Puzzle Pack 2

for kids, with kids, by kids.

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About this guide

This guide is for teachers and club volunteers and provides a solution to completing the puzzles. For this reason, **this document should not be shared with children**. This document also outlines the learning objective of each puzzle.

Back on Track

Constant parameters in functions | Changing values | A3 | E2

YA1 | YP2 | PA2 | PP3

Description
Back On Track introduces the player to BoostPads and the ability to manipulate values, in this case directional values. These BoostPads have a single arrow and will propel characters one square.

Design Tip
Use the water block to turn the puzzle area into a big lake before starting to design the path across it. This will make it easier to plan a route that works with the BoostPads.

Steps to complete

1. Build a lake with a narrow path across it.
2. Place the BoostPad along the path. In this state it should direct the Glitch stepping on the BoostPad into the water.
3. Place the Blue Button in the puzzle area.

4 Code the obstacle to be solved when the button is pressed. Pressing the button should also trigger changing the direction of the BoostPad so the tester can proceed.

5 Test the puzzle using the play icon in the bottom right corner of the screen.

Code required to complete the puzzle

To correctly build this puzzle you will need to write the code shown on the right. The BoostPad should change direction when the button is pressed to allow the tester to reach the checkpoint at the end of the puzzle area.

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Skill Development

JavaScript	Constant parameters in functions:I understand how parameters can affect the output of a function. Changing values (numbers, strings, Booleans): I understand the difference among different types of values and can explain in what situations I might use each.
Computational Thinking	A3: Writing instructions that store, move and manipulate data to achieve a desired effect; (variables and assignment). E2: Assessing whether an algorithm does the right thing (functional correctness).
Computing Progression	YA1: I know that algorithms are implemented on digital devices as programs. YP2: I can use logical reasoning to predict the behaviour of programs. PA2: I know that computers need precise instructions. PP3: I can run, check and change programs.

Over the HIll

Constant parameters in functions | Changing values | A3 | E2

YA1 | YP2 | PA2 | PP3

Description
Over the Hill introduces the player to catapults and also reinforces manipulating values learned in Back on Track.

Design Tip
These catapults will fling characters three squares. This value can't be changed for this puzzle.

Steps to complete

1. Build a hill to act as a barrier.
2. Place the catapult near the hill. In this state it should direct the Glitch stepping on it away from the hill.
3. Place the Blue Button in the puzzle area.

4 Code the obstacle to be solved when the button is pressed. Pressing the button should also trigger changing the direction of the catapult so the tester is flung over the hill.

5 Test the puzzle using the play icon in the bottom right corner of the screen.

Code required to complete the puzzle

To correctly build this puzzle you will need to write the code shown below. The catapult should change direction when the button is pressed to fling the tester over the hill and reach the checkpoint at the end of the puzzle area.

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Skill Development

JavaScript	Constant parameters in functions:I understand how parameters can affect the output of a function. Changing values (numbers, strings, Booleans): I understand the difference among different types of values and can explain in what situations I might use each.
Computational Thinking	A3: Writing instructions that store, move and manipulate data to achieve a desired effect; (variables and assignment). E2: Assessing whether an algorithm does the right thing (functional correctness).
Computing Progression	YA1: I know that algorithms are implemented on digital devices as programs. YP2: I can use logical reasoning to predict the behaviour of programs. PA2: I know that computers need precise instructions. PP3: I can run, check and change programs.

Pathfinder

Constant parameters in functions | Changing values | A3 | E2

YA1 | YP2 | PA2 | PP3

Description
Pathfinder adds a layer of complexity to the BoostPad puzzle created in Back on Track. The double BoostPads will propel characters until they collide with another object so will require more careful design.

Design Tip
Use the water block to turn the puzzle area into a big lake before starting to design the path across it. This will make it easier to plan a route that works with the BoostPads.

Steps to complete

1. Build a lake with a narrow path across it.

2. Place the BoostPads along the path. In this state they should direct the Glitch stepping on them into the water.

3 Place the Blue Button in the puzzle area.

4 Code the obstacle to be solved when the button is pressed. Pressing the button should also trigger changing the direction of the BoostPads so the tester can proceed.

5 Test the puzzle using the play icon in the bottom right corner of the screen.

Code required to complete the puzzle

To correctly build this puzzle you will need to write the code shown on below. The BoostPads should change direction when the button is pressed to allow the tester to reach the checkpoint at the end of the puzzle area.

Skill Development

JavaScript	Constant parameters in functions:I understand how parameters can affect the output of a function. Changing values (numbers, strings, Booleans): I understand the difference among different types of values and can explain in what situations I might use each.
Computational Thinking	A3: Writing instructions that store, move and manipulate data to achieve a desired effect; (variables and assignment). E2: Assessing whether an algorithm does the right thing (functional correctness).
Computing Progression	YA1: I know that algorithms are implemented on digital devices as programs. YP2: I can use logical reasoning to predict the behaviour of programs. PA2: I know that computers need precise instructions. PP3: I can run, check and change programs.

Glitch-apult

Constant parameters in functions | Changing values | A3 | E2

YA1 | YP2 | PA2 | PP3

Description
Glitch-apult is similar to Over the Hill but requires a greater level of puzzle design. Players should use three catapults to successfully fling the tester around the puzzle area so they can reach the checkpoint.

Design Tip
The catapults in this puzzle have distance values that can be manipulated giving the player greater freedom when designing the puzzle.

Steps to complete

1. Build three islands, one for each catapult.
2. Place a catapult on each island.
3. Place the Blue Button in the puzzle area.

4 Code the obstacle to be solved when the button is pressed. Pressing the button should also trigger changing the direction of the catapult so the tester is flung to the next island.

5 Test the puzzle using the play icon in the bottom right corner of the screen.

Code required to complete the puzzle

To correctly build this puzzle you will need to write the code shown below. The catapult should change direction when the button is pressed to fling the tester over the hill and reach the checkpoint at the end of the puzzle area.

Skill Development

JavaScript	Constant parameters in functions:I understand how parameters can affect the output of a function. Changing values (numbers, strings, Booleans): I understand the difference among different types of values and can explain in what situations I might use each.
Computational Thinking	A3: Writing instructions that store, move and manipulate data to achieve a desired effect; (variables and assignment). E2: Assessing whether an algorithm does the right thing (functional correctness).
Computing Progression	YA1: I know that algorithms are implemented on digital devices as programs. YP2: I can use logical reasoning to predict the behaviour of programs. PA2: I know that computers need precise instructions. PP3: I can run, check and change programs.