Canadian Math Kangaroo Contest

Part A: Each correct answer is worth 3 points

1. Which letter on the board is not in the word "KOALA"?

(A) R (B) L (C) K (D) N (E) O

2. In a cave, there were only two seahorses, one starfish and three turtles. Later, five seahorses, three starfish and four turtles joined them. How many sea animals gathered in the cave?

(A) 6 (B) 9 (C) 12 (D) 15 (E) 18

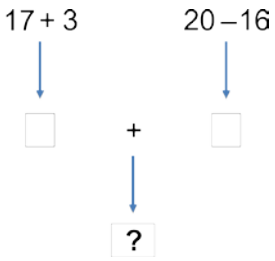
3. Matt had to deliver flyers about recycling to all houses numbered from 25 to 57. How many houses got the flyers?

(A) 31 (B) 32 (C) 33 (D) 34 (E) 35

4. Kanga is 1 year and 3 months old now. In how many months will Kanga be 2 years old?

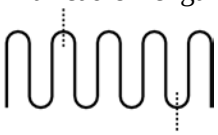
(A) 3 (B) 5 (C) 7 (D) 8 (E) 9

5.



(A) 24 (B) 28 (C) 36 (D) 56 (E) 80

6. A thread of length 10 cm is folded into equal parts as shown in the figure.



The thread is cut at the two marked places. What are the lengths of the three parts?

(A) 2 cm, 3 cm, 5 cm (B) 2 cm, 2 cm, 6 cm (C) 1 cm, 4 cm, 5 cm
(D) 1 cm, 3 cm, 6 cm (E) 3 cm, 3 cm, 4 cm

7. Which of the following traffic signs has the largest number of lines of symmetry?

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

8. Kanga combines 555 groups of 9 stones into a single pile. She then splits the resulting pile into groups of 5 stones. How many groups does she get?

(A) 999 (B) 900 (C) 555 (D) 111 (E) 45

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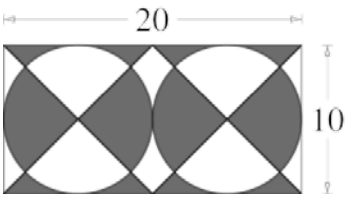
9. 

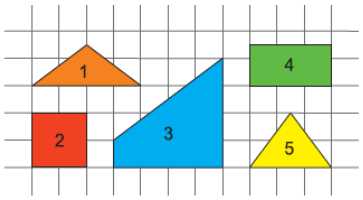
What is the shaded area?
(A) 50 (B) 80 (C) 100 (D) 120 (E) 150

10. In a coordinate system four of the following points are the vertices of a square. Which point is not a vertex of this square?
(A) $(-1; 3)$ (B) $(0; -4)$ (C) $(-2; -1)$ (D) $(1; 1)$ (E) $(3; -2)$

Part B: Each correct answer is worth 4 points

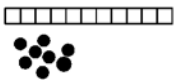
11. There are twelve rooms in a building and each room has two windows and one light. Last evening, eighteen windows were lighted. In how many rooms was the light off?
(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

12. Which three of the five jigsaw pieces shown can be joined together to form a square?



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

13. John has a board with 11 squares. He puts a coin in each of eight neighbouring squares without leaving any empty squares between the coins. What is the maximum number of squares in which one can be sure that there is a coin?



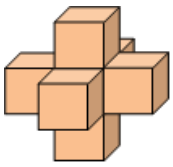
(A) 1 (B) 3 (C) 4 (D) 5 (E) 6

14. Which of the following figures cannot be formed by gluing these two identical squares of paper together?

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

15. Each letter in BENJAMIN represents one of the digits 1, 2, 3, 4, 5, 6 or 7. Different letters represent different digits. The number BENJAMIN is odd and divisible by 3. Which digit corresponds to N?
(A) 1 (B) 2 (C) 3 (D) 5 (E) 7

16. Seven standard dice are glued together to make the solid shown. The faces of the dice that are glued together have the same number of dots on them. How many dots are on the surface of the solid?



(A) 24 (B) 90 (C) 95 (D) 105 (E) 126

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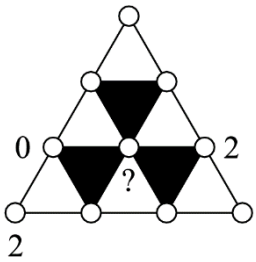
17. Jill is making a magic multiplication square using the numbers 1, 2, 4, 5, 10, 20, 25, 50 and 100. The products of the numbers in each row, in each column and in the two diagonals should all be the same. In the figure you can see how she has started. Which number should Jill place in the cell with the question mark?

20	1	
		?

(A) 2 (B) 4 (C) 5 (D) 10 (E) 25

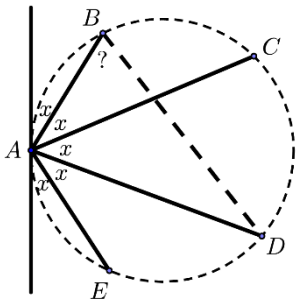
18. What is the smallest number of planes that are needed to enclose a bounded part in three-dimensional space?
(A) 3 (B) 4 (C) 5 (D) 6 (E) 7

19. Each of ten points in the figure is marked with either 0 or 1 or 2. It is known that the sum of numbers in the vertices of any white triangle is divisible by 3, while the sum of numbers in the vertices of any black triangle is not divisible by 3. Three of the points are marked as shown in the figure. What numbers can be used to mark the central point?



(A) Only 0. (B) Only 1. (C) Only 2. (D) Only 0 and 1. (E) Either 0 or 1 or 2.

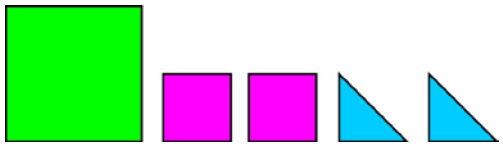
20. Betina draws five points A, B, C, D and E on a circle as well as the tangent to the circle at A, such that all five angles marked with x are equal. (Note that the drawing is not to scale.) How large is the angle $\angle\ ABD$?

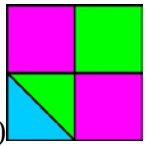
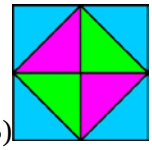
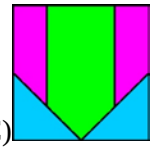
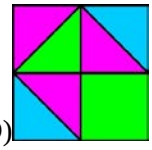
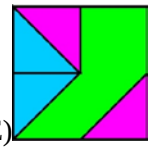


(A) 66° (B) 70.5° (C) 72°
(D) 75° (E) 77.5°

Part C: Each correct answer is worth 5 points

21. Which pattern can we make using all five cards given below?



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

22. The numbers 1, 5, 8, 9, 10, 12 and 15 are distributed into groups with one or more numbers. The sum of the numbers in each group is the same. What is the largest number of groups?
(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

23. My dogs have 18 more legs than noses. How many dogs do I have?
(A) 4 (B) 5 (C) 6 (D) 8 (E) 9

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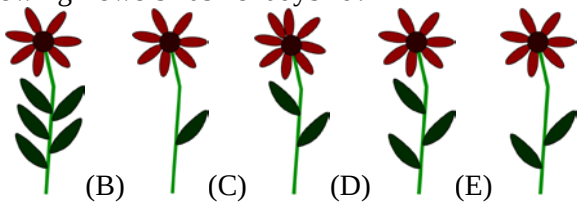
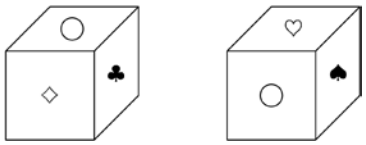
24. In the picture you see 5 ladybirds.

Each one sits on its flower. Their places are defined as follows: the difference of the dots on their wings is the number of the leaves and the sum of the dots on their wings is the number of the petals. Which of the following flowers has no ladybird?



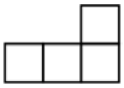
(A) (B) (C) (D) (E)

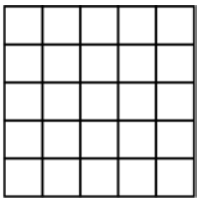
25. On each of six faces of a cube there is one of the following six symbols: ♣, ♦, ♥, ♠, ■ and O. On each face there is a different symbol. In the picture we can see this cube shown in two different positions.



Which symbol is opposite the ■?

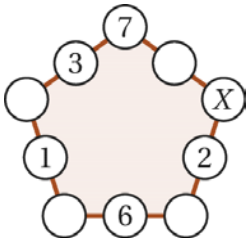
(A) O (B) ♦ (C) ♥ (D) ♠ (E) ♣

26. What is the greatest number of shapes of the form  that can be cut out from a 5×5 square?



(A) 2 (B) 4 (C) 5 (D) 6 (E) 7

27. Kirsten wrote numbers in 5 of the 10 circles as shown in the figure. She wants to write a number in each of the remaining 5 circles such that the sums of the 3 numbers along each side of the pentagon are equal. Which number will she have to write in the circle marked by X?



(A) 7 (B) 8 (C) 11 (D) 13 (E) 15

28. A $3 \times 3 \times 3$ cube is built from 15 black cubes and 12 white cubes. Five faces of the larger cube are shown.

Which of the following is the sixth face of the large cube?

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

29. Jakob wrote down four consecutive positive integers. He then calculated the four possible totals made by taking three of the integers at a time. None of these totals was a prime. What is the smallest integer Jakob could have written?

(A) 12 (B) 10 (C) 7 (D) 6 (E) 3

30. Four sportsmen and sportswomen - a skier, a speed skater, a hockey player and a snowboarder - had dinner at a round table. The skier sat at Andrea's left hand. The speed skater sat opposite Ben. Eva and Filip sat next to each other. A woman sat at the hockey player`s left hand. Which sport did Eva do?

(A) speed skating (B) skiing (C) ice hockey (D) snowboarding
(E) It`s not possible to find out with the given information.

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