

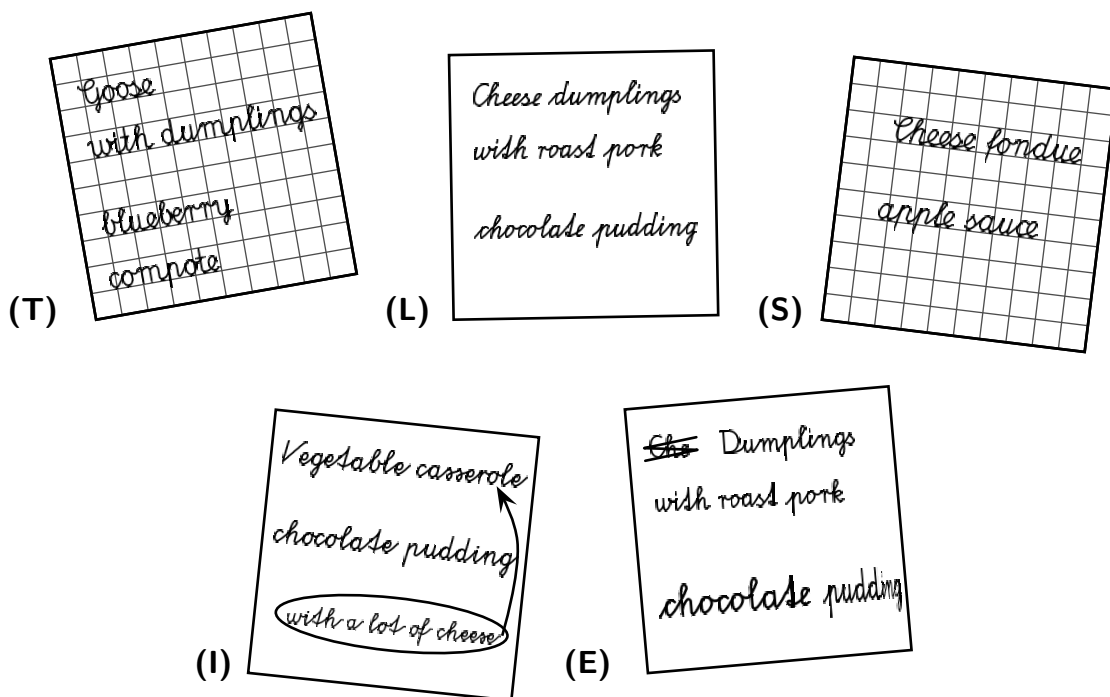
# 1

## Favourite food

By the Huber family, everyone wishes for their favourite food for Christmas. Everyone writes their wish for a main dish and a desert onto a piece of paper.

Finn wishes for something vegetarian. His mum has used squared paper. Klara would like dumplings and Amelie would like apple sauce for dessert.

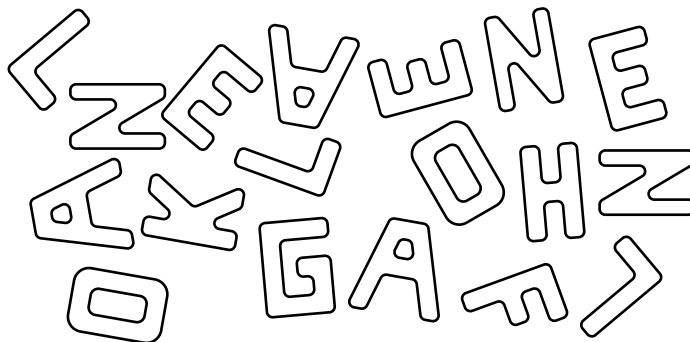
Which paper has the father written?



# 2

## Alphabet cookies

Anna, Leo, Lena, Nele and Olga sit and talk together during snack time. Anna has a packet of Russian bread and pours some alphabet cookies onto the table.



“All of the letters that we need to write out names are there!” shouts Leo.

“But we can’t write all of our five names at the same time,” says Nele thoughtfully.

“But we could write 4 of our names at the same time,” Olga notices.

Which name is missing when four of the children write their names at the same time with the alphabet cookies?

(A) Anna

(W) Leo

(L) Lena

(N) Nele

(R) Olga

# 3

## Shopping at the market

Fabian and Paul are at the weekend market. There is a stand with roasted almonds.

“It smells delicious here,” comments Fabian.



“These would be great presents!” Paul exclaims cheerfully. “I’m going to take one small bag for each one of my three aunts as well as four big bags for my grandparents.”

“Great idea!” exclaims Fabian. “I’m going to take double as many small bags and half as many big bags as you.”

Which is correct?

- (P) Fabian pays 2 euros less than Paul.
- (S) Fabian pays 1 euros less than Paul.
- (M) Fabian pays exactly as much as Paul.
- (G) Fabian pays 1 euros more than Paul.
- (J) Fabian pays 2 euros more than Paul.

# 4

## Fresh fruit

Sabrina prepares a big fruit bowl for breakfast. She uses 4 kiwis, 5 apples, 10 plums and 2 big bananas for it. She cuts every same piece of fruit into the same number of pieces.

Sabrina considers how she has to cut every piece of fruit so that every person has the same number of pieces of every fruit. She also does not want to cut more times than she has to.

In how many pieces does Sabrina have to cut every banana?

(Ä) 4

(O) 5

(E) 6

(C) 8

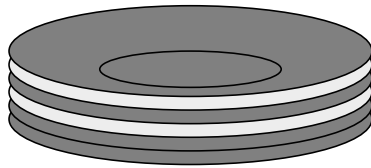
(K) 10

# 5

## Piles of dishes

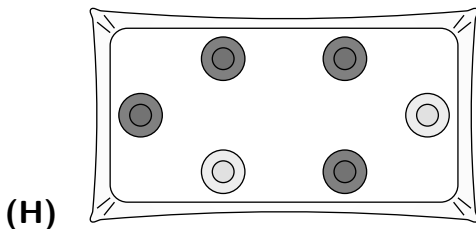
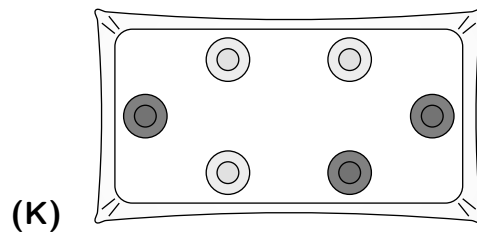
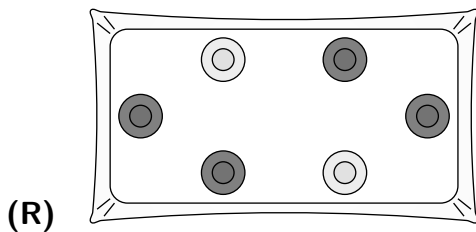
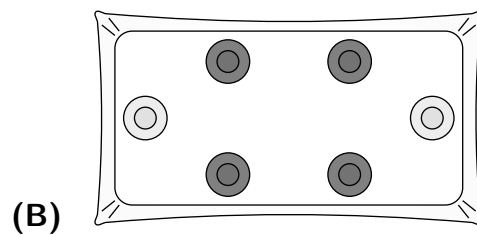
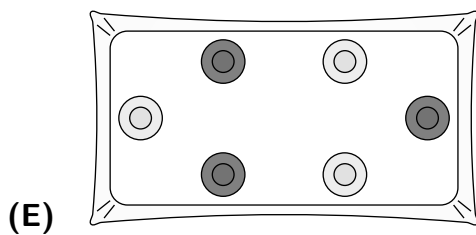
Joanna and her parents have invited Joanna's friend Meike and her parents over for dinner.

While Joanna's parents are preparing the food, the children are laying the table for dinner. Meike puts out the table cloth. Joanna carries a pile of plates to the table.



Joanna puts out the plates onto the table in clockwise direction.

How could the plates now be set on the table?



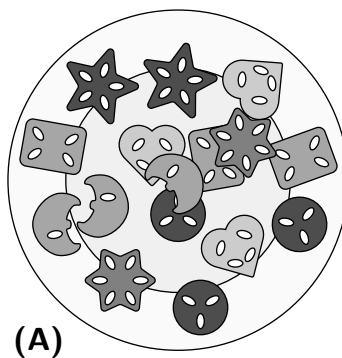
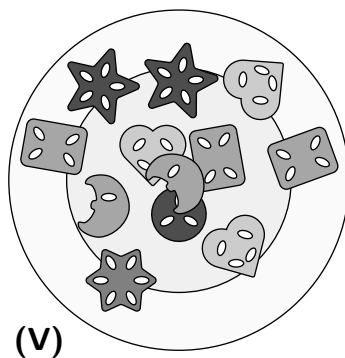
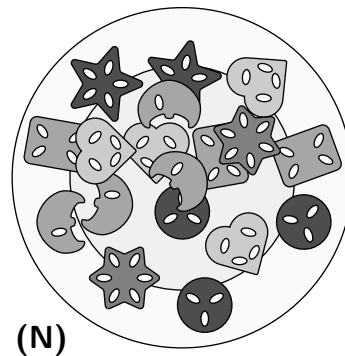
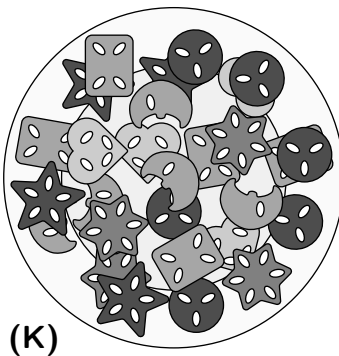
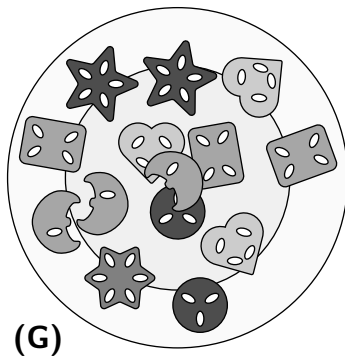
# 6

## Saint Nicholas

Theo has a new game in his Saint Nicholas stocking. He wants to try it right away. Emma and Carlson come by to play. Both of them have brought some cookies. Theos mum places them on a plate. While playing the game, each one of the three children eat some of the cookies.

From time to time, Theo's brother comes into the room, curious of what they're doing. The fifth time, he says, "Every time I come into the room, there are fewer cookies."

What did the plate look like when Theo's brother came into the room the fourth time?



# 7

## Apple juice

For their classes Christmas party, Kim and Jonas want to bring homemade apple juice and paper cups. They need to estimate how many bottles they need to bring.

Jonas considers, "We are 26 children." "And our teacher!" Kim interrupts. "You're right," Jonas agrees thoughtfully. "It's 27 people."

Through trying it out, they found out that every bottle fills exactly 4 and a half cups of apple juice.

How many bottles do they need to take to the Christmas party so that every person gets a cup of apple juice?

(A) 3

(L) 4

(E) 5

(J) 6

(C) 7

# 8

## Grocery list

Willi went shopping with his dad. On their way, they receive an SMS from Willi's mum.

I still need some ingredients for the nut biscuits! Twice as much flour as hazel nuts. Double as much butter as sugar. More butter than hazelnuts, but less than flour.

Tue, 8. December, 15:24

"Great! Your mum is baking using her feeling," laughs Willi's dad. Willi suggest, "Let's look at what type of packaging we can find."

When they walk through the supermarket, Willi thinks about which ingredient they need to have the most of and which they need the least of.

What does Willi's mum need the most of and which does she need the least of?

- (D) the most flour, the least sugar
- (I) the most butter, the least sugar
- (M) the most flour, the least hazelnuts
- (Z) the most hazelnuts, the least butter
- (T) the most butter, the least hazelnuts



# 9

## Pyramids

In the shop window in the health shop there is a triangular pyramid out of honey jars.



In the bottom layer there are 6 jars with dark buckwheat honey. In the middle layer there are 3 jars with light linden honey and in the top layer there is one jar with fir honey.

Due to there being some additional space in the shop window, a pyramid with 5 layers is meant to be built up. How many honey jars will be needed altogether for this pyramid?

(T) 28

(E) 32

(L) 35

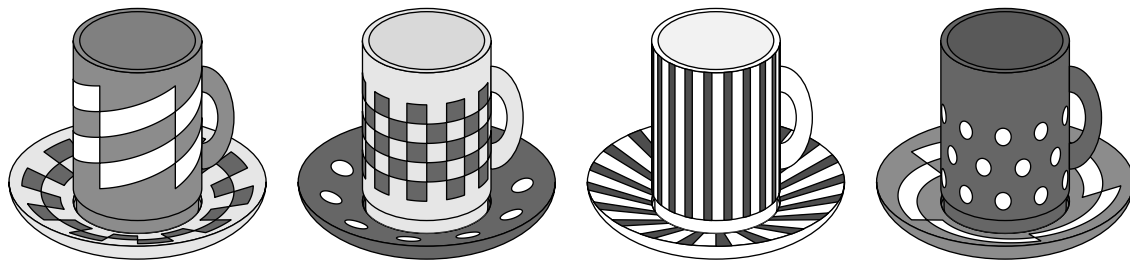
(K) 40

(Q) 48

# 10

## Cocoa

Lilly and her friends Dima, Aymara and Sandro all want to have some cocoa. On the table there is a big jug of Cocoa. Lilly takes some cups and saucers out of the cupboard. Dima is meant to place them on the table.



“You have not even paid attention to the pattern!” Lilly notices.

“You’re right, they don’t fit together at all,” Aymara agrees.

Sandro explains that he thinks that it always happens when you don’t pay attention to how you are setting the table.

The four friends ponder what combinations could be possible if you do not pay attention to how you match them on the table.

What is correct?

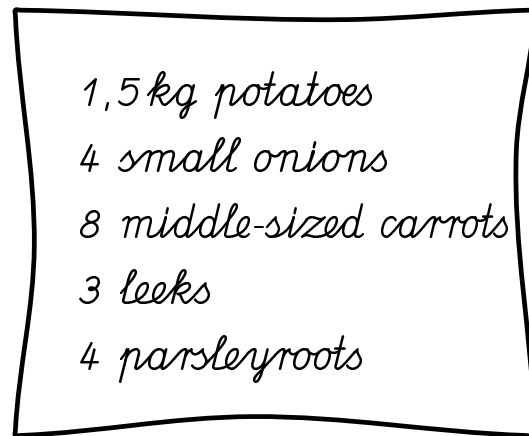
- (N) It is certain that none of the 4 cups will match with the saucer.
- (A) It is certain that exactly 1 cup will match its saucer.
- (V) It is impossible that exactly 2 cups will match their saucers.
- (F) It is impossible that exactly 3 cups will match their saucers.
- (I) It is impossible that all 4 cups will match their saucers.

# 11

## Potato soup

When the family returns from ice skating this afternoon, a delicious potato soup is meant to be on the table, ready to be warmed up. For that to happen, everyone has to help with the preparations in the morning before they go ice skating. First all of the vegetables need to be washed and chopped.

On the table there is still a shopping list from when they went shopping.



“That will be quite a lot,” mum decides. “Then we can freeze some for later.”

Mum is nearly already done with half of the potatoes. Dad has already peeled and finely chopped up 3 onions.

Also the children are helping. Sebastian has already washed 3 carrots, Erik has washed a leek and Rita has washed 2 Parsley roots. Anyone who has finished is meant to help the others.

Who finishes first?

- (S) Mum
- (Ö) Dad
- (L) Sebastian
- (B) Erik
- (E) Rita

# 12

## Movie afternoon

Zeynep is sleeping over at her friend, Sandra's. During the afternoon they watch a movie together.

Afterwards, they help Sandra's mum prepare a lasagna. When they put the Lasagna into the oven, the digital clock says 19:19.

"Two ones and two 9's!" Zeynep shouts.

Sandra's mum suggests, "Brilliant! Then we can take out the lasagna the next time that the clock shows two of the same digits!"

How long is the lasagna going to be in the oven?

- (P) 34 minutes
- (O) 38 minutes
- (U) 43 minutes
- (N) 48 minutes
- (M) 51 minutes

# 13

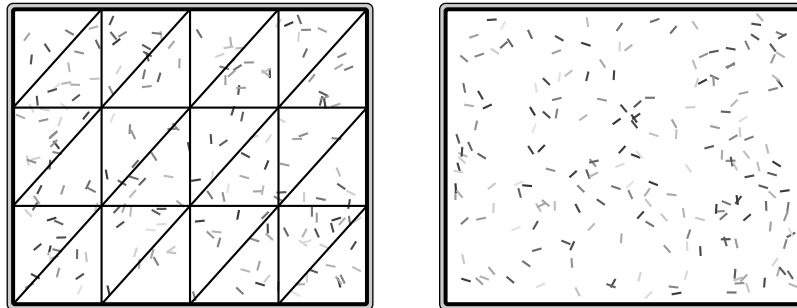
## Cutting cake

Edwin's mum has baked two oven dishes of cake. Edwin is meant to cut the cakes into pieces.

Edwin cuts the first cake 3 times vertically, followed by 2 times horizontally.

"These pieces are huge!" mum calls and cuts the pieces again, this time diagonally.

"Great! Triangular pieces!" notices Edwin. "Additionally, you only had to cut them 6 times diagonally."



"If you like the triangular pieces, then let's cut the second cake the same way. This time, cut it 5 times vertically and 3 times horizontally so that the pieces get even smaller."

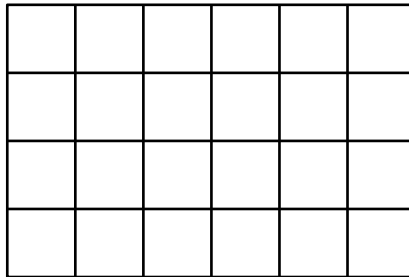
How many times do they have to cut the second cake?

- (T) 7 times
- (A) 8 times
- (M) 9 times
- (Y) 10 times
- (X) 11 times

# 14 Chocolate

In the after school mathematics group, our teacher explained the following game, that we played on this grid.

Arthu and Bruno have a chocolate bar with 6 pieces in length and 4 pieces width.



Arthur and Bruno take turns. Whoever's turn it is, breaks the bar along any one of the straight lines.

They do this until there is only one piece left.

Whoever can't break along any line anymore loses the game and the other wins.

When they played it at home, they noticed that whoever wins can always win! When the beginning player has their turn, they just have to always stick to one rule. Then it doesn't matter what the other player does, they cannot win.

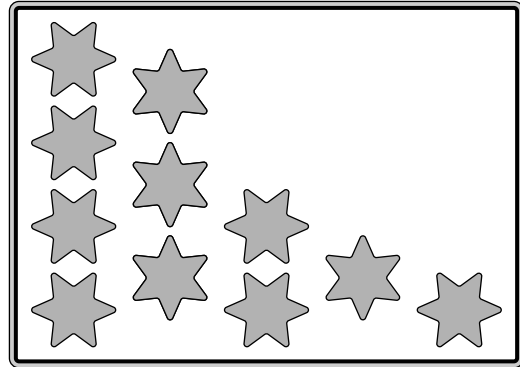
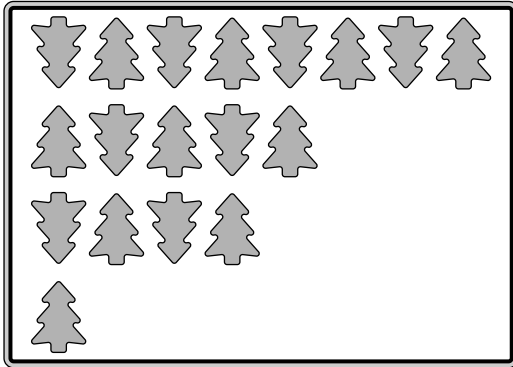
What could this rule be?

- (R) Break only one row off
- (B) Break exactly 4 pieces of chocolate off
- (A) Break it off so that the rest of the chocolate bar is a square
- (M) Break off as many rows as possible
- (Ä) Break off exactly two rows

# 15

## On the oven tray

Tom and Nina bake cookies with their dad. First they rolled out the dough. Tom cuts out trees and Nina cuts out stars. Everyone neatly arranges the baking trays with those shapes.



“Look!” Tom says to Nina. “I can get far more of the trees on my baking tray than you of your stars.”

How many more trees than stars will he manage to fit on his oven tray?

- (E) 8
- (I) 9
- (G) 11
- (Q) 14
- (O) 16

# 16

## Feeding Bunnies

Tarek, Susi and Konrad are at their neighbour's house to feed his bunnies. They have brought some vegetables.

"What did you bring?" asks their neighbour.

"We have brought some celery sticks, parsnip and carrots," replies Tarek.

"That's one more celery stick than parsnip."

"And two more carrots than celery sticks," Susi adds.

"It is twice as many carrots as Parsnip," Konrad interrupts.

"Oh dear, I guess you want me to calculate all of this now?" their neighbour asks.

How many vegetables have the three children brought altogether?

(S) 9

(R) 11

(H) 13

(N) 15

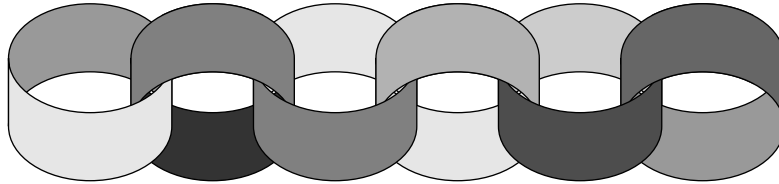
(A) 17



# 17

## Garlands

Lotta is making paper garlands for the Christmas tree. First she cut coloured paper into strips. She glued them together one after the other to form rings so that they interlock.



She has already finished 5 such mini-garlands of 6 rings each. She connects these one after the other with one paper strip each, until one long garland is finished.

How many rings is the long paper garland made of?

(T) 31

(D) 34

(Ö) 37

(A) 40

(X) 43

# 18

## Macaroon baking

In the late evening, Moritz bakes Macaroons. After he has placed the first tray into the oven, he sees the digital time mirrored in the pane of the oven door.

The mirror time looks like this:

22:05

One hour and 10 minutes later, Moritz takes the last tray out of the oven. Again, he sees the mirrored time in the pane of the oven door.

What does he see?

(Y) 50:55

(A) 20:22

(C) 50:22

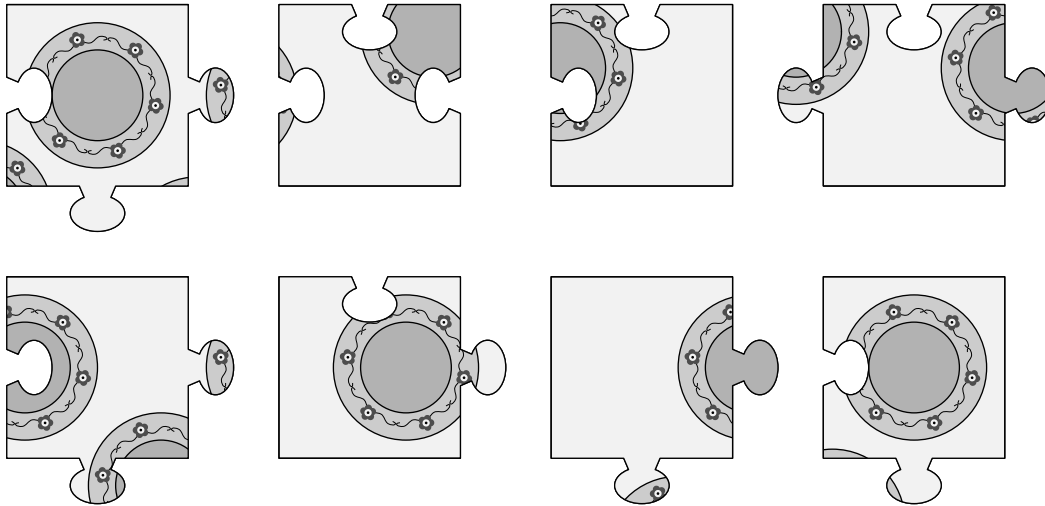
(S) 20:50

(D) 20:55

# 19

## Favourite Plate

Philippe has photographed his grandmother's favourite plate and made a puzzle out of it. It is a Christmas present for her.



How many plates are visible on the puzzle?

(F) 3

(P) 4

(N) 5

(Ü) 6

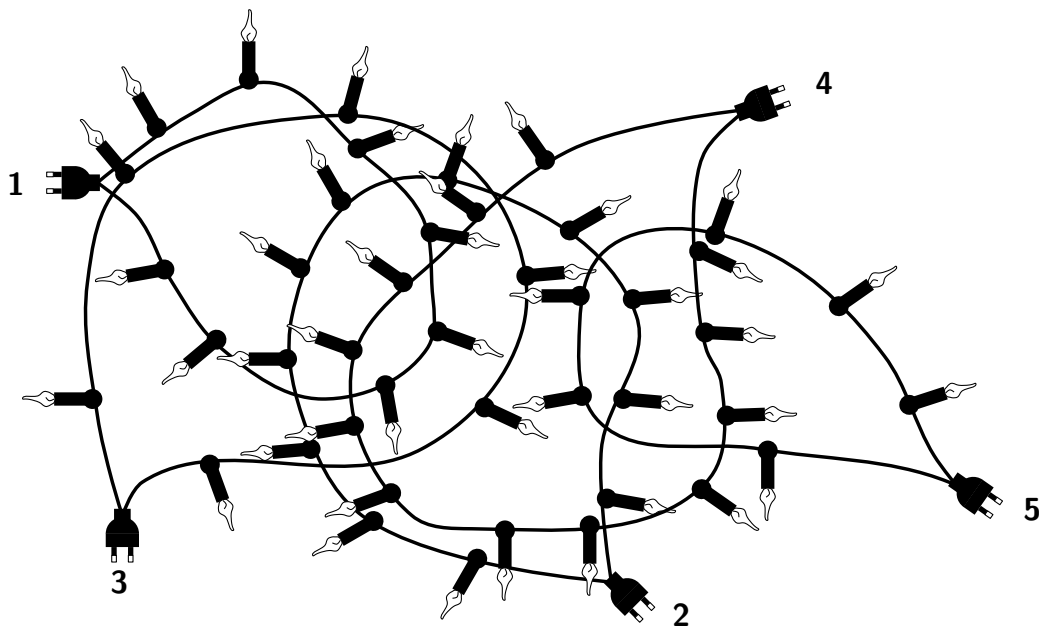
(B) 7

# 20

## Tangled cables

Julia is helping her uncle decorate the Christmas tree. Both of them take fairy lights out of the cellar and lay them out on the floor.

Her uncle yells out angrily, "Every year it's the same! One terrible bunch of tangled cables!"



"It's not that bad," Julia calmly explains. "We will untangle one after the other. Let us start with the fairy light chain that has the most lights first. We will hang that one up first."

Which fairy light chain has the most lights?

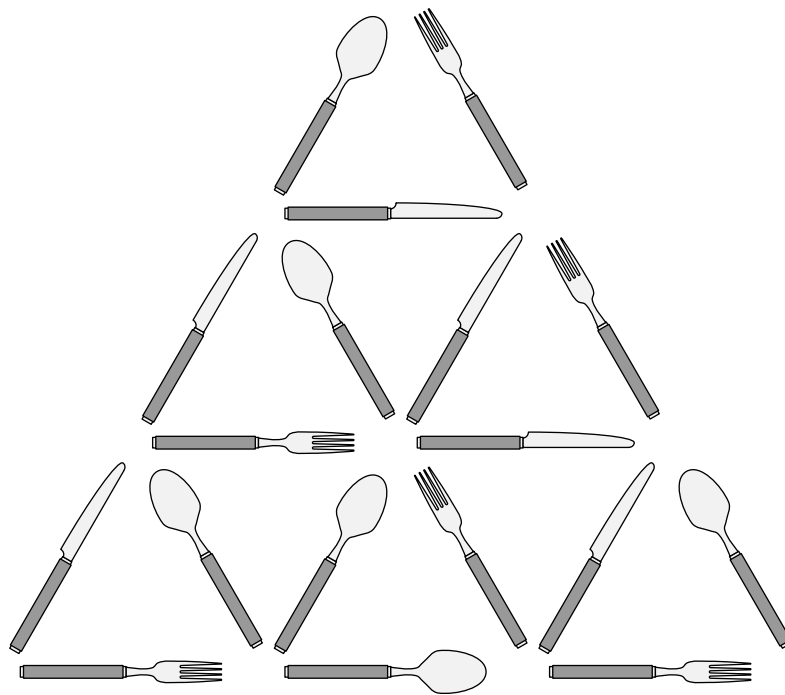
- (O) Number 1
- (E) Number 2
- (R) Number 3
- (S) Number 4
- (T) Number 5

# 21

## Knife and Fork

Ole is supposed to set the table. Instead, he has used the pieces of cutlery to create a figure with 9 small triangles.

He tried to ensure that each small triangle contains a fork, a knife and a spoon. But something went wrong.



Now Ole always takes two pieces of cutlery and swaps them with each other until everything is correct. He wants to swap as few pieces as possible.

How often does Ole have to swap two pieces of cutlery with each other?

- (T) Once
- (F) Twice
- (G) Three times
- (O) Four times
- (M) Five times

# 22

## Egg pancakes

Luisa has brought her three friends Kerem, Ludwig and Selma home with her. They were outside all afternoon and are hungry. Luisa's father wants to make egg pancakes right away.

"You'll have to be patient for a moment," he says. "I'll need 10 minutes to make the batter and in the meantime, I'll heat up the pan. Then I'll cook each pancake for two minutes per side, which should be about right."

"If you take two pans, it'll go faster," says Luisa. "That's right," responds her father, placing two pans on the stove.

Each child should get 3 pancakes.

How long do the children have to wait until all the pancakes are ready?

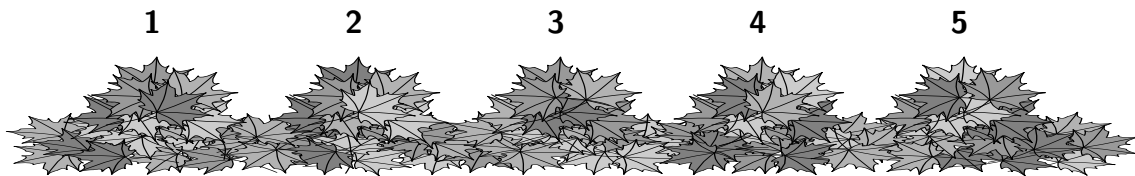
- (O) 26 minutes
- (P) 28 minutes
- (L) 30 minutes
- (I) 32 minutes
- (E) 34 minutes

# 23

## Squirrels

In autumn, the squirrel hid nuts and acorns in front of the old maple tree in the garden.

It hid walnuts under two piles of leaves and acorns under two other piles of leaves. Under a fifth pile, it hid hazelnuts.



Today, he wanted to dig up his favourite nuts: the hazelnuts. Unfortunately, he has forgotten where they are. The wise owl looks down from above with amusement. She has observed the little oak carefully in the autumn and gives him some advice:

“Each of the two hiding places with acorns is directly to the right of a hiding place with walnuts. And the hiding places at the edge, having no walnuts.”

Under which pile are the hazelnuts hidden?

- (H) Under pile 1
- (S) Under pile 2
- (Z) Under pile 3
- (R) Under pile 4
- (E) Under pile 5

## 24 Christmas Eve

Neven has painted a picture as a gift for his parents. For his sister Hannah, there is a puzzle that's what she likes the best. Since Hannah and Neven like to write secret messages to each other, Neven wants to write something secret. They have already tried out various things, but Neven found the Grünkohl-Alphabet the funniest. Does Hannah remember it?

## Instead of the normal alphabet

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Ä Ö Ü ß

the Grünkohl-Alphabet has the word GRÜNKOHL first and then the rest of the missing letters of the alphabet in their usual order:

GRÜNKOHLABCDEFIJMPQSTUVWXYZÄÖß

### Neven wants to write Hannah Merry Christmas in German:

# FRÖHLICHE WEIHNACHTEN

He codes every letter with the one that is directly before it in the Spinach-Alphabet. So:

**F becomes E, R becomes G, Ö becomes Ä, H becomes O, and so on.**

**Neven's coded message becomes:**

EGÄOHFBOD VDFOÜLBOSDÜ

To decode the message, Hannah needs to write the letter that is directly to the left of the coded letter in the Grünkohl-Alphabet.

**Also the solution to the Känguru-Advent calendar maxi 2020 has been coded with the Grünkohl-Alphabet.**

### What is the correct decoded solution?

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**Can you find a way to translate it into English?**