

PRIMO

Coding with Cubetto - Unit 4

Reception, Ages 4 to 5, UK National Curriculum

Subjects covered:

[Maths](#)

[Position](#)

[Shape, Space & Measure](#)

[Days of the Week](#)

[Capacity](#)

Resources provided:

[Tell the time sheet](#)

[Restaurant square](#)

[Week bingo card](#)

[Cruise sequence](#)

[Full Cubetto sheet](#)

Materials required:

[6x Cubettos](#)

[6x Boards](#)

[6x Sets of Blocks](#)

[6x Standard Maps](#)

Resources provided:

[Face Mask](#)

[Opposites Card](#)

Introduction

The Cubetto Playset is a Montessori inspired coding toy that allows children ages 3 to 6 to program a friendly wooden robot without screens and is powered by a programming language you can touch.

New technology can sometimes be overwhelming to understand and adopt. The activities contained in this guide were created by educators for educators.

We want to make it simple for you to integrate the Cubetto Playset and its tangible programming language into your teaching.

Development and learning in other key areas

Beyond coding

The collaborative nature of Cubetto makes it an extremely versatile tool for the classroom. Cubetto fosters learning in key development areas that go beyond programming.

Communication

Children practice listening through a range of stories and narratives in relation to Cubetto, accurately anticipating key events and responding with comments, questions or actions. They also develop their own narratives and explanations.

Dexterity

Children develop coordination in large and small movements around the playset. They negotiate the placement of obstacles around the world map and place blocks on our tangible interface.

Social-Emotional

Children become confident by trying new, open-ended activities that remove “wrong” outcomes, and easily encourage group work. The open nature of the maps allows them to choose the resources they need for their play session.

Mathematics

Children add and subtract blocks to a sequence. They solve problems, including doubling and halving to get Cubetto from A to B. They discuss size, shapes and patterns, distance, position, and time to solve problems.

Logical reasoning

The blocks allow children to create and debug simple programs with their hands. They use technology purposefully to create, organise, store, manipulate and retrieve meaningful sequences.

Introducing the Playset

Introducing Cubetto

Introduce Cubetto as a friendly robot that children can program. Children should be told that Cubetto cannot think for himself, and can only move as programmed by the child, just like any other machine. If in a group setting, sit children in a circle, and allow them to pass Cubetto around to one another, saying hello or acknowledging the presence of the object.

Doing so forms a bond with Cubetto, in the same way they would with a stuffed animal, or a toy, and solving problems through narratives later on is more engaging.

Introducing the Board

Introduce the Board as a remote control that children can use to send instructions to Cubetto.

Without the Board, there is no way of sending Cubetto his instructions.

It is important for children to understand Cubetto is only able to move with a human's command. This is not only empowering, but also key to understanding computing.

Encourage children to also explain what other objects in their homes and lives function within a similar paradigm. A television needs a human to change its channels for example, or a washing machine needs a human to select its settings.

These examples, like Cubetto, are machines that need human programming to do their job.

Introducing the Blocks

Introduce the Instruction Blocks as the directions Cubetto follows when inserted in the Board and sent by pressing the action button.

Different Blocks represent different instructions, and an unambiguous, distinct command. These Blocks are what make up Cubetto's hands on coding language, and are key in the learning of computational thinking.

When each block is inserted in the Board, a child should be encouraged to predict what Cubetto will execute before pressing the "Go" button.

This is key in understanding concepts like program design, and it helps develop abstraction.

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Unit 4 Overview

Reception

By the end of the unit pupils will be able to:

- Understand what a bug is, different types of bugs, how to identify and how to debug and test an algorithm.
- 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
NC Computing Objectives	To create a simple algorithm	To create a simple algorithm	To predict behaviour of simple programs	To predict behaviour of simple programs
Outcomes	<ul style="list-style-type: none"> I can use positional language I can write an algorithm 	<ul style="list-style-type: none"> I can use positional language I can write an algorithm 	<ul style="list-style-type: none"> I can tell the time (o'clock) I can predict where Cubetto will move 	<ul style="list-style-type: none"> I can make a clock with two moving hands I can predict where Cubetto will move
EYFS Focus	Position (ELG 2: Understanding)	Position (ELG 2: Understanding)	Position (ELG 2: Understanding)	Position (ELG 2: Understanding)
Computational Thinking	Algorithms, Tinkering	Algorithms, Tinkering	Logic, Tinkering	Logic, Tinkering
Main Activities	Cubetto's hide and seek! <ol style="list-style-type: none"> Where is Cubetto? Describe where he's hiding in the classroom using positional language. Make arrays with Cubetto's blocks then describe it to a friend to re-create. Go on a Cubetto hunt! Sing the song and take photos of him hiding. Make an obstacle course for Cubetto on the map! Can you move Cubetto from start to finish? Program two Cubettos to move and describe their position in relation to each other. Tell a friend to bring things to you by describing where they are! Outside, make and describe an obstacle course for your partner. 		Cubetto's dinner dash <ol style="list-style-type: none"> Cubetto is late for a dinner party! Predict where Cubetto's restaurant is on the map. Make a watch using recycled materials. Draw a healthy dinner for Cubetto on a plate template. Tell the time on different clocks to describe what time Cubetto eats his meals each day. Play 'What's the time Cubetto?' in a small group. Tell the time on Cubetto's face and program him to move to the restaurant. Tell the time by predicting which number Cubetto will move towards on the giant hoop clock. 	
Challenge	Can you talk about what happens when Cubetto goes wrong?	Can you make an algorithm using all of the blocks? Where does Cubetto end?	Play 'I spy' with a friend. Can you make Cubetto move towards the object?	Cubetto keeps forgetting a shape! Can you move it backwards to help?
Resources	Camera, PE equipment/chairs for obstacle course, materials to make obstacle course on map		Tell the time sheet, restaurant square, hula hoop, arrow and number cards, recycled materials, stapler/glue, plate template	
Assessment	Photos taken by children, observation of obstacle course, verbal statements about position		Telling the time sheet, algorithm predictions, verbal statements about clocks, photos and observation of telling time	

	Lesson 5	Lesson 6	Lesson 7	Lesson 8
NC Computing Objectives	To debug a simple program	To debug a simple program	To debug a simple program	To debug a simple program
Outcomes	<ul style="list-style-type: none"> I know the days of the week I can find the bug in an algorithm 	<ul style="list-style-type: none"> I can order the days of the week I can debug an algorithm 	<ul style="list-style-type: none"> I can say if something is full, half full or empty I can debug an algorithm 	<ul style="list-style-type: none"> I can order containers by capacity I can debug an algorithm
EYFS Focus	Days of week (ELG 12)	Days of week (ELG 12)	Capacity (ELG 12)	Capacity (ELG 12)
Computational Thinking	Algorithms, Debugging	Algorithms, Debugging	Algorithms, Debugging	Algorithms, Debugging
Main Activities	Cubetto's cruise 1. Sing the 'Days of the Week' song, then plan Cubetto's week on a cruise! 2. Play 'Week bingo'! Roll the dice and cross out the days. 3. Fix the algorithm to move Cubetto to trace the days of the week in order. 4. Make 'Days of the Week' paper chains in order. 5. Sequence pictures of Cubetto's cruise and talk about what you would do. 6. Lay sea squares on the map to make a new route for Cubetto to move along, using the function block. 7. Outside, play 'Week race'! Run to the day of the week as your teacher calls it. 8. Tell a friend to bring things to you by describing where they are! 9. Outside, make and describe an obstacle course for your partner.		Cubetto's H2UOh! 1. Cubetto needs to fill cups for his friends. Which will hold the most? How many cups would fill the bottle? 2. Debug the algorithm to collect an empty cup and stack on top of Cubetto. 3. Fill as many cubes as you can with sand. Can you make them all half full? 4. Colour in the mini Cubettos until they are all full. 5. Magic trick - cover three cups, two full and one empty, and ask a partner to guess which is the odd one out! 6. 'Debug' random block to move Cubetto to find the half empty container. 7. Order containers by capacity, starting with the least amount to the fullest.	
Challenge	Can you make Cubetto pick up the class mascot?	Can you move Cubetto forward the number of days in a week? Try the function block!	Roll a die and write an algorithm using that number of blocks.	Can you order cubes of different sizes?
Resources	Week bingo card, Cubetto's cruise sequence, dice, paper and pens, days of week on paper strips and glue, sea squares, days of the week signs x 5		Full Cubetto sheet, plastic cups, jugs of water and dye, sand area and different sized cubes, cloth and cups filled with pebbles, mixed containers	
Assessment	Bingo cards and cruise sequence, algorithms debugged, photos, verbal statements and observation		Full Cubetto sheet, algorithms debugged, photos of containers, statements and observation of filling cubes	

Lesson 1: Cubetto's Hide & Seek (1 of 2)

EYFS Focus: Maths - Position

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To create a simple algorithm	<ul style="list-style-type: none"> I can use positional language I can write an algorithm 	<ul style="list-style-type: none"> Camera PE equipment/ chairs for obstacle course Materials to make obstacle course on map 	<ul style="list-style-type: none"> Check batteries. Hide Cubettos around the classroom in places that can be described as under, over/on, behind, next to, etc. 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> On top Over/under In front/behind Next to

Computational thinking concept



Algorithms

Computational thinking approach



Tinkering

Teacher-led Introduction (introducing Board, Blocks and Cubetto – not the map just yet)

1. Tell the children that Cubetto is playing hide and seek!
2. Explain that you know where Cubetto is in the classroom and you will help them by telling them 'hot' when they are closer and 'cold' when they are far away.
3. Ask for a volunteer to try first and direct them using hot and cold (allow the children to suggest where they could look as they guess).
4. When Cubetto is found, bring him to the front of the class and place him on a chair. Ask: Can you say where Cubetto is?
5. Model using the language, "Cubetto is on top of the chair."
6. Ask a volunteer to put Cubetto under the chair.
7. Place Cubetto next to a child and ask: Where is Cubetto now? Repeat for in front of and behind the chair.
8. Explain that pupils will be using these words today with Cubetto and trying to make two Cubettos move at once!

Lesson 1: Cubetto's Hide & Seek (2 of 2)

Activity 1: Block arrays

1. Take six of Cubetto's blocks and make a pattern.
2. Ask a friend to copy your pattern.
3. Can you describe the pattern using the vocabulary: next to, first and last?

Activity 2: Cubetto hunt!

1. Sing, "We're going on a Cubetto hunt " as you walk.
2. Take photos of where you find Cubetto hiding.
3. Can you describe where Cubetto was, using on, under, and next to?

Activity 3: Cubetto's obstacle course

1. Use toys and objects from around the classroom to make an obstacle course for Cubetto.
2. Program Cubetto to move from start to finish.

Activity 4: Double trouble (requires two Cubettos)

1. Program two Cubettos to move on the map at the same time.
2. Can you describe their position on the map using the vocabulary: next to, behind, and in front?

Activity 5: Bossy friend!

1. Work with a partner and take it in turns to be bossy!
2. Choose an object in the room for your friend to bring to you but don't tell them what it is!
3. Use the words: next to, behind, in front of, under, and on top.

Activity 6: Playground play

1. Make an obstacle course in the playground using chairs and PE equipment.
2. Give your partner instructions on how to complete the race.

Challenge

Can you talk about what happens when Cubetto goes wrong?

Plenary and Assessment

1. Ask volunteers to share their Cubetto hunt and what they found out. Ask: Where was Cubetto?
2. Show children's photos and ask: Where is Cubetto hiding here?
3. Tell the children you are going to be bossy to Cubetto and need their help.
4. Ask a volunteer to hold Cubetto and say, "Go under the chair Cubetto!" - volunteer to move Cubetto as instructed.
5. Repeat with other volunteers and other instructions (e.g. next to the role play area, in front of the sink, etc).

Lesson 2: Cubetto's Hide & Seek (1 of 2)

EYFS Focus: Maths - Position ELG 2

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To create a simple algorithm	<ul style="list-style-type: none"> I can use positional language I can write an algorithm 	<ul style="list-style-type: none"> Camera PE equipment/ chairs for obstacle course Materials to make obstacle course on map 	<ul style="list-style-type: none"> Check batteries. Hide Cubettos around the classroom in places that can be described as under, over/on, behind, next to, etc. 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> On top Over/under In front/behind Next to Position

Computational thinking concept



Algorithms

Computational thinking approach



Tinkering

Teacher-led Introduction

1. Sit in a circle and place two Cubettos on the map, next to picture squares (e.g. boat/castle/tree).
2. Ask: Where is Cubetto? Take suggestions and model using positional language.
3. Give two volunteers a Board each, and ask them to make Cubetto move using three blocks of their choice.
4. Run the algorithm and discuss where and how each one moves.
5. Ask: Can you describe where Cubetto is now? Model comparing one Cubetto's position with the other's.
6. Explain that Cubetto wants to go on an adventure under and over different things.
7. Ask children to suggest how they could make an obstacle course for Cubetto using different objects or materials from the classroom.
8. Allow time for pupils to collect items and try out making Cubetto move under/over them (e.g. make bridge using books and a ruler).

Lesson 2: Cubetto's Hide & Seek (2 of 2)

Activity 1: Block arrays

1. Take six of Cubetto's blocks and make a pattern.
2. Ask a friend to copy your pattern.
3. Can you describe the pattern using the vocabulary: next to, first and last?

Activity 2: Cubetto hunt!

1. Sing, "We're going on a Cubetto hunt " as you walk.
2. Take photos of where you find Cubetto hiding.
3. Can you describe where Cubetto was, using on, under, and next to?

Activity 3: Cubetto's obstacle course

1. Use toys and objects from around the classroom to make an obstacle course for Cubetto.
2. Program Cubetto to move from start to finish.

Activity 4: Double trouble (requires two Cubettos)

1. Program two Cubettos to move on the map at the same time.
2. Can you describe their position on the map using the vocabulary: next to, behind, and in front?

Activity 5: Bossy friend!

1. Work with a partner and take it in turns to be bossy!
2. Choose an object in the room for your friend to bring to you but don't tell them what it is!
3. Use the words: next to, behind, in front of, under, and on top.

Activity 6: Playground play

1. Make an obstacle course in the playground using chairs and PE equipment.
2. Give your partner instructions on how to complete the race.

Challenge

Can you make an algorithm using all of the blocks? Where does Cubetto end?

Plenary and Assessment

1. Ask pupils to demonstrate their obstacle courses.
2. Ask: What is Cubetto doing? Describe his different positions on the map in relation to the obstacles using positional language.
3. Show photos of where Cubetto has been hiding and ask: Where else could Cubetto hide in the school?

Lesson 3: Cubetto's Dinner Dash (page 1 of 2)

EYFS Focus: Maths - Time ELG 12

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To predict behaviour of simple program	<ul style="list-style-type: none"> I can tell the time (o'clock) I can predict where Cubetto will move 	<ul style="list-style-type: none"> Clocks with moveable hands Craft materials and stapler/glue Plate template Hula hoop, arrow and number cards 1-12 	<ul style="list-style-type: none"> Check batteries. Cut strips of card for watch straps and circles for watch face. Make a clock face for Cubetto. Algorithms to move Cubetto to different numbers in the hoop clock (12, 3, 6 or 9 o'clock). 	<ul style="list-style-type: none"> Tell the time sheet Restaurant square 	<ul style="list-style-type: none"> Time O'clock Clock Hands

Computational thinking concept



Logic

Computational thinking approach



Tinkering

Teacher-led Introduction

1. Ask: What time does school start in the morning? Discuss and clarify with pupils. Ask: What time does school finish?
2. Explain that Cubetto is having trouble telling the time and needs their help. Cubetto's got a dinner party this evening and can't be late!
3. Show a clock on the board showing 3 o'clock and ask: Do you know what time it is? Collect suggestions.
4. Explain that clocks have two hands: one big and one small.
5. Explain that when the big hand points at 12 and the small hand points at 3, it's 3 o'clock. Repeat for other times.
6. Hand out the small clocks and ask children to show you different o'clocks by moving the hands.
7. Play 'What's the time Cubetto?' with a small group of children: one child holds Cubetto at the front and tries to 'catch' the others coming up behind them.

Lesson 3: Cubetto's Dinner Dash (page 2 of 2)

Activity 1: Watch making

1. Make a strap using a strip of paper/card that fits your wrist.
2. Draw numbers 1-12 on a circle to make the clock face.
3. Draw on two hands to show 3 o'clock and stick your watch together for you to wear!

Activity 2: Healthy dinner

1. Draw a healthy dinner for Cubetto to eat on the plate template.

Activity 3: Tell the time

1. Look at the first clock on the sheet. That's Cubetto's breakfast time!
2. What time does the clock say? Write the number underneath.
3. Repeat for all the clocks to describe Cubetto's meal times.

Activity 4: What's the time Cubetto? (guided)

1. Form a small group and choose one person to be Cubetto.
2. Play 'What's the time Cubetto?' as the group moves nearer the front.
3. The winner is the first person to reach Cubetto!

Activity 5: Restaurant rush

1. Place the restaurant square on the map.
2. What time does Cubetto's face say?
3. Program Cubetto to move to the restaurant quickly!

Activity 6: Hoop clock (guided – with hoop on map)

1. Put number cards just inside the hoop's edge to make a clock.
2. Place Cubetto in the middle with one arrow pointing to 12.
3. Predict where Cubetto will go and what time it will be.

Challenge

Play 'I spy' with a friend. Can you make Cubetto move towards the object?

Plenary and Assessment

1. Ask: Do you remember what time school starts and finishes?
2. Ask pupils to share their telling the time sheets.
3. Show the hoop clock with the arrow pointing at 12, and ask a volunteer to place Cubetto on 7 o'clock. Repeat for other times.
4. Ask children to go home and find out what time they get up in the morning and what time they go to bed!

Lesson 4: Cubetto's Dinner Dash (page 1 of 2)

EYFS Focus: Maths - Time ELG 12

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To predict behaviour of simple programs	<ul style="list-style-type: none"> I can make a clock with two moving hands I can predict where Cubetto will move 	<ul style="list-style-type: none"> Craft materials and stapler/glue Plate template Hula hoop and number cards 1-12 	<ul style="list-style-type: none"> Check batteries. Algorithm to move Cubetto to the restaurant square. Cut strips of card for watch straps and circles for watch face. Make a clock face for Cubetto. Algorithms to move Cubetto to different numbers in the hoop clock (12, 3, 6 or 9 o'clock). 	<ul style="list-style-type: none"> Tell the time sheet Restaurant square 	<ul style="list-style-type: none"> Predicting Algorithm Time O'clock Clock Hands

Computational thinking concept



Logic

Computational thinking approach



Tinkering

Teacher-led Introduction

- Sit in a circle with the map and Board in the middle. Explain that the children need to help Cubetto get to the restaurant for his dinner party but he's lost!
- Show the prepared algorithm and explain that this will take Cubetto to the restaurant. Ask: Where do you think the restaurant is?
- Take suggestions, discuss, then run the algorithm.
- Ask: Where is the restaurant? Ask a volunteer to place the restaurant square in the right place on the map.
- Change one of the blocks and ask: Where do you think the restaurant is now?
- Explain that when the children guess where they think Cubetto will move, this is called predicting.

Lesson 4: Cubetto's Dinner Dash (page 1 of 2)

Activity 1: Watch making

1. Make a strap using a strip of paper/card that fits your wrist.
2. Draw numbers 1-12 on a circle to make the clock face.
3. Draw on two hands to show 3 o'clock and stick your watch together for you to wear!

Activity 2: Healthy dinner

1. Draw a healthy dinner for Cubetto to eat on the plate template.

Activity 3: Tell the time

1. Look at the first clock on the sheet. That's Cubetto's breakfast time!
2. What time does the clock say? Write the number underneath.
3. Repeat for all the clocks to describe Cubetto's meal times.

Activity 4: What's the time Cubetto? (guided)

1. Form a small group and choose one person to be Cubetto.
2. Play 'What's the time Cubetto?' as the group moves nearer the front.
3. The winner is the first person to reach Cubetto!

Activity 5: Restaurant rush

1. Place the restaurant square on the map.
2. What time does Cubetto's face say?
3. Program Cubetto to move to the restaurant quickly!

Activity 6: Hoop clock (guided – with hoop on map)

1. Put number cards just inside the hoop's edge to make a clock.
2. Place Cubetto in the middle with one arrow pointing to 12.
3. Predict where Cubetto will go and what time it will be.

Challenge

Cubetto keeps forgetting a shape! Can you move it backwards to help?

Plenary and Assessment

1. Ask pupils to show their watches and read the time they have chosen using 'o'clock'. Ask: Where does the big hand point to?
2. Ask volunteers to share what they predicted Cubetto would do today and whether they were correct.
3. Discuss what time pupils get up and go to bed!

Lesson 5: Cubetto's Cruise (page 1 of 2)

EYFS Focus: Maths - Days of the week ELG 12

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To debug a simple program	<ul style="list-style-type: none"> I know the days of the week I can find the bug in an algorithm 	<ul style="list-style-type: none"> Dice Days of the week on paper strips and glue Paper and pens Sea squares Days of the week signs 	<ul style="list-style-type: none"> Check batteries. Label dice with days of the week (Sat/Sun on one). Prepare simple algorithms missing one block. Print days of the week on paper strips. Cut up the cruise schedule. Copy sea squares 15x15cm. 	<ul style="list-style-type: none"> Week bingo card Cruise sequence 	<ul style="list-style-type: none"> Monday - Sunday Day Week

Computational thinking concept



Algorithms

Computational thinking approach



Debugging

Teacher-led Introduction

1. Sing the 'Days of the Week' song: <https://www.youtube.com/watch?v=mXMofxtDPUQ>
2. Ask: What day is it today? What day was it yesterday? What day will it be tomorrow?
3. Ask: How many days of the week are there?
4. Explain that they will be helping Cubetto to learn the days of the week!
5. Show the bingo card and ask a volunteer to roll the week dice.
6. Ask: What day of the week have you rolled? Can you see this day on the bingo card?
7. Model crossing out this day of the week on the board and repeat with new volunteers.
8. Recap how children predicted where Cubetto would move in the last session and how this can help them today.

Lesson 5: Cubetto's Cruise (page 2 of 2)

Activity 1: Week bingo (guided)

1. Play 'Week bingo'!
2. Work in pairs or a small group. The first player rolls the die.
3. If anyone has that day of the week on their card, cross it out.
4. The winner is the first person to cross out all their days!

Activity 2: Fix Cubetto

1. Lay out three days of the week on the map in order (e.g. Mon, Tue, Wed).
2. Place Cubetto on the first day and look at the algorithm.
3. Can you debug the algorithm so Cubetto reaches the third day?

Activity 3: Paper chain

1. Find the paper strip with the first day of the week on it.
2. Fold the strip into a circle and glue the ends together.
3. Put the next day paper strip through the first and glue to make a days of the week paper chain!

Activity 4: Cruise sequence

1. Look at the different activities Cubetto takes part in on his cruise.
2. Can you order the events by the day of the week?
3. Stick them on paper in order.
4. What would you do on a boat cruise?

Activity 5: Sea route (guided)

1. Place sea squares on Cubetto's map to make a cruise route from the boat to the castle.
2. Program Cubetto to move along the route.
3. Can you use the blue (function) block to help you?

Activity 6: Week race (outside with day signs stuck on walls)

1. Teacher calls out days of the week at random.
2. When you hear the day of the week, run to that sign!
3. Can you move there even faster?

Challenge

Can you make Cubetto pick up the class mascot?

Plenary and Assessment

1. Ask: Can you sing the 'Days of the Week' song without the music?
2. Tell the children they are going to play a silent pointing game! When you say a day of the week, the children must turn in their place and point to the right sign around the room.
3. Repeat for all days of the week.

Lesson 6: Cubetto's Cruise (page 1 of 2)

EYFS Focus: Maths - Days of the week ELG 12

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To debug a simple program	<ul style="list-style-type: none"> I can order the days of the week I can debug an algorithm 	<ul style="list-style-type: none"> Dice Days of the week on paper strips and glue Paper and pens Sea squares Days of the week signs x5 	<ul style="list-style-type: none"> Check batteries. Label dice with days of the week (Sat/Sun on one). Prepare simple algorithms missing one block. Print and copy days of the week on paper strips. Cut out the cruise schedule. Copy sea squares 15x15cm. 	<ul style="list-style-type: none"> Week bingo card Cruise sequence 	<ul style="list-style-type: none"> Monday - Sunday Day Week Algorithm Debug Fix

Computational thinking concept



Algorithms

Computational thinking approach



Debugging

Teacher-led Introduction

1. Use the interactive activity to order the days of the week: <http://www.iboard.co.uk/activity/Days-of-the-Week-713>
2. Put children into groups of seven.
3. Hand out days of the week signs to each group and ask pupils to take one each.
4. Tell pupils to put themselves in order of the days of the week. Time them: the quickest team wins!
5. Ask one group to stand at the front and the rest of the class to close their eyes.
6. Ask one child (silently!) to sit down and hide their sign. Ask the children to open their eyes and work out which day is missing.
7. Explain that they have fixed the days of the week and will be helping to fix Cubetto today too.
8. Introduce the word 'debug' to describe how computers are fixed.
9. Show an algorithm with a block missing and ask: Will this work? Why/why not? How could we debug it?

Lesson 6: Cubetto's Cruise (page 2 of 2)

Activity 1: Week bingo (guided)

1. Play 'Week bingo'!
2. Work in pairs or a small group. The first player rolls the die.
3. If anyone has that day of the week on their card, cross it out.
4. The winner is the first person to cross out all their days!

Activity 2: Fix Cubetto

1. Lay out three days of the week on the map in order (e.g. Mon, Tue, Wed).
2. Place Cubetto on the first day and look at the algorithm.
3. Can you debug the algorithm so Cubetto reaches the third day?

Activity 3: Paper chain

1. Find the paper strip with the first day of the week on it.
2. Fold the strip into a circle and glue the ends together.
3. Put the next day paper strip through the first and glue to make a days of the week paper chain!

Activity 4: Cruise sequence

1. Look at the different activities Cubetto takes part in on his cruise.
2. Can you order the events by the day of the week?
3. Stick them on paper in order.
4. What would you do on a boat cruise?

Activity 5: Sea route (guided)

1. Place sea squares on Cubetto's map to make a cruise route from the boat to the castle.
2. Program Cubetto to move along the route.
3. Can you use the blue (function) block to help you?

Activity 6: Week race (outside with day signs stuck on walls)

1. Teacher calls out days of the week at random.
2. When you hear the day of the week, run to that sign!
3. Can you move there even faster?

Challenge

Can you move Cubetto forward the number of days in a week? Try the function block!

Plenary and Assessment

1. Play snap with two sets of the days of the week signs: ask volunteers to take it in turns to turn over two cards and see if they match.
2. If they match, they can keep them. If not, turn them back over.
3. Ask: How many days of the week can you see? Are any missing?
4. Ask pupils to go home and find out which day of the week they were born.

Lesson 7: Cubetto's H2UhOh! (page 1 of 2)

EYFS Focus: Maths - Capacity ELG 12

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To debug a simple program	<ul style="list-style-type: none"> I can say if something is full, half full or empty I can debug an algorithm 	<ul style="list-style-type: none"> Plastic cups Jugs of water and dye Sand area and different sized cubes Cloth and cups filled with pebbles Mixed containers 	<ul style="list-style-type: none"> Check batteries. Prepare algorithms to be debugged. Colour water in some jugs. Fill cups full, half full and empty with pebbles. Fill different containers with varying amounts of water to be ordered. 	<ul style="list-style-type: none"> Full Cubetto sheet 	<ul style="list-style-type: none"> Empty Full Half full

Computational thinking concept



Algorithms

Computational thinking approach



Debugging

Teacher-led Introduction

1. Show the six cups and the jug of coloured water. Explain that Cubetto has six friends coming round for lunch and wants to give them all a drink.
2. Ask: How could Cubetto pour the drink into the six cups?
3. Allow time for discussion and invite pupils up to try out their ideas.
4. Show three cups: full, half full and empty, and ask pupils to describe them.
5. Introduce vocabulary and explain that half full means it is only partly full, to the middle of the cup.
6. Ask: What else could we pour into the cups?
7. Show three cup outlines on the board and ask: Can you colour the first one in so it's full?
8. Repeat for half full and empty (a trick question!).

Lesson 7: Cubetto's H2UhOh! (page 2 of 2)

Activity 1: Stack the cups

1. Place an empty cup on the map.
2. Can you debug the algorithm to reach the cup?
3. Stack the cup on top of Cubetto and repeat.
4. How many cups can you stack on Cubetto?

Activity 2: Sand cubes

1. Fill as many cubes as you can with sand.
2. Do all the cubes have the same amount of sand in them?
3. Now make all the cubes half full. What did you do?

Activity 3: Full Cubetto

1. On the sheet, colour in the mini Cubettos to show they are all full up.

Activity 4: Magic

1. Fill two cups with pebbles and leave one empty.
2. Cover the three cups with a cloth and ask a friend to guess which cup is empty.
3. Are they right? Reveal the correct answer by taking off the cloth!

Activity 5: Cubetto's container (guided)

1. Teacher to place one full, one empty and one half empty cup on the map.
2. Look at the algorithm. Which cup will Cubetto get to?
3. Test it out - were you right? How can you fix the algorithm?

Activity 6: Capacity

1. Look at the different containers with different amounts in them.
2. Can you order them from empty to full?
3. How could you measure how much is inside the full one?

Challenge

Roll a die and write an algorithm using that number of blocks.

Plenary and Assessment

1. Ask volunteers to share their coloured Cubetto sheets and ask pupils to describe them.
2. Ask volunteers to fill different containers half full with pebbles, then show the class to check.
3. Ask: What does half full mean?

Lesson 8: Cubetto's H2UhOh! (page 1 of 2)

EYFS Focus: Maths - Capacity ELG 12

NC Objectives	Outcomes	Resources Needed	Prep Needed	Resources Provided	Key Vocabulary
To debug a simple program	<ul style="list-style-type: none"> I can order containers by capacity I can debug an algorithm 	<ul style="list-style-type: none"> Plastic cups Jugs of water and dye Sand area and different sized cubes Cloth and cups filled with pebbles Mixed containers 	<ul style="list-style-type: none"> Check batteries. Prepare algorithms to be debugged. Fill jugs with colour water. Fill cups full, half full and empty with pebbles. Fill different containers with varying amounts of water to be ordered. 	<ul style="list-style-type: none"> Full Cubetto sheet 	<ul style="list-style-type: none"> Empty Full Half full Bug Algorithm

Computational thinking concept



Algorithms

Computational thinking approach



Debugging

Teacher-led Introduction

1. Show four cups of coloured water and an empty jug. Explain that Cubetto poured too many cups and needs to put them back in the jug.
2. Ask: How full are the cups? Will all the water fit into the jug? What will happen if there is too much water to fit in the jug? Will the jug be full if we pour water into all the cups?
3. Allow time for discussion and invite pupils up to try out their ideas.
4. Show the map with Cubetto and two empty cups nearby. Show the algorithm to pick up both cups.
5. Ask: Do you think Cubetto will get both cups if we press the Go button? Collect ideas and allow time for pupils to make suggestions.
6. Run algorithm (Cubetto misses at least one cup or doesn't move).
7. Ask: What is the bug? How could we fix this algorithm?
8. Allow time for pupils to discuss and feedback, then test out ideas.

Lesson 8: Cubetto's H2UhOh! (page 2 of 2)

Activity 1: Stack the cups

1. Place an empty cup on the map.
2. Can you debug the algorithm to reach the cup?
3. Stack the cup on top of Cubetto and repeat.
4. How many cups can you stack on Cubetto?

Activity 2: Sand cubes

1. Fill as many cubes as you can with sand.
2. Do all the cubes have the same amount of sand in them?
3. Now make all the cubes half full. What did you do?

Activity 3: Full Cubetto

1. On the sheet, colour in the mini Cubettos to show they are all full up.

Activity 4: Magic

1. Fill two cups with pebbles and one empty.
2. Cover the three cups with a cloth and ask a friend to guess which cup is empty.
3. Are they right? Reveal by taking off the cloth!

Activity 5: Cubetto's container (guided)

1. Teacher to place one full, empty and half empty cup on the map.
2. Look at the algorithm. Which cup will Cubetto get to?
3. Test it out - were you right? How can you fix the algorithm?

Activity 6: Capacity

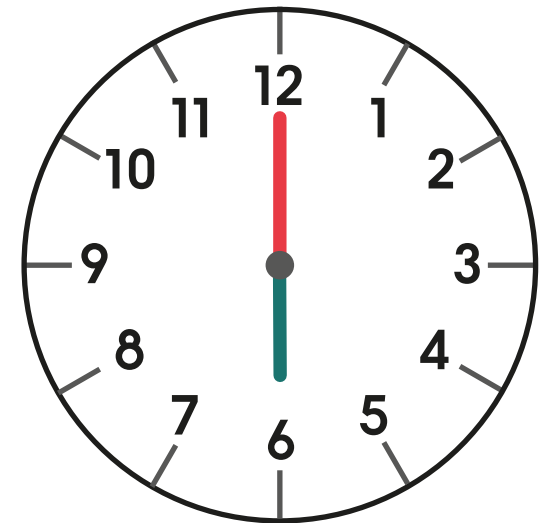
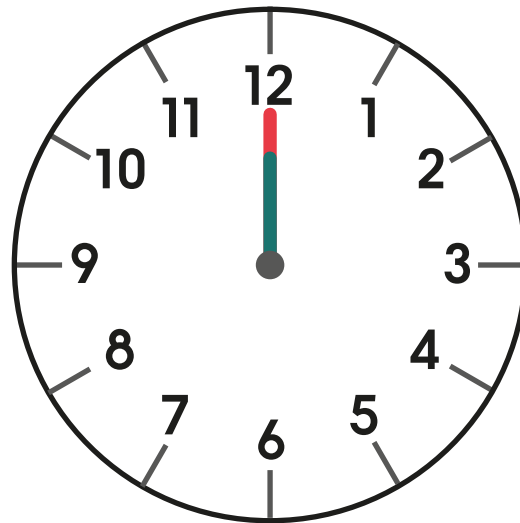
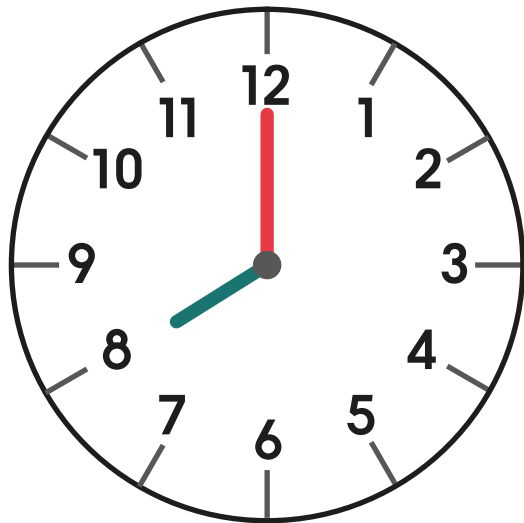
1. Look at the different containers with different amounts in them.
2. Can you order them from empty to full?
3. How could you measure how much is inside the full one?

Challenge

Can you order cubes of different sizes?

Plenary and Assessment

1. Ask volunteers to demonstrate making full cups, then pouring out half, then pouring out everything to make them empty.
2. Ask volunteers to show the algorithm they fixed to make Cubetto pick up the cup.
3. Ask: How many cups did you stack on Cubetto?
4. Explain that they have learnt so much about computers and programming that many adults find difficult! Ask: What is your favourite thing about Cubetto? What have you found difficult/easy?
5. Make a display of all the things the children have learnt, photos and their favourite adventures with Cubetto.





Saturday	Monday	Wednesday	Saturday
Wednesday	Sunday	Friday	Thursday
Thursday	Friday	Monday	Tuesday
Tuesday	Friday		
Saturday	Monday		
Sunday	Wednesday		

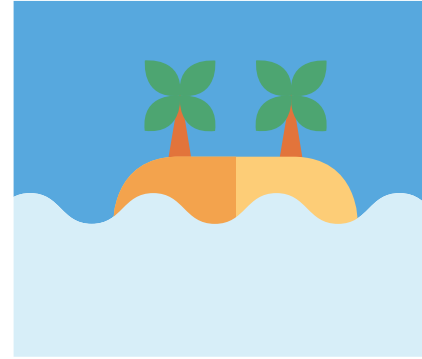
Monday



Tuesday



Wednesday



Thursday



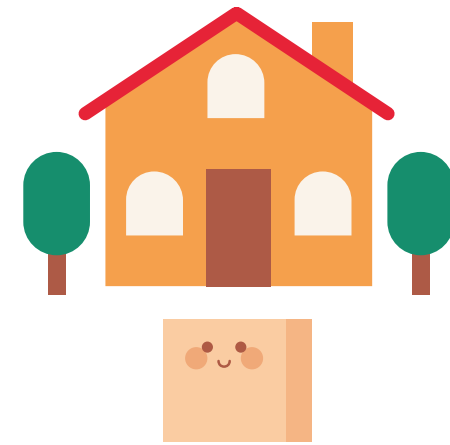
Friday



Saturday



Sunday





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