1. You have 60 minutes to solve 24 multiple choice problems. For each problem, circle only one of the proposed five choices. If you circle more than one choice, your response will be marked as wrong.

2. Record your answers in the response form. Remember that this is the only sheet that is marked, so make sure you have all your answers transferred here by the end of the contest.

3. The problems are arranged in three groups. A correct answer of the first 8 problems is worth 3 points. A correct answer of the problems 9 -16 is worth 4 points. A correct answer of the problems 17-24 is worth 5 points. For each incorrect answer, one point is deducted from your score. Each unanswered question is worth 0 points. To avoid negative scores, you start from 24 points. The maximum score possible is 120.

4. Calculators and graph paper are not permitted. You are allowed to use rough paper for draft work.

5. The figures are not drawn to scale. They should be used only for illustration.

6. Remember, you have about 2-3 minutes for each problem; hence, if a problem appears to be too difficult, save it for later and move on to the other problems.

7. At the end of the allotted time, please **submit the response form** to the contest supervisor. Please do not forget to pick up your Certificate of Participation!

Good luck! *Canadian Math Kangaroo Contest team*

2017 CMKC locations: Algoma University; Bishop's University; Brandon University; Brock University; Carlton University; Concordia University; Concordia University of Edmonton; Coquitlam City Library; Dalhousie University; Evergreen Park School; F.H. Sherman Recreation & Learning Centre; GAD Elementary School; Grande Prairie Regional College; Humber College; Lakehead University (Orillia and Thunder Bay); Laurentian University; MacEwan University; Memorial University of Newfoundland; Mount Allison University; Mount Royal University; Nipissing University; St. Mary's University (Calgary); St. Peter's College; The Renert School at Royal Vista; Trent University; University of Alberta-Augustana Campus; University of British Columbia (Okanagan); University of Guelph; University of Lethbridge; University of New Brunswick; University of Prince Edward Island; University of Quebec at Chicoutimi; University of Quebec at Rimouski; University of Regina; University of Toronto Mississauga; University of Toronto Scarborough; University of Toronto St. George; University of Windsor; The University of Western Ontario; University of Winnipeg; Vancouver Island University; Walter Murray Collegiate, Wilfrid Laurier University; YES Education Centre; York University; Yukon College.
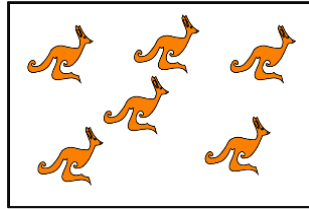
2017 CMKC supporters: Laurentian University; Canadian Mathematical Society; IEEE; PIMS.
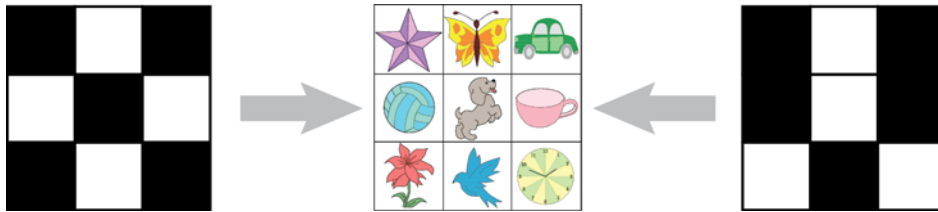
Canadian Math Kangaroo Contest

Part A: Each correct answer is worth 3 points

1. John looks through the window. He sees half of the kangaroos in the park (see the picture).

    How many kangaroos are there in the park?

    (A) 12   (B) 14   (C) 16   (D) 18   (E) 20

2. Two 3×3 transparent sheets are darkened in some squares, as shown. They are both slid on top of the board shown in the middle.

    Pictures behind the darkened squares cannot be seen. Only one of the pictures can still be seen, which one is it?

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

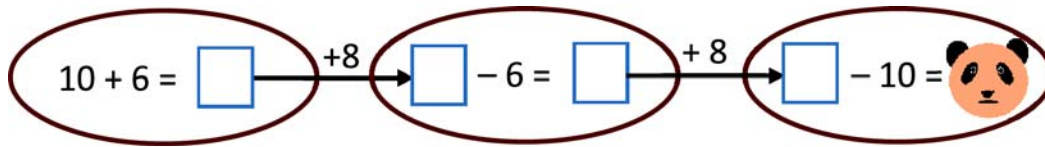3. A picture of footprints shown on the left was rotated as shown on the right.
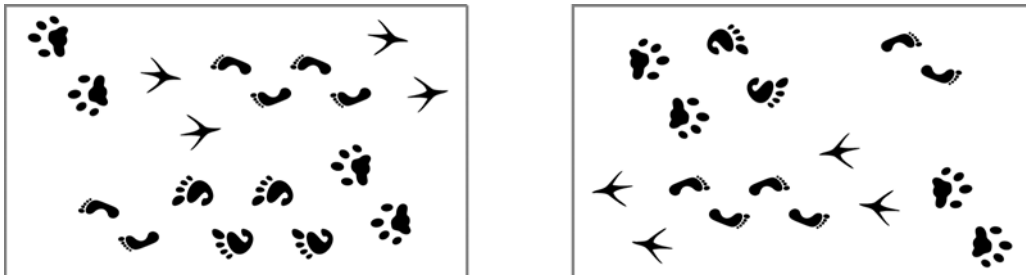
    Which footprints are missing in the picture on the right?

    (A)   (B)   (C)   (D)   (E)
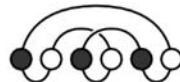
4. What number is hidden behind the panda?

$$10 + 6 = \square \xrightarrow{+8} \square - 6 = \square \xrightarrow{+8} \square - 10 = \text{🐼}$$

(A) 16   (B) 18   (C) 20   (D) 24   (E) 28

5. Dolly accidentally broke the mirror into pieces. How many pieces have exactly four sides?
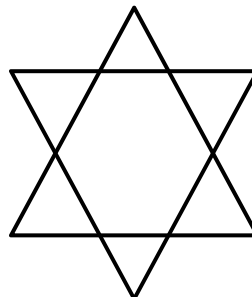
(A) 2   (B) 3   (C) 4   (D) 5   (E) 6

6. In the figure, we see a necklace of six beads.

Which one is the same necklace?

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

7. How many triangles (of any size) are there in the figure?
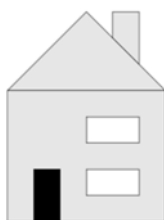
(A) 2   (B) 6   (C) 7   (D) 8   (E) 9

8. In the table, correct sums are shown. Ink was spilled over some of the table. What is the result in the box with the question mark?

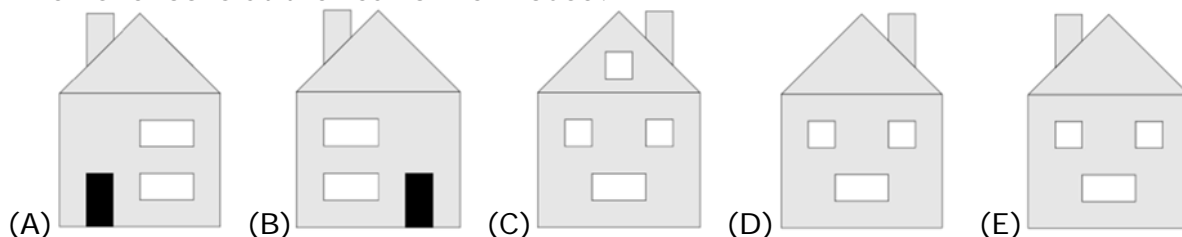| +	11	7	2
6	17	13	8
		?	11

(A) 10   (B) 12   (C) 13   (D) 15   (E) 16

Part B: Each correct answer is worth 4 points

9. The picture shows the front of Mélanie's house.

The rear of her house has three windows and no door. What view does Mélanie see when she looks at the rear of her house?

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

10. A five-digit number has four equal digits and the sum of the digits is 43. Which one is the different digit?

(A) 1   (B) 3   (C) 5   (D) 7   (E) 9

11. ⬤ + ⬤ + ⬤ + ⬤ + 🟥 = 🟥 + 🟥 + 🟥

Imagine that the circles represent the same number and the same is true for the squares. Which one is true?

(A) ⬤ = 🟥   (B) ⬤ + ⬤ + ⬤ = 🟥   (C) 🟥 + 🟥 + 🟥 = ⬤
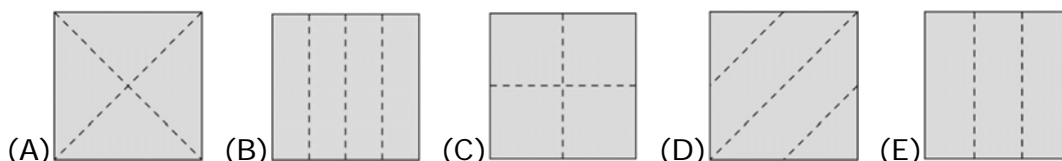
(D) 🟥 + 🟥 = ⬤   (E) ⬤ + ⬤ = 🟥

12. Balloons are sold in packs of 5, 10 and 25. Marius buys exactly 70 balloons. What is the smallest number of packs he could buy?

    (A) 3   (B) 4   (C) 5   (D) 6   (E) 7

13. Bob folded a piece of paper. He drilled exactly one hole in the paper. Then he unfolded the piece of paper and saw the result as shown in the picture.

    How had Bob folded his piece of paper?

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

14. There is a tournament at the pool. First 13 children signed up and then another 19 signed up. Six teams with an equal number of players are needed for the tournament. At least how many more children need to sign up so that the six teams can be formed?

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

15. The Modern Sofa Furniture store is selling a sofa and a loveseat made from identical modular pieces as shown in the picture.
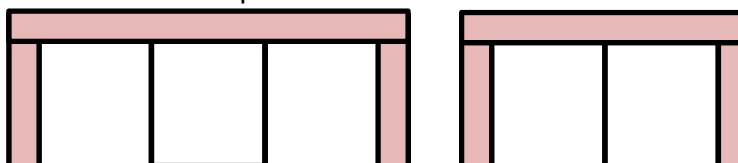
    sofa
    220 cm wide

    loveseat
    160 cm wide

    The width, including the seating and the armrests, is given below each item. How wide is an armrest?

    (A) 15 cm   (B) 20 cm   (C) 30 cm   (D) 40 cm   (E) 60 cm

16. David wants to cook 5 dishes on a stove with only 2 burners. The times needed to cook the 5 dishes are 40 min, 15 min, 35 min, 10 min and 45 min. What is the shortest time in which he can do it? (Once he starts cooking a dish, he may remove it from the stove only when it is cooked.)

   (A) 60 min   (B) 70 min   (C) 75 min   (D) 80 min   (E) 85 min

Part C: Each correct answer is worth 5 points

17. A mathematical test consists of 20 problems. At the beginning, everybody starts with 20 points. For a correct answer one gets 1 point, while for an incorrect or missing answer 1 point is subtracted. Mary's final result is 24 points. How many correct answers did Mary have?

    (A) 4   (B) 8   (C) 10   (D) 12   (E) 16

18. Identical cubes are glued together. The figures below show the structure seen from the front, from the left, and from above.

    1) front   2) left   3) above
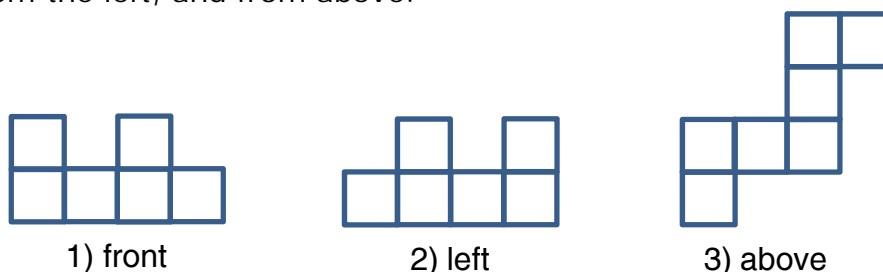
    What number of cubes does the structure contain?

    (A) 6   (B) 9   (C) 10   (D) 11   (E) 12

19. Ten bags each contain a different number of candies from one to ten. Five boys each took two bags of candies. Alex got five candies, Bob got seven candies, Charles got nine, and Dennis got fifteen. How many candies did Eric get?

    (A) 9   (B) 11   (C) 13   (D) 17   (E) 19

20. George starts training at five in the afternoon. The walk from his house to the bus stop takes 5 minutes. The bus journey takes 15 minutes. It takes George 5 minutes to walk from the bus stop to the field. The bus arrives to his stop every 10 minutes from six in the morning. At what time at the latest does George have to leave his house to arrive at the field exactly on time?

    (A)   (B)   (C)   (D)   (E)
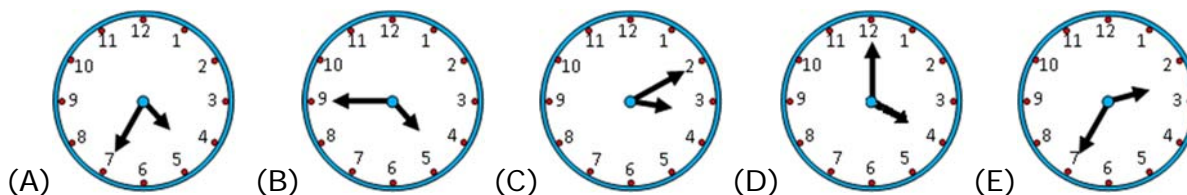
21. A small zoo has a giraffe, an elephant, a lion and a turtle. Susan wants to plan a tour where she sees exactly two different animals. She does not want to start with the lion. How many different tours can she plan?

    (A) 3   (B) 7   (C) 8   (D) 9   (E) 12

22. Zosia has hidden smileys ☺ in some of the cells of the table. In some of the other cells she writes the number of smileys in the neighbouring cells as shown in the picture. Two cells are said to be neighbouring if they share a common side or a common corner. How many smileys has she hidden?
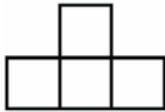

(A) 4   (B) 5   (C) 7   (D) 8   (E) 11

23. Kate has 4 flowers, one with 6 petals, one with 7 petals, one with 8 petals and one with 11 petals.

Kate choose three flowers and tears off one petal from each flower. She does this several times, choosing any three flowers each time. She stops when she can no longer tear one petal from three flowers. What is the smallest number of petals which can remain?

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

24. In how many ways can Josie cut out a T-shape like with exactly one shaded cell from the rectangle in the figure below?

(A) 3   (B) 5   (C) 7   (D) 8   (E) 9

International Contest-Game
Math Kangaroo Canada, 2017

Answer Key
Grade 3-4

1	**A** B C D E	9	A B C D **E**	17	A B C **D** E
2	A B C D **E**	10	A B C **D** E	18	A **B** C D E
3	A B **C** D E	11	A B C D **E**	19	A B C D **E**
4	**A** B C D E	12	A **B** C D E	20	**A** B C D E
5	A B **C** D E	13	A B **C** D E	21	A B C **D** E
6	**A** B C D E	14	A B C **D** E	22	A **B** C D E
7	A B C **D** E	15	A **B** C D E	23	A **B** C D E
8	A B C D **E**	16	A B **C** D E	24	A B C **D** E