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**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 22th

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

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1. What is the time at 17 hours after 17:00?
- A.** 8:00 **B.** 9:00 **C.** 10:00 **D.** 11:00 **E.** 12:00

2. *Jean* adds three different positive whole numbers. Her answer is 7.
Susan multiplies the same three numbers.

What is *Susan's* answer?

- A.** 5 **B.** 8 **C.** 9 **D.** 10 **E.** 12

3. A group of girls is standing in a circle.
Eva is the fourth girl to the left of *Laura* and the seventh girl to *Laura's* right.

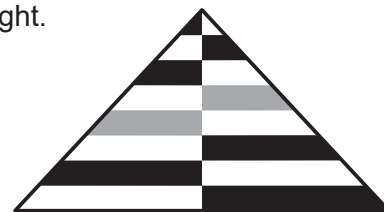
How many girls are in the circle?

- A.** 9 **B.** 10 **C.** 11 **D.** 12 **E.** 13

4. Which number should you subtract from -17 to get -33?

- A.** -50 **B.** -16 **C.** 16 **D.** 40 **E.** 50

5. In the isosceles triangle alongside, each strip has the same height.



Which fraction of the triangle is white?

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

6. Which of the following statements is true?

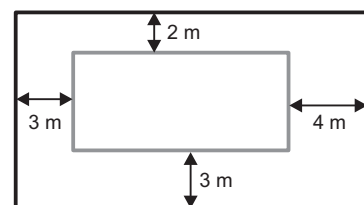
- A.** $\frac{4}{1} = 1,4$ **B.** $\frac{5}{2} = 2,5$ **C.** $\frac{6}{3} = 3,6$ **D.** $\frac{7}{4} = 4,7$ **E.** $\frac{8}{5} = 5,8$

7. *Amal* has 20 euros. Each of her four sisters has 10 euros.

How many euros should *Amal* give to each of her sisters so that each of the five girls has the same amount of euros?

- A.** € 2,- **B.** € 2,50 **C.** € 4,- **D.** € 5,- **E.** € 8,-

8. The sides of both rectangles alongside are parallel.



What is the difference in meters between their perimeters?

- A.** 12 **B.** 16 **C.** 20 **D.** 21 **E.** 24

9. The shape alongside has been made by placing two white hearts and two grey hearts on top of each other.
The areas of the hearts are 1 cm^2 , 4 cm^2 , 9 cm^2 and 16 cm^2 .



How many cm^2 of the grey hearts is visible?

- A.** 9 **B.** 10 **C.** 11 **D.** 12 **E.** 13

- 10.** The figure shows seven equilateral triangles, formed by the dotted line and the black zig-zag line together. The dotted line has length 20.



What is the length of the black zig-zag line?

- A.** 30 **B.** 40 **C.** 50 **D.** 60 **E.** 70

- 11.** *Mary Ant* and *Josh Ladybird* walk along a long branch.

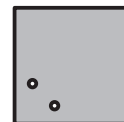


Mary walks from left to right and has walked $\frac{2}{3}$ of the length of the branch.
Josh walks from right to left and has walked $\frac{3}{4}$ of the length of the branch.

Which part of the length of the branch separates the two little animals?

- A.** $\frac{1}{12}$ **B.** $\frac{3}{8}$ **C.** $\frac{5}{12}$ **D.** $\frac{1}{2}$ **E.** $\frac{5}{7}$

- 12.** *Mark* has folded a sheet of paper twice. Then he punched a hole in the paper. Next he unfolded the paper completely again. The sheet of paper looks like the one alongside then.



How did *Mark* fold the paper?

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

- 13.** At a play at school $\frac{1}{6}$ th of the public were adults, the rest were children. Of the children $\frac{2}{5}$ ths were boys.

Which fraction of the public were girls?

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

- 14.** *Emma*, *Ina*, *Rita* and *Tina* are sisters. They are (in another order) 3, 8, 12 and 14 years old. *Emma* is younger than *Rita*. The sum of the ages of *Emma* and *Tina* is divisible by 5. The sum of the ages of *Tina* and *Rita* is divisible by 5 as well.

How old is *Ina*?

- A.** 3 jaar **B.** 5 jaar **C.** 8 jaar **D.** 12 jaar **E.** 14 jaar

- 15.** *Tycho* is going to make a running scheme. He wants to run two days a week, the same days each week. He never wants to run on consecutive days.

How many schemes can *Tycho* make?

- A.** 8 **B.** 10 **C.** 12 **D.** 14 **E.** 16

- 16.** Numbers should be written in the following table. If you add the first three numbers you should get sum 22. If you add the final three numbers you should get sum 25. If you add all five numbers you should get sum 35.

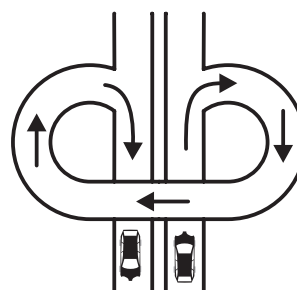
Stefano started already, see figure.

3					4
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What should the answer be if *Stefano* multiplies the numbers in the grey squares?

- A.** 0 **B.** 39 **C.** 48 **D.** 63 **E.** 108

17. A car follows the arrows.



By how many degrees should it turn then in total?

- A. 180 B. 270 C. 360 D. 450 E. 540

18. Huey wants to saw a plank in 9 pieces of equal length. He marks the sawing points on the plank to start with. Dewey wants to saw the same plank in 8 pieces of equal length. He also marks the sawing points on the plank. Louie saws the plank at all marked sawing points.

Into how many pieces will he saw the plank?

- A. 15 B. 16 C. 17 D. 18 E. 19

19. 35% of the participants in the Sydney Marathon were female. The number of male participants was 252 more than the number of female participants.

How many people ran in the Sydney Marathon?

- A. 802 B. 810 C. 822 D. 824 E. 840

20. Monica wants to write a number in each square of the table. Every time she adds the numbers in two squares that share an edge, she should get the same answer. She has already written down two numbers.

2		
		3

What is the answer Monica should get when she adds all numbers of the full table?

- A. 18 B. 20 C. 21 D. 22 E. 23

21. All angles of a triangle are of different size. All three angles, measured in degrees, are whole numbers as well.

What is the **smallest possible outcome** if you add the smallest and the largest angle?

- A. 61° B. 90° C. 91° D. 120° E. 121°

22. Ten kangaroos are in a line as can be seen in the figure.



Kangaroos that look at each other change places, but they do not turn around. This is repeated until there is no pair of kangaroos facing each other anymore.

How many times do kangaroos change places?

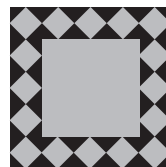
- A. 15 B. 16 C. 18 D. 20 E. 21

23. Gülben will add either 2 or 5 to each of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and 9. She wants to get the least possible number of different answers.

How many answers will she get?

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

- 24.** Alongside you see the tablecloth of *Fatima*. It has a regular pattern.



What percentage of the tablecloth is black?

- A.** 16 **B.** 24 **C.** 25 **D.** 32 **E.** 36

- 25.** A sequence starts with the digits 2 and 3. You obtain every new digit of the sequence by multiplying the last two digits of the sequence and taking the last digit of that result. So the sequence starts with 2, 3, 6, 8, 8,

What is the 2017th digit of this sequence?

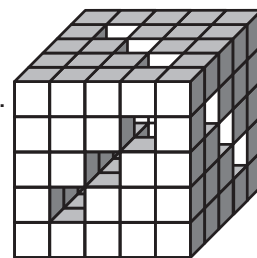
- A.** 2 **B.** 3 **C.** 4 **D.** 6 **E.** 8

- 26.** Every 3 minutes a bus leaves from the airport to the town centre. A car departs from the airport at the same time as a bus and drives the same route as the bus. It takes a bus 60 minutes to do the trip, it takes the car 35 minutes.

How many busses does the car pass, not counting the bus that left the airport at the same time?

- A.** 8 **B.** 9 **C.** 10 **D.** 11 **E.** 13

- 27.** *Bert* has 125 small cubes. A number of those he has glued together. He made one big cube with nine tunnels that pass through the whole cube.



How many small cubes did *Bert* leave unused?

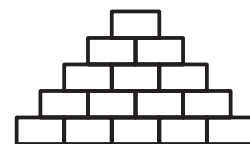
- A.** 36 **B.** 39 **C.** 42 **D.** 45 **E.** 52

- 28.** Two runners are training on a 720 meters round track. Both run at a constant speed. The first runner runs clockwise and runs one round in 4 minutes. The second runs counterclockwise and runs one round in 5 minutes. They meet each other a number of times.

How many meters does the second runner run in between two meetings?

- A.** 320 **B.** 330 **C.** 340 **D.** 350 **E.** 355

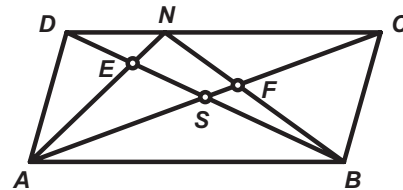
- 29.** *Sarah* wants to write a positive integer in each square. Each number in a square should be the sum of the two numbers in the adjacent squares immediately below it.



What is the largest number of odd integers that *Sarah* can write down?

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

- 30.** The figure shows a parallelogram *ABCD* of area 1. *S* is the intersection of the diagonals. Point *N* is on side *CD*. *E* is the point of intersection of *AN* and *BD*. *F* is the point of intersection of *BN* and *AC*. Together, the areas of triangle *AED* and triangle *BCF* are $\frac{1}{3}$.



What is the area of quadrilateral *ESFN*?

- A.** $\frac{1}{14}$ **B.** $\frac{1}{12}$ **C.** $\frac{1}{10}$ **D.** $\frac{1}{8}$ **E.** $\frac{1}{6}$