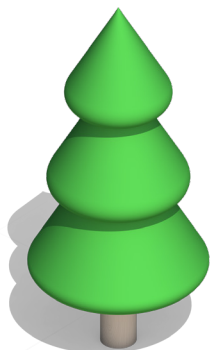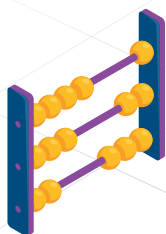# KUBO

Quick Start Guide

KUBO CODING MATH

4+

KUBO is the world's first puzzle-based educational robot, designed to empower students so that they are not just passive consumers of technology, but rather controllers and creators of technology. By simplifying complex concepts through hands-on experiences, KUBO builds confidence among educators and students by providing a context for endless possibilities to engage students in playful STEAM activities.

KUBO and the unique TagTile® programming language lays the foundations for computational literacy for children aged 4 to 10+.

Getting Started

This Quick Start Guide will account for the content included in your KUBO Coding Math solution and introduce you to each of the new functionalities that your KUBO Coding Math set features. Remember that you need a basic KUBO Coding Starter Set to use this expansion pack.

WHAT'S IN THE BOX

Your KUBO Coding Math set consists of a sorting box with 50 new TagTiles providing you with a variety of new functionalities including the use of numbers, operators, and a playful Game Activator TagTile.

Printable Activity Maps and Task Cards are available on school.kubo.education

KUBO Coding Math TagTile® Set

The KUBO Coding Math Set is a new unique set of TagTiles that can be used entirely in the purpose of practising math or in combination with the KUBO Coding Starter Set TagTiles. This gives teachers a great way to cover multiple learning objectives at once. The KUBO Coding Math Set comes with 300+ Task Cards and 3 Activity Maps addressing counting, cardinality, operations, algebraic thinking, numbers and operations, available to download from school.kubo.education

In your KUBO Coding Math TagTile® set you will see three sections:

Section 1 TagTiles®

NUMBERS

Number TagTiles are quite simple and can be used in both math and coding. Regarding math, the TagTiles® can be used, in cooperation with operator TagTiles, to create simple equations for problem solving. Number TagTiles can also be assembled into larger numbers, which makes it possible to create more complex math problems. Furthermore, number TagTiles can be combined with coding, as the numbers can be included directly into both routes, functions, loops, etc.

1 2 3 4

5 6 7 8

0 9

Section 2 TagTiles®

OPERATORS

Operators are used in cooperation with numbers to create both simple and complex math problems. =, +, - are great for creating simple calculations, while x, ÷, <, > are suitable for creating more advanced calculations. Furthermore, the - TagTile can be placed in front of numbers to create negative numbers and thereby create even more advanced math calculations.
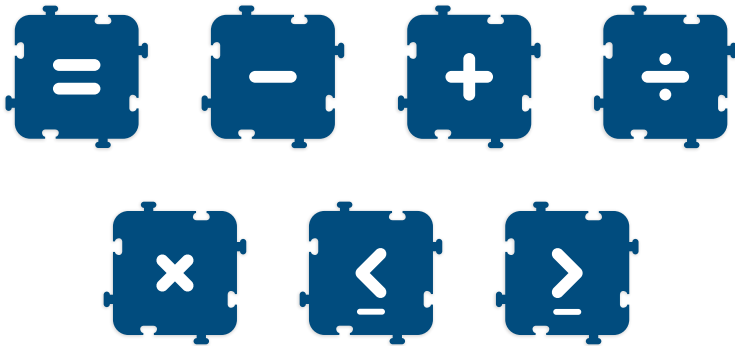
Section 3 TagTiles®

GAME ACTIVATOR TAGTILE®

The Game Activator TagTile will allow KUBO to go a predetermined route on the map. The Game Activator TagTile will work in cooperation with the number TagTiles 1, 2, and 3 respectively, as it will be possible for KUBO to take one of three routes. Which route KUBO takes is determined by which number you place in front of the Game Activator TagTile.

GAME TAGTILES

Game TagTiles are used to determine where on the map KUBO must solve a math problem. Game TagTiles can be placed along a given route and the students must solve a math problem before KUBO will be able to continue the route. Game TagTiles will work in cooperation with the task cards that are included in the KUBO Math Set. 5x Game TagTiles will be included in the set.

How to use KUBO Coding Math

In the following, it will be demonstrated how to use the new TagTiles® included in the KUBO Coding Math Set and how these are used together with the Activity Maps and Task Cards.

Math

GAME ACTIVATOR TAGTILE® AND TASK CARDS

The three Activity Maps included in the KUBO Coding Math set help make math more fun and intuitive for children.

The three Activity Maps represent a Farm, City and Super Market environment respectively, which each have three routes. The beginning of each route, along with the route number, will be highlighted on maps so you know where to place the Game Activator TagTile. Be aware to place the correct number in front of the Game Activator TagTile to make KUBO take the correct route.

The maps are filled with different objects that fit into the theme of the three Activity Maps such as animals, trees etc.. The routes on the map work in collaboration with task cards and Game TagTiles, as it is possible to place Game TagTiles along the route. Once KUBO encounters a Game TagTile, it will not continue until the task is completed. The task that needs to be completed will be defined on a randomly drawn task card. The math problem on the task card will revolve around the different objects on the map. The math problem may therefore be the number of trees on the map + number of ducks on the map.

The students will then recreate the math problem with the number and operator TagTiles and solve the task. If the task is completed incorrectly, KUBO will shake its head while its eyes turn red. If the task is completed correctly, KUBO will make a victory dance while its eyes turn green. Once the task is completed correctly, KUBO will be able to continue its route, Just place KUBO back on the Game TagTile®.

NOTE:

KUBO will be able to continue its route just by simply solving any math problem, and not necessarily solving the math problem on the given task card.

EXTENSION

You can experiment with using the movement tiles from the KUBO Coding Starter Set to make your own routes on a map. Simply make a space between the movement tiles in your routes and place a Math Game TagTile where you want KUBO to stop and solve a Math Task.

CALCULATION

By incorporating math skills into the KUBO robot, KUBO is able to teach students how to understand, create, and solve various math problems. The degree of difficulty can be determined by the teacher. Furthermore, even more complex math problems can be created by using more operators simultaneously.

In the following example, it will be displayed how to create and solve math problems by using the number and operator TagTiles®.

$$1 \quad 7 \quad + \quad 4 \quad 5 \quad = \quad 6 \quad 3$$

$$7 \quad \times \quad 7 \quad = \quad 4 \quad 9$$

$$- \quad 1 \quad 7 \quad + \quad 4 \quad 5 \quad = \quad 2 \quad 8$$

$$5 \quad 5 \quad - \quad 2 \quad 5 \quad > \quad 8 \quad + \quad 1 \quad 7$$

Math and Coding

Adding numbers into coding makes it possible to simplify otherwise complex and demanding coding processes.

NUMBERS AND MOVEMENT

By combining number and movement TagTiles®, it will be possible to make KUBO move longer distances by simply adding a number in front of the movement TagTile.
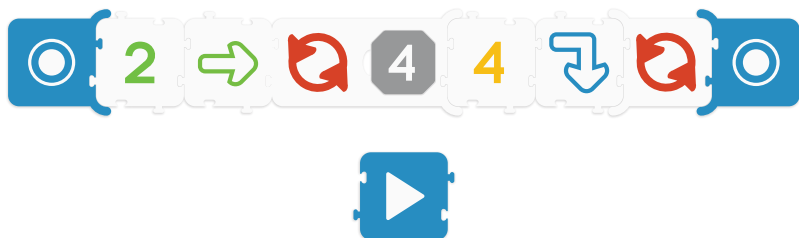
Furthermore, it is possible to make KUBO move the sum of a calculated number, by use of the number and operator TagTiles.
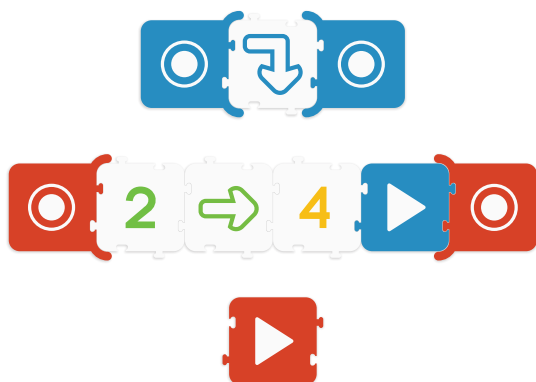
Example of Numbers in functions

Example of Numbers in loops

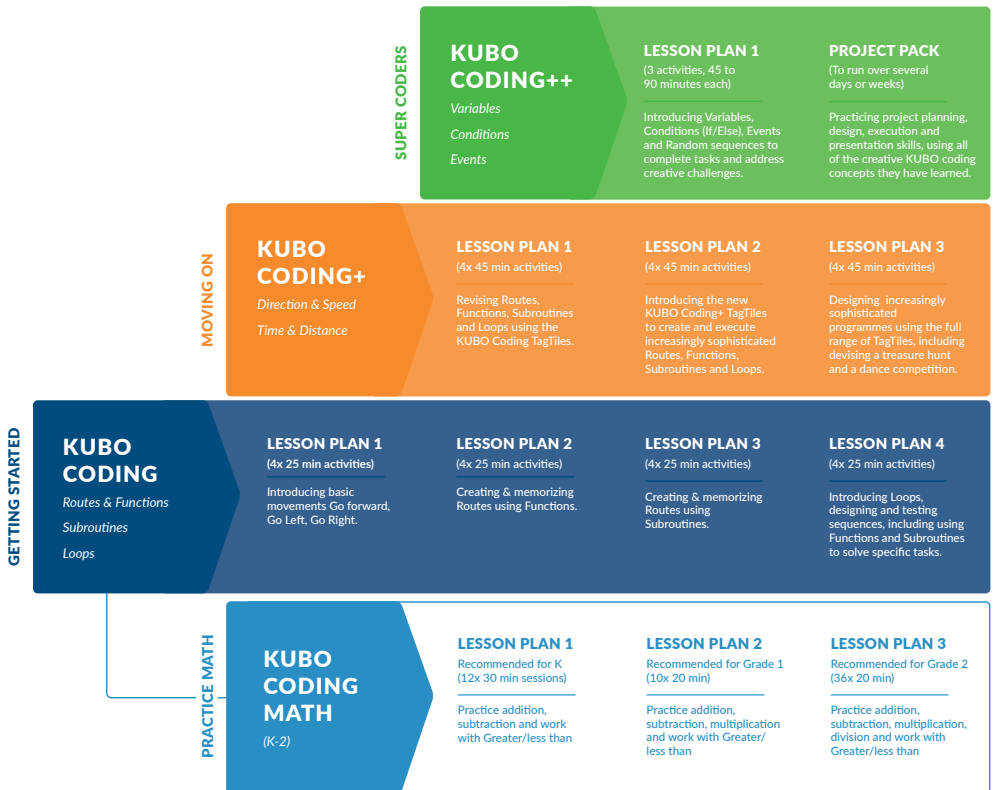Example of Numbers and subroutines

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KUBO
Curriculum Fit

SUPER CODERS

KUBO CODING++

Variables

Conditions

Events

LESSON PLAN 1
(3 activities, 45 to 90 minutes each)

Introducing Variables, Conditions (If/Else), Events and Random sequences to complete tasks and address creative challenges.

PROJECT PACK
(To run over several days or weeks)

Practicing project planning, design, execution and presentation skills, using all of the creative KUBO coding concepts they have learned.

MOVING ON

KUBO CODING+

Direction & Speed

Time & Distance

LESSON PLAN 1
(4x 45 min activities)

Revising Routes, Functions, Subroutines and Loops using the KUBO Coding TagTiles.

LESSON PLAN 2
(4x 45 min activities)

Introducing the new KUBO Coding+ TagTiles to create and execute increasingly sophisticated Routes, Functions, Subroutines and Loops.

LESSON PLAN 3
(4x 45 min activities)

Designing increasingly sophisticated programmes using the full range of TagTiles, including devising a treasure hunt and a dance competition.

GETTING STARTED

KUBO CODING

Routes & Functions

Subroutines

Loops

LESSON PLAN 1
(4x 25 min activities)

Introducing basic movements Go forward, Go Left, Go Right.

LESSON PLAN 2
(4x 25 min activities)

Creating & memorizing Routes using Functions.

LESSON PLAN 3
(4x 25 min activities)

Creating & memorizing Routes using Subroutines.

LESSON PLAN 4
(4x 25 min activities)

Introducing Loops, designing and testing sequences, including using Functions and Subroutines to solve specific tasks.

PRACTICE MATH

KUBO CODING MATH

(K-2)

LESSON PLAN 1
Recommended for K
(12x 30 min sessions)

Practice addition, subtraction and work with Greater/less than

LESSON PLAN 2
Recommended for Grade 1
(10x 20 min)

Practice addition, subtraction, multiplication and work with Greater/less than

LESSON PLAN 3
Recommended for Grade 2
(36x 20 min)

Practice addition, subtraction, multiplication, division and work with Greater/less than

The Coding License is available to view or download at school.kubo.education, provides a comprehensive set of lesson plans and teacher guides designed to take teachers and students through every KUBO product in a playful, progressive, and creative way.

KUBO