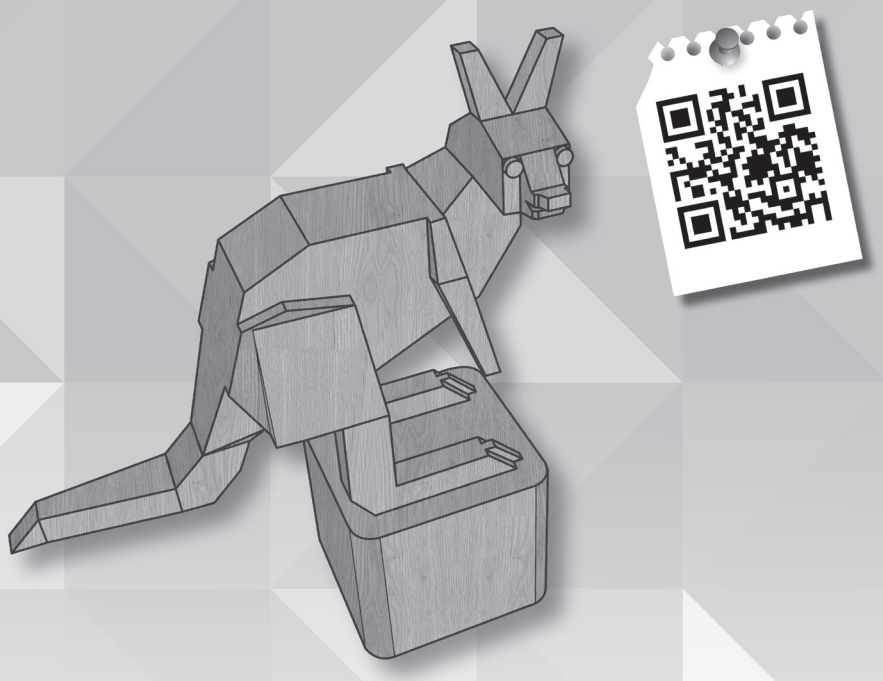
wizPROF 2026

WereldWijde WiskundeWedstrijd

W4Kangoeroe

COMPETITION PERIOD
MARCH 19 TO 27

WWW.W4KANGOEROE.NL



GOOD LUCK AND MOST OF ALL HAVE FUN !

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 at the end of May

answers will be posted on the website about April 4th

solutions will be posted on the website about April 20th

wizPROF
havo 4 & 5
vwo 3, 4, 5 & 6

1. Which is the smallest?

A. 202 : 6 **B.** 202.6 **C.** 20 + 26 **D.** 202 - 6 **E.** 20 x 26

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2. A palindrome is a number that reads the same from left to right and from right to left.
Maartje is taking part in the Kangaroo Competition this year.
Her date of birth, written as DD-MM-YYYY, is a palindrome.

In what month was *Maartje* born?

A. February **B.** March **C.** September **D.** October **E.** November

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3. During dinner, 19 plums are eaten in *Hanneke's* family.
Each of the five family members eats exactly three or four plums.

How many family members ate four plums?

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

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4. The year 2026 has two properties:
– Exactly two of its four digits are the same.
– The sum of its digits is 10.

How many years in the 21st century have these two properties?

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

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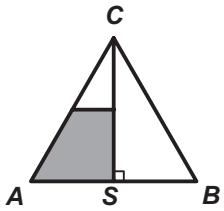
5. *Alexander* draws an equilateral triangle *ABC*.
S is the midpoint of *AB*.
A line is drawn through the midpoint of *CS*, parallel to the base *AB*.



What fraction of the triangle is shaded?

A. $\frac{1}{8}$ **B.** $\frac{1}{4}$ **C.** $\frac{3}{10}$ **D.** $\frac{1}{3}$ **E.** $\frac{3}{8}$

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6. *Abdul* writes down a 7-digit number: 193391✗
This number is divisible by 6 (with no remainder).
His pen leaked, so the last digit cannot be read.

Which digit is under the ink stain?

A. 0 **B.** 2 **C.** 4 **D.** 6 **E.** 8

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7. What is the result of $(1 - 2) - (3 - 4) - (5 - 6) - \cdots - (2025 - 2026)$?

A. -1013 **B.** -1011 **C.** 0 **D.** 1011 **E.** 1013

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8. *Cristina* is placing the numbers 1 to 7 into the boxes shown.
As you can see, she has already placed the 2 and the 5. She wants that:
– the sum of the numbers in two neighboring boxes is odd, and
– the sum of the numbers in three boxes in a row is not a multiple of 3.

What is the sum of the numbers in the grey boxes?

A. 5 **B.** 7 **C.** 9 **D.** 11 **E.** 13

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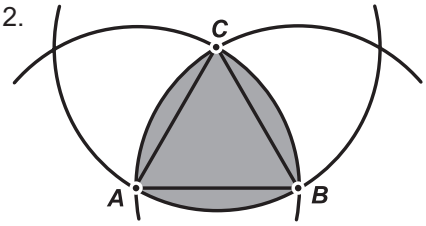
9. In the diagram you see an equilateral triangle *ABC* with side length 2.
From each vertex, an arc is drawn.
The center of each arc is at a vertex of the triangle and
the radius of each arc is the same length as a side of the triangle.



What is the perimeter of the grey shape?

A. π **B.** 6 **C.** 2π **D.** 8 **E.** 4π

10. A farmer has dogs, sheep, goats, pigs and chickens on her farm.
We know this:
– There are more chickens than pigs.
– There are more pigs than goats.
– There are more goats than sheep.
– There are more sheep than dogs.
– The number of dogs is half the number of chickens.
We also know that the total number of animals is as small as possible.

How many animals are there in total on her farm?

A. 28 **B.** 30 **C.** 32 **D.** 34 **E.** 36

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11. After a day hike through the Scottish Highlands, five hikers are covered in mosquito bites.
They have 7, 9, 10, 13 and 14 bites.
We know the following about the hikers:
– *Anton* and *Linda* together have 3 times as many bites as *Kai*.
– *Mia* and *Linda t*ogether have 2 times as many bites as *Peter*.

How many bites does *Linda* have?

A. 7 **B.** 9 **C.** 10 **D.** 13 **E.** 14

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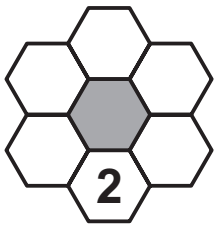
12. We have a puzzle with hexagonal cells (like the one shown on the right).
You must put the prime numbers 2, 3, 5, 7, 11 and 13 into the white cells, in each cell exactly one.
The sum of the numbers in two neighboring cells must not be a prime number.
The 2 is already in place.



In how many different ways can the puzzle be completed?

A. 12 **B.** 24 **C.** 36 **D.** 60 **E.** 120

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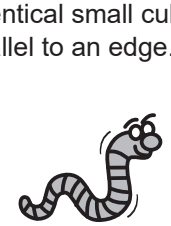
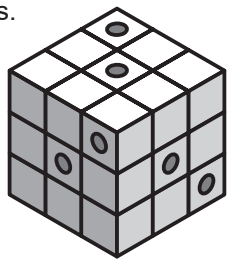
13. Six woodworms live in an old wooden cube that is made up of identical small cubes.
Each woodworm drills a tunnel all the way through the cube, parallel to an edge.
The diagram shows the entrances to the six tunnels.





How many small cubes are still completely intact?

A. 10 **B.** 12 **C.** 13 **D.** 15 **E.** 21

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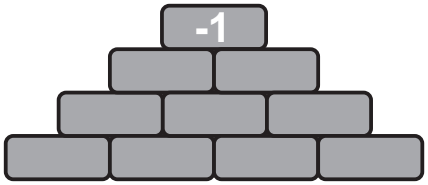
14. *Ali* wants to fill each cell with −1 or +1.
In all rows, except the bottom one, the number in each cell is equal to the product of the two numbers below it.
In the top cell there is −1, as shown in the diagram.



In how many different ways can *Ali* fill in the cells?

A. 4 **B.** 8 **C.** 10 **D.** 12 **E.** 15

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15. There are 15 points equally spaced around a circle.

How many regular polygons can you make by selecting the vertices from these points?

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

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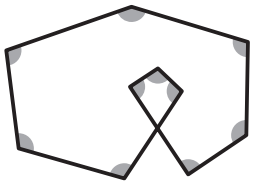
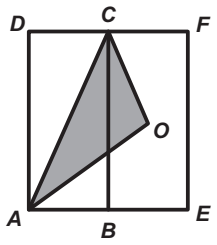
16. There are ten line segments drawn that form ten equal angles, as shown in the picture.



How many degrees is each angle?

A. 96° **B.** 105° **C.** 108° **D.** 115° **E.** 120°

17. In the picture next to this, we see two rectangles of the same size: *ABCD* and *BEFC*.
We also see a grey triangle *AOC*, where point *O* is the center of rectangle *BEFC*.



What fraction of rectangle *AEFD* is grey?

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

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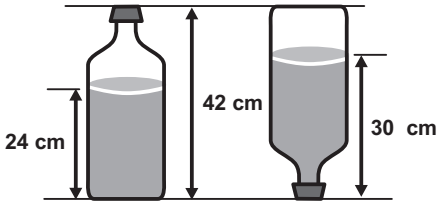
18. The picture shows how the water level in a bottle changes when you turn the bottle upside down.
The bottle has a capacity of 4.5 liters and the water part in the first picture has the shape of a cylinder.



In liters, what is the volume of water in the bottle?

A. 2.4 **B.** 2.5 **C.** 2.7 **D.** 3.0 **E.** 3.5

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19. Five students -- *Anne*, *Ben*, *Carly*, *David* and *Elsje* -- took part together in a 1.6 km running race.
One of them did not finish. The others all finished in different times.
Afterwards they said:
– *Anne*: "I finished second or third."
– *Ben*: "I finished the race and I was not fourth."
– *Carly*: "I was fourth."
– *David*: "I did not finish the race."
– *Elsje*: "I was first."
Exactly one student was lying; all the others told the truth.

Who was lying?

A. *Anne* **B.** *Ben* **C.** *Carly* **D.** *David* **E.** *Elsje*

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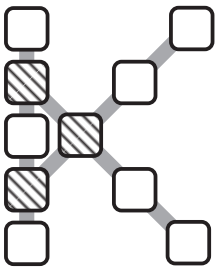
20. We have a K-shaped grid of boxes.
The numbers 1 to 10 must be placed in the boxes, in each box exactly one.
Every straight line of boxes -- 5 in a vertical line or 4 in a diagonal line -- must have the same sum.
We want this sum to be as large as possible.



What will be the sum of the three numbers in the shaded boxes?

A. 13 **B.** 18 **C.** 23 **D.** 26 **E.** 27

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21. In the first round in a chess tournament, each player plays exactly once against every other player.
You get 3 points for a win, 1 point for a draw and −1 point for a loss.
At the end of the tournament, the sum of the scores of all the players together is 90.

How many players took part in the tournament?

A. 5 **B.** 8 **C.** 10 **D.** 12 **E.** 15

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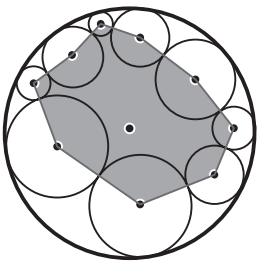
22. We see a big circle with radius 10 and nine smaller circles that touch each other pairwise and also touch the large circle.
The centers of the small circles together form the (grey) polygon.
The sum of the distances from these centers to the center of the large circle is d.



What is the perimeter of this polygon, written in terms of d?

A. $90 - 2d$ **B.** $90 - d$ **C.** $180 - 2d$ **D.** $180 - d$ **E.** $180 + 2d$

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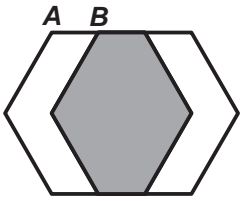
23. For positive whole numbers a and b, the equality $a^b - ab = 2026$ is true.

What is the value of $a + b$?

A. 10 **B.** 13 **C.** 15 **D.** 1013 **E.** 1015

24. There are two regular hexagons with side length of 60, as shown in the diagram. The right hexagon was created by sliding the left hexagon horizontally by the length of *AB*.
This creates three regions of equal area.



What is the length of *AB* ?

A. 30 **B.** 39 **C.** 40 **D.** 45 **E.** 52

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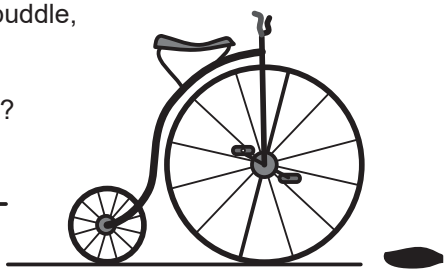
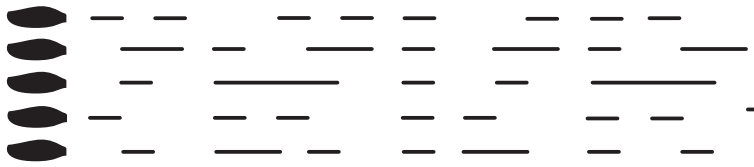
25. *Amber* rides her high-wheel bicycle (velocipede) through a small puddle, as shown in the picture.



What could the track of her tires look like after she rides through it?

A.
B.
C.
D.
E.



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26. *Ron* has eight sticks, all with different whole-number lengths.
You cannot make a triangle using any combination of three of these sticks.

What is the shortest possible length of the longest stick?

A. 32 **B.** 33 **C.** 34 **D.** 35 **E.** 36

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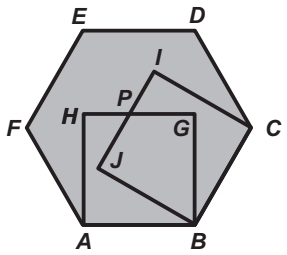
27. We have a regular hexagon *ABCDEF*.
Inside the hexagon, two squares are drawn: *ABGH* and *BCIJ* .
P is the intersection point of the line segments *GH* and *IJ*.



What is the ratio of the areas of triangles *JGP* and *BGJ*?

A. 1 : 4 **B.** $\sqrt{3}$: 6 **C.** 1 : 3 **D.** 2 : 5 **E.** 1 : 2

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28. *Charles* and *Paul* take turns taking toffees from a box.
Charles takes 1, then *Paul* takes 2, then *Charles* takes 3, then *Paul* takes 4, and so on.
If at some point there are not enough toffees left to keep following this pattern, the person whose turn it is takes all the remaining toffees. In the end, *Charles* has a total of 407 toffees.

How many toffees were in the box at the beginning?

A. 814 **B.** 827 **C.** 834 **D.** 841 **E.** 851

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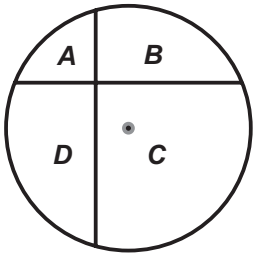
29. We have a circle with radius 12 cm.
Two chords are drawn that are perpendicular to each other: one is 3 cm from the center and the other is 4 cm from the center.
They divide the circle into four regions: *A*, *B*, *C* and *D* (as shown in the diagram).



By how many square centimeters is *A* + *C* larger than *B* + *D*?

A. 9 **B.** 16 **C.** 36 **D.** 48 **E.** 60

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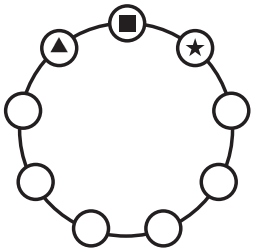
30. *Ann* places the digits 1 to 9 in a circle, in some order.
She can read three adjacent digits clockwise to form a three-digit number ▲■★ (as shown in the diagram), and in this way she gets nine numbers.
One of these nine numbers is *a*.
The number *a* is a divisor of the sum of the other eight numbers.



How many possible values can *a* have?

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