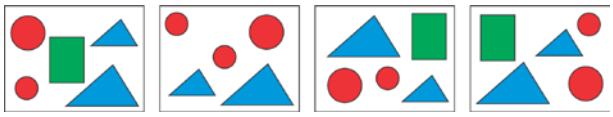
Canadian Math Kangaroo Contest

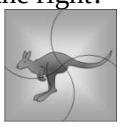
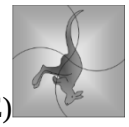
Part A: Each correct answer is worth 3 points

1. Which figure is not in all four pictures?

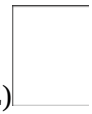


(A)  (B)  (C)  (D)  (E) 

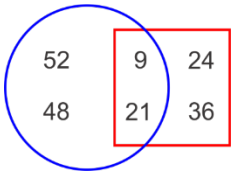
2. Which of the following pictures can be rotated so that it will coincide with the picture shown on the right?

(A)  (B)  (C)  (D)  (E) 

3. What does the round tower in the picture on the right looks like from above?

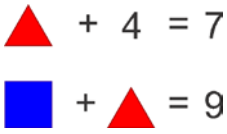
(A)  (B)  (C)  (D)  (E) 

4. What is the sum of the numbers outside the square?



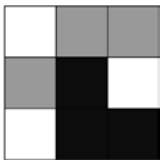
(A) 30 (B) 60 (C) 90 (D) 45 (E) 100

5. Which number is hidden behind the square?



(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

6. Sam painted 9 squares with the colours black, white and grey as shown. At least how many squares does he need to repaint so that no two squares with a common side have the same colour?



(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

7. Peter looks through a magnifying glass at different parts of a drawing on a wall. Which is the picture that he cannot see?

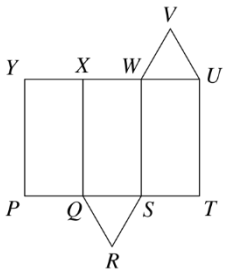
(A)  (B)  (C)  (D)  (E) 

8. Mother did the laundry and hanged t-shirts in line on a clothing line. Then she asked her children to put a single sock between any two t-shirts. Now there are 29 pieces of clothing on the line. How many t-shirts are there on the line?

(A) 10 (B) 11 (C) 13 (D) 14 (E) 15

9. What is the units digit of the number $2015^2 + 2015^0 + 2015^1 + 2015^5$?
(A) 1 (B) 5 (C) 6 (D) 7 (E) 9

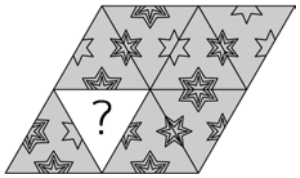
10. The diagram shows the net of a triangular prism. Which edge coincides with edge UV when the net is folded to make the prism?
(A) WV (B) XW (C) XY
(D) QR (E) RS



Part B: Each correct answer is worth 4 points

11. It takes half an hour for Jenny to go half of the way from school to home. How long does it take Jenny to go to school from home?
(A) 15 minutes (B) half an hour (C) 1 hour (D) 2 hours (E) 40 minutes

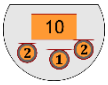
12. Which piece is missing?



(A)  (B)  (C)  (D)  (E) 

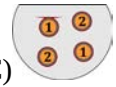
13. The date 5/5/2015 has three 5's. The earliest date that will have three 5's again is:
(A) 5/5/2025 (B) 6/15/2055 (C) 5/15/2050 (D) 5/25/2015 (E) 5/15/2015

14. Mother ordered 2 pizzas and sliced each of them into 8 pieces for Vera's birthday. There were 14 children at the party including Vera. How many slices are left over if mother gives one slice to each child?
(A) 5 (B) 4 (C) 3 (D) 2 (E) 1

15. Lucy had some kangamoney in her wallet (see the picture). 

She went to a shop where she bought a ball and paid 7 kangamoney. How many kangamoney did she have when she left the shop?
(A) 

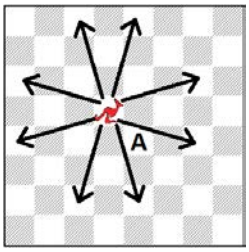
(B) 

(C) 

(D) 

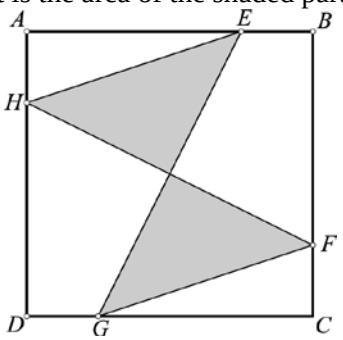
(E) 

16. A new chess piece "kangaroo" has been introduced. In each move, it jumps either 3 squares vertically and 1 horizontally, or 3 squares horizontally and 1 vertically, as shown in the picture. What is the minimum number of moves the kangaroo needs in order to go from its current position to the square marked with A?
(A) 2 (B) 3 (C) 4 (D) 5 (E) 6



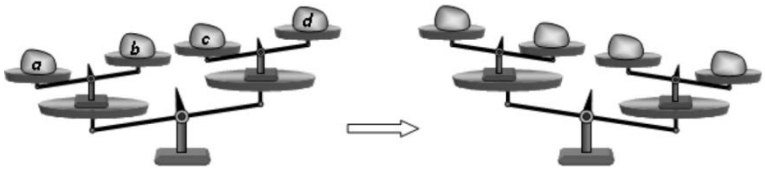
17. Irina asked five of her students how many of the five of them had studied the day before. Pol said none, Berta said only one, Ona said exactly two, Eugeni said exactly three and Gerard said exactly four. Irina knew that those students who had not studied were not telling the truth, but those who had studied were telling the truth. How many of these students had studied the day before?
(A) 0 (B) 1 (C) 2 (D) 3 (E) 4

18. The given square $ABCD$ has area 80. Points E, F, G and H are on the sides of the square and $AE = BF = CG = DH$. If $AE = 3\,EB$, what is the area of the shaded part?



(A) 20 (B) 25 (C) 30 (D) 35 (E) 40

19. Four loads a, b, c, d are placed in the scales (see fig.). Two of the loads are exchanged and, as a result, the scales change their position as shown in the figure. Which loads were exchanged?



(A) a and b (B) b and d (C) b and c (D) a and d (E) a and c

20. $\sqrt{(2015+2015)+(2015-2015)+(2015\cdot 2015)+(2015:2015)}$

(A) $\sqrt{2015}$ (B) 2015 (C) 2016 (D) 2017 (E) 4030

Part C: Each correct answer is worth 5 points

21. There were 11 flags on a straight track of a race. The first one was at the start, the last one at the finish. The distance between two neighbouring flags was 8 m. How long was the track?

(A) 24 metres (B) 48 metres (C) 72 metres (D) 80 metres (E) 88 metres

22. Rick and Tom were building an igloo. Each hour Rick made 8 snow bricks and Tom made two bricks less. How many bricks did they make together in three hours?

(A) 14 (B) 30 (C) 42 (D) 48 (E) 54

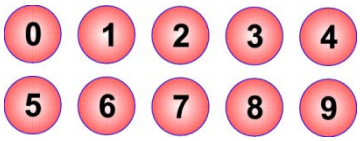
23. We left for a summer camp yesterday at 4:32 PM and got to our destination today at 6:11 AM. For how long did we travel?

(A) 13 hours 39 minutes (B) 14 hours 39 minutes (C) 14 hours 21 minutes
(D) 13 hours 21 minutes (E) 2 hours 21 minutes

24. Jane bought 3 toys. For the first toy she paid half of her money and EUR1 more. For the second toy she paid half of the remaining money and EUR2 more. Finally, for the third toy she paid half of the remaining money and EUR3 more, thus spending all of her money. How much money did she have initially?

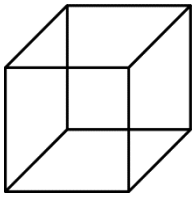
(A) EUR36 (B) EUR45 (C) EUR34 (D) EUR65 (E) EUR100

25. Peter has ten balls, numbered from 0 to 9. He distributed these balls among three friends: John got three balls, George four and Ann three. Then Peter asked each of his friends to multiply the numbers on the balls they got. The results were: 0 for John, 72 for George and 90 for Ann. What is the sum of the numbers on the balls that John received?



(A) 11 (B) 12 (C) 13 (D) 14 (E) 15

26. Cyril has seven pieces of wire with lengths 1 cm, 2 cm, 3 cm, 4 cm, 5 cm, 6 cm and 7 cm. He uses some pieces to make a wire cube with edges of length 1 cm without any overlaps. What is the smallest number of these pieces that he can use?



(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

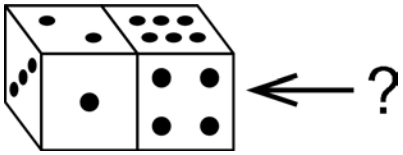
27. Every positive integer is to be coloured according to the following three rules.
(i) Each number is either red or green.
(ii) The sum of any two different red numbers is a red number.
(iii) The sum of any two different green numbers is a green number.
In how many different ways can this be done?

(A) 0 (B) 2 (C) 4 (D) 6 (E) more than 6

28. A two-digit number with digits a, b, can be written in the form $\overline{ab}$. Let a, b, c be different digits. How many ways can you choose the digits a, b, c such that $\overline{ab} < \overline{bc} < \overline{ca}$?

(A) 84 (B) 96 (C) 125 (D) 201 (E) 502

29. For standard dice the sum of the numbers on opposite faces is 7. here are two identical standard dice shown in the figure. What number may be on the (not visible) face on the right (marked by the "?" sign)?



(A) Only 5 (B) Only 2 (C) Either 2 or 5 (D) Either 1, 2, 3 or 5 (E) Either 2, 3 or 5

30. 96 members of a counting club are standing in a large circle. They start saying numbers 1, 2, 3, etc. in turn, going around the circle. Every member that says an even number steps out of the circle and the rest continue, starting the second round with 97. They continue in this way until only one member is left. Which number did this member say in the first round?

(A) 1 (B) 17 (C) 33 (D) 65 (E) 95