

GRADE R TERM 3 CODING & ROBOTICS			
2 x 30-minute lessons per week			
TERM 3 WEEK 1	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Interpret a given set of arrow commands on a grid (C3) ➤ Execute a given code by moving one block at a time (C3) ➤ Find and fix a single error in a given sequence of steps (C4)	C3 C4	Problem Statement: Karen is feeling cold and very hungry. Help her find the bread and soup on the grid. The teacher gives the learners the grid and coding command to interpret and execute the command. Resources: • 5x5 floor grid • Use the grid provided Activity 1: • Learners must execute the given code. • Learners execute and identify a problem with the given code. • Learners will correct a code by moving on the grid.	Activity 2: Learners use grid to pick up winter clothes only.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
Success Criteria: I can...	➤ Read the arrow cards in order, from first to last ➤ Move one block on the grid for each arrow card ➤ Say where the code will take me before I move ➤ Point to the step where the code goes wrong ➤ Change that step and run the code again to check that it works		

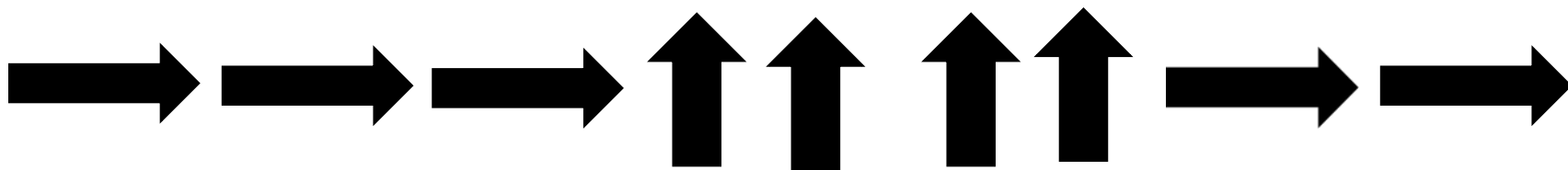
Activity 1:



Instruction:

Find the mistake.

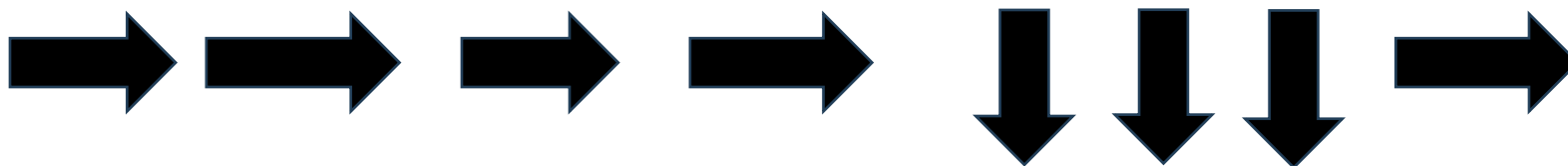


Activity 2

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TERM 3 WEEK 2	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Interpret and execute a code that has been packed out for me (C3) ➤ Present a simple coding solution using arrow cards to reach a goal (C2) ➤ Explain in my own words what a robot is (R1) ➤ Identify robots I have seen at home, at school or in the shops (R2)	C2 C3	Problem statement: Neo's dad has a green car. He is coming to pick Neo up from school. Neo cannot see where his dad parked the car. Can you help Neo find the green car? Resources: • 4x4 floor grid • A3 grid • Arrows The teacher must pack out the coding solution underneath the grid. The learners must follow the code on a floor grid and see if they can reach the car.	Activity: Teacher will give each pair an A3 grid and coding arrows. Create code to get from the school to the red car.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	R1 R2	Discussion and show pictures: What is a robot? Revise term 2 work. Learners play Simon Says: in pairs Robot can only work if you hear: Simon says...	Talk about your vacuum robot. Why is it a robot? E.g. Can it think? Work on its own?
Success Criteria: I can:	➤ Follow a code that someone else packed out, one step at a time ➤ Place arrow cards to make a path from the school to the car ➤ Check my path by walking it on the floor grid ➤ Say that a robot only does what it is told to do		

School				
				
				



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TERM 3 WEEK 3	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Break a familiar event into its main steps (C1: decomposition) ➤ Arrange the steps of an event in the correct order (C1) ➤ Explain why we take breaks away from screens (D2) ➤ Explain that personal information must be kept private (D2, D3)	C1 Decomposition	Problem Statement: Thando needs to visit the dentist for the first time. Please help him understand what will happen when he gets there. Learners will sequence the process of a visit to the dentist using the given pictures. What happens first? What does the dentist do next? And what is the last thing that happens? Expected Steps: • The dental assistant introduced himself to the child. • The child meets the dentist. • The dentist examines the child. • The child told the dentist he was fine.	Activity 2: Work with a friend. Look at the pictures of a boy who gets hurt and goes to the doctor. Put the pictures in the correct order. Then tell your teacher what happened first, next, and last.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	D2 D3	Screen time: ➤ take a break and protect eyes. ➤ Give examples of how to take a break – draw a picture ➤ How should we answer a phone? ➤ May we share information with a person on a phone if they say they phone from the police or bank?	Role play in groups: • How we answer phone and ask each other questions. • Do not share personal information
Success Criteria: I can...	➤ Name what happens first, next and last at the dentist ➤ Place the picture cards in the right order and retell the story ➤ Give one reason why my eyes need a rest from a screen ➤ Name two things I must never tell a person on the phone ➤ Say who I should ask before sharing anything about myself		

Activity 1:



Activity 2:



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TERM 3 WEEK 4	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Choose the clearest and safest route to solve a problem (C1: abstraction) ➤ Leave out the parts of the grid that are not needed (C1) ➤ Explain what makes a machine a robot (R1) ➤ Name the main parts of a robot and say what each part is for (R3)	C1 Abstraction	Problem statement: Help the bee to get home safely by creating a coding solution that will take the bee from the flower to its hive. Resources: • 4x4 grid • Pictures • Coding arrows	Activity: Learners work in pairs, using the same grid. Help a second bee get back to the hive from a different starting block.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	R1 R2	Class discussion: What is a robot. What makes it a robot? Learners own words Introduce a new robot: Medical robot – medicine delivery robot	
Success Criteria: I can:	➤ Point out the blocks on the grid that the bee must avoid ➤ Pack out a code that takes the bee from the flower to the hive ➤ Explain why I chose that route and not another one ➤ Say that a robot follows stored instructions and cannot think for itself ➤ Point to a robot's body, its wheels or legs, its sensors and its battery, and say what each one does		

Activity 1

		bird	
			
			



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TERM 3 WEEK 5	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Interpret and execute a given code block by block on a grid (C3) ➤ Find and correct one bug in a given code (C4) ➤ Explain input, process and output using a familiar example (D7)	C3 C4	Problem statement: Sipho wants to make a fruit smoothie. Help Sipho collect three different fruits. Resources: • 4x4 grid with different fruit pictures • Coding arrows The teacher gives learners a grid, codes and ask them to interpret the given codes. Learners need to follow the code and solve the problem. <i>Note: The code given is block-by-block.</i> There is one bug in the given code. Ask the learners to debug the code and show the correct code.	Activity: The teacher prints pictures of different fruits (or uses real fruits). Look carefully at the fruit pictures. • Name all the fruits. • Close your eyes while the teacher removes one fruit picture. • Open your eyes and tell the teacher which fruit is missing?
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	D7	Explain input - process - output (cause and effect awareness - the learner should recognise that an action (input) leads to a result (output). The teacher put the 3 cut fruits plus half a cup of milk in the blender, blended them, and shared the smoothie with the learners. Input (fruits & milk), process (blending), output (delicious smoothie).	The class can enjoy the output (smoothie) with the teacher. PS If you cannot make a smoothie: Use a carrot, grater and bowl. Show how a carrot, process of grating, becomes carrot salad
Success Criteria: I can...	➤ Read the code one block at a time and move for each block ➤ Say which block does not work and give my reason ➤ Show the corrected code and run it again to check it ➤ Name what goes in, what happens, and what comes out when we make the smoothie ➤ Give one more example of input, process and output from my own day		

Make a bug in this code



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TERM 3 WEEK 6	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Design and make a simple artefact that stands for a robot (R5) ➤ Act out the operations of a robot by carrying out an instruction exactly (R6) ➤ Give a partner one clear instruction at a time (R6)	R5 R6	Problem statement: The farmer needs help to collect fruit from the garden. He is missing a helper to gather the fruits. Can you create a helper to help him collect the correct fruits by following the teacher's instructions? Resources: toilet roll holders, scissors, glue, colour pencils. Instructions: • Cut out the parts of the farmer. • Colour/ decorate the parts of the farmer. • Stick the parts onto the toilet roll to make a farmer.	Activity: Place fruit pictures around the classroom. Learners work in pairs; the teacher gives them all a different instruction (see examples below): • Pick up the red apple. • Find the yellow banana. • Collect two oranges. • Put the pear next to the apple. In pairs, learners use their farmer artefact to code each other (verbal) to get to the fruit.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
Success Criteria: I can...	➤ Make a farmer artefact that has all the parts we agreed on ➤ Wait for an instruction before I move ➤ Carry out one instruction at a time, exactly as it was given ➤ Give my partner one clear instruction at a time ➤ Say what my artefact can do and what it cannot do		

Week 7 Resources

GRADE R TERM 3 CODING & ROBOTICS			
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TERM 3 WEEK 7	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Break a task into steps and place them in a logical order (C1) ➤ Recognise and describe a pattern in a set of pictures (C6) ➤ Explain what it means to be kind and respectful when using a device (D2) ➤ Identify computing devices used at home (D3)	C1 C6	Problem statement: Linford wants to milk a cow, but he does not know what to do first. Help him by putting the pictures in the correct order. Tell your teacher what happens first, next, and last. Resources: Pictures Learners work in pairs to sequence the pictures, and the learners explain the sequence to the teacher.	Activity 2: Look at the patterns below: Learners can explain how the pattern works. Add pattern pictures
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	D2 D3	Whole class discussion: May you say rude words or show rude hand-signs to people when you speak to them? May you send rude emoji's to people online? (thumbs-up / thumbs-down) What other device (that can store data), apart from your phone, do the people in your house use? E.g. laptop	
Success Criteria: I can...	➤ Tell my partner what happens first, next and last ➤ Explain why my order makes sense ➤ Point to the part of the pattern that repeats ➤ Say what comes next in the pattern and why ➤ Give two kind ways and two unkind ways of sending a message ➤ Name two devices at home that can store information		



1. Feed the cow



2. Give the cow water



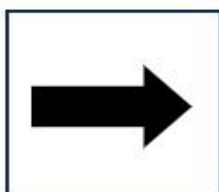
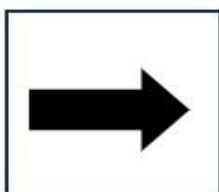
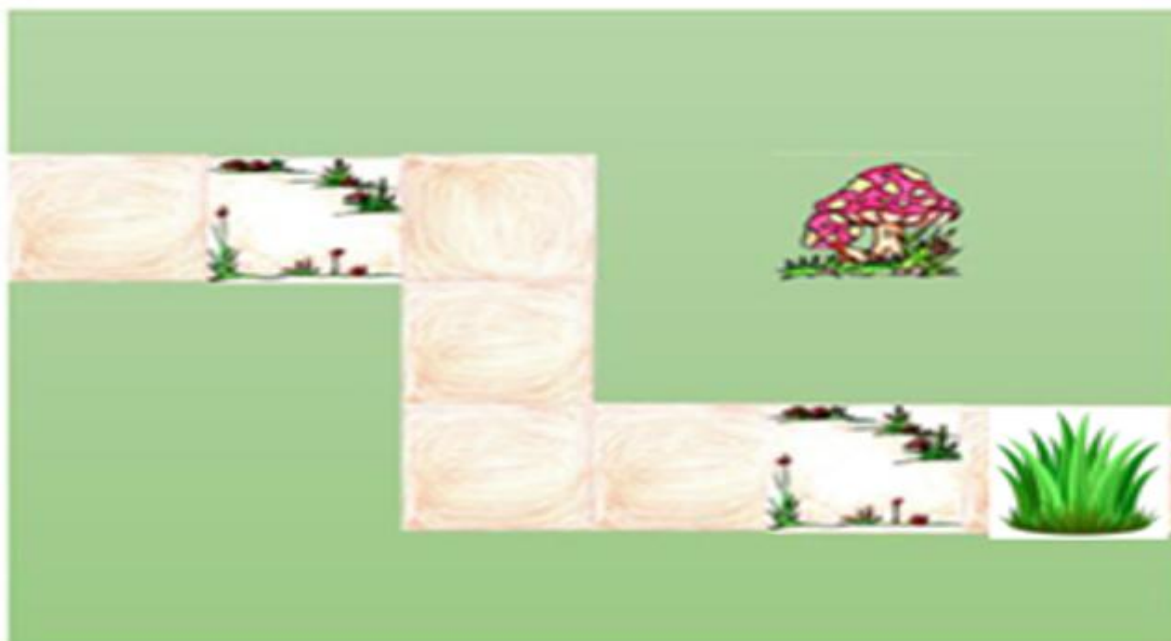
3. Brush the cow

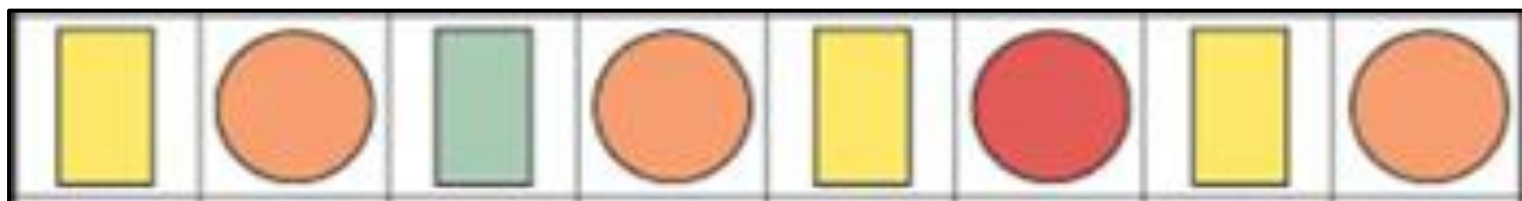
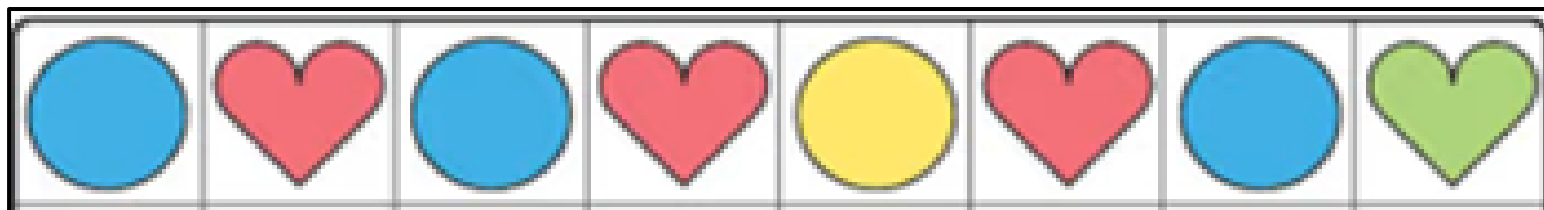


4. Wash the udder



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TERM 3 WEEK 8	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Interpret a given set of arrow instructions (C3) ➤ Complete a coding solution by supplying the missing steps (C2) ➤ Find and fix mistakes in a sequence (C4) ➤ Explain what a robot is and how it differs from an ordinary machine (R1) ➤ Identify different types of robots and say what each is used for (R2)	C2 C3 C4	Problem statement: Bobby, the sheep is hungry. Help him get to the grass. Resources: Maze Coding cards Fill in the missing code.	Activity: Debug the patterns Find the mistake in each row. The first 2 shapes are correct.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	R1 R2	Why is the medicine delivery robot a robot? How is this robot different from the vacuum cleaner robot? How and Why? e.g. How does each move – wheels, feet, big or small wheels, etc	Discuss the differences and similarities between a robot vacuum cleaner and the medicine delivery robot?
Success Criteria: I can...	➤ Read the code and say where Bobby will end up ➤ Place the missing arrow so that the code reaches the grass ➤ Find the shape that is wrong in each row and say why it is wrong ➤ Fix the mistake and check the pattern again ➤ Name two robots and say what job each one does ➤ Say one way the vacuum robot and the medicine robot are the same, and one way they are different		

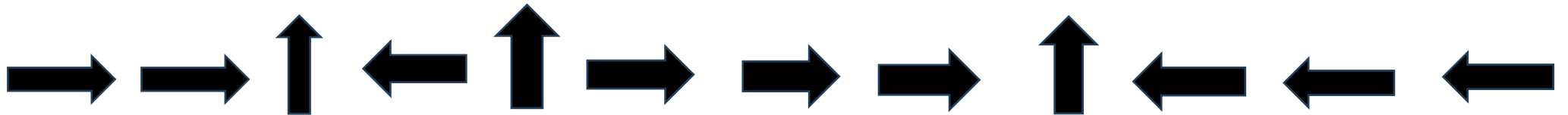


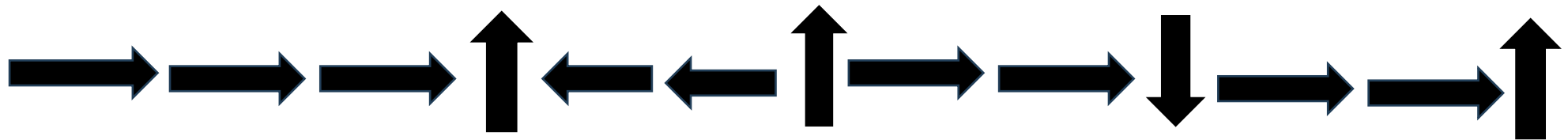
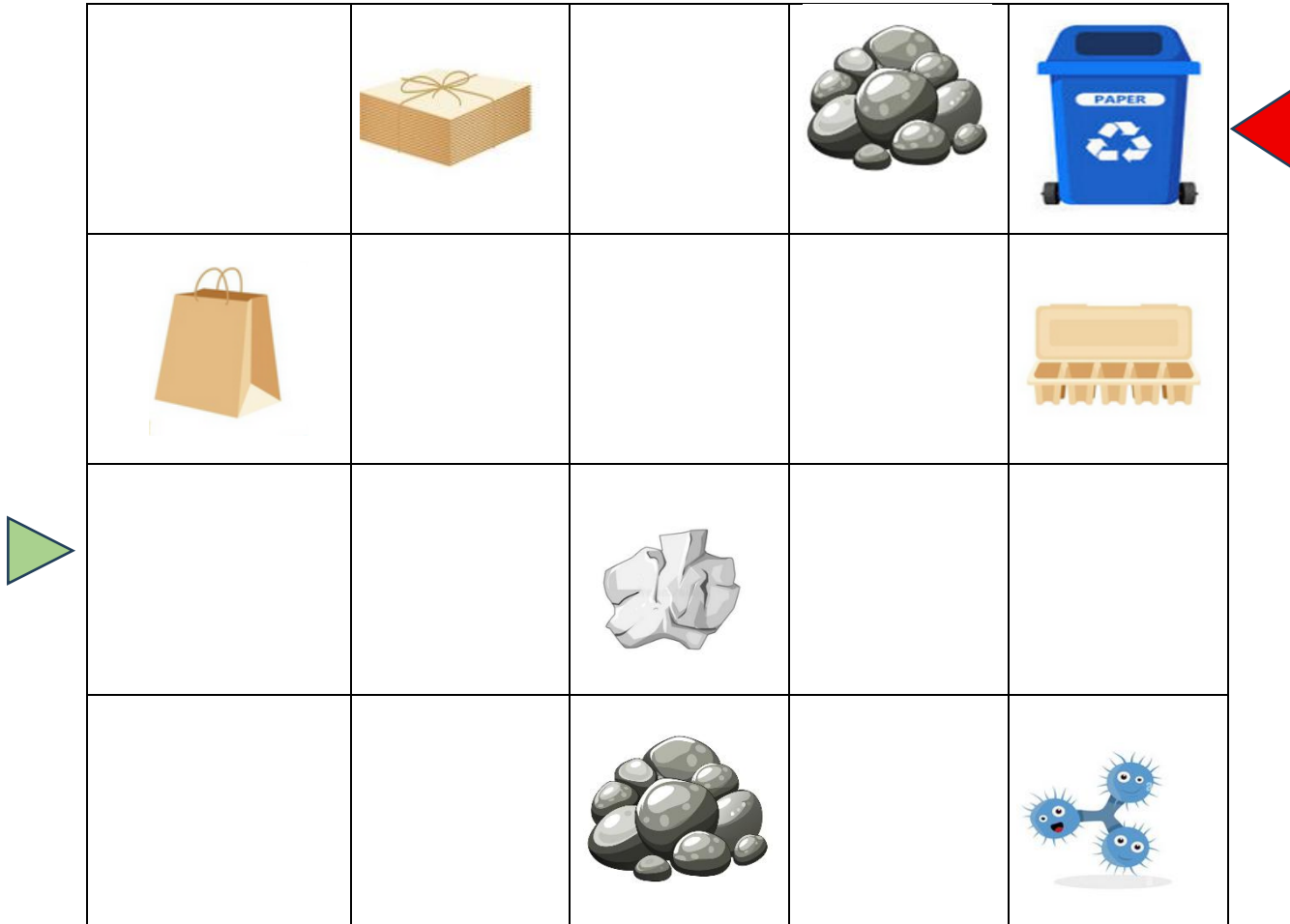


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TERM 3 WEEK 9	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to... ➤ Plan a set of logical steps to solve a problem (C1) ➤ Present my own coding solution using arrow cards (C2) ➤ Interpret and execute a code given to me by a classmate (C3) ➤ Explain that a computing device stores data so that it can be found again (D3, D7)	C1 C2 C3	Problem Statement: The school yard is very dirty. Help the teacher clean up by recycling the bottles, plastics, and paper lying around the classrooms. Resources: 5X5 grid Pictures/real objects The teacher provides the learners with coding solutions. Learners work in groups. Learners take turns to act out the code, while the other learner gives the code. NB: Teacher may utilize the provided resources for a variety of other instructional activities.	Activity Revision: Oarena wants to pick up all the papers around the school. He must avoid picking up stones. Learners use the grid provided, working in pairs to create the code.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	D3 D7	Teacher will ask the learners: Where do we keep our toys?" (toy box) Where do we keep our clothes?" (wardrobe) Where do we keep our photos?" (album or phone) Explain: Just like we keep toys or clothes in special places, we also keep information in special places. This is called data storage. Have you ever asked someone a question, and they answered you back? Show how a picture is taken. People, press button on phone, picture can be saved – Input, process, output – and then you can retrieve the data (the saved photo)	Learners can draw a picture to demonstrate their understanding of input, process and output .
Success Criteria: I can...	➤ Decide the order in which I will collect the items ➤ Pack out my code and explain it to my group ➤ Follow a partner's code exactly and say whether it works ➤ Say where a photograph is kept after we have taken it ➤ Draw a picture that shows input, process and output		

Week 9 Resources





GRADE R TERM 3 CODING & ROBOTICS			
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TERM 3 WEEK 10	COMPETENCIES	TEACHER GUIDELINES for PRACTICAL ACTIVITY	RETRIEVAL PRACTICE
Learning Intentions: Learners will learn to ... ➤ Present a simple coding solution to reach a chosen goal (C2) ➤ Interpret and execute a code created by another group (C3) ➤ Act out the operations of a robot for a partner (R6) ➤ Explain how to keep my personal information safe (D2) ➤ Explain why screen time should be limited (D2)	C2 C3 R6	Problem Statement: The Khosi family is having a Heritage celebration. Help Mrs. Khosi collect four types of South African food for their celebration. Resources: 4x4 Grid, coding solutions, pictures with different types of South African food. Learners will be provided with the grid and coding cards. Learners can choose one type of South African food from the grid.	Activity: Swop code with another group and tell them which food they selected. A learner can take the role of an instructor, and one will mimic the operations of the robot.
	COMPETENCIES	TEACHER GUIDELINES for THEORY	
	D2 D3	Play thumbs-up and thumbs-down game with learners. They must answer with yes (thumbs-up) or no (thumbs down) Ask: May you share...? May you scream on the phone? Must you ask to use someone else's phone A phone stores data. May you look at the things on someone else's phone without permission	
Success Criteria: I can...	➤ Choose a food and pack out a code that reaches it on the grid ➤ Swap codes and follow another group's code correctly ➤ Move only when my instructor gives me an instruction ➤ Say two things I must not share on a phone ➤ Say that I must ask before I use someone else's device ➤ Give one reason why too much screen time is not good for me		

Redo pictures

