



Till läraren

Välkommen till Kängurutävlingen – Matematikens hopp 2026 *Junior*

- Tävlingen genomförs under perioden 19 – 27 mars. *Uppgifterna får inte användas tidigare.*
- Du får tillgång till facit och ett kalkylblad. I kalkylbladet matar du in elevernas svar och får en sammanställning av klassens resultat. Facit öppnas klockan 12.00 på tävlingsdagen, lösenord till facit finns i mailet du fått.
- Redovisa resultatet senast 30 april. Efter det görs både problem och facit fritt åtkomliga.
- *Tävlingen är individuell* och eleverna får arbeta i 60 minuter. De tre delarna ska genomföras vid *ett och samma tillfälle*.
- Eleverna behöver ha tillgång till papper för att kunna göra anteckningar och figurer. Linjal behövs inte.
- *Miniräknare eller sax får inte användas. Observera att telefoner, datorplattor och datorer inte heller får användas.*
- Läs igenom problemen själv i förväg så att eventuella oklarheter kan redas ut.
- Kontrollera att kopiorna blir tillräckligt tydliga så att nödvändiga detaljer syns.
- Besök *Kängurusidan* på ncm.gu.se/kanguru där vi publicerar eventuella rättelser och ytterligare information.
- Samla in problemformulären efter tävlingen. Problemen får inte spridas utanför klassrummet förrän efter 30 april, men ni får gärna arbeta med problemen i klassen.

Mikael Passares stipendium

Mikael Passare (1959–2011) var professor i matematik vid Stockholms universitet. Han hade ett stort intresse för matematikundervisning på alla nivåer och var den som tog initiativ till Kängurutävlingen i Sverige. Mikael Passares minnesfond har instiftat ett stipendium för att uppmärksamma elevers goda matematikprestationer. Information om hur du nominerar elever kommer tillsammans med facit och kommentarer.

Lycka till med årets Känguru!

e-post: kanguru@ncm.gu.se

För administrativa frågor, vänd dig till Ann-Charlotte Forslund:
ann-charlotte.forslund@ncm.gu.se
031–786 69 85

För innehållsfrågor, vänd dig till Ulrica Dahlberg:
ulrica.dahlberg@ncm.gu.se



Svarsblankett

Markera ditt svar i rätt ruta

Uppgift	A	B	C	D	E	Poäng
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Namn:.....

Klass:.....

Kängurutävlingen – Matematikens hopp 2026

Junior



Three point problems

- 1 Which of these expressions has the smallest value?

A: $202 \div 6$ B: $202,6$ C: $20 + 26$ D: $202 - 6$ E: $20 \cdot 26$

[Sweden]

- 2 Emily fills in the blanks in the expression below with a plus sign, a minus sign, and a multiplication sign in any order:

$$2 \square 0 \square 2 \square 6 =$$

What number *cannot* be the result of this?

A: -10 B: -4 C: 4 D: 5 E: 8

- 3 Five people ate 19 plums. Some ate three each, everyone else ate four each.
How many ate four plums?

A: 1 B: 2 C: 3 D: 4 E: 5

[Latvia]

- 4 The digits of the year 2026 have the following two properties: The sum of the digits of the number is 10 and exactly two of its four digits are the same.

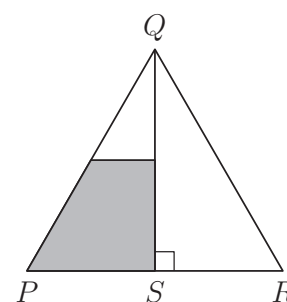
How many years in the 21st century (years 2000–2099) have the same two properties?

A: 1 B: 2 C: 3 D: 4 E: 5

[Spain]

- 5 Aleksandar draws an equilateral triangle PQR . Point S is the midpoint of PR . A line is drawn parallel to the base PR through the midpoint of QS .

What is the shaded part of the triangle PQR ?



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

[Iran]

- 6 How many positive two-digit integers are there such that if the tens digit is removed, the number becomes one-sixth of the original?

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



- 7 Abdul writes down a 7-digit number, 193391a. His number is divisible by 6.

What is the value of a ?

A: 0 B: 2 C: 4 D: 6 E: 8

[Belarus]

- 8 What is the value of the expression $(1 - 2) - (3 - 4) - (5 - 6) - \dots - (2025 - 2026)$?

A: -1013 B: -1011 C: 1011 D: 1013 E: 2024

[Belarus]

Four point problems

- 9 Cristina wants to write the numbers 1, 2, 3, 4, 5, 6, and 7 in the squares. She has already written two numbers, 2 and 5. She wants the sum of the numbers in each pair of adjacent squares to be odd. She also wants the sum of the numbers in three consecutive squares to not be a multiple of 3.

What is the sum of the numbers she will write in the shaded boxes?

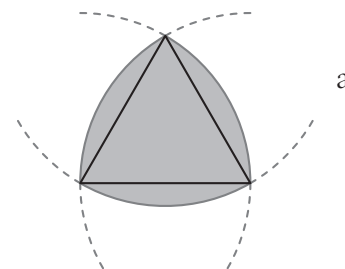


A: 5 B: 7 C: 9 D: 11 E: 13

[Mexico]

- 10 The figure shows an equilateral triangle and three arcs, each with a center at one of the triangle's vertices and radius equal to the length of the triangle's side. The length of the triangle's side is 2 cm.

What is the perimeter of the shaded shape?



A: π cm B: 6 cm C: 2π cm D: 8 cm E: 4π cm

[Spain]

- 11 We know that a farmer has dogs, sheep, goats, pigs, and chickens on his farm, and he has more chickens than pigs, more pigs than goats, more goats than sheep, more sheep than dogs, and half as many dogs as chickens.

What is the largest number of animals that we can know for sure that the farmer has?

A: 28 B: 30 C: 32 D: 34 E: 36

[Great Britain]

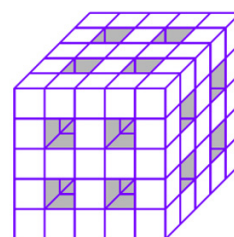


- 12 After a day trip, five hikers are bitten by mosquitoes. They have 7, 9, 10, 13 and 14 mosquito bites. The total number of bites that Anton and Linda have is three times as many as Kai has. The total number of bites that Mia and Linda have is twice as many as Peter has. How many bites does Linda have?

A: 7 B: 9 C: 10 D: 13 E: 14

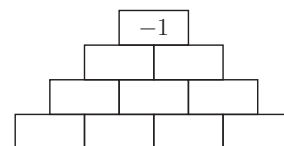
[Germany]

- 13 Some small cubes were removed from a cube consisting of 125 identical small cubes. Only as many cubes were removed as were required to create twelve identical cuboid-shaped tunnels that run between two opposite side faces of the cube, as shown in the figure. How many small cubes were removed?



A: 36 B: 44 C: 48 D: 52 E: 60

- 14 Ali wants to fill each square with the number -1 or $+1$. Except in the bottom row, the number in each square is equal to the product of the two numbers directly below it. The number in the top square is -1 , as shown.

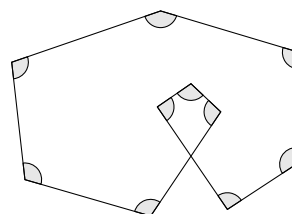


In how many different ways can Ali do this?

A: 4 B: 8 C: 10 D: 12 E: 15

[Iran]

- 15 In the figure, ten angles are marked, all of which are equal in size. How large is each of these angles?



A: 96° B: 105° C: 108° D: 115° E: 120°

[Catalonia]

- 16 Five boys – Alan, Ben, Carl, David, and Ernest – participated in a race. One of them did not finish and the others finished at different times. When later asked about the race, they said:

Alan: I came second or third.

Ben: I finished and I did not come fourth.

Carl: I came first.

David: I came fourth.

Ernest: I did not come fourth.

One of the boys lied and all the others told the truth.

Which of the boys lied?

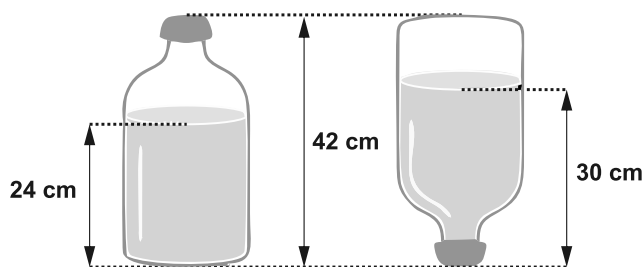
A: Alan B: Ben C: Carl D: David E: Ernest

[Poland]



Five point problems

- 17 The pictures show how the depth of water in a bottle changes when it is turned upside down. The volume of the bottle is 4.5 liters and the entire water-filled part in the left picture is cylindrical in shape.



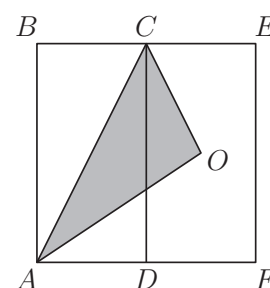
What is the volume of the water in the bottle?

- A: 2.4 l B: 2.5 l C: 2.7 l D: 3.0 l E: 3.5 l

[Vietnam]

- 18 $ABCD$ and $DCEF$ are congruent rectangles and O is the midpoint of rectangle $DCEF$.

What fraction of the area of rectangle $ABEF$ is triangle ACO ?



- A: $\frac{1}{4}$ B: $\frac{1}{2}$ C: $\frac{1}{3}$ D: $\frac{1}{5}$ E: $\frac{2}{9}$

[Peru]

- 19 Determine the value of n in the following equation:

$$2^{13} + 2^{13} + 4^7 + 4^7 + 4^7 + 4^8 = 2^n$$

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

- 20 In the first round of a chess tournament, each player plays every other player exactly once. A player receives 3, 1, or -1 points for a win, a draw, or a loss, respectively. At the end of the first round, the sum of all players' points is 90.

How many players participated in the tournament?

- A: 5 B: 8 C: 10 D: 12 E: 15

[Myanmar]

- 21 For two non-negative integers a and b the equality $a^b - ab = 2026$.

What is the value of $a + b$?

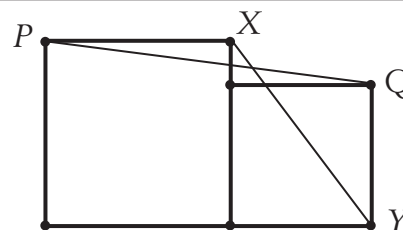
- A: 10 B: 13 C: 15 D: 1013 E: 1015

[Belarus]



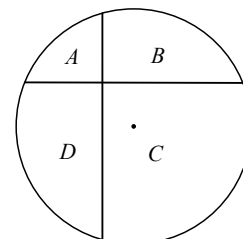
- 22 Two squares of unknown side length are shown in the figure.

What is the ratio $PQ : XY$?



- A) 2 : 1 B) 3 : 2 C) $\sqrt{2} : 1$ D) $\sqrt{3} : \sqrt{2}$ E) More information needed

- 23 Two perpendicular chords are drawn in a circle with radius 12 cm. They divide the circle into four regions: A , B , C , and D , as shown in the diagram. One chord is 3 cm from the center of the circle and the other is 4 cm from the center.



How many cm^2 larger is the sum of the areas of regions A and C compared to the sum of the areas of regions B and D ?

- A: 9 B: 16 C: 36 D: 48 E: 60

[Hungary]

- 24 Charles and Paul take turns taking candy from a box: Charles takes one, then Paul takes two, then Charles takes three, then Paul takes four, and so on. When there are not enough candy left to follow the pattern, the boy whose turn it is takes all the remaining candy. When the box is empty, Charles has a total of 407 candy.

How many candy were there in the box to begin with?

- A: 814 B: 827 C: 834 D: 841 E: 851

[Italy]