basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

CODING & ROBOTICS
GRADE 3

LESSON PLANS

DEPARTMENT OF BASIC EDUCATION

Contents

Notes to the teacher:

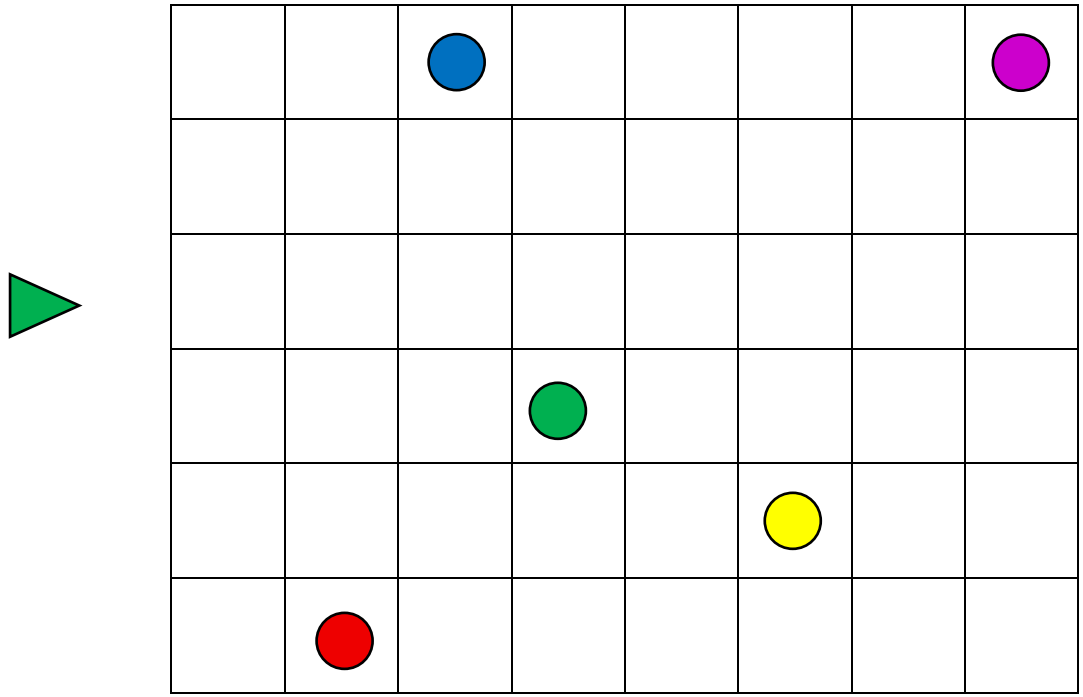
Annexures are provided as separate documents.

GRADE 3 TERM 1 CODING & ROBOTICS WEEK 1			
2 x 60-minute lessons per week			
TERM 1 WEEK 1	**COMPETENCIES**	**TEACHER GUIDELINES for PRACTICAL ACTIVITY**	**RETRIEVAL PRACTICE**
Learning Intentions: **Learners can …** • Read and execute multi-step directional sequences accurately • Follow coordinate-style instructions to create shapes • Define technology and distinguish between technology and information technology	**C3**	**Problem statement:** An art class is preparing for a special project. Paint supplies are organized on a large grid around the classroom. Each student needs specific colours, but they can only move one square at a time following exact directions. Give each learner a set of instructions (arrows). Each set of instructions should land on a colour cup. Once all learners have completed the instructions check to make sure that the correct instructions landed on the correct colour. ***Extension:*** Teacher can decide to pair up the learners where one 'reads' the code and the other complete it (Linked to R6). ***Classroom management ideas:*** The big grid can be done on a large A1 page and done in groups. Another option is to split the class into 2 groups. Half does the big grid activity and half does the shape activity and then swop groups. *Resources: Use a large floor grid. Pack out the coloured cups/dots/crayons on specific blocks.*	**Activity 2:** Draw the shape activity. **Can you use the instructions to draw the different shapes?** Use the worksheet attached. Learner reads the code and draws the different shapes according to the code.
	COMPETENCIES	**TEACHER GUIDELINES for THEORY**	
	D1	What is technology? Learners define technology and identify examples. Technology includes tools, machines, and devices that solve problems and make life easier. Give examples of tools, machines/or appliances and devices	Ask the learners what is the difference between Technology and Information Technology (IT). Ask the learners to raise their hand if it is technology and cross their arms if it is IT. • Lawnmower • Computer • Phone • Coffee machine • Printer • Tablet • Smart watch (discuss the difference between a normal watch) • Oven • Air fryer • Smart TV (discuss the difference between a normal TV and a Smart TV)

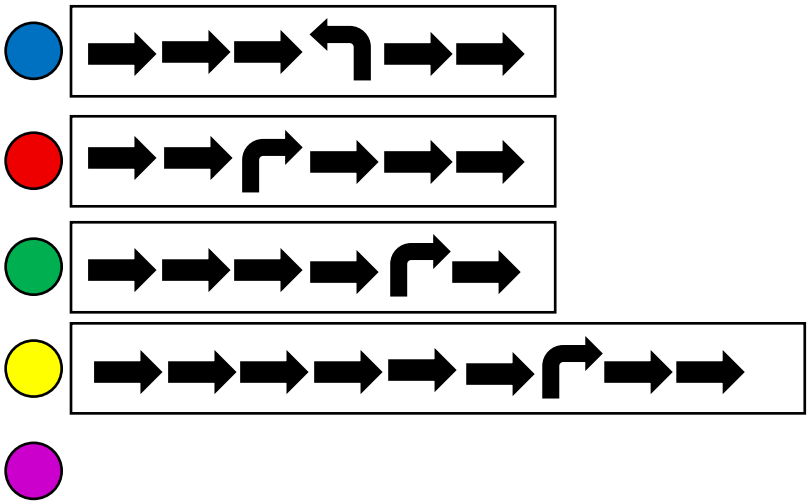
GRADE 3 TERM 1 CODING & ROBOTICS WEEK 1			
2 x 60-minute lessons per week			
TERM 1 WEEK 1	**COMPETENCIES**	**TEACHER GUIDELINES for PRACTICAL ACTIVITY**	**RETRIEVAL PRACTICE**
Success Criteria: **I can…**	• Read direction codes in the correct order • Move accurately on a grid following each instruction • Reach the specified colour/destination • Draw shapes by following directional instructions • Define technology and give 3 specific examples • Explain the difference between technology and information technology		

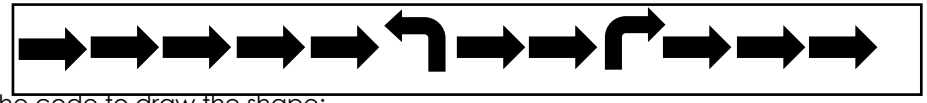
Grade 3 Term 1

Example of a big floor grid (use colour dots/cups etc)

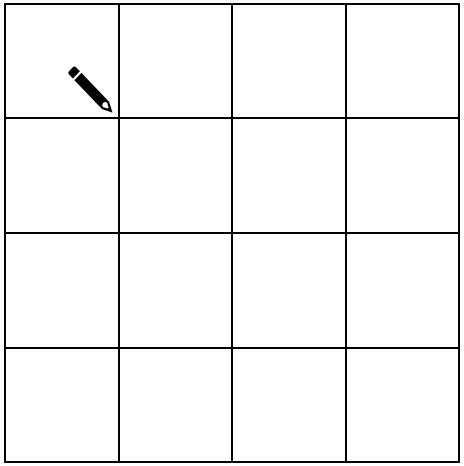


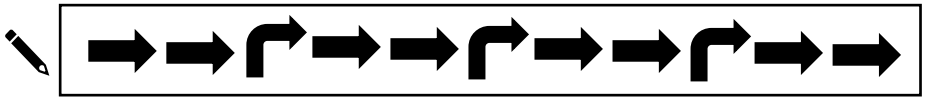
Print out these instructions, cut them out and give them to the learners. Do not give the dots to the learners (these are for the teachers to know the answers).

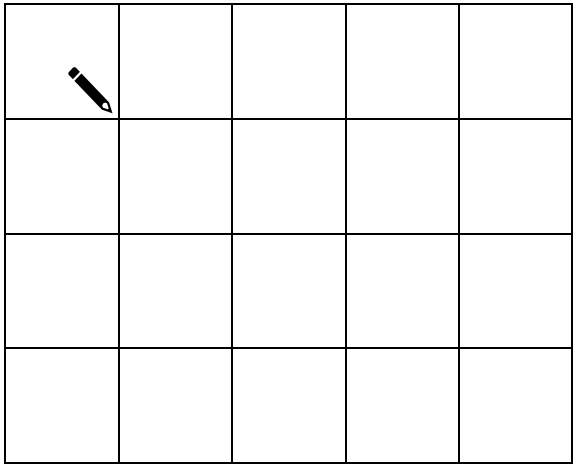


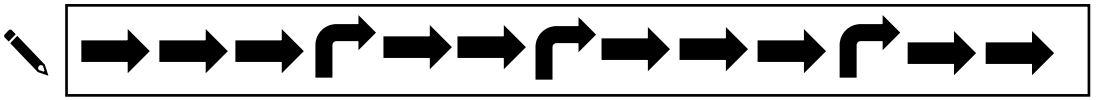


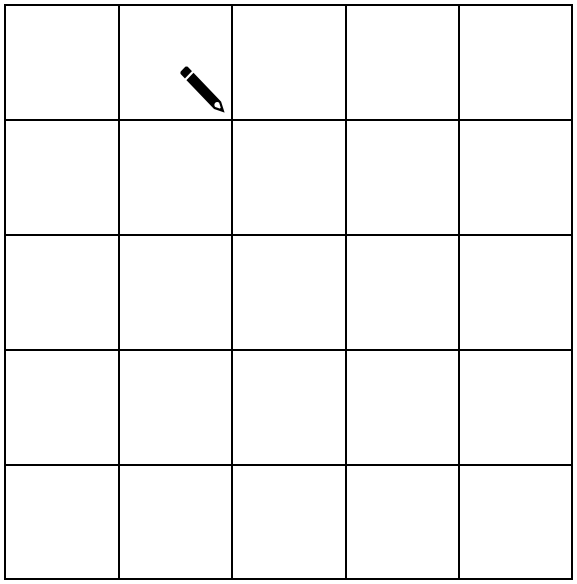
Use the code to draw the shape:

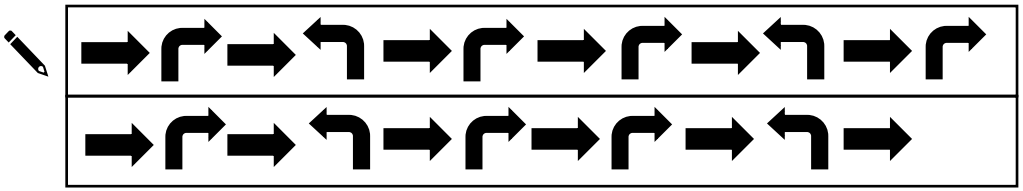












<table>
<tr><th colspan="4">GRADE 3 TERM 1 CODING & ROBOTICS WEEK 2</th></tr>
<tr><th colspan="4">2 x 60-minute lessons per week</th></tr>
<tr><th>TERM 1 WEEK 2</th><th>COMPETENCIES</th><th>TEACHER GUIDELINES for PRACTICAL ACTIVITY</th><th>RETRIEVAL PRACTICE</th></tr>
<tr><td rowspan="3">Learning Intentions:

Learners can …

• Identify repeating patterns in sequences
• Explain what makes something a pattern using correct terminology
• Connect pattern recognition to repeated instructions in code
• Understand what robots are and how they differ from other machines</td><td>C1
C6</td><td>Use 6 Bricks (or any other type of blocks). Use the pictures of the Lego patterns below.

Problem statement:

A toy factory uses robots to pack building blocks into boxes. The robots can only recognize and work with patterns. Your job is to help quality control by identifying which arrangements are patterns and which are not.

Activity 1: Pattern or Random?
Investigate each 6-brick arrangement:
- Build it with your blocks
- Is this a pattern? Prove it!
- If YES: What is the repeating unit? What would come next?
- If NO: How could you rearrange it to create a pattern?
- Explain your reasoning to a partner</td><td>Activity 2:
Match the pattern:
Cut out the blocks below and place in the blocks to match the shapes.</td></tr>
<tr><td>COMPETENCIES</td><td>TEACHER GUIDELINES for THEORY</td><td></td></tr>
<tr><td>R1</td><td>What is a robot? Machines built by humans can look different. They have one thing in common – They can only follow instructions. They cannot think on their own. Robots cannot make own decisions. They follow instructions or commands given to them.</td><td>Discuss the content. Ask the learners
• If the robot makes a mistake, whose fault is it?
• Name different robots that they have learnt about so far – What do they have in common?</td></tr>
<tr><td>Success Criteria:
I can…</td><td colspan="3">• Look at a sequence and determine if it contains a pattern
• Identify the repeating "unit"/sequence in a pattern
• Use pattern vocabulary: repeat, unit, sequence, cycle
• Explain what a robot is and give examples
• Describe what robots have in common</td></tr>
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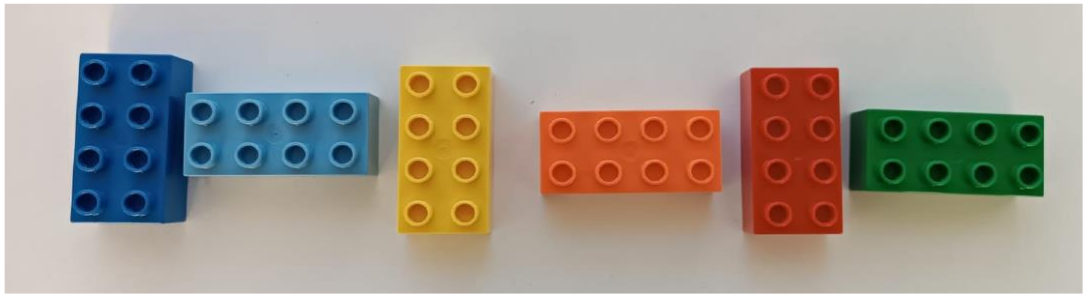
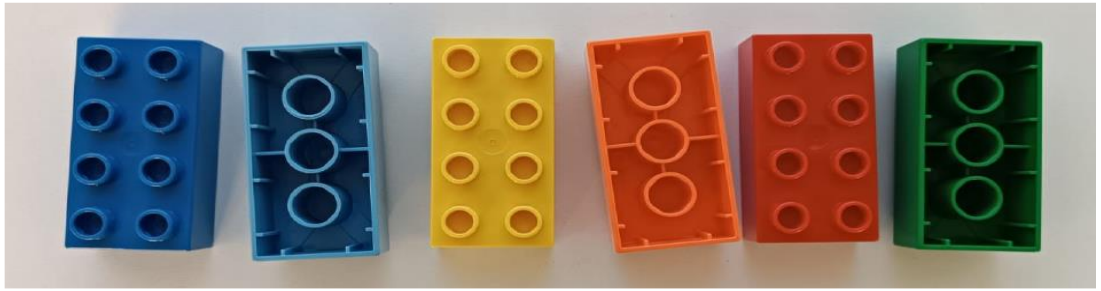
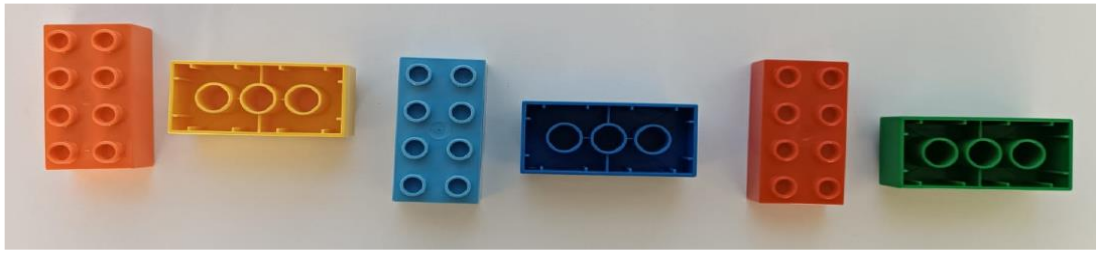
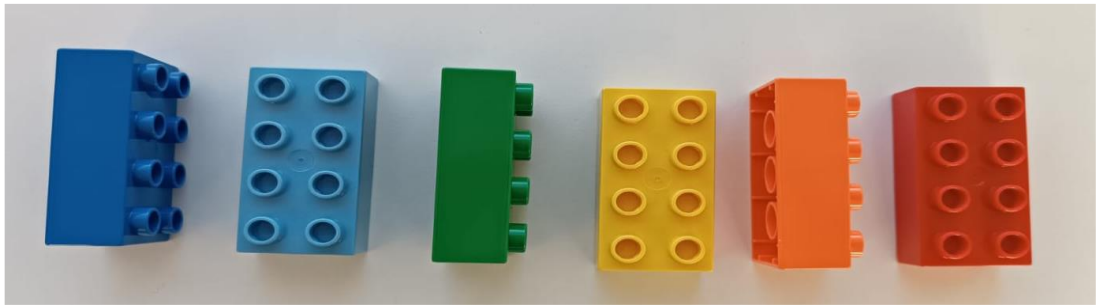
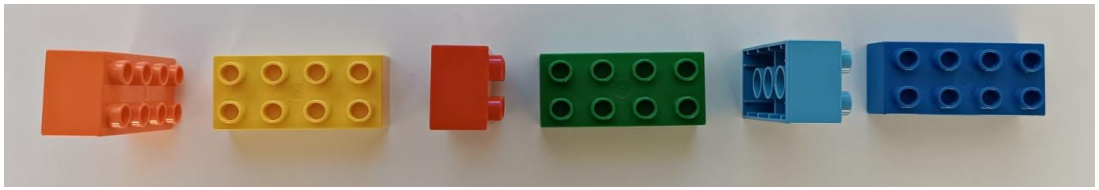
The intention of this lesson is that the learners explain the pattern. They can use any words they have, and the teacher can build vocabulary as they explain.

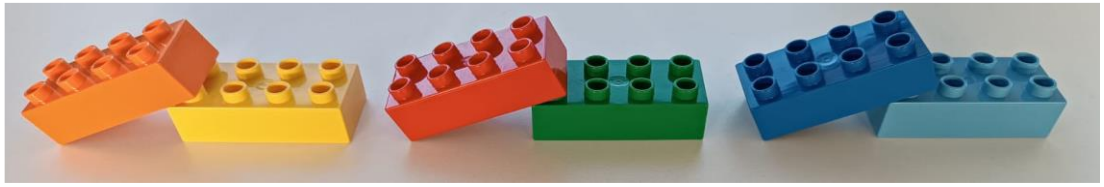




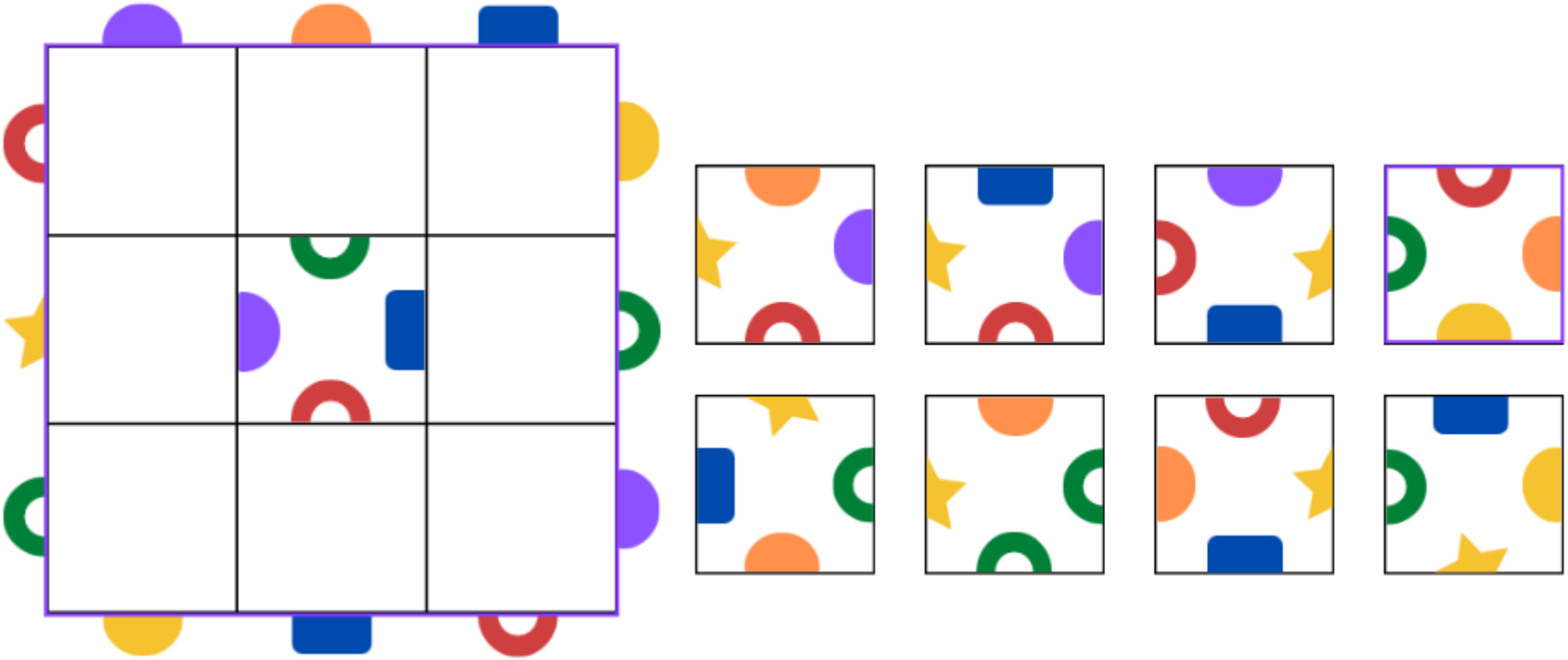








Activity 2



<table>
<tr><th colspan="4">GRADE 3 TERM 1 CODING & ROBOTICS WEEK 3</th></tr>
<tr><th colspan="4">2 x 60-minute lessons per week</th></tr>
<tr><th>TERM 1 WEEK 3</th><th>COMPETENCIES</th><th>TEACHER GUIDELINES for PRACTICAL ACTIVITY</th><th>RETRIEVAL PRACTICE</th></tr>
<tr><td rowspan="3">Learning Intentions:

Learners can …
Design and write our own code to reach a specific destination
Create multiple solutions to the same problem
Test code by executing it step-by-step
Interpret and execute code created by others
Identify different types of robots and their specific purposes</td><td>C2
C3</td><td>Activity 1: Emoji faces

You're a developer creating a feelings app! Users navigate to different emoji faces to express their emotions. You need to write the navigation code.

Divide learners into 4 groups. Each group receives a grid and icons to develop a coding solution to reach a different emoji destination.
Group 1: Angry face
Group 2: Happy face
Group 3: Shocked face
Group 4: Unhappy face

Activity 2: Swop groups

Groups swop stations and interpret the code done by the previous group. Now create a different code (a different code to get to the same emoji). Groups swop stations again and interpret the new code.

Resources: Four big floor grids (5x4), loops, starting triangle and stop sign.</td><td>Activity 3: Code a friend to make tea.

Use an A4 grid (see grid at the bottom), coding cards and something to move around on the board (Lego man/mini-item).

Can you code your friend to make tea in the correct order?

Work in pairs, use the grid to code your friend to make tea. Pack the coding cards at the bottom of the grid. Take turns to code each other using the mini-item and the code.

Groups can also be bigger. One learner can be coded to the first step and come back. Another learner can be coded to the second step and come back. The group can continue until all the steps are done.

Extension: Brushing teeth, making my bed, timeline of my life – sequence the steps.</td></tr>
<tr><td>COMPETENCIES</td><td>TEACHER GUIDELINES for THEORY</td><td></td></tr>
<tr><td>R2</td><td>Identify different types of robots: Robots can be used in many different areas. It is a special kind of machine that follows instructions to do things by itself if it is coded. It is made by people. It sometimes does things people cannot do, e.g. work in dangerous places.</td><td>Ask the learners to discuss in groups:
Can robots work without people? Where and why?
Name a few robots that are used in our homes. Do they need to have wheels? Why or why not?
What kind of robots do we find in factories? Do they always need to have wheels? Why?
Where would we use a robot with wheels?
Where would we use robots with arms?
What do all robots have in common. (It could be more than one answer)</td></tr>
<tr><td>Success Criteria:
I can…</td><td colspan="2">Plan a path from start to destination on a grid
Write the path using directional symbols
Test my code by following it exactly
Create an alternative route to the same destination</td><td>Interpret and execute a friend's code and verify it works correctly
• Name at least 3 types of robots
• Explain what job each type of robot performs</td></tr>
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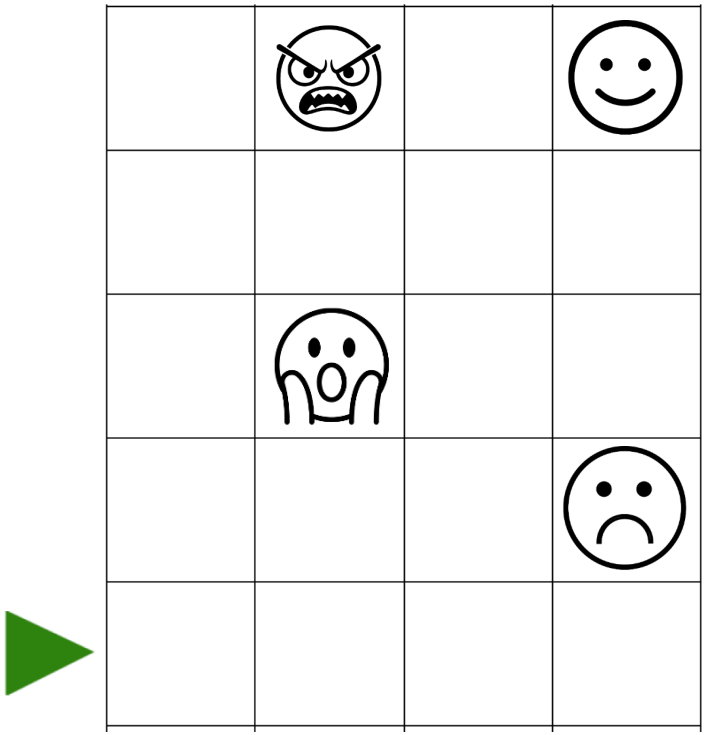
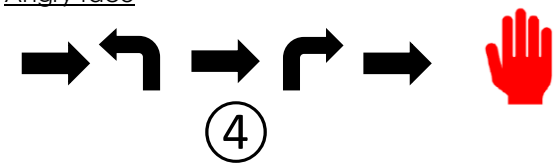
Activity 1: Emoji faces

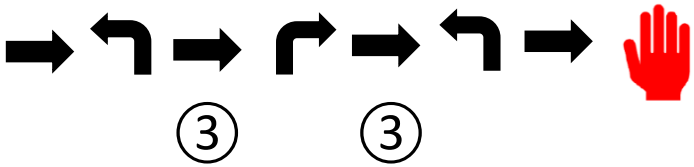


Possible solutions (teacher memo):
Other ideas are also possible.

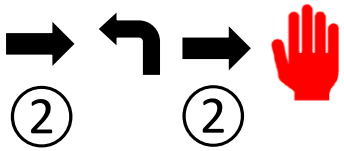
Angry face



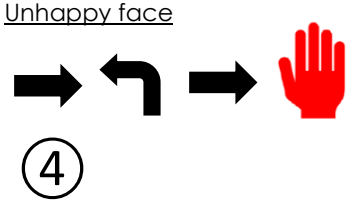
Happy face



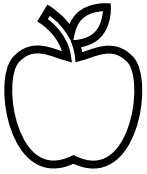
Shocked face



Unhappy face



Making tea

RADE 3 TERM 1 CODING & ROBOTICS WEEK 4			
2 x 60-minute lessons per week			
TERM 1 WEEK 4	**COMPETENCIES**	**TEACHER GUIDELINES for PRACTICAL ACTIVITY**	**RETRIEVAL PRACTICE**
Learning Intentions: **Learners can …** • Break complex problems into smaller, manageable steps (decomposition) • Solve each step separately before combining solutions • Apply decomposition to real-life situations • Understand safe & responsible behaviour as digital citizens • Practice good online etiquette	**C1 Decomposition**	**Activity 1:** Emotions **Problem Statement:** Big emotions can be overwhelming! Let's use decomposition to break down how to handle them. Scenario: "Someone took your pencil without asking. You feel angry." Instead of just saying "Fix the problem," let's decompose it: ***"I feel angry because someone took my pencil."***  Ask learners: "What can we do to solve the proble[illegible]arners brainstorm. Teacher guides them to be more specific and not just say "We will fix the problem." Guide them to break it into small, ordered steps: • Stop, pause and take a deep breath. • Name your feeling (angry). • Think of your choices (Tell your teacher, ask your pencil back politely, borrow another pencil, etc.) • Choose the best option. • Act by using calm words. Learners use emoji cards and action cards in sequence on the floor. They can act it out like a robot. **Activity 2: Group work** In groups learners get a new scenario with different feelings: 1. You won a price. 2. You forget your homework. 3. A friend does not play with you. They discuss and break the problem up into smaller parts to solve it. They write down the steps and act out the solutions to the other groups.	**Activity 3:** Build a burger. **Problem statement: You need to make a burger for dinner. Look at the picture and use the parts to make it.** Use the floor grid to develop a coding solution to pick up the burger ingredients. Avoid the chips, you may walk over any other picture. In pairs, one packs the code at the bottom of the grid with coding cards and the other walks out the code to make sure it is correct. Remember the burger must be built from the bottom. ***Classroom management idea:*** This lesson can be done in a big group. Where each pair only collect one item at a time. They must work together to build it in the correct sequence from the bottom.
	COMPETENCIES	**TEACHER GUIDELINES for THEORY**	

RADE 3 TERM 1 CODING & ROBOTICS WEEK 4			
2 x 60-minute lessons per week			
TERM 1 WEEK 4	**COMPETENCIES**	**TEACHER GUIDELINES for PRACTICAL ACTIVITY**	**RETRIEVAL PRACTICE**
	D2	I am a digital citizen Learners understand what it means to live in a digital world. • A digital citizen uses technology responsibly and safely.	Ask the following questions: • What does it mean to be a digital citizen? • If you take someone's pictures from the internet and use it as your own, is that okay? Why? • Is it okay to pretend to be someone else online? Why?
Success Criteria: **I can…**	• Identify the main parts of a complex problem • Break a problem into 4-6 smaller steps • Solve each step in the correct sequence • Combine steps to solve the whole problem • Apply decomposition to emotional situations • List 5 rules for being a good digital citizen • Explain why online respect matters – responsible and safe use of technology		

Grade 3 Term 1

Activity 1: Emoji cards

Happy 	**Sad** 
Angry 	**Scared** 
Tired 	**Confused** 

Grade 3 Term 1

Action cards:

Stop and take a deep breath	Name the feeling
Think of the choices	Choose the best option
Act calmly	Ask for help

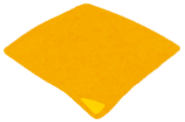
Grade 3 Term 1

Scenario cards:

You won a price.
You forgot your homework.
A friend does not want to play with you.

Grade 3 Term 1

Activity 2: Build a burger activity

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<tr><th colspan="4">2 x 60-minute lessons per week</th></tr>
<tr><th>TERM 1 WEEK 5</th><th>COMPETENCIES</th><th>TEACHER GUIDELINES for PRACTICAL ACTIVITY</th><th>RETRIEVAL PRACTICE</th></tr>
<tr><td rowspan="3">Learning Intentions:

Learners can …
• Focus on important information and ignore irrelevant details (abstraction)
• Create code that collects only what we need
• Identify what makes something a computing device
• Identify different computing devices</td><td>C1 Abstraction</td><td>Resources: Learners receive a 5 X 5 grid like in the example below.

Problem statement:
Dr. Code is rushing to see patients at the hospital. His medical bag is at one end of the room, but his equipment is scattered everywhere! He needs to collect ONLY his medical tools while ignoring everything else.

Activity 1: Help Dr Code collect his equipment

Learners should look at the grid and develop a set of commands for the doctor to collect all the medical equipment. Learners should end at the medical bag.

The code can be written under the grid. Learners work together in groups on A3 paper.</td><td>Activity 2: Medicine bottles

Problem statement: Find the bottles with all the straight lines.

Use pictures of different medicine bottles and ask the learners select the correct bottles that have straight lines.

Extension: Learners can also match the arrows (left, right, up, down and diagonal) to assist with abstraction.</td></tr>
<tr><td>COMPETENCIES</td><td>TEACHER GUIDELINES for THEORY</td><td></td></tr>
<tr><td>D3</td><td>What Is a computing device?

Learners recall and expand on the concept of computing devices.

A computing device is a machine that helps us work with information.

Show pictures of phones, tablets, computers, smartwatches. Discuss what makes them computing devices.</td><td>The teacher revises what a computing device is, and learners can name some of the devices that they know.

Activity 3: Computing devices.

Identify the computing devices from the images.</td></tr>
<tr><td>Success Criteria:
I can…</td><td colspan="3">• Identify the goal in a problem
• Determine what information is relevant/irrelevant
• Create code that focuses only on what matters
• Explain my abstraction decisions
• List 4 computing devices and explain what makes them "computing"</td></tr>
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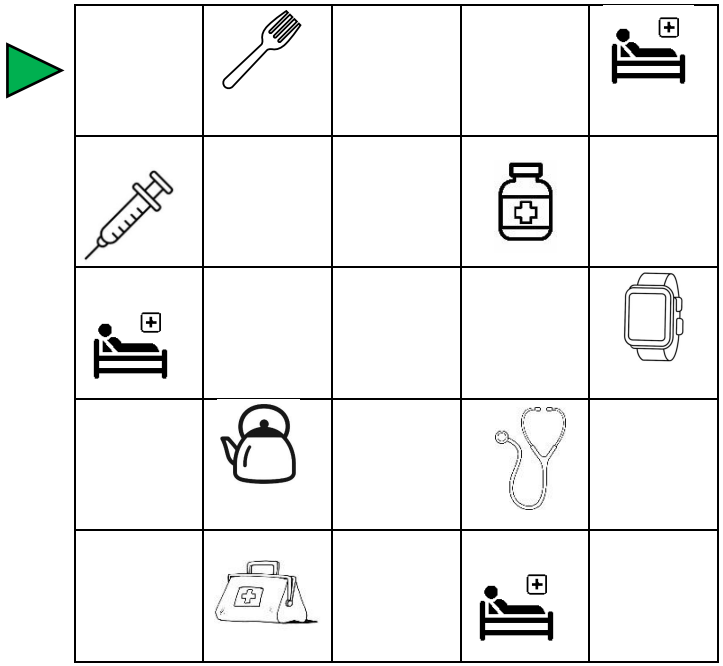
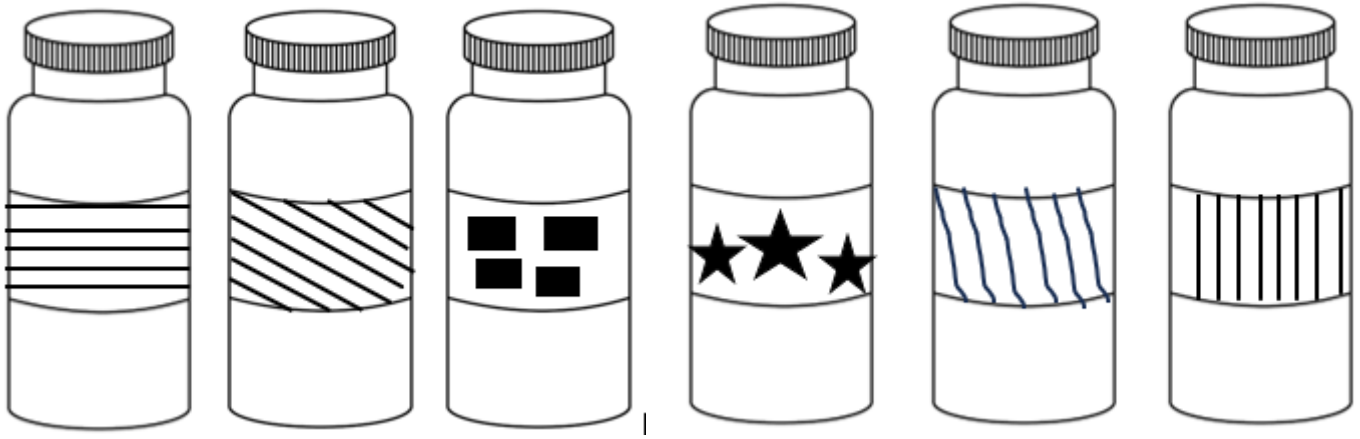
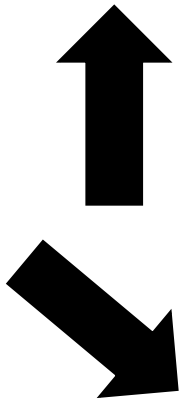
Grade 3 Term 1

Activity 1: Help Dr Code collect his equipment
Give each group a copy of the grid and coding cards.

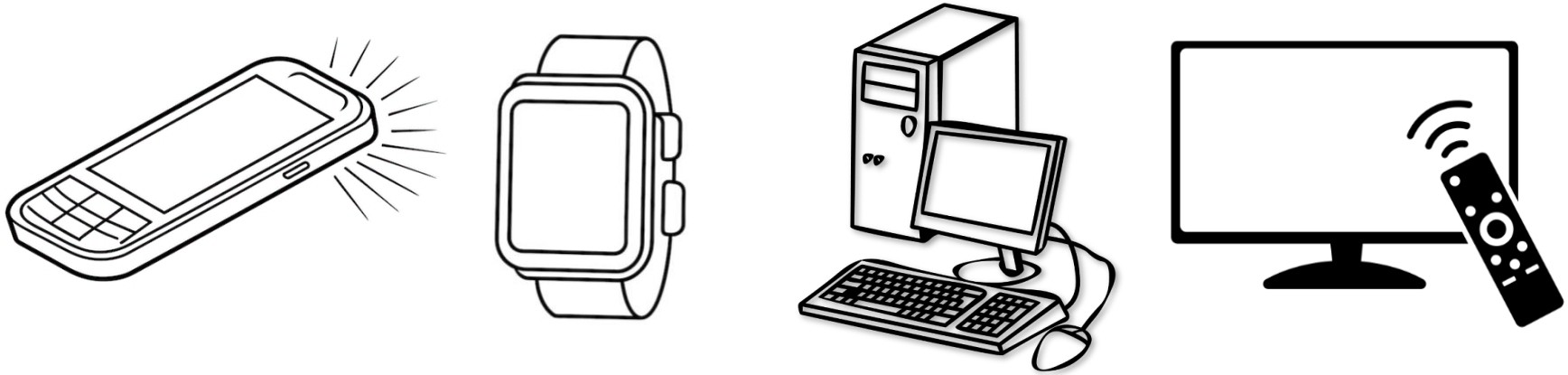


Activity 2: Medicine bottles
Dr Code would like to prescribe medicine to a patient. He only wants the medicine bottles with the straight lines.





Activity 3: Computing devices.
Help Dr Code to select the computing devices that he might need do his work and which ones he would use to relax.



A **personal computer** is a computer that is used by one person at a time in business, at school, or at home. The abbreviation PC is also used.	A **mobile device** is a small electronic gadget that you can easily carry with you. These devices are special because they don't need to be plugged into a wall all the time. They usually have a battery inside letting you use them anywhere!
A **smart TV** is a television with built-in internet connectivity and an operating system that allows it to run various applications, similar to a smartphone or computer.	It is a small, wearable computer or electronic gadget, like a **smartwatch** or **fitness tracker**, that you wear on your body to do things like tell time, count your steps, or even listen to music.

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<tr><th colspan="4">GRADE 3 TERM 1 CODING & ROBOTICS WEEK 6</th></tr>
<tr><th colspan="4">60-minute lessons per week</th></tr>
<tr><th>TERM 1 WEEK 6</th><th>COMPETENCIES</th><th>TEACHER GUIDELINES for PRACTICAL ACTIVITY</th><th>RETRIEVAL PRACTICE</th></tr>
<tr><td rowspan="3">Learning Intentions:

Learners can …
• Make use of computational thinking skills to solve a problem.
• Create a set of instructions to complete the task.
• Follow code to identify where it lands.
• How robots look different
• Discuss why robots do things by themselves</td><td>C1
C2
C3</td><td>Problem Statement: Design a safe and short route for Tim to walk from home to school, meeting his friends along the way.

A 6x6 grid is provided and coding cards.

Activity 1: Learners work in groups. They must use the coding solution below to help Tim get to his friends and then to school.

Activity 2:
Use the coding cards and create another code to get Tim and his friends safely to school. Do not walk under a tree, there can be a danger waiting in it. You can walk through the park. Find the shortest route.</td><td>Activity 3:
Start on the green triangle and follow the code to see where it goes.

In groups of 4, give each learner an algorithm (using abbreviations instead of arrows). Ask them where does each algorithm land on.

Classroom management idea: multiply grids and instructions can be made so that there is enough for each learner in the class.

Activity 4: complete the activities shown below to make the learners think critically.</td></tr>
<tr><td>COMPETENCIES</td><td>TEACHER GUIDELINES for THEORY</td><td></td></tr>
<tr><td>R1

R2</td><td>Robots look different

Learners learn that robots come in many shapes and sizes.

• Robots can look like machines, animals, or humans.
• Their shape depends on the job they do.

Robots follow instructions

Learners learn that robots work because of coding.

• Robots do things by themselves because they are programmed.
• They cannot make decisions.</td><td>Activity 4: Show the learners example of robots. Discuss what each one is used for. Discuss what part has been made to help them with their task. Add machines that aren't robot to confuse the learners. Learners can sort the pictures into robots and not robots.

• Role-play: Learners act as robots following commands.
• Create steps for your robot to follow and leave out some steps. Swop and another group or partner can fill in the missing steps.</td></tr>
<tr><td>Success Criteria:
I can…</td><td colspan="3">• Use computational thinking skills to solve a problem
• Plan a sequence of steps for Tim to follow.
• Follow code to see where it ends.
• Name differences between different robots
• Identify the things that robots can and cannot do</td></tr>
</table>

Grade 3 Term 1

Activity 1:

					
					
					
Start 					

(Give this solution to learners)

Forward 2, turn left, forward, turn right, forward 3,turn left,forward 3

Activity 3: Use the code below to find out where each algorithm with end up.

Cut out the follow instructions and give each learner one. If the learners are not ready for abbreviation yet, then arrows or words may be used for the same activity.

FWD, TL, FWD, TR, FWDX3

FWD x2, TR, FWD

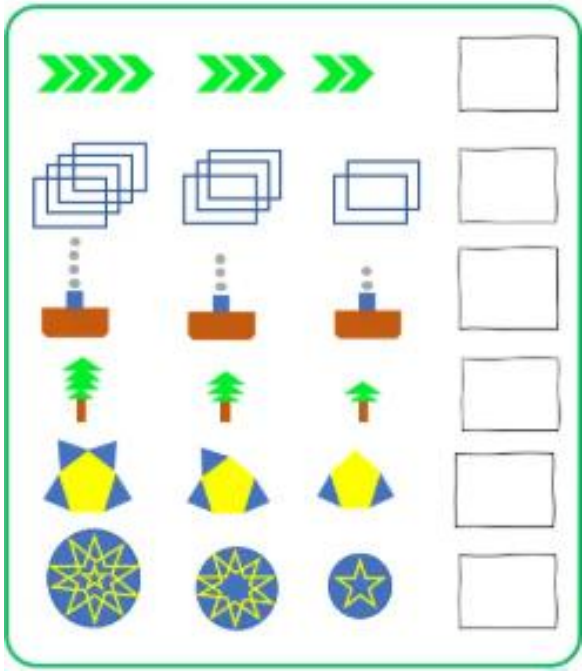
FWD, TL, FWD x2

FWD x3, TL, FWD x2

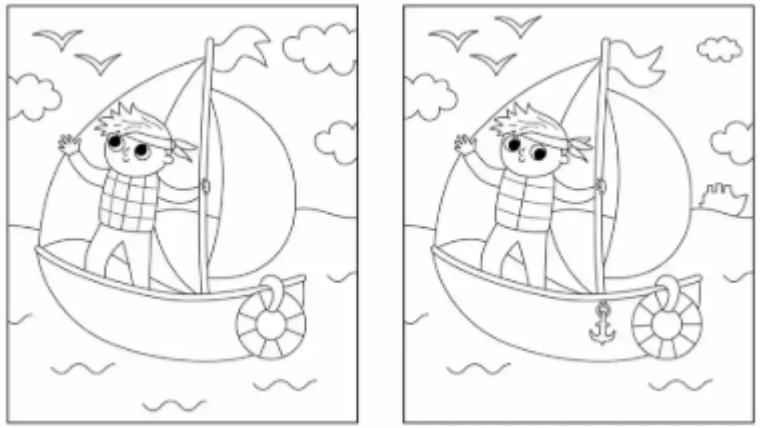
Grade 3 Term 1

Match the image with its shadow.

What is the decreasing pattern.

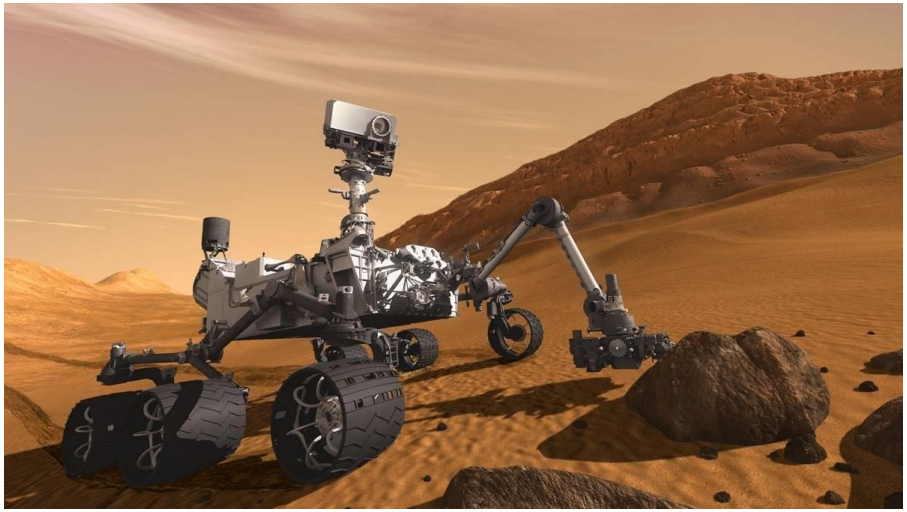


Spot 10 differences:



Grade 3 Term 1

Activity 3: Different types of robot pictures for discussion.



Grade 3 Term 1

<table>
<tr><th colspan="4">GRADE 3 TERM 1 CODING & ROBOTICS WEEK 7</th></tr>
<tr><th colspan="4">2 x 60-minute lessons per week</th></tr>
<tr><th>TERM 1 WEEK 7</th><th>COMPETENCIES</th><th>TEACHER GUIDELINES for PRACTICAL ACTIVITY</th><th>RETRIEVAL PRACTICE</th></tr>
<tr><td rowspan="3">Learning Intentions:

Learners can …
• Plan and explain the order of actions needed to complete a task.
• Follow a sequence of steps to solve a problem.
• Explain why we use technology
• Explain what a digital footprint is
• Name different computing devices</td><td>C1
C3</td><td>Provide a 5X5 grid and coding cards. Place the icons on the grid or use the grid provided. Give learners the problem statement.

Problem Statement: Chezi the dog loves treats. He must be careful and not take any treats. He may only take treats that looks like a bone and take it to his doghouse.

Activity 1: Learners must look at the grid and develop their own set of instructions to help Chezi fetch his treat and go home. Use the coding cards and pack out the instructions below.</td><td>Activity 2:
Problem statement: Help the rabbit get to the carrot and avoid the dam.

Use the code provided. Let learners work in pairs to execute the coding solution (each pair completes one coding solution provided).</td></tr>
<tr><td>COMPETENCIES</td><td>TEACHER GUIDELINES for THEORY</td><td></td></tr>
<tr><td>D1
D2
D3</td><td>Why do we use technology?
Learners explore how technology meets human needs and wants.
• Technology helps us work, communicate, learn, and have fun.

What is a digital footprint
Learners understand that their online actions leave a trail.
A digital footprint is the record of everything you do

Comparing computing devices.

Learners compare devices by size, shape, and features.

• Computing devices come in different forms but do similar tasks.</td><td>Learners match needs/wants (e.g., cooking, talking, playing) with technology that helps (e.g., stove, phone, game console). The teacher can use pictures or real objects

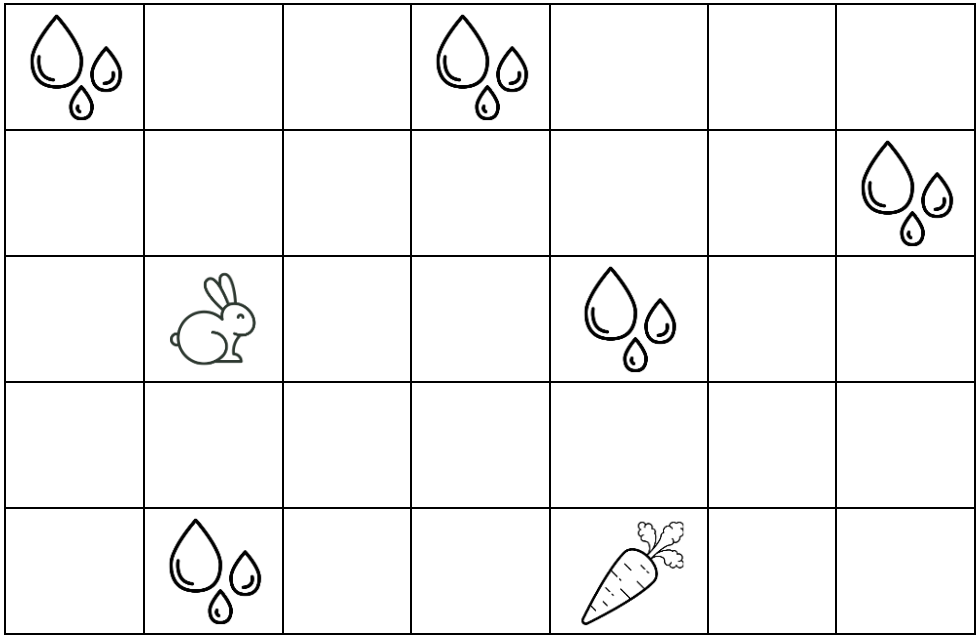
Use a footprint template to write or draw online actions (e.g., watching videos, posting photos).</td></tr>
<tr><td>Success Criteria:
I can…</td><td colspan="3">Learners can:
• Use clear instructions or symbols to guide Chezi.
• Follow instructions as per the given code.
• Explain why we use technology
• Explain what a digital footprint is
• Name and compare different computing devices</td></tr>
<tr><td colspan="4"></td></tr>
</table>

Grade 3 Term 1

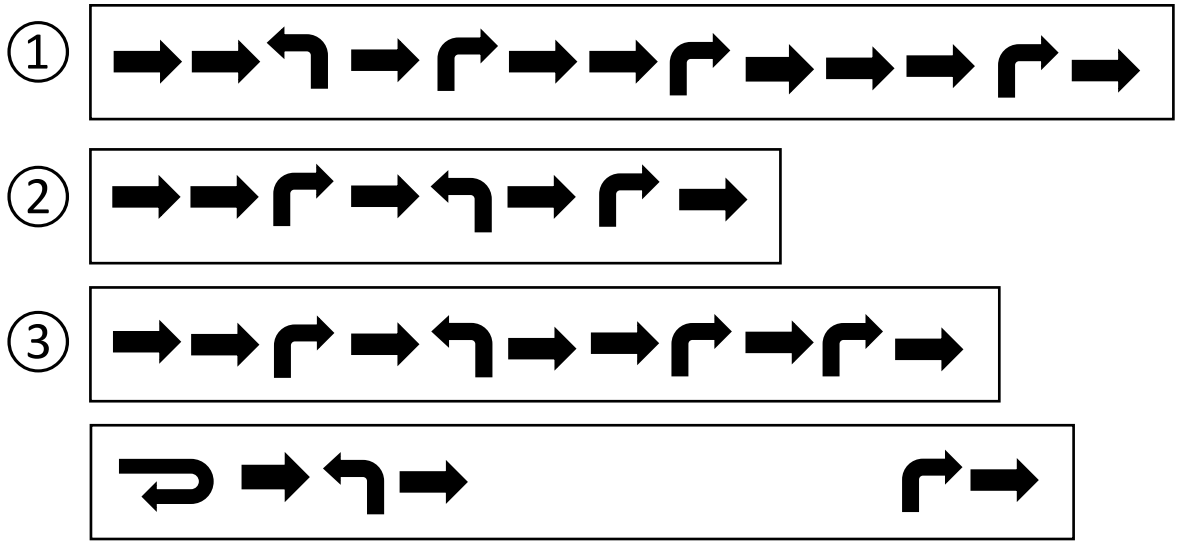
Activity 1: Chezi the dog must pick up his treat and then go home.

Activity 2: Help the rabbit get to the carrot. Avoid the dam.



Copy and cut out the code below. Get each pair a set of instructions.

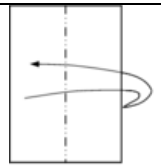
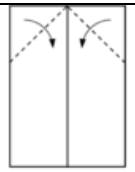
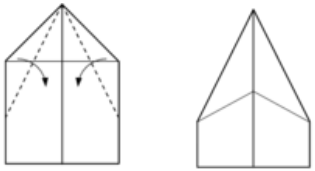
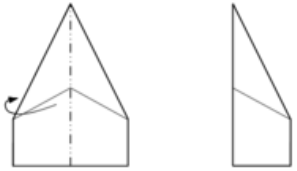


④ 

GRADE 3 TERM 1 CODING & ROBOTICS WEEK 8			
2 x 1-hour lessons per week			
TERM 1 WEEK 8	**COMPETENCIES**	**TEACHER GUIDELINES for PRACTICAL ACTIVITY**	**RETRIEVAL PRACTICE**
Learning Intentions: **Learners will learn to …** • Follow design rules to make something • Follow instructions step by step	**R5** **R6**	**Activity 1**: Make a paper aeroplane. **Problem statement: We are going to hold a paper aeroplane flying competition. Whose plane can fly the furthest. You will have 2 chances. Then explain to a friend how to throw the aeroplane. They must follow the instructions step by step.** Learners identify the materials needed to make a paper aeroplane. They follow simple instructions to fold the aeroplane. ***Resources:*** A4 paper, markers or crayons. Follow the step-by-step instructions below. Pictures attached to help with the instructions. 1. Fold the paper in half lengthwise and then unfold to make a crease. 2. Fold the two corners toward the middle crease to form a triangle at the top. 3. Fold the top two corners again toward the middle to make a longer triangle. 4. Fold the plane in half along the original crease 5. Fold the wings down so they line up with the bottom edge of plane. 6. Decorate the plane with markers or crayons. 7. Open the wings and throw your plane.	**Activity 2**: If your aeroplane did not fly far, what changes could you make to improve it? Make some changes to the plane to try improving it (add a fold, throw it differently etc.) Test it again, ask the learners: Is it better or worse, why? R6 – Explain to a friend how to throw a paper aeroplane. The friend must follow the instructions step by step.
	COMPETENCIES	**TEACHER GUIDELINES for THEORY**	
		No theory this week. Only focus on Robotics.	
Success Criteria: **I can…**	• Follow the design instructions. • Follow instructions step by step as given by a friend • test and improve my model		

Grade 3 Term 1

Activity 1: Step by step instructions

1. Fold the paper in half lengthwise and then unfold to make a crease.	
2. Fold the two corners toward the middle crease to form a triangle at the top.	
3. Fold the top two corners again toward the middle to make a longer triangle.	
4. Fold the plane in half along the original crease	
5. Fold the wings down so they line up with the bottom edge of plane.	
6. Decorate the plane with markers or crayons.	
7. Open the wings and throw your plane.	

<table>
<tr><th colspan="4">GRADE 3 TERM 1 CODING & ROBOTICS WEEK 9</th></tr>
<tr><th colspan="4">2 x 60-minute lessons per week</th></tr>
<tr><th>TERM 1 WEEK 9</th><th>COMPETENCIES</th><th>TEACHER GUIDELINES for PRACTICAL ACTIVITY</th><th>RETRIEVAL PRACTICE</th></tr>
<tr><td rowspan="4">Learning Intentions:

Learners will learn to …
• Notice similarities and differences between patterns.
• Create instructions to follow the correct sequence of a life cycle of a butterfly.
• Explain that robots do not have feelings or opinions
• Identify different robot components</td><td>C1 patterns
C6</td><td>Problem statement: Cynthia is setting up cups for a special event. Can you help her organise the cups?

Activity 1:
Pattern-search - Give/ show learners a pattern of cups that they must find and circle.
• It can be from left to right, down or diagonal
• It can overlap with another pattern
Find the following pattern: 

Activity 2:
Pattern-search
• It can be from left to right, down or diagonal
• It can overlap with another pattern
Find the following pattern:  </td><td>Activity 3: C1 algorithm
Problem statement: A butterfly is a very special animal. Can you show why it is special?

Provide learners with a grid and butterfly stages. Learners must code each other, using coding cards, to collect the different stages in the correct sequence and place them in the correct sequence

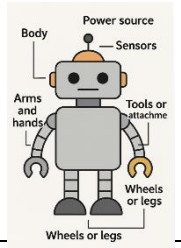
Classroom management idea: Can be done in a bigger group. In pairs, learners code each other to collect one stage at a time. Pay careful attention to the group so that the stages are collected in the right order.</td></tr>
<tr><td>COMPETENCIES</td><td>TEACHER GUIDELINES for THEORY</td><td></td></tr>
<tr><td>R1

R2</td><td>Learners understand robots do not make decisions.
• Robots do not have feelings or opinions.
• They only do what they are told.

Robots have different parts
Learners identify robot components.

• Arms and hands – pick up things.
• Sensors – see, hear, feel.
• Legs or wheels – move around.
• Control system – brain.
• Power source – energy.
• Tools or attachments – special jobs.</td><td>Role-play: Learners act as robots following commands.

Scenario discussion: “Can a robot choose what to eat?”

Label a robot diagram.
  </td></tr>
<tr><td>Success Criteria:
I can…</td><td colspan="3">• Explain the similarities and differences between patterns.
• Code each other to identify the life cycle of a butterfly in the correct sequence.
• Explain that robots do not have feelings or opinions and why
• Identify the different robot parts and what they are used for</td></tr>
</table>

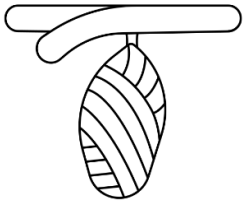
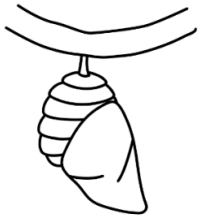
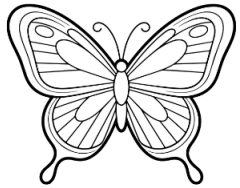
Grade 3 Term 1

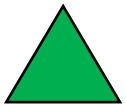
Activity 1

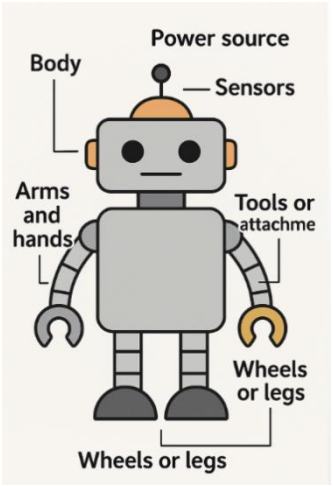
Activity

Grade 3 Term 1

Activity 3:
Code your friend (verbally) to pick up the butterfly stages in the correct sequence.





<table>
<tr><th colspan="4">GRADE 3 TERM 1 CODING & ROBOTICS WEEK 10</th></tr>
<tr><th colspan="4">2 x 30-minute lessons per week</th></tr>
<tr><th>TERM 1 WEEK 10</th><th>COMPETENCIES</th><th>TEACHER GUIDELINES for PRACTICAL ACTIVITY</th><th>RETRIEVAL PRACTICE</th></tr>
<tr><td rowspan="3">Learning Intentions:

Learners can …
Develop an algorithm for sorting the water animals
Create coding solution to reach the key and the treasure chest.
Identify types of technology
Identify what is appropriate to post
Identify parts of computing devices</td><td>C1
C2
C3</td><td>Problem statement: Develop a code to find a hidden treasure.
Be careful of the obstacles.

Activity 1: Sort the water animals
Learners work in groups. Sort and match the pictures according to a characteristic. Explain and give reason for the choices.

Activity 2: Treasure chest

Learners receive a 5X5 grid and coding cards. Leaners develop a code to reach the key. Pick up the key and code a path to the treasure chest. Open the treasure chest and collect your prize. Work in groups. Remember to use loops and the pick-up symbol.</td><td>Activity 3: Swop code

Groups swop stations and check each other’s coding solutions to make sure that it is logical. Make corrections if necessary.</td></tr>
<tr><td>COMPETENCIES</td><td>TEACHER GUIDELINES for THEORY</td><td></td></tr>
<tr><td>D1
D2
D3</td><td>Types of technology – tools, machines, devices
Objective: Learners classify technology into tools, machines, and devices.
Technology includes different types of items that help us in various ways.
Activity: Sorting activity using images or real objects.
Think before you post
Learners explore the consequences of online sharing.
What you post online can be seen by others and may stay online forever.
“Post or Pause?” game – learners decide if a post is safe

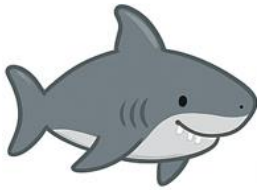
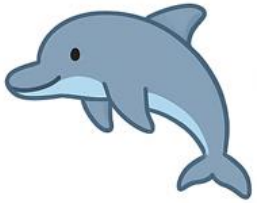
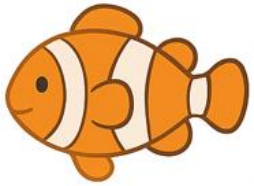
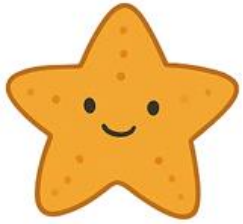
Devices have parts like screens, buttons, speakers, and cameras.
Can you draw the device you like using?
Label it</td><td>Give the learners some situations and ask them to say thumbs up (if it is taking good care of a device) or thumbs down (if it is not taking care of a device).
Thabo took his Mum’s phone without permission to his friend’s house.
Sam was playing with her tablet in the garden. She left is on the grass when she went to eat lunch.
John asked his mum to use her phone to play games and sat carefully on the couch while playing.
Jan likes to eat dinner while playing games on his tablet.
Post or Pause: May I share…
An embarrassing photo of my friend
A photo of my baby-sister in the bath
A photo of mom and dad at their anniversary
My dog barking at a cat
A beautiful rose I saw on our walk through the gardens
My name and surname to a random person that wanted to know the spelling.</td></tr>
</table>

Grade 3 Term 1

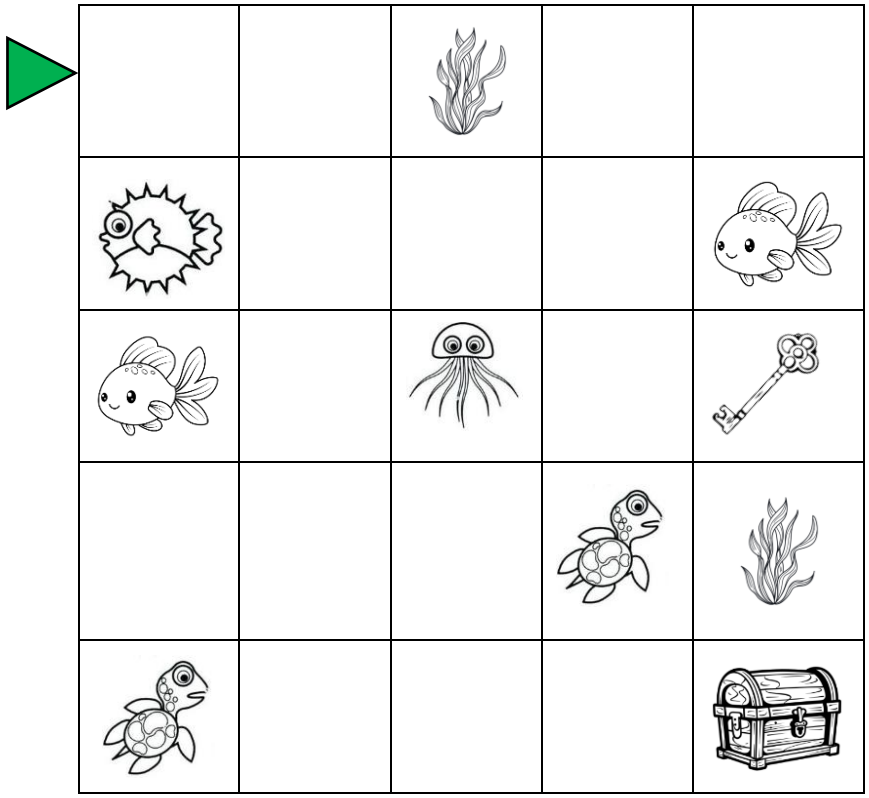
Success Criteria: **I can…**	• Sort pictures according to given criteria – what is your algorithm • Develop a set of commands using abstraction. • Sort pictures according to their own criteria and explain why. • Create a coding solution to reach the treasure chest • Sort technology into tools, machines or devices • Decide and explain what is appropriate to post or not • Identify and label the parts of a computing device

Grade 3 Term 1

Activity 1: Abstraction- copy and cut out each picture to use for sorting.

Activity 2: Copy the grid and print it out for the learners. Learners use coding cards for the answers.



Teachers Memo (other solutions are possible):