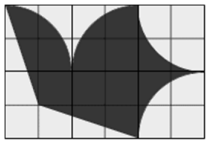
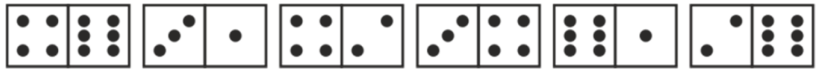
25. Flying club designed a flag of a flying dove on a square grid as shown. The area of the dove is 192 cm^2. All parts of the perimeter of the dove are either parts of a circle or straight lines. What are the dimensions of the flag?



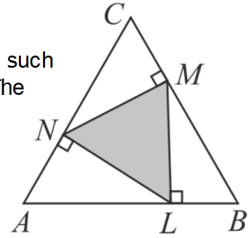
(A) 6 cm x 4 cm (B) 12 cm x 8 cm
(C) 20 cm x 12 cm (D) 24 cm x 16 cm (E) 30 cm x 20 cm

26. Domino tiles are said to be arranged correctly if the number of spots at the ends that touch for any two adjacent dominoes are the same. Piter laid six dominoes in a line as shown in the diagram. He can make a move by either swapping the position of any two dominoes or by rotating one domino. What is the smallest number of moves he needs to make to arrange all the tiles correctly?



(A) 1 (B) 2 (C) 3 (D) 4 (E) it is impossible to do

27. Points N, M and L lie on the sides of the equilateral triangle ABC, such that $NM \perp BC$, $ML \perp AB$ and $LN \perp AC$ as shown in the diagram. The area of triangle ABC is 36. What is the area of triangle LMN?

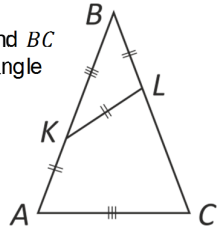


(A) 9 (B) 12
(C) 15 (D) 16 (E) 18

28. Alex, Boris and Clod went shopping. Boris spent only 15 % of what Clod spent. However, Alex spent 60 % more than Clod. Together they spent 55 USD. How much did Alex spend?
(A) 3 (B) 20 (C) 25 (D) 26 (E) 32

29. Viola is practising the long jump. The average distance she has jumped so far today is 3.80 m. On her next jump, she jumped 3.99 m and her average increased to 3.81 m. What distance must she jump with her next jump to increase her average to 3.82 m?
(A) 3.97 m (B) 4.00 m (C) 4.01 m (D) 4.03 m (E) 4.04 m

30. In isosceles triangle ABC, points K and L are marked on sides AB and BC respectively so that $AK = KL = LB$ and $KB = AC$. What is the size of angle ABC?



(A) 30° (B) 35°
(C) 36° (D) 40° (E) 44°

Laiks uzdevumu risināšanai – 75 minūtes!

Starptautiskā konkursa
„Ķengurs”
uzdevumi

22.03.2018. 7.-8. klases

3 point problems

1. What is the value of (20 + 18): (20 – 18)?
(A) 18 (B) 19 (C) 20 (D) 34 (E) 36

2. When the letters of the word MAMA are written vertically above one another, the word has a vertical line of symmetry. Which of these words also have a vertical line of symmetry when written in the same way?

(A) ROOT (B) BOOM (C) BOOT (D) LOOT (E) TOOT

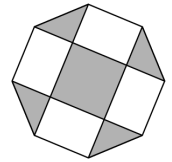
3. A triangle has sides of length 6, 10 and 11. An equilateral triangle has the same perimeter. What is the length of each side of the equilateral triangle?
(A) 6 (B) 9 (C) 10 (D) 11 (E) 27

4. Which number should replace $star$ in the equation $2 \cdot 18 \cdot 14 = 6 \cdot * \cdot 7$ to make it correct?
(A) 8 (B) 9 (C) 10 (D) 12 (E) 15

5. The panels of Fergus' fence are full of holes. One morning, one of the panels fell flat on the floor.Which of the following could Fergus see as he approaches his fence?

(A)  (B)  (C)  (D)  (E) 

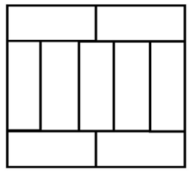
6. Bertie the Builder is assembling stairs which are 15 cm tall and 15 cm deep. How many stairs does he need to reach the second floor of a building 3 m above the first floor?



(A) 8 (B) 10 (C) 15 (D) 20 (E) 25

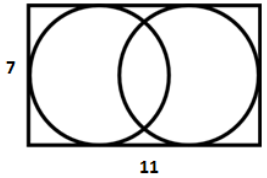
7. The diagram shows a regular octagon with side length 1. What is the total area shaded?
(A) 1.5 (B) 1.8 (C) 2 (D) 2.4 (E) 3

8. A large rectangle is made up of nine identical rectangles whose longest sides are 10 cm long. What is the perimeter of the large rectangle?



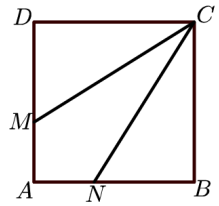
(A) 40 cm (B) 48 cm
(C) 76 cm (D) 81 cm (E) 90 cm

9. The diagram shows a rectangle of dimensions 7 × 11 containing two circles that each touch three of the sides of the rectangle. What is the distance between the centres of the two circles?



(A) 1 (B) 2
(C) 3 (D) 4 (E) 5

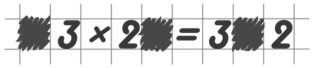
10. Square $ABCD$ has sides of length 3 cm. The points M and N lie on AD and AB so that CM and CN split the square into three pieces of the same area. What is the length of DM?



(A) 0.5 cm (B) 1 cm
(C) 1.5 cm (D) 2 cm (E) 2.5 cm

4 point problems

11. Martha multiplied two 2-digit numbers correctly on a piece of paper. Then she scribbled out three digits as shown. What is the sum of the three digits she scribbled out?



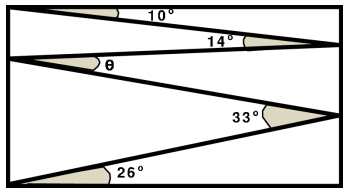
(A) 5 (B) 6 (C) 9 (D) 12 (E) 14

12. A rectangle is divided into 40 identical squares. The rectangle contains more than one row of squares. Andrew found the middle row of squares and coloured it in. How many squares did he not colour?
(A) 20 (B) 30 (C) 32 (D) 35 (E) 39

13. Philip wants to know the weight of a book to within half a gram. His weighing scales only weigh to within 10 grammes. What is the smallest number of identical copies of this book that Philip should weigh together to be able to do this?
(A) 5 (B) 10 (C) 15 (D) 20 (E) 50

14. A lion is hidden in one of three rooms. A note on the door of room 1 reads "The lion is here". A note on the door of room 2 reads "The lion is not here". A note on the door of room 3 reads "2 + 3 = 2 × 3".Only one of these sentences is true. In which room is the lion hidden?
(A) In room 1. (B) In room 2. (C) In room 3.
(D) It may be in any room. (E) It may be in either room 1 or room 2.

15. Valeriu draws a zig-zag line inside a rectangle, creating angles of $10^\circ, 14^\circ, 33^\circ, 26^\circ$ as shown. What is the size of angle θ?

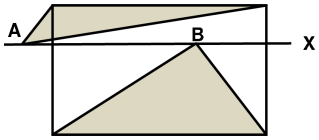


(A) 11° (B) 12°
(C) 16° (D) 17° (E) 33°

16. Alice wants to write down a list of prime numbers less than 100, using each of the digits 1,2,3,4 and 5 exactly once and no other digits. Which prime number must be in her list?
(A) 2 (B) 5 (C) 31 (D) 41 (E) 53

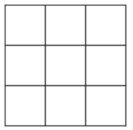
17. A hotel on an island in the Caribbean advertises using the slogan "350 days of sun every year!". According to the advert, what is the smallest number of days Willi Burn has to stay at the hotel in 2018 to be certain of having two consecutive days of sun?
(A) 17 (B) 21 (C) 31 (D) 32 (E) 35

18. The diagram shows a rectangle and a line X parallel to its base. Two points A and B lie on X. The sum of the areas of the two shaded triangles is 10 cm^2. What is the area of the rectangle?



(A) 18 cm^2 (B) 20 cm^2 (C) 22 cm^2
(D) 24 cm^2 (E) It depends on the positions of A and B

19. James wrote a different integer from 1 to 9 in each cell of a 3 × 3 table. He calculated the sum of the integers in each of the rows and in each of the columns of the table. Five of his answers are 12, 13, 15, 16 and 17, in some order. What is his sixth answer?



(A) 17 (B) 16 (C) 15 (D) 14 (E) 13

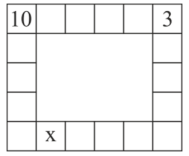
20. Eleven points are marked from left to right on a straight line. The sum of all the distances between the first point and the other points is 2018. The sum of all the distances between the second point and the other points, including the first one, is 2000. What is the distance between the first and second points?
(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

5 point problems

21. There are three candidates for one position as class monitor and 130 students are voting. Suhaimi has 24 votes so far, while Khairul has 29 and Akmal has 37. How many more votes does Akmal need in order to be elected?
(A) 13 (B) 14 (C) 15 (D) 16 (E) 17

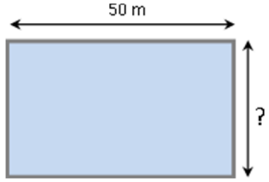
22. When a passenger drove 5/7 of the way, he started looking out of the window and kept on looking until he had to drive 1/4 of the way that he had driven without looking out of the window. What part of the way had the passenger been looking out of the window?
(A) $\frac{1}{14}$ (B) $\frac{3}{28}$ (C) $\frac{1}{7}$ (D) $\frac{5}{28}$ (E) $\frac{2}{7}$

23. Ria wants to write a number in every cell on the picture. In each cell, the number she writes is equal to the sum of the two numbers in the cells with which this cell shares an edge. Two of the numbers are given in the diagram. What number will she write in the cell marked x?



(A) 10 (B) 7 (C) 13 (D) −13 (E) −3

24. Simon runs around the perimeter of the pool shown in the diagram while Ian swims lengths of the pool. Simon runs three times faster than Ian swims. Ian swam six lengths of the pool in the same time Simon ran around the pool five times. How wide is the pool?



(A) 25 m (B) 40 m
(C) 50 m (D) 80 m (E) 180 m

7.-8. klases