Topic 1 Variables

- Magical House
  - The magical house can only hold one person at any time
  - When the second person goes in, the first person would varnish

- Grandpa walks into the house at 9am and Grandma walks in at 9:01am.

9am

9:01am

- Who is in the house? Why? _____

- Aunt Lily, Uncle Ben and Sally take different routes to go to the house.
  - They all start at 9am.
  - The number of minutes for each route is labeled on the graph.

7 min

14 min

15 min

12 min

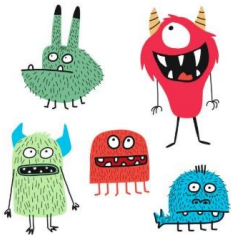
6 min

4 min

- Who is in the house at 9:10am?
- Who is in the house at 9:18am?
- Who is in the house at 9:20am?
- Who is in the house at 9:25am?

Topic 2 Arrays

- We learnt **arrays** this week. An array is a sequence of variables. Each array should have a **name** (like a street name) and some **indices** (like house numbers).
- Several aliens would like to live together on a new street. They are

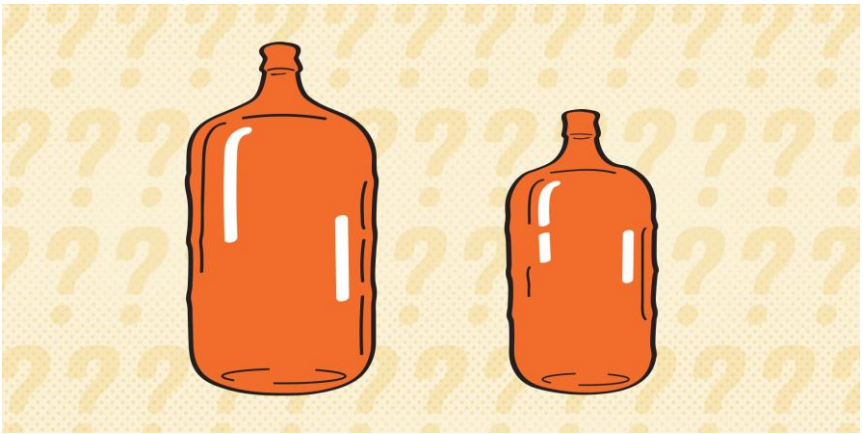


- Can you
  - give each alien a name,
  - draw a street with different shapes of houses to suit the aliens,
  - give the street a suitable name,
  - write down the name of the alien in each house.
  - Don't forget the house numbers!

- Now the alien living at No. 1 wants to swap houses with the alien living at No. 4.
  - But remember the weirdness of the houses? As soon as the second alien moves in, the first alien will be gone.
  - So please be very careful on how you do it.
  - Draw any extra things you need to make the swap.
  - Write down step by step how to swap.

Topic 3
Sequential Execution

- You have a 5-litre bottle, a 4-litre bottle and unlimited water.
- The bottles unfortunately do not have a scale, so you don't know exactly how much are 1 litre, 2 litres, 3 litres, etc.
- We want to measure 2 litres of water exactly without any other tools.
- How to achieve this? Write down or draw the steps.



Topic 4 Boolean Values

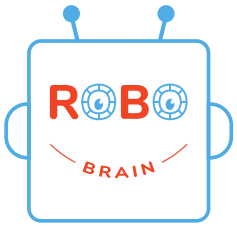
- True or False

  Put a ✓ if a statement is true.

  Put a ✗ if it is false.

- It is Sunday today. _____
- You are 7 years old. _____
- Spiders are insects. _____
- There are 365 days in a leap year. _____
- Dinosaurs are amphibians. _____
- Henry VII is not the father of Henry VIII. _____
- Water cannot be turned into gas directly. _____
- Ludwig van Beethoven is not a musician. _____
- Football does not have 11 players each side. _____
- Argentina is not in America. _____
- Lego is not edible. _____
- -9 > 3 _____
- 9 = 8 _____
- 5 ≠ 4 _____
- 5 + 4 < 7 _____

Topic 5 Flowcharts

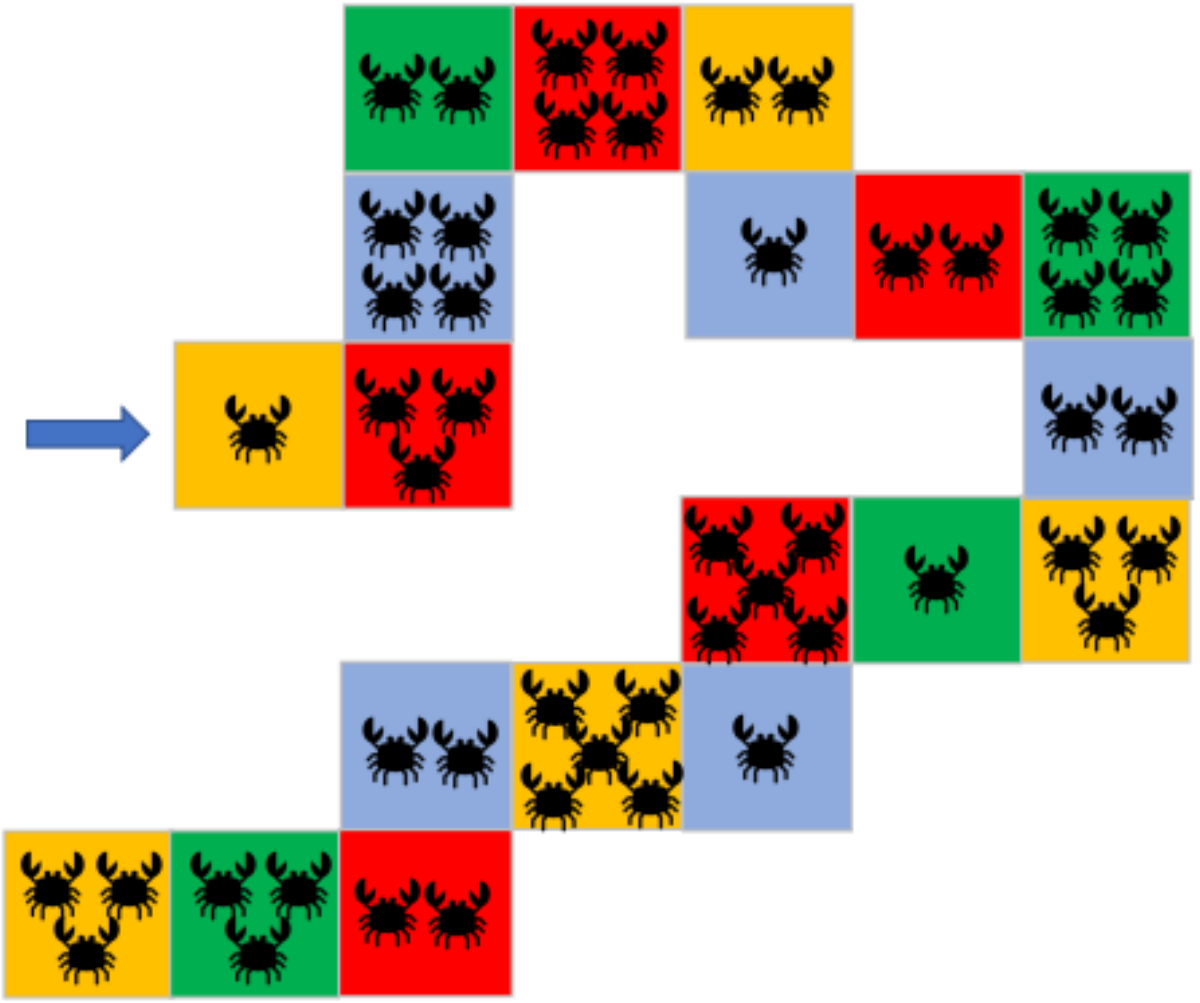


- Design and create your own flowchart
  - There should be at least 3 conditions (written in yellow diamonds)
  - There should be at least 5 actions (in blue or green rectangles)
  - Don't forget the Start and End (in purple ovals)
  - Ask your parents to perform your flowchart!

Topic 6 Conditionals

- You are walking on a coloured beach, which is famous for its black crabs.
- You will have to follow the rules to collect crabs.

```
IF (land on red or green square) and crab number > 1
        collect a crab
        forward the same number as there are crabs left on the square
ELSE
        forward one square
```



- How many crabs will you have in the end?

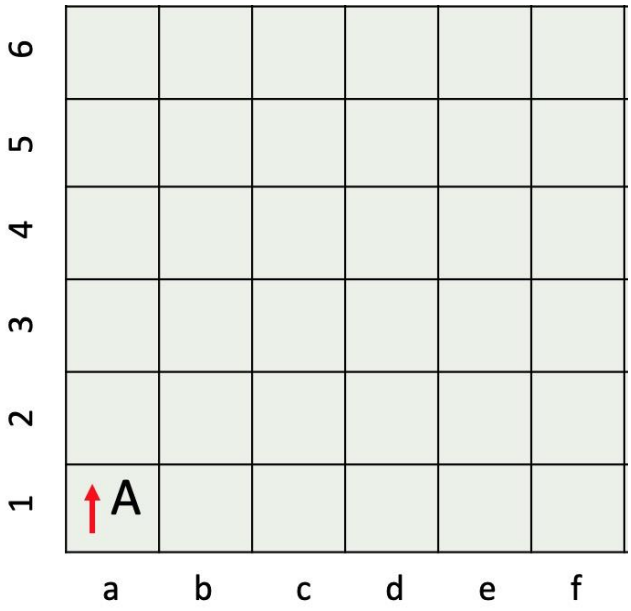
Task 7 Loops

- Remember there are two ways to go forward 4 steps in our robot.

The second way is a loop.

To use a loop, we need to tell
- where the start and end of the loop are
- what to repeat (the repeating pattern)
- how many times to repeat the pattern

- In which cell will Robot A terminate? Facing which way? Which cells have bulbs lit?



Instructions

Forward →
Left turn ↶
Right turn ↷
Backward ←
Light a bulb

Program: