Canadian Math Kangaroo Contest
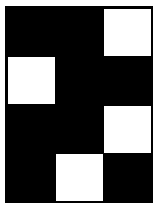## 2011 Online Training
Grade 5-6

Part A (3 points each)

1 Kanga can solve 6 math problems in 12 minutes. At this rate, how many problems can she solve in 60 minutes?

A) 60   **B**) 30   C) 20   D) 10   E) 120

2 Minous has 16 cards: 4 spades (♠), 4 clubs (♣), 4 diamonds (♦) and 4 hearts (♥). She wants to arrange them in the square below, in such a way that every row and every column has a card of each sort. In the square below you can see how she started. What sort must be put in the square marked by the question mark?

A) ♠   B) ♣   **C**) ♦   D) ♥   E) Impossible to decide

3 Which of the following expressions is equal to the value of $(10 \times 100) \times (20 \times 80)$?

A) 20000×80000 B) 2000×8000 C) 2000×80000

D) 20000×8000 **E**) 2000×800

4 Vesna chose a whole number and multiplied it by three. Which of the following numbers could not be her answer?

A) 103   B) 105   C) 204   D) 444   E) 47988

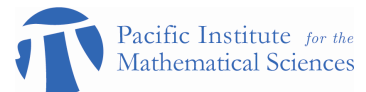**5** Which of the rectangles (A) to (E) can be covered by the pattern

to become a completely black or a completely white rectangle?

A)   B)   C)   **D**)   E)

Part B (4 points each)

6 In one month, 5 Sundays occurred. This month could not have
A) 5 Saturdays   B) 5 Fridays   C) 5 Tuesdays   **D**) 5 Thursdays E) 5 Mondays

7 A rectangle has a perimeter of 24cm and one side is twice as long as another. What, in square centimetres, is the rectangle's area?
A) 12   B) 16   C) 20   D) 24   **E**) 32

8 One corner of a cube is cut off, as shown on the picture. Then, the resulting solid is unfolded. Which of the nets below is the net of this solid?


A)   B)

C)   D)   **E**)
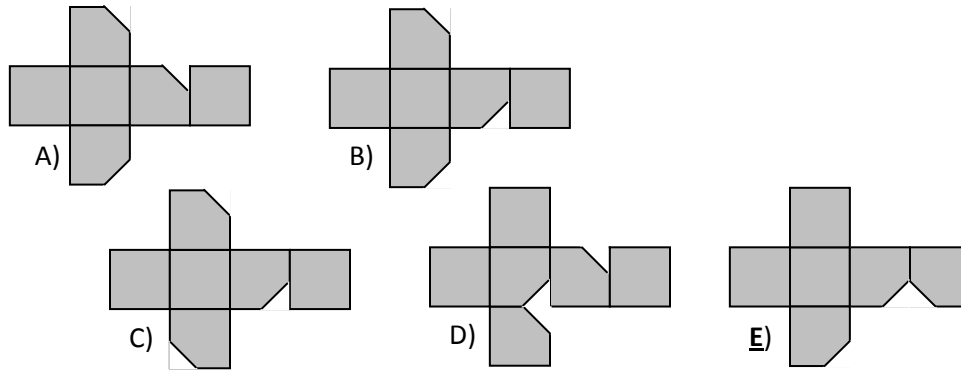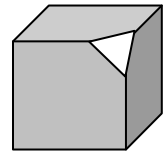
9 After three games of the soccer championship, Platypus United has scored three goals and received one. They get three points for a win, one point for a draw and no points for a loss. How many points can they not have right now?
A) 3   B) 4   C) 5   D) 6   E) 7

10 In the addition shown on the figure the digits of the numbers are replaced by symbols. Different symbols represent different digits, and equal symbols represent equal digits. Find the digit replaced by the square.
A) 9   B) 8   C) 7   **D**) 6   E) 5
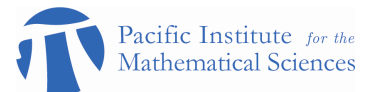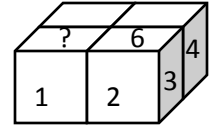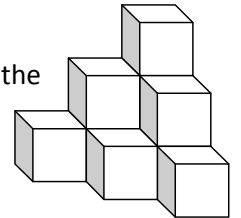
Part C (5 points each)

11 In a regular die, the faces are numbered by the numbers 1 to 6 and the sum of the numbers on any two opposite faces is 7. Nick composed a rectangular prism $2 \times 2 \times 1$ using four identical regular dice, with the numbers on any two touching faces of the dice being equal (see the figure). The numbers on some faces are shown.
Which number must be written on the face denoted by the (**?**)?
A) 5   B) 6   C) 2   D) 3   E) not enough information

12 The structure shown on the picture is glued together from 10 cubes. Roman painted the entire structure, including the bottom. How many faces of the cubes are painted?
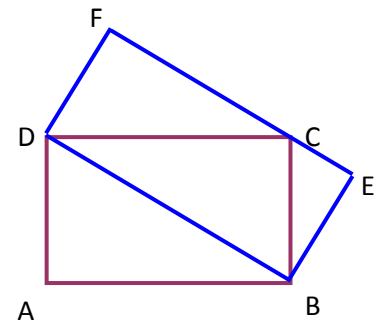A) 18   B) 24   C) 30   **D**) 36   E) 42

13 The total number of participants in a math club is between 50 and 100. The club teacher wanted to divide them in teams. He tried to group the students in 5, or 6, or 12 per team, and noticed that there were always 3 students left. How many students are there in the math club?
A) 51   B) 61   **C**) 63   D) 75   E) Not enough information

14 Two rectangles, ABCD and DBEF are shown in the diagram. The length of AD is 3 cm; the length of AB is 4 cm. What is the area of rectangle DBEF?
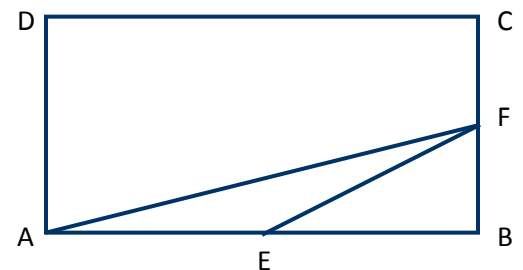A) 10 cm^2 **B**) 12 cm^2 C) 13 cm^2
D) 14 cm^2 E) 16cm^2

15 If you read the date 21.02 (the 21st of February) from right to left, you get 20.12, and this is also some date (the 20th of December). The date 10.09 does not possess this property (there is no 90th of January). How many dates (in the year) possess this property?
A) 183   B) 182   **C**) 34   D) 35   E) depends on the year

16 In the figure, ABCD is a rectangle; E is the midpoint of AB; F is the midpoint of BC. What is the ratio between the area of the rectangle ABCD and the area of the triangle AEF?
A) 4:1   **B**) 8:1   C) 16:1
D) 5:2   E) 3:2