UNIVERSITY OF WATERLOO

The CENTRE for EDUCATION in MATHEMATICS and COMPUTING

2020 Beaver Computing Challenge (Grade 5 & 6)

Questions

Part A

Bear Selection

Story

Ren is allowed to bring one of his four teddy bears to school.

Ren brings the bear that has a star on one of its feet, and is wearing a scarf or a bow, but not glasses.

Question

Which bear did Ren bring to school?

(A)

(B)

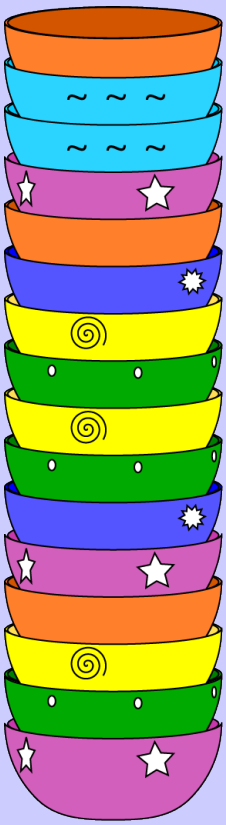
(C)

(D)

Bowls

Story

Whenever a customer orders soup, a bowl is taken from the top of the stack shown.



Question

What is the fewest number of soup orders that need to be filled so that three identical bowls are used?

(A) 13

(B) 14

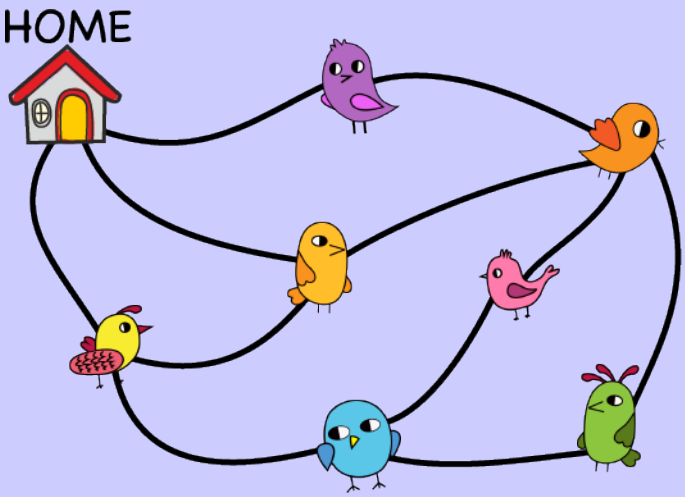
(C) 15

(D) 16

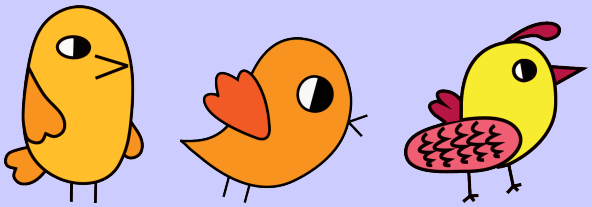
Bird Watching

Story

A family went for a walk. They started from their home and walked along some paths, eventually returning home. They did not walk on any path more than once.

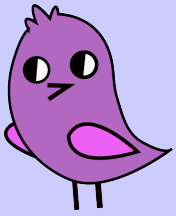


During their walk they saw *exactly* four birds. Three of the four birds they saw are shown below:

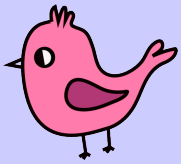


Question

Which other bird must they have seen?

(A) 

(B)

(C) 

(D)

Rare Mushrooms

Story

Colby wants to take a picture of a rare mushroom. To determine whether or not a mushroom is rare, Colby assigns points to the stem and cap according to the following table:

Points for Stem		**Points for Cap**		
Plain	Layered	Dotted	Horned	Striped
0 points	2 points	1 point	3 points	4 points

A mushroom that scores 5 points or more is rare and a mushroom that scores less than 5 points is not rare.

Question

Which one of the following four mushrooms is rare?

(A)

(B)

(C)

(D)

Part B

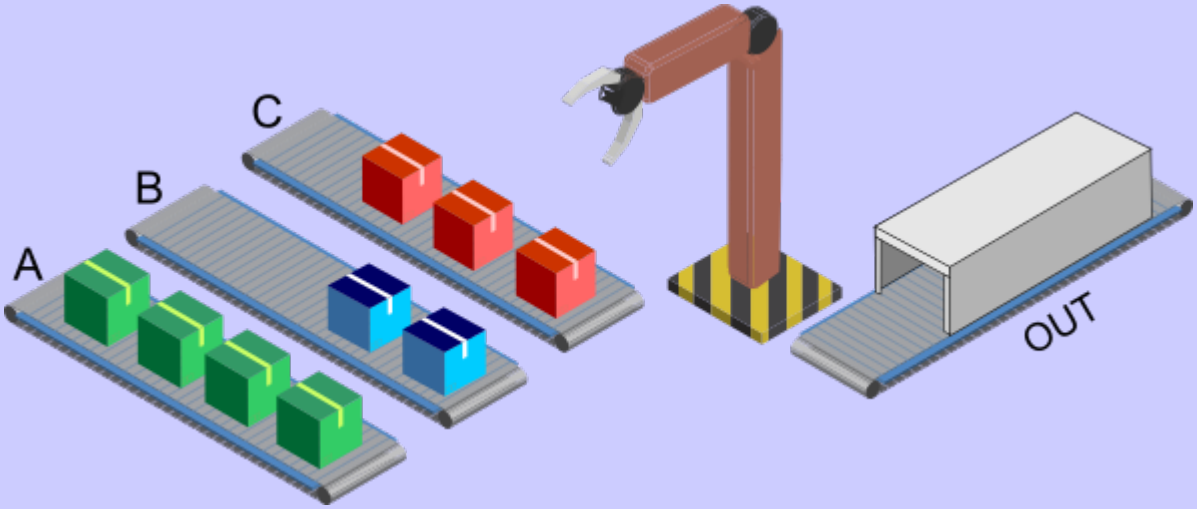
Moving Packages

Story

A robotic arm takes packages from three conveyor belts (labelled A, B, and C) and moves them to the conveyor belt labelled OUT. The rules for the robotic arm are as follows:

- If there is a package on belt A, take one and move it to belt OUT. Then,
- if there is a package on belt B, take one and move it to belt OUT. Then,
- if there is a package on belt C, take one and move it to belt OUT. Then,
- move to belt A and start again.

If the robotic arm is ready to take a package from a particular belt, but no package is available there, the robotic arm will shut down.



Question

Given the arrangement of packages on the three belts as shown, how many packages will the robotic arm move before shutting down?

(A) 9

(B) 8

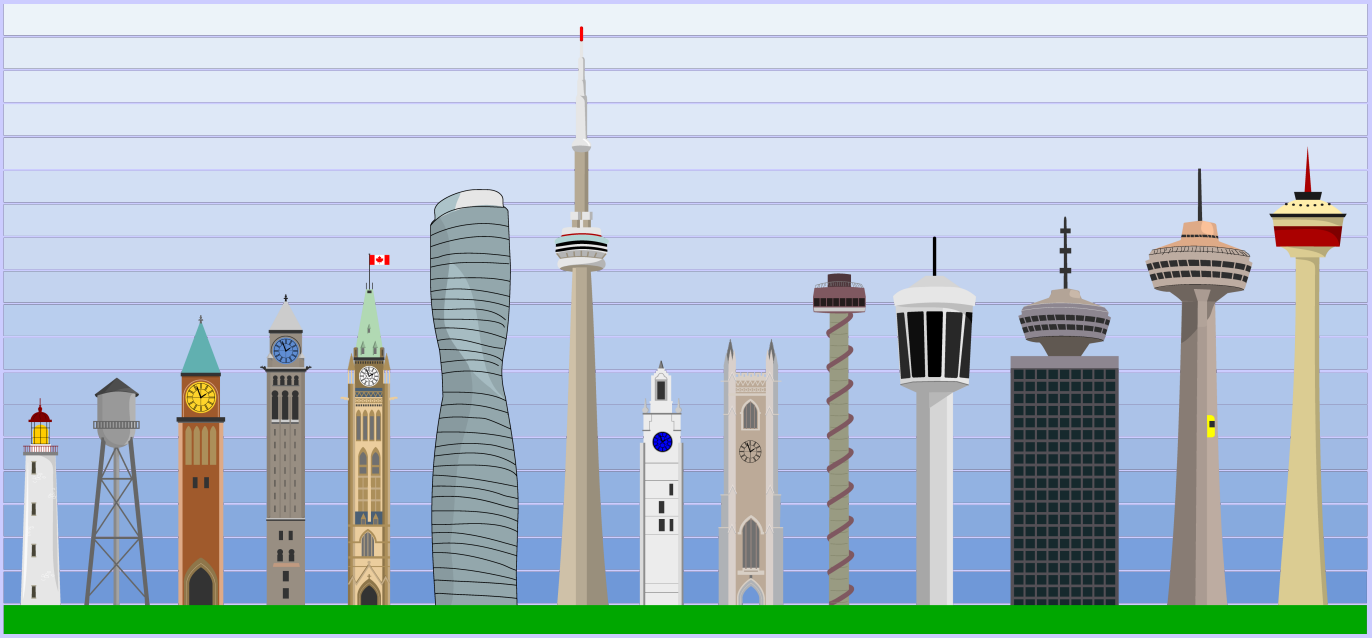
(C) 7

(D) 6

Skyline

Story

A skyline consists of 14 towers as shown.



The height of a tower is measured from the bottom of its base to its highest point, including any flagpoles or antennas.

Question

If the towers are listed from shortest to tallest, which tower would be 10th in the list?

(A)

(B)

(C)

(D)

Market Exchange

Story

A beaver goes to a market to trade items. It has one carrot but needs one fir tree .

Each stall of the market allows a different trade as shown:

Stall	Give	Get
P		
Q		
R		
S		
T		
U		
V		
W		

Question

Which of the following sequences of stalls should the beaver visit in order to trade its carrot for one fir tree ?

(A) P, Q, T

(B) W, T, U

(C) S, V, U

(D) S, R, U

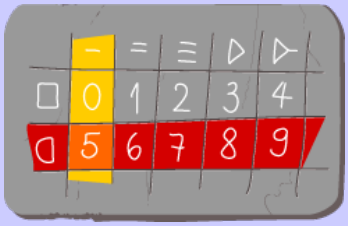
Beaver Homes

Story

Beaver homes are identified using symbols rather than digits according to the table shown:

The symbol assigned to a row and the symbol assigned to a column are combined to form a new single symbol. This symbol represents the digit where that row and column meet.

For example, the symbol represents the digit 5, since it is a combination of its row symbol and its column symbol .



Here is a picture of one beaver's home:

Question

What four-digit number is represented by the symbols on this beaver's home?

(A) 1874
(B) 1923
(C) 1824
(D) 1973

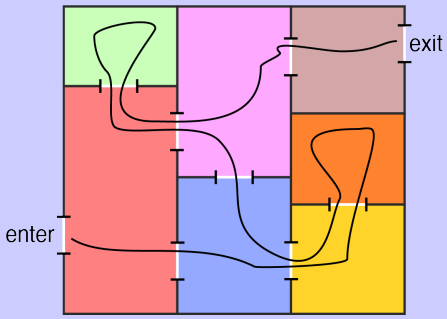
Part C

Museum Tour

Story

A new museum with seven rooms has been constructed. The builders are now trying to decide where to place the doors between rooms, so that visitors can enter, walk through the rooms, and exit.

The following possible layout of doors shows how guests might walk through the museum. Notice that some rooms are visited multiple times.

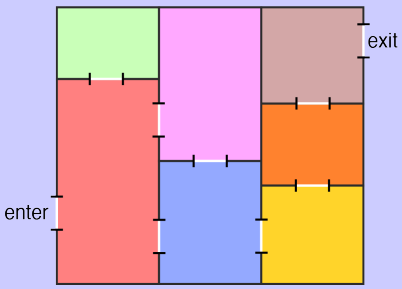


In an ideal layout, guests should be able to visit each room without having to walk through any room more than once.

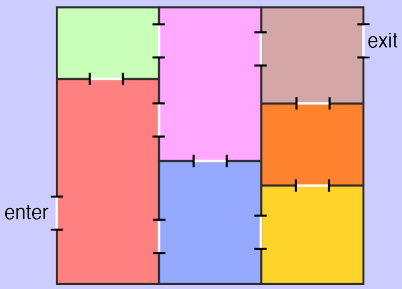
Question

Which one of the following layouts makes it possible for guests to tour the museum by visiting each room exactly once?

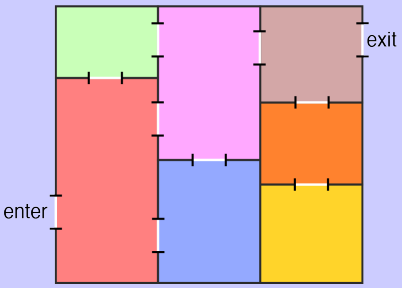
(A)



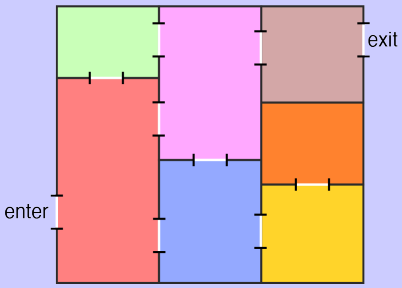
(C)



(B)



(D)

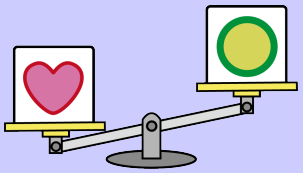


Weighing Boxes

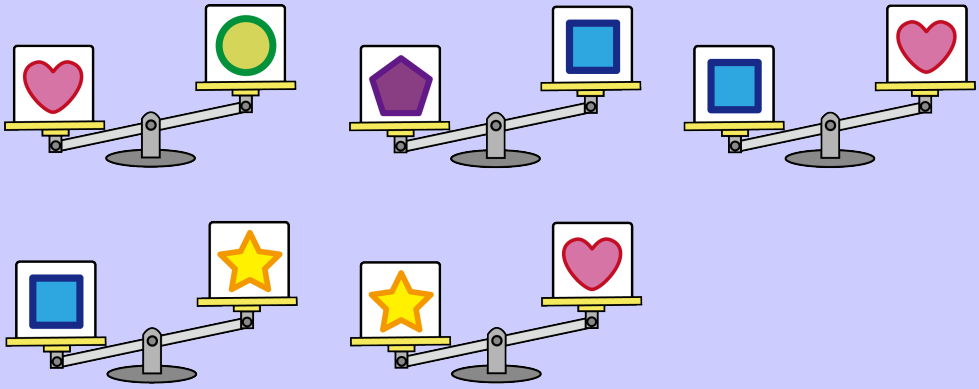
Story

There are five boxes, each featuring a different shape, and each having a different mass. Using a scale we can compare the masses of two boxes.

For example, the following scale shows that is heavier than :



Five comparisons were made, and the results are shown on the following scales:



Question

If we arrange the boxes in order from heaviest to lightest, which box would be in the middle?

(A)

(B)

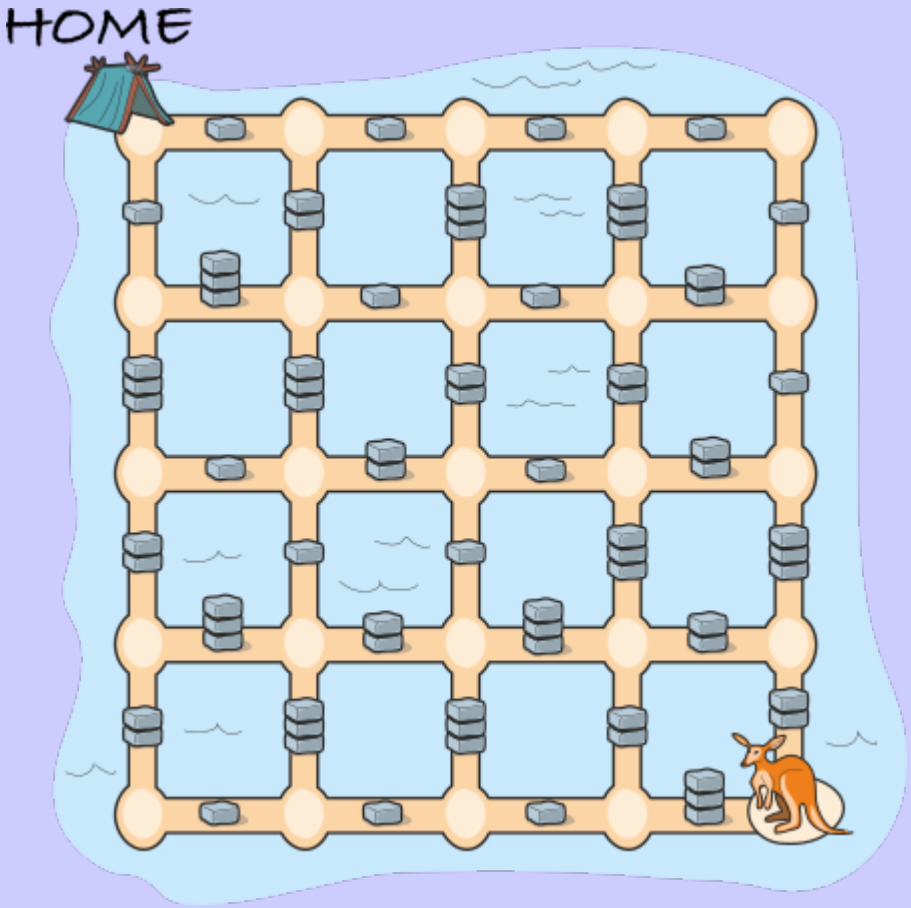
(C)

(D)

Jumping Kangaroo

Story

Kanga Roo is jumping home along the vertical and horizontal paths. Kanga jumps over exactly one pile of bricks with each jump. Kanga cannot jump over brick piles that have a height of 3 bricks.



Question

If Kanga wants to jump home using the fewest jumps possible, how many jumps must Kanga make?

(A) 8

(B) 13

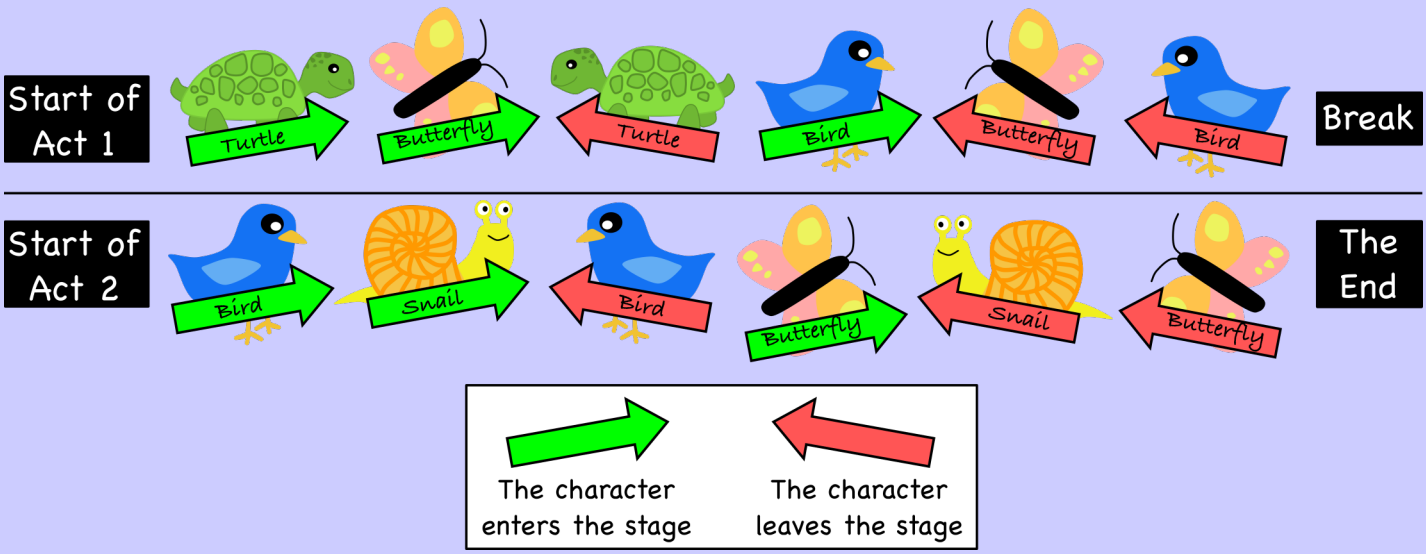
(C) 14

(D) 16

Theatre Performance

Story

Four characters are in a play. They enter and leave the stage according to the order shown, read from left to right. The play has two acts and one break between the acts.



Question

Which statement is *not* true?

(A) The snail and the butterfly were together on the stage.

(B) The turtle and the bird were together on the stage.

(C) The snail entered the stage after the break.

(D) The snail and the bird were together on the stage.