



Computing Scheme of Work Unit 1.5 – Maze Explorers



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Introduction

For the following four sessions, you will need [2Go](#), which can be found on Purple Mash in the Tools area. Refer to the [2Go user guide](#) for more information on this tool.

These lesson plans make use of the facility within Purple Mash to set activities for children which they can then complete and hand in online (2Dos). This enables you to assess their work easily as well as distribute resources to all children. If children have not opened 2Dos before, they will need more detailed instructions for how to do this. If your children do not have individual logins for Purple Mash, we can help you with this. Contact your school Purple Mash administrator or email us at support@2simple.com.

A teacher's guide to 2Dos can be found in the Teacher section: [2Dos Guide](#).

To force links within this document to open in a new tab, right-click on the link and then select 'Open link in new tab'.



Medium-Term Plan

Lesson	Title	Aims (Objectives)	Success Criteria
<u>1</u>	Challenges 1 and 2	- To understand the functionality of the basic direction keys in Challenges 1 and 2. - To be able to use the direction keys to complete the challenges successfully.	- Children know how to use the direction keys in 2Go to move forwards, backwards, left and right. - Children know how to add a unit of measurement to the direction in 2Go Challenge 2. - Children know how to undo their last move. - Children know how to move their character back to the starting point.
<u>2</u>	Challenges 3 and 4	- To understand the functionality of the basic direction keys in Challenges 3 and 4. - To understand how to create and debug a set of instructions (algorithm).	- Children can use diagonal direction keys to move the characters in the right direction. - Children know how to create a simple algorithm. - Children know how to debug their algorithm.
<u>3</u>	Challenges 5 and 6	- To use the additional direction keys as part of their algorithm. - To understand how to change and extend the algorithm list. - To create a longer algorithm for an activity.	- Children can use the additional direction keys to create a new algorithm. - Children can challenge themselves by using the longer algorithm to complete challenges.
<u>4</u>	Setting More Challenges	- To provide an opportunity for the children to set challenges for each other. - To provide an opportunity for the teacher to add these challenges to a display board for the class to try.	- Children can change the background images in their chosen challenge and save their new challenge. - Children have tried each other's challenges.



Lesson 1 – Challenges 1 and 2

Aims

- To understand the functionality of the basic direction keys in Challenges 1 and 2.
- To be able to use the direction keys to complete the challenges successfully.

Success criteria

- Children know how to use the direction keys in 2Go to move forwards, backwards, left and right.
- Children know how to add a unit of measurement to the direction in 2Go Challenge 2.
- Children know how to undo their last move.
- Children know how to move their character back to the starting point.

Resources

Unless otherwise stated, all resources can be found on the [Lesson Materials: Lesson 1 page](#). From here, they can be set as 2Dos by clicking on the icon. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

- [2Go: Lesson 1 Challenge 1](#)
- [2Go: Lesson 1 Challenge 2](#)
- Additional extension activities for the 2Go challenges:
[Extension Activity 1 – Lesson 1 Level 1](#)
[Extension Activity 2 – Lesson 1 Level 2](#)
- To make the most of this unit, it would be helpful if the children had had the opportunity to work with simple programmable toys to help develop directional language before engaging with this unit of work.
- 2Go works well if you create your own challenges for the children. Having created the challenge, you can then set the activity for the children as a 2Do. Help with setting 2Do lists can be found at [2Dos Guide](#).
- You can select the following objectives when setting the 2Do to make future assessment easier:

Edit Objectives



Year:	Y1	✓
Subject:	Computing	✓
Strand:	Computer Science	✓

Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

Create and debug simple programs.

Use logical reasoning to predict the behaviour of simple programs.

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Activities

Introduction	Display slide 2 and outline the lesson aims. Display slide 3 and outline the success criteria.
Vocabulary	Slide 4 can be used to review previous vocabulary. Further slides introduce new vocabulary. The vocabulary is repeated at the end of the lesson where it can be used to review new vocabulary.
2Go	Display slide 5 and introduce the program 2Go from the tools section of Purple Mash. Clicking reveals further information.
Activity 1: Challenge 1	Use slide 6 to open Challenge 1 Demonstrate how to use the direction keys to move the fish around the screen.
Activity 1: Challenge 1	Use slide 7 to ensure children understand the program and use the suggested questions to ensure children understand what the challenge is asking them to do. When confident, allow them to have a go on their devices. (Setting Challenge 1 as a 2Do enables quick access to this challenge from the 2Do area).
Activity 2: Challenge 2	Use slide 8 to introduce Challenge 2. (Click on the link to open Challenge 2). Discuss the questions first then click to reveal answers.
Activity 2: Challenge 2	Use slide 9 to ensure children understand the program and use the suggested questions to ensure children understand what the challenge is asking them to do. When confident, allow them to have a go on their devices. (Setting Challenge 2 as a 2Do enables quick access to this challenge from the 2Do area).
Activity 2: Challenge 2: Other things to try...	Use slide 10 to suggest other things the children can try after they have reached the bank and hospital. Children can explore another scene by clicking new, then using the white arrow keys to scroll through different backgrounds.
Activity 3: Extension	Use slide 11 to display extension tasks found on the Lesson 1 page and linked above in the lesson plan resources.

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	Lesson 1 Level 1 uses the direction keys in Challenge 1. Lesson 1 Level 2 uses the direction keys and number pad in Challenge 2.
Vocabulary Overview	Slide 12 can be used to review lesson vocabulary. Click on the words to reveal the definitions.
Review Success Criteria	Review the success criteria on slide 13 . Children could rate how well they achieved this using a show of hands.



Lesson 2 – Challenges 3 and 4

Aims

- To understand the functionality of the basic direction keys in Challenges 3 and 4.
- To understand how to create and debug a set of instructions (algorithm).

Success Criteria

- Children can use diagonal direction keys to move the characters in the right direction.
- Children know how to create a simple algorithm.
- Children know how to debug their algorithm.

Resources

Unless otherwise stated, all resources can be found on the [Lesson Materials: Lesson 2 page](#). From here, they can be set as 2Dos by clicking on the icon. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

- [2Go: Lesson 2 Challenge 3](#)
- [2Go: Lesson 2 Challenge 4](#)
- Extension activities for the 2Go challenges can be found at:
[Extension Activity 1 – Lesson 2 Level 1](#)
[Extension Activity 2 – Lesson 2 Level 2](#)
- You can select the following objectives when setting the 2Do to make future assessment easier:

Edit Objectives ×

Year:	Y1	✓
Subject:	Computing	✓
Strand:	Computer Science	✓

Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

✓

Create and debug simple programs.

✓

Use logical reasoning to predict the behaviour of simple programs.

✓

Activities

Introduction	Display slide 2 and outline the lesson aims. Display slide 3 and outline the success criteria.
Vocabulary	Slide 4 can be used to review previous vocabulary. Further slides introduce new vocabulary.

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2Go	Display slide 5 and remind children what 2Go is and how it works.
Activity 1: Challenge 3	Use slide 6 to open challenge 3. Discuss the new direction keys.
Activity 1: Challenge 3	Use slide 7 to talk through challenge 3. Show children that the next island they need to go to will light up. When confident, allow them to have a go on their devices. (Setting Challenge 3 as a 2Do enables quick access to this challenge from the 2Do area).
Activity 2: Challenge 4	Use slide 8 to introduce challenge 4. Click on the link in the slide to open challenge 4.
Activity 2: Challenge 4	Use slide 9 to explain what they need to do and demonstrate as a whole class.
Activity 2: Challenge 4	After demonstrating the challenge, share slide 10 and let the children have a go on their own devices. (Setting Challenge 4 as a 2Do enables quick access to this challenge from the 2Do area).
Activity 2: Challenge 4 - Solution	When children have had a try themselves, share the solution on slide 11 and replicate on the program. Read the instructions out with the children and go through the route before you press play.
Activity 3: Extension	Use slide 12 to display extension tasks found on the main unit page and linked in the lesson plan resources. Lesson 2 Level 1 uses the direction keys in Challenge 3. Lesson 2 Level 2 uses the direction keys and number pad in Challenge 4.
Vocabulary Overview	Slide 13 can be used to review lesson vocabulary. Click on the words to reveal the definitions.
Review Success Criteria	Review the success criteria on slide 14 . Children could rate how well they achieved this using a show of hands.



Lesson 3 – Challenges 5 and 6

Aims

- To use the additional direction keys as part of their algorithm.
- To understand how to change and extend the algorithm list.
- To create a longer algorithm for an activity.

Success criteria

- Children can use the additional direction keys to create a new algorithm.
- Children can challenge themselves by using the longer algorithm to complete challenges.

Resources

Unless otherwise stated, all resources can be found on the [Lesson Materials: Lesson 3 page](#). From here, they can be set as 2Dos by clicking on the icon. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

- [2Go: Lesson 3 Challenge 5](#)
- [2Go: Lesson 3 Challenge 6](#)
- Additional extension activities for the 2Go challenges can be found at:
[Extension Activity 1 – Lesson 3 Level 1](#)
[Extension Activity 2 – Lesson 3 Level 2](#)
- You can select the following objectives when setting the 2Do to make future assessment easier:

Edit Objectives
✕

Year:	Y1	✓
Subject:	Computing	✓
Strand:	Computer Science	✓

Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
☒

Create and debug simple programs.
☒

Use logical reasoning to predict the behaviour of simple programs.
☒

Activities

Introduction	Display slide 2 and outline the lesson aims. Display slide 3 and outline the success criteria.
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Vocabulary	Slide 4 can be used to review previous vocabulary. Further slides introduce new vocabulary.
2Go	Display slide 5 and remind children what 2Go is and how the direction keys work to create an algorithm (list of instructions).
Activity 1: Challenge 5	Use slide 6 to introduce and demonstrate challenge 5. The new program list will give the children the opportunity to create a longer program and may help them with the next activities.
Activity 1: Challenge 5	Children can have a go at challenge 5. (Setting challenge 5 as a 2Do enables quick access to this challenge from the 2Do area). Use the questioning on slide 7 to extend children.
Activity 2: Challenge 6	Use slide 8 to introduce and demonstrate challenge 6.
Activity 2: Challenge 6	Children can have a go at challenge 6. (Setting challenge 6 as a 2Do enables quick access to this challenge from the 2Do area). Use the questioning on slide 9 to extend children.
Activity 2: Challenge 6 - Solution	When children have had a try themselves, share the solution on slide 10 and replicate on the program. Read the instructions out with the children and go through the route before you press play.
Activity 3: Extension	Use slide 11 to display extension tasks found on the main unit page and linked on the lesson plan resources. Lesson 3 Level 1 uses the direction keys in Challenge 5. Lesson 3 Level 2 uses the direction keys in Challenge 6.
Vocabulary Overview	Slide 12 can be used to review lesson vocabulary. Click on the words to reveal the definitions.
Review Success Criteria	Review the success criteria on slide 13 . Children could rate how well they achieved this using a show of hands.



Lesson 4 – Setting More Challenges

Aims

- To provide an opportunity for the children to set challenges for each other.
- To provide an opportunity for the teacher to add these challenges to a display board for the class to try.

Success criteria

- Children can change the background images in their chosen challenge and save their new challenge.
- Children have tried each other's challenges.

Resources

Unless otherwise stated, all resources can be found on the [Lesson Materials: Lesson 4 page](#). From here, they can be set as 2Dos by clicking on the icon. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

- [2Go](#), which can be found on Purple Mash in the Tools area.
- You can select the following objectives when setting the 2Do to make future assessment easier:

Edit Objectives

Year:

Y1

▼

Subject:

Computing

▼

Strand:

Computer Science

▼

Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

✓

Create and debug simple programs.

✓

Use logical reasoning to predict the behaviour of simple programs.

✓

Activities

Introduction	Display slide 2 and outline the lesson aims. Display slide 3 and outline the success criteria.
Vocabulary	Slide 4 can be used to review previous vocabulary. Further slides introduce new vocabulary.
2Go	Display slide 5 and discuss the questions about 2Go.

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Activity 1: Create a Challenge	Use slide 6 to demonstrate how to create their own challenge. Let children work in pairs to set each other challenges to complete.
Activity 2: Evaluation	After giving the children time to do the activity, use slide 7 to help children evaluate their challenges. You might want children to share their activities to a class display board so they can try a range of their peers' activities. (See the Display Boards Guide for instructions.)
Activity 3: Extension	Use slide 8 to display an optional extension task.
Vocabulary Overview	Slide 9 can be used to review lesson vocabulary. Click on the words to reveal the definitions.
Review Success Criteria	Review the success criteria on slide 10 . Children could rate how well they achieved this using a show of hands.



Assessment Guidance

The unit overview for Year 1 contains details of national curricula mapped to the Purple Mash Units. The following information is an exemplar of what a child at an expected level would be able to demonstrate when completing this unit with additional exemplars to demonstrate how this would vary for a child with emerging or exceeding achievements.

Assessment Guidance	
Emerging	Children can use the buttons to move their character purposefully. They move one step at a time towards the goal rather than anticipating several steps. In (Unit 1.5 Lesson 2), they needed support with challenges 4 and 5 which require anticipating several steps. Children can tackle challenges 4-6 with support, though they might not complete all challenges. They are starting to be able to work out why their program doesn't work as they expect and know that it is due to the instructions which they are inputting rather than a fault with the computer understanding the instructions. With support, children can explain the possible ways to make their turtle move. When looking at a program they can 'read' the code one line at a time but might not be able to envision the bigger picture of the overall effect of the program. When presented with an example from challenges 4-6, they will struggle to work out where the turtle will end up at the end of the program but will know that it will move.
Expected	Children can use the buttons to move their character purposefully. They can plan their moves several steps at a time towards the goal rather than one step at a time. In (Unit 1.5 Lessons 2 & 3), they were able to complete challenges 4 and 5 which require anticipating several steps. In (Unit 1.5 Lessons 2 & 3), children can complete challenges 4 and 5 which require anticipating several steps to build a program. They know that any unexpected outcome is due to the code that they have created and make logical attempts to try to fix this code rather than attributing it to a fault with the computer understanding the instructions. Children can explain the possible ways to make their turtle move in the different levels of 2Go. When looking at a program they can 'read' the code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. When presented with an example from challenges 4-6, they

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Assessment Guidance

	can sometimes work out where the turtle will end up at the end of the program and when they are incorrect, they will make good attempts to work out why. Most children will be able to save their 2go maze files, using a memorable file name, to their own personal space on Purple Mash and understand that this can be retrieved later Unit 1.5 Lesson 4. Using 2Go, children can use simple direction keys in conjunction with a number pad (add a unit of measurement) to move an on-screen character to specific locations on a screen. They demonstrate that their sequence of buttons relates to their thinking of how to solve a problem of getting character from point A to point B (Unit 1.5. Lesson 1). As children move through this unit, they demonstrate an ability to successfully use diagonal direction keys combined with number pad to refine their solution for solving a problem (Unit 1.5. Lessons 2 to 3). Most children can make a screen character 'sprite' navigate to a specific place using 2Go. Using strategies such as drawing the route with their finger, counting squares with a grid and testing how many squares each command moves the character, the children have broken down a problem to solve a solution (Unit 1.5. Lesson 1). Children can use the 'list' feature in 2Go to generate an algorithm to solve a given problem. They test their instructions until they finally make an algorithm which works (Unit 1.5. Lesson 2). Their skill of breaking down a problem to solve it is evident in their ability to create increasingly longer and more complex algorithms, including number of units moved and diagonal controls (Unit 1.5. Lessons 3 & 4). Most children can change an algorithm to create a different outcome when using 2Go. Their skill at debugging an algorithm and then changing it to perform an intended outcome is secure. Children use alternative algorithms to achieve the same outcomes, beginning to understand refinement of instruction (Unit 1.5. Lesson 3).
Exceeding	Children choose to plan their moves several steps at a time towards the goal even reaching the goal in one 'run' of the program rather than one step at a time. In (Unit 1.5 Lessons 2 & 3, they were able to complete challenges 4 - 6 which require anticipating several steps with ease. Children challenge themselves by creating their own complex challenges. Children choose to plan their moves several steps at a time towards the goal. In (Unit 1.5 Lessons 2 & 3), they can complete challenges 4 - 6 which require anticipating several steps with ease. Children challenge themselves by creating their own complex challenges.



Assessment Guidance

They intuitively debug their code knowing that any unexpected outcome is down to the code and not the computer's understanding.

Children can explain the possible ways to make their turtle move in the different levels of 2Go. When looking at a program they can 'read' the code one line and envision the bigger picture of the overall effect of the program. When presented with an example from challenges 4-6, they can often work out where the turtle will end up at the end of the program and when they are incorrect, they are able to work out why.