

Tasks T1 – T7 carry 3 points each

T1. Fair Animals

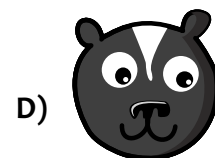
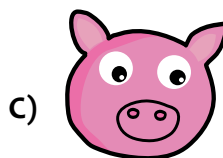
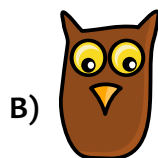
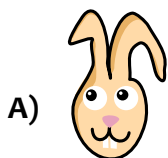
Haley the hare , Steve the stunk , Paul the pig , and Olivia the owl  all want to have different houses in the animal kingdom. There are 12 houses in the animal kingdom which the 4 animals want to share out between them. They have already chosen some of the houses for themselves. The map below shows the houses the animals have already picked and the roads that connect them. The question mark '?' is the house which has not been chosen yet. The animals want to assign the remaining house so that:

- Two neighboring houses that are connected by a road are not chosen by the same animal.
- Every animal has the same number of houses.



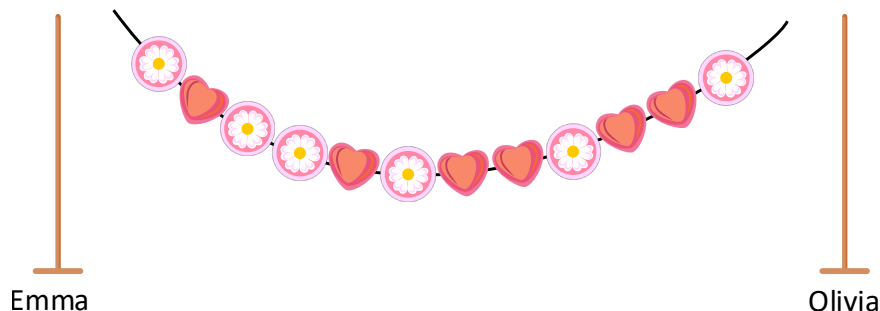
Question / Challenge

Which animal should be assigned in the remaining house?



T2. Beads stringing

Emma and Olivia want to make a beaded necklace for their mom, which should look like this:



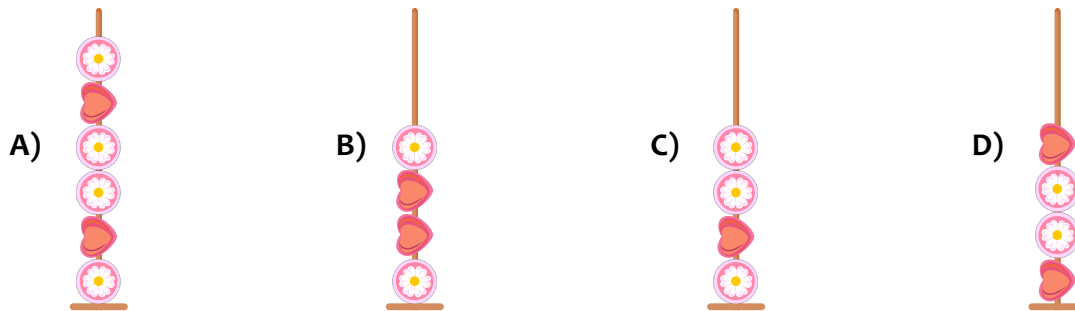
To finish it as quickly as possible, they will both string the beads **at the same time**, Emma from the left and Olivia from the right.

To help them string the beads in the correct order, the beads are placed on a **vertical support**, one for each sister.

Emma is younger and she strings beads more slowly. In the time she strings **one** bead, Olivia strings **two** of them.

Question / Challenge

How must the beads be organised on Emma's support so that the necklace is ready as soon as possible?



T3. Symmetry

Beaver teacher wants the class to sketch the following design.

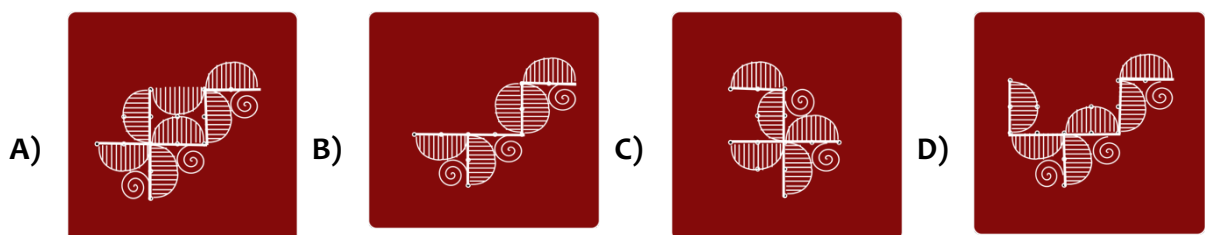


She has drawn the following on the board and wants the class to complete the design.



Question / Challenge

Which of the following pieces did the students add to get the intended design?



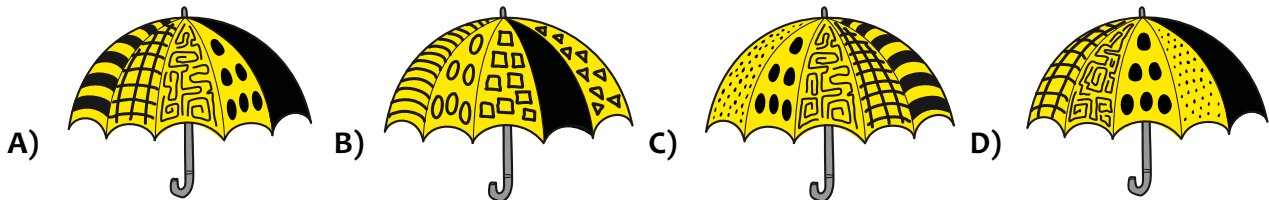
T4. Umbrella

This is Anna's umbrella:



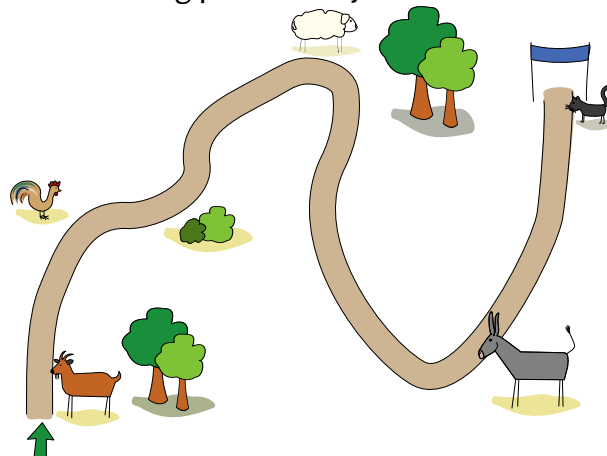
Question / Challenge

One of the four images shows Anna's umbrella. Which one?



T5. Farm

Little Marko was on a farm trip with his grandparents. As they walked, they saw different animals. Grandpa drew their walking path exactly.



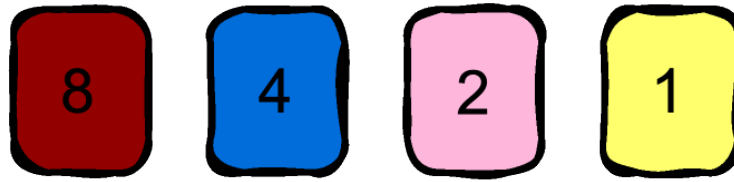
Question / Challenge

Which of the sentences about their walk is **false**?

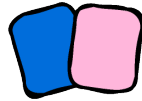
- A) They saw the cat last. B) They saw a goat first.
C) They saw a donkey as the second animal. D) After they saw the rooster, they saw the sheep.

T6. Coded Ages

Zita shows Silat how to use the cards below to tell their ages.

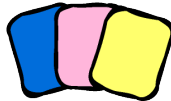


Zita is 6, so she uses the cards



$$(4 + 2 = 6).$$

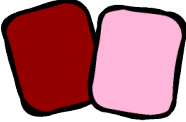
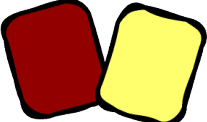
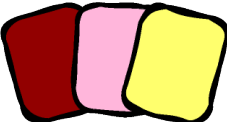
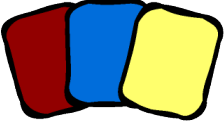
Silat is 7, so he uses the cards



$$(4 + 2 + 1 = 7).$$

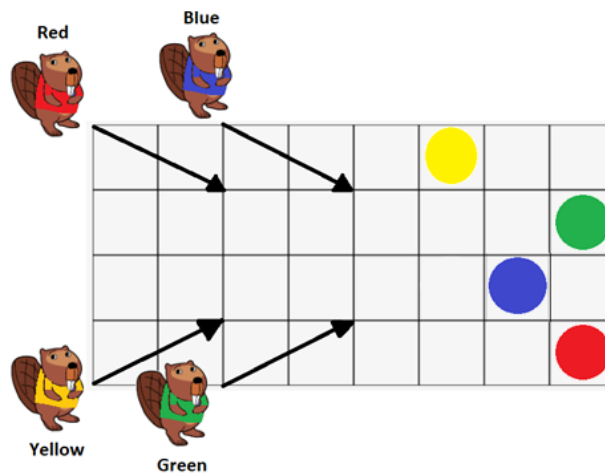
Question / Challenge

Big sister Kali is 9. What cards will she use?

- A)  B)  C)  D) 

T7. Reaching the circle

Four beavers representing the Red, Yellow, Green and Blue teams go only in the direction indicated by the arrows.



Question / Challenge

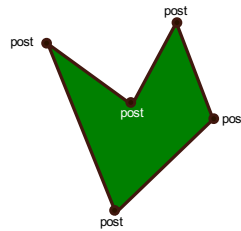
How many of the beavers will reach the circle coloured with their team's colour?

- A) none of them B) 1 C) 3 D) 4

Tasks T8 – T14 carry 4 points each

T8. Flower Garden

Beaver Bevy has a garden enclosed by fence-and-post.

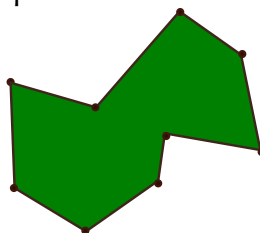


Bevy wants to plant different types of flowers. To do so, Bevy divides the garden into triangles using the following steps:

1. First he chooses three consecutive posts and connects the first and last of them with a rope.	2. Next, he chooses the post at one end of the rope that was just added and the neighbor of the post at the other end and connects them with a new rope.	3. He repeats step 2 until the whole garden is divided into triangles.

Question / Challenge

This year he has a garden of this shape.



How many triangles will Bevy create after following the procedure described above?

A) 3

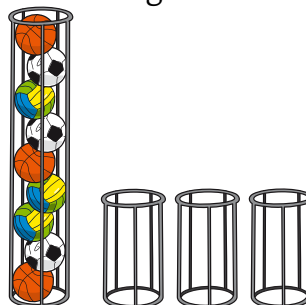
B) 7

C) 8

D) 9

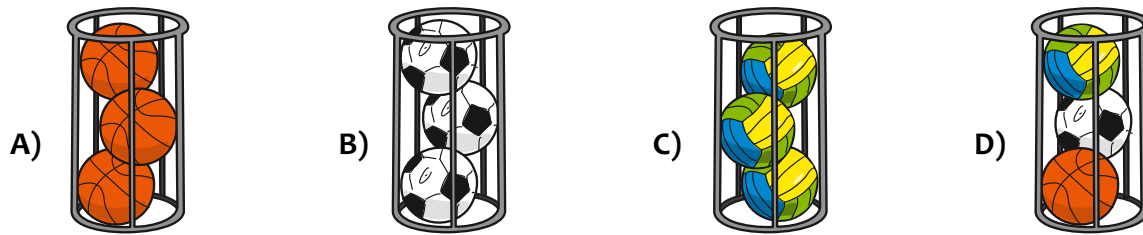
T9. Organizing the balls

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?



T10. Classifying the Beavers

The trainer of beaver school must choose representatives to take part in the next sport competition. The teacher looked at the results from last years and some additional data about the participants. The data is shown in the following table.

Age	Height	Weight	Beaver Photo
1	4	5	
1	3	6	
2	3	5	
1	4	6	

The beavers with medals in the Beaver Photo column are the winners from past years.

Question / Challenge

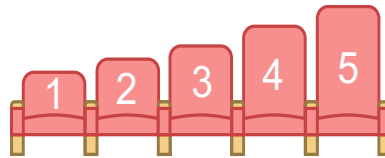
Assuming that the same property that helped to win the last competition will make it more likely to win the competition next year, which property of the beaver should be used by the trainer?

- A) Age B) Height C) Weight D) Either Height or Weight

T11. Theater

Five beaver friends went to a movie theater to watch a movie. They sat in a row of five seats, numbered 1 to 5 from left to right. Each friend sat in a different seat. It is known that:

- Cindy sat in a smaller seat than Dave;
- Bob sat in a smaller seat than Cindy;
- Alice sat in a smaller seat than Bob;
- Dave sat in a smaller seat than Ellen.



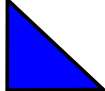
Question / Challenge

Who sat in seat 3?

- A) Alice B) Bob C) Cindy D) Dave

T12. 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

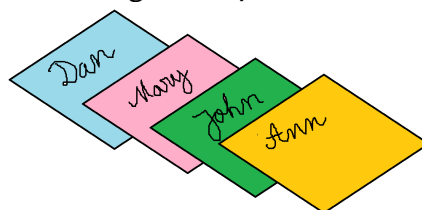
Question / Challenge

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



T13. Ordered cards

The cards in the picture should be in the order in which Dan, Mary, John and Ann arrived at school. However, two pupils interchanged the position of their cards.



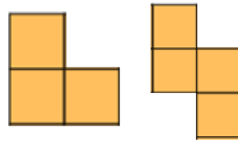
Question / Challenge

If Mary arrived last, in what order did the four children arrive?

- A) John, Ann, Dan, Mary B) Ann, John, Dan, Mary.
C) Dan, Ann, John, Mary D) Dan, John, Ann, Mary

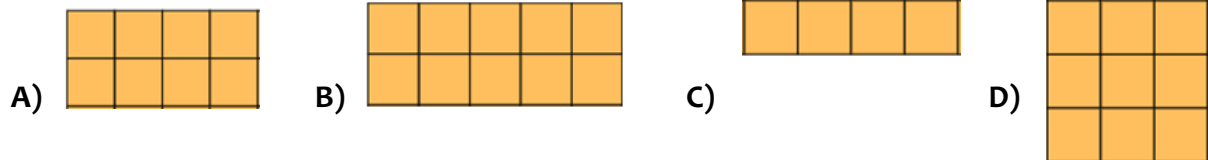
T14. Buildings

Adam has to cover a rectangular board with tiles having the following two shapes:



Question / Challenge

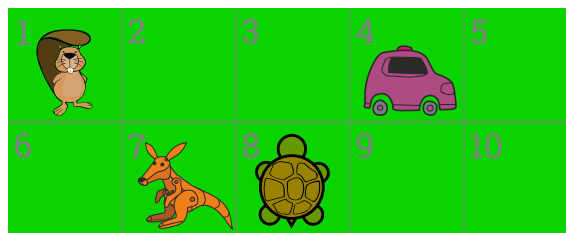
If no overlaps and no gaps are allowed, which of the following boards could be the one tiled by Adam?



Tasks T15 – T21 carry 5 points each

T15. Turtle Bug

Turtle, the floor-robot, needs to move from its starting position in square 8 to the beaver in square 1 on the floor-mat shown here:



Turtle can follow programs with these instructions: $\uparrow$ (Forward), $\downarrow$ (Backward), $\curvearrowleft$ (Turn Left), and $\curvearrowright$ (Turn Right).

Start Position	Instruction	End Position	Example
	$\uparrow$		So if the following program is executed: $\curvearrowleft, \uparrow, \curvearrowright, \uparrow$ the turtle will move from its starting point (square 8) to the car (square 4).
	$\downarrow$		
	$\curvearrowleft$		
	$\curvearrowright$		

However, when the instructions: $\uparrow, \curvearrowleft, \uparrow, \uparrow$ are executed with intention to reach the beaver in square 1, that does not happen.

Question / Challenge

Which instruction needs to be changed so that the Turtle reaches the beaver?

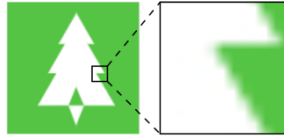
- A) Change the first $\uparrow$ to $\downarrow$ B) Change $\curvearrowleft$ to $\curvearrowright$

C) Change the second $\uparrow$ to $\downarrow$

D) Change the second $\uparrow$ to $\curvearrowright$

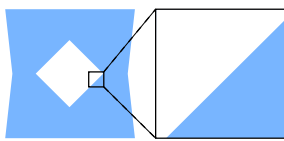
T16. Graphics

Hale is a graphic designer. A client wants their logo printed on a very large canvas. The client only has a very low quality image of their logo, as seen below. You can see the pixels (tiny blocks that build up an image) when you zoom in.

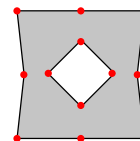


LOGO

Hale decides to remake it as an image created with points and lines between those points, that the computer then colors in, like in the example below.



Image



Points and lines that create the image

This way, the logo can be printed in better quality. Hale wants to recreate the client's logo in this way, with as few points as possible.

Question / Challenge

What is the minimum amount of points Hale has to use to remake the customer's logo in this way?

A) 15

B) 19

C) 21

D) 22

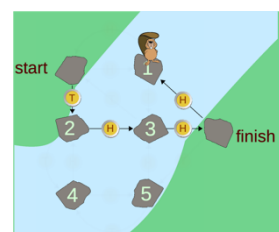
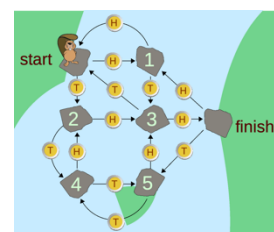
T17. Travel by coin

Flipper is jumping from stepping stone to stepping stone according to a map he has. He starts at the stone marked 'start' and travels from there according to the result of a coin toss. One side of the coin has symbol H, another side of the coin has symbol T.

Standing on the start, if the coin lands on H he will travel to stone 1, if it lands on T he will travel to stone 2.

For each stone Flipper lands on, there are instructions of where to go from there, depending on whether he throws H or T.

Shown on the right is the path Flipper would take if he threw the following coin sequence **THHH**



Question / Challenge

Which coin sequence would result in Flipper ending his journey at the stone marked 'finish', assuming he starts at the stone marked 'start'?

A) TTHTHHT

B) HTHHHT

C) TTTHTTHH

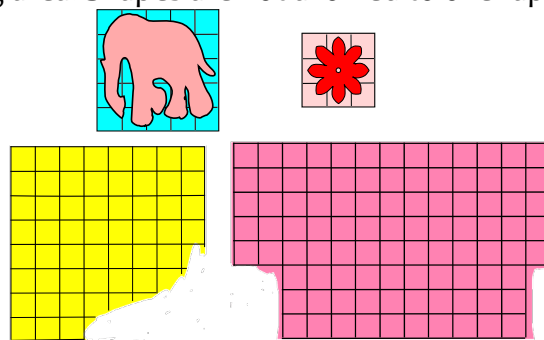
D) THTTHTTHT

T18. Applique

Applique is an art form where shapes such as animals, birds and flowers are attached to fabric.

An artist is using two different shapes for applique, an elephant and a flower. To make their planning easier, the artist divides the pieces of fabric into squares. Attaching an elephant requires an area of 25 squares (5×5 squares). Attaching a flower requires an area of 9 squares (3×3 squares).

Both shapes can be attached facing any direction and onto any colour fabric. On each piece of fabric, elephants must be attached first. The artist wants to place as many elephants as possible. When no more elephants can be attached, flowers are then attached to the remaining area. Shapes are not allowed to overlap.



Question / Challenge

What is the maximum total number of shapes which can be attached to the two pieces of fabric?

A) 8 (3 elephants and 5 flowers)

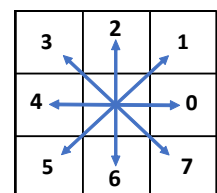
B) 10 (4 elephants and 6 flowers)

C) 9 (3 elephants and 6 flowers)

D) 10 (3 elephants and 7 flowers)

T19. Chain coding

Beavers use a method called chain coding to mark their borders with black squares. They walk around their border every day. They pick a square to start from and write down the direction they need to take to get to the next square. They repeat this until they come back to the first square. Directions are represented using numbers, as shown in the right:

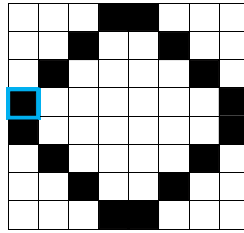


Example:

Starting square is marked	Coding directions	Chain code
		1,0, 0, 7, 7, 5, 5, 4, 3, 3, 2

Question / Challenge

Given this image:

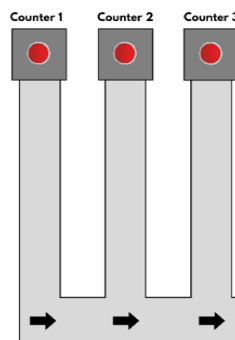


Starting at the square with the blue outline, which chain code represents the border in that image?

- A) 1, 1, 0, 0, 7, 7, 6, 6, 5, 5, 4, 4, 3, 3, 2, 2
B) 6, 7, 7, 7, 0, 1, 1, 1, 2, 3, 3, 3, 4, 5, 5, 5
C) 1, 1, 1, 0, 7, 7, 7, 6, 5, 5, 5, 4, 3, 3, 3, 2
D) 0, 1, 1, 0, 7, 7, 7, 6, 5, 5, 5, 4, 3, 3, 3, 0

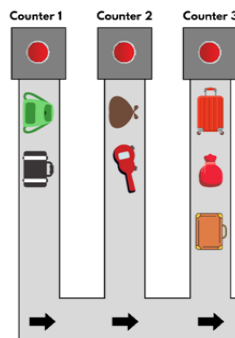
T20. Airport Luggage Check-in

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.



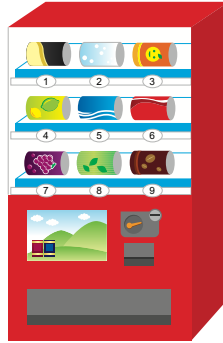
Question / Challenge

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

- A) → [red bag, brown bag, red bag, orange bag, green bag, black bag, red bag] →
B) → [black bag, green bag, red bag, brown bag, red bag, red bag, orange bag] →
C) → [green bag, black bag, red bag, brown bag, red bag, red bag, orange bag] →
D) → [black bag, green bag, orange bag, red bag, red bag, red bag, brown bag] →

T21. Favourite Drinks

Dag, Norb and Jack always buy their favourite drinks from a vending machine in their work place. Each of them has three favourites from the numbered nine options.



On Monday, only Dag and Norb worked. Together they bought drinks 1, 2, 3, 5, 8 and 9.
On Tuesday, only Norb and Jack worked. Together they bought drinks 1, 4, 5, 6, 7 and 9.

Question / Challenge

Which drinks are Dag's favourites?

A) 1, 2, 3

B) 2, 3, 9

C) 1, 2, 5

D) 2, 3, 8

