

wereldwijde  
wiskundewedstrijd  
**W4Kangoeroe**

[www.w4kangoeroe.nl](http://www.w4kangoeroe.nl)

March 19th  
2015

Good luck and most of  
all have fun.

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calculators are not  
allowed



you may use  
75 minutes



Only a pencil, an  
eraser and scribbling  
paper are allowed



results and prizes will  
arrive at school in May



answers will be posted  
on the website March  
26th



solutions will be  
posted on the website  
April 19th

wizBRAIN  
havo 1, 2 & 3  
vwo 1 & 2  
vmbo 3 & 4 m.u.v. basisberoepsgerichte leerweg.

zwijzen

**NEMO** Science  
Center  
[www.e-nemo.nl](http://www.e-nemo.nl)

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

keep on playing  
**SMART**  
GAMES  
[www.smart.be](http://www.smart.be)

**Sanders**  
[www.sanderspuzzelboeken.nl](http://www.sanderspuzzelboeken.nl)

**Schoolsupport**  
[www.schoolsupport.nl](http://www.schoolsupport.nl)

**Blink**  
uitgevers  
[www.blinkuitgevers.nl](http://www.blinkuitgevers.nl)

**ID Premiums** relatiegeschenken & promotieartikelen  
[www.idpremiums.nl](http://www.idpremiums.nl)

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

**platform**  
wiskunde nederland  
[www.platformwiskunde.nl](http://www.platformwiskunde.nl)

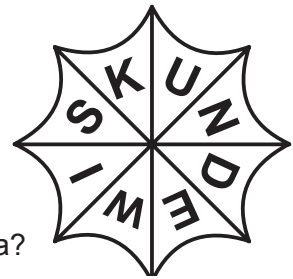
**rekeningtuin**  
[www.rekeningtuin.nl](http://www.rekeningtuin.nl)

**Denksport**  
[www.denksport.nl](http://www.denksport.nl)

**CITO**  
[www.cito.nl](http://www.cito.nl)

**MUSEUM BOERHAAVE**  
SYNDUS 1931  
[www.museumboerhaave.nl](http://www.museumboerhaave.nl)

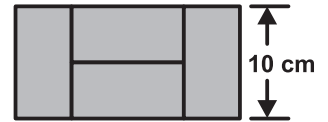
1. An umbrella has the word WISKUNDE written on top. See picture.



Which of the following pictures does not show the same umbrella?



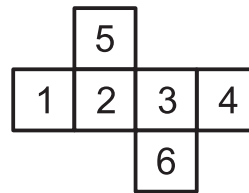
2. 4 identical small rectangles form a larger rectangle as shown. The width of the large rectangle is 10 cm.



What is the length of the large rectangle?

- A. 10 cm      B. 20 cm      C. 30 cm      D. 40 cm      E. 50 cm
3. Which of the following numbers is closest to  $2,015 \times 510,2$ ?
- A. 0,1      B. 1      C. 10      D. 100      E. 1000

4. Sabine folds this net into a cube. Then she adds the numbers on each pair of opposite faces.

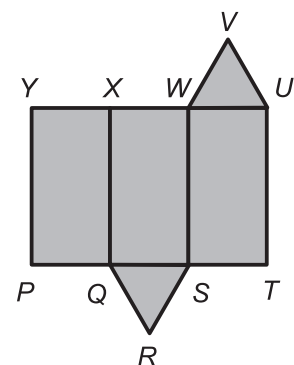


Which 3 answers will Sabine get?

- A. 4, 5, 12      B. 4, 6, 11      C. 5, 6, 10      D. 5, 7, 9      E. 5, 8, 8
5. A journey by car from Groningen to Utrecht via Assen takes 2 hours and 10 minutes. From Groningen to Assen takes 35 minutes. How many minutes will it take from Assen to Utrecht?


- A. 95      B. 105      C. 115      D. 165      E. 175
6. A triangle has sides of lengths 6, 10 and 11. Tom now wants to draw an equilateral triangle with the same perimeter as this triangle. How long is each side of the equilateral triangle?

- A. 6      B. 9      C. 10      D. 11      E. 18
7. Nassim wants to fold this net into a triangular prism. Which side will coincide with side UV then?



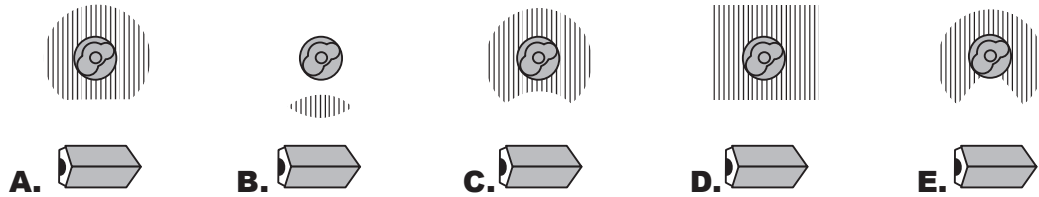
- A. QR      B. RS      C. WV      D. XW      E. XY

8. Squirrels *Chip* and *Dale* want to collect nuts.

On the ground they stay within 5 meters of the tree () .

They also stay at least 5 meters away from *Pluto's* doghouse () .

Which of the following pictures shows where *Chip* and *Dale* might go?

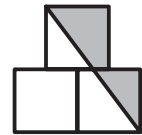


9. Which of the following fractions cannot be written as a whole number?

A.  $\frac{2011}{1}$       B.  $\frac{2012}{2}$       C.  $\frac{2013}{3}$       D.  $\frac{2014}{4}$       E.  $\frac{2015}{5}$

10. The top square is placed exactly in the middle on the 2 bottom squares. All squares have sides of length 1

What is the area of the shaded part?



A.  $\frac{3}{4}$       B.  $\frac{7}{8}$       C. 1      D.  $1\frac{1}{4}$       E.  $1\frac{1}{2}$

11. *Samira* rides her bike at a speed of 5 meters per second.

The front wheel of her bike has a circumference of 125 cm.

How many complete turns does *Samira's* front wheel make in 5 seconds?

A. 4      B. 5      C. 10      D. 20      E. 25

12. There is something special in a class: no two boys have their birthdays on the same day of the week and no two girls have their birthdays in the same month. Tomorrow a new pupil will join the class. After that, we know for sure, there is nothing special any more in this class.

How many pupils will be in this class from tomorrow on?

A. 18      B. 19      C. 20      D. 24      E. 25

13. By substituting + or – for each \* in  $2 * 0 * 1 * 5 * 2 * 0 * 1 * 5 * 2 * 0 * 1 * 5 = 0$  we will get a correct equation.

What is the smallest number of asterisks (\*) that has to be replaced by +?

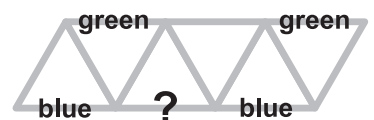
A. 1      B. 2      C. 3      D. 4      E. 5

14. *Tamara* wants to colour each side of each triangle in the picture red, green or blue.

The sides of each triangle have to be of different colours.

*Tamara* already coloured some of the sides.

Which colour will the side with the question mark be?



A. blue      B. green      C. red      D. red or blue  
E. It is impossible for *Tamara* to choose the right colour.

15. In a bouquet of 10 branches each branch has either only 5 leaves or 2 leaves and 1 flower.

Which of the following could be the total number of leaves in the bouquet?

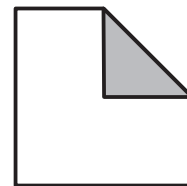


A. 36      B. 37      C. 38      D. 39      E. 40

**16.** At an exam the average score of the students was 6.  
Exactly 60% of the students passed.  
The average score of the students who passed was 8.  
What was the average score of the students who failed?

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

**17.** Of a square sheet of paper 1 corner is folded to the centre.  
That way an irregular pentagon is formed, see picture. The areas of the  
pentagon and of the square are consecutive whole numbers.



What is the area of the square?

- A.** 2                      **B.** 4                      **C.** 8                      **D.** 16                      **E.** 32

**18.** *Tim* has added the lengths of 3 sides of a rectangle. His outcome was 44 cm.  
*Tom* too has added the lengths of 3 sides of the same rectangle. His outcome was 40 cm.  
How many cm is the perimeter of the rectangle?

- A.** 42                      **B.** 56                      **C.** 64                      **D.** 84                      **E.** 112

**19.** During a rainstorm 15 litres of water fell per square metre.  
By how many cm did the water level rise in a swimming pool during that rainstorm?

- A.** 0,15                      **B.** 1,5                      **C.** 15                      **D.** 150  
**E.** It depends on the size of the swimming pool.

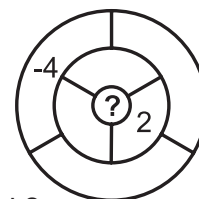
**20.** Mister *Kei* lets his 5 students guess how many of them did their homework.  
*Ali* answers 0, *Bert* 1, *Caroline* 2, *Desi* 3 and *Elsie* 4.  
Mister *Kei* notices that the ones who did their homework guessed  
correctly and the ones who did not do their homework guessed wrong.



How many students did their homework?

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

**21.** *Roel* wants to write a number in each of the 7 regions of the figure.  
The number in a region has to be the sum of all numbers in the  
neighbouring regions (2 regions are neighbours if they border each other)  
*Roel* has already written down 2 numbers.



Which number does *Roel* has to write down in the region with the question mark?

- A.** -4                      **B.** -2                      **C.** 0                      **D.** 1                      **E.** 6

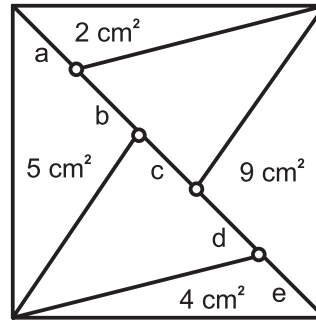
**22.** 5 positive whole numbers are written on 5 cards, 1 per card (a number could be written  
down more than once). *Peter* adds the numbers of every possible pair of cards.  
He only gets 3 different outcomes: 57, 70 and 83.  
What is the largest number that occurs on these cards?

- A.** 35                      **B.** 42                      **C.** 48                      **D.** 53                      **E.** 82

**23.** In a group of kangaroos the 2 lightest animals together weigh 25% of the total weight of the  
group. The 3 heaviest kangaroos together weigh 60% of the total weight.  
How many kangaroos are in the group?

- A.** 6                      **B.** 7                      **C.** 8                      **D.** 15                      **E.** 20

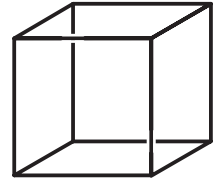
- 24.** A square of area  $30 \text{ cm}^2$  is divided into a number of triangles as shown. The area of 4 of these triangles is given.



Which part of the diagonal is the longest?

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

- 25.** Igor has pieces of wire of lengths 1 cm, 2 cm, 3 cm, 4 cm, 5 cm, 6 cm and 7 cm long, one of each length. He uses some of them to make a wire model of a cube with edges of length 1 cm. The pieces do not overlap.



What is the smallest number of pieces that he can use?

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

- 26.** The figure alongside is an example of a trapezium. In a trapezium  $PQRS$  with parallel sides  $PQ$  and  $SR$  is angle  $S = 120^\circ$  and  $RS = SP = \frac{1}{3} PQ$ .



How many degrees is angle  $Q$ ?

- A.** 25                      **B.** 30                      **C.** 40                      **D.** 45                      **E.** 60

- 27.** 5 points are drawn on a line. Lionel measures the distance between each possible pair of these points. He finds, in ascending order, 2, 5, 6, 8, 9,  $k$ , 15, 17, 20 and 22. Which number is  $k$ ?

- A.** 10                      **B.** 11                      **C.** 12                      **D.** 13                      **E.** 14

- 28.** Last week my friend Thomas from Atlantis gave me his phone number. I want to call Thomas now, but I notice that he only wrote down six digits. In Atlantis phone numbers consist of seven digits. The numbers may start with 0, just like in the Netherlands. I want to calculate how many telephone numbers I'll have to try at the most to make sure that I'll speak to Thomas. How many telephone numbers do I calculate?

- A.** 55                      **B.** 60                      **C.** 64                      **D.** 70                      **E.** 80

- 29.** Fatima divided the number 2015 by each of the numbers 1, 2, 3 etcetera, up till and including 1000. She wrote down the remainder of each of these divisions. What is the largest remainder Fatima wrote down?

- A.** 15                      **B.** 215                      **C.** 671                      **D.** 1007                      **E.** none of these

- 30.** We will colour all positive whole numbers according to the following 3 rules.  
 (1) Every number is either red or green.  
 (2) Every number you can get by adding two different red numbers is red too.  
 (3) Every number you can get by adding two different green numbers is green too.

In how many different ways can we colour the numbers?

- A.** 0                      **B.** 2                      **C.** 4                      **D.** 6                      **E.** more than 6