

2005



WIZSMART

# EUROPEAN KANGAROO ARITHMETIC AND MATHEMATICS CONTEST

Welcome to the Kangaroo, great that you join in!

- \* You have 75 minutes. There are 30 questions. With every question one of the five options is the correct one.
- \* Do what you can, don't be disappointed if you cannot answer everything.
- \* You are not allowed to use a calculator; of course you may use scribbling paper.
- \* Use a pencil to fill in the answer sheet carefully.
- \* About scoring points:
  - \* You start with 30 free points.
  - \* Question 1 - 10: you will get 3 points for a correct answer; you will lose  $\frac{3}{4}$  points for an incorrect one.
  - \* Question 11 - 20: you will get 4 points for a correct answer; you will lose 1 point for an incorrect one.
  - \* Question 21 - 30: you will get 5 points for a correct answer; you will lose  $1\frac{1}{4}$  points for an incorrect one.
  - \* If you don't answer a question, you neither gain nor lose points.
- \* The answers will be on the website from March 22<sup>nd</sup>, [www.math.ru.nl/kangoeroe](http://www.math.ru.nl/kangoeroe)
- \* The scores and the prizes will arrive at schools in week 17.

**Good luck and most of all: have fun!!**

wizSMART  
the Netherlands: 7 & 8 primary school and 1 & 2 vmbo  
Flanders: 5 & 6 primary school and bso 1st degree



[www.museumboerhaave.nl](http://www.museumboerhaave.nl)



[www.technopolis.be](http://www.technopolis.be)

TU/e

[www.tue.nl](http://www.tue.nl)



[www.education.ti.com](http://www.education.ti.com)



[www.smart.be](http://www.smart.be)



Koninklijke  
Nederlandse  
Akademie van  
Wetenschappen

[www.knaw.nl](http://www.knaw.nl)



[www.ru.nl](http://www.ru.nl)



[www.wiskgenoot.nl](http://www.wiskgenoot.nl)



[www.zozitdat.nl](http://www.zozitdat.nl)



[www.puzzelsport.nl](http://www.puzzelsport.nl)



[www.citogroep.nl](http://www.citogroep.nl)



[www.kijk.nl](http://www.kijk.nl)

2005



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01. Complete.

$$2005 - 1005 = 50 +$$



Which number should replace the kangaroo?

- A. 950      B. 955      C. 1950      D. 1955      E. 2960

02. Tim and Meryl share 10 candies. Meryl has two more than Tim. How many candies has Meryl got?

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

03. Meryl chooses a whole number and multiplies it by 3. Which of the following numbers cannot be the result?

- A. 20      B. 27      C. 30      D. 45      E. 66

04. How many minutes are there in a quarter of half an hour?

- A.  $7\frac{1}{2}$       B. 10      C.  $12\frac{1}{2}$       D. 15      E.  $17\frac{1}{2}$

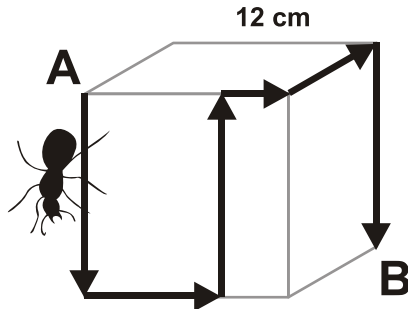
05. Tim lives at home with his father, mother and sister. They also have a dog, two cats, two canaries and four goldfish. How many legs do they have altogether?

- A. 13      B. 22      C. 24      D. 28      E. 32

06. What is the result of  $2005 \times 10 + 2005$ ?

- A. 2255      B. 4010      C. 4020      D. 22010      E. 22055

07. The cube shown below measures 12 cm by 12 cm by 12 cm. An ant walks along the marked route, from A to B.



How many cm does the ant walk?

- A. 36      B. 40      C. 48      D. 50      E. 60

08. Two consecutive whole numbers add up to 2005. What is the largest of these two numbers?

- A. 1000      B. 1002      C. 1003      D. 1005      E. 2003

09. Tim cuts a sheet of paper in three pieces. After that he cuts one of these pieces in three again. How many pieces of paper does he have altogether now?

- A. 4      B. 5      C. 6      D. 7      E. 9

10. Five cards are placed in a row, as shown at start. You have to get them in the right order, as shown at end. The way to do this is by interchanging two cards repeatedly.



How many times do you have to do this? (the least number of times possible)

- A. 1      B. 2      C. 3      D. 4      E. 5

3 points

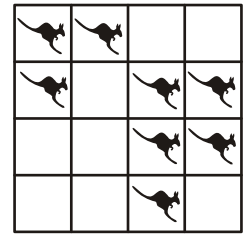
2005



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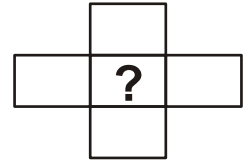
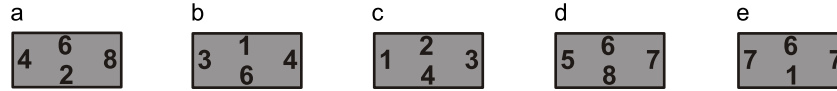
4 points

11. We want two kangaroos in each row (from left to right and from top to bottom). We want to move the least number of kangaroos possible. How many kangaroos will be moved?



- A. 1      B. 2      C. 3      D. 4      E. 5

12. Five playing cards A, B, C, D and E should form a cross. Sides that touch each other should have the same number. You are not allowed to rotate cards or turn cards over.



Which card will be in the middle?

- A. a      B. b      C. c      D. d      E. e

13. Shown below are five jigsaw puzzle pieces.



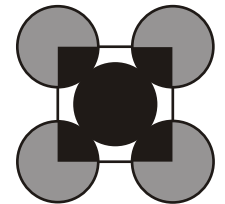
Two of the pieces have the same area. Which two?

- A. 2 and 4      B. 1 and 5      C. 1 and 3      D. 4 and 5      E. 3 and 5

14. In the boot of a car are five trunks. In each trunk are three boxes. In each box are ten golden coins. The boot, the trunks and the boxes are all locked. How many locks do you have to open to get 50 golden coins?

- A. 5      B. 6      C. 7      D. 8      E. 9

15. Five circles have the same size. The black region measures  $10 \text{ cm}^2$ . How many  $\text{cm}^2$  is the area of the grey region?

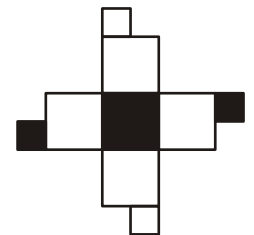
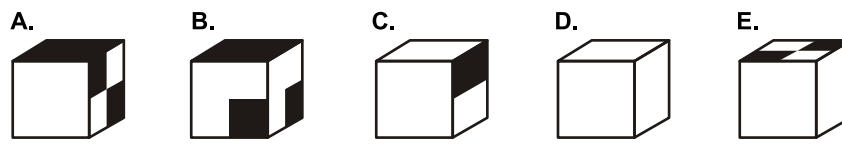


- A. 10      B. 12      C. 15      D. 16      E. 17

16. The number 25 divides into 100. How many numbers divide into 100? (The result of the division should be a whole number.)

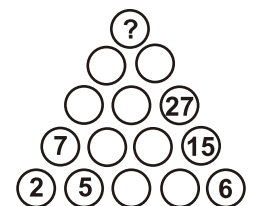
- A. 3      B. 6      C. 7      D. 8      E. 9

17. The net alongside is folded into a cube. Which cube could you get?



18. Meryl uses a fixed scheme to form a number triangle. When three circles form a triangle like  $\circ \circ \circ$  you get the top number by adding the two bottom numbers. For example, you get 7 from adding 2 and 5. She applies this fixed rule all the time. The six numbers shown here have already been put in the triangle by Meryl. What will be the top number?

- A. 32      B. 50      C. 55      D. 82      E. 100

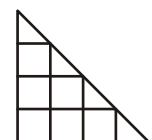


19. When Meryl walks to the beach and rides her bicycle back, it takes her 40 minutes. When Meryl rides her bicycle both ways, it takes 20 minutes. How long does it take for Meryl to walk both ways?

- A. 50      B. 56      C. 60      D. 64      E. 80

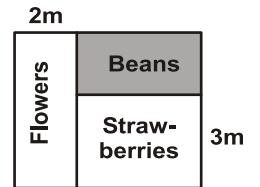
20. You can find seven squares in the picture. You can find more triangles. How many more?

- A. 0      B. 1      C. 2      D. 3      E. 4



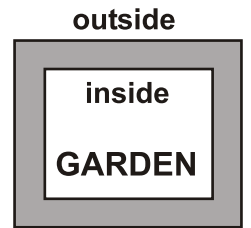


21. Tim's father's garden has an area of  $30 \text{ m}^2$  and it is divided into three rectangular parts. The part for flowers is 2 m wide and has an area of  $10 \text{ m}^2$ . The part for strawberries is 3 m wide. How many square metres is the area of the part for beans?



- A. 4      B. 6      C. 8      D. 10      E. 12

22. The figure shows a path of tiles around a garden. The path has the same width everywhere. The outside of the tiled path is 8 meters longer than the inside. What is the width of the path in metres?



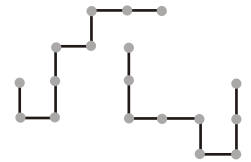
- A. 1      B. 2      C. 4      D. 8  
E. You first need to know the garden's measurements

23. A square sheet of paper is cut in three pieces. Two pieces are shown on the right. What does the third piece look like?



- A.      B.      C.      D.      E.

24. On the right you see two pieces of piping. Each pipe consists of eight pieces of the same length. One pipe is put on top of the other in such a way that as many pieces as possible cover each other perfectly. How many pieces do cover each other then?



- A. 2      B. 3      C. 4      D. 5      E. 6

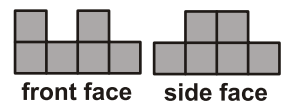
25. Each sign shows a whole number. The result of the multiplication is 10.

$$\square \times \square \times \square \times \square \times \square \times \square = 10$$

The same numbers are added.  
What is the smallest possible result of this addition?

- A. 11      B. 12      C. 14      D. 18      E. 20

26. The front face and side face of a building of cubes are shown. How many cubes can be used at most?

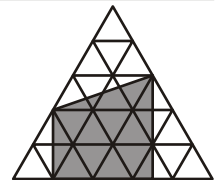


- A. 6      B. 8      C. 12      D. 20      E. 24

27. Meryl sleeps under an oak tree every day from noon until midnight. She is awake for story-telling for the rest of the time. A sign is put up on the oak saying: "Two hours ago Meryl did the same as she will be doing in an hour from now." How many hours per day is the text on the sign true?

- A. 3      B. 6      C. 12      D. 18      E. 21

28. The triangle shown is made from 25 triangles of area 1. What is the area of the grey part?



- A. 12      B. 12,5      C. 13      D. 13,5      E. 14

29. Tim looked at his digital watch at 21:15 last night. His watch shows always four digits. He noticed something particular then about the time shown. If you put a mirror on the two dots in the middle, the left half is the mirror image of the right half. How often does this happen during a day?



- A. 1      B. 3      C. 7      D. 11      E. 24

30. Tim, Puck, Meryl, Jip and Jane were sitting on a fence. Tim was not sitting at the very right, Puck was not sitting at the very left. Jip did not sit on the outside. Meryl was not sitting next to Jip, and Jip was not sitting next to Puck. Jane sat at Puck's right-hand side, but maybe not immediately next to her. Who was sitting at the very right?

- A. Tim      B. Puck      C. Meryl      D. Jip      E. Jane