Kangourou Sans Frontières

Math Kangaroo in USA

Math Kangaroo 2017 in USA

International Competition in Mathematics
Thursday, March 16, 2017

This test consists of 24 questions on 4 pages.

You have 75 minutes to complete it.

Calculators are not allowed!

Please enter your answers on the answer form provided.

Please put your name and ID number on the line below.

Levels
3 and 4

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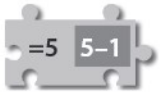
3 points

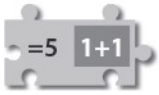
 # 1. Which of the pieces (A) through (E) will fit between the two pieces shown above so the two equalities are true?

(A) 

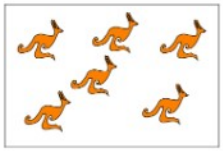
(B) 

(C) 

(D) 

(E) 

 # 2. John looks out the window. He sees half of the kangaroos in the park (see picture). How many kangaroos are there in the park?

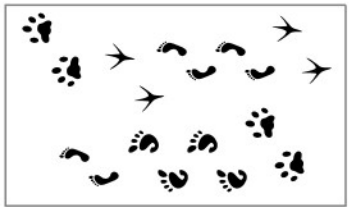


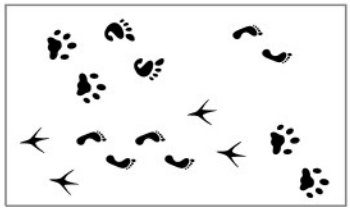
(A) 12 (B) 14 (C) 16 (D) 18 (E) 20

 # 3. Two transparent grids have some dark squares, as shown. They both slide into place on top of the board shown in the middle. Now the pictures behind the dark squares cannot be seen. Only one of the pictures can still be seen. Which one is it?

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

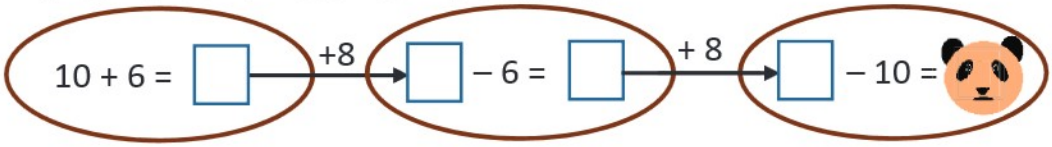
 # 4. A picture of footprints was turned upside down. Which set of footprints is missing?





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

 # 5. What number is hidden behind the panda?



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

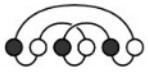
 # 6. The table shows correct sums. What number is in the box with the question mark?

+	11	7	2
6	17	13	8
		?	11

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

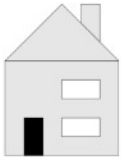
 # 7. Dolly accidentally broke the mirror into pieces. How many pieces have exactly four sides?

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

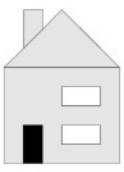
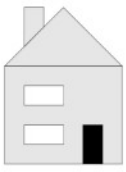
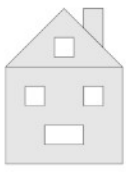
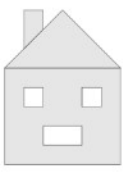
 # 8. Here is a necklace with six beads.  Which of the pictures below shows the same necklace?

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

4 points

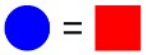


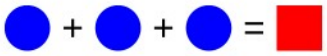
 # 9. The picture on the left shows the front of Ann's house. The back of her house has three windows and no door. Which view does Ann see when she looks at the back of her house?

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

 # 10. 

Which of the following is true?

(A) 

(B) 

(C) 

(D) 

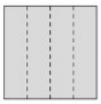
(E) 

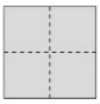
 # 11. Balloons are sold in packets of 5, 10 and 25. Marius buys exactly 70 balloons. What is the smallest number of packets he can buy?

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

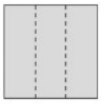
 # 12. Bob folded a piece of paper. He cut exactly one hole in the paper. Then he unfolded the piece of paper and saw the result as shown in the picture.  How did Bob fold his piece of paper?

(A) 

(B) 

(C) 

(D) 

(E) 

 # 13. There is a tournament at the pool. First, 13 children signed up and then another 19 children signed up. Six teams with an equal number of members each 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

 # 14. Numbers are placed in the cells of the 4×4 square shown in the picture. Mary finds the 2×2 square where the sum of the numbers in the four cells is the largest. What is that sum?

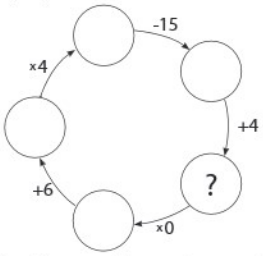
1	2	1	3
4	1	1	2
1	7	3	2
2	1	3	1

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

 # 15. David wants to prepare a meal with 5 dishes using 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? (He may only remove a dish from the stove when it is done cooking.)

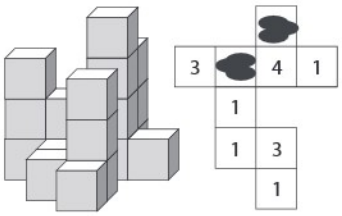
(A) 60 min (B) 70 min (C) 75 min (D) 80 min (E) 85 min

 # 16. Which number should be written in the circle with the question mark?



(A) 10 (B) 11 (C) 12 (D) 13 (E) 14

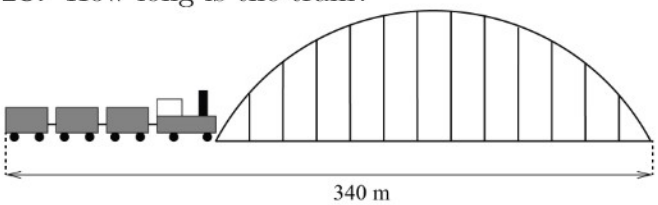
5 points

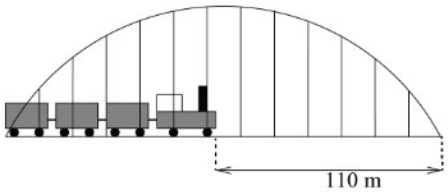


 # 17. The picture shows a group of building blocks and a plan of the same group. Some ink spilled on the plan. What is the sum of the numbers under the ink spills?

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

 # 18. How long is the train?





(A) 55 m **(B)** 115 m **(C)** 170 m **(D)** 220 m **(E)** 230 m

 # 19. The ancient Romans used Roman numerals. We still use them today. I=1, V=5, X=10, L=50, C=100, D=500, M=1000. John was born in February of the year MMVII. How old is John today? (Today's date is on this booklet.)

(A) I **(B)** III **(C)** IV **(D)** V **(E)** X

 # 20. A small zoo has a giraffe, an elephant, a lion and a turtle. Susan wants to plan a tour where she sees 2 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

 # 21. Four brothers ate 11 cookies in total. Each of them ate at least one cookie and no two of them ate the same number of cookies. Three of them ate 9 cookies in total and one of them ate exactly 3 cookies. How many cookies did the boy who ate the largest number of cookies eat?

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

 # 22. Zosia hid a smiley ☺ in some of the cells of the table. In some of the other cells she wrote the number of smileys in the neighboring cells as shown in the picture. Two cells are neighboring if they share a common side or a common corner. How many smileys did she hide?

	3	3	
2			
		2	
	1		

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

 # 23. Each of ten bags contains a different number of pieces of candy. The number of pieces of candy in each bag ranges from 1 to 10. Each of five boys took two bags of candy. Alex got 5 pieces of candy, Bob got 7 pieces, Charles got 9 pieces, and Dennis got 15 pieces. How many pieces of candy did Eric get?

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

 # 24. Kate has 4 flowers, one with 6 petals, one with 7 petals, one with 8 petals and one with 11 petals. Kate tears off one petal from three flowers. 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