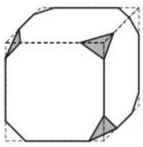
**C6.** The florist had 24 white, 42 red, and 36 yellow roses left. How many identical bunches can she make at most, if she wants to use all the remaining flowers?

**A** 4 **B** 6 **C** 8 **D** 10 **E** 12

**C7.** A cube has all its corners cut off, as shown. How many edges does the resulting shape have?

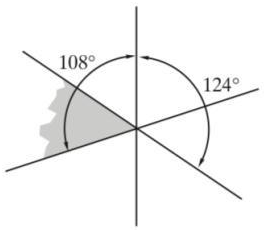
**A** 26 **B** 30 **C** 36 **D** 40 **E** Another answer





**C8.** Three lines intersect at one point. Two angles are given in the figure. How many degrees does the grey angle have?

**A** 52° **B** 53° **C** 54° **D** 55° **E** 56°




**C9.** Dan has 9 coins, each being 2 litas; his sister Ann has 8 coins, each being 5 litas. What the least number of coins should they give to each other in order to equalize their money?

**A** 4 **B** 5 **C** 8 **D** 12 **E** It is impossible to do

**C10.** How many squares can be drawn by joining the dots with line segments?



**A** 2 **B** 3 **C** 4 **D** 5 **E** 6

## 4-POINT QUESTIONS

**C11.** With what number of identical matches is it impossible to form a triangle?

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

**C12.** The famous mathematician Augustus de Morgan claimed that he was $x$ years old in the year of $x^2$. He is known to have died in 1871. When was he born?

**A** 1806 **B** 1848 **C** 1849 **D** 1899 **E** Another answer

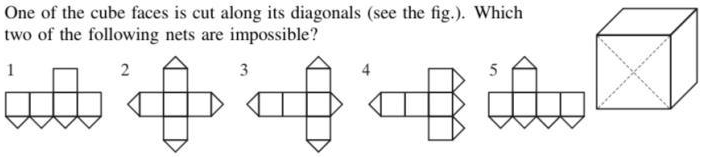
**C13.** We decided to visit four islands $A$, $B$, $C$ and $D$ by a ferry-boat starting from the mainland. $B$ can be reached only from $A$ or from the mainland, $A$ and $C$ are connected to each other and with the mainland, and $D$ is connected only with $A$. What is the minimum necessary number of ferry runs, if we want to visit all the islands?

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

**C14.** Tom and Jerry cut two equal rectangles. Tom got two rectangles with the perimeter of 40 cm each, and Jerry got two rectangles with the perimeter of 50 cm each. What were the perimeters of the initial rectangles?

**A** 40 cm **B** 50 cm **C** 60 cm **D** 80 cm **E** 90 cm

**C15.** One of the cube faces is cut along its diagonals (see the fig.). Which two of the following nets are impossible?



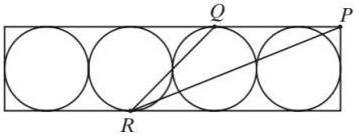

**A** 1 and 3 **B** 1 and 5 **C** 3 and 4 **D** 3 and 5 **E** 2 and 4

**C16.** Points $A$, $B$, $C$, and $D$ are marked on the straight line in some order. It is known that $AB = 13$, $BC = 11$, $CD = 14$ and $DA = 12$. What is the distance between the farthest two points?

**A** 14 **B** 38 **C** 50 **D** 25 **E** Another answer



**C17.** Four tangent congruent circles of radius 6 cm are inscribed in a rectangle.

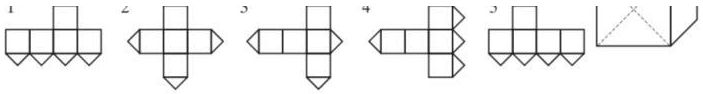



If $P$ is a vertex and $Q$ and $R$ are the points of tangency, what is the area of triangle $PQR$?

**A** 27 cm$^2$ **B** 45 cm$^2$ **C** 54 cm$^2$ **D** 108 cm$^2$ **E** 180 cm$^2$

**C18.** Seven cards are in a box. The numbers from 1 to 7 are written on these cards. The first sage takes at random 3 cards out of the box and the second sage takes 2 cards (2 cards are left in the box). Then, looking at his cards, the first sage says to the second one: "I know that the sum of the numbers of your cards is even". What is the sum of card numbers of the first

LIVEWORKSHEETS



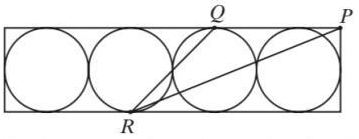
**A** 1 and 3 **B** 1 and 5 **C** 3 and 4 **D** 3 and 5 **E** 2 and 4

**C16.** Points $A$, $B$, $C$, and $D$ are marked on the straight line in some order. It is known that $AB = 13$, $BC = 11$, $CD = 14$ and $DA = 12$. What is the distance between the farthest two points?

**A** 14 **B** 38 **C** 50 **D** 25 **E** Another answer



**C17.** Four tangent congruent circles of radius 6 cm are inscribed in a rectangle.




If $P$ is a vertex and $Q$ and $R$ are the points of tangency, what is the area of triangle $PQR$?

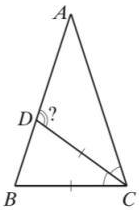
**A** 27 cm$^2$ **B** 45 cm$^2$ **C** 54 cm$^2$ **D** 108 cm$^2$ **E** 180 cm$^2$

**C18.** Seven cards are in a box. The numbers from 1 to 7 are written on these cards. The first sage takes at random 3 cards out of the box and the second sage takes 2 cards (2 cards are left in the box). Then, looking at his cards, the first sage says to the second one: "I know that the sum of the numbers of your cards is even". What is the sum of card numbers of the first sage?

**A** 10 **B** 12 **C** 6 **D** 9 **E** 15

**C19.** In an isosceles triangle $ABC (AB = AC)$, the bisector $CD$ of the angle $C$ is equal to the base $BC$. Then the angle $CDA$ is equal to

**A** 90° **B** 100° **C** 108° **D** 120°
**E** Impossible to determine




**C20.** A wooden cube $5 \times 5 \times 5$ is obtained by sticking together $5^3$ unit cubes. What is the largest number of unit cubes visible from some point?

**A** 75 **B** 74 **C** 60 **D** 61 **E** 62

## 5-POINT QUESTIONS

**C21.** In the picture any letter stands for some digit (different letters for different digits, equal letters for equal digits). Find the largest possible value of the number KAN.

$$\begin{array}{r} \text{K A N} \\ -\ \text{G A R} \\ \hline \text{O O} \end{array}$$

**A** 987 **B** 876 **C** 865 **D** 864 **E** 785

**C22.** In a company of classmates, the girls make more than 45%, but less than 50%. What is the smallest possible number of girls in that company?

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

**C23.** A boy always says the truth on Thursdays and Fridays, always tells lies on Tuesdays, and randomly tells the truth or lies on other days of the week. On seven consecutive days he was asked what his name was, and on the first six days he gave the following answers in turn: John, Bob, John, Bob, Pit, Bob. What did he answer on the seventh day?

**A** John **B** Bob **C** Pit **D** Kate **E** Another answer

**C24.** Moving at constant speed, a lorry has driven from town $A$ to town $B$ in an hour and 30 min, and from town $B$ to $C$ in an hour. A car, moving by the same way also at constant speed, has driven from town $A$ to $B$ in an hour. How much time did its trip take from town $B$ to $C$?

**A** 45 min **B** 40 min **C** 35 min **D** 30 min **E** 90 min



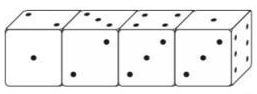
**C25.** Let us call three prime numbers special, if the product of these numbers is five times as great as their sum. How many special threes there exist?

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

**C26.** Two sets of five-digit numbers are given: set $A$ of numbers, the product of digits of which is equal to 25, and set $B$ of numbers, the product of digits of which is equal to 15. Which set consists of more numbers? How many times more numbers are there?

**A** Set $A$, $\frac{5}{3}$ times **B** Set $A$, 2 times **C** Set $B$, $\frac{5}{3}$ times
**D** Set $B$, 2 times **E** The numbers of elements are equal

**C27.** Four identical dice are arranged in a row (see the fig.).



Each dice has faces with 1, 2, 3, 4, 5 and 6 points, but the dice are not standard, i.e., the sum of the points on the opposite faces of the dice is not necessarily [redacted]. What is the total sum of the points in all the 6 touching faces of the dice?

LIVEWORKSHEETS

asked what his name was, and on the first six days he gave the following answers in turn: John, Bob, John, Bob, Pit, Bob. What did he answer on the seventh day?

**A** John **B** Bob **C** Pit **D** Kate **E** Another answer

**C24.** Moving at constant speed, a lorry has driven from town $A$ to town $B$ in an hour and 30 min, and from town $B$ to $C$ in an hour. A car, moving by the same way also at constant speed, has driven from town $A$ to $B$ in an hour. How much time did its trip take from town $B$ to $C$?

**A** 45 min **B** 40 min **C** 35 min **D** 30 min **E** 90 min



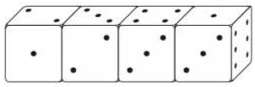
**C25.** Let us call three prime numbers special, if the product of these numbers is five times as great as their sum. How many special threes there exist?

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

**C26.** Two sets of five-digit numbers are given: set $A$ of numbers, the product of digits of which is equal to 25, and set $B$ of numbers, the product of digits of which is equal to 15. Which set consists of more numbers? How many times more numbers are there?

**A** Set $A$, $\frac{5}{3}$ times **B** Set $A$, 2 times **C** Set $B$, $\frac{5}{3}$ times
**D** Set $B$, 2 times **E** The numbers of elements are equal

**C27.** Four identical dice are arranged in a row (see the fig.).



Each dice has faces with 1, 2, 3, 4, 5 and 6 points, but the dice are not standard, i.e., the sum of the points on the opposite faces of the dice is not necessarily equal to 7. What is the total sum of the points in all the 6 touching faces of the dice?

**A** 19 **B** 20 **C** 21 **D** 22 **E** 23

**C28.** Some straight lines are drawn on the plane so that all angles $10^\circ$, $20^\circ$, $30^\circ$, $40^\circ$, $50^\circ$, $60^\circ$, $70^\circ$, $80^\circ$, $90^\circ$ are among the angles between these lines. Determine the smallest possible number of these straight lines.

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

**C29.** The greatest common divisor of two positive integers $m$ and $n$ is 12, and their least common multiple is a square. How many squares are among the 5 numbers

$$\frac{n}{3},\quad \frac{m}{3},\quad \frac{n}{4},\quad \frac{m}{4},\quad m \cdot n?$$

**A** 1 **B** 2 **C** 3 **D** 4 **E** Impossible to determine

**C30.** Let $M$ denote the product of the perimeter of a triangle and the sum of the three heights of the same triangle. Which of the following statements is false, if the area of the triangle is 1?

**A** $M$ can be greater than 1000 **B** Always $M > 6$ **C** $M$ can be equal to 18
**D** If the triangle is rectangular, then $M > 16$ **E** $M$ can be less than 12



## JUNIOR (grades 9 and 10)

3-POINT QUESTIONS

**J1.** There are 5 boxes and each box contains some cards labeled K, M, H, P, T, as shown below. Peter wants to remove cards out of each box so that at the end each box contained only one card, and different boxes contained cards with different letters. Which card remains in the first box?




**A** It is impossible **B** T **C** M **D** H **E** P

**J2.** Frank and Gabriel competed in running 200 meters. Gabriel ran the distance in half a minute, and Frank in a hundredth part of one hour. Who and by how many seconds was faster?

**A** Gabriel by 36 seco[redacted]
**D** Frank by 4 seconds **E** They did it by equal time

LIVEWORKSHEETS