Unit 1: Year 1: Computational Thinking with Cubetto – Maths
(For use with 6x Cubettos, Boards, Sets of Blocks & City Maps)

By the end of the unit pupils will be able to: understand what an algorithm is, how it is implemented on devices, and that programs execute by precise instructions. Pupils will also be able to create and debug a simple algorithm and use logical reasoning to predict the behaviour of simple programs.

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8
NC Computing Objectives	To explore a digital device	To understand how algorithms are implemented on devices	To create a simple algorithm	To create a simple algorithm	To use logical reasoning to predict the behaviour of simple programs	To create a simple algorithm	To debug a simple algorithm	To create and debug an algorithm
Outcomes	● I can describe an object's properties ● I can compare the weight of two objects	● I can describe an urban environment ● I can use forwards, backwards, left and right	● I can recognise a symmetrical shape ● I can use the negation block	● I can recognise 1p, 2p, 5p and 10p coins ● I can write an algorithm	● I can recognise and use £1 and £2 coins ● I can predict Cubetto's moves	● I can spell numbers ● I can use the function block	● I can solve addition problems ● I can debug an algorithm	● I can order the days of the week ● I can program and debug Cubetto
Computational Thinking	Tinkering	Algorithms Tinkering	Algorithms Creating	Algorithms Creating	Logic Persevering	Algorithms Creating	Algorithms Debugging	Algorithms Creating
Main Activities **1. Guided** **2. Independent**	Cubetto's Properties 1.Introduce words to describe Cubetto (e.g. wood, cube, light, hard). Play a guessing game: describe a square on the map to a partner and when you guess correctly, place Cubetto there. 2.Find objects in the room that are lighter and heavier than Cubetto.	Cubetto's Directions 1.Cubetto is lost! Describe how Cubetto can get from the bank to the market using the four different directions. Program Cubetto to move from the bike to the traffic lights. 2.Place arrows around classroom and make routes using directions.	Cubetto's Symmetry 1.Introduce symmetry as two halves that are the same. Cut shapes in half then program Cubetto to collect them and stick on his sides. Use the negation block in your algorithm. 2.Explore the map using a mirror, finding which images are symmetrical.	Cubetto's Shopping 1.Introduce 1p, 2p, 5p & 10p coins and stick to four main blocks. Label map and ask children to 'buy' different items using their blocks. Start at market and shop with Cubetto – what could you buy for 20p? 2.Make price tags and label items you have drawn.	Cubetto's Savings 1.Discuss the concept of saving, adding £1 and £2 coins. How many coins do you need to make £10? Intro the backward block and predict whether the algorithm provided will get Cubetto to the bank. 2.Order the needs and wants cards in a diamond and discuss what you could save up for.	Cubetto's Crossword 1.Turn map into crossword by blocking out black squares to match grid. Use function blocks to choose a word. 2.Pupils solve addition and subtraction calculations using money to fill in the words: one, two, five, ten, twenty.	Cubetto Goes Bowling 1.Go bowling with Cubetto! Make scores of 5, 6 and 7 by knocking over combinations of pins 1-4. Debug an algorithm to add Cubetto's score. 2.Work out all the number bonds to 10. Now work with three pins: how many ways can you make 10?	Cubetto's Tourist 1.Move from Monday to Sunday telling story about map and using function block. 2.Write, draw or tell a maths story about Cubetto using the days of the week and places on the map.
Challenge	Can you make Cubetto turn around?	Can you move from the taxi to the bridge using two turns?	Can you make Cubetto turn left without using the left block?	We've lost the backward block! Can you still make Cubetto go back?	Can you use the backward block to move from the taxi to the bank?	Can you write new maths clues to make the same answers?	Use the random block in an algorithm for a friend to debug.	Can you make Cubetto repeat his movement forever?
Creative play	Make a bridge for Cubetto to cross.	Draw an advert for Cubetto to put on the billboard.	Make an opposites picture: paint one side & fold in half.	Design new money for Cubetto's world.	Turn Cubetto into a piggy bank! Make pig-shaped sides.	Move the black squares to make a new crossword!	Make a bowling lane for Cubetto to travel along.	Role play going on a tour of your area.
Resources *Provided* Needed	*Properties table* *City Map squares* Feely bags &	Photos of town/city Large coloured arrows	Mirrors & scissors Paper shapes Sticky tack & dice	*Board template* Large coin images Play coins & pens	£1 & £2 coins Need & want cards Diamond 9	*Maths crossword* Black squares Letter cards	Plastic bottles Labels and pens Bowling score	City Map squares Postcard template

	objects			Price tags	template Glue	Mini whiteboards	sheet		
Assessment	Properties table Shape descriptions Photos Observation	Arrow placement Observation Photos Verbal statements	Shapes collected Verbal statements Photos Observation of mirrors	Algorithms Photos Verbal statements Observation	Algorithms Photos Verbal statements Observation	Crosswords Photos Verbal statements Observation	Number bonds Algorithms Observation Photos	Algorithms Postcards Verbal evaluation Observation Photos	