

Kangourou Mathematics 2008 Levels 5-6

3 points

1) Which is the smallest ?


A) $2 + 0 + 0 + 8$



B) $200/8$

C) $2 \times 0 \times 0 \times 8$

D) $200 - 8$

E) $8 + 0 + 0 - 2$

2) By what  can be replaced to have:

 \times  = $2 \times 2 \times 3 \times 3$?

A) 2

B) 3

C) 2×3

D) 2×2

E) 3×3

3) John(J) likes to multiply by 3, Pete(P) likes to add 2, and Nick(N) likes to subtract 1. In what order should they perform their favorite actions to convert 3 into 14?


A) JPN

B) PJN

C) JNP

D) NJP

E) PNJ

4) In a piece of paper there were written some number calculations, but a drop of ink made a stain and covered a number or an arithmetic symbol. Now we see the following: $1 + 1$  $1 - 2 = 100$. What was at under the stain?

A) +

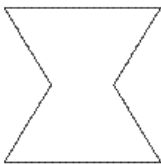
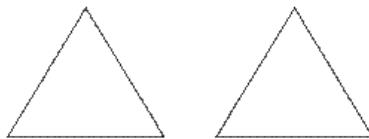
B) -

C) \times

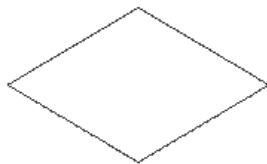
D) 0

E) 1

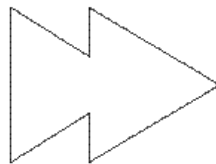
5) Carol is playing with the two equilateral triangular cards shown. She puts one card besides or on top of a part of the other and both on a piece of paper. Then she draws on the paper around them, following the contour. Only one of the shapes she cannot get. Which one is it?



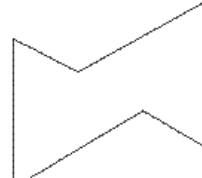
A)



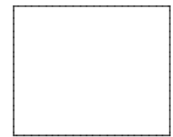
B)



C)



D)

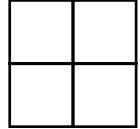


E)

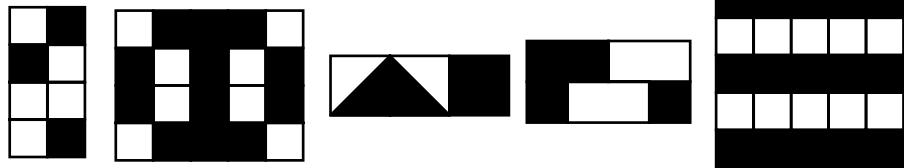
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6) Numbers 2, 3, 4 and one more number are written in the cells of 2 X 2 table. It is known that the sum of the numbers in the first row is equal to 9, and the sum of the numbers in the second row is equal to 6. The unknown number is

- A) 5 B) 6 C) 7 D) 8 E) 4



7) At a pirate school, each student had to sew a black and white flag. The condition was, that the black colour had to cover exactly three fifths of the flag. How many of the following flags fulfilled this condition?



- A) None. B) One. C) Two. D) Three. E) Four.

8) Before the snowball fight, Paul had prepared a few snowballs. During the fight, he made another 17 snowballs and he threw 21 snowballs at the other boys. After the fight, he had 15 snowballs left. How many snowballs had Paul prepared before the fight?

- A) 53 B) 33 C) 23 D) 19 E) 18

9) This is a small piece of the multiplication table.

×	4	3
5	20	15
7	28	21

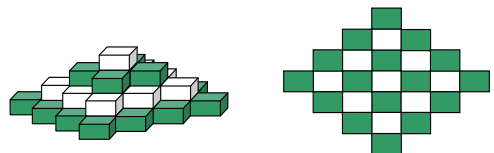
And this is an other one, in which, unfortunately, some numbers are missing.

×		
	35	63
	30	?

What is the number in the square with the question mark ?

- A) 54 B) 56 C) 65 D) 36 E) 42

10) In a shop selling toys a four-floor black and white “brickflower” is displayed. (picture 1). Each floor is made of bricks of the same colour. On picture 2, the flower is shown from the top. How many white bricks were used to make the flower?



- A) 9 B) 10 C) 12 D) 13 E) 14

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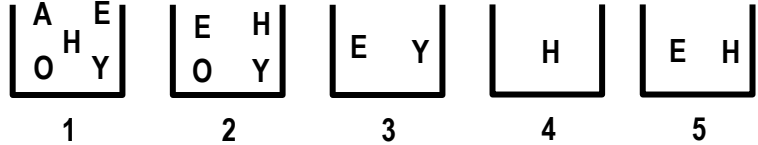
4 points

11) With what number of identical matches it is impossible to form a triangle? (The matches should not be broken!)

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

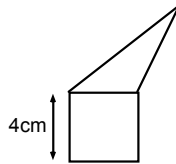


12) There are 5 boxes and each box contains some cards labelled A, E, H, O, Y as shown. Peter wants to remove cards from each box in such a way that at the end each box contains only one card, and different boxes contain cards with different letters. What card remains in box 2?



- A) A B) E C) H D) O E) Y

13) The triangle and the square have the same perimeter. What is the perimeter of the whole figure (a pentagon)?

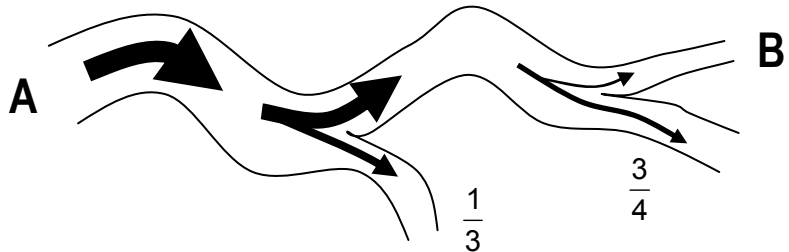


- A) 12 cm B) 24 cm C) 28 cm D) 32 cm E) It depends of the triangle measures

14) A circular table is surrounded by 60 chairs. In some of the chairs there are people seating while the rest are empty. Between any two people who are seating there are two empty chairs. How many people are seating around the table?

- A) 19 B) 20 C) 21 D) 29 E) 30

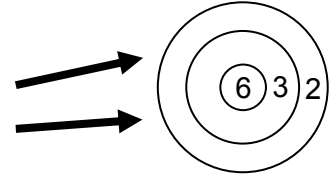
15) A river starts at point A. As it flows the river splits in two. One branch takes $\frac{1}{3}$ of the water and the second takes the rest. Later the second branch splits in two, one taking $\frac{3}{4}$ of the branch's water, the other the rest. The map below shows the situation. What proportion of the original water flows at the point B?



- A) $\frac{1}{4}$ B) $\frac{2}{3}$ C) $\frac{11}{12}$ D) $\frac{1}{6}$ E) we cannot compute it.

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16) By shooting two arrows at the shown aiming board on the wall, how many different scores can we obtained? (Missing the board is possible.)

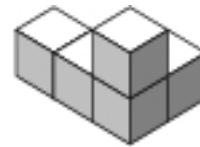


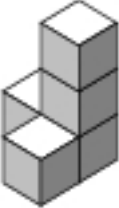



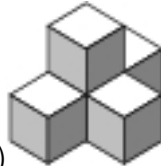
- A) 4 B) 6 C) 8
D) 9 E) 10

17) Rebeka was sorting her books. The one third of her books did not fit on the shelves of her bookcase, so she put them in three drawers. In each drawer she managed to put 7 books, so again there did not fit and two books were left, which she left on the table. How many books does Rebeka have?

- A) 21 B) 23 C) 27 D) 63 E) 69

18) Which of the “buildings” (A),..., (E) – each consisting of exactly 5 cubes – can you *not* obtain from the building on the right hand side if you are allowed only to move exactly one cube?



- A)  B)  C)  D)  E) 

19) Points A , B , C and D are marked on the straight line in some order. It is known that $AB = 13$, $BC = 11$, $CD = 14$ and $DA = 12$. What is the distance between the farthest two points?

- A) 14 B) 38 C) 50 D) 25 E) another answer

20) Today I can say: Two years later my son will be twice as old as he was two years ago. And three years later my daughter will be three times as old as she was three years ago. What's right?

- A) The son is one year older than the daughter
B) The daughter is one year older than the son
C) They are of equal age
D) The son is two years older than the daughter
E) The daughter is two years older than the son

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5 points

21) The five signs @, *, #, &, ^ represent five different digits from which none is zero. They are connected through the following calculations:

$$@ + @ + @ = *$$

$$\# + \# + \# = \&$$

$$* + \& = ^$$

$$^ = ?$$

What is the digit ^ ?

A) 3

B) 2

C) 6

D) 8

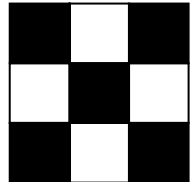
E) 9

22) In new year's day Vasile received for a gift a t-shirt, which had the number 2008 printed on the front. Then he went in front of a mirror and balanced up-side down with his hands on the ground and his feet up. What did his friend Nike could read through the mirror who was standing normally next to Vasile?

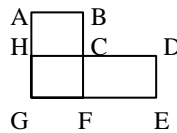
- A) 2008
B) 5008
C) 8002
D) 8005
E) 2005

23) Suppose you make a journey over the squared board shown, and you visit every square exactly once. Where must you start, if you can move only horizontally or vertically, but not diagonally?

- A) In the middle square
- B) At a corner square
- C) At an unshaded square
- D) At a shaded square
- E) You can start at any square



24) The picture shows the plan of a town. There are four circular bus routes in the town. №1 bus follows the route C-D-E-F-G-H-C, which is 17km long. №2 bus goes A-B-C-F-G-H-A, and covers 12 km. The route of №3 bus is A-B-C-D-E-F-G-H-A, and is equal to 20 km. №4 bus travels C-F-G-H-C. How long is this route?



A) 5 km

B) 8 km

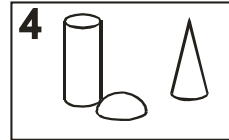
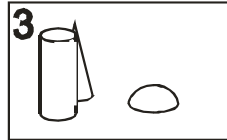
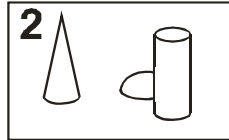
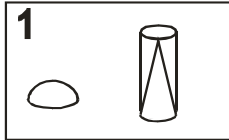
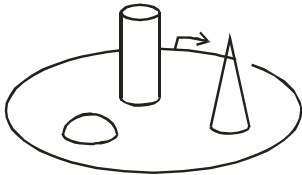
C) 9 km

D) 12 km

E) 15 km

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25) Betty walked once around the park, starting from the marked point in direction of the arrow. She made 4 photos. In which order did she make the photos?



A) 2-4-3-1

B) 4-2-1-3

C) 2-1-4-3

D) 2-1-3-4

E) 3-2-1-4

26) Seven cards lie in a box. Numbers from 1 to 7 are written on these cards (exactly one number on the card). The first sage takes, at random, 3 cards from the box and the second sage takes 2 cards (2 cards are left in the box). Then the first sage tells the second one: "I know that the sum of the numbers of your cards is even". The sum of card's numbers of the first sage is equal to

A) 10

B) 12

C) 6

D) 9

E) 15

27) Maria has drawn a picture on a piece of paper with dimensions 80cmX160cm . Afterwards she transferred the picture onto a smaller paper with dimensions 30cmX40cm. The longer side of the first picture fits exactly the longer side of the smaller. What area of the 30cmX40cm remained uncovered?



Paper 80 cm x 160 cm



Paper 30 cm x 40 cm

A) 300cm^2 B) 400cm^2 C) 500cm^2 D) 600cm^2 E) 800cm^2

28) How many three digit numbers are there, whose written form contains exactly two consecutive digits 3 ?

A) 16

B) 17

C) 18

D) 19

E) 20

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29)

We write consecutively the numbers 1, 2, 3, 4, 5, ... with the following zink-zank method.
In which row the number 800 is located?

1 st row	1		9	
2 nd row	2		8	10
3 rd row	3		7	11
4 th row	4	6		12
5 th row		5		13

- A) 1st row B) 2nd row C) 3rd row D) 4th row E) 5th row

30) How many digits can at most be erased from the 1000-digit number 20082008...2008 (continuous repetition of 2008), such that the sum of the remaining digits is 2008?

- A) 260 B) 510 C) 746 D) 1020 E) 130