



# Kangaroo 2011 Cadet

(8<sup>th</sup> and 9<sup>th</sup> class)

NAME \_\_\_\_\_ CLASS/GROUP \_\_\_\_\_

**Points:** \_\_\_\_\_ **Kangaroo leap:** \_\_\_\_\_

Separate the answer sheet from the test.

Write your answer under each problem number.

If you do NOT know the answer, leave the space empty.

For each WRONG answer, 1/4 of the points is deducted. DO NOT guess!

PROBLEM	1	2	3	4	5	6	7
ANSWER							

PROBLEM	8	9	10	11	12	13	14
ANSWER							

PROBLEM	15	16	17	18	19	20	21
ANSWER							



**3 points**

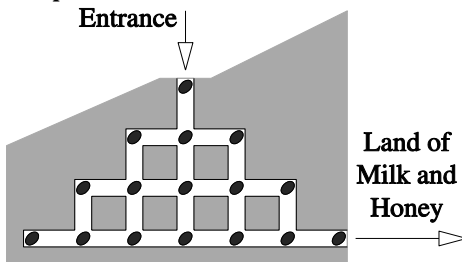
**1.**

Which of the following has the largest value?

- (A)  $2011^1$       (B)  $1^{2011}$       (C)  $1 \cdot 2011$       (D)  $1 + 2011$       (E)  $1 : 2011$

**2.**

Hamster Fridolin sets out for the Land of Milk and Honey. His way to the legendary Land passes through a system of tunnels. There are 16 pumpkin seeds spread through the tunnels, as shown in the picture.



What is the highest number of pumpkin seeds Fridolin can collect if he is not allowed to visit any junction more than once?

- (A) 12      (B) 13      (C) 14      (D) 15      (E) 16

**3.**

A zebra crossing has alternate white and black stripes, each of width 50 cm. The crossing starts and ends with a white stripe and has 8 white stripes in all. What is the total width of the crossing?

- (A) 5.5 m      (B) 6.5 m      (C) 7.5 m      (D) 8.5 m      (E) 9.5 m

**4.**

My digital watch has just changed to show the time 20:11. How many minutes later will it next show a time with the digits 0, 1, 1, 2 in some order?

- (A) 40      (B) 45      (C) 50      (D) 55      (E) 60

**5.**

In my street there are 17 houses. On the "even" side, the houses are numbered 2, 4, 6, and so on. On the "odd" side, the houses are numbered 1, 3, 5, and so on. I live in the last house on the even side, which is number 12. My cousin lives in the last house on the odd side. What is the number of my cousin's house?

- (A) 5      (B) 7      (C) 13      (D) 17      (E) 21



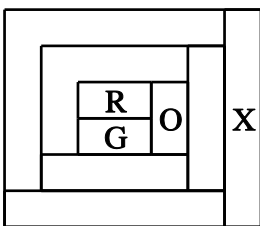
6.

Felix the Cat caught 12 fish in three days. Each day after the first he caught more fish than the previous day. On the third day he caught fewer fish than the first two days together. How many fish did Felix catch on the third day?

- (A) 5                      (B) 6                      (C) 7                      (D) 8                      (E) 9

7.

Each region in the figure is coloured with one of four colours: red (R), green (G), orange (O), or yellow (Y). (The colours of only three regions are shown.)



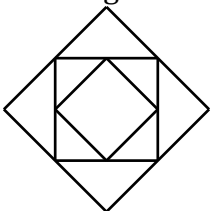
Any two regions that touch have different colours. The colour of the region X is

- (A) red                      (B) orange                      (C) green                      (D) yellow                      (E) impossible to determine

4 points

8.

The diagram shows three squares.



The medium square is formed by joining the midpoints of the large square. The small square is formed by joining the midpoints of the medium square. The area of the small square in the figure is 6 cm<sup>2</sup>. What is the difference between the area of the medium square and the area of the large square?

- (A) 6 cm<sup>2</sup>                      (B) 9 cm<sup>2</sup>                      (C) 12 cm<sup>2</sup>                      (D) 15 cm<sup>2</sup>                      (E) 18 cm<sup>2</sup>

9.

What is the value of  $\frac{2011 \cdot 2.011}{201.1 \cdot 20.11}$ ?

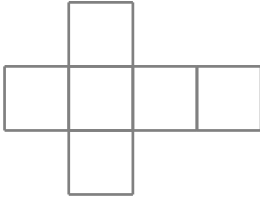
- (A) 0.01                      (B) 0.1                      (C) 1                      (D) 10                      (E) 100



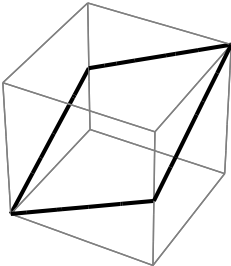


14.

The figure shows a net which is cut out of paper and folded to make a cube.

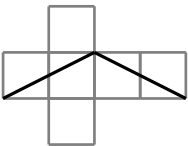


A dark line is then drawn on the cube, as shown, dividing the surface of the cube into two identical parts.

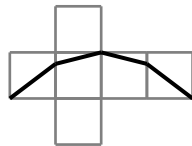


The cube is then unfolded. The paper could now look like only one of the following. Which one?

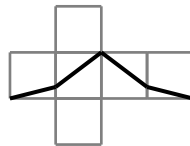
(A)



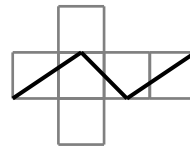
(B)



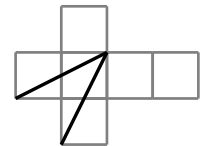
(C)



(D)



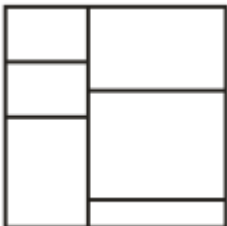
(E)



5 points

15.

A square piece of paper is cut into six rectangular pieces.



When the perimeter lengths of the six pieces are added together the result is 120 cm. What is the area of the square piece of paper?

(A) 48 cm<sup>2</sup>

(B) 64 cm<sup>2</sup>

(C) 110.25 cm<sup>2</sup>

(D) 144 cm<sup>2</sup>

(E) 256 cm<sup>2</sup>



16.

The three blackbirds Isaac, Max and Oscar are each on their own nest.

Isaac says: "I am more than twice as far away from Max as I am from Oscar".

Max says: "I am more than twice as far away from Oscar as I am from Isaac".

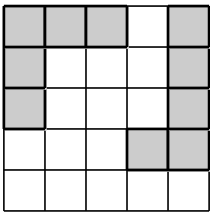
Oscar says: "I am more than twice as far away from Max as I am from Isaac".

At least two of them are telling the truth. Who is lying?

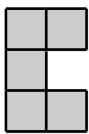
- (A) Isaac            (B) Max            (C) Oscar            (D) none of them            (E) impossible to tell

17.

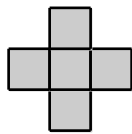
Lina has fixed two shapes on a 5 x 5 board, as shown in the picture. Which of the following five shapes should she place on the empty part of the board so that none of the remaining four shapes will fit in the empty space that is left? (The shapes may be rotated or turned over, but can only be placed so that they cover complete squares.)



(A)



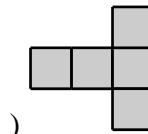
(B)



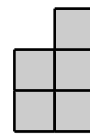
(C)



(D)



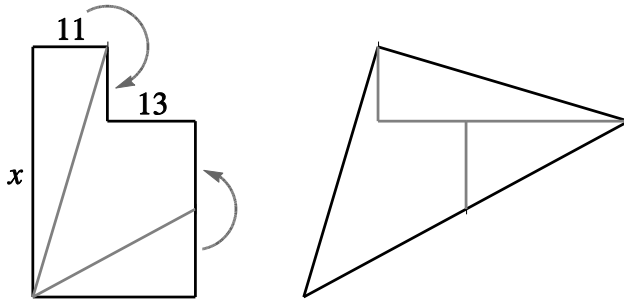
(E)





18.

The left-hand figure shows a shape consisting of two rectangles. The lengths of two sides are marked: 11 and 13. The shape is cut into three parts and the parts are rearranged into a triangle, as shown in the right-hand figure. What is the length marked  $x$ ?



- (A) 36                      (B) 37                      (C) 38                      (D) 39                      (E) 40

19.

In the expression  $\frac{K \cdot A \cdot N \cdot G \cdot A \cdot R \cdot O \cdot O}{G \cdot A \cdot M \cdot E}$  different letters stand for different non-zero digits, but the same letter always stands for the same digit. What is the smallest possible positive integer value of the expression?

- (A) 1                      (B) 2                      (C) 3                      (D) 5                      (E) 7

20.

Seven years ago Evie's age was a multiple of 8, and in eight years' time her age will be a multiple of 7.

Eight years ago Raph's age was a multiple of 7, and in seven years' time his age will be a multiple of 8.

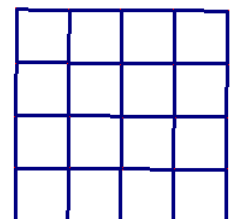
Neither Evie nor Raph is over a hundred years old.

Which of the following statements is true?

- (A) Raph is two years older than Evie.  
(B) Raph is one year older than Evie.  
(C) Raph and Evie are the same age.  
(D) Raph is one year younger than Evie.  
(E) Raph is two years younger than Evie.

21.

Sixteen different positive integers are written in a 4 x 4 table. Any two neighbours (numbers in cells with a common side) have a common divisor greater than 1. If  $n$  is the largest number in the table, find the smallest possible value of  $n$ .



- (A) 17                      (B) 21                      (C) 24                      (D) 25                      (E) 33