wizBRAIN 2019

calculators are not allowed

you may use 75 minutes

Only a pencil, an eraser and scribbling paper are allowed

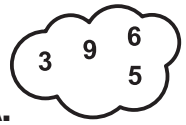
results and prizes will arrive at school at the end of May

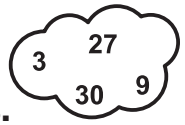
answers will be posted on the website about March 31th

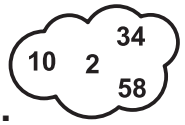
solutions will be posted on the website about April 22th

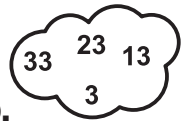
wizBRAIN
havo 1, 2 & 3
vwo 1 & 2
vmbo 3 & 4 m.u.v. basisberoepsgerichte leerweg.

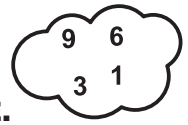
1. In which cloud are only even numbers?

A. 

B. 

C. 

D. 

E. 

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2. How many hours are ten quarters of an hour?

A. $2\frac{1}{2}$ **B.** 3 **C.** 4 **D.** $5\frac{1}{2}$ **E.** 40

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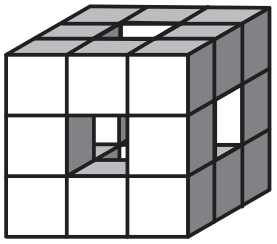
3. *Peter* used little cubes to make a cube with edges of three little cubes long. Then *Frank* made three tunnels by taking away a number of little cubes, see picture.



How many little cubes does the cube still have?

A. 15 **B.** 18 **C.** 20 **D.** 21 **E.** 22

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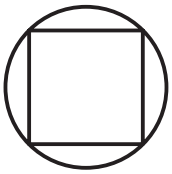
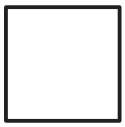
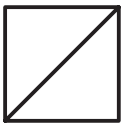
4. You have to draw the following figures without taking your pencil from the paper and without drawing a single line more than once.

Which figure you cannot draw then?

A. 
B. 
C. 
D. 
E. 

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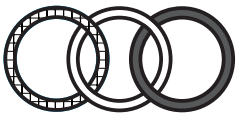
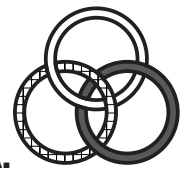
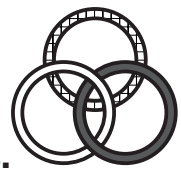
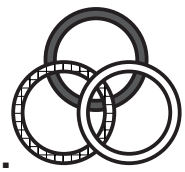
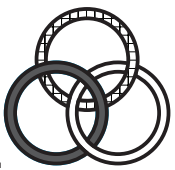
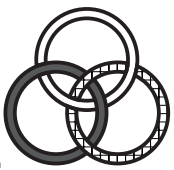
5. In the picture you see three interlocked rings.



In which of the following pictures do you see the three rings interlocked in the same way?

A. 
B. 
C. 
D. 
E. 

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6. By numbering all pages of a book the digit 0 is used five times and the digit 8 is used six times.

Which of the following numbers might be the number of the last page?

A. 48 **B.** 58 **C.** 60 **D.** 68 **E.** 88

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7. At a run *Chantal* finished before *Babet*, *Agnes* finished after *Devika*, *Babet* finished before *Devika* and *Elisa* finished before *Agnes*.

Who came last?

A. *Agnes* **B.** *Babet* **C.** *Chantal* **D.** *Devika* **E.** *Elisa*

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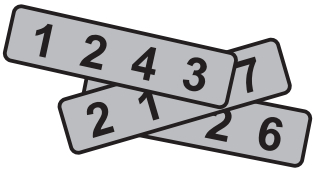
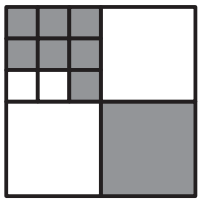
8. On each of three strips of paper a four-digit number is written.
The strips partly cover each other and therefore three digits cannot be seen.
When you add the numbers on the strips you will get the answer 10126.



Which three digits cannot be seen?

A. 3, 5 and 6 **B.** 4, 5 and 6 **C.** 4, 5 and 7 **D.** 4, 6 and 7 **E.** 5, 6 and 7

9. A large square is divided into smaller little squares.



Which part of the large square is grey?

A. $\frac{2}{5}$ **B.** $\frac{5}{12}$ **C.** $\frac{4}{9}$ **D.** $\frac{4}{7}$ **E.** $\frac{2}{3}$

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10. *Bert* and *Ernie* have an equal number of apples. *Bert* divides his apples into six equal portions. *Ernie* divides his apples into five equal portions. *Ernie*'s portions all have two more apples than *Bert*'s portions.

How many apples does *Bert* have?

A. 50 **B.** 54 **C.** 60 **D.** 66 **E.** 70

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11. Five friends are sitting at the table. Each has a number of cupcakes.
Everyone gives one to each of the others.
The given cupcakes are being eaten immediately.
Half the number of cupcakes of the friends remain.

How many cupcakes did the five friends together have, initially?

A. 20 **B.** 24 **C.** 30 **D.** 40 **E.** 60

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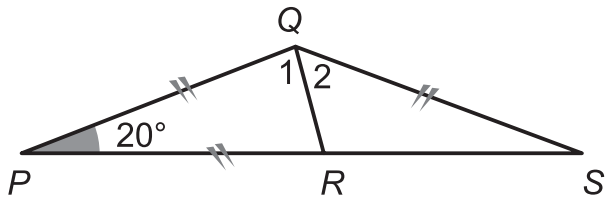
12. $PQ=PR=QS$ en $\angle P = 20°$.



How big is $\angle Q_2$?

A. 50° **B.** 60° **C.** 65° **D.** 70° **E.** 75°

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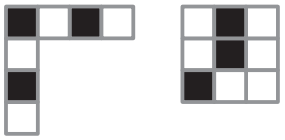
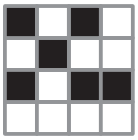
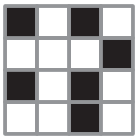
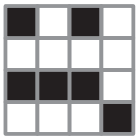
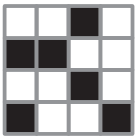
13. Which of the following squares you cannot make using the two pieces alongside?



A.  **B.**  **C.**  **D.**  **E.** 

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14. *Albert*, *Berend*, *Chris*, *Dimitri* and *Elmo* saw each other at a party and amongst themselves they shook hands once with all they knew already. *Albert* shook hands once, *Berend* shook hands twice, *Chris* did so three times and *Dimitri* shook hands four times.

How many times did *Elmo* shake hands?

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

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15. *Julia* takes free throws in basketball. Out of 20 attempts she scored 55%.
Five attempts later her average score increased to 56%.

How many of the last five attempts were a score?

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

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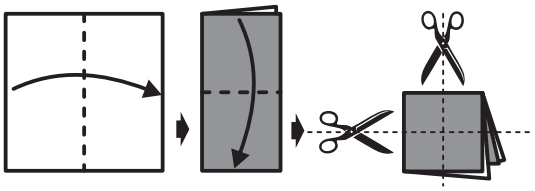
16. *Samira* folds a square piece of paper twice and then cuts it twice, as shown in the picture.
She will get several pieces of paper then.



How many of these pieces are squares?

A. 3 **B.** 4 **C.** 5 **D.** 6 **E.** 8

17. *Mike* has dogs, cats, cows and kangaroos as pets.

He has 24 pets, $\frac{1}{8}$ of them are dogs, $\frac{3}{4}$ are not cows and $\frac{2}{3}$ are not cats.

How many kangaroos does *Mike* have?

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

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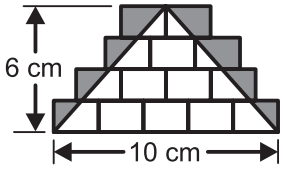
18. In the figure you see a number of identical rectangles and a triangle of base 10 cm and height 6 cm.
The part of the rectangles outside the triangle is coloured grey.



What is the area of the grey region?

A. 10 cm² **B.** 12 cm² **C.** 14 cm² **D.** 15 cm² **E.** 21 cm²

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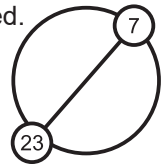
19. The numbers 1, 2, 3, and so on, are being placed on a circle, in order, equally spaced.
The number 23 will be opposite the number 7, see figure.



What is the largest number that can be placed this way?

A. 30 **B.** 32 **C.** 34 **D.** 36 **E.** 38

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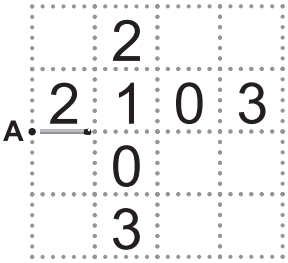
20. *Alicia* wants to make a path of matches.
The path has to follow the dotted lines and has to start and finish at point A.
In some boxes the number of matches is indicated that should be on the edge of that box. *Alicia* wants to use as few matches as possible.
She has already placed the first match.



How many matches does she need in total?

A. 12 **B.** 14 **C.** 16 **D.** 18 **E.** 20

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21. *Anna* has two cylindrical candles of different height and diameter.
The first candle has a burning time of 6 hours, the second one has a burning time of 8 hours.
Anna lights both candles at the same time and after three hours both candles have the same height.

What was the ratio of the heights of the first and the second candle before they were lighted?

A. 3:5 **B.** 4:3 **C.** 5:4 **D.** 7:3 **E.** 8:5

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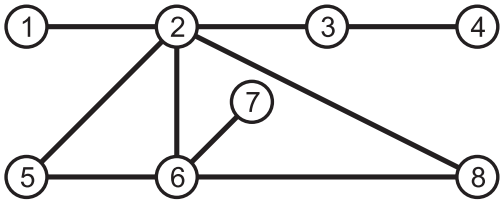
22. *John* wants to colour each of the eight circles in the figure red, white or blue.
He does this in such a way that the circles which are connected by a line segment will get different colours.



Which two circles must be given the same colour by *John* then?

A. 1 and 6 **B.** 2 and 7 **C.** 3 and 6 **D.** 4 and 5 **E.** 5 and 8

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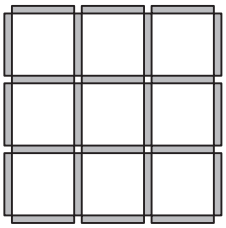
23. *Lotte* has bought 50 little bottles of water for 1 euro each.
She sells all these bottles at a higher price, the same price for each bottle.
After *Lotte* has sold 40 bottles she has already made a profit of 10 euros.

For how much money altogether does she sell the 50 bottles?

A. 70 euros **B.** 75 euros **C.** 80 euros **D.** 90 euros **E.** 100 euros

24. *Thomas* has red, blue, yellow and green sticks, all equally long.
With these sticks he lays the figure as shown alongside.
He wants to do it in such a way that the four sticks bordering one box are of different colours.



What is the least number of green sticks he needs then?

A. 3 **B.** 4 **C.** 5 **D.** 6 **E.** 7

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25. *Els* has a box with 60 chocolates.
Of this she gives $\frac{1}{10}$ part to Anton, then $\frac{1}{9}$ part of the remainder to Bert, next $\frac{1}{8}$ part of the remainder to Carlijn, then $\frac{1}{7}$ part of the remainder to Dineke and so on, untill she gives $\frac{1}{2}$ part of what still remains to her last friend.

How many chocolates has *Els* left for herself?

A. 1 **B.** 2 **C.** 3 **D.** 4 **E.** 6

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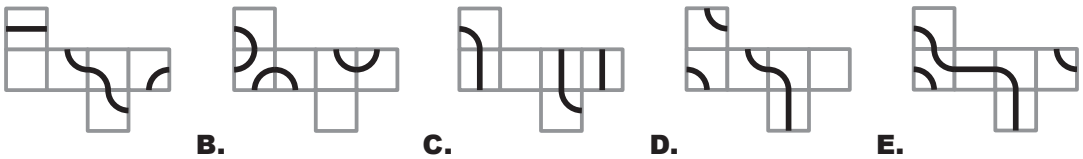
26. *Amira* draws a squiggly line on a cube without lifting her pencil off the cube.
She stops when her pencil arrives at the starting point with her pencil. After this she unfolds the cube.

Which of the following nets can be of her cube?



A. **B.** **C.** **D.** **E.**

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27. The ratio of the savings of *Petra* and *Shannon* was 5:3.
When *Petra* bought a tablet for 160 euros, the ratio changed into 3:5.

What were *Petra*'s savings in euros before she bought the tablet?

A. 192 **B.** 200 **C.** 250 **D.** 400 **E.** 420

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28. A table tennis tournament is being played by teams of three persons.
Each player in a team plays exactly once against every player from all the other teams.
For organizational reasons no more than 250 games can be played.

What is the largest number of teams that can enter the tournament?

A. 7 **B.** 8 **C.** 9 **D.** 10 **E.** 11

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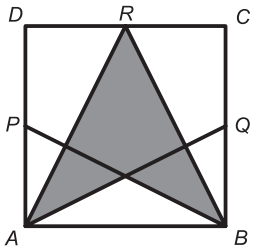
29. In square *ABCD* the midpoints of the sides *AD*, *BC* and *CD* are *P*, *Q* and *R*, see figure.



Which part of the square is coloured grey?

A. $\frac{3}{8}$ **B.** $\frac{7}{16}$ **C.** $\frac{1}{2}$ **D.** $\frac{5}{8}$ **E.** $\frac{3}{4}$

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30. 700 passengers travel on a train of 18 wagons.
In any five adjacent wagons are 199 passengers in total.

How many passengers are in the middle two wagons of the train?

A. 70 **B.** 77 **C.** 78 **D.** 96 **E.** 103