



Till läraren

Välkommen till Kängurutävlingen – Matematikens hopp 2021 *Ecolier, för elever i årskurs 3 och 4*

- Tävlingen genomförs under perioden 18 mars – 15 maj. *Uppgifterna får inte användas tidigare.*
- När du redovisar antalet deltagare får du tillgång till facit och ett kalkylblad där du matar in elevernas svar. Du får då en sammanställning av klassens resultat. Sista dag för redovisning av antalet deltagare är den *15 maj*.
- Redovisa resultatet senast *20 maj*.
- *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. Där finns också information om hur kalkylbladet fungerar.
- Samla in problemformulären efter tävlingen. Problemen får inte spridas utanför klassrummet förrän efter 20 maj, 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 eller Peter Nyström:

Ulrica.Dahlberg@ncm.gu.se

Peter.Nystrom@ncm.gu.se



Svarsblankett

Markera ditt svar i rätt ruta

Uppgift	A	B	C	D	E	Poäng
1						
2						
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Namn:.....

Klass:.....

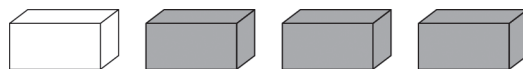
Kängurutävlingen – Matematikens hopp 2021

Ecolier

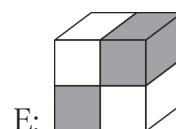
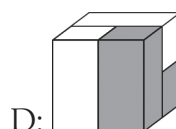
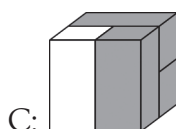
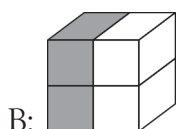
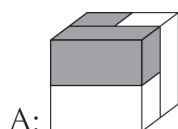


Three points problems

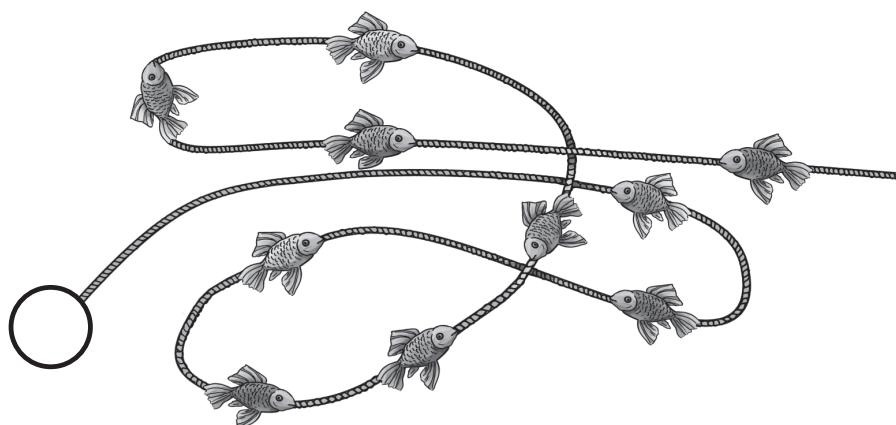
- 1 Erik has 4 bricks:



Which of the cubes below can he make with his 4 bricks?



-
- 2 How many fish will have their heads pointing towards the ring when we straighten the line?



- A: 3 B: 5 C: 6 D: 7 E: 8

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- 3 When you put the 4 puzzle pieces together correctly, they form a rectangle with a calculation on it.

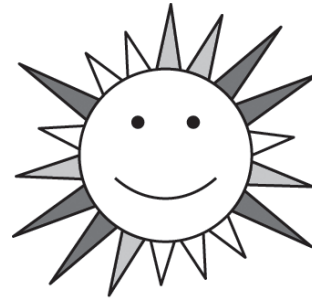
What is the result of this calculation?



- A: 6 B: 15 C: 18 D: 23 E: 32



4 Which of the following is part of the picture?

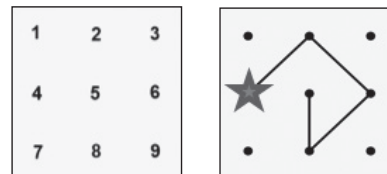


- A: B: C: D: E:

5 Five children competed in a shooting challenge. Ricky scored the most points. Which target was Ricky's?

- A: B: C: D: E:

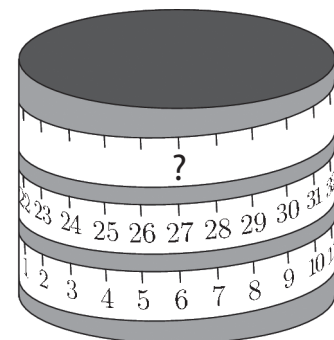
6 A number is created by starting at the star, following the line and writing down the digits along the line while passing. For example the red line shown represents the number 42685.



Which of the following lines represents the greatest number?

- A: B: C: D: E:

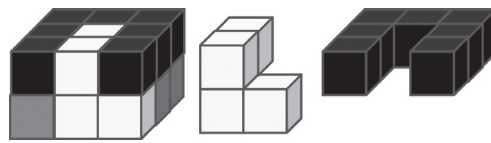
7 A measuring tape is wrapped around a cylinder. Which number should be at the place shown by the question mark?



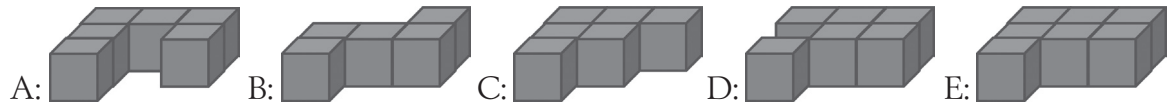
- A: 33 B: 42 C: 48 D: 53 E: 69



- 8 18 cubes are coloured white or grey or black and are arranged as shown. The figures on the right show the white and the black parts.



Which of the following is the grey part?

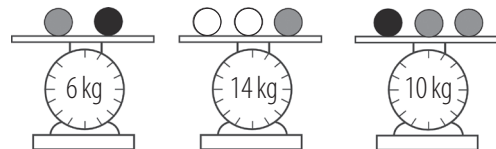


Four points problems

- 9 Grandfather fired a silver and a gold rocket at the same time. The rockets exploded into 20 stars in total. The gold rocket exploded into 6 more stars than the silver one. How many stars did the gold rocket explode into?

A: 9 B: 10 C: 12 D: 13 E: 15

- 10 Rosana has some balls of 3 different colours. Balls of the same colour have the same weight. What is the weight of each white ball?



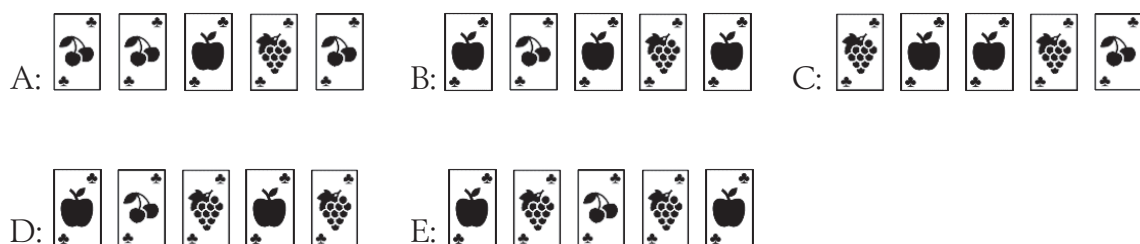
A: 3 kg B: 4 kg C: 5 kg D: 6 kg E: 7 kg

- 11 Ellen has 3 different types of cards in a game:



She chooses 2 cards from the set and swaps their places. She wants to arrange the cards so that all the cards with the same fruit on are next to each other.

For which set is this *not* possible?

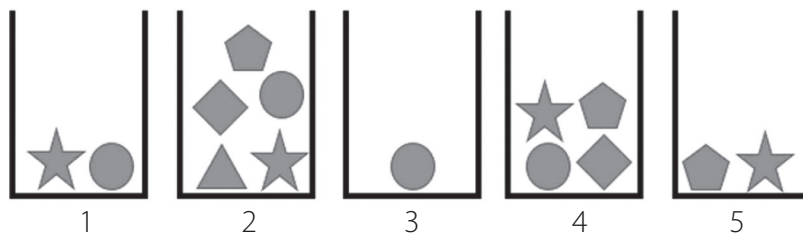




- 12 Some children are selling muffins at the school festival.
 After selling 6 muffins, there are 70 kr in the drawer.
 After selling a total of 16 muffins there are 120 kr in the drawer.
 How much were there in the drawer at the start?

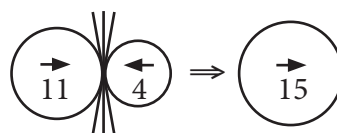
A: 20 kr B: 30 kr C: 40 kr D: 50 kr E: 60 kr

- 13 Hanna wants to pick 5 different shapes from the boxes.
 She can only pick 1 shape from each box.
 Which shape must she pick from box 4?

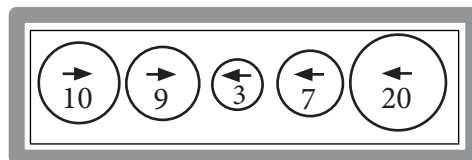


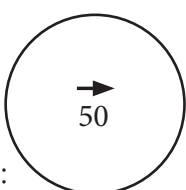
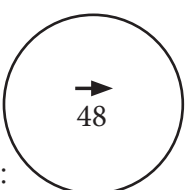
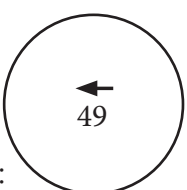
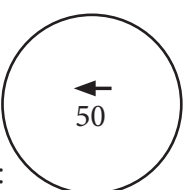
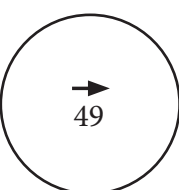
A:  B:  C:  D:  E: 

- 14 The 5 balls shown begin to move simultaneously in the directions indicated by their arrows. When two balls going in opposite directions collide, the bigger ball swallows the smaller one and increases its value by the value of the smaller ball. The bigger ball continues to move in its original direction, as shown in the following example.



What is the final result of the collisions of the 5 balls shown?



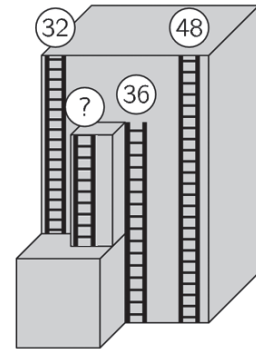
A:  B:  C:  D:  E: 



- 15 The Koala ate some leaves from 3 branches. Each branch had 20 leaves.
The Koala ate a few leaves from the first branch and then ate as many leaves from the second branch as were left on the first branch. Then it ate 2 leaves from the third branch.
How many leaves in total were left on the 3 branches?

A: 20 B: 22 C: 28 D: 32 E: 38

- 16 On a tall building there are 4 fire escape ladders, as shown.
The heights of 3 ladders are at their tops.
What is the height of the shortest ladder?



A: 12 B: 14 C: 16 D: 20 E: 22

Five points problems

- 17 Alma plays with 3 cups on the kitchen table.
She takes the left-hand cup, flips it over, and puts it to the right of the other cups.
The picture shows the first move.

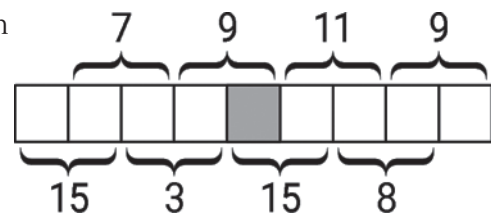


What do the cups look like after 10 moves?

A: B: C:

D: E:

- 18 The numbers 1 to 9 are placed in the squares shown with a number in each square.
The sums of all pairs of neighbouring numbers are shown.

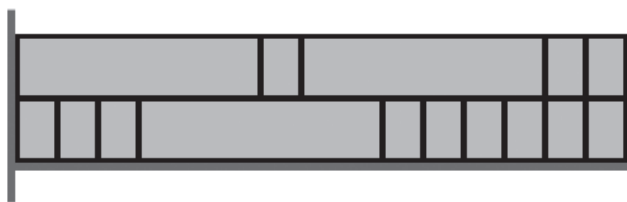


Which number is placed in the shaded square?

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



- 19 In the classroom there is a shelf with two rows of boxes.
 There are two kinds of boxes, small boxes and large boxes.
 The small boxes are 20 cm wide.
 How wide is the shelf?



- A: 180 cm B: 240 cm C: 280 cm D: 300 cm E: 320 cm

- 20 Miller throws darts at balloons worth 3, 9, 13, 14 and 18 points.
 He scores 30 points in total.
 Which balloon does Miller *definitely* hit?



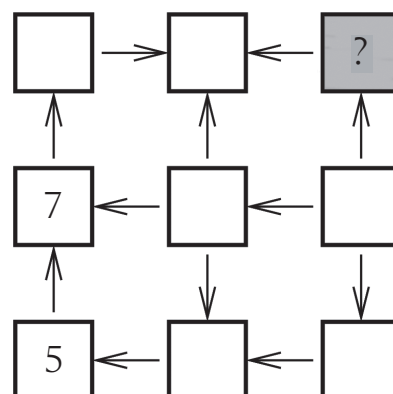
- A: 3 B: 9 C: 13 D: 14 E: 18

- 21 Each of the 5 boxes contains either apples or bananas, but not both.
 The total weight of all the bananas is 3 times the weight of all the apples.
 Which boxes contain apples?



- A: 1 and 2 B: 1 and 4 C: 2 and 4 D: 3 and 4 E: 2 and 3

- 22 Anne wants to write the numbers from 1 to 9 in the squares shown.
 The arrows always point from a smaller number to a larger one.
 She has already written 5 and 7.
 Which number should she write instead of the question mark?

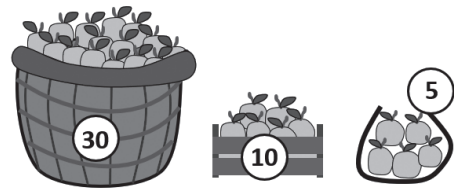


- A: 2 B: 3 C: 4 D: 6 E: 8






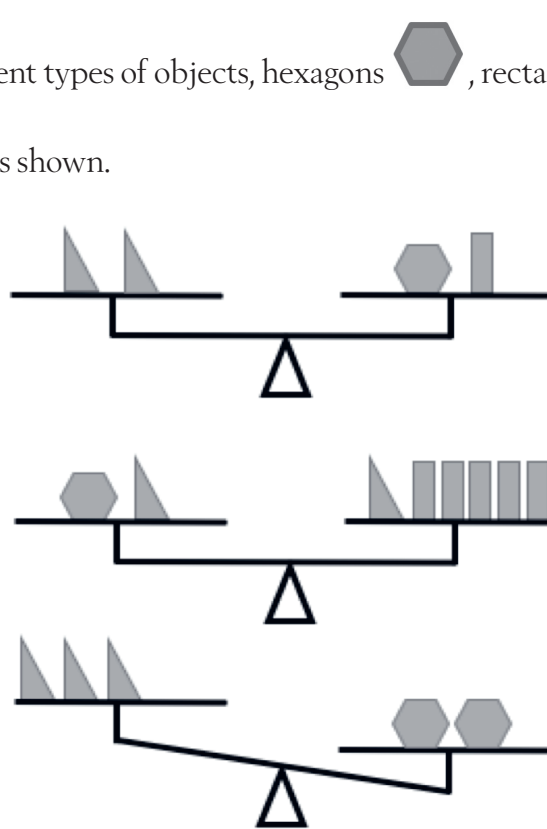
- 23 A gardener has some baskets with 30 apples each, some crates with 10 apples each and some bags with 5 apples each.

If he wants to give 40 apples as a present, in how many ways can he do that without spoiling the baskets or the crates or the bags?



- A: 1 B: 2 C: 3 D: 5 E: 7

- 24 Martin placed 3 different types of objects, hexagons , rectangles  and triangles , on sets of scales, as shown.



What does he need to put on the left-hand side on the third set of scales for these scales to balance?

- A: 1 triangle B: 2 triangles C: 1 hexagon D: 1 rectangle E: 2 rectangles