

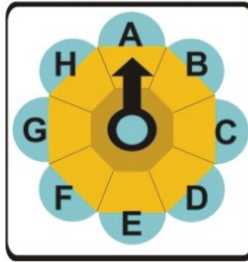
Tasks T1 – T7 carry 3 points each

T1. Safe

The Beaver Chef has a safe for keeping secret recipes. Chef's safe is unlocked using a circular knob. The knob has a pointer. At any given time, the pointer can point to one of eight letters.

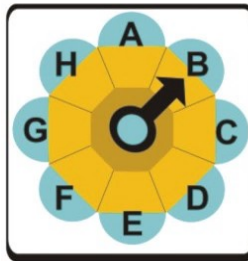
To unlock a safe, Chef must spell the password using the pointer, making the pointer point to the letters of the password one after the other. The knob must be turned clockwise and anticlockwise alternately to achieve this.

The starting position:



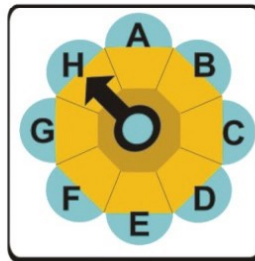
Turn it 1 letter clockwise to point to B:

1↻



Turn it 2 letters anticlockwise to point to H:

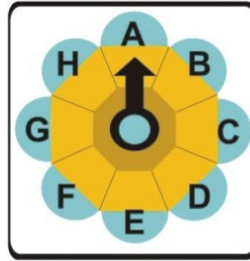
2↻



1↻ 2↻: The numbers indicate the number of letters. The arrows show the direction. This example enters the password BH.

Question / Challenge

Now the Chef has the password CHEFDG. The lock starts as shown below.



Which of the following will unlock the safe?

- A) 2⌚ 5⌚ 5⌚ 1⌚ 6⌚ 3⌚ B) 6⌚ 3⌚ 3⌚ 7⌚ 2⌚ 5⌚
c) 2⌚ 3⌚ 5⌚ 7⌚ 6⌚ 5⌚ D) 2⌚ 1⌚ 4⌚ 3⌚ 3⌚ 2⌚

T2. Lying

Beaver mommy took her three little beavers, Anna, Betty and Cathy to the park. Cathy got hurt falling from the swing. Beaver mommy asked little beavers what they were doing when Cathy fell. Here are their answers:

Anna said “I was sitting on the bench, not swinging with Cathy.”

Betty said “I was sitting on the bench or playing on the slide while Cathy was swinging.”

Cathy said “When I was swinging, Anna and Betty were sitting on the bench.”



Question / Challenge

The photo above was taken by beaver mommy right before Cathy fell. According to the photo, who is lying?

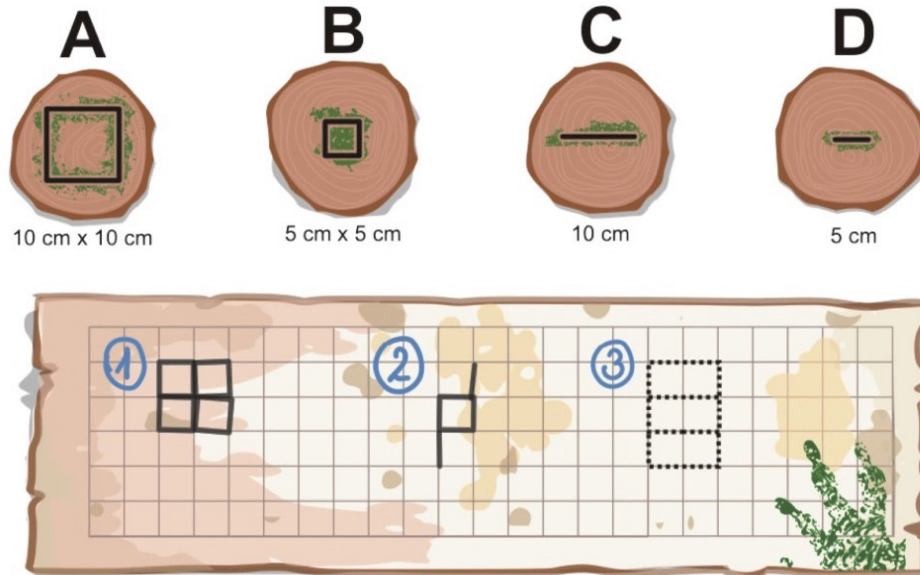
- A) Anna B) Betty C) Cathy D) No one is lying.

T3. Stamps

Beaver Paul has 4 stamps: A, B, C and D in the picture below. By using these, he has already made two figures, 1 and 2, below.

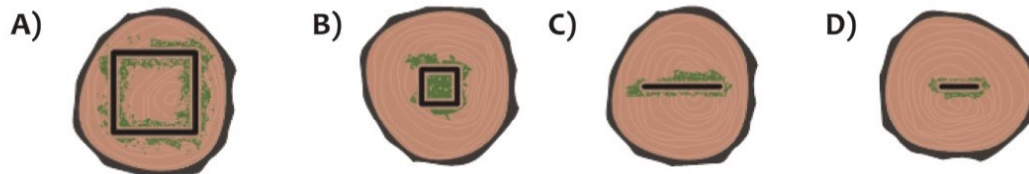
- To create figure 1 Paul used only stamp B (four times).
- To create figure 2 Paul used stamp B (once) and stamp D (twice).

Now Paul wants to make figure 3 below, and his friend Mary offers to help him.



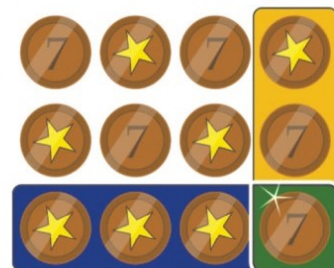
Question / Challenge

Mary claims that she can make figure 3 by using only one stamp twice!
What stamp would she use?



T4. Wizard Bibraxus

In front of Wizard Bibraxus is a table with 49 coins. While his eyes are covered, you are allowed to turn a coin over. Once his eyes are uncovered, Bibraxus quickly knows which coin has been turned over. He tells you his secret: "In every row and in every column there is an even number of coins with a star on top. After turning a coin over, there is exactly one row and one column with an odd number of coins showing the star on top. Where this row and this column meet is the changed coin."



Question / Challenge

At the next show you may support him. Which coin was turned over?

	A	B	C	D	E	F	G
1							
2							
3							
4							
5							
6							
7							

A) E2

B) D6

C) F6

D) A3

T5. FIFO Socks

Anil likes to wear different colour socks everyday he goes out. Anil follows the rules given below:

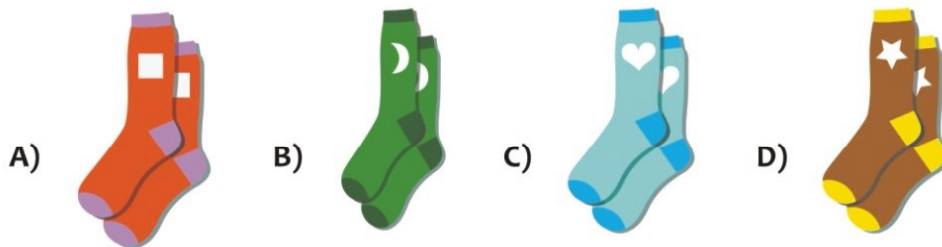
- Socks are washed daily, and as soon as they are washed they are added to the left of the pile of socks.
- Socks to be worn are always taken from the right of the pile.
- On Wednesday, the pile of socks looks like this:



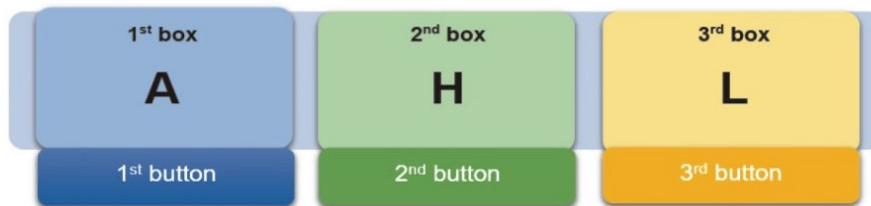
Anil will not be able to go out on Sunday this week, and Tuesday and Thursday next week.

Question / Challenge

What colour socks will Anil wear next Saturday?



T6. Magic Buttons



When a user clicks on 1st, 2nd, and 3rd buttons, specific letters appear in the boxes.

- In 1st box, there exist A, B, C, D, and E letters.
- In 2nd box, there exist F, G, H, I, J, and N letters.
- In 3rd box, there exist S, K, L, M, O, P, and R letters.
- When a user clicks on a button continuously, the letter in the corresponding box changes. For instance, when a user clicks on 1st button for three times continuously, C letter appears in the 1st box. When a user clicks on 1st button for seven times, B letter appears in the 1st box.

Question / Challenge

Based on this information, can you find the letters that will appear in the boxes when a user clicks on each button for eight times?

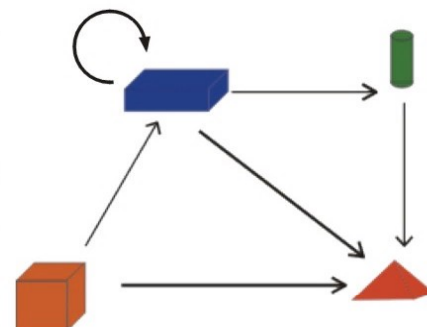
- A) CHK B) DHO C) EHS D) CGS

T7. Which tower?

Ela challenged her friend Vernon to build a tower from wooden blocks, following certain rules.

The picture shows these rules.

A block can be put on another block only if the rules contain an arrow starting from the first block and ending on the second block. For example, a pyramid block can be put above a rectangular block as there is an arrow starting from the rectangular block and



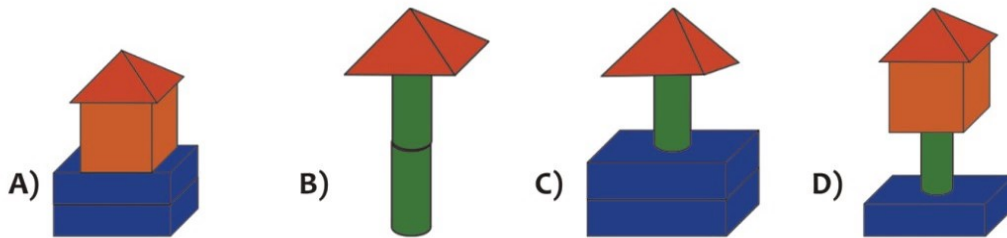
ending on the pyramid block at the right.

Note that an arrow leading from a block to the same block allows putting any number of such blocks on top of each other.

You can start the tower with any block and you can stop building at any moment.

Question / Challenge

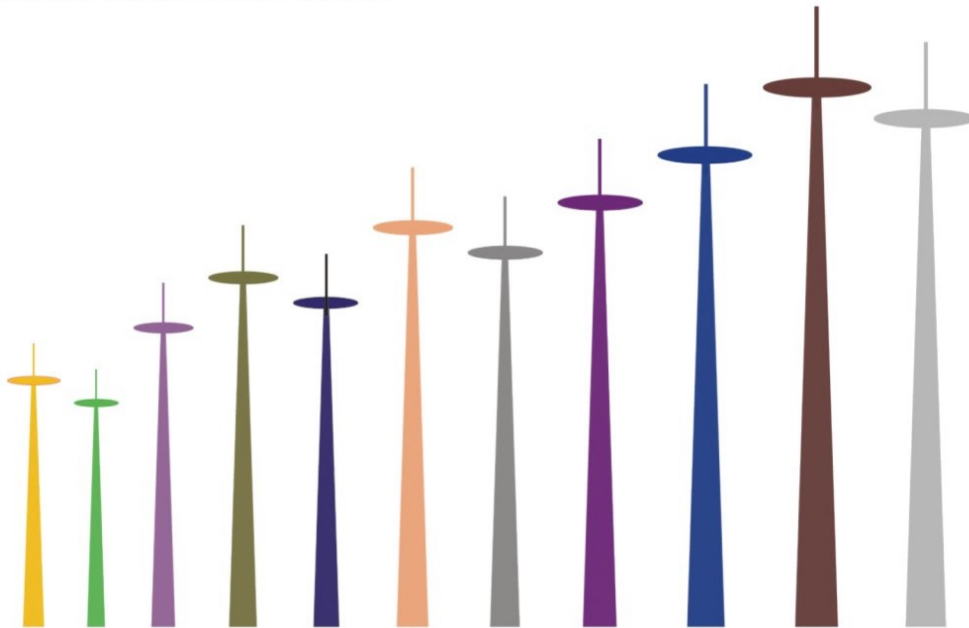
Which tower is built correctly according to the rules?



Tasks T8 – T14 carry 4 points each

T8. Special Towers

Look at the towers shown below.



A tower is **special** if all towers to the left of it are shorter, and all towers to the right of it are taller.

Question / Challenge

How many special towers are there?

A) 3

B) 4

C) 5

D) 6

T9. Classifier

Beaver King wants to have information on all the animals in his forest. He has invited them to his castle so they can be counted. To make his task easier, the King has bought a machine that can identify the animals based on some characteristics of their faces.

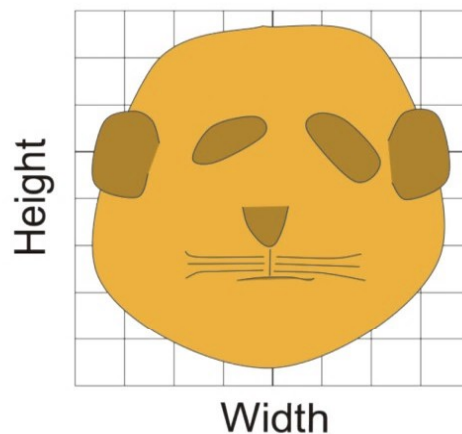
We know the machine identifies some of the animals as follows:

Characteristics	Rabbit	Beaver	Bear	Cat
Ear height	half of head height	quarter of head height	quarter of head height	half of head height
Mustache width*	head width	half of head width	half of head width	head width
Head width	half of head height	half of head height	head height	head height

***Note:** the width of the mustache is measured by adding both left and right parts.
General note: all measurements should be the maximum width and the maximum height.

Question / Challenge

The next animal to be identified has the following face:



Which of the four animals on the table is this?

- A) Rabbit B) Beaver C) Bear D) Cat

T10. Snowmen's hats

Five snowmen are standing in line. From left to right each gets its hat according to its size. The snowmen get the hats from the top, one by one.



Question / Challenge

Which pile of hats belongs to which row of snowmen?

A)

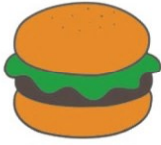

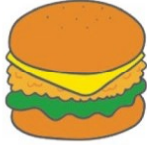

B)

C)

D)

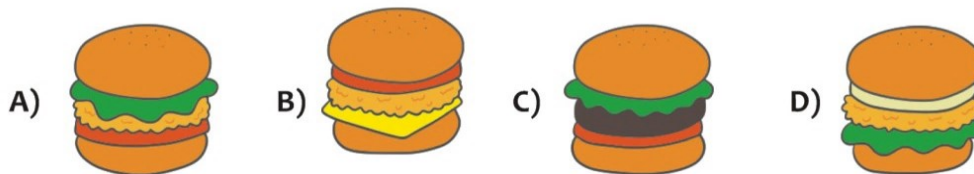
T11. Burger Fillings

Beaver KingWay uses six types of fillings (A, B, C, D, E, and F) in order to make a burger. The following table shows the burgers and their fillings. The fillings are not listed in any particular order.

Burger				
Fillings	C, F	A, B, E	B, E, F	B, C, D




Question / Challenge

Which burger has the fillings A, E, and F?

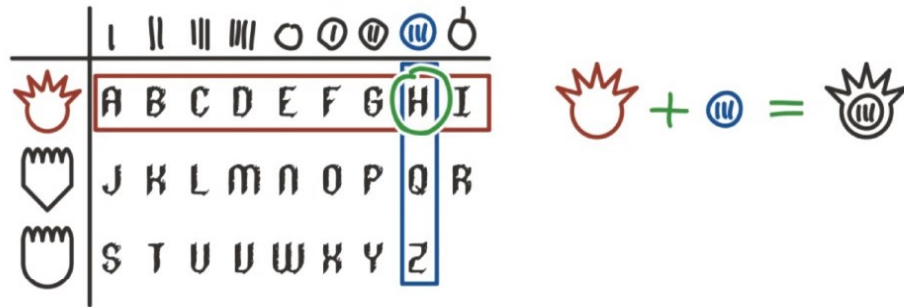


T12. Message from the Elder Beavers

Beaver Cleveria discovered deep down at the base of the dam an ancient tree. On closer inspection she discovers mystical signs carved in the wood. Cleveria reasons that it must be a coding-table from the time when the Elder Beaver still lived in the dam.

	I	II	III	IIII	○	◐	◑	◒	◓
	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	

After a long study of the table, Cleveria figured out how it works: The new signs are a combination of the symbols assigned to the corresponding rows and columns. For example: The letter «H» is coded as follows:



Cleveria remembers that she has seen such signs on another place in the beaver dam. She goes there and indeed, this is what is written on the other tree:

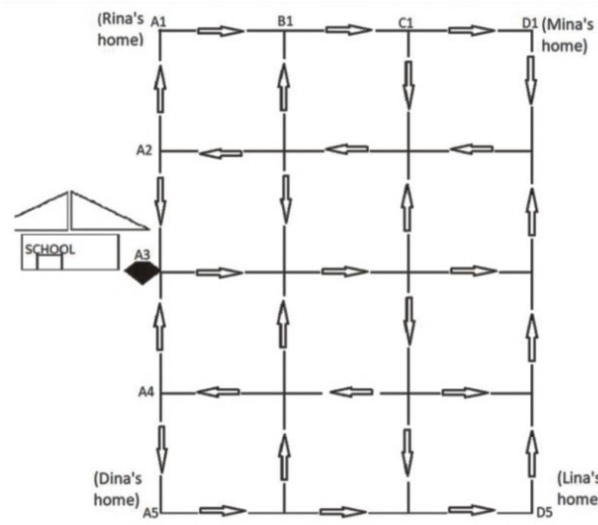


Question / Challenge

Which is the message of the elder beavers?

- A) LOVEWATER
- B) SLEEPDAYS
- C) LOVEMYSUN
- D) CAREFORME

T13. Shortest Path



Rina, Mina, Lina and Dina are 4 friends that go the same school. The map above, shows the location of their homes and their school.

All the crossroads are the same distance apart. That is, the distance from A1 to B1 is the same as the distance from B1 to C1 and from C1 to D1, from A1 to A2 and from A2 to A3 and so on.

All the roads allow traffic only in one direction, indicated by the arrows.

Rina, Mina, Dina and Lina start from their respective homes at the same time and travel at the same speed. Each one follows the shortest path from their home to school.

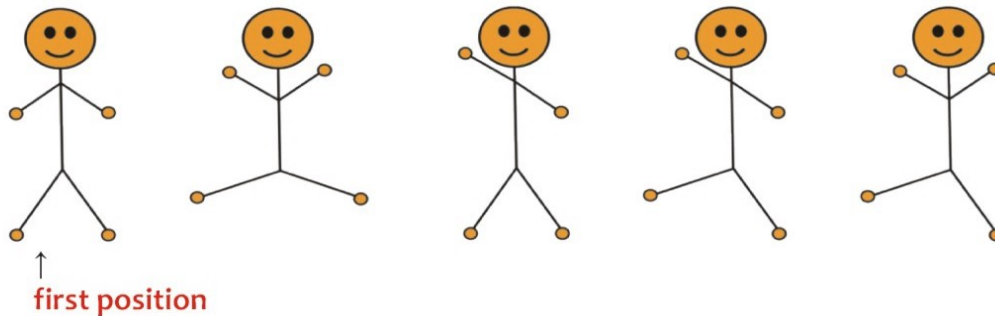
Question / Challenge

In what order will the 4 friends reach the school?

- A) Rina, Mina, Lina, Dina
B) Mina, Dina, Rina, Lina
C) Dina, Mina, Rina, Lina
D) Lina, Dina, Rina, Mina

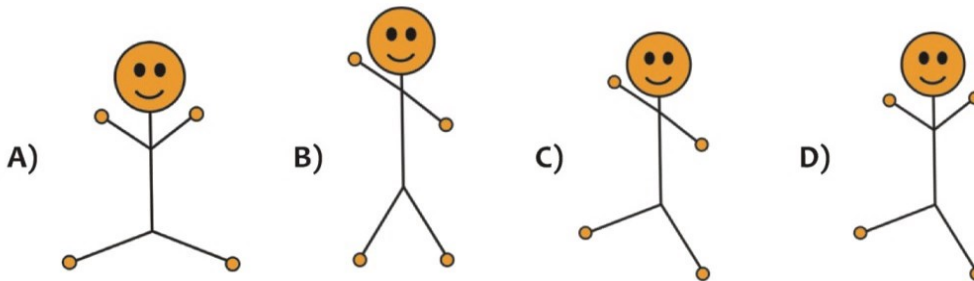
T14. Beaver's Samba

Beaver's Samba is a famous dance in Beaverland. The dance has 5 positions. During each move, you change either the position of one leg or of one arm. Anna remembers that the dance has only 5 positions but does not remember the correct order.



Question / Challenge

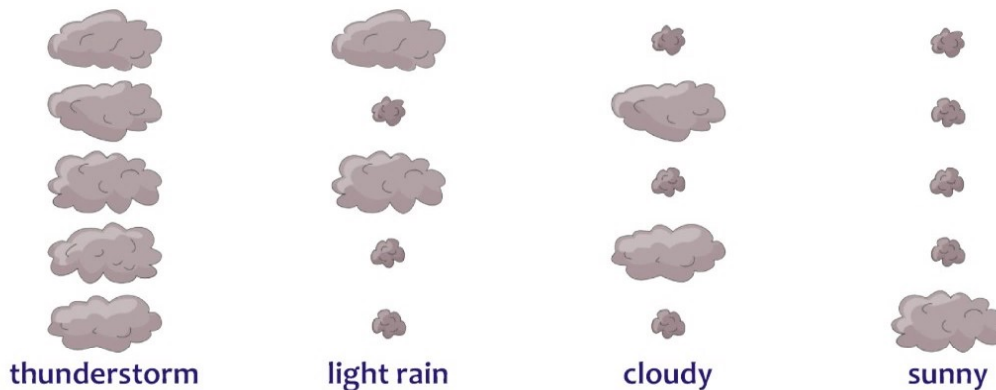
What is the third position?



Tasks T15 – T21 carry 5 points each

T15. Cloud Communication

A weather beaver sends messages from the top of a mountain to beavers in the valley below. She makes small and large smoke clouds and uses the code below.



One day, the beavers in the valley think they saw this:



Something went wrong. Either one small cloud was mistaken for a large cloud or one large cloud of smoke was mistaken for a small cloud.

Question / Challenge

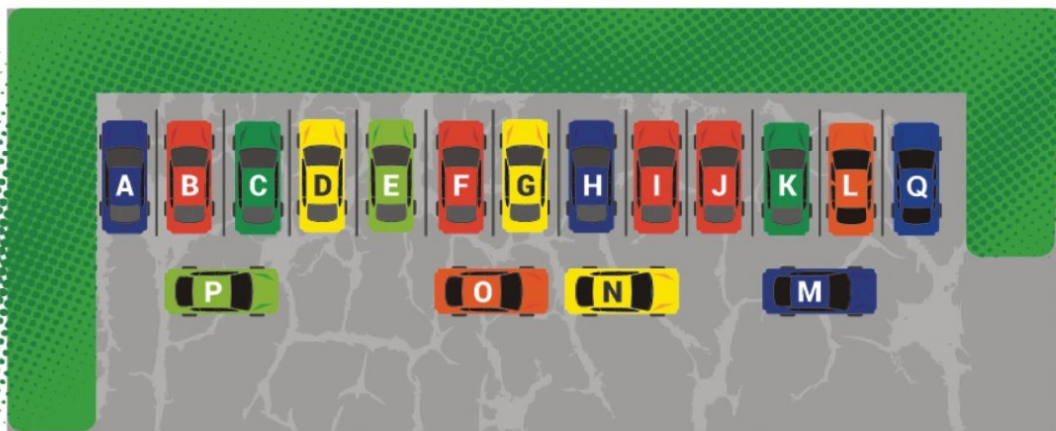
Which message was sent?

- A) thunderstorm B) light rain C) cloudy D) sunny

T16. Push-Away Parking

In a parking lot, cars can be parked in parking spaces or in front of these parking spaces as shown in the image below. Cars that are parked in front of the parking spaces can be pushed forward or backward carefully if they block a car that wants to leave its parking space.

For example, in the image below, car A is not blocked and can leave its parking space. Car L is blocked by car M. Car M must be pushed away before car L can leave its parking space.



Question / Challenge

Which car needs two other cars to be pushed away before it can leave its parking space?

- A) car B B) car E C) car F D) car I

T17. Superstar

In the social network "TeeniGram", members may "follow" other members.



TeeniGram "groups" are collections of members. Within a group, a member can be a "celebrity".

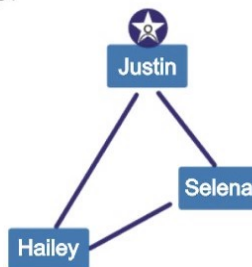
A "celebrity" is someone who:

- is followed by everyone in the group
- does not follow anyone in the group

One TeeniGram group has these members: Hailey, Selena and Justin.

- Hailey follows Justin and Selena
- Selena follows Justin
- Justin doesn't follow anyone

Justin is a celebrity in this group.



Another TeeniGram group has these members: Alan, Don, Frances, Grace and Robin.

- Alan follows Don and Grace.
- Don follows Grace and Robin.
- Frances follows Alan, Grace, and Robin.
- Robin follows Alan and Grace.

Question / Challenge

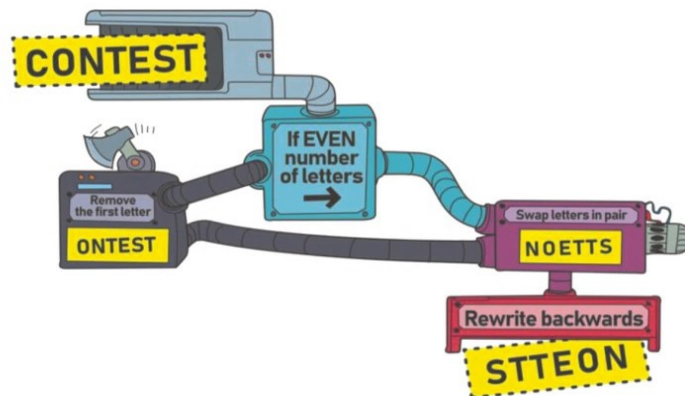
Is there a celebrity in this group?

- A) Yes, Alan is a celebrity in this group.
- B) Yes, Frances and Robin are celebrity in this group.
- C) Yes, Grace is a celebrity in this group.
- D) No, there is no celebrity in this group.

T18. Word Coding

Beavers have built a machine that transforms words in the following way. If the number of letters is even, it is passed along unchanged. Otherwise, the first letter of the word is removed. Next, each pair of neighboring letters is swapped: the first and the second letters, then the third and the fourth, and so on. In the final step, the resulting word is reversed.

For example, the word CONTEST is converted to STTEON:



Question / Challenge

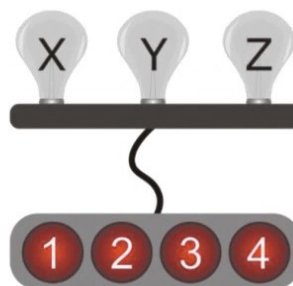
If we send the word STORAGE, what we will get?

- A) OTAREG B) GERATO C) EGAROT D) OREGTA

T19. Light Buttons

There are 3 light bulbs in a room, labeled X, Y and Z. There are also four buttons that work as follows:

- Button 1: Turns on Y, turns off X
- Button 2: Turns on X and Y, turns off Z
- Button 3: Turns on Z, turns off Y
- Button 4: Turns on X



Turning on a bulb that is already on leaves the bulb on. Similarly, turning off a bulb that is already off leaves the bulb off.

Question / Challenge

When all the bulbs are off, we want to turn them all on by pressing the buttons in a certain order. We wish to do this while pressing as few buttons as possible. Which of the following is the best order in which to press the buttons?

- A) 2 → 3 → 1 → 4 B) 3 → 1 → 4 C) 4 → 1 → 3 D) 2 → 3

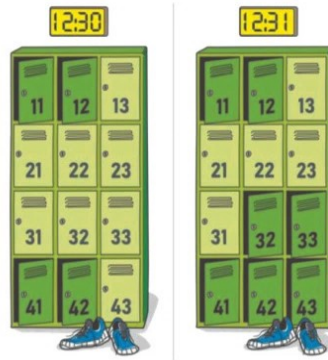
T20. Lockers and Coding

There are many lockers installed in an aqua park. To evaluate how they are used, data is collected each minute and appended to a database.

Initially, at 12:30, the data in the database looks like: 1 1 0 0 0 0 0 0 1 1 0 (see left picture)

After one minute we will have the following data in the database (see right picture):

1100000001101100000011111

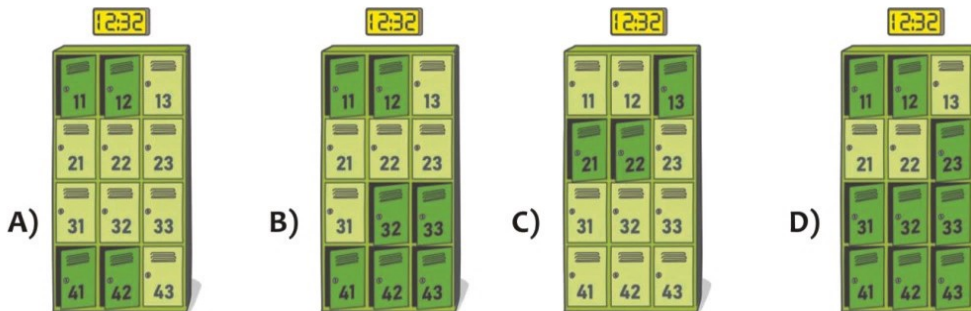


After another more minute the data in the database looks like:

1100000001101100000011111110000000110

Question / Challenge

How the lockers look like?



T21. Meal Planning

Raju lives in India. He takes 2 food boxes to school each day, one for the short snack break, and the other for the lunch break. He has only 30 minutes to prepare both food boxes. Given below are all the items for the food boxes that he can prepare, with the time he needs to prepare and pack them.



Rice Preparation
time: 15 min



Poha Preparation
time: 20 min



Sandwich Preparation
time: 15 min



Roti Preparation
time: 20 min



Paratha Preparation
time: 20 min



Bhel Preparation
time: 10 min

Question / Challenge

Which one of the following statements is false?

- A) If Raju packs Roti for lunch, he cannot also pack a Sandwich for his snack
- B) If Raju packs Paratha for lunch, he can only pack Bhel for his snack
- C) If Raju packs Rice for lunch, he can pack Poha for his snack
- D) If Raju packs Rice for lunch, he can pack either a Sandwich or Bhel for his snack

