Overview of the learning environments

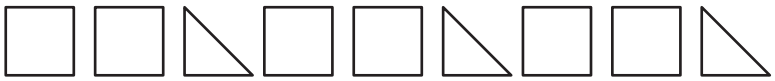
Learning environment	Focus	Grade	Programmable materials	Duration
Drawing plane shapes	Drawing quadrilaterals, describing construction steps, modifying programming based on given specifications, and checking properties of figures	Grade 2 to 4	mTiny, Dash® and Scratch 	2 to 4 hours
Frieze patterns	Frieze patterns, spiral patterns, and tessellations	Grade 1 to 4	mTiny, Scratch 	2 to 4 hours per module
Coordinate system “Corolina Amusement Park“	Algorithms, point coordinates in the plane, coordinate systems, orienting oneself in two-dimensional space, describing paths	Grade 4	ScratchJr 	2 to 4 hours
Networks and paths in Cornerstown	Orientating in two-dimensional space, describing paths, preformal familiarisation with the coordinate system	Grade 2 to 4	Dash®, mTiny, Ozobot® 	3 to 4 hours

Module 1

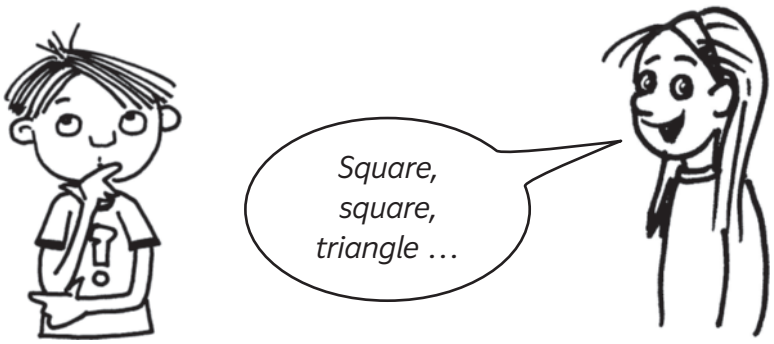
Describe frieze patterns

You work on this task in pairs like Lina and Tim. They have put a screen between them.

1. Lina lays out a frieze pattern with colour tiles. Lina's frieze pattern:



2. Tim can't see it, so she describes it in words.



3. Tim lays out the described frieze pattern with colour tiles.

4. Now Lina and Tim compare their frieze patterns. Do they match?

Think of additional frieze patterns.

Module 1

Draw frieze patterns with mTiny

You need:

- Frieze pattern templates
- Paper

1. Select a frieze pattern from the templates.
2. Create a program by arranging the code cards in the right order.
3. Tap each card with the pen and let mTiny draw.
4. Compare the frieze pattern with the template.
5. If everything matches, write down the program here:

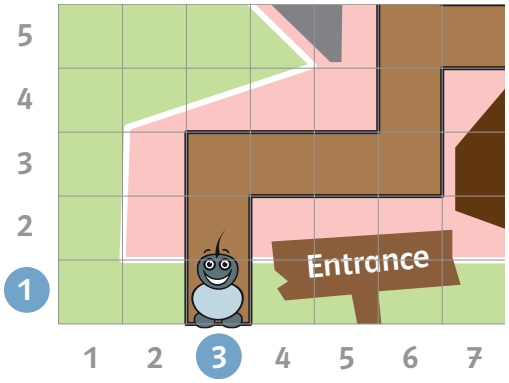
Let's think!

- What do you need to consider when programming?

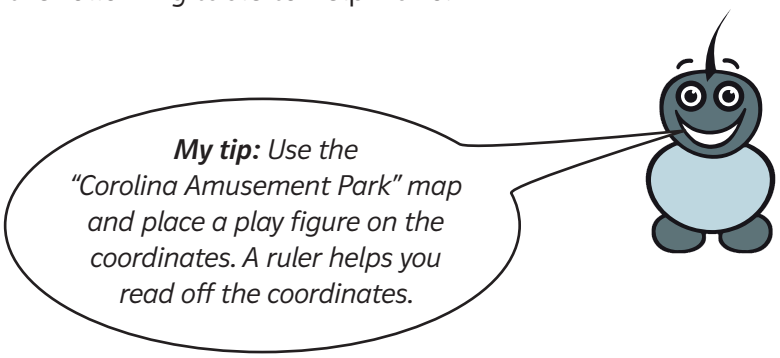
- What is difficult for you?

Where is what in the Corolina Amusement Park?

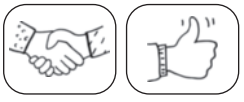
Nano is looking forward to visit the amusement park! Nano has divided the map into squares. This will help with finding everything!
Each square can be named using two numbers: The square Nano is currently standing on is called (3 | 1).



1.1 Nano wants to write down the coordinates for the entrances to the most important places. Fill in the following table to help Nano.



Location	1st coordinate	2nd coordinate	Coordinate notation
Entrance	3	1	(3 | 1)
Ice cream	9	6	(9 | 6)
Climbing park	9	4	(9 |)
WC	11		(11 |)
Lake		7	(| 7)
Football	16		(16 |)
Volleyball		12	(| 12)
Petting zoo			
Skatepark			
Stage			
Snack bar			



Programming Nano's paths through the amusement park (1)

This is how it works:

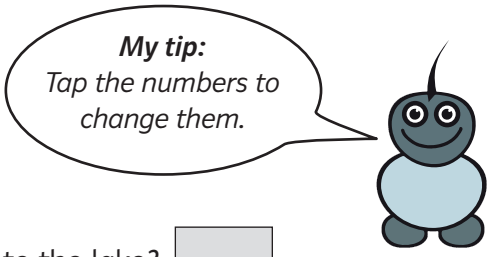
- Launch the ScratchJr app on your tablet.
- Tap the house to get an overview of all projects.
- Tap the "Corolina Amusement Park" project.
- Tap the first picture on right (task 2.1 & 2.2)

Tips:

	Tap this symbol to make the coordinate grid visible.
	For Nano to start, blocks must be connected to the flag block.
	Tap on the green flag to make Nano start.
	Tap this icon to put Nano back to his starting position.

2.1 Nano is standing in front of the petting zoo. Press the green flag. Where does Nano end up? Record the coordinates where Nano comes to a stop on the map.

2.2 Nano would much rather go to the lake. Change the numbers so that it walks from the petting zoo to the lake.



How many steps did Nano walk from the petting zoo to the lake? ☐


Map of Cornerstown (Dash® and mTiny)

This map is a template. To use Cornerstown with robots, the map needs to be laid out using the appropriate action and coordinate cards.

North

East

West

South

E

D

C

B

A

0 1 2 3

Eva

Leo