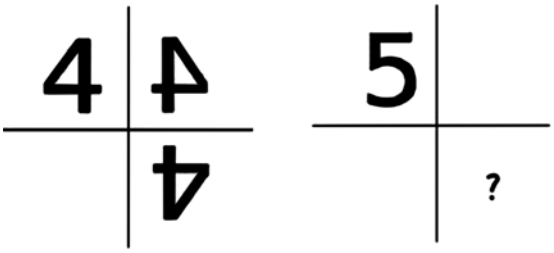
# Känguru der Mathematik 2010
# Group Benjamin (Grades 5. and 6.)
# Austria - 18.3.2010

**- 3 Point Questions -**

1) Given that ▲ + ▲ + 6 = ▲ + ▲ + ▲ + ▲. which number should replace ▲?

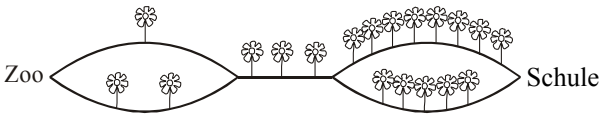
**A)** 2 **B)** 3 **C)** 4 **D)** 5 **E)** 6

2) The number 4 is reflected twice in the picture. What apears in the field with the question mark if we do the same with the number 5?




**A)** **B)** **C)** **D)** **E)**

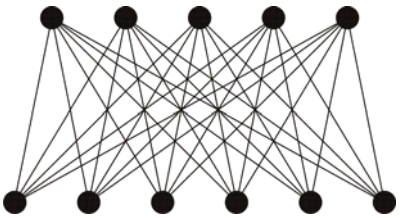
3) Kangi goes directly from the zoo to school (Schule) and counts the flowers along the way. Which of the following numbers can he not obtain this way?




**A)** 9 **B)** 10 **C)** 11 **D)** 12 **E)** 13

4) A staircase has 21 steps. Nick and Mike count the steps; one from botton to top and the other from top to bottom. They meet at one step which Nick indicates as the 10th. As which number does Mike indicate this step?

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

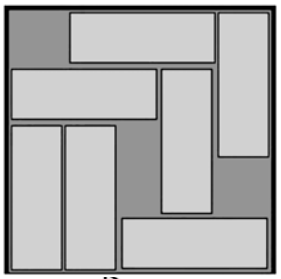


5) Anna has connected all the upper and lower points with straight lines. How many lines has she drawn?

**A)** 20 **B)** 25 **C)** 30 **D)** 35 **E)** 40

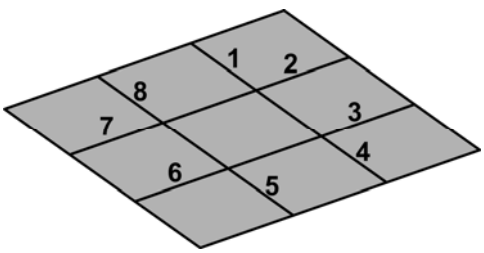
6) A fly has 6 legs and a spider has 8. Together, 2 flies and 3 spiders have as many legs as 10 birds and.....

**A)** 2 cats **B)** 3 cats **C)** 4 cats **D)** 5 cats **E)** 6 cats

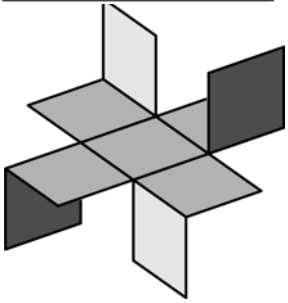


7) In the box are seven blocks. It is possible to slide the blocks around so that another block can be added to the box. What is the minimum number of blocks that must be moved?

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

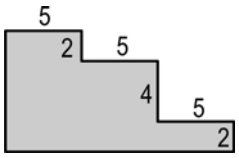



8) lines are drawn on a piece of paper and some of the lines are given numbers. The paper is cut along some of these lines and then folded as shown in the picture. Along which lines were the cuts made



**A)** 1,3,5,7 **B)** 2,4,6,8 **C)** 2,3,5,6 **D)** 3,4,6,7 **E)** 1,4,5,8

## - 4 Points Questions -




9) What is the perimeter of the figure shown (all angles are right angles)?

**A)** 23 **B)** 31 **C)** 38 **D)** 42 **E)** 46

10) In the following figures you see five elastic bands, only one of which is tied in a knot. Which one?

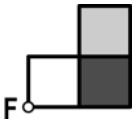
**A)** **B)** **C)** **D)** **E)**

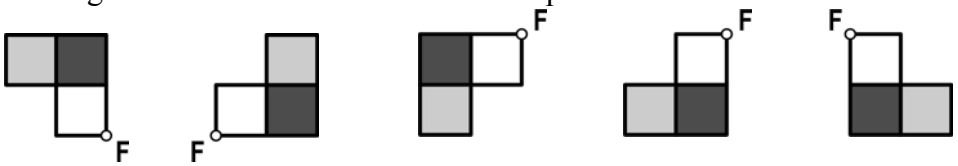
11) Which of the following expressions has a value that differs from the others?

**A)** $20 \times 10 + 20 \times 10$ **B)** $(20 \div 10) \times 20 \times 10$ **C)** $20 \times 10 \times (20 \div 10)$

**D)** $20 \times 10 + 10 \times 20$ **E)** $(20 \div 10) \cdot 20 + 10$

12) The figure should be rotated 180° around point F. What is the result?



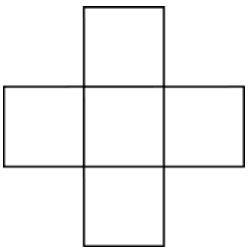




**A)** **B)** **C)** **D)** **E)**

13) Benjamin chooses a number, divides it by 7, adds 7 to the result and multiplies that result with 7. He obtains the number 777. Which number did he start with?

**A)** 7 **B)** 111 **C)** 722 **D)** 567 **E)** 728

14) The numbers 1, 4, 7, 10 and 13 should be written into the squares so that the sum of the three numbers in the horizontal row is equal to the sum of the three numbers in the vertical column. What is the largest possible value of these sums?

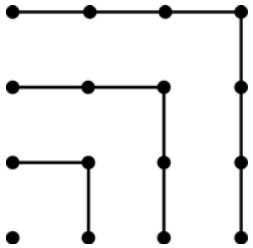


**A)** 18 **B)** 20 **C)** 21 **D)** 22 **E)** 24

15) In order to produce a newspaper with 60 pages, you need 15 sheets that are stuck within each other. In one such newspaper page 7 is missing. Which other pages are also missing from this newspaper?

**A)** 8, 9 and 10 **B)** 8, 42 and 43 **C)** 8, 48 and 49 **D)** 8, 52 and 53 **E)** 8, 53 and 54

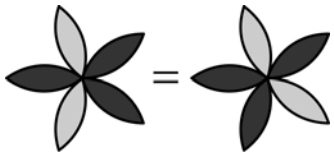
16) In the adjacent picture we see that $1+3+5+7 = 4 \times 4$. How big is $1+3+5+7+\ldots+17+19$?



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

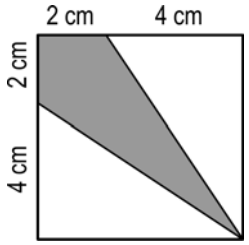
## - 5 Point Questions -

17) Lydia draws a flower with 5 petals. She wants to colour in the flower using the colours white and black. How many different flowers can she draw with these two colours if the flower can also be just one colour?



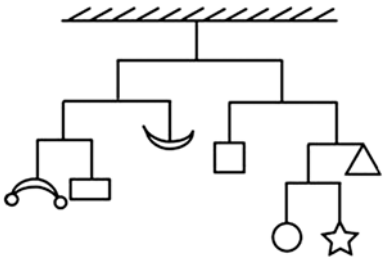
**A)** 6 **B)** 7 **C)** 8 **D)** 9 **E)** 10

18) What fraction of the square is grey?




**A)** $\frac{1}{3}$ **B)** $\frac{1}{4}$ **C)** $\frac{1}{5}$ **D)** $\frac{3}{8}$ **E)** $\frac{2}{9}$

19) The picture shows a hanging mobile. The mobile weighs 112 grams in total. (The weight of the sticks and threads is not taken into account.) How much does the star weigh?



**A)** 6 g **B)** 7 g **C)** 12 g **D)** 16 g

**E)** It cannot be calculated.

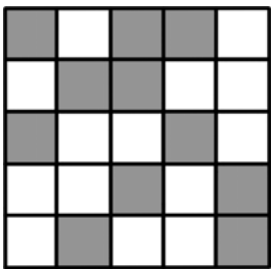
20) In a pizzeria there is a basic pizza with tomato and cheese that can be ordered with only one or two of the following toppings: anchovies, artichokes, mushrooms or capers. The pizza comes in three sizes. How many different types of pizza are offered in total?

**A)** 30 **B)** 12 **C)** 18 **D)** 48 **E)** 72

21) In order to decide who will get the last piece of Leni's birthday cake, five children use a rhyme. Leni, Sara, Hannes, Petra and Arno stand in this order, clockwise in a circle. They count in a clockwise direction: KAN – GA – ROO – OUT – ARE – YOU. For each syllable one child is counted and whoever is counted at YOU is out. They continue this until only one child is left. Leni can choose who starts. Who does she have to choose if she wants Arno to get the piece of cake?

**A)** Leni **B)** Sara **C)** Hannes **D)** Petra **E)** Arno

22) In the multiplication of a three-digit number with a single-digit number PPQ × Q = RQ5Q, P, Q and R represent different digits. P + Q + R =



**A)** 13 **B)** 15 **C)** 16 **D)** 17 **E)** 20

23) In the grid, how many grey squares have to be coloured white, so that in each row and each column there is exactly one grey square?

**A)** 4 **B)** 5 **C)** 6 **D)** 7 **E)** This is not possible.

24) Six-legged, seven-legged and eight-legged octopuses serve Neptune, the king of the sea. The seven-legged ones always lie and the six-legged and eight-ledded ones always speak the truth. One day four octopuses meet. The blue one says: „We have 28 legs altogether." The green one says: „We have 27 legs altogether." The yellow one says: „We have 26 legs altogether." The red one says: „ We have 25 legs altogether." What colour is the octopus that speaks the truth?

**A)** red **B)** blue **C)** green **D)** yellow **E)** Nobody speaks the truth.

# KÄNGURU DER MATHEMATIK 2010
# 18.3.2010

Categorie: Benjamin, Grades: 5-6

| | |
|---|---|
| Name: | |
| School: | |
| Class: | |

Time allowed: 60 min.
Each correct answer, questions 1.-8.: 3 Points
Each correct answer, questions 9.-16.: 4 Points
Each correct answer, questions 17.-24.: 5 Points
Each question with no answer given: 0 Points
Each incorrect answer: Lose ¼ of the points for than question.
You begin with 24 points.

**Please write the letter (A, B, C, D, E) of the correct answer under the question number (1 to 24).**
**Write neatly and carefully!**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
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Information über den Känguruwettbewerb: www.kaenguru.at
Wenn Du mehr in dieser Richtung machen möchtest, gibt es die Österreichische Mathematikolympiade; Infos unter: www.oemo.at

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