

Tasks T1 – T7 carry 3 points each

T1. Riccas

Evren is trying to learn what a Ricca looks like. Evren studies the following five photos of Riccas and makes some notes that accurately describe what she sees.



Evren is then shown this sixth photo of a Ricca and realizes one of her notes is definitely wrong.

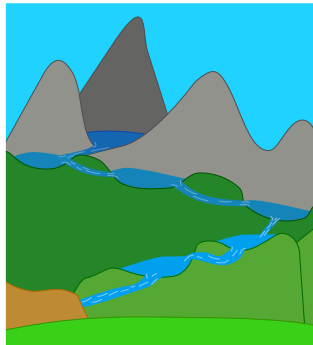
**Question / Challenge**

Which one of Evren's notes about Riccas is **definitely wrong**?

- A) Riccas always have teeth.
- B) Riccas sometimes have wings.
- C) Riccas have either horns or three eyes, but not both.
- D) If Riccas have exactly two arms then they also have exactly two legs.

T2. Lakes

Tamara was hiking in the mountains. She took a picture of a river going through six lakes.



Online she found a table with information about these lakes in alphabetical order.

Name	Depth	Height above sea level	Estimated fish population
Arrowhead Gorge	6 m	320 m	32000
Benburg Basin	13 m	740 m	1500
Croysoll Depths	4 m	490 m	65000
Delordown Pond	20 m	673 m	4200
Eatoboia Lake	15 m	973 m	22100
Ferfolk Domain	8 m	382 m	43000

Question / Challenge

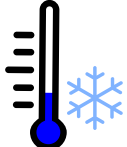
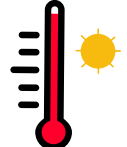
The river flows from a lake with a larger height above sea level to a lake with a smaller height above sea level. In what order will water flow between these lakes?

- A) Arrowhead Gorge, Benburg Basin, Croysoll Depths, Delordown Pond, Eatoboia Lake, Ferfolk Domain
- B) Eatoboia Lake, Benburg Basin, Ferfolk Domain, Arrowhead Gorge, Croysoll Depths, Delordown Pond
- C) Delordown Pond, Benburg Basin, Croysoll Depths, Eatoboia Lake, Arrowhead Gorge, Ferfolk Domain
- D) Eatoboia Lake, Benburg Basin, Delordown Pond, Croysoll Depths, Ferfolk Domain, Arrowhead Gorge

T3. Jamie and the Weather

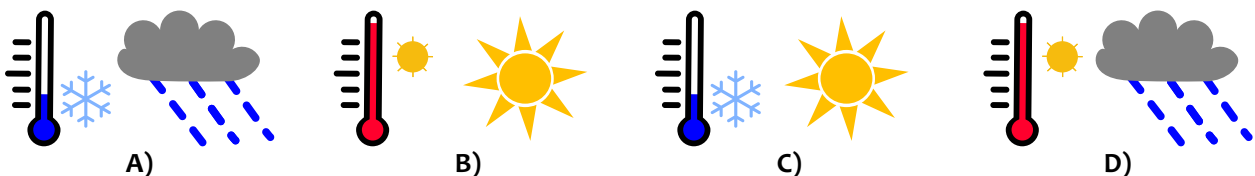
Jamie is from England. She talks about the weather in her hometown: "On a typical day it's cold or it's raining." So, if at least one of these statements (cold, raining) applies, it is a typical day in England for Jamie.

The weather forecast uses the following symbols:

Temperature		
	Cold	Hot
Precipitation		
	Raining	Sunny

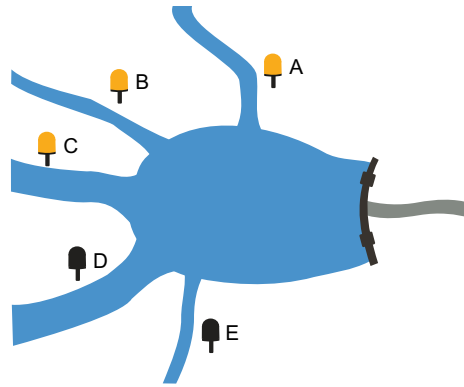
Question / Challenge

Which symbols do NOT represent a typical day in England according to Jamie?

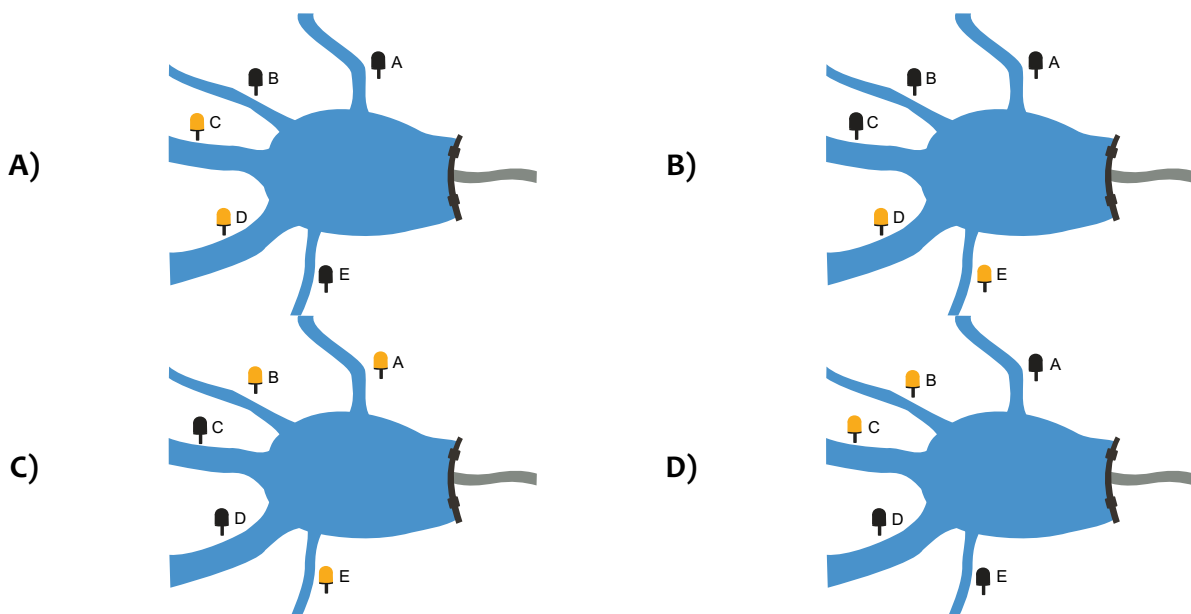


T4. High Water Mark

The Beavers' water reservoir has five inlets and one outlet, which is normally closed. When there is a risk of flooding, the outlet is opened. This is the job of Karl, who counts the high water marks (lit up warning lamps). He counts the wide rivers C and D twice because they fill the reservoir especially quickly during floods. As soon as he counts to four, Karl opens the outlet, for example, when A, B and C reach the high water mark.

**Question / Challenge**

In which situation does Karl open the outlet?

**T5. Parking permit**

The Department of Transport of Beaver-city uses a special alphabet to generate unique parking permits IDs:

A	E	G	I	K	O	P	R	S	T	U	V
---	---	---	---	---	---	---	---	---	---	---	---

The Department generated permits' IDs match the following rules:

- consist exactly of three letters followed by one digit,
- the first letter is any of the consonants G, K, P, R, S, T, V, that is any of the red letters on striped background,
- the third letter is a vowel (A, E, I, O, U), that is any of the green letters on dotted background,
- repetition of letters in permit ID is allowed.

Question / Challenge

What parking permit ID matches the rules?

A) RAKS7

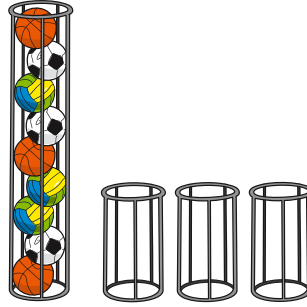
B) PSAT

C) TAA3

D) V5E6

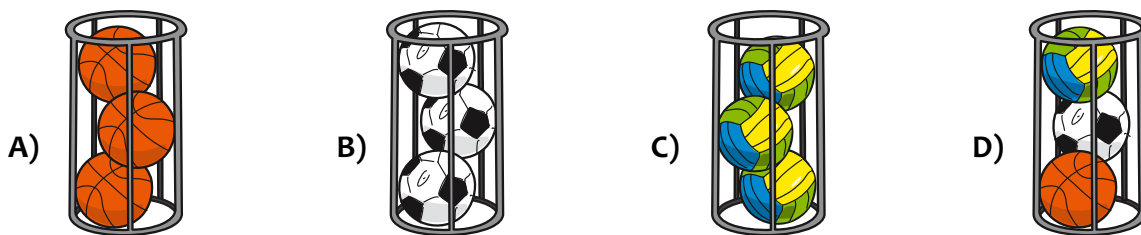
T6. Organizing the balls

Sarah has 9 balls of 3 different styles in one big container, and she wants to organize each style of balls into a separate storage. To divide them, Sarah takes the balls one by one from the container and puts them in its own storage.



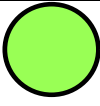
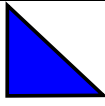
Question / Challenge

Based on the picture above, which storage of balls will Sarah fill first?



T7. Eric's New House

Beaver Eric wants to build a new house. He needs to buy different shapes from the store. The table below shows the prices for each shape:

Shape						
Price (beaver-coins)	4	2	1	3	2	5

Question / Challenge

Which design should Eric choose to build his house, spending the least amount of beavercoins?



Tasks T8 – T14 carry 4 points each

T8. Encrypted message

Adam sends an encrypted message to Ben using a key consisting of numbers. For example, Adam's message "My name is beaver" encrypted with the key = [3,2,1,4] would be "nia yeer Mmbe asv". (Spaces are not counted).



1	2	3	4
M	y	n	a

m	e	i	s
b	e	a	v
e	r		

Question / Challenge

What encrypted message will receive Ben if Adam sends the message “I wrote a letter” using the key = [3,1,2,4] ?

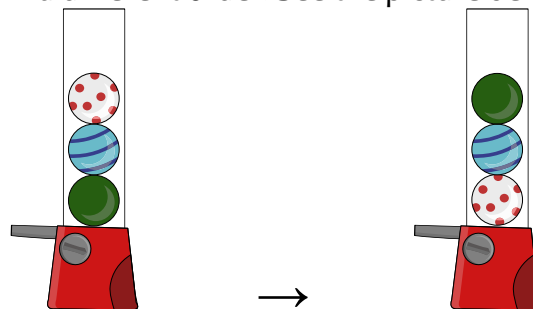
1	2	3	4
I	w	r	o
t	e	a	l
e	t	t	e
r			

- A) rat wet lter ole B) lter rat wet ole C) rat ole wet lter D) rat lter wet ole

T9. Queue

Harry has a machine with three balls inside.

He wants to put the balls in a different order. See the picture below:



He can use the shelf to move the balls with these actions:

Move a ball to the empty shelf	Move a ball to the top	Move the ball from the shelf to the top

Question / Challenge

What is the smallest number of actions he needs?

- A) 2 B) 3 C) 4 D) 5

T10. 3D Objects

There is a 3x3 board with rows labeled A, B, and C, and columns labeled 1, 2, and 3.

Each cell is named by combining the labels assigned to the rows and columns such as ‘A1’.

The board is initially filled with zeros. Whenever any cell is named, the number in that cell increases by 1.

For example, Harry names the following cells A1, A3, B2, C1, C3, A3, B2, A3. Then the board looks the following way:

	1	2	3
A	1	0	3
B	0	2	0
C	1	0	1

Question / Challenge

Harry clears the board to all zeros and names the following cells:

A1, A3, B1, B3, C1, C3, A1, A3, B1, B3, A1, A3

What does the board look like after he has finished?

	1	2	3
A	1	0	3
B	2	0	2
C	3	0	1

A)

	1	2	3
A	3	0	3
B	2	0	2
C	1	0	1

B)

	1	2	3
A	1	0	1
B	2	0	2
C	3	0	3

C)

	1	2	3
A	3	2	1
B	0	0	0
C	3	2	1

D)

T11. Magic Tree

Bain the Beaver has a magical tree growing near their home.

Whenever a bird lands on it () , the tree sprouts 2 apples. Whenever a squirrel climbs up it () , the tree drops 1 apple (if it has any). Bain has also noticed that whenever a

snake visits the tree () , all of the apples instantly disappear!

One morning Bain notes that the magical tree contains 25 apples. Bain then spends the rest of the day drawing pictures of all the animals that come to the tree. The drawings, in order, are:



Question / Challenge

How many apples are on the tree at the end of the day?

A) 3

B) 7

C) 17

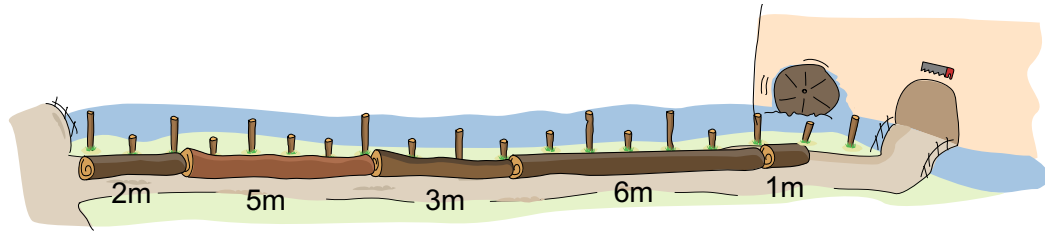
D) 31

T12. Log Storage

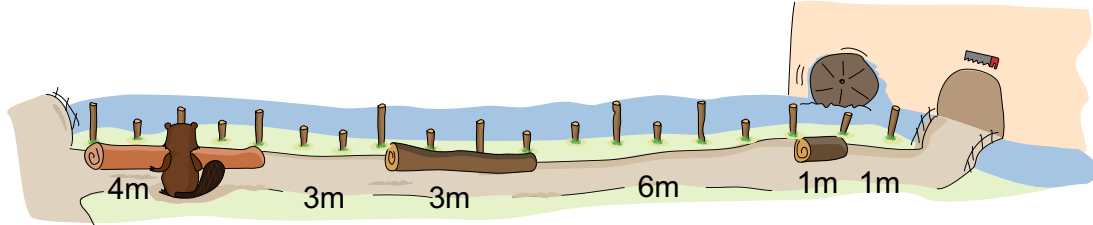
Beaver Sawya cuts wood logs of various lengths and then sells them. Whenever she has finished cutting one, she puts the logs down along the 18-meter-long narrow road, one after the other as the logs cannot fit side by side.

When Sawya puts down a log, she places it in the first available spot from the left where the log fits. When she sells a given log, it is simply removed from the spot it previously occupied.

Sawya has prepared, in this order, logs of lengths 2, 5, 3, 6, and 1 (in meters). This leads to this arrangement along the road:



She proceeds to sell the logs with sizes 6, 2, and 5 meters. Then, she cuts a new 4-meter log. Since she places it as far left as she can, the road now looks like this:



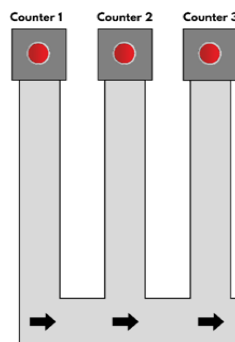
Question / Challenge

Sawya has to cut logs of lengths 1, 2, 3 and 4 meters. Which of the following orders will allow her to store them all on the road, provided she uses the same rule?

- A) B)
- C) D)

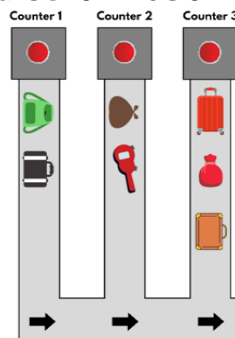
T13. Airport Luggage Check-in

At the Bebrasland airport, passengers can drop off their bags at any of the 3 check-in counters shown below.



The operators at the check-in counters will place bags one at a time on the vertical lane. As each new bag is placed, the operator presses a button to move the bag forward. When the bag reaches the horizontal lane it will transfer automatically to the same.

The bags on the three vertical lanes are shown below.



Question / Challenge

Which option shows a possible order of the bags on the horizontal lane?

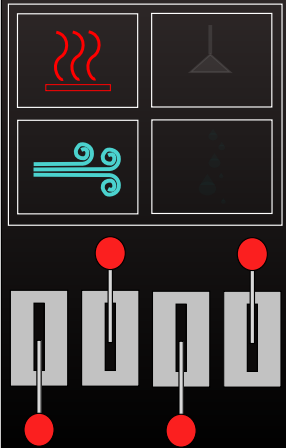
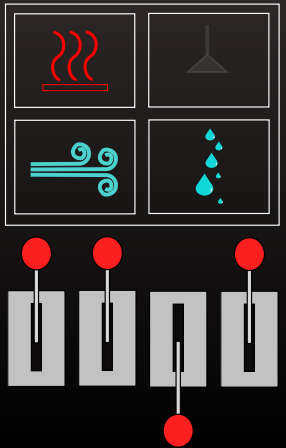
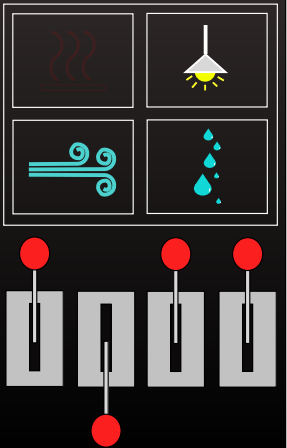
- A)  C) 
- B)  D) 

T14. Levers

Jacinta is the new Life Support Systems Operator for the Nazca Space Station. Her job is to control and manage the station's systems for a comfortable life onboard. Each area of the station has exactly the same control panel with 4 levers for controlling the heat, ventilation, light, and humidity systems. All levers in every panel work the same way and are in the same order. However, the labels on these levers are missing because the station is very old.

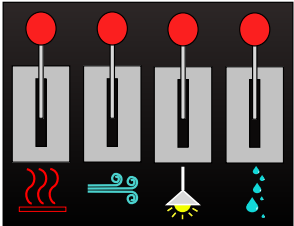
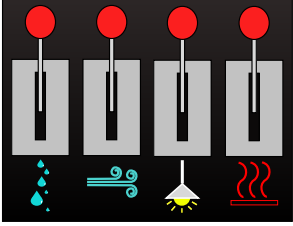
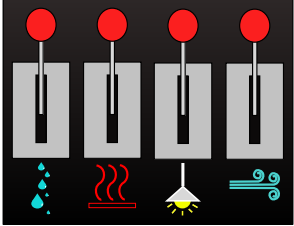
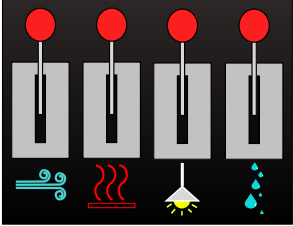
Luckily, there are 3 areas where the systems are still working. Jacinta can figure out which system each lever controls by comparing their positions to the state of each system.

These are the panels that are currently in operation:

AREA A	AREA B	AREA C
		

Question / Challenge

Looking at the working control panels, which system (heat, ventilation, light or humidity) is being controlled by which lever?

- A) 
- B) 
- C) 
- D) 

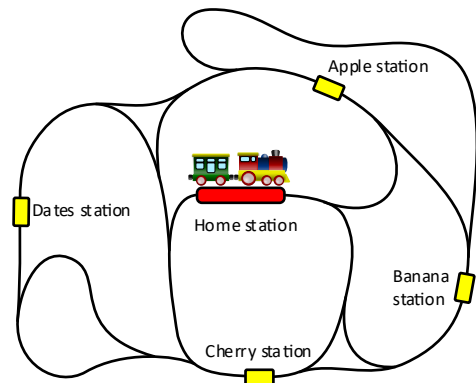
Tasks T15 – T21 carry 5 points each

T15. Model Railway

Ondra built a railway model with a *Home* station and 4 other stations. The train is programmable, can execute a sequence of instructions, and turn on railway switches according to the instructions. It also stops at the nearest station after executing all of the instructions.

The instructions can only be the letters **L** and **R**. When the train reaches a railway switch, it chooses where to go based on the following table:

Railway Switch	Next Instruction	Where to go
	L	
	R	
	Not using the next instruction	



Ondra places the train in the *Home* station with the direction shown in the image. If she gives the instruction **RL**, then the train will stop at *Banana* station.

If Ondra places the train back to the *Home* station with the same direction and gives the instructions **LR** then the train will stop in *Banana* station again.

Question / Challenge

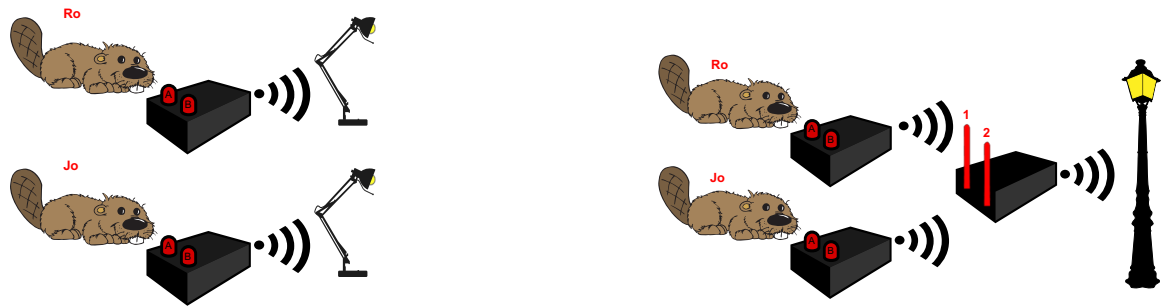
At which station will the train stop after executing the instructions **LLRR** when starting from *Home* station with the same direction as shown in the picture?

- A) Apple station B) Banana station C) Cherry station D) Dates station

T16. Switching Lights

Beavers Ro and Jo found two remote controls, each containing two buttons A and B. Each remote is used to send a signal to light a lamp according to the following table:

Button A	Button B	Lamp
OFF	OFF	ON
ON	OFF	ON
OFF	ON	ON
ON	ON	OFF



The two beavers found a third remote, responsible for lighting the garden lamps, which works exactly as their remotes except that it has two antennas instead of the buttons. Antenna 1 becomes ON with an ON signal from Ro's remote, while antenna 2 becomes ON with an ON signal from Jo's remote.

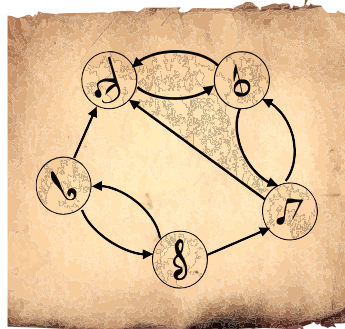
Question / Challenge

If no button is pressed on Ro's remote, which buttons should Jo press on their remote to switch on the garden lamp?

- A) Button A B) Button B C) No buttons D) Both buttons

T17. Restore Ancient Music Sheet

Beaver Jessica has found an ancient music sheet with five notes. The ancient rule of composition uses the diagram below where a next note is selected from an initial note according to the direction of the arrow(s) from the initial note. There is no restriction on the number of times a note appears in a music sheet.



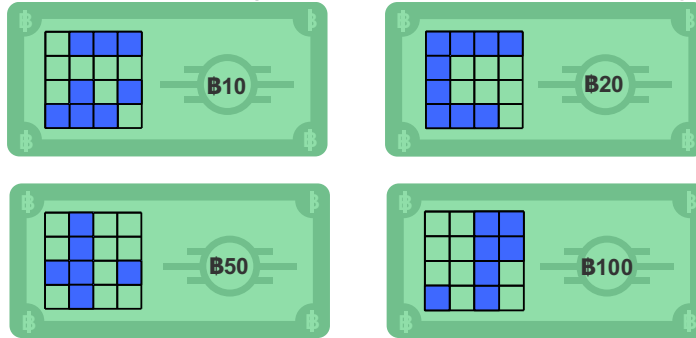
Question / Challenge

The music sheet below has a burnt part. Which of the following pairs are two possible notes that correspond to the burnt part? (The music sheet is read from left to right).



T18. Vending machine

In Beaverland, paper money has code patterns with blank and filled squares on them:



Vending machines in Beaverland can identify these 4 types of paper money by looking at squares 1, 2 and 6 as shown below:

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

- 1: blank, 2: filled, 6: blank $\Rightarrow$ B10
- 1: filled, 2: filled, 6: blank $\Rightarrow$ B20
- 1: blank, 2: filled, 6: filled $\Rightarrow$ B50
- 1: blank, 2: blank, 6: blank $\Rightarrow$ B100

Question / Challenge

Sylvia found that she could identify all the paper money by only looking at two squares. Which two squares?

A) 1, 2

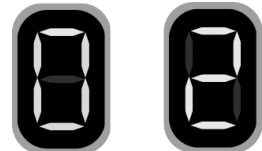
B) 9, 10

C) 10, 12

D) 14, 16

T19. Broken Digital Clock

In a digital clock, each digit, used to indicate hours and minutes, is formed by 7 LED segments that can be 'on' or 'off'. The picture shows what the digits 0 and 2 look like.



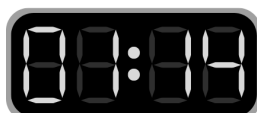
A beaver has a digital clock where the right-most digit is broken; one of the segments cannot be turned on.

The images below show what the clock has shown the past couple of minutes:

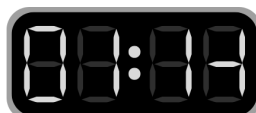


Question / Challenge

What will this clock show in the next minute?



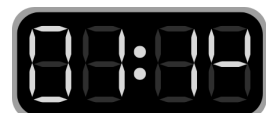
A)



B)



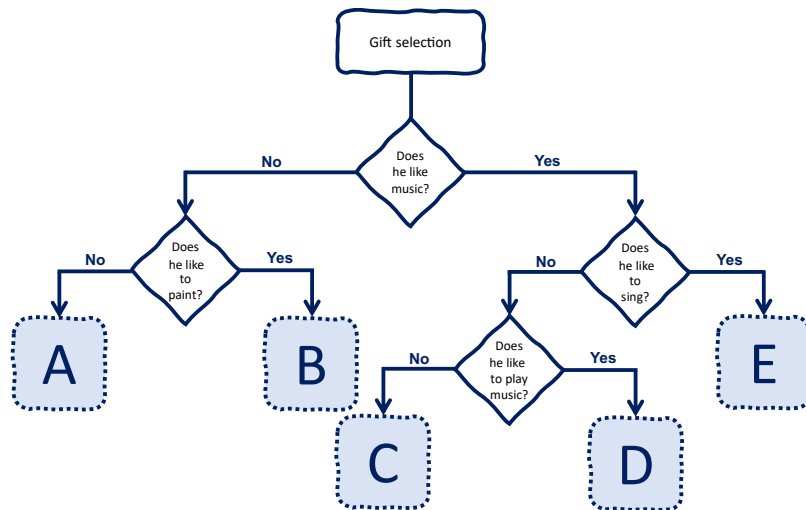
C)



D)

T20. Gift selection

A new student has transferred to Madina's class. They decided to surprise him with a gift. In order to pick the right gift, they decided to ask him a few questions and decide what to give him based on his answers.



Question / Challenge

What is the item that goes in position C)?



A)



B)



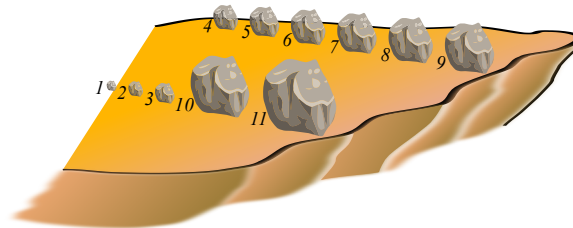
C)



D)

T21. Boulders

Boulders are arranged in two lines as shown. Each boulder is labelled with its size.



A beaver pushes the boulders off a cliff. Since the beaver has more energy when they begin, the beaver pushes the boulders off the cliff in order from the largest boulder to the smallest boulder.

Question / Challenge

At some moment, the last boulder in one line will be pushed off the cliff but boulders will remain on the cliff in the other line. At this moment, how many boulders will remain in this other line?

A) 0

B) 1

C) 2

D) 3

