# **Flowcharts and Algorithms**

**Task 1**

Complete the following definitions

**Algorithm** – a series of \_\_\_\_\_\_\_\_\_\_\_ to solve a \_\_\_\_\_\_

**Program** – a set of \_\_\_\_\_\_\_\_\_\_\_ to be followed by a \_\_\_\_\_\_\_\_\_\_\_\_ to solve a \_\_\_\_\_\_.

**Task 2 Simple Flowcharts**

1. From looking at this flowchart, what do you think each of these symbols means?



1. What is the first thing that someone following this algorithm would need to do?

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1. What is the last thing that they would need to do?

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1. Using the symbols you see above, use a pencil and ruler to draw your own flowchart showing how a person would brush their teeth.

**Task 3 More Complex Flowcharts**

1. From looking at this, what do you think the diamond symbol means?



1. What is the first thing that a person following this algorithm would have to do?

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1. Imagine the following: A door is closed but not locked. The room beyond the door is dark. Complete the list of steps that a person would need to take according to the algorithm:

Step 1: Check whether the door is locked

Step 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 5: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 6: Close door behind you

1. Complete the flowchart below to represent Miss Scott’s morning routine:

Step 1: Wake up

Step 2: Get out of bed

Step 3: Check if she’s running late

Step 4: If not running late, go to step 5. If running late, skip straight to step 6

Step 5: Have a cup of tea

Step 6: Check whether hair is messy

Step 7: If hair is messy, go to step 8. If hair is not messy, skip to step 9.

Step 8: Straighten hair

Step 9: Get dressed

Step 10: Brush teeth

Step 11: Eat breakfast

Start

Wake up

No

Running late?

Yes

Yes

Straighten hair

No

Get dressed

1. Have a look at this flowchart.



1. What does the arrow from “move forward 1cm” do? (Hint: this is called a loop).

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1. Complete the following to describe the algorithm:

“Stop” will be set to false at the start. If there is no obstacle, stop will remain \_\_\_\_\_\_ and the robot will move forward 1cm, then check again for an \_\_\_\_\_\_\_\_\_\_. This process will repeat until the robot comes to an \_\_\_\_\_\_\_\_\_ when “stop” will be set to \_\_\_\_\_\_\_\_\_ and the robot will stop moving.



1. What does the symbol mean?

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**Extension Task**

Think of your own scenario. If you are feeling brave this might include decisions and/or loops! Write it out below, first as a list of steps, then as a flowchart. When you are done, give it to a friend and ask them to write underneath what the algorithm will do. Is it the same as what you were planning?