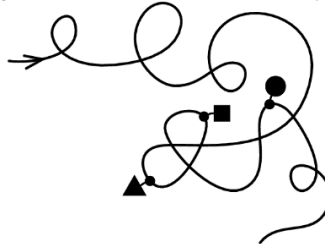




# Canadian Math Kangaroo Contest

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

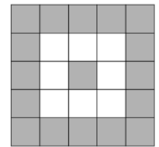
1. If you start at the arrow and move along the line, in what order do you meet the shapes?



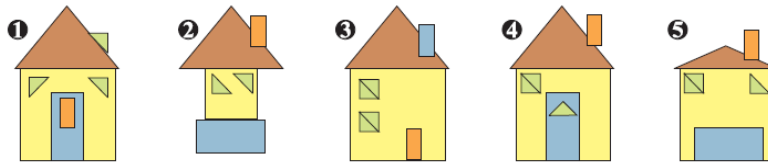
- (A) ▲ ■ ● (B) ▲ ● ■ (C) ● ▲ ■ (D) ■ ▲ ● (E) ■ ● ▲

2. How many more small grey squares are there than small white squares?

- (A) 6 (B) 7 (C) 8 (D) 9 (E) 10



3. Which houses are made using exactly the same pieces of triangular or rectangular pieces?



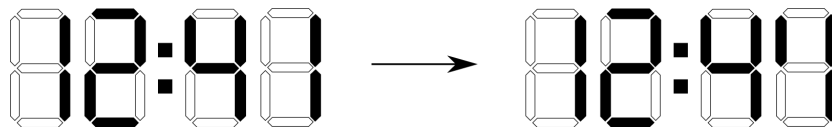
- (A) 1, 4 (B) 3, 4 (C) 1, 4, 5 (D) 3, 4, 5 (E) 1, 2, 4, 5

4. Arno spelled the word KANGAROO with cards showing one letter at a time. Unfortunately, some cards were rotated. By turning the K card by 90° twice he can correct the letter K and by turning the first A card once he can correct the first A as seen in the figures. How many times does he need to rotate by 90° for all of the letters to be correct?



- (A) 4 (B) 5 (C) 6 (D) 7 (E) 8

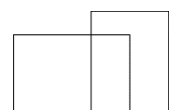
5. Ben's digital watch is not working properly. The three horizontal lines in the digit on the far right on the watch do not display. Ben is looking at his watch and the time has just changed from the one shown on the left to the one shown on the right. What time is it now?



- (A) 12:40 (B) 12:42 (C) 12:44 (D) 12:47 (E) 12:49

6. How many quadrilaterals of any size are shown in the figure?




- (A) 0 (B) 1 (C) 2 (D) 4 (E) 5

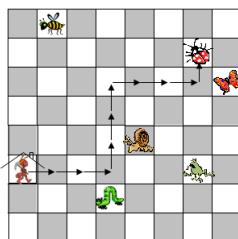




- 7. If the date of the Kangaroo competition is the third Sunday in March in each year, what is the first possible date of the competition?  
(A) 14      (B) 15      (C) 20      (D) 21      (E) 22
- 8. In a certain village, the ratio between the number of adult men and the number of adult women is 2 : 3 and the ratio between the number of adult women and the number of children is 8 : 1. What is the ratio between the number of adults (men and women) and the number of children?  
(A) 5 : 1      (B) 10 : 3      (C) 13 : 1      (D) 12 : 1      (E) 40 : 3
- 9.  $\frac{2^{2014} - 2^{2013}}{2^{2013} - 2^{2012}} = ?$   
(A)  $2^{2011}$       (B)  $2^{2012}$       (C)  $2^{2013}$       (D) 1      (E) 2
- 10. Which of these expressions does not contain  $b + 1$  as a factor?  
(A)  $2b + 2$       (B)  $b^2 - 1$       (C)  $b^2 + b$       (D)  $-1 - b$       (E)  $b^2 + 1$






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

- 11. When the ant  goes from home  following these arrows:  $\rightarrow 3, \uparrow 3, \rightarrow 3, \uparrow 1$  on the board on the picture, it comes to the ladybird .

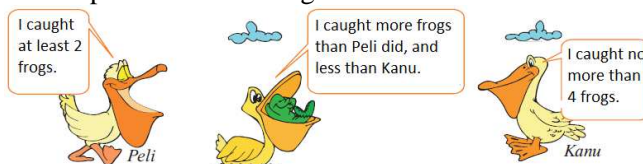


Which animal will it come to if it goes from home following these arrows:

$\rightarrow 2, \downarrow 2, \rightarrow 3, \uparrow 3, \rightarrow 2, \uparrow 2 ?$

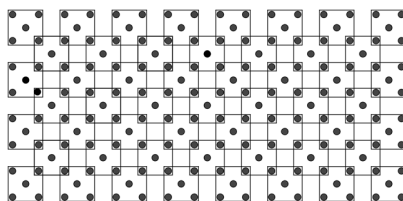
- (A) 
- (B) 
- (C) 
- (D) 
- (E) 

- 12. How many frogs did the three pelicans catch altogether?



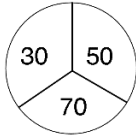
- (A) 1      (B) 2      (C) 4      (D) 9      (E) 12

- 13. How many dots are there in the picture?

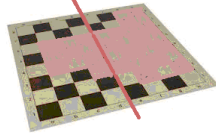
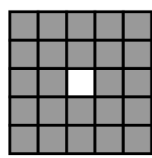





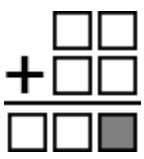


- (A) 180      (B) 181      (C) 182      (D) 183      (E) 265




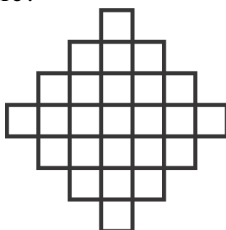
14. Paula shoots arrows at the target shown in the picture. When she misses the target, she gets zero points. Paula shoots two arrows and adds the number of points. Which of the following sums cannot be her score?  
 (A) 60                      (B) 70                      (C) 80                      (D) 90                      (E) 100
- 
15. At the summer camp, 7 pupils eat ice cream every day, 9 pupils eat ice cream every second day and the rest of the pupils don't eat ice cream at all. Yesterday, 13 pupils had ice cream. How many pupils will eat ice cream today?  
 (A) 7                      (B) 8                      (C) 9                      (D) 10                      (E) it cannot be determined
16. The faces of a cube are numbered 1, 2, 3, 4, 5, and 6. The faces 1 and 6 have a common edge. The same is true for faces numbered 1 and 5, faces numbered 1 and 2, faces numbered 6 and 5, faces numbered 6 and 4, and faces numbered 6 and 2. Which number is on the face opposite the face with number 4?  
 (A) 1                      (B) 2                      (C) 3                      (D) 5                      (E) it cannot be determined
17. Jack has a piano lesson twice a week and Hannah has a piano lesson every other week. In a given term, Jack has 15 more lessons than Hannah. How many weeks long is their term?  
 (A) 30                      (B) 25                      (C) 20                      (D) 15                      (E) 10
18. Ann walked 8 km with a speed of 4 km/h. Now she will run some time with a speed of 8 km/h. How long does she have to run in order to have an overall average speed of 5 km/h?  
 (A) 15 min                      (B) 20 min                      (C) 30 min                      (D) 35 min                      (E) 40 min
19. A new kind of crocodile has been discovered in Africa. The length of its tail is a third of its entire length. Its head is 93 cm long and the head's length is a quarter of the crocodile's length without its tail. How long is this crocodile in cm?  
 (A) 558                      (B) 496                      (C) 490                      (D) 372                      (E) 186
20. Let  $p, q, r$  be positive integers and  $p + \frac{1}{q + \frac{1}{r}} = \frac{25}{19}$ . Which of the following is equal to  $pqr$ ?  
 (A) 6                      (B) 10                      (C) 18                      (D) 36                      (E) 42

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

21. The chess board is damaged. How many black squares are missing on the right side of the line?  
 (A) 11                      (B) 12                      (C) 13                      (D) 14                      (E) 15
- 
22. The central cell of the square was removed. We cut the rest of the square into equal pieces. Which type of piece is not possible to get?
- 
- (A)                       (B)                       (C)                       (D)                       (E) 
23. Write each of the numbers 0, 1, 2, 3, 4, 5, 6 in the squares to make the addition correct. Which digit will be in the grey square?
- 
- (A) 2                      (B) 3                      (C) 4                      (D) 5                      (E) 6



24. What is the largest number of small squares that can be shaded so that no square like  , made of four small shaded squares, appears on the figure?

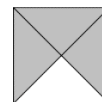


- (A) 18                      (B) 19                      (C) 20                      (D) 21                      (E) 22
25. In Fabuland, every sunny day is immediately preceded by two consecutive rainy days. Also, five days after any rainy day, it is another rainy day. It is sunny today. For how many days at most can we predict the weather with certainty?
- (A) 1 day                      (B) 2 days                      (C) 4 days                      (D) We cannot predict even one day ahead  
(E) We can predict the weather every day from here on

26. Granny has 10 grandchildren. Alice is the eldest. One day, Granny notices that her grandchildren all have different ages. If the sum of her grandchildren' ages is 180, what is the youngest Alice can be?
- (A) 19                      (B) 20                      (C) 21                      (D) 22                      (E) 23

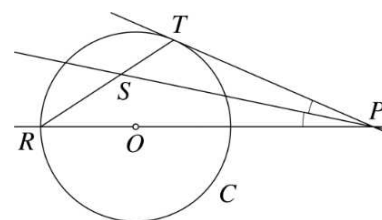
27. Several different positive integers are written on the board. Exactly two of them are divisible by 2 and exactly 13 of them are divisible by 13. Let  $M$  be the greatest of these numbers. What is the smallest possible value of  $M$ ?
- (A) 169                      (B) 260                      (C) 273                      (D) 299                      (E) 325

28. A  $5 \times 5$  square is made from  $1 \times 1$  tiles, all with the same pattern, as shown. Any two adjacent tiles have the same colour along the shared edge. The perimeter of the large square consists of grey and white segments of length 1. What is the smallest possible number of such unit grey segments?



- (A) 4                      (B) 5                      (C) 6                      (D) 7                      (E) 8
29. There are 2014 persons in a row. Each of them is either a liar (who always lies) or a knight (who always tells the truth). Each person says 'There are more liars to my left than knights to my right'. How many liars are there in the row?
- (A) 0                      (B) 1                      (C) 1007                      (D) 1008                      (E) 2014

30. In the picture,  $PT$  is tangent to the circle  $C$  with center  $O$  and  $PS$  bisects the angle  $TPR$ . Calculate the angle  $TSP$ .
- (A)  $30^\circ$                       (B)  $45^\circ$                       (C)  $60^\circ$                       (D)  $75^\circ$   
(E) It depends on the position of point  $P$





International Contest-Game  
Math Kangaroo Canada, 2014

**Answer Key**  
**Parents**

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