Till läraren

Välkommen till Kängurutävlingen – Matematikens hopp 2026
Cadet

- 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
Cadet

Three-point problems

1 In which diagram does the shaded part have the largest area?

Figure 1 

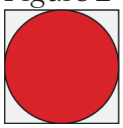
Figure 2 

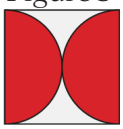
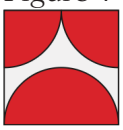
Figure 3 

Figure 4 

A: Figure 1 B: Figure 2 C: Figure 3 D: Figure 4
E: All shaded parts have the same area

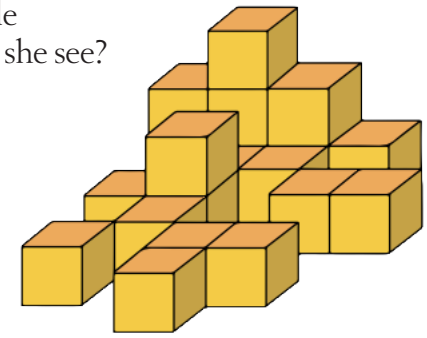
[*Spain*]

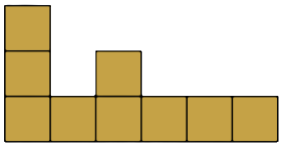
2 The year 2026 is called ”all-even” because 2026 consists of only even digits. How many years will pass before the year is first an ”all-even” year where its digits are all different?

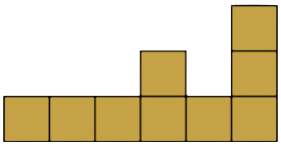
A: 2 B: 20 C: 22 D: 38 E: 42

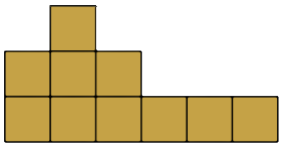
[*Malaysia*]

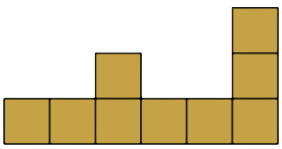
3 Karla the kangaroo is looking at the pile of twenty boxes, as shown. What does she see?

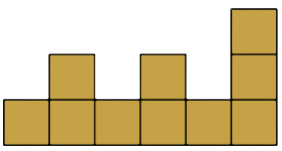


A: 

B: 

C: 

D: 

E: 

[*Iran*]

4 There are three different routes from city A to city B. There are five different routes from city B to city C. Ahmad travels from city A to city C, via city B. He wishes to return to city A via city B by a route that is not completely the same as the route he used from A to C. How many possible routes can he choose for his return trip?

A: 5 B: 6 C: 10 D: 12 E: 14

[*Afghanistan*]

5 Jo wants to place the numbers 2, 0, 2 and 6 in the boxes shown $\frac{\square+\square}{\square-\square}$ with one number in each box and to calculate the result. What is the smallest **positive** result she can get?

A: $\frac{1}{6}$ B: $\frac{1}{4}$ C: $\frac{1}{3}$ D: $\frac{1}{2}$ E: $\frac{2}{3}$

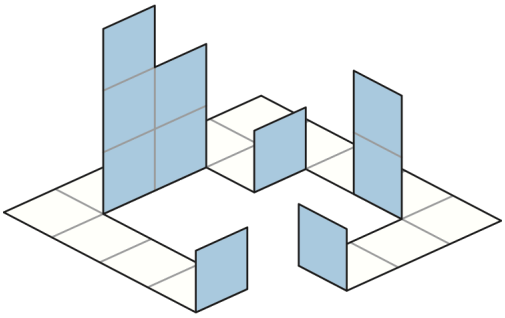
[*Switzerland*]

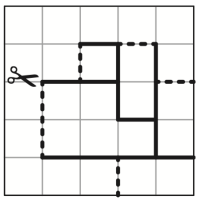
6 Which of the following numbers is **not** the sum of two or more consecutive positive whole numbers?

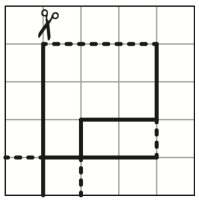
A: 5 B: 6 C: 7 D: 8 E: 9

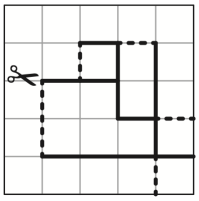
[*Germany*]

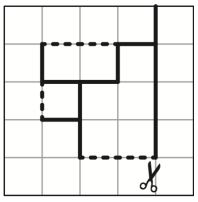
7 Ada has used a paper template to make the figure shown. The dashed lines on the template show where she would fold and the solid lines show where she would cut.
Which template did Ada use?

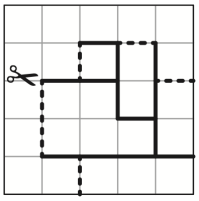


A 

B 

C 

D 

E 

[*Norway*]

8 Four seats in a row numbered 1-4 from left to right are occupied by Andi, Budi, Citra, and Dira, but not in that order, with the following conditions:

- Andi is not in seat 1.
- Budi is directly to the right of Andi
- Dira is not at either end.
- Citra is not in seat 3.

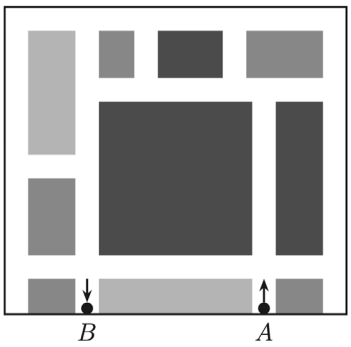
In what order, from left to right, do they sit?

A: Budi, Dira, Andi, Citra B: Citra, Andi, Dira, Budi C: Citra, Dira, Andi, Budi
D: Citra, Dira, Budi, Andi E: Dira, Citra, Budi, Andi

[*Indonesia*]

Four-point problems

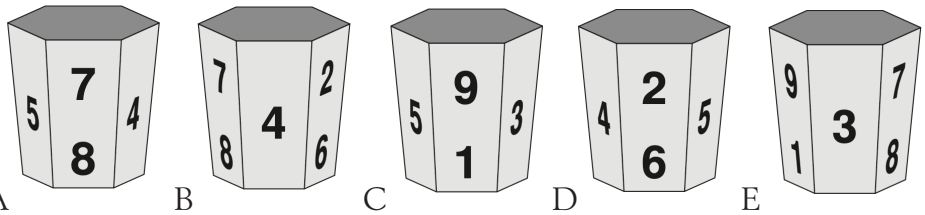
9 A map of part of Kangarooville is shown in the diagram, where the white areas represent roads. The Kangarooville rules specify that at every junction, vehicles can only go straight on or turn right. Anna wants to travel from point A to point B along the roads shown. What is the smallest number of times she must turn right?



A: 4 B: 5 C: 6 D: 7 E: 9

[*China*]

10 My mug has the digits 1 to 9 on it. It can be seen in four of the following pictures. Which picture shows a different mug?



[*Germany*]

11 Mariam has 13 dollars less than the total amount Ria and Emma have. Ria has 5 dollars more than the total amount Emma and Mariam have. How many dollars does Emma have?

A: 18 B: 17 C: 8 D: 7 E: 4

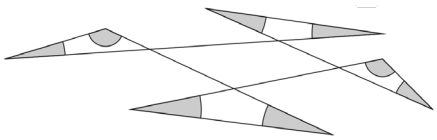
[*Marocco*]

12 Five squirrels and a hare live in a magic forest. Each squirrel eats six cherries a day. Each day the hare eats five more cherries than the mean number of cherries eaten by all six animals. How many cherries does the hare eat each day?

A: 10 B: 11 C: 12 D: 13 E: 14

[*Portugal*]

13 What is the sum of all the shaded angles?



A: 180° B: 240° C: 270° D: 360° E: 450°

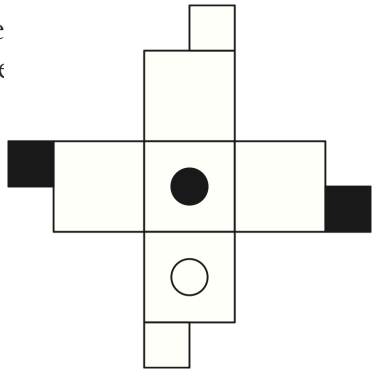
[*Switzerland*]

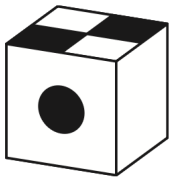
14 The units digit of a number is 1. Julio removes this digit to get a new number that is 2026 less than the original number. What is the sum of the digits of the original number?

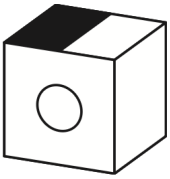
A: 10 B: 12 C: 14 D: 16 E: 18

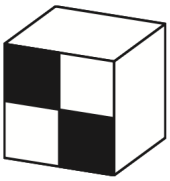
[*Vietnam*]

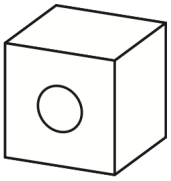
15 The figure on the right shows a template from which a cube be made. Which of the following shows the completed cube

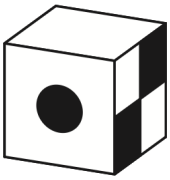


A 

B 

C 

D 

E 

[*China*]

16 In the given addition problem, each letter used represents a single digit, and different letters represent different digits. What is the value of $A + B + C$?

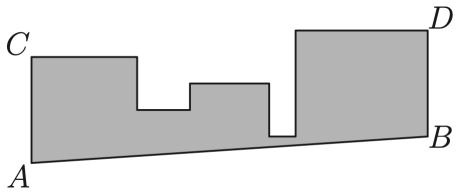
$$\begin{array}{r} A\,B\,C \\ +\,A\,C\,B \\ \hline C\,4\,A \end{array}$$

A: 16 B: 17 C: 18 D: 19 E: 20

[*Iraq*]

Five-point problems

17 A shape is made from five touching squares with areas of 1 m^2, 4 m^2, 9 m^2, 16 m^2 and 25 m^2 in some order, whose bases all lie on some common line. The point A is a vertex of the left-hand square. Valeriu cuts the shape along the line AB, which is parallel to CD. What is the area of the remaining shape, as shown?



A: 44,5 m^2 B: 45,5 m^2 C: 46,5 m^2 D: 47,5 m^2 E: 48,5 m^2

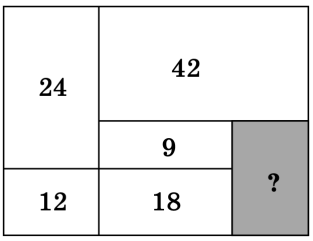
[*Croatia*]

18 I have two old watches, my grandfather's watch and my father's watch. My grandfather's watch loses 5 minutes every hour, and my father's watch gains 5 minutes every hour. Yesterday I set them to the correct time at 09:00 PM. When I woke up the next morning, my grandfather's watch showed 08:00 AM. What time did my father's watch show at that moment?

A: 09.00 B: 09.30 C: 10.00 D: 10.30 E: 11.00

[*Saudi Arabia*]

19 The rectangle shown is divided into six rectangular parts. The areas of five of the parts are given. What is the area of the sixth part?



A: 14 B: 15 C: 16 D: 18 E: 20

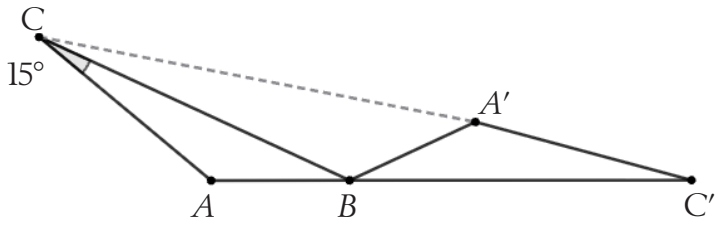
[*Belarus*]

20 Anna, Bea, and Cili went to a stationery store to buy pens and rulers. Each of them bought exactly 10 items in total. Anna bought twice as many pens as Cili bought rulers. Bea bought twice as many pens as Anna bought rulers. Altogether, the girls bought an even number of rulers. How many pens did Bea buy?

A: 2 B: 4 C: 6 D: 7 E: 8

[*Hungary*]

21 Triangle $A'BC'$ is obtained by rotating triangle ABC around vertex B. The points C, A', and C′ lie on a straight line as do the points A, B and C′. The size of $\angle ACB$ is 15°. What is the size of $\angle BAC$?



A: 105° B: 115° C: 120° D: 135° E: 140°

[*Catalonia*]

22 A large cube with a side-length of 4, consists of small cubes with a side-length of 1. What is the smallest number of small cubes that need to be removed from the large cube to increase the surface area of the shape by 50%?

A: 6 B: 8 C: 10 D: 12 E: 18

[*Ukraine*]

23 How many of the four statements below are true?

- Exactly two of the statements are false.
- This statement is true.
- The previous statement is true.
- The three statements above are false.

A: 0 B: 1 C: 2 D: 3 E: 4

[*United States*]

24 Deindra wants to arrange the five numbers 1, 2, 3, 4, and 5 into a row such that the last number is odd, and the sum of any three consecutive numbers is divisible by the first number of the three. How many such arrangements could she make?

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

[*Hong Kong*]