Simple Loops

Introduction

You will aim to learn the following objectives and keywords during this lesson.

Learning Objective	• To identify a loop in a program • To discuss the benefit of a loop in a program • To create a program using a loop
Keywords	• Loop • Instructions

Setting the Scene

"Do you do something more than once?"

Loops are used to save time saying the same thing over and over again.

Concept	How it is used
A _**loop**_ is used when an action needs to be completed more than once.	If you need to move forward 4 steps, you could say: Move forward Move forward Move forward Move forward It is easier and saves time to say Move forward 4 times

Can you think of a time where you had to do the same thing more than once?

First let us look at when to use a loop.

Scenario 1	Scenario 2
	Building a tower using blocks.
A dance routine consists of individual steps to complete. However, if you were told each step it would take a lot of time to work through. If the steps are combined i.e. stamp left foot 4 times, it will save time and make it easier to follow the steps.	If the instructions were to place one block on top of another each time it could take time to give the instructions to build up 10 blocks. If the instruction was building a tower placing blocks on top of each other 10 times, it is easier to follow and quicker to say.

Without a loop

JUMP	JUMP	JUMP	JUMP

With a loop

JUMP x 4
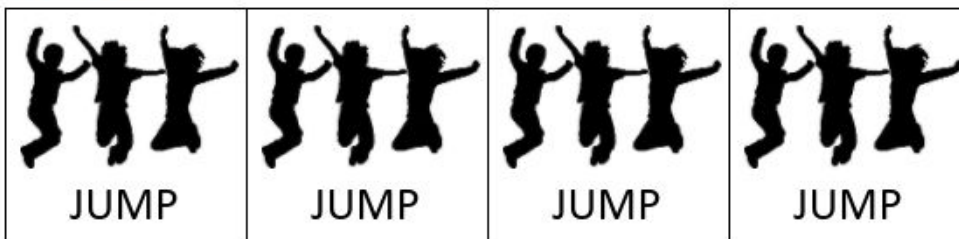
Activities

Activity 1 – follow the instructions

1. Draw a 1cm line
2. Draw a 1cm line
3. Draw a 1cm line
4. Draw a 1cm line
5. Draw an arrowhead at the end of the line

Activity 2 – dot-to-dot

.56
.55   .57

.54
.58   .1
.64
.53   .2
.59   .63
.3
.52   .4
.60
.61   .62   .5
.51
.50   .6
.7
.49   .8
.9
.10
.48
.11
.47
.12
.46
.13
.14
.45   .15
.44   .16
.43
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.37
.29
.36 .35   .30   .28   .24 .23
.27 .26 .25
.34
.31
.33 .32
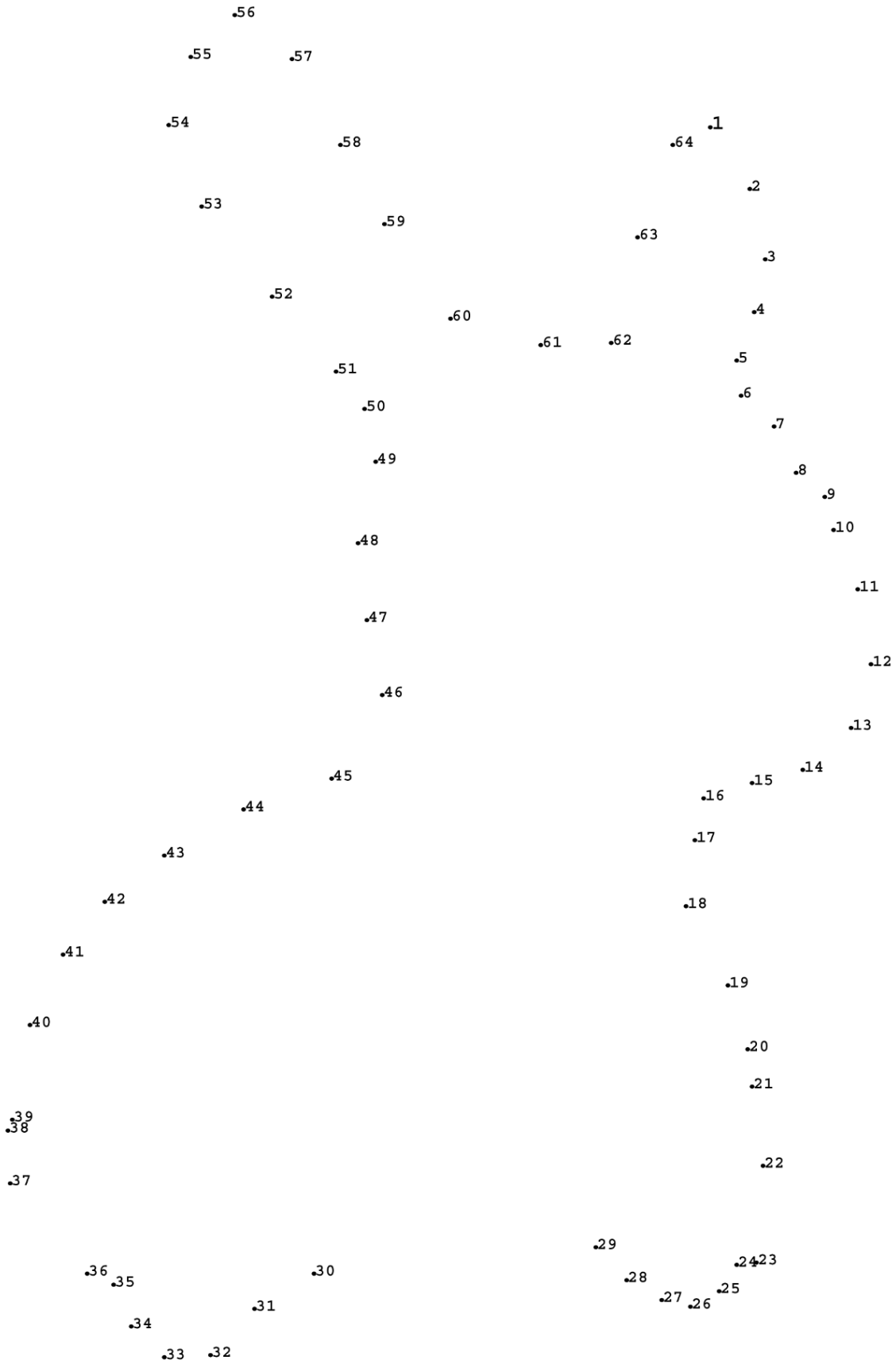
MiRo Program Predictions

Program	What do you think will happen?	Were you right?
Program Start Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps		
Program Start repeat 4 times do Move MiRo Forwards 1 steps		
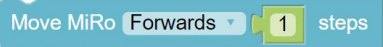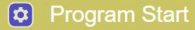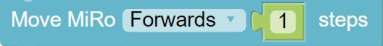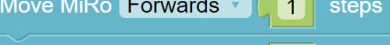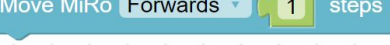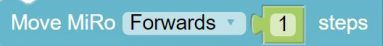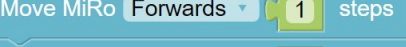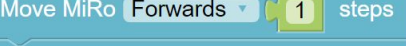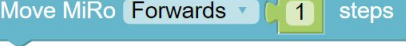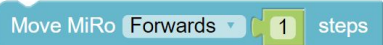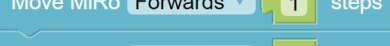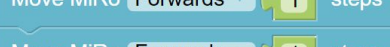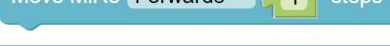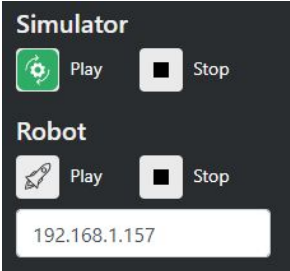
Summary Self-Assessment

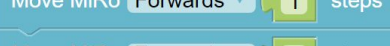| Question	Got it	Got it with help	Unsure
Can you identify a loop in a program?	☐	☐	☐
Can you discuss the benefit of a loop in a program?	☐	☐	☐
Can you create a program using a loop?	☐	☐	☐
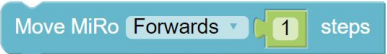
Step-by-Step

Create the programs to run and see if your predictions were correct

Program 1

Step				
1	Add 1 x **Program Start**	Program Start		
2	Add 1 x **Move MiRo [forwards] [1] steps**	Move MiRo Forwards 1 steps		Program Start Move MiRo Forwards 1 steps
3	Add 1 x **Move MiRo [forwards] [1] steps**	Move MiRo Forwards 1 steps		Program Start Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps
4	Add 1 x **Move MiRo [forwards] [1] steps**	Move MiRo Forwards 1 steps		Program Start Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps
5	Add 1 x **Move MiRo [forwards] [1] steps**	Move MiRo Forwards 1 steps		Program Start Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps Move MiRo Forwards 1 steps
6	Click **Simulator Play** or **Robot Play**			Simulator Play Stop Robot Play Stop 192.168.1.157

Program 2

Step			
1	Add 1 x **Program Start**	Program Start	
2	Add 1 x **repeat [10] times**	repeat 10 times do	Program Start repeat 10 times do
3	Set to 4		Program Start repeat 4 times do
4	Add 1 x **Move MiRo [forwards] [1] steps**	Move MiRo Forwards 1 steps	Program Start repeat 4 times do Move MiRo Forwards 1 steps
5	Click **Simulator Play** or **Robot Play**		Simulator [Play] [Stop] Robot [Play] [Stop] 192.168.1.157