

# **MATHEMATICS**

**LEVEL 5 – 6**  
**(Ε΄- ΣΤ΄ Δημοτικού)**

19 March 2011  
10:00-11:15

## 3 point

1. Basil writes the word KANGAROO, one letter each day. He starts on Wednesday. What will be the day when he finishes?

- (A) Monday (B) Tuesday (C) Wednesday  
(D) Thursday (E) Friday

2. A motorcyclist rode a distance of 28 km in 30 minutes. At what average speed (km/h) did he drive?

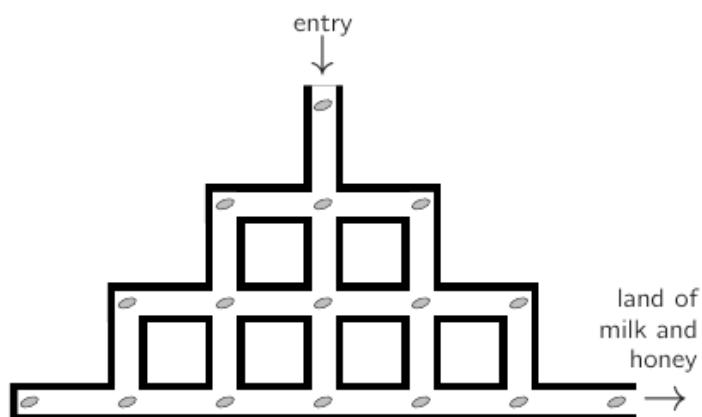
- (A) 28 (B) 36 (C) 56 (D) 58 (E) 62

3. A square of paper is cut into two pieces using a straight line. Which of the following shapes cannot be the result of the cut?



- (A) a square (B) a rectangle (C) a right-angled triangle (D) a pentagon (E) an isosceles triangle

4. Hamster Fridolin sets out for the Land of Milk and Honey. His way to the legendary Land passes through a system of tunnels. There are 16 pumpkin seeds throughout the tunnels, as shown in the picture. What is the highest number of pumpkin seeds he can collect if he is not allowed to take the same path or intersection twice?

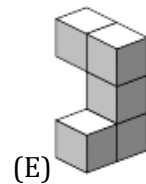
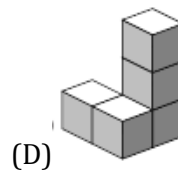
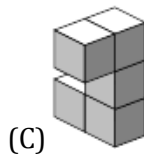
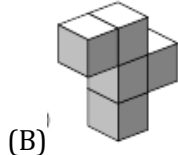
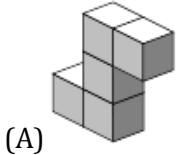
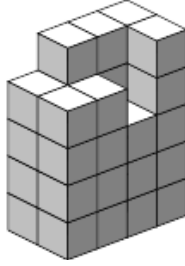


- (A) 12 (B) 13 (C) 14 (D) 15 (E) 16

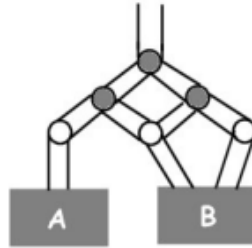
5. In Crazytown, the houses on the right side of Number Street have odd numbers. However, Crazytowners don't use numbers containing the digit 3. The first house on the right side of the street is numbered 1. What is the number of the fifteenth house on the right side of the street?

- (A) 29 (B) 41 (C) 43 (D) 45 (E) 47

6. Which of the following pieces do I need to complete the cuboid?



7. We pour 1000 litres of water into the top of the pipe. At every fork, the water splits into two equal parts. How many litres of water will reach container B?



(A) 800

(B) 750

(C) 666,67

(D) 660

(E) 500

8. The date 01-03-05 (1 March 2005) consists of three consecutive odd numbers in increasing order. This is the first date with this feature in the 21st century. Including the date given as an example, how many dates expressed in the form dd-mm-yy have this feature in the 21st century?

(A) 5

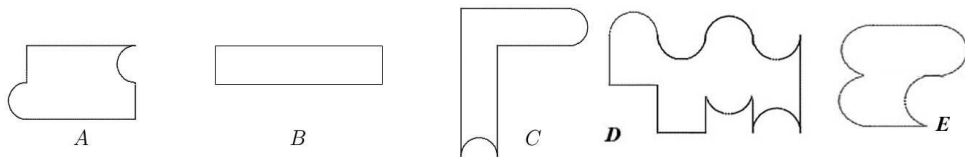
(B) 6

(C) 16

(D) 13

(E) 8

9. Four cardboard pieces are arranged to form a figure. Which of the five figures below is impossible to make?



(A) A

(B) B

(C) C

(D) D

(E) E

10. If Liza the cat only laze around during the day, she drinks 60 ml of milk. If she catches mice, she drinks a third more milk. In the last two weeks she has been catching mice every other day. How much milk did she drink in the last two weeks?

(A) 840 ml

(B) 980 ml

(C) 1050 ml

(D) 1120 ml

(E) 1960 ml

4 point

11. Andrew wrote the letters of the word KANGAROO in cells, one letter per cell. He can write the first letter in any cell he wants. He writes every subsequent letter in a cell that has at least one point in common with the cell in which the letter before it was written. Which of the tables below cannot be Andrew's?

K	A
N	O
O	G
R	A

(A)

N	G
A	A
K	R
O	O

(B)

O	O
K	R
A	A
G	N

(C)

K	A
N	G
O	O
R	A

(D)

K	O
A	O
R	N
A	G

(E)

12. All 4-digit integers with the same digits as the number 2011 (two 1's, 0, and 2) are written in increasing order. What is the difference between the two neighbours of the number 2011 on this list?  
(A)890 (B)891 (C)900 (D)909 (E)990

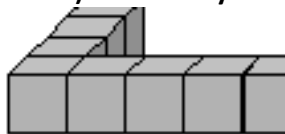
13. Move four of the numbers on the left into the cells on the right so that the addition is correct.

<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px; width: 20%;">17</td> <td style="width: 20%;"></td> <td style="border: 1px solid black; padding: 5px; width: 20%;">167</td> <td style="width: 20%;"></td> </tr> <tr> <td></td> <td style="border: 1px solid black; padding: 5px; text-align: center;">30</td> <td></td> <td></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">49</td> <td></td> <td style="border: 1px solid black; padding: 5px;">96</td> <td></td> </tr> </table>	17		167			30			49		96		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; width: 40px; height: 20px;"></td> </tr> <tr> <td style="font-size: 20px; vertical-align: middle;">+</td> <td style="border: 1px solid black; width: 40px; height: 20px;"></td> </tr> <tr> <td style="font-size: 20px; vertical-align: middle;">+</td> <td style="border: 1px solid black; width: 40px; height: 20px;"></td> </tr> <tr> <td style="border: 1px solid black; width: 100%; height: 20px;"></td> </tr> </table>		+		+		
17		167																	
	30																		
49		96																	
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Which number remains on the left?

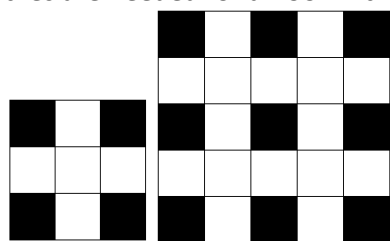
- (A)17 (B)30 (C)49 (D)96 (E)167

14. Nina used 36 identical cubes to build a fence of cubes around a square region (part of it is shown in the picture). How many more cubes will she need to fill the region?



- (A)36 (B)49 (C)64 (D)81 (E)100

15. Square floors are made of white and black tiles. Floors with 4 and 9 black tiles are shown in the picture. There is a black tile in each corner and all tiles around a black tile are white. How many white tiles are needed for a floor with 25 black tiles?



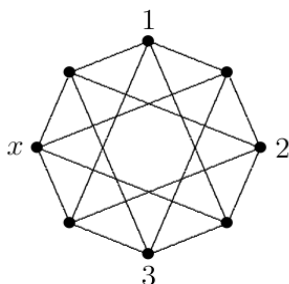
- (A)25 (B)39 (C)45 (D)56 (E)72

16. Paul wanted to multiply an integer with 301, but he forgot the zero and multiplied it by 31 instead. The result he got was 372. What result was he supposed to get, if he did not make the mistake?  
(A) 3010                      (B) 3612                      (C) 3702                      (D) 3720                      (E) 30 720

17. In a tournament FC Barcelona scored three goals and had one goal scored against it. It won one game, drew one game and lost one game. What was the score of the game FC Barcelona won?  
(A) 2:0                      (B) 3:0                      (C) 1:0                      (D) 4:1                      (E) 0:1

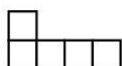
18. We are given three points that form a triangle. We want to add one point to make a parallelogram. How many possibilities are there for the fourth point?  
(A) 1                      (B) 2                      (C) 3                      (D) 4                      (E) It depends on the initial triangle

19. The numbers 1, 2, 3 or 4 should be written at each of the 8 marked points in the picture in such a way that the ends of each line segment should have different numbers. Three numbers have already been written as shown. X could be any one of the four numbers. How many times does 4 appear in the picture?



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

20. Daniel wants to make a complete square using only pieces like the one in the picture. What is the smallest number of pieces he can use?



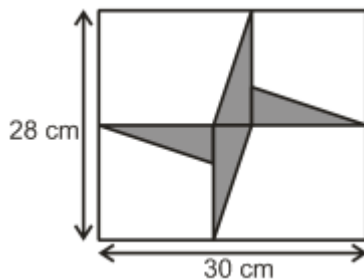
(A) 8                      (B) 10                      (C) 12                      (D) 16                      (E) 20

**5 point**

21. There are 10 pupils in a dance class. Their teacher has 80 jelly beans. If she gives each of the girls in her class the same number of jelly beans, there will be 3 jelly beans left over. How many boys are there in the class?  
(A) 1                      (B) 2                      (C) 3                      (D) 5                      (E) 7

22. A cat has 7 kittens: white, black, red, white-black, white-red, black-red, and white-black-red. How many ways are there to choose 4 kittens so that any two among them have a common color?  
(A) 1                      (B) 3                      (C) 4                      (D) 6                      (E) 7

23. There are four identical right-angle triangles inside the rectangle, as shown in the picture. Find the total area of all the four triangles. The vertical sides of each triangle are parallel to the sides of the rectangle.

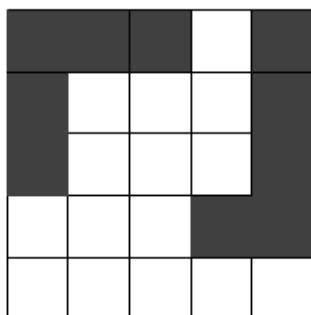


- (A)  $46 \text{ cm}^2$       (B)  $52 \text{ cm}^2$       (C)  $54 \text{ cm}^2$       (D)  $56 \text{ cm}^2$       (E)  $64 \text{ cm}^2$

24. Alex says Pelle is lying. Pelle says Mark is lying. Mark says Pelle is lying. Tony says Alex is lying. How many boys are lying?

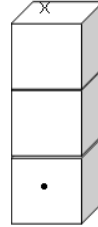
- (A) 0      (B) 1      (C) 2      (D) 3      (E) 4

25. Lina has a square board with two dark pieces on it as shown in the picture. Which of the following 5 pieces should she place on the empty part of the board such that none of the remaining 4 pieces fit anymore?



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

26. The picture shows three regular dice stacked on top of each other. A regular die has the following property: the spots on any two opposite faces add up to 7. In this picture, the sum of the spots of any two faces that meet is 5. How many spots are on the face marked X?



(A)2

(B)3

(C)4

(D)5

(E)6

27. I want to draw four circles on the blackboard such that any two of them have exactly one common point. What is the biggest number of points that can belong to more than one circle?

(A)1

(B)4

(C)5

(D)6

(E)8

28. In one month there were 5 Saturdays and 5 Sundays, but only 4 Fridays and 4 Mondays. In the next month there will be

(A)5 Wednesdays

(B)5 Thursdays

(C)5 Fridays

(D)5 Saturdays

(E)5 Sundays

29. You are given four positive numbers  $a$ ,  $b$ ,  $c$  and  $d$  such that  $a < b < c < d$ . You are asked to increase one of them by 1 in such a way that, after increasing, the product of the four numbers is as small as possible. Which one should you increase?

(A) $a$ (B) $b$ (C) $c$ (D) $d$ (E)either  $b$  or  $c$ 

30. How many integers can be formed with the digits 1, 2, 3, 4, 5 using each digit only once such that the first digit of the number is divisible by 1, the first two digits form a number divisible by 2, the first three digits form a number divisible by 3, the first four digits form a number divisible by 4 and the five digits form a number divisible by 5?

(A)it is impossible

(B)1

(C)2

(D)5

(E)10