possible.

29. A triangle is divided into four triangles and three quadrilaterals by three straight line segments (see the figure). The sum of the perimeters of the three quadrilaterals is equal to 25 cm. The sum of the perimeters of the four triangles is equal to 20 cm. The perimeter of the whole triangle is equal to 19 cm. What is the sum of the lengths of the three straight line segments?

A) 11 B) 12 C) 13 D) 15 E) 16