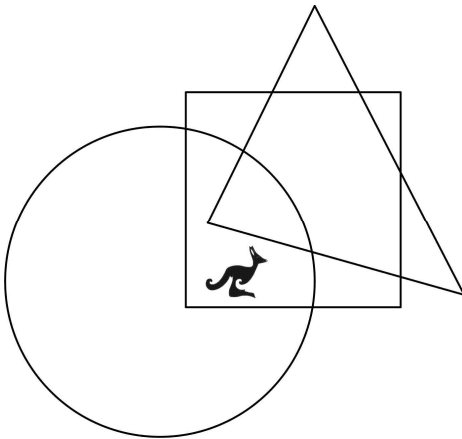# Kangaroo of Mathematics 2009
Level Benjamin (Grades 5. and 6.)
Austria - 23.3.2009

- 3 Point Questions -

1) Where is the Kangaroo?

A) In the circle and in the triangle but not in the square.

B) In the circle and in the square but not in the triangle.

C) In the triangle and in the square but not in the circle.

D) In the circle but in neither the square or the triangle.

E) In the square but in neither the circle or the triangle.

2) Which of the following numbers is even?

A) 2009 **B)** $2 + 0 + 0 + 9$ **C)** 200 ó 9 **D)** 200×9 **E)** $200 + 9$

3) How many Natural numbers lie between 2·009 und 23·03?

A) 20 **B)** 21 **C)** 22 **D)** 23 **E)** mehr als 23

4) What is the minimum number of digits that must be removed from the number 12323314, so that the resulting number is the same when read from either left to right or right to left?
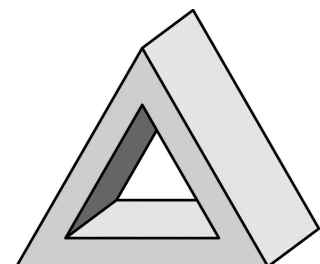
A) 1 **B)** 2 **C)** 3 **D)** 4 **E)** 5

5) In front of me there are three boxes, one white, one red and one green. In one box there is a chocolate bar, in another an apple and one box is empty. The chocolate bar is in either the white or red box. And the apple is in neither the white or the green box. In which box is the chocolate bar?
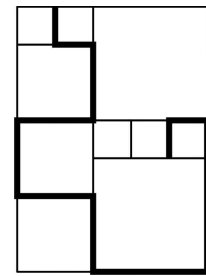
A) White **B)** Red **C)** Green
D) red or green **E)** not possible to answer.

6) How many faces has the object shown?
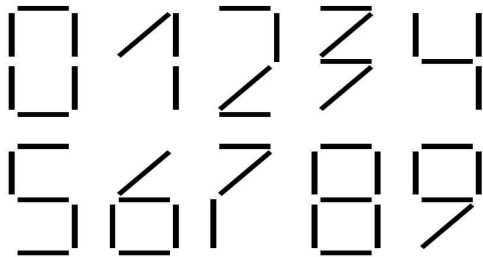 (Prism with a hole)

A) 3 **B)** 5 **C)** 6 **D)** 8 **E)** 12

7) The diagram shows squares of different sizes. The side length of the smallest square is 20 cm. How long is the black line?

A) 380 cm **B)** 400 cm **C)** 420 cm **D)** 440 cm **E)** 1680 cm

8) The different digits are build using sticks as shown. The õweightö of a number describes the number of sticks used to build it. How heavy is the heaviest two digit number?

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

9) A bridge is being build over a 120m wide river. One quarter of the bridge continues on land on the left bank, another quarter continues on land on the right bank. How long is the bridge?
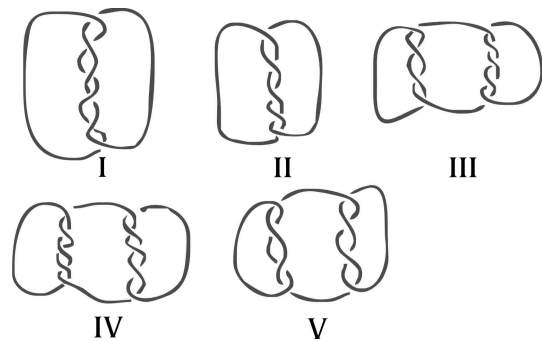
A) 150 m **B)** 180 m **C)** 210 m **D)** 240 m **E)** 270 m

10) In a park there are some cats and dogs. The number of cats feet is double the size of the number of dogs noses. The number of cats is í í ??? í í . of the number of dogs.

A) double the size **B)** half the size **C)** the same size
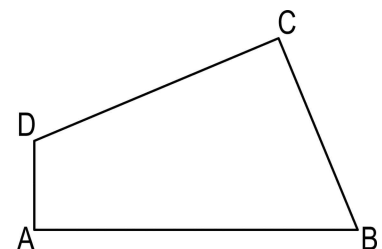**D)** a quarter the size **E)** a sixth of the size.

11) Which of the following is made using more than one piece of string?

A) I, III, IV and V **B)** III, IV and V
C) I, III and V **D)** all
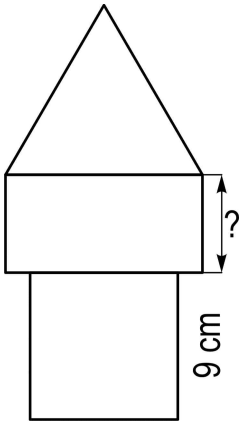**E)** None of these answers

I   II   III

IV   V

12) The quadrilateral on the right has the following side lengths: AB = 11, BC = 7, CD = 9 and DA = 3. The angles at points A and C are right angles. What is the area of the quadrilateral?

A) 30 **B)** 44 **C)** 48 **D)** 52 **E)** 60

13) In a dance group there are 39 boys and 23 girls. Every week 6 more boys and 8 more girls join the group. After a few weeks there will be the same number of boys as girls in the dance group. How many boys and girls will be in the dance group at that time?

A) 144 **B)** 154 **C)** 164 **D)** 174 **E)** 184

14) The štowerõ in the diagram on the left is made up of a sqaure, a rectangle and an equlateral triangle. Each of those three shapes has the same perimeter. The side length of the square is 9cm. How long is the side of the rectangle indicated?

A) 4 cm **B)** 5 cm **C)** 6 cm **D)** 7 cm **E)** 8 cm

? 9 cm

15) We want to build a box with the measurements $40 \times 40 \times 60$ using all identical cubes. What is the minimum number of cubes needed?

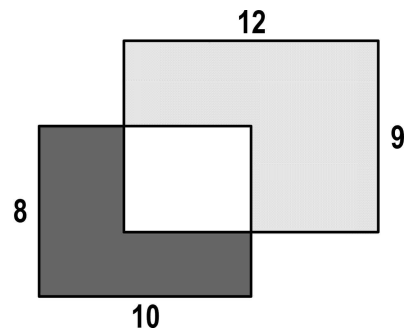**A)** 6 **B)** 12 **C)** 96 **D)** 1200 **E)** 96000

16) Today is Sunday. Francis starts to read a book with 290 pages today. Sundays he reads 25 pages and on all other days he reads 4 pages, with no exception. How many days does it take him to read the entire book?

A) 5 **B)** 46 **C)** 40 **D)** 35 **E)** 41

- **5 Point Questions** -

17) Two rectangles with measurements 8×10 and 9×12 overlap to some extend. The dark grey area is 37. What is the area of the light grey part?

A) 60 **B)** 62 **C)** 62,5 **D)** 64 **E)** 65
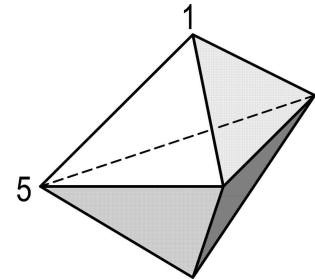
12
9
8
10

18) Eight cards that are numbered 1 to 8 are inside two boxes A and B so that the sum of the cards in both boxes is identical. If there are exactly 3 cards in box A then which of the following statements is definitely true:

A) Three cards in B are odd numbers.
B) Four cards in B are even numbers.
C) The card numbered 1 is not in B.
D) The card numbered 2 is in B.
E) The card numbered 5 is in B.

19) Andrea, Branimir, Celestin and Doris (but not necessarily in this order) are ranked one to four in a fencing tournament. If you add Andrea's, Branimir's and Doris'rank, your total is 6. You obtain the same number if you add Branimir's and Celestin's rank. Who won the tournament, if Branimir did better than Andrea?

A) Andrea **B)** Branimir **C)** Celestin **D)** Doris **E)** It cannot be determined.

20) In the diagram opposite there is an object with 6 triangular faces. On each corner there is a number (two are shown). The sum of the numbers on the corners of each triangle is the same. What is the sum of all 5 numbers?
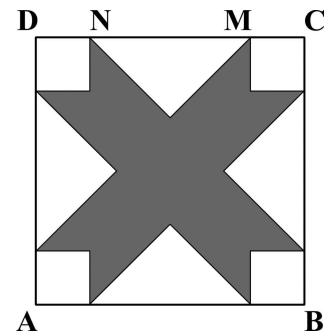
A) 9 **B)** 12 **C)** 17 **D)** 18 **E)** 24

21) The rooms in a hotel are numbered with three digit numbers each. The first digit determines the floor and the last two digits the number of the room on each floor; e.g. room 125 is on the 1st floor, room number 25. The hotel has 5 floors (from 1 to 5) and 35 rooms on each floor, i.e. on the 1st floor you have room numbers 101 to 135 etc. How often does the digit 2 appear in all room numbers of the hotel?

A) 60 times **B)** 65 times **C)** 95 times
D) 100 times **E)** 105 times

22) ABCD is a square with side length 10cm. The distance of N to M measures 6cm. Each area not shaded grey is either a sqaure or an isosceles triangle. How big is the area shaded in grey?

A) 42 cm² **B)** 46 cm² **C)** 48 cm² **D)** 52 cm² **E)** 58 cm²

23) In the diagram on the left the total of each row and column is given. What is the value of ⌐⌐ ?

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

24) We want to paint each square in the grid with the colours A, B, C and D, so that neighbouring squares always have different colours. (Squares which share the same corner point also count as neighbouring.) Some of the squares are already painted. In which colour(s) could the grey square be painted?

A) A **B)** B **C)** C **D)** D **E)** There are two possibilities.