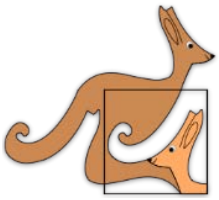
# For training purposes only!



**INTERNATIONAL CONTEST-GAME**
**MATH KANGAROO**
**CANADA, 2019**

**INSTRUCTIONS**
**GRADE 5-6**

1. You have 75 minutes to solve 30 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 to that form before giving it back to the contest supervisor.
3. The problems are arranged in three groups. A correct answer of the first 10 problems is worth 3 points. A correct answer of problems 11-20 is worth 4 points. A correct answer of problems 21-30 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 30 points. The maximum score possible is 150.
4. The use of external material or aid of any kind is **not permitted**.
5. The figures *are not* drawn to scale. They should be used only for illustration purposes.
6. Remember, you have about 2 to 3 minutes for each problem; hence, if a problem appears to be too difficult, save it for later and move on to another problem.
7. At the end of the allotted time, please **give the response form to the contest supervisor**.
8. Do not forget to pick up your Certificate of Participation on your way out!

**Good luck!**

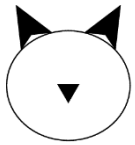
*Canadian Math Kangaroo Contest team*

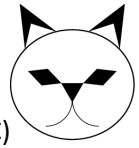
**Grade 5-6** **2019**

# Canadian Math Kangaroo Contest

**Part A: Each correct answer is worth 3 points**

**1.** Carrie started to draw a cat. A picture of her unfinished drawing is shown on the right.
She finishes her drawing by adding more elements.
Which of the figures below can show the finished drawing?



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

**2.** The Mayan people wrote numbers with dots and bars. A dot is written for 1 and a bar for 5.
How did they write 17?

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

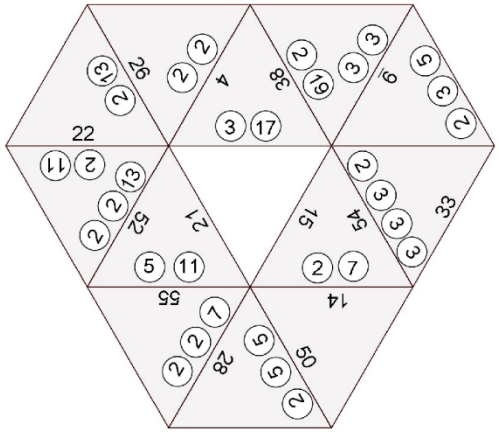

**3.** In how many ways can the word KENGA be read in the figure on the right if neighbouring letters of the word must lie in triangles that have common side?
(A) 3 (B) 4 (C) 5 (D) 6 (E) 7

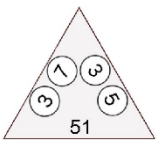
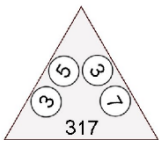
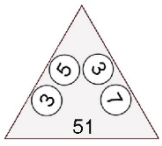
**4.** There are 14 girls and 12 boys in a kindergarten. One day, half of the children went out for a walk. At least how many of them are girls?
(A) 5 (B) 4 (C) 3 (D) 2 (E) 1

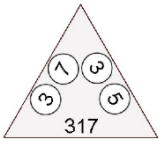
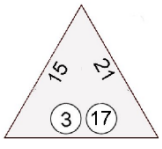
**5.** The sum of the dots on opposite faces of an ordinary die is equal to 7. Which of the following pictures might be an image of an ordinary die?

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

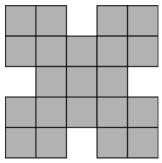
**6.** You see a numerical puzzle on the right. You have to figure out how it is built.
Which piece should be placed at the center of the figure?



(A)  (B)  (C) 

(D)  (E) 

**7.** On the larger figure on the right, Laura wants to colour in red a 2×2 square section like the one on the small figure  . In how many ways can she do that?



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

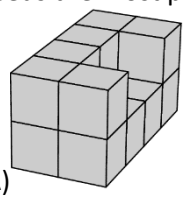
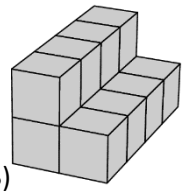
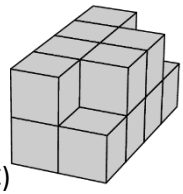
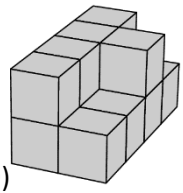
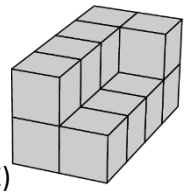
**8.** The six smallest odd natural numbers are written on the faces of a die, in some order. Toni throws the die three times. Which of the following numbers CANNOT be the sum of the three results?

(A) 21 (B) 3 (C) 20 (D) 19 (E) 29

**9.** In a family of kangaroos, the sum of the ages of all members is 36 years. After two years, the sum of their ages will be 60 years. How many kangaroos are there in this family?

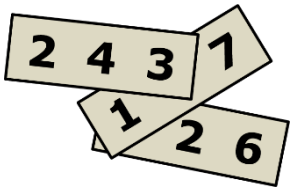
(A) 10 (B) 12 (C) 15 (D) 20 (E) 24

**10.** The following five structures were made by gluing together identical cubes. Their bases are the same and consist of eight cubes. Michael plans to paint their entire surfaces with one layer of paint. Which structure needs the most paint?

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

**Part B: Each correct answer is worth 4 points**

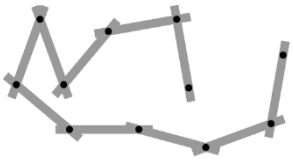
**11.** On each of three pieces of paper, a three-digit number is written. The sum of the three numbers is 826. The picture shows the pieces in a position where two of the digits are covered. What is the sum of these two digits?



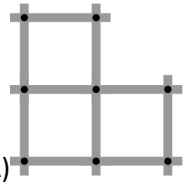
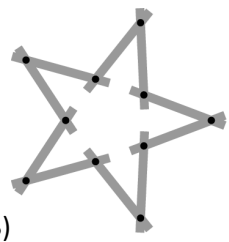
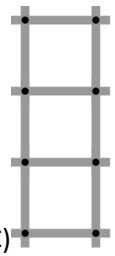
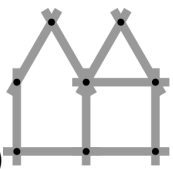
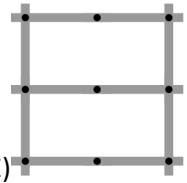

(A) 7 (B) 8 (C) 9 (D) 10 (E) 11

**12.** Riri the frog usually eats 5 spiders a day. When Riri is very hungry, she eats 10 spiders a day. Last month, she ate 60 spiders in 9 days. How many of these days was she very hungry?

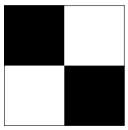
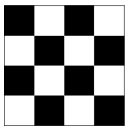
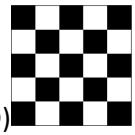
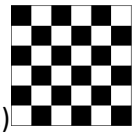
(A) 1 (B) 2 (C) 3 (D) 6 (E) 9



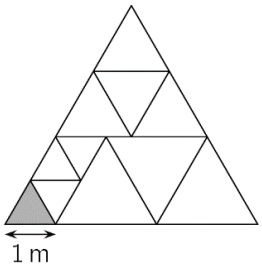
**13.** Pia plays with a folding ruler consisting of 10 identical parts (see figure). Which of the following figures cannot be formed with this ruler?

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

**14.** Five equal squares are divided into smaller squares. Which square has the largest black area?

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

**15.** A big triangle is divided into equilateral triangles as in the figure on the right. The side of the small grey triangle is 1 m. What is the perimeter of the big triangle?

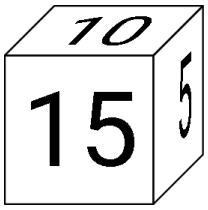



(A) 15 m (B) 17 m (C) 18 m (D) 20 m (E) 21 m

**16.** In the garden of a witch there were 30 animals: dogs, cats and mice. The witch turned 6 dogs into cats. Then she turned 5 cats into mice. Now in her garden, there are the same number of dogs, cats and mice. How many cats were there at the beginning?

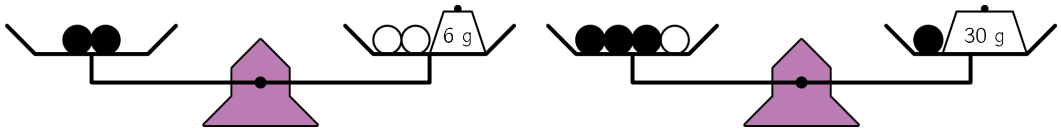
(A) 4 (B) 5 (C) 9 (D) 10 (E) 11

**17.** The cube shown in the figure has a positive integer number written on each face. The products of the two numbers on opposite faces are the same. What is the smallest possible sum of the six numbers on the cube?




(A) 36 (B) 37 (C) 41 (D) 44 (E) 60

**18.** Six identical black beads and three identical white beads are arranged on weighing scales as shown below.




What is the total weight of these nine beads?

(A) 100 g (B) 99 g (C) 96 g (D) 94 g (E) 90 g

**19.** AliBaba and 40 thieves equally divided 42 identical bags of gold coins. Each of them got one full bag and two coins. How many coins did a bag contain?

(A) 42 (B) 81 (C) 82 (D) 84 (E) 41

**20.** Robert made 5 statements (A) - (E), exactly one of which is false. Which one?

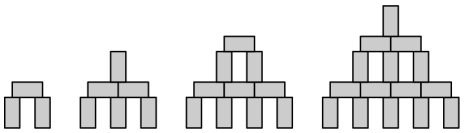
(A) My son Basil has 3 sisters.
(B) My daughter Ann has 2 brothers.
(C) My daughter Ann has 2 sisters.
(D) My son Basil has 2 brothers.
(E) I have 5 children.

**Part C: Each correct answer is worth 5 points**

**21.** There are 11 wagons on the train, 350 passengers are traveling in them. In any three consecutive wagons there are 99 passengers. How many passengers are in the sixth wagon?

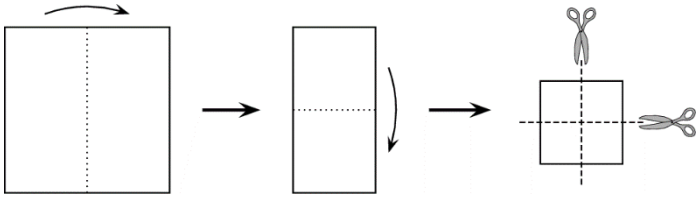
(A) 32 (B) 33 (C) 39 (D) 46 (E) 53

**22.** With blocks of dimension 1 cm × 1 cm × 2 cm, you can build towers as shown in the picture. How high is a tower that is built in the same way with 28 blocks?



(A) 9 cm (B) 11 cm (C) 12 cm (D) 14 cm (E) 17 cm

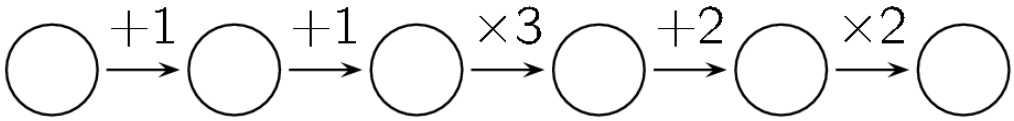
**23.** Bridget folded a square sheet of paper twice, and then cut it twice as shown in the figure.



How many pieces of paper will she get?

(A) 6 (B) 8 (C) 9 (D) 12 (E) 16

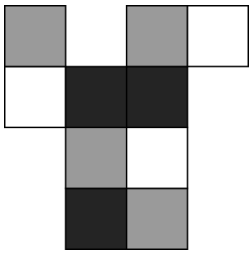
**24.** Benjamin writes an integer in the first circle and then fills the other five circles by following the instructions.



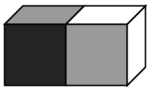

How many of the six numbers in the circles are multiples of 3?

(A) 1 (B) both 1 and 2 are possible (C) 2
(D) both 2 and 3 are possible (E) both 3 and 4 are possible

**25.** The cardboard in the figure is a net, which can be folded into a 2×1×1 box.



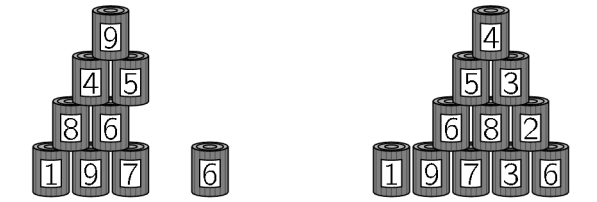
For which of the pictures can we be certain that it does NOT show this box?

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

**26.** Cathie wrote some numbers at the vertices of the cube. Then she calculated the sums of numbers on the left, on the right and on the top faces. It got values 14, 22 and 18 respectively. What is the sum of the numbers on the lower face?

(A) 16 (B) 18 (C) 20 (D) 22 (E) Impossible to determine

**27.** Jette and Willi are throwing balls at two identical pyramids of 15 cans. First, Jette hit 6 cans and scored a total of 25 points. The figure on the left shows the remaining cans of the first pyramid after this throw. At the same time, Willi hit 4 cans. The figure on the right shows the remaining cans of the second pyramid after this throw.



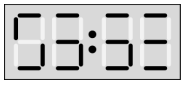
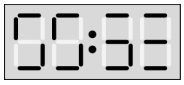
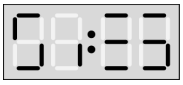
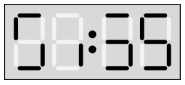
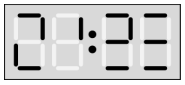

How many points did Willi score?

(A) 22 (B) 23 (C) 25 (D) 26 (E) 28

**28.** On most digital clocks, the time is displayed by four digits – the first two showing the hours, and the last two showing the minutes. Every digit is displayed by at most 7 segments, some of which are off (invisible) and some are on (visible), as follows:

Unfortunately, for all four of the digits on Mark's digital clock, the same two segments are broken and cannot be switched on if needed. At this moment Mark's clock shows

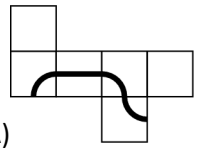
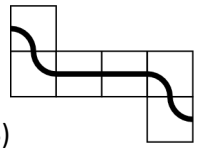
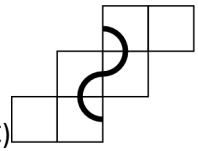
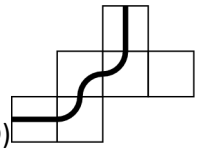
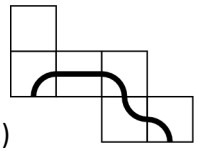
What will the clock show in 3 hours and 45 minutes?

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

**29.** Zev has two machines: one exchanges 1 white token into 4 red tokens, while the other exchanges 1 red token into 3 white ones. Zev starts with 4 white tokens. After exactly 11 exchanges, he has 31 tokens. How many of those are red?

(A) 21 (B) 17 (C) 14 (D) 27 (E) 11

**30.** Each of the following pictures shows the net of a cube. Only one of the resulting cubes has a closed line on it. Which one?

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

# International Contest-Game
# Math Kangaroo Canada, 2019

## Answer Key
### Grade 5-6

| | | | | | |
|---|---|---|---|---|---|
| **1** | A **B** C D E | **11** | A B **C** D E | **21** | A B C **D** E |
| **2** | A B **C** D E | **12** | A B **C** D E | **22** | A **B** C D E |
| **3** | A **B** C D E | **13** | A B **C** D E | **23** | A B **C** D E |
| **4** | A B C D **E** | **14** | A **B** C D E | **24** | A B **C** D E |
| **5** | A B C D **E** | **15** | **A** B C D E | **25** | A **B** C D E |
| **6** | A B **C** D E | **16** | A B **C** D E | **26** | A **B** C D E |
| **7** | A B C **D** E | **17** | A B **C** D E | **27** | A B C **D** E |
| **8** | A B **C** D E | **18** | A B C D **E** | **28** | **A** B C D E |
| **9** | A **B** C D E | **19** | A B **C** D E | **29** | A B **C** D E |
| **10** | **A** B C D E | **20** | A B C **D** E | **30** | A B C **D** E |