

## Math Kangaroo 2013 Sample Questions - Levels 7 & 8

1. In the picture, the big triangle is equilateral and has an area of 9. The lines are parallel to the sides and divide the sides into three equal parts. What is the area of the shaded part?

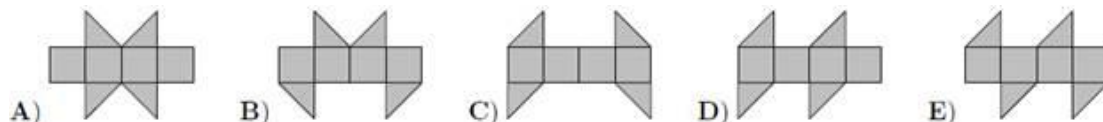


- A) 1      B) 4      C) 5      D) 6      E) 7

2. It is true that  $\frac{1111}{101} = 11$ . What is the value of  $\frac{3333}{101} + \frac{6666}{303}$  ?

- A) 5      B) 9      C) 11      D) 55      E) 99

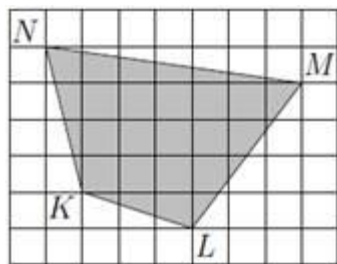
14. One of the following nets cannot be folded to form a cube. Which one?



15. Vasya wrote down several consecutive integers. Which of the following could not be the percentage of odd numbers among them?

- A) 40      B) 45      C) 48      D) 50      E) 60

21. The diagram shows a shaded quadrilateral  $KLMN$  drawn on a grid. Each cell of the grid has sides of length 2 cm. What is the area of  $KLMN$ ?



- A) 96 cm<sup>2</sup>      B) 84 cm<sup>2</sup>      C) 76 cm<sup>2</sup>      D) 88 cm<sup>2</sup>      E) 104 cm<sup>2</sup>

22. Let  $S$  be the number of squares among the integers from 1 to  $2013^6$ . Let  $Q$  be the number of cubes among the same integers. Then

- A)  $S = Q$       B)  $2S = 3Q$       C)  $3S = 2Q$       D)  $S = 2013Q$       E)  $S^3 = Q^2$