



ESSENTIAL CODING

Basic 3 Facilitator's Guide





Essential Coding

Basic 3

Facilitator's Guide

NNF Esquire Limited
P.O. Box AN 8644
Accra – North
Ghana.

Telephone or WhatsApp
+233 26 211 3117
+233 24 460 8305

© NNF Esquire Ltd, 2026.

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of NNF Esquire Limited.

ISBN: 978-9988-9627-8-4

Every effort has been made to trace copyright holders. Should infringements occur, please inform the publishers who will correct these in the event of a reprint.

If you want to know more about this book or any other NNF Esquire Limited publication, phone us at +233 26 211 3117, +233 24 460 8305 or send an e-mail to nnfstareducation@gmail.com/info@nnfesquire.com.

Table of Contents

Introduction

- Overview of the Essential Coding Series and Facilitator's Guide 7
- How This Book Teaches Coding Without Computers 8
- Structure of Learning Levels 10

Diagnostic Assessment

- **Level 1: Reasoning** 14
- **Level 2: Critical Thinking & Analysis** 31
- **Level 3: Data Processing** 46
- **Level 4: Algorithmic Intelligence** 53
- Core Competencies Mapping 67

Facilitator's Page-wise Teaching Instructions

Level 1 – Reasoning

- 1.1 Play with Numbers 70
- 1.2 Shapes 72
- 1.3 Number Pattern 75
- 1.4 Number Pyramid 77
- 1.5 Number Grid 79
- 1.6 Build-A-Word 83
- 1.7 Word Search 84
 - **Coding Challenge - 1: I-Spy!** 87
 - Review Exercise
 - Differentiated Learning
 - Teacher Closure

Level 2 – Critical Thinking & Analysis

- 2.1 Spot the Difference 89
- 2.2 Puzzled Pictures 90
- 2.3 Similar Images 91
- 2.4 Rhyme Time 93

2.5	Directions	95
2.6	Grid Maps	97
2.7	Riddles	100
	• Coding Challenge - 2: Hidden Character	101
	• Review Exercise	
	• Differentiated Learning	
	• Teacher Closure	

Level 3 – Data Processing

3.1	Representing Data	104
3.2	Processing Data	108
	• Coding Challenge - 3: Maze Route	110
	• Review Exercise	
	• Differentiated Learning	
	• Teacher Closure	

Level 4 – Algorithmic Intelligence

4.1	Step-by-Step	112
4.2	Algorithm	114
4.3	Understanding Programs	118
4.4	Decision Making	120
4.5	Loop Programs	124
	Coding Challenge - 4: Understanding Program	126
	Review Exercise	
	Differentiated Learning	
	Teacher Closure	

Answer Key

Level 1 – Reasoning

1.1	Play with Numbers	129
1.2	Shapes	131

1.3	Number Pattern	133
1.4	Number Pyramid	134
1.5	Number Grid	135
1.6	Build-A-Word	137
1.7	Word Search	138
	• Coding Challenge - 1: I-Spy!	140

Level 2 – Critical Thinking & Analysis

2.1	Spot the Difference	141
2.2	Puzzled Pictures	142
2.3	Similar Images	143
2.4	Rhyme Time	146
2.5	Directions	148
2.6	Grid Maps	150
2.7	Riddles	152
	• Coding Challenge - 2: Hidden Character	153

Level 3 – Data Processing

3.1	Representing Data	154
3.2	Processing Data	157
	• Coding Challenge - 3: Maze Route	159

Level 4 – Algorithmic Intelligence

4.1	Step-by-Step	160
4.2	Algorithm	161
4.3	Understanding Programs	163
4.4	Decision Making	164
4.5	Loop Programs	166
	Coding Challenge - 4: Understanding Program	167

Introduction

Overview of the Essential Coding Series and Facilitator's Guide

The books in the **Essential Coding** series introduce young learners to the foundations of computational thinking and early coding skills through engaging visual activities and problem-solving tasks. These activities encourage learners to observe carefully, think logically, recognise patterns, and solve challenges step by step.

The content is organised into four progressive levels that gradually develop learners' thinking abilities—from basic reasoning to algorithmic thinking. Each level focuses on important skills such as counting, comparison, classification, pattern recognition, logical reasoning, and step-by-step problem solving.

Every activity includes a “**Completed in ____ Min.**” section to help teachers manage classroom time effectively and encourage learners to develop focus and time awareness. The book also includes **QR codes** linked to educative videos that support better understanding of concepts through visual learning and guided explanation.

At the end of each level, learners complete a **Coding Challenge** activity to apply the skills learned through observation, reasoning, and logical thinking.

The book also includes a **Progress Report** section to help teachers evaluate learners' development in four key computational thinking areas:

- ❖ Reasoning
- ❖ Critical Thinking & Analysis
- ❖ Data Processing
- ❖ Algorithmic Intelligence

Teachers can use this section to record progress, provide feedback, and identify areas where additional support may be needed.

Using This Facilitator's Guide Effectively

This Facilitator's Guide is designed to help teachers conduct lessons in a structured and meaningful manner. Before teaching, teachers are encouraged to read the “Overview Section”, “How This Book Teaches Coding Without Computers”, and “Structure of Learning Levels” sections to understand the learning approach and progression.

For every concept, teachers should follow the sequence provided in the guide:

- ❖ **Diagnostic Assessment:** (includes Diagnostic Check, Remediation Support, and Extension Activities)
- ❖ **Facilitator's Page-wise Teaching Instructions:** (includes Teacher Instructions, Teacher-Learner Interaction, Teacher Guidance, Reinforcement, Coding Link, and Review Exercise)
- ❖ **Level Completion Components:** (includes Review Exercise, Differentiated Learning, and Teacher Closure)

This structured flow helps teachers introduce concepts clearly, observe learner understanding, provide support where needed, and connect activities with computational thinking and early coding skills.

How This Book Teaches Coding Without Computers

■ Building Foundations for Coding

- ❖ Coding starts with thinking, not typing
- ❖ Every activity builds a coding skill
- ❖ Learners are developing computational thinking
- ❖ These skills prepare learners for real programming

■ Teaching Philosophy

Coding does not begin with computers. It begins with thinking.

This book develops computational thinking skills, which are the foundation of coding:

- ❖ Observation
- ❖ Logical reasoning
- ❖ Pattern recognition
- ❖ Sequencing
- ❖ Decision-making

Every activity in this book is intentionally designed to build a coding skill.

■ What Teachers Must Understand

Coding = Giving clear instructions to solve a problem

Learners are already “coding” when they:

- ❖ Count
- ❖ Follow steps
- ❖ Identify patterns
- ❖ Make decisions

Your role is to help learners see the connection.

■ Coding Link

Whenever you see this icon, explain to learners how the activity relates to coding.

■ Teaching Strategy

Every lesson should follow this flow:

- ❖ Introduce concept (real-life example)
- ❖ Demonstrate activity

- ❖ Guide learners step-by-step
- ❖ Ask questions
- ❖ Reinforce learning
- ❖ Explain Coding Link

■ Classroom Strategy

- ❖ Encourage learners to think aloud
- ❖ Allow trial and error
- ❖ Use real objects when possible
- ❖ Keep lessons interactive

■ Professional Positioning

Teachers should communicate clearly:

“This is not just an activity. This is coding thinking.”

■ Final Note for Teachers

By teaching this book well, you are not just teaching activities.

You are:

- ❖ Building problem solvers
- ❖ Developing logical thinkers
- ❖ Preparing future programmers

Every activity is a step into coding

■ Inclusive Learning Statement

This Facilitator’s Guide promotes inclusive and learner-centred education by encouraging teachers to support learners with diverse learning needs through differentiated instruction, peer collaboration, visual aids, oral participation, hands-on activities, movement-based learning, and flexible assessment strategies. Teachers should ensure that all learners, including learners requiring additional learning support, are actively involved in classroom activities, discussions, problem-solving tasks, and coding-related experiences in a respectful and supportive learning environment.

Structure of Learning Levels

Level 1: Reasoning

This level focuses on building learners' basic reasoning, number sense, and observation skills. Learners practise recognising numbers, shapes, patterns, and word relationships.

■ 1.1 Play with Numbers

Learners practise counting objects and selecting the correct number. Activities include identifying quantities, counting items in pictures, and recognising numbers correctly.

■ 1.2 Shapes

Learners identify common shapes such as circle, square, triangle, and rectangle by recognising their sides and corners. They also match everyday objects with their corresponding shapes.

■ 1.3 Number Pattern

Learners explore number patterns where numbers increase or decrease according to a rule. These activities help learners identify relationships between numbers and predict the next number in a sequence.

■ 1.4 Number Pyramid

Learners solve number pyramids in which each number is the sum of the two numbers below it. This activity strengthens logical reasoning and number relationships.

■ 1.5 Number Grid

Learners fill numbers in a grid based on instructions such as “more than” or “less than.” This helps learners practise comparing numbers and following instructions.

■ 1.6 Build-A-Word

Learners combine two words to form a new word, helping them recognise word relationships and patterns in language.

■ 1.7 Word Search

Learners find hidden words in a grid arranged horizontally or vertically. This activity strengthens observation and pattern recognition.

..... Coding Challenge - 1: I-Spy!

Learners search for hidden objects in a picture and identify them, applying their observation and reasoning skills.

Level 2: Critical Thinking and Analysis

This level develops learners' analytical thinking, visual comparison skills, and logical reasoning.

■ 2.1 Spot the Difference

Learners compare two pictures and identify the small differences between them, improving observation and attention to detail.

■ 2.2 Puzzled Pictures

Learners complete images by selecting the correct puzzle pieces, which strengthens spatial reasoning and problem-solving skills.

■ 2.3 Similar Images

Learners identify objects with similar characteristics such as colour, type, or function.

■ 2.4 Rhyme Time

Learners identify rhyming words and match words with similar sounds, developing language and pattern recognition skills.

■ 2.5 Directions

Learners understand basic directions such as north, south, east, and west and follow paths or directions to reach a destination.

■ 2.6 Grid Maps

Learners locate objects on a grid using coordinates made of letters and numbers, helping them understand spatial location and mapping concepts.

■ 2.7 Riddles

Learners solve simple riddles using clues, encouraging logical thinking and inference.

..... Coding Challenge - 2: Hidden Character

Learners search for hidden characters within a grid filled with numbers, strengthening observation and concentration.

Level 3: Data Processing

This level introduces learners to organising, analysing, and interpreting information, which is an important part of computational thinking.

■ 3.1 Representing Data

Learners understand how information can be shown using pictures, symbols, and tables. They practise reading pictorial data and answering questions based on it.

■ 3.2 Processing Data

Learners use simple codes to perform mathematical operations and solve problems based on coded information.

..... Coding Challenge - 3: Maze Route

Learners follow arrows in a maze and perform calculations along the path to reach a target number. This activity combines logical reasoning and numerical processing.

Level 4: Algorithmic Intelligence

This level introduces learners to algorithmic thinking, which forms the core concept of coding and programming.

■ 4.1 Step-by-Step

Learners understand that tasks must be performed in a specific order of steps. Activities involve drawing pictures by following step-wise instructions.

■ 4.2 Algorithm

Learners learn that an algorithm is a sequence of steps used to solve a problem or complete a task. Activities include arranging instructions in the correct order.

■ 4.3 Understanding Programs

Learners are introduced to the idea that a program is a set of instructions given to a computer. They practise writing simple movement instructions to draw shapes.

■ 4.4 Decision Making

Learners explore If–Then–Else conditions, which help computers make decisions based on given conditions.

■ 4.5 Loop Programs

Learners understand that some actions repeat again and again. This repetition is known as a **loop** in programming.

..... Coding Challenge - 4: Understanding Program

Learners follow given instructions and repeating patterns to colour a design correctly, applying the concept of loops and step-by-step logic.

Diagnostic Assessment

Level 1: Reasoning

Concept 1.1: Play with Numbers

(LB Pages 8–9)

⇒ Activity A: Count and Tick the Correct Answer

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Count objects from 1–10 orally.
- ❖ Identify numbers shown on flashcards.
- ❖ Count groups of classroom objects carefully.
- ❖ Match quantities with correct numerals.

Observe learners who:

- ❖ Skip objects while counting.
- ❖ Count the same object more than once.
- ❖ Cannot match numbers with quantities correctly.
- ❖ Need repeated support recognising numerals.

Remediation Support

For learners struggling with counting:

- ❖ Use counters, beads, or classroom objects for practice.
- ❖ Encourage learners to point to each object while counting.
- ❖ Arrange objects in rows for easier counting.
- ❖ Count aloud slowly together as a class.

For learners struggling with number recognition:

- ❖ Use colourful number flashcards.
- ❖ Match numeral cards with groups of objects.
- ❖ Practise tracing numbers in sand or air-writing.

Extension Activity

(Work in Pairs / Groups)

Ask fast learners to:

- ❖ Count larger groups of classroom objects.
- ❖ Count backwards from 20.
- ❖ Create their own counting questions for classmates.
- ❖ Group objects into equal sets independently.

⇒ Activity B: Count the Apples

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify apples among different fruits.
- ❖ Count objects carefully in a picture.
- ❖ Match numbers with quantities.
- ❖ Observe picture details closely.

Observe learners who:

- ❖ Miss objects while counting.
- ❖ Count fruits incorrectly.
- ❖ Need repeated visual guidance.
- ❖ Struggle to verify answers independently.

Remediation Support

For learners struggling with picture counting:

- ❖ Encourage finger pointing while counting apples.
- ❖ Count one row of fruits at a time.
- ❖ Use enlarged fruit pictures for observation.
- ❖ Practise counting similar objects together slowly.

For learners struggling with object identification:

- ❖ Compare apples with other fruits visually.
- ❖ Use real fruits or fruit flashcards for practice.
- ❖ Repeat fruit names aloud together.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Count other fruits in the picture independently.
- ❖ Compare which fruit appears most or least.
- ❖ Create their own fruit-counting activity.
- ❖ Draw and label groups of fruits with quantities.

Concept 1.2: Shapes

(LB Pages 10–12)

⇒ Activity: Identify the Shapes

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Name common shapes seen in the classroom.

- ❖ Identify circles, triangles, rectangles, and squares.
- ❖ Count sides and corners of shapes.
- ❖ Match shapes with everyday objects.

Observe learners who:

- ❖ Confuse shape names.
- ❖ Cannot identify sides or corners correctly.
- ❖ Need repeated visual support.
- ❖ Struggle to distinguish between square and rectangle.

Remediation Support

For learners struggling with shape recognition:

- ❖ Use real classroom objects to demonstrate shapes.
- ❖ Provide shape cut-outs for tracing and touching.
- ❖ Repeat shape names through games and rhymes.
- ❖ Compare one shape at a time.

For learners struggling with shape properties:

- ❖ Count sides and corners together using fingers.
- ❖ Point to corners while naming them.
- ❖ Use large floor shapes for demonstration.

Extension Activity

(Work Individually / in Pairs)

Ask fast learners to:

- ❖ Find shapes around the classroom.
- ❖ Draw additional examples of each shape.
- ❖ Describe shapes using sides and corners.
- ❖ Create pictures using geometric shapes.

⇒ Activity A: Count the Shapes

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify circles, triangles, squares, and rectangles.
- ❖ Count small groups of shapes accurately.
- ❖ Match shapes with colours.
- ❖ Sort shapes into categories.

Observe learners who:

- ❖ Experience difficulty counting shapes accurately.
- ❖ Experience difficulty distinguishing rectangles from squares.

- ❖ Require additional support during counting activities.
- ❖ Skip shapes while counting groups of shapes.

Remediation Support

For learners struggling with counting shapes:

- ❖ Count one type of shape at a time.
- ❖ Use coloured markers to track counted shapes.
- ❖ Encourage one-to-one pointing while counting.
- ❖ “Demonstrate counting step by step slowly.

For learners struggling with shape recognition:

- ❖ Review shapes before beginning the activity.
- ❖ Use flashcards and cut-outs for comparison.
- ❖ Compare shapes side by side.

Inclusive Support

- ❖ Use enlarged shape cards and classroom displays for learners with visual support needs.
- ❖ Allow learners requiring additional support to count physical shape cut-outs before completing workbook activities.
- ❖ Encourage learners to point to each shape while counting aloud.
- ❖ Pair learners requiring additional support with supportive peers during counting activities.
- ❖ Use colour coding and hands-on materials to support learners who benefit from tactile and visual learning experiences.
- ❖ Allow additional time where necessary during counting and shape recognition tasks.

Extension Activity

(Work in Groups)

Ask fast learners to:

- ❖ Compare totals of different shapes.
- ❖ Create shape graphs using the counts.
- ❖ Draw their own mixed-shape picture.
- ❖ Identify which shape appears most or least.

⇒ Activity B: Identify the Shape of Objects

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify shapes in everyday objects.
- ❖ Compare objects with geometric forms.

- ❖ Name basic shapes correctly.
- ❖ Observe classroom objects carefully.

Observe learners who:

- ❖ Cannot relate objects to shapes.
- ❖ Guess answers without observing carefully.
- ❖ Need repeated teacher guidance.
- ❖ Confuse similar shapes.

Remediation Support

For learners struggling with object-shape matching:

- ❖ Use real classroom objects for demonstration.
- ❖ Compare one object and one shape at a time.
- ❖ Discuss shape features clearly.
- ❖ Encourage learners to touch and observe objects.

For learners needing additional support:

- ❖ Use picture cards for matching practice.
- ❖ Demonstrate examples slowly.
- ❖ Repeat shape vocabulary regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Draw additional objects for each shape.
- ❖ Explain why objects match certain shapes.
- ❖ Sort classroom objects into shape groups.
- ❖ Create their own object-shape matching activity.

Concept 1.3: Number Pattern

(LB Pages 13–14)

⇒ Activity: Identify the Pattern

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Read number sequences aloud.
- ❖ Identify increasing and decreasing numbers.
- ❖ Recognise simple addition and subtraction patterns.
- ❖ Predict the next number in a sequence.

Observe learners who:

- ❖ Cannot recognise the rule in a pattern.
- ❖ Skip numbers while reading sequences.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to identify increasing or decreasing patterns.

Remediation Support

For learners struggling with number patterns:

- ❖ Use number cards and counters to demonstrate patterns.
- ❖ Show addition and subtraction step by step.
- ❖ Practise simple skip-counting activities.
- ❖ Encourage learners to say the sequence aloud.

For learners needing visual support:

- ❖ Highlight changing numbers using colours.
- ❖ Use number lines for forward and backward counting.
- ❖ Point to each number while explaining the pattern.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own number patterns.
- ❖ Identify more complex increasing or decreasing rules.
- ❖ Extend patterns independently.
- ❖ Challenge classmates with pattern puzzles.

⇒ Activity A: Complete the Number Patterns

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Observe number sequences carefully.
- ❖ Identify repeated addition or subtraction rules.
- ❖ Predict missing numbers in a sequence.
- ❖ Read patterns aloud from left to right.

Observe learners who:

- ❖ Guess missing numbers randomly.
- ❖ Cannot identify the number rule.
- ❖ Need repeated counting support.
- ❖ Confuse increasing and decreasing patterns.

Remediation Support

For learners struggling with completing patterns:

- ❖ Use number lines for counting forward and backward.
- ❖ Practise skip-counting using small numbers first.
- ❖ Show how numbers change step by step.
- ❖ Encourage learners to count aloud while solving.

For learners needing additional support:

- ❖ Use coloured counters to represent changes in numbers.
- ❖ Start with shorter sequences first.
- ❖ Demonstrate one example before independent work.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create longer number patterns independently.
- ❖ Explain the pattern rule clearly.
- ❖ Design pattern worksheets for classmates.
- ❖ Identify patterns using larger numbers.

Concept 1.4: Number Pyramid

(LB Pages 15–16)

⇒ Activity: Explore the Pyramid

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Add two single-digit numbers correctly.
- ❖ Observe relationships between numbers.
- ❖ Identify patterns in number arrangements.
- ❖ Recognise how numbers combine to form larger numbers.

Observe learners who:

- ❖ Cannot add numbers accurately.
- ❖ Struggle to understand number relationships.
- ❖ Need repeated teacher guidance.
- ❖ Guess answers without checking calculations.

Remediation Support

For learners struggling with addition:

- ❖ Use counters or beads for addition practice.
- ❖ Show how two lower numbers combine to form the upper number.

- ❖ Practise simple addition facts repeatedly.
- ❖ Encourage learners to add aloud step by step.

For learners needing visual support:

- ❖ Use colour coding for related number pairs.
- ❖ Highlight the two numbers being added.
- ❖ Demonstrate one pyramid level at a time.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own number pyramids.
- ❖ Use larger numbers in pyramid activities.
- ❖ Explain the addition rule clearly.
- ❖ Challenge classmates with pyramid puzzles.

➞ Activity A: Complete the Number Pyramids

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Add numbers mentally.
- ❖ Identify missing values in patterns.
- ❖ Observe number relationships in pyramids.
- ❖ Check calculations carefully.

Observe learners who:

- ❖ Experience difficulty calculating sums accurately.
- ❖ Experience difficulty identifying missing numbers in the pyramid.
- ❖ Require additional support during addition activities.
- ❖ Experience difficulty remembering the pyramid rule.

Remediation Support

For learners struggling with number pyramids:

- ❖ Use counters to demonstrate addition.
- ❖ Explain the pyramid rule repeatedly.
- ❖ Add one pair of numbers step by step.
- ❖ Encourage learners to verify answers by recounting.

For learners needing additional support:

- ❖ Start with smaller number pyramids first.
- ❖ Use colour highlighting for related numbers.
- ❖ Allow learners to solve with partners.

Inclusive Support

- ❖ Use enlarged number pyramids and visual displays for learners with visual support needs.
- ❖ Allow learners requiring additional support to use counters or number cards during addition activities.
- ❖ Encourage learners to solve one number pair at a time and discuss answers orally before writing.
- ❖ Pair learners requiring additional support with supportive peers during problem-solving activities.
- ❖ Use colour coding and guided demonstrations to support learners during number pattern activities.
- ❖ Allow additional time where necessary during calculation and reasoning tasks.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Solve larger pyramids independently.
- ❖ Create their own addition pyramids.
- ❖ Explain how the top number is formed.
- ❖ Challenge classmates with number pyramids.

Concept 1.5: Number Grid

(LB Pages 17–19)

⇒ Activity: Understand the Grid

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Identify numbers before and after a given number.
- ❖ Count forward and backward correctly.
- ❖ Recognise more than and less than relationships.
- ❖ Read simple instructions involving numbers.

Observe learners who:

- ❖ Confuse greater and smaller numbers.
- ❖ Cannot count backward correctly.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to follow number instructions.

Remediation Support

For learners struggling with number comparison:

- ❖ Use number lines to show more and less.
- ❖ Practise forward and backward counting together.
- ❖ Use counters to demonstrate number differences.
- ❖ Show examples using classroom objects.

For learners needing additional support:

- ❖ Highlight the centre number clearly.
- ❖ Solve one instruction at a time.
- ❖ Repeat comparison vocabulary regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own number grids.
- ❖ Write clues using more than and less than.
- ❖ Solve larger comparison grids independently.
- ❖ Challenge classmates with grid puzzles.

⇒ Activity A: Solve the Number Grid

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify smallest and greatest numbers.
- ❖ Recognise one-digit and two-digit numbers.
- ❖ Read clues carefully.
- ❖ Compare number values correctly.

Observe learners who:

- ❖ Confuse one-digit and two-digit numbers.
- ❖ Cannot identify smallest or greatest numbers.
- ❖ Need repeated prompts while solving clues.
- ❖ Guess answers without checking.

Remediation Support

For learners struggling with number properties:

- ❖ Use number charts for comparison practice.
- ❖ Discuss one clue at a time.
- ❖ Show examples of smallest and greatest numbers visually.

- ❖ Encourage learners to count aloud while comparing.

For learners needing extra support:

- ❖ Use flashcards for one-digit and two-digit numbers.
- ❖ Practise simple comparison games.
- ❖ Allow partner discussion during solving.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own clue-based number grids.
- ❖ Write comparison clues for classmates.
- ❖ Use larger numbers independently.
- ❖ Explain how they identified the correct numbers.

⇒ Activity B: Complete the Number Grid Around 20

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify numbers before and after 20.
- ❖ Count forward and backward from 20.
- ❖ Recognise number order clearly.
- ❖ Understand “3 places before” and “3 places after.”

Observe learners who:

- ❖ Confuse number order.
- ❖ Need repeated counting support.
- ❖ Struggle with backward counting.
- ❖ Cannot identify positions correctly.

Remediation Support

For learners struggling with sequencing:

- ❖ Use a number line around 20.
- ❖ Practise forward and backward counting slowly.
- ❖ Show jumps of 3 using counters or finger movements.
- ❖ Point to each number while counting together.

For learners needing additional support:

- ❖ Start with smaller counting ranges first.
- ❖ Use visual charts and number strips.
- ❖ Practise number-order games regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create number grids around other numbers.
- ❖ Identify numbers 5 or 10 places before or after.
- ❖ Write their own sequencing clues.
- ❖ Challenge classmates with number-grid tasks.

⇒ Activity C: Solve the Grid Using Instructions

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Solve simple addition and subtraction problems.
- ❖ Understand phrases such as “more than” and “less than.”
- ❖ Follow written instructions carefully.
- ❖ Compare and calculate numbers mentally.

Observe learners who:

- ❖ Confuse addition and subtraction.
- ❖ Struggle to follow instructions correctly.
- ❖ Need repeated teacher guidance.
- ❖ Make calculation errors frequently.

Remediation Support

For learners struggling with calculations:

- ❖ Use counters and number lines for support.
- ❖ Solve one instruction at a time together.
- ❖ Highlight operation words such as “more” and “less.”
- ❖ Practise mental maths using small numbers first.

For learners needing additional support:

- ❖ Use visual examples on the board.
- ❖ Encourage learners to explain calculations aloud.
- ❖ Allow peer support during solving.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own instruction-based grids.
- ❖ Write addition and subtraction clues for classmates.
- ❖ Solve larger calculation grids independently.
- ❖ Explain how they solved each instruction step by step.

⇒ Activity A: Match Two Words to Form a New Word**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Read simple words aloud correctly.
- ❖ Identify familiar compound words.
- ❖ Match related word pairs.
- ❖ Recognise how two smaller words form a new word.

Observe learners who:

- ❖ Cannot read words correctly.
- ❖ Struggle to combine words meaningfully.
- ❖ Need repeated teacher guidance.
- ❖ Guess answers randomly without reading carefully.

Remediation Support

For learners struggling with word recognition:

- ❖ Use flashcards with simple words and pictures.
- ❖ Read each word aloud slowly together.
- ❖ Explain the meaning of each small word first.
- ❖ Show examples of familiar compound words.

For learners struggling with word matching:

- ❖ Match one pair at a time.
- ❖ Use picture support for understanding.
- ❖ Encourage learners to say the new word aloud after matching.

Extension Activity*(Work Individually / in Groups)*

Ask fast learners to:

- ❖ Create their own compound words.
- ❖ Draw pictures for new compound words.
- ❖ Explain the meaning of compound words independently.
- ❖ Challenge classmates with word-building games.

⇒ Activity: Identify Words in the Grid**Diagnostic Check***(Work in Groups)*

Before the activity, ask learners to:

- ❖ Recognise letters and simple words.
- ❖ Read words horizontally and vertically.
- ❖ Identify familiar picture names.
- ❖ Scan rows and columns carefully.

Observe learners who:

- ❖ Cannot recognise hidden words.
- ❖ Skip letters while searching.
- ❖ Need repeated visual guidance.
- ❖ Struggle to track rows and columns correctly.

Remediation Support

For learners struggling with word searching:

- ❖ Highlight the first letter of words.
- ❖ Trace rows and columns with fingers.
- ❖ Use smaller grids with fewer words first.
- ❖ Read target words aloud together before searching.

For learners needing additional support:

- ❖ Use coloured markers to track letters.
- ❖ Demonstrate one example word in the grid.
- ❖ Encourage learners to search row by row slowly.

Extension Activity*(Work Individually / in Groups)*

Ask fast learners to:

- ❖ Create their own word-search grids.
- ❖ Hide additional words in rows and columns.
- ❖ Challenge classmates with hidden-word puzzles.
- ❖ Explain how they located the hidden words.

⇒ Activity A: Find and Circle the Hidden Words**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Read simple object names aloud.
- ❖ Identify letters in sequence.

- ❖ Recognise words from pictures.
- ❖ Observe grids carefully.

Observe learners who:

- ❖ Cannot follow letter sequences correctly.
- ❖ Need repeated help identifying words.
- ❖ Skip rows while searching.
- ❖ Struggle to connect pictures with words.

Remediation Support

For learners struggling with hidden words:

- ❖ Highlight the first letter of each target word.
- ❖ Encourage learners to trace letters with fingers first.
- ❖ Search for one word at a time.
- ❖ Use picture cards alongside the word grid.

For learners needing extra support:

- ❖ Use smaller practice grids first.
- ❖ Read target words together aloud.
- ❖ Guide learners row by row.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own hidden-word puzzle.
- ❖ Hide classroom object names in a grid.
- ❖ Challenge classmates to find hidden words.
- ❖ Explain search strategies independently.

⇒ Activity B: Find the Hidden Words

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Recognise animal and object names.
- ❖ Read words vertically and horizontally.
- ❖ Observe letter patterns carefully.
- ❖ Match pictures with corresponding words.

Observe learners who:

- ❖ Cannot identify hidden words correctly.
- ❖ Confuse letter order while searching.

- ❖ Need repeated support during scanning.
- ❖ Struggle to focus on one word at a time.

Remediation Support

For learners struggling with scanning the grid:

- ❖ Use finger tracking while searching.
- ❖ Search one row or column at a time.
- ❖ Highlight beginning letters of target words.
- ❖ Read target words aloud together before searching.

For learners needing additional support:

- ❖ Use simplified grids first.
- ❖ Provide visual demonstrations of hidden words.
- ❖ Allow learners to work with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Design their own word-search puzzle.
- ❖ Hide words diagonally or vertically.
- ❖ Challenge classmates with new word grids.
- ❖ Explain how they found each hidden word.

Coding Challenge – I: Spy!

(LB Page 24)

⇒ Activity: Find and Identify the Hidden Objects

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Observe pictures carefully.
- ❖ Identify objects hidden in busy scenes.
- ❖ Count objects accurately.
- ❖ Match objects with numbers.

Observe learners who:

- ❖ Miss hidden objects easily.
- ❖ Guess answers without observing carefully.
- ❖ Need repeated teacher prompts.
- ❖ Struggle to scan pictures systematically.

Remediation Support

For learners struggling with observation:

- ❖ Guide learners section by section through the picture.
- ❖ Encourage scanning from left to right and top to bottom.
- ❖ Highlight one example object before independent searching.
- ❖ Use finger pointing while searching.

For learners struggling with counting:

- ❖ Count objects together slowly.
- ❖ Mark found objects lightly with a pencil.
- ❖ Encourage learners to verify answers by recounting.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own I-Spy picture puzzle.
- ❖ Hide and count objects for classmates.
- ❖ Explain strategies used to locate hidden objects.
- ❖ Complete observation challenges within a time limit.

Level 2: Critical Thinking & Analysis

Concept 2.1: Spot the Difference

(LB Page 26)

⇒ Activity A: Spot and Circle the Differences

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Compare two pictures carefully.
- ❖ Identify visible changes between images.
- ❖ Observe picture details from left to right.
- ❖ Describe differences aloud.

Observe learners who:

- ❖ Experience difficulty identifying small details while comparing pictures.
- ❖ Respond before carefully observing the pictures.
- ❖ Require additional visual guidance during comparison activities.
- ❖ Focus on only one section of the picture during comparison activities.

Remediation Support

For learners struggling with observation:

- ❖ Compare one section of the picture at a time.
- ❖ Guide learners from top to bottom slowly.
- ❖ Point to objects while discussing similarities and differences.
- ❖ Demonstrate one example difference step by step.

For learners struggling with concentration:

- ❖ Use finger tracking while comparing pictures.
- ❖ Encourage learners to pause and observe carefully.
- ❖ Allow learners to work with partners.
- ❖ Use enlarged picture sections if needed.

Inclusive Support

- ❖ Use enlarged picture displays for learners with visual support needs.
- ❖ Encourage learners requiring additional support to compare one section of the picture at a time.
- ❖ Allow learners to point to and describe differences orally before circling answers.

- ❖ Pair learners requiring additional support with supportive peers during pair activities.
- ❖ Use finger tracking and guided questioning to support learners during comparison tasks.
- ❖ Allow additional time where necessary during observation and picture comparison activities.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Draw two similar pictures with differences.
- ❖ Challenge classmates to spot the changes.
- ❖ Explain all differences independently.
- ❖ Complete comparison tasks within a time limit.

Concept 2.2: Puzzled Pictures

(LB Page 27)

⇒ Activity A: Fit the Missing Puzzle Pieces

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Observe puzzle pictures carefully.
- ❖ Identify missing parts in images.
- ❖ Compare shapes and colours visually.
- ❖ Recognise puzzle-piece outlines.

Observe learners who:

- ❖ Place puzzle pieces randomly.
- ❖ Ignore colours and picture details.
- ❖ Need repeated teacher support.
- ❖ Struggle to compare edges and shapes.

Remediation Support

For learners struggling with puzzle matching:

- ❖ Compare one puzzle piece at a time.
- ❖ Highlight colours and picture details clearly.
- ❖ Encourage learners to check edges carefully.
- ❖ Demonstrate one matching example together.

For learners needing additional support:

- ❖ Use enlarged puzzle pictures.
- ❖ Start with simpler puzzle activities first.
- ❖ Allow learners to work in pairs.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own puzzle picture.
- ❖ Draw missing puzzle pieces for classmates.
- ❖ Explain how they identified the correct pieces.
- ❖ Complete puzzle activities within a time limit.

Concept 2.3: Similar Images

(LB Pages 28–30)

⇒ Activity A: Circle the Images Which Are Hot

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify objects that produce heat.
- ❖ Observe pictures carefully.
- ❖ Classify objects based on properties.
- ❖ Discuss hot and cold objects in daily life.

Observe learners who:

- ❖ Cannot identify hot objects correctly.
- ❖ Guess answers randomly.
- ❖ Need repeated visual support.
- ❖ Confuse hot objects with unrelated objects.

Remediation Support

For learners struggling with classification:

- ❖ Use real-life examples of hot objects.
- ❖ Discuss why certain objects produce heat.
- ❖ Compare hot and cold objects visually.
- ❖ Use picture cards for sorting activities.

For learners needing additional support:

- ❖ Use classroom demonstrations where possible.
- ❖ Repeat vocabulary related to heat and temperature.
- ❖ Allow learners to discuss answers with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Group objects into hot and cold categories.
- ❖ Draw additional hot objects independently.
- ❖ Explain why certain objects are hot.
- ❖ Create classification games for classmates.

➞ Activity B: Circle the Brown Things That You Can Eat

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify brown-coloured objects.
- ❖ Classify edible and non-edible items.
- ❖ Observe picture details carefully.
- ❖ Compare objects using more than one feature.

Observe learners who:

- ❖ Cannot identify edible objects correctly.
- ❖ Ignore colour conditions.
- ❖ Need repeated teacher prompts.
- ❖ Guess answers without checking both conditions.

Remediation Support

For learners struggling with multiple conditions:

- ❖ Discuss colour and edibility separately first.
- ❖ Use real-life examples of edible items.
- ❖ Compare edible and non-edible brown objects visually.
- ❖ Encourage learners to explain their choices aloud.

For learners needing additional support:

- ❖ Use sorting games with food pictures.
- ❖ Highlight correct features step by step.
- ❖ Allow partner discussion during classification.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own “colour and category” activity.
- ❖ Group objects by multiple properties.

- ❖ Draw edible and non-edible brown objects.
- ❖ Challenge classmates with classification tasks.

➞ **Activity C: Circle the Images Which Have Wheels**

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify objects that move using wheels.
- ❖ Observe object features carefully.
- ❖ Classify vehicles and movable objects.
- ❖ Compare objects based on function.

Observe learners who:

- ❖ Cannot identify wheeled objects correctly.
- ❖ Need repeated visual guidance.
- ❖ Confuse objects with and without wheels.
- ❖ Guess answers without careful observation.

Remediation Support

For learners struggling with object classification:

- ❖ Use toy vehicles and classroom objects for demonstration.
- ❖ Discuss how wheels help objects move.
- ❖ Compare wheeled and non-wheeled objects visually.
- ❖ Encourage learners to describe object functions aloud.

For learners needing additional support:

- ❖ Use picture sorting activities.
- ❖ Highlight wheels in example objects clearly.
- ❖ Repeat classification games regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Draw additional objects with wheels.
- ❖ Group objects by movement type.
- ❖ Explain how wheels help objects move.
- ❖ Create their own classification challenge for classmates.

⇒ Activity A: Identify Rhyming Pictures**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Say simple rhyming words aloud.
- ❖ Listen carefully to ending sounds.
- ❖ Identify pictures with similar sounding names.
- ❖ Recognise rhyming word pairs.

Observe learners who:

- ❖ Cannot hear rhyming sounds clearly.
- ❖ Confuse picture names.
- ❖ Need repeated oral guidance.
- ❖ Struggle to identify similar ending sounds.

Remediation Support

For learners struggling with rhyming words:

- ❖ Practise rhyming words orally using simple examples.
- ❖ Repeat ending sounds slowly and clearly.
- ❖ Use picture-word cards for rhyme matching.
- ❖ Encourage learners to say words aloud together.

For learners struggling with pronunciation:

- ❖ Say each word slowly as a class.
- ❖ Encourage learners to repeat individually.
- ❖ Use visual picture support while pronouncing words.

Extension Activity*(Work Individually / in Groups)*

Ask fast learners to:

- ❖ Create their own rhyming word pairs.
- ❖ Draw pictures representing rhyming words.
- ❖ Challenge classmates with rhyme games.
- ❖ Explain why words rhyme.

⇒ Activity B: Find the Rhyming Words**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Read simple words aloud correctly.
- ❖ Identify words with matching ending sounds.

- ❖ Use a word wall to locate words.
- ❖ Compare sounds in spoken words.

Observe learners who:

- ❖ Cannot identify matching sounds.
- ❖ Need repeated reading support.
- ❖ Confuse similar-looking words.
- ❖ Struggle to connect rhyming pairs.

Remediation Support

For learners struggling with rhyme recognition:

- ❖ Read each word aloud together.
- ❖ Highlight the ending sounds in rhyming words.
- ❖ Use oral rhyme games for practice.
- ❖ Match one rhyming pair at a time.

For learners needing additional support:

- ❖ Use flashcards with rhyming pictures.
- ❖ Encourage learners to clap while saying rhyming words.
- ❖ Provide repeated listening practice.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Write their own rhyming word lists.
- ❖ Create rhyming sentences or poems.
- ❖ Challenge classmates with rhyme puzzles.
- ❖ Identify additional rhyming words independently.

Concept 2.5: Directions

(LB Pages 33–35)

👉 Activity: Understanding Directions

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Identify north, south, east, and west directions.
- ❖ Use hand movements to show directions.
- ❖ Follow simple directional instructions.
- ❖ Observe compass symbols carefully.

Observe learners who:

- ❖ Confuse directions easily.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to follow movement instructions.
- ❖ Cannot identify opposite directions correctly.

Remediation Support

For learners struggling with directions:

- ❖ Use a classroom compass chart for demonstration.
- ❖ Practise movement games using directions.
- ❖ Use body movements to show north, south, east, and west.
- ❖ Repeat direction names aloud regularly.

For learners needing additional support:

- ❖ Use floor arrows for navigation activities.
- ❖ Start with two directions first before adding more.
- ❖ Allow learners to practise with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Give directional instructions to classmates.
- ❖ Draw simple maps using directions.
- ❖ Create directional games independently.
- ❖ Explain how a compass works.

➞ Activity A: Match the Same Direction

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify arrows pointing in different directions.
- ❖ Compare directional movement visually.
- ❖ Match similar directional symbols.
- ❖ Recognise north, south, east, and west labels.

Observe learners who:

- ❖ Cannot match the same directions correctly.
- ❖ Confuse left-right or up-down orientation.
- ❖ Need repeated visual prompts.
- ❖ Guess answers randomly.

Remediation Support

For learners struggling with matching directions:

- ❖ Use large arrow flashcards for practice.
- ❖ Point to each direction while explaining.
- ❖ Compare one pair of arrows at a time.
- ❖ Encourage learners to imitate directions with hands.

For learners needing extra support:

- ❖ Practise simple directional games regularly.
- ❖ Use classroom movement demonstrations.
- ❖ Allow partner support during activities.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Draw arrows in different directions.
- ❖ Create direction-matching activities.
- ❖ Challenge classmates with direction puzzles.
- ❖ Explain direction names independently.

⇒ Activity B: Find the Path in the Maze

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Trace simple maze paths with fingers.
- ❖ Identify movement directions correctly.
- ❖ Recognise starting and ending points.
- ❖ Follow step-by-step movement instructions.

Observe learners who:

- ❖ Lose track while tracing paths.
- ❖ Cross maze walls incorrectly.
- ❖ Need repeated guidance during navigation.
- ❖ Struggle to decide correct directions.

Remediation Support

For learners struggling with mazes:

- ❖ Encourage finger tracing before drawing.
- ❖ Guide learners step by step through the maze.

- ❖ Use coloured pencils for tracing paths.
- ❖ Demonstrate one correct path slowly.

For learners needing additional support:

- ❖ Use simpler maze activities first.
- ❖ Practise movement games using directions.
- ❖ Allow learners to work with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own maze puzzles.
- ❖ Design paths using directions.
- ❖ Explain the route step by step.
- ❖ Complete maze challenges within a time limit.

Concept 2.6: Grid Maps

(LB Pages 36–38)

⇒ Activity: Locate Objects on the Grid

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify rows and columns in a grid.
- ❖ Recognise letters and numbers correctly.
- ❖ Locate simple positions on a chart.
- ❖ Match coordinates with objects.

Observe learners who:

- ❖ Confuse rows and columns.
- ❖ Cannot identify coordinates correctly.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to combine letters and numbers.

Remediation Support

For learners struggling with grid references:

- ❖ Use enlarged classroom grids for practice.
- ❖ Show how letters represent columns and numbers represent rows.
- ❖ Trace rows and columns using fingers.
- ❖ Practise locating one object at a time.

For learners needing additional support:

- ❖ Use colour-coded rows and columns.
- ❖ Start with smaller grids first.
- ❖ Allow learners to work with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own grid maps.
- ❖ Place and locate classroom objects using coordinates.
- ❖ Write coordinate clues for classmates.
- ❖ Challenge classmates with grid-location games.

⇒ Activity A: Locate the Animals on the Grid

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify animals in the picture correctly.
- ❖ Read grid references using letters and numbers.
- ❖ Locate objects on a coordinate grid.
- ❖ Observe map details carefully.

Observe learners who:

- ❖ Cannot locate animals correctly.
- ❖ Confuse coordinate positions.
- ❖ Need repeated visual support.
- ❖ Struggle to combine row and column references.

Remediation Support

For learners struggling with coordinates:

- ❖ Highlight rows and columns clearly.
- ❖ Trace coordinates step by step.
- ❖ Locate one animal at a time together.
- ❖ Use colour coding for easier understanding.

For learners needing extra support:

- ❖ Practise simple coordinate games first.
- ❖ Use classroom seating arrangements as grid examples.
- ❖ Allow learners to discuss answers with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own animal grid maps.
- ❖ Write coordinate clues independently.
- ❖ Challenge classmates to locate animals.
- ❖ Explain how grid references work.

⇒ Activity B: Draw Objects at the Given Location

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Read grid references carefully.
- ❖ Identify rows and columns correctly.
- ❖ Recognise objects from instructions.
- ❖ Draw simple objects neatly in squares.

Observe learners who:

- ❖ Draw objects in incorrect grid squares.
- ❖ Confuse coordinate positions.
- ❖ Need repeated teacher prompts.
- ❖ Struggle to follow instructions carefully.

Remediation Support

For learners struggling with placing objects:

- ❖ Guide learners to locate the square first before drawing.
- ❖ Use finger tracing to identify coordinates.
- ❖ Demonstrate one example step by step.
- ❖ Practise using simple A1, B1, C1 positions first.

For learners needing additional support:

- ❖ Use larger grid charts for practice.
- ❖ Allow learners to copy one example first.
- ❖ Repeat coordinate activities regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own grid drawing activity.
- ❖ Write coordinates for classmates to follow.
- ❖ Draw additional objects using new coordinates.
- ❖ Challenge classmates with coordinate puzzles.

⇒ Activity A: Solve the Riddles**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Listen carefully to simple riddles.
- ❖ Identify familiar objects from clues.
- ❖ Read short sentences aloud.
- ❖ Connect descriptions with real-life objects.

Observe learners who:

- ❖ Experience difficulty understanding clues in riddles.
- ❖ Respond before carefully thinking about the clues.
- ❖ Require additional oral explanation during riddle activities.
- ❖ Experience difficulty connecting clues with correct answers.

Remediation Support

For learners struggling with understanding riddles:

- ❖ Read each riddle slowly and clearly.
- ❖ Explain difficult words using pictures or actions.
- ❖ Discuss one clue at a time step by step.
- ❖ Encourage learners to repeat clues aloud.

For learners struggling with logical reasoning:

- ❖ Use simple clue-based games first.
- ❖ Compare answer choices one by one.
- ❖ Ask guiding questions to narrow down answers.
- ❖ Use picture cards to support understanding.

For learners needing additional support:

- ❖ Allow learners to discuss answers with partners.
- ❖ Use familiar classroom objects for practice riddles.
- ❖ Repeat oral clue activities regularly.

Inclusive Support

- ❖ Use enlarged picture cards and visual displays for learners with visual support needs.
- ❖ Encourage learners requiring additional support to discuss clues orally before answering.

- ❖ Allow learners to repeat clues aloud and point to matching pictures or objects during discussions.
- ❖ Pair learners requiring additional support with supportive peers during riddle activities.
- ❖ Use guided questioning and picture prompts to support learners during reasoning tasks.
- ❖ Allow additional time where necessary during listening and response activities.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own riddles.
- ❖ Write clues for classmates to solve.
- ❖ Explain how they identified the correct answer.
- ❖ Design picture-riddle games independently.

Coding Challenge – 2: Hidden Character

(LB Page 40)

⇒ Activity: Find the Hidden Characters

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Recognise letters and numbers correctly.
- ❖ Compare similar-looking symbols visually.
- ❖ Scan rows and columns carefully.
- ❖ Identify differences between 9 and P.

Observe learners who:

- ❖ Cannot distinguish between similar symbols.
- ❖ Miss hidden characters while scanning.
- ❖ Need repeated visual guidance.
- ❖ Struggle to search systematically.

Remediation Support

For learners struggling with symbol recognition:

- ❖ Compare the shapes of 9 and P side by side.
- ❖ Highlight differences using coloured markers.
- ❖ Practise identifying letters and numbers separately.
- ❖ Encourage learners to trace symbols with fingers.

For learners struggling with scanning the grid:

- ❖ Guide learners row by row slowly.
- ❖ Use finger tracking while searching.
- ❖ Mark completed rows lightly with a pencil.
- ❖ Demonstrate how to search systematically.

For learners needing additional support:

- ❖ Use smaller grids with fewer symbols first.
- ❖ Allow learners to work with partners.
- ❖ Repeat hidden-symbol activities regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own hidden-character puzzle.
- ❖ Hide letters among numbers or symbols.
- ❖ Challenge classmates to locate hidden characters.
- ❖ Complete scanning activities within a time limit.

Level 3: Data Processing

Concept 3.1: Representing Data

(LB Pages 42–45)

⇒ Activity: Understanding Data Representation

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Observe pictures, symbols, and tables carefully.
- ❖ Identify information shown in charts or tables.
- ❖ Count objects represented by pictures.
- ❖ Read simple rows and columns correctly.

Observe learners who:

- ❖ Cannot interpret information from tables.
- ❖ Confuse rows and columns.
- ❖ Need repeated visual guidance.
- ❖ Struggle to connect symbols with quantities.

Remediation Support

For learners struggling with data representation:

- ❖ Use simple classroom charts and tables.
- ❖ Explain rows and columns step by step.
- ❖ Count pictures together slowly.
- ❖ Use real objects to demonstrate data collection.

For learners needing additional support:

- ❖ Highlight important information using colours.
- ❖ Use smaller tables first.
- ❖ Allow learners to work in pairs while reading data.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create simple tables using classroom data.
- ❖ Draw pictorial symbols for information.
- ❖ Compare quantities independently.
- ❖ Design mini surveys and record results.

⇒ Activity A: Favourite Musical Instrument

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Count symbols in a pictograph correctly.
- ❖ Understand that one symbol may represent more than one vote.
- ❖ Compare quantities visually.
- ❖ Read chart headings carefully.

Observe learners who:

- ❖ Cannot interpret the pictograph key correctly.
- ❖ Miscount symbols.
- ❖ Need repeated teacher support.
- ❖ Struggle to compare quantities.

Remediation Support

For learners struggling with pictographs:

- ❖ Explain the key using simple examples.
- ❖ Count one column of symbols at a time.
- ❖ Use counters to represent votes physically.
- ❖ Show how multiplication or repeated addition works.

For learners needing additional support:

- ❖ Highlight one instrument row at a time.
- ❖ Use visual demonstrations for counting symbols.
- ❖ Practise simple pictograph reading activities first.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own pictograph survey.
- ❖ Compare instruments with the highest and lowest votes.
- ❖ Write questions based on pictograph data.
- ❖ Explain how the key changes totals.

⇒ Activity B: Count and Record the Quantity

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Count groups of objects carefully.

- ❖ Record quantities in a table.
- ❖ Identify objects with more or fewer items.
- ❖ Read table headings correctly.

Observe learners who:

- ❖ Miscount objects while recording.
- ❖ Skip items during counting.
- ❖ Need repeated visual guidance.
- ❖ Struggle to enter values correctly in the table.

Remediation Support

For learners struggling with counting:

- ❖ Count one type of item at a time.
- ❖ Use finger pointing while counting.
- ❖ Mark counted items lightly with a pencil.
- ❖ Practise recording numbers slowly in the table.

For learners needing additional support:

- ❖ Use smaller groups of objects first.
- ❖ Provide guided counting examples.
- ❖ Allow partner support during recording.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own data-recording table.
- ❖ Compare which object appears most or least.
- ❖ Draw additional items and record totals.
- ❖ Design counting surveys for classmates.

⇒ Activity C: Candy Data Table

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Count and add small quantities correctly.
- ❖ Read names and numbers in a table.
- ❖ Compare quantities between people.
- ❖ Interpret pictorial information carefully.

Observe learners who:

- ❖ Experience difficulty adding totals correctly.
- ❖ Experience difficulty comparing quantities between rows.

- ❖ Require additional support during counting activities.
- ❖ Experience difficulty interpreting information in tables.

Remediation Support

For learners struggling with addition:

- ❖ Use counters or candies for demonstration.
- ❖ Add quantities together step by step.
- ❖ Encourage learners to count aloud.
- ❖ Show how totals are formed clearly.

For learners needing additional support:

- ❖ Highlight one person's candies at a time.
- ❖ Use guided addition examples.
- ❖ Allow learners to work with partners.

Inclusive Support

- ❖ Use enlarged tables and picture displays for learners with visual support needs.
- ❖ Allow learners requiring additional support to use counters, candies, or real objects during addition activities.
- ❖ Encourage learners to count aloud and point to quantities while adding.
- ❖ Pair learners requiring additional support with supportive peers during counting and comparison activities.
- ❖ Use guided demonstrations and colour highlighting to support learners during table interpretation tasks.
- ❖ Allow additional time where necessary during counting and addition activities.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own candy-data table.
- ❖ Compare totals independently.
- ❖ Write and solve data-based questions.
- ❖ Explain how they calculated the totals.

Concept 3.2: Processing Data

(LB Pages 46–47)

⇒ Activity A: Decode the Symbols and Find the Sum

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Recognise numbers represented by symbols.
- ❖ Perform simple addition correctly.

- ❖ Match symbols with values.
- ❖ Read coded information carefully.

Observe learners who:

- ❖ Cannot decode symbols correctly.
- ❖ Forget symbol-number values.
- ❖ Need repeated teacher guidance.
- ❖ Struggle with addition after decoding.

Remediation Support

For learners struggling with decoding:

- ❖ Match one symbol and number at a time.
- ❖ Use flashcards with pictures and values.
- ❖ Encourage learners to write numbers below symbols first.
- ❖ Repeat decoding practice using simple examples.

For learners struggling with addition:

- ❖ Use counters for adding decoded values.
- ❖ Solve one calculation step at a time.
- ❖ Encourage learners to check answers by recounting.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own symbol-code sums.
- ❖ Exchange coded maths puzzles with classmates.
- ❖ Solve larger coded calculations independently.
- ❖ Explain how they decoded the symbols.

⇒ Activity B: Solve the Code Using Letters and Numbers

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Recognise letters and assigned number values.
- ❖ Perform simple addition and subtraction.
- ❖ Decode letter-number combinations carefully.
- ❖ Read coded expressions correctly.

Observe learners who:

- ❖ Experience difficulty matching letters with correct numbers.
- ❖ Experience difficulty remembering code values during calculations.

- ❖ Require additional support during coded calculations.
- ❖ Experience difficulty solving subtraction problems.

Remediation Support

For learners struggling with coded calculations:

- ❖ Write letter-number values clearly on the board.
- ❖ Substitute one letter and number value at a time.
- ❖ Solve calculations step by step together.
- ❖ Use colour coding for different letters.

For learners needing additional support:

- ❖ Start with smaller calculations first.
- ❖ Use flashcards for code practice.
- ❖ Allow learners to work with partners during decoding.

Inclusive Support

- ❖ Use enlarged code charts and visual displays for learners with visual support needs.
- ❖ Allow learners requiring additional support to use flashcards, counters, or number lines during calculations.
- ❖ Encourage learners to substitute one letter or number at a time while solving coded expressions.
- ❖ Pair learners requiring additional support with supportive peers during decoding activities.
- ❖ Use colour coding and guided demonstrations to support learners during coded calculations.
- ❖ Allow additional time where necessary during decoding and calculation activities.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own letter-number code system.
- ❖ Write coded maths puzzles for classmates.
- ❖ Solve multi-step coded expressions independently.
- ❖ Explain how coded values are processed.

⇒ Activity: Find the Correct Maze Route**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Follow arrows and directions carefully.
- ❖ Perform simple calculations step by step.
- ❖ Track totals while moving through a maze.
- ❖ Identify starting and ending points in a puzzle.

Observe learners who:

- ❖ Lose track of the running total.
- ❖ Ignore arrow directions.
- ❖ Need repeated support while calculating.
- ❖ Struggle to test different routes logically.

Remediation Support

For learners struggling with maze calculations:

- ❖ Start with simpler maze routes first.
- ❖ Solve one calculation step at a time together.
- ❖ Write running totals beside each move.
- ❖ Use finger tracing before drawing the route.

For learners struggling with logical path selection:

- ❖ Discuss possible routes aloud.
- ❖ Highlight arrows clearly.
- ❖ Encourage learners to check totals after every step.

Extension Activity*(Work Individually / in Groups)*

Ask fast learners to:

- ❖ Create their own number maze puzzle.
- ❖ Design multiple routes leading to a target number.
- ❖ Challenge classmates with maze calculations.
- ❖ Explain how they found the correct route.

Level 4: Algorithmic Intelligence

Concept 4.1: Step-by-Step

(LB Pages 50–51)

⇒ Activity: Drawing Step by Step

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Observe picture sequences carefully.
- ❖ Identify first, next, and last steps.
- ❖ Follow simple drawing instructions.
- ❖ Recognise how pictures develop step by step.

Observe learners who:

- ❖ Mix up the sequence of steps.
- ❖ Skip important stages in the drawing.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to follow picture progression logically.

Remediation Support

For learners struggling with sequencing:

- ❖ Show one drawing step at a time.
- ❖ Use simple shapes before complex drawings.
- ❖ Encourage learners to trace pictures with fingers.
- ❖ Discuss what changes in each step clearly.

For learners needing additional support:

- ❖ Use enlarged step-by-step pictures.
- ❖ Allow learners to copy one step before moving to the next.
- ❖ Repeat sequencing practice regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own step-by-step drawing.
- ❖ Explain the sequence of steps independently.
- ❖ Draw another animal using ordered steps.
- ❖ Challenge classmates with drawing sequences.

⇒ Activity A: Draw the Owl Step by Step

Diagnostic Check

(Work Individually)

Before the activity, ask learners to:

- ❖ Trace simple shapes and lines correctly.
- ❖ Observe drawing progression carefully.
- ❖ Follow instructions in sequence.
- ❖ Identify shapes used in the owl drawing.

Observe learners who:

- ❖ Skip drawing steps.
- ❖ Need support with tracing lines.
- ❖ Struggle to follow the correct sequence.
- ❖ Have difficulty with fine motor control.

Remediation Support

For learners struggling with drawing:

- ❖ Demonstrate one drawing step at a time.
- ❖ Use dotted tracing guides for practice.
- ❖ Encourage learners to draw slowly and carefully.
- ❖ Provide extra tracing sheets if needed.

For learners struggling with sequencing:

- ❖ Compare each drawing stage with the previous one.
- ❖ Point out newly added parts clearly.
- ❖ Use verbal instructions while tracing.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Draw another bird step by step independently.
- ❖ Add extra details to the owl creatively.
- ❖ Create their own drawing algorithm.
- ❖ Teach classmates how to draw using steps.

⇒ Activity: Follow the Algorithm**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Follow directional instructions carefully.
- ❖ Identify left, right, up, and down movements.
- ❖ Recognise ordered sequences of actions.
- ❖ Trace simple paths step by step.

Observe learners who:

- ❖ Confuse movement directions.
- ❖ Skip steps in the sequence.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to follow ordered instructions.

Remediation Support

For learners struggling with algorithms:

- ❖ Demonstrate each movement step physically.
- ❖ Use floor grids for movement practice.
- ❖ Read instructions aloud slowly together.
- ❖ Encourage learners to trace paths with fingers first.

For learners needing additional support:

- ❖ Start with shorter instruction sequences.
- ❖ Use coloured arrows for guidance.
- ❖ Allow partner support during activities.

Extension Activity*(Work Individually / in Groups)*

Ask fast learners to:

- ❖ Create their own movement algorithm.
- ❖ Draw shapes using directional steps.
- ❖ Challenge classmates with algorithm paths.
- ❖ Explain why instruction order matters.

⇒ Activity A: Complete the Algorithm

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Observe picture sequences carefully.
- ❖ Identify missing instructions in a sequence.
- ❖ Recognise shapes and objects in drawings.
- ❖ Read simple instruction sentences aloud.

Observe learners who:

- ❖ Experience difficulty identifying missing steps in sequences.
- ❖ Guess answers without carefully observing picture details.
- ❖ Require additional visual support during sequencing activities.
- ❖ Experience difficulty connecting instructions with pictures.

Remediation Support

For learners struggling with sequencing:

- ❖ Discuss each picture one step at a time.
- ❖ Highlight the new shape added in each stage.
- ❖ Explain each step clearly using simple verbal instructions.
- ❖ Encourage learners to compare pictures carefully.

For learners needing additional support:

- ❖ Use enlarged images for observation.
- ❖ Provide guided examples before independent work.
- ❖ Allow learners to work in pairs.

Inclusive Support

- ❖ Use enlarged picture sequences and classroom displays for learners with visual support needs.
- ❖ Allow learners requiring additional support to discuss one step at a time before completing the activity.
- ❖ Encourage learners to use finger tracking while observing picture sequences.
- ❖ Pair learners requiring additional support with supportive peers during sequencing activities.
- ❖ Use colour highlighting and guided demonstrations to support learners during algorithm activities.
- ❖ Allow additional time where necessary during sequencing and observation tasks.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Write their own drawing algorithms.
- ❖ Create step-by-step shape sequences.
- ❖ Challenge classmates with missing-step puzzles.
- ❖ Explain each algorithm stage independently.

➞ Activity: Making a Banana–Apple Shake

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Identify everyday tasks that follow steps.
- ❖ Arrange simple daily activities in sequence.
- ❖ Observe picture instructions carefully.
- ❖ Recognise beginning and ending stages of a process.

Observe learners who:

- ❖ Mix up the order of steps.
- ❖ Skip important actions.
- ❖ Need repeated teacher prompts.
- ❖ Struggle to explain processes logically.

Remediation Support

For learners struggling with sequencing:

- ❖ Discuss each preparation step separately.
- ❖ Use real or picture-based ingredients for demonstration.
- ❖ Arrange picture cards physically before sequencing.
- ❖ Repeat instruction words such as first, next, then, and last.

For learners needing additional support:

- ❖ Start with shorter task sequences first.
- ❖ Use verbal repetition while arranging steps.
- ❖ Allow learners to discuss steps with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create algorithms for other recipes.
- ❖ Write step-by-step instructions independently.
- ❖ Explain why steps must follow a sequence.
- ❖ Draw process-flow charts for simple tasks.

⇒ Activity B: Arrange the Steps to Make a Sandwich

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify food preparation steps logically.
- ❖ Arrange activities in correct order.
- ❖ Read instruction sentences carefully.
- ❖ Recognise first and final steps in a process.

Observe learners who:

- ❖ Place steps in the wrong order.
- ❖ Skip important preparation stages.
- ❖ Need repeated teacher support.
- ❖ Struggle to connect actions logically.

Remediation Support

For learners struggling with sequencing:

- ❖ Use picture cards for sandwich-making steps.
- ❖ Discuss what should happen first and why.
- ❖ Arrange steps physically before numbering them.
- ❖ Repeat sequencing vocabulary regularly.

For learners needing additional support:

- ❖ Start with fewer steps first.
- ❖ Use real-life demonstrations if possible.
- ❖ Allow learners to work with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Write algorithms for making other foods.
- ❖ Create new sequencing activities for classmates.
- ❖ Explain each sandwich-making step independently.
- ❖ Design flowcharts for daily tasks.

Concept 4.3: Understanding Programs

(LB Pages 56–57)

⇒ Activity: Follow the Program

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Follow movement instructions carefully.
- ❖ Identify right, left, up, and down directions.

- ❖ Trace shapes step by step.
- ❖ Recognise how instructions form shapes.

Observe learners who:

- ❖ Confuse movement directions.
- ❖ Skip instructions while tracing.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to visualise shape formation.

Remediation Support

For learners struggling with movement instructions:

- ❖ Use floor-grid movement demonstrations.
- ❖ Trace paths with fingers before drawing.
- ❖ Discuss one movement step at a time.
- ❖ Use arrows and colour coding for directions.

For learners needing additional support:

- ❖ Start with simple square or rectangle paths first.
- ❖ Use larger diagrams for tracing.
- ❖ Allow learners to practise with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own shape-drawing program.
- ❖ Write movement instructions independently.
- ❖ Challenge classmates with shape programs.
- ❖ Explain how the program forms a shape.

⇒ Activity A: Write a Program to Draw the Figure

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Observe figure paths carefully.
- ❖ Count movement steps accurately.
- ❖ Identify changes in direction.
- ❖ Write simple directional instructions.

Observe learners who:

- ❖ Cannot identify movement directions correctly.
- ❖ Forget the sequence of instructions.
- ❖ Need repeated visual guidance.
- ❖ Struggle to convert movements into written steps.

Remediation Support

For learners struggling with writing programs:

- ❖ Trace the path step by step together.
- ❖ Use arrows to represent movements visually.
- ❖ Write one instruction at a time.
- ❖ Count steps aloud while tracing.

For learners needing additional support:

- ❖ Use smaller figures with fewer steps first.
- ❖ Provide guided examples before independent writing.
- ❖ Allow learners to work in pairs during program writing.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own shape-drawing programs.
- ❖ Write complex movement instructions independently.
- ❖ Challenge classmates to follow their program.
- ❖ Explain how each instruction changes the figure.

Concept 4.4: Decision Making

(LB Pages 58–60)

⇒ Activity: Understanding the Decision

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Identify situations where choices must be made.
- ❖ Recognise true and false conditions.
- ❖ Discuss simple “if–else” examples from daily life.
- ❖ Observe conditions and outcomes carefully.

Observe learners who:

- ❖ Cannot understand conditions clearly.
- ❖ Confuse the “if” and “else” outcomes.
- ❖ Need repeated teacher guidance.
- ❖ Struggle to explain why a choice is made.

Remediation Support

For learners struggling with decision making:

- ❖ Use real-life examples of choices and conditions.
- ❖ Demonstrate simple if–else situations physically.

- ❖ Discuss one condition and one outcome at a time.
- ❖ Encourage learners to explain their thinking aloud.

For learners needing additional support:

- ❖ Use picture cards to show different outcomes.
- ❖ Repeat conditional statements slowly.
- ❖ Allow learners to role-play decision situations.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own if–else examples.
- ❖ Write simple decision-making conditions.
- ❖ Challenge classmates with condition-based questions.
- ❖ Explain how decisions change according to conditions.

➞ Activity A: Follow the Condition

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Identify colours correctly.
- ❖ Read simple condition statements.
- ❖ Match actions with conditions.
- ❖ Observe picture details carefully.

Observe learners who:

- ❖ Cannot understand the condition.
- ❖ Choose actions randomly.
- ❖ Need repeated teacher prompts.
- ❖ Struggle to identify true and false outcomes.

Remediation Support

For learners struggling with conditions:

- ❖ Read the condition aloud slowly together.
- ❖ Highlight the important condition words.
- ❖ Discuss what happens if the condition is true.
- ❖ Compare the “then” and “else” instructions visually.

For learners needing additional support:

- ❖ Use simpler colour-based conditions first.
- ❖ Provide guided examples before independent work.
- ❖ Allow learners to work with partners.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own colour-condition activities.
- ❖ Write new if–else instructions for classmates.
- ❖ Explain why a specific action was chosen.
- ❖ Design conditional-colouring games.

⇒ Activity B: Choose the Correct Outcome

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Read simple condition statements aloud.
- ❖ Identify correct outcomes from situations.
- ❖ Recognise cause-and-effect relationships.
- ❖ Observe picture and text clues carefully.

Observe learners who:

- ❖ Experience difficulty connecting conditions with outcomes.
- ❖ Choose answers without explaining their thinking.
- ❖ Require additional guidance during activities.
- ❖ Experience difficulty explaining why outcomes occur.

Remediation Support

For learners struggling with outcomes:

- ❖ Discuss one condition at a time.
- ❖ Explain the result of true and false conditions clearly.
- ❖ Use familiar home and school examples to explain outcomes.
- ❖ Encourage learners to explain their thinking aloud.

For learners needing additional support:

- ❖ Use role-play activities to demonstrate conditions.
- ❖ Highlight important words in the statement.
- ❖ Provide simpler if–else examples first.

Inclusive Support

- ❖ Use enlarged pictures and highlighted keywords for learners with visual support needs.
- ❖ Allow learners requiring additional support to discuss one condition at a time before selecting answers.
- ❖ Encourage learners to explain answers orally before writing responses.

- ❖ Pair learners requiring additional support with supportive peers during discussions.
- ❖ Use role-play, real-life examples, and visual demonstrations to support understanding of conditions and outcomes.
- ❖ Allow additional time for learners who require extended support during reasoning activities.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own reward-condition examples.
- ❖ Write if-else outcome questions independently.
- ❖ Challenge classmates with condition puzzles.
- ❖ Explain outcomes based on conditions clearly.

⇒ Activity C: Understand the Condition

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Read simple calendar information correctly.
- ❖ Identify days of the week.
- ❖ Recognise conditions and outcomes.
- ❖ Match conditions with actions logically.

Observe learners who:

- ❖ Experience difficulty identifying the correct day.
- ❖ Require additional support understanding conditions.
- ❖ Choose outcomes without careful thinking.
- ❖ Experience difficulty connecting conditions with outcomes.

Remediation Support

For learners struggling with conditions:

- ❖ Use a classroom calendar for demonstration.
- ❖ Discuss one condition and one outcome clearly.
- ❖ Ask guiding questions step by step.
- ❖ Highlight the day mentioned in the condition.

For learners needing additional support:

- ❖ Use simpler daily-life condition examples first.
- ❖ Allow learners to discuss answers with partners.
- ❖ Provide repeated practice for if-else condition activities.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own calendar-based conditions.
- ❖ Write if-else examples using daily routines.
- ❖ Create simple decision-making puzzles for classmates.
- ❖ Explain how conditions affect actions.

Concept 4.5: Loop Programs

(LB Pages 61–62)

⇒ Activity: Understanding Loops

Diagnostic Check

(Work in Groups)

Before the activity, ask learners to:

- ❖ Identify actions that repeat regularly.
- ❖ Observe circular movement patterns carefully.
- ❖ Recognise repeated actions in daily life.
- ❖ Discuss examples of repetition.

Observe learners who:

- ❖ Cannot recognise repeated actions.
- ❖ Confuse one-time and repeated actions.
- ❖ Need repeated teacher explanation.
- ❖ Struggle to explain loop behaviour.

Remediation Support

For learners struggling with loops:

- ❖ Demonstrate repeated actions physically.
- ❖ Use examples such as fan rotation or clock movement.
- ❖ Repeat movements step by step.
- ❖ Encourage learners to describe repetition aloud.

For learners needing additional support:

- ❖ Use movement games involving repetition.
- ❖ Show loops using classroom objects.
- ❖ Compare repeating and non-repeating actions visually.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Identify more examples of loops in daily life.
- ❖ Create movement sequences that repeat.

- ❖ Draw loop cycles independently.
- ❖ Explain why repetition is useful in coding.

⇒ **Activity A: Identify the Loop**

Diagnostic Check

(Work in Pairs)

Before the activity, ask learners to:

- ❖ Observe whether actions repeat or not.
- ❖ Classify repeated and non-repeated activities.
- ❖ Read short activity statements aloud.
- ❖ Identify loops from daily-life examples.

Observe learners who:

- ❖ Cannot identify repeating actions correctly.
- ❖ Need repeated visual guidance.
- ❖ Confuse loops with one-time actions.
- ❖ Struggle to explain why an activity is a loop.

Remediation Support

For learners struggling with loops:

- ❖ Discuss one example at a time.
- ❖ Use real-life repeated actions such as day and night.
- ❖ Act out repeating movements physically.
- ❖ Encourage learners to explain if the action repeats.

For learners needing additional support:

- ❖ Use picture cards showing repeated actions.
- ❖ Compare loop and non-loop examples side by side.
- ❖ Practise classification games regularly.

Extension Activity

(Work Individually / in Groups)

Ask fast learners to:

- ❖ Create their own loop examples.
- ❖ Write activities that repeat regularly.
- ❖ Challenge classmates with loop-identification tasks.
- ❖ Explain how loops help computers repeat actions.

⇒ Activity: Colour the Mat by Following the Program**Diagnostic Check***(Work in Pairs)*

Before the activity, ask learners to:

- ❖ Identify directions such as above, below, left, and right.
- ❖ Follow step-by-step colouring instructions.
- ❖ Recognise colours correctly.
- ❖ Observe grid positions carefully.

Observe learners who:

- ❖ Confuse directional instructions.
- ❖ Colour incorrect blocks.
- ❖ Skip steps in the sequence.
- ❖ Need repeated teacher guidance.

Remediation Support

For learners struggling with following instructions:

- ❖ Read one instruction at a time slowly.
- ❖ Use finger tracing to identify grid positions.
- ❖ Highlight directional words clearly.
- ❖ Demonstrate one colouring step before independent work.

For learners struggling with grid understanding:

- ❖ Use enlarged grid charts for practice.
- ❖ Practise locating positions using simple examples.
- ❖ Allow learners to work with partners.

Extension Activity*(Work Individually / in Groups)*

Ask fast learners to:

- ❖ Create their own colouring program.
- ❖ Write directional instructions for classmates.
- ❖ Design colour-grid puzzles independently.
- ❖ Explain how following instructions completes the pattern.

Core Competencies Mapping

LEVEL 1: REASONING

Concept	Core Competencies Developed
1.1 Play with Numbers	Critical Thinking and Problem Solving (CP)
1.2 Shapes	Critical Thinking and Problem Solving (CP); Communication and Collaboration (CC)
1.3 Number Patterns	Critical Thinking and Problem Solving (CP); Digital Literacy (DL); Creativity and Innovation (CI)
1.4 Number Pyramid	Critical Thinking and Problem Solving (CP); Digital Literacy (DL); Communication and Collaboration (CC)
1.5 Number Grid	Critical Thinking and Problem Solving (CP); Digital Literacy (DL)
1.6 Built-A-Word	Critical Thinking and Problem Solving (CP)
1.7 Word Search	Critical Thinking and Problem Solving (CP); Digital Literacy (DL)
Coding Challenge-1: I-Spy!	Critical Thinking and Problem Solving (CP); Personal Development and Leadership (PL)

LEVEL 2: CRITICAL THINKING AND ANALYSIS

Concept	Core Competencies Developed
2.1 Spot the Difference	Critical Thinking and Problem Solving (CP); Communication and Collaboration (CC)
2.2 Puzzled Pictures	Critical Thinking and Problem Solving (CP); Creativity and Innovation (CI)
2.3 Similar Images	Critical Thinking and Problem Solving (CP)
2.4 Rhyme Time	Critical Thinking and Problem Solving (CP); Communication and Collaboration (CC)
2.5 Directions	Critical Thinking and Problem Solving (CP); Digital Literacy (DL)

2.6 Grid Maps	Digital Literacy (DL); Critical Thinking and Problem Solving (CP)
2.7 Riddles	Critical Thinking and Problem Solving (CP); Communication and Collaboration (CC)
Coding Challenge-2: Hidden Character	Critical Thinking and Problem Solving (CP); Personal Development and Leadership (PL)

LEVEL 3: DATA PROCESSING

Concept	Core Competencies Developed
3.1 Representing Data	Digital Literacy (DL); Critical Thinking and Problem Solving (CP)
3.2 Processing Data	Digital Literacy (DL); Critical Thinking and Problem Solving (CP); Communication and Collaboration (CC)
Coding Challenge-3: Maze Route	Critical Thinking and Problem Solving (CP); Digital Literacy (DL)

LEVEL 4: ALGORITHMIC INTELLIGENCE

Concept	Core Competencies Developed
4.1 Step-By-Step	Digital Literacy (DL); Critical Thinking and Problem Solving (CP)
4.2 Algorithm	Digital Literacy (DL); Critical Thinking and Problem Solving (CP); Communication and Collaboration (CC)
4.3 Understanding Programs	Digital Literacy (DL); Critical Thinking and Problem Solving (CP)
4.4 Decision Making	Critical Thinking and Problem Solving (CP); Personal Development and Leadership (PL); Cultural Identity and Global Citizenship (CG); Communication and Collaboration (CC)
4.5 Loop Programs	Digital Literacy (DL); Critical Thinking and Problem Solving (CP)
Coding Challenge-4: Understanding Program	Critical Thinking and Problem Solving (CP); Creativity and Innovation (CI)

Facilitator's Page-wise Teaching Instructions

Reasoning activities help learners develop observation, counting, pattern recognition, classification, and logical thinking skills. These abilities form the early foundation of computational thinking and prepare learners for basic coding concepts such as patterns, relationships, sequences, and problem solving.

In this level, learners engage with colourful and engaging tasks that require them to count objects, recognise shapes, complete number patterns, solve number pyramids and grids, form words, and search for hidden words. These activities strengthen learners' ability to observe details, identify relationships, and organise information logically.

Through these activities, learners begin to understand that complex problems can be solved by observing patterns and following simple logical steps, which is a key principle in coding.

Concept 1.1: Play with Numbers

(LB Pages 8–9)

Teaching Intent

To help learners recognise numbers, count objects accurately, and relate numbers to quantities.

Through engaging visual activities, learners practise counting objects and selecting the correct number, which helps develop early mathematical understanding and observation skills.

⇒ Activity A: Count and Tick the Correct Answer

Teacher Instructions

- ❖ Ask learners to observe each group of objects carefully.
- ❖ Tell learners to count the objects one by one.
- ❖ Ask them to identify the correct number that represents the quantity of objects.
- ❖ Instruct learners to tick (✓) the correct option from the given numbers.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ How many fish can you count?
- ❖ How many trees are there in the row?
- ❖ What number represents the guitars?

Encourage learners to point to each object while counting.

Teacher Guidance

Help learners understand that:

- ❖ Each number represents a specific quantity of objects.
- ❖ Counting carefully helps avoid missing or repeating objects.

Reinforce

Numbers help us count and represent quantities.

Coding Link

This is what computers do when they work with numbers. Computers count and store quantities to understand data. When learners count objects and choose the correct number, they are thinking like a computer.

Activity B: Count the Apples

Teaching Intent

To help learners practise counting objects in a picture and writing the correct number.

Teacher Instructions

- ❖ Ask learners to observe the fruit stall picture carefully.
- ❖ Explain that several fruits are shown in the picture.
- ❖ Tell learners to identify all the apples.
- ❖ Ask learners to count the apples and write the total number in the space provided.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which fruits in the picture are apples?
- ❖ How many apples can you see?
- ❖ Can you count them again to check?

Encourage learners to count slowly and verify their answers.

Teacher Guidance

Help learners understand that:

- ❖ Counting helps determine the exact quantity of objects.
- ❖ Careful observation helps identify the correct items to count.

Reinforce

Counting objects helps learners connect numbers with real-life quantities.

Computers collect and count information to find totals. When learners count apples and write the number, they are collecting data just like a computer system.

Concept 1.2: Shapes

(LB Pages 10–12)

Teaching Intent

To help learners recognise basic geometric shapes and understand their simple properties such as sides and corners.

Shapes are important in mathematics and daily life because many objects around us resemble basic geometric forms. In this lesson, learners are introduced to circle, square, triangle, and rectangle.

Concept Explanation

Circle

A circle is a round shape.

- ❖ It has 0 sides.
- ❖ Its boundary is curved.
- ❖ It has no corners.

Square

A square is a shape with four equal sides.

- ❖ It has 4 sides.
- ❖ All sides are the same length.
- ❖ It has 4 corners.

Triangle

A triangle is a shape with three straight sides.

- ❖ It has 3 sides.
- ❖ It has 3 corners.

Rectangle

A rectangle is a shape with four sides.

- ❖ Its opposite sides are equal.
- ❖ It has 4 sides and 4 corners.

⇒ Activity: Identify the Shapes

Teacher Instructions

- ❖ Ask learners to observe the shapes shown on the page.
- ❖ Explain the number of sides and corners each shape has.
- ❖ Encourage learners to repeat the names of the shapes aloud.
- ❖ Ask learners to identify objects in the classroom that look like these shapes.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which shape has no sides and no corners?
- ❖ Which shape has three sides?
- ❖ Which shape has four equal sides?
- ❖ Which shape has opposite sides equal?

Encourage learners to trace the shapes with their fingers.

Teacher Guidance

Help learners understand that:

- ❖ Shapes can be identified by the number of sides and corners.
- ❖ Many objects around us resemble basic geometric shapes.

Reinforce

Recognising shapes helps learners understand the structure of objects in their surroundings.

■ Coding Link

Computers recognise shapes to display images and designs. When learners identify shapes, they are understanding how computers use shapes to create pictures on the screen.

⇒ Activity A: Count the Shapes

Teacher Instructions

- ❖ Ask learners to work in groups of four and observe the picture carefully.
- ❖ Explain that different shapes are used to make the design.
- ❖ Ask each learner to choose one shape—square, triangle, circle, or rectangle.
- ❖ Tell learners to count how many of their chosen shape appear in the picture.
- ❖ Ask learners to colour the correct number of boxes for each shape in their own book.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ How many circles can you see in the picture?
- ❖ How many triangles are there altogether?
- ❖ Can you find and count all the rectangles?
- ❖ Which shape appears the most?
- ❖ Encourage learners to point to each shape while counting carefully.

Teacher Guidance

- ❖ Help learners understand that:
- ❖ Shapes can be counted just like other objects.
- ❖ Counting one type of shape at a time makes the task easier.
- ❖ Careful observation helps learners identify shapes correctly.

Reinforce

Shapes appear in many patterns and designs around us.

Coding Link

Computers count different types of objects separately. When learners count shapes, they are sorting and counting data just like a computer.

⇒ Activity B: Identify the Shape of Objects

Teaching Intent

To help learners recognise shapes in everyday objects and relate them to basic geometric forms.

Teacher Instructions

- ❖ Ask learners to read each sentence carefully.
- ❖ Explain that each object resembles a specific shape.
- ❖ Ask learners to identify the shape that matches the object.
- ❖ Tell learners to write the correct shape name in the blank.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What shape does a clock look like?
- ❖ What shape is a slice of pizza?
- ❖ What shape does a window resemble?

Encourage learners to observe real-life objects around them.

Teacher Guidance

Help learners understand that:

- ❖ Many objects around us resemble basic geometric shapes.
- ❖ Recognising shapes in objects helps learners understand geometry in everyday life.

Reinforce

Shapes help us describe and identify objects around us.

Coding Link

Computers identify objects based on their shape and features. When learners match objects with shapes, they are recognising patterns just like a computer system.

Concept 1.3: Number Pattern

(LB Pages 13–14)

Teaching Intent

To help learners recognise number patterns and understand how numbers change according to a specific rule.

A number pattern shows a relationship between numbers in a sequence. Each number follows a rule such as adding or subtracting a fixed number.

Understanding number patterns helps learners develop logical thinking and early problem-solving skills, which are important foundations for mathematics and coding.

Concept Explanation

A number pattern is a sequence of numbers that follow a specific rule or relationship.

By observing how numbers change, learners can identify the rule and continue the pattern.

Example 1: Adding 2

$2 \rightarrow 4 \rightarrow 6 \rightarrow 8 \rightarrow 10$

In this pattern, 2 is added each time to get the next number.

Example 2: Adding 3

$1 \rightarrow 4 \rightarrow 7 \rightarrow 10 \rightarrow 13$

In this pattern, 3 is added each time to get the next number.

Example 3: Subtracting 1

$8 \rightarrow 7 \rightarrow 6 \rightarrow 5 \rightarrow 4$

In this pattern, 1 is subtracted each time to get the next number.

Explain to learners that once we recognise the rule, we can predict what number will come next in the pattern.

⇒ Activity: Identify the Pattern

Teacher Instructions

- ❖ Ask learners to observe the number sequences carefully.
- ❖ Explain how the numbers change in each example.
- ❖ Show learners how to identify the rule used in the pattern (adding or subtracting).
- ❖ Encourage learners to say the pattern aloud.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What number comes after 2 when we add 2?
- ❖ What happens when we add 3 each time?
- ❖ What happens when we subtract 1 from a number?

Encourage learners to count the pattern aloud.

Teacher Guidance

Help learners understand that:

- ❖ Patterns follow a clear rule.
- ❖ Recognising the rule helps us continue the number sequence correctly.

Reinforce

Number patterns help learners understand relationships between numbers and improve logical thinking.

■ Coding Link

Computers follow patterns and rules to process information. When learners observe number patterns, they are understanding how computers follow rules step by step.

⇒ Activity A: Complete the Number Patterns

Teacher Instructions

- ❖ Ask learners to observe each sequence of numbers carefully.
- ❖ Explain that each sequence follows a specific rule.
- ❖ Encourage learners to identify whether the numbers are increasing or decreasing.
- ❖ Ask learners to fill in the missing numbers in the empty circles to complete the pattern.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What change do you notice between the numbers?

- ❖ Are the numbers increasing or decreasing?
- ❖ What number should come next in the sequence?

Encourage learners to say the numbers aloud while identifying the pattern.

Teacher Guidance

Help learners understand that:

- ❖ A number pattern follows a specific rule such as adding or subtracting a number.
- ❖ Identifying the rule helps us complete the sequence correctly.

Reinforce

Recognising number patterns helps learners develop logical thinking and mathematical reasoning.

Coding Link

This is how coding works. Computers continue a sequence based on a rule. When learners complete patterns, they are predicting the next step just like a computer program.

Concept 1.4: Number Pyramid

(LB Pages 15–16)

Teaching Intent

To help learners understand how numbers can be related through addition patterns and how larger numbers can be formed by combining smaller numbers.

This activity strengthens learners' logical thinking, number sense, and problem-solving skills by identifying relationships between numbers.

Concept Explanation

A number pyramid is a pattern where the number in each circle is the sum of the two numbers directly below it.

Learners can find the number above by adding the two numbers beneath it.

Example from the pyramid:

$$\begin{array}{ccc} \text{❖ } 4 + 1 = 5 & \text{❖ } 1 + 3 = 4 & \text{❖ } 3 + 5 = 8 \end{array}$$

The next level is formed in the same way:

$$\begin{array}{l} \text{❖ } 5 + 4 = 9 \\ \text{❖ } 4 + 8 = 12 \end{array}$$

Finally:

$$\text{❖ } 9 + 12 = 21$$

This shows how numbers build up step by step to form the top number in the pyramid.

⇒ Activity: Explore the Pyramid

Teacher Instructions

- ❖ Ask learners to observe the number pyramid carefully.
- ❖ Explain that each number above is the sum of the two numbers below it.
- ❖ Demonstrate how the numbers combine to form the next number in the pyramid.
- ❖ Encourage learners to identify the pattern.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What numbers are below 5?
- ❖ What do we get when we add 4 and 1?
- ❖ What do we get when we add 3 and 5?

Encourage learners to add the numbers aloud.

Teacher Guidance

Help learners understand that:

- ❖ Numbers in the pyramid follow a consistent addition rule.
- ❖ Recognising the rule helps complete the pyramid correctly.

Reinforce

Number pyramids help learners understand number relationships and addition patterns.

■ Coding Link

Computers combine numbers to get new results. When learners add numbers in the pyramid, they are processing data step by step like a computer.

⇒ Activity A: Complete the Number Pyramids

Teacher Instructions

- ❖ Ask learners to work in pairs and observe each number pyramid carefully.
- ❖ Explain that the number in each circle is the sum of the two numbers directly below it.
- ❖ Encourage learners to add the numbers in the lower row to find the missing number above.
- ❖ Ask learners to fill in the blank circles with the correct numbers in their own book.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What two numbers are below this circle?
- ❖ What do we get when we add these numbers together?
- ❖ Which number should be written in the empty circle?
- ❖ Can you check whether the pattern continues correctly?

Encourage learners to add the numbers aloud with their partner while solving the pyramids.

Teacher Guidance

Help learners understand that:

- ❖ Each number above is formed by adding the two numbers directly below it.
- ❖ Addition patterns help learners find missing numbers step by step.
- ❖ Careful observation and checking help complete the pyramids correctly.

Reinforce

Number pyramids help learners understand addition patterns and relationships between numbers.

Coding Link

Computers solve problems by following rules again and again. When learners complete the pyramid, they are applying the same rule repeatedly like a computer program.

Concept 1.5: Number Grid

(LB Pages 17-19)

Teaching Intent

To help learners understand how numbers can be organised in a grid pattern and how numbers change according to given instructions such as more than or less than a number. This activity helps learners develop logical reasoning, number comparison skills, and problem-solving abilities.

Concept Explanation

A number grid is formed by straight lines that intersect to create squares. Numbers can be placed in these squares according to a rule or instruction.

In this activity, the number in the centre of the grid is 5. The numbers in the surrounding boxes are determined by following the given instructions:

- | | |
|---------------------------------|---------------------------------|
| ❖ 4 less than 5 $\rightarrow$ 1 | ❖ 2 more than 5 $\rightarrow$ 7 |
| ❖ 2 less than 5 $\rightarrow$ 3 | ❖ 4 more than 5 $\rightarrow$ 9 |

By carefully reading the instructions, learners can determine the correct number to place in each box.

⇒ **Activity: Understand the Grid**

Teacher Instructions

- ❖ Ask learners to observe the number in the centre of the grid.
- ❖ Explain that the centre number is 5.
- ❖ Ask learners to read the instructions given around the grid.
- ❖ Demonstrate how to find numbers that are more than or less than 5.
- ❖ Show how the numbers are placed in the surrounding boxes according to the instructions.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What number is in the centre of the grid?
- ❖ What is 2 less than 5?
- ❖ What is 4 more than 5?

Encourage learners to count forward or backward to find the correct number.

Teacher Guidance

Help learners understand that:

- ❖ Numbers can increase or decrease based on instructions.
- ❖ Careful reading of instructions helps determine the correct number placement.

Reinforce

Number grids help learners understand number relationships and comparisons.

■ Coding Link

Computers follow instructions to place data correctly. When learners read clues like more than or less than, they are following instructions just like a computer.

⇒ **Activity A: Solve the Number Grid**

Teacher Instructions

- ❖ Ask learners to read the clues carefully.
- ❖ Explain that each clue describes a specific number.
- ❖ Tell learners to identify the number that matches each clue.
- ❖ Ask learners to place the correct number in the grid.

Examples of clues:

- ❖ Smallest 2-digit number
- ❖ Greatest 1-digit number
- ❖ Zero in numeral
- ❖ Smallest 1-digit number
- ❖ Greatest 2-digit number

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What is the smallest two-digit number?
- ❖ What is the greatest one-digit number?
- ❖ What number represents zero?

Encourage learners to think about number values before filling the grid.

Teacher Guidance

Help learners understand that:

- ❖ Numbers can be identified using clues and number properties.
- ❖ Careful reading of instructions helps find the correct number.

Reinforce

Understanding number properties helps learners solve number puzzles effectively.

Coding Link

Computers use clues to find correct answers. When learners solve the grid using number properties, they are analysing information like a computer system.

⇒ Activity B: Complete the Number Grid Around 20

Teacher Instructions

- ❖ Ask learners to observe the number in the centre of the grid (20).
- ❖ Explain the clues such as:
 - What comes just before 20
 - What comes just after 20
 - What comes 3 places before 20
 - What comes 3 places after 20
- ❖ Ask learners to fill the boxes with the correct numbers.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What number comes before 20?
- ❖ What number comes after 20?
- ❖ What is 3 numbers before 20?

Encourage learners to count forward or backward to find the answers.

Teacher Guidance

Help learners understand that:

- ❖ Numbers follow a fixed sequence.
- ❖ Counting forward and backward helps identify missing numbers.

Reinforce

Understanding number order strengthens number sense and sequencing skills.

Coding Link

Computers understand number order and sequence. When learners find numbers before and after 20, they are working with sequences just like a computer.

⇒ Activity C: Solve the Grid Using Instructions

Teacher Instructions

- ❖ Ask learners to read each instruction carefully.
- ❖ Explain that the number must be calculated according to the given instruction.
- ❖ Encourage learners to solve each step using addition or subtraction.
- ❖ Ask them to write the correct number in the corresponding box.

Examples:

- 10 more than 8
- 2 more than 13
- 5 less than 13
- 10 less than 18

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What is 10 more than 8?
- ❖ What is 5 less than 13?
- ❖ What is 2 less than 15?

Encourage learners to solve the calculations step by step.

Teacher Guidance

Help learners understand that:

- ❖ Instructions such as more than and less than indicate addition or subtraction.
- ❖ Following instructions carefully helps solve the grid correctly.

Reinforce

Number grids help learners practise calculation, reasoning, and problem solving.

Coding Link

Computers follow step-by-step instructions to calculate answers. When learners solve 'more than' and 'less than' problems, they are performing operations like a computer.

Concept 1.6: Built-A-Word

(LB Page 20)

Teaching Intent

To help learners develop word recognition and vocabulary skills by combining two smaller words to form a new meaningful word.

This activity strengthens learners' ability to identify word parts, understand compound words, and improve language comprehension.

A compound word is formed when two smaller words are joined together to create a new word.

Activity A: Match Two Words to Form a New Word

Teacher Instructions

- ❖ Ask learners to read the words in the left column.
- ❖ Ask them to read the words in the right column.
- ❖ Explain that some words can be joined together to make a new meaningful word.
- ❖ Tell learners to match the words from both columns correctly.

Teacher-Learner Interaction

Ask guiding questions such as:

- ❖ What word do we get when we join Sun and flower?
- ❖ What word is formed by joining Note and book?
- ❖ What word is formed by joining Butter and fly?

Encourage learners to say the new word aloud after matching.

Teacher Guidance

Help learners understand that:

- ❖ Two smaller words can combine to form one compound word.
- ❖ Understanding word parts helps improve reading and vocabulary skills.

Reinforce

Compound words help learners understand how new words are formed from smaller words.

Coding Link

Computers combine letters and words to form meaningful outputs. When learners join two words to make a new word, they are processing language just like a computer.

Concept 1.7: Word Search

(LB Pages 21-23)

Teaching Intent

To help learners develop letter recognition, spelling awareness, and observation skills by identifying words hidden in a grid of letters.

This activity strengthens learners' ability to scan letters carefully and recognise meaningful words, which improves reading and vocabulary skills.

Concept Explanation

A word search is a puzzle where letters are arranged in a grid. Words can be formed by reading the letters in a specific direction.

Words may appear in:

Row (Horizontal) Letters are arranged from left to right to form a word.

Example: B – E – A – R → BEAR

Column (Vertical) Letters are arranged from top to bottom to form a word.

Example: R – A – I – N → RAIN

Learners must look carefully at the grid to find the hidden words.

Activity: Identify Words in the Grid

Teacher Instructions

- ❖ Ask learners to observe the letter grid carefully.
- ❖ Explain that words can be formed in rows or columns.
- ❖ Demonstrate how the word BEAR appears in a row.
- ❖ Demonstrate how the word RAIN appears in a column.
- ❖ Encourage learners to trace the letters that form the word.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Can you find the word BEAR in the grid?
- ❖ Which letters form the word RAIN?
- ❖ Are the letters arranged in a row or a column?

Encourage learners to scan the grid slowly to locate the words.

Teacher Guidance

Help learners understand that:

- ❖ Words can be formed by arranging letters in rows or columns.
- ❖ Careful observation helps identify hidden words.

Reinforce

Word search puzzles improve spelling, vocabulary, and concentration skills.

Coding Link

Computers scan data to find specific information. When learners search for words in a grid, they are scanning and recognising patterns like a computer.

⇒ Activity A: Find and Circle the Hidden Words

Teacher Instructions

- ❖ Ask learners to observe the letter grid carefully.
- ❖ Explain that several words related to the pictures given below are hidden in the grid.
- ❖ Tell learners to find the words and circle them in the grid.
- ❖ Encourage learners to look for the words from left to right or from top to bottom.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Can you find the word BALL in the grid?
- ❖ Where is the word BOAT hidden?
- ❖ Which letters form the word STAR?

Encourage learners to trace the letters with their finger before circling the word.

Teacher Guidance

Help learners understand that:

- ❖ Words can be hidden in rows or columns.
- ❖ Careful observation helps identify correct letter combinations.

Reinforce

Word search puzzles help improve spelling, concentration, and vocabulary skills.

Coding Link

Computers locate information by checking one part at a time. When learners find hidden words, they are searching step by step like a computer system.

Activity B: Find the Hidden Words

Teacher Instructions

- ❖ Ask learners to observe the letter grid carefully.
- ❖ Explain that the words shown below the grid are hidden within the letters.
- ❖ Tell learners to locate each word and circle it in the grid.
- ❖ Encourage learners to search row by row.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Can you find the word BIRD in the grid?
- ❖ Which letters form the word SUN?
- ❖ Where is the word RAIN hidden?

Encourage learners to look carefully for the first letter of each word and then follow the sequence.

Teacher Guidance

Help learners understand that:

- ❖ Words can appear in rows or columns within the grid.
- ❖ Identifying patterns of letters helps locate hidden words quickly.

Reinforce

Word search activities help learners improve reading, observation, and vocabulary skills.

Coding Link

Computers recognise letter patterns to understand words. When learners identify hidden words, they are recognising patterns just like a computer program.

Teaching Intent

To help learners apply their observation and reasoning skills by identifying objects hidden within a picture. This activity encourages learners to carefully analyse visual information, recognise objects, and record their findings using numbers. It also strengthens attention to detail, classification skills, and logical thinking—important foundations for computational thinking.

⇒ Activity: Find and Identify the Hidden Objects

Teacher Instructions

- ❖ Ask learners to carefully observe the large picture shown in the activity.
- ❖ Explain that several objects are hidden within the image.
- ❖ Tell learners to search for each object and identify its number.
- ❖ Ask them to write the correct number of the object in the blank space provided.
- ❖ Encourage learners to scan the image slowly from left to right and top to bottom to ensure they do not miss any object.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Can you find the stars in the picture?
- ❖ How many fireworks can you see?
- ❖ Can you locate the eagle head?
- ❖ How many feathers or decorations appear?

Encourage learners to scan the picture slowly from top to bottom.

Teacher Guidance

Encourage learners to:

- ❖ Observe the picture carefully before writing any answers.
- ❖ Identify each object correctly before noting its number.
- ❖ Check the image again to confirm their answer.
- ❖ Use systematic searching (row by row or section by section).

Reinforce

Careful observation and organised searching help solve problems more efficiently. These skills are similar to how computers follow steps to find information.

Coding Link

Computers search and identify objects by carefully scanning images. When learners find hidden objects and count them, they are observing and analysing information like a computer.

Review Exercise

1. What do numbers help us do when identifying objects?
2. Why is careful observation important when solving puzzles?
3. What strategy can help you find hidden objects more easily?
4. How can you make sure you do not miss any object in a picture?

Differentiated Lessons

Remedial Activity

- ❖ Show learners a simpler picture with only a few objects.
- ❖ Ask them to find and count the objects one by one.
- ❖ Help them practise identifying and numbering the objects.

Challenging Activity

- ❖ Ask learners to create their own I-Spy puzzle by drawing a picture with hidden objects.
- ❖ Ask their classmates to find and count the objects in the picture.

Teacher Closure for Level 1

Summarise the key learning points:

Learners have learned to:

- ❖ Count and recognise numbers
- ❖ Identify common shapes
- ❖ Recognise number patterns
- ❖ Solve number pyramids and grids
- ❖ Form words and search for hidden words
- ❖ Observe pictures carefully to find objects

These activities help learners develop reasoning, observation, and logical thinking skills, which form the foundation for computational thinking and early coding concepts.

Critical thinking activities help learners develop observation, comparison, classification, spatial awareness, and logical reasoning skills. These skills allow learners to analyse information carefully, identify differences, recognise similarities, and interpret clues to solve problems.

In this level, learners practise these abilities through activities such as spotting differences between pictures, completing puzzles, identifying similar objects, recognising rhyming words, understanding directions, locating objects on grid maps, solving riddles, and finding hidden characters.

These activities encourage learners to observe details carefully, compare information, and think logically, which are important foundations for computational thinking and coding.

Concept 2.1: Spot the Difference

(LB Page 26)

Teaching Intent

To help learners develop observation and visual comparison skills by identifying differences between two similar pictures.

This activity encourages learners to look carefully at details such as objects, colours, shapes, and positions, which strengthens concentration and analytical thinking.

⇒ Activity A: Spot and Circle the Differences

Teacher Instructions

- ❖ Ask learners to work in pairs and observe both pictures carefully.
- ❖ Explain that the pictures look similar but contain several small differences.
- ❖ Tell learners to compare the pictures carefully and discuss their observations with their partner.
- ❖ Ask learners to find and circle the differences they notice in their own book.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What changes can you see between the two pictures?
- ❖ Is anything missing or different in the second picture?
- ❖ Can you find a difference in the tree, window, or animals?
- ❖ Which part of the picture looks different first?

Encourage learners to observe the pictures section by section while discussing with their partner.

Teacher Guidance

Help learners understand that:

- ❖ Careful observation helps identify small changes and details.
- ❖ Comparing pictures improves visual analysis and attention skills.
- ❖ Looking at one part at a time makes it easier to spot differences.

Reinforce

Spotting differences helps learners develop focus, observation, and problem-solving abilities.

Coding Link

Computers compare two sets of information to find differences. When learners observe and circle the changes between pictures, they are comparing data just like a computer system.

Concept 2.2: Puzzled Pictures

(LB Page 27)

Teaching Intent

To help learners develop visual reasoning and spatial awareness by identifying how puzzle pieces fit together to complete a picture.

This activity strengthens learners' ability to observe shapes, colours, and picture details, which helps improve logical thinking and problem-solving skills.

⇒ Activity A: Fit the Missing Puzzle Pieces

Teacher Instructions

- ❖ Ask learners to observe the puzzle picture carefully.
- ❖ Explain that some puzzle pieces are missing from the picture.
- ❖ Tell learners to look at the puzzle pieces given below the picture.
- ❖ Ask them to identify which piece fits in each blank space.
- ❖ Encourage learners to match the pieces by comparing shape, colour, and picture details.

Teacher-Learner Interaction

Ask guiding questions such as:

- ❖ Which puzzle piece shows part of the school bus?
- ❖ Which piece contains part of the wheel or road?
- ❖ Which piece matches the shape of the empty space?

Encourage learners to check the edges and picture details before choosing the correct piece.

Teacher Guidance

Help learners understand that:

- ❖ Puzzle pieces must match the shape and picture pattern of the empty space.
- ❖ Observing colours and edges helps identify the correct piece.

Reinforce

Puzzle activities improve visual observation, spatial reasoning, and problem-solving skills.

Coding Link

Computers analyse shapes and patterns to complete images. When learners choose the correct puzzle pieces, they are solving problems by matching patterns like a computer.

Concept 2.3: Similar Images

(LB Pages 28–30)

Teaching Intent

To help learners develop observation, classification, and logical reasoning skills by identifying objects that share a common property or feature.

These activities encourage learners to compare objects based on temperature, colour, function, and physical features.

⇒ Activity A: Circle the Images Which Are Hot

Teacher Instructions

- ❖ Ask learners to observe all the pictures carefully.
- ❖ Explain that some objects produce heat or are hot.
- ❖ Ask learners to identify the objects that are hot.
- ❖ Tell learners to circle those images.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which object gives us heat and light?
- ❖ Which object produces fire?
- ❖ Which item becomes hot when used?

Encourage learners to think about real-life experiences.

Teacher Guidance

Help learners understand that:

- ❖ Some objects naturally produce heat or fire.
- ❖ Careful observation helps identify the correct objects.

Reinforce

Objects can be classified based on their properties such as heat.

Coding Link

Computers group objects based on their properties. When learners identify hot objects, they are classifying items based on features just like a computer.

⇒ Activity B: Circle the Brown Things That You Can Eat

Teacher Instructions

- ❖ Ask learners to observe the pictures carefully.
- ❖ Explain that they must identify brown-coloured items that are edible.
- ❖ Tell learners to circle only the objects that are both brown and edible.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which of these items can we eat?
- ❖ Which objects are brown in colour?
- ❖ Are all brown objects edible?

Encourage learners to check both colour and purpose before choosing.

Teacher Guidance

Help learners understand that:

- ❖ Objects can be grouped based on multiple characteristics such as colour and use.
- ❖ Not all objects of the same colour have the same purpose.

Reinforce

Observation helps identify correct items based on given conditions.

Coding Link

Computers check more than one condition at a time. When learners find objects that are both brown and edible, they are applying multiple conditions like a computer program.

⇒ Activity C: Circle the Images Which Have Wheels

Teacher Instructions

- ❖ Ask learners to observe the pictures carefully.
- ❖ Explain that some objects move using wheels.
- ❖ Tell learners to identify and circle the objects that have wheels.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which objects move on wheels?
- ❖ Do vehicles have wheels?
- ❖ Which item can roll on the ground?

Encourage learners to think about how objects move.

Teacher Guidance

Help learners understand that:

- ❖ Many vehicles and movable objects use wheels.
- ❖ Observing object features helps identify their function and purpose.

Reinforce

Classification helps learners organise objects based on shared characteristics.

Coding Link

Computers identify objects based on their function and features. When learners select items with wheels, they are grouping similar objects like a computer system.

Concept 2.4: Rhyme Time

(LB Pages 31–32)

Teaching Intent

To help learners recognise rhyming words and similar sounds in language.

Rhyming activities strengthen learners' phonetic awareness, listening skills, vocabulary development, and reading readiness.

Rhyming words are words that have similar ending sounds, such as cat–hat or sun–fun.

Activity A: Identify Rhyming Pictures

Teacher Instructions

- ❖ Ask learners to observe the pictures in each row carefully.
- ❖ Explain that the first picture in each row is the reference picture.
- ❖ Tell learners to identify pictures whose names rhyme with the first picture.
- ❖ Ask learners to colour the pictures that rhyme with the first one.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What is the name of the first picture?

- ❖ Which picture has a word that sounds similar at the end?
- ❖ Do the words sound the same when spoken aloud?

Encourage learners to say the words aloud to hear the rhyming sound.

Teacher Guidance

Help learners understand that:

- ❖ Rhyming words share similar ending sounds.
- ❖ Listening carefully helps identify rhyming patterns.

Reinforce

Rhyming activities help improve phonetic awareness and early reading skills.

Coding Link

Computers recognise sound and pattern similarities in language. When learners identify rhyming words, they are recognising patterns just like computers process language.

⇒ Activity B: Find the Rhyming Words

Teacher Instructions

- ❖ Ask learners to read the words given in the word wall.
- ❖ Explain that each word rhymes with one of the words listed in the questions.
- ❖ Tell learners to find the word from the word wall that rhymes with the given word.
- ❖ Ask learners to write the rhyming word in the blank space.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which word rhymes with Hay?
- ❖ Which word rhymes with Look?
- ❖ Which word rhymes with Dog?

Encourage learners to say both words aloud to check if they rhyme.

Teacher Guidance

Help learners understand that:

- ❖ Rhyming words have similar ending sounds.
- ❖ Listening to the sound helps identify correct rhyming pairs.

Reinforce

Recognising rhyming words improves phonetic awareness, pronunciation, and vocabulary skills.

Coding Link

Computers match similar patterns to find correct results. When learners match rhyming words, they are comparing sounds just like a computer compares data.

Concept 2.5: Directions

(LB Pages 33-35)

Teaching Intent

To help learners understand the concept of directions and how position or movement can be described using directional terms.

Understanding directions helps learners develop spatial awareness, logical thinking, and navigation skills, which are important in everyday life and coding activities.

Concept Explanation

Directions refer to the position towards which something faces or moves.

There are four main directions:

- ❖ **North** – the upward direction on a map or compass
- ❖ **South** – the downward direction
- ❖ **East** – the direction to the right
- ❖ **West** – the direction to the left

A **compass** is a tool that helps identify directions.

In the example shown, the child moves around a rectangular path while following different directions such as east, west, north, and south.

⇒ Activity: Understanding Directions

Teacher Instructions

- ❖ Ask learners to observe the compass diagram.
- ❖ Explain the four main directions: North, South, East, and West.
- ❖ Show learners how the directions are represented on the compass.
- ❖ Ask learners to follow the path shown in the picture and identify the direction of movement.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which direction is shown at the top of the compass?
- ❖ Which direction is opposite to North?
- ❖ If the boy moves to the right, which direction is he moving?

Encourage learners to point in different directions with their hands.

Teacher Guidance

Help learners understand that:

- ❖ Directions help describe movement and location.
- ❖ A compass helps identify the four main directions.

Reinforce

Understanding directions helps learners follow paths, maps, and step-by-step instructions.

Coding Link

Computers follow directions to move objects on a screen. When learners understand directions like north, south, east, and west, they are learning how computers navigate.

Activity A: Match the Same Direction

Teacher Instructions

- ❖ Ask learners to observe the arrows and objects carefully.
- ❖ Explain that each arrow shows a specific direction.
- ❖ Tell learners to match pictures that show the same direction of movement.
- ❖ Ask learners to write the correct name of the direction in the blank space.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which arrow is pointing upwards?
- ❖ Which arrow is pointing downwards?
- ❖ Which arrow is pointing left or right?

Encourage learners to use their hands to imitate the directions.

Teacher Guidance

Help learners understand that:

- ❖ Arrows help show the direction of movement.
- ❖ Matching directions requires careful observation.

Reinforce:

Understanding directions helps learners follow instructions and navigate paths.

Coding Link

Computers read directional instructions to perform actions. When learners match arrows and directions, they are interpreting instructions like a computer program.

Activity B: Find the Path in the Maze

Teacher Instructions

- ❖ Ask learners to observe the maze carefully.
- ❖ Explain that they need to help the moon reach the star.
- ❖ Tell learners to trace the correct path through the maze.
- ❖ Encourage them to follow the path step by step without crossing the maze walls.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Which direction should we move first?
- ❖ Do we move left, right, up, or down?
- ❖ Which path leads closer to the star?

Encourage learners to trace the path slowly with their finger before drawing.

Teacher Guidance

Help learners understand that:

- ❖ Mazes require careful planning and observation.
- ❖ Following directions step by step helps reach the correct destination.

Reinforce

Maze activities improve logical thinking, concentration, and directional understanding.

Coding Link

Computers solve path problems step by step. When learners trace the maze, they are finding the correct path using directions just like a computer.

Concept 2.6: Grid Maps

(LB Pages 36-38)

Teaching Intent

To help learners understand how grid maps are used to locate objects using a combination of letters and numbers.

This concept develops learners' spatial awareness, observation skills, and logical thinking, which are useful for map reading, navigation, and computational thinking.

Concept Explanation

A grid map is formed by rows and columns that create squares. Each square can be identified using a letter and a number.

- ❖ Columns are labelled with letters (A, B, C, D, E, F).
- ❖ Rows are labelled with numbers (1, 2, 3, 4).

To locate an object on the grid, we combine the column letter and row number.

Example:

- ❖ The bat is located at A1.
- ❖ The boy is located at A3.
- ❖ The fan is located at B4.
- ❖ The train is located at C3.
- ❖ The shoe is located at D2.
- ❖ The rabbit is located at E2.
- ❖ The chair is located at F1.

⇒ Activity: Locate Objects on the Grid

Teacher Instructions

- ❖ Ask learners to observe the grid map carefully.
- ❖ Explain how letters represent columns and numbers represent rows.
- ❖ Demonstrate how to identify the location of an object using the letter and number combination.
- ❖ Encourage learners to practise locating objects on the grid.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ In which column is the bat located?
- ❖ What number row is the fan in?
- ❖ What object is located at C3?

Encourage learners to trace the row and column with their finger to find the location.

Teacher Guidance

Help learners understand that:

- ❖ Grid maps help us locate objects precisely.
- ❖ Using letters and numbers together helps identify exact positions.

Reinforce

Grid maps are used in maps, games, and navigation systems to find locations easily.

■ Coding Link

Computers use coordinates to locate objects on a screen or map. When learners find positions using letters and numbers, they are working like a computer system.

⇒ Activity A: Locate the Animals on the Grid

Teacher Instructions

- ❖ Ask learners to observe the grid map carefully.
- ❖ Explain that the grid is divided into columns (A–F) and rows (1–4).
- ❖ Demonstrate how to find the location of an object using the column letter and row number.
- ❖ Ask learners to identify the correct location of each animal and write the grid reference.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ In which column is the giraffe located?
- ❖ Which row number is the tiger in?
- ❖ What animal can you see at B2?

Encourage learners to trace the column and row with their finger to locate the object.

Teacher Guidance

Help learners understand that:

- ❖ The letter represents the column and the number represents the row.
- ❖ Combining the letter and number gives the exact location of an object.

Reinforce

Grid references help us find locations quickly and accurately.

■ Coding Link

Computers identify exact locations using grid references. When learners write positions like A1 or B2, they are locating data just like a computer.

⇒ Activity B: Draw Objects at the Given Location

Teacher Instructions

- ❖ Ask learners to observe the grid carefully.
- ❖ Explain the labels for columns (A, B, C) and rows (1, 2, 3).
- ❖ Tell learners to read each instruction carefully.
- ❖ Ask them to draw the object in the correct square according to the given grid reference.

Examples:

- Mango at A1
- Fish at B1
- Star at C1

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Where is square A1 located?
- ❖ Which square represents B2?
- ❖ Where should we draw the sun?

Encourage learners to identify the square first and then draw the object.

Teacher Guidance

Help learners understand that:

- ❖ Grid coordinates help locate exact positions.
- ❖ Following instructions carefully helps complete the grid correctly.

Reinforce

Grid activities help develop map-reading skills, spatial awareness, and logical thinking.

Coding Link

Computers place objects at exact positions based on instructions. When learners draw objects in the correct grid squares, they are following instructions like a computer program.

Concept 2.7: Riddles

(LB Page 39)

Teaching Intent

To help learners develop logical thinking, comprehension skills, and problem-solving abilities by interpreting clues in riddles.

Riddles encourage learners to analyse descriptions carefully and connect them with familiar objects or ideas, improving reasoning and vocabulary skills.

⇒ Activity A: Solve the Riddles

Teacher Instructions

- ❖ Ask learners to work in small groups and read each riddle carefully.
- ❖ Explain that a riddle gives clues about an object, person, or idea.
- ❖ Tell learners to discuss the clues together and identify the correct answer.
- ❖ Ask learners to choose the correct word from the help box and write it in their own book.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What clues are given in the riddle?
- ❖ Which object or word matches those clues?
- ❖ Can you find the correct answer in the help box?
- ❖ Why do you think that answer is correct?

Encourage learners to read the riddles aloud and discuss their ideas as a group before answering.

Teacher Guidance

Help learners understand that:

- ❖ Riddles require careful thinking and understanding of clues.
- ❖ The correct answer should match all the clues given in the riddle.
- ❖ Discussing ideas with others can help learners solve problems more easily.

Reinforce

Solving riddles helps improve logical reasoning, vocabulary, and thinking skills.

Coding Link

Computers use clues to find correct answers. When learners solve riddles, they are analysing information and making logical decisions like a computer.

Coding Challenge - 2: Hidden Character

(LB Page 40)

Teaching Intent

To strengthen learners' observation, concentration, and visual discrimination skills by identifying a specific character hidden within a grid. This activity helps learners practise scanning patterns carefully and distinguishing between similar-looking symbols, which supports the development of logical analysis and attention to detail—important aspects of computational thinking.

Activity: Find the Hidden Characters

Teacher Instructions

- ❖ Ask learners to observe the grid carefully.
- ❖ Explain that the grid mostly contains the number 9, but some letter P characters are hidden inside it.
- ❖ Instruct learners to search the grid carefully and circle all the letter P characters they can find.

- ❖ Encourage learners to look at each row slowly to avoid missing any hidden character.
- ❖ After completing the activity, ask learners to count how many P characters they found.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Can you find a letter that looks different from the others?
- ❖ How is the letter P different from the number 9?
- ❖ How many P characters can you find?

Encourage learners to look carefully at each row before moving to the next.

Teacher Guidance

Encourage learners to:

- ❖ Scan the grid row by row or column by column.
- ❖ Focus carefully on each symbol before deciding if it is a 9 or P.
- ❖ Mark the hidden characters clearly by circling them.
- ❖ Recheck the grid after finishing to ensure no character was missed.

Reinforce

Computers process information by carefully identifying patterns and symbols. Similarly, learners must observe details carefully to locate hidden characters.

Coding Link

Computers scan data to find specific patterns or symbols. When learners search for hidden characters, they are carefully analysing details just like a computer system.

Review Exercise

1. What character were you asked to find in the grid?
2. Why is careful observation important in this activity?
3. What strategy helped you find the hidden characters more easily?
4. How is this activity similar to searching for information in a computer?

Differentiated Lessons

Remedial Activity

- ❖ Provide learners with a smaller grid containing fewer characters.
- ❖ Ask them to circle a specific letter hidden among other letters or numbers.

Challenging Activity

- ❖ Ask learners to create their own Hidden Character puzzle using a grid.
- ❖ They can hide one letter among many other letters or numbers and ask their classmates to find it.

Teacher Closure for Level 2

Summarise the key learning points:

Learners have learned to:

- ❖ Compare images and identify differences
- ❖ Solve visual puzzles
- ❖ Group objects based on common features
- ❖ Recognise rhyming words
- ❖ Understand directions and navigation
- ❖ Locate objects using grid maps
- ❖ Solve riddles using logical thinking
- ❖ Identify hidden characters through careful observation

These activities strengthen learners' critical thinking, observation, and analytical skills, which are essential foundations for computational thinking and coding.

Data processing activities help learners understand how information can be collected, organised, represented, and analysed. These skills are important for computational thinking because computers process data to solve problems and make decisions.

In this level, learners explore how information can be shown using pictures, symbols, tables, and simple codes. They practise counting items, interpreting pictorial data, organising information into tables, and solving problems using coded values.

Through these activities, learners begin to understand how data can be analysed to find answers, which is an important concept in coding, programming, and logical reasoning

Concept 3.1: Representing Data

(LB Pages 42-45)

Teaching Intent

To help learners understand how information or data can be represented using pictures, symbols, and tables.

This concept develops learners' ability to observe, organise, and interpret information visually, which is an important foundation for data handling and computational thinking.

Concept Explanation

Data is information that can be collected and organised to help us understand something better.

Data can be represented in different ways, such as:

1. Using Symbols or Pictures

Sometimes pictures or symbols are used to represent information. These are called pictorial symbols.

Examples include:

- Traffic signs
- Warning symbols
- Direction signs

These symbols help us understand information quickly and easily.

2. Using Tables

Data can also be arranged in a table, which is an organised arrangement of information in rows and columns.

Example:

Animals	Numbers
Lion	3
Tiger	4
Elephant	5

Another example:

Flowers	Numbers
Sunflower	3
Rose	5
Lily	2

Tables help us compare and read information clearly.

3. Using Maps

A map is a visual representation of an area on a flat surface.

Maps help us understand locations, places, and directions.

⇒ Activity: Understanding Data Representation

Teacher Instructions

- ❖ Ask learners to observe the pictures, symbols, and tables carefully.
- ❖ Explain that these are different ways of representing information.
- ❖ Show how the numbers correspond to the pictures in the table.
- ❖ Ask learners to read the information given in the tables.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What do the pictures of lions represent?
- ❖ How many roses are shown in the table?
- ❖ What information does a map show?

Encourage learners to describe what they see in the pictures and tables.

Teacher Guidance

Help learners understand that:

- ❖ Data can be represented using pictures, tables, or symbols.
- ❖ Visual representations help us understand information quickly.

Reinforce

Representing data visually makes it easier to organise, read, and interpret information.

Coding Link

This is what computers do with data. Computers represent information using symbols, pictures, and tables so that it is easy to understand. When learners read and observe data, they are interpreting information like a computer.

⇒ Activity A: Favourite Musical Instrument

Teacher Instructions

- ❖ Ask learners to observe the pictograph carefully.
- ❖ Explain that each symbol represents a specific number of votes.
- ❖ Point out that one sun symbol represents 2 votes.
- ❖ Ask learners to count the symbols in each column and calculate the total votes.
- ❖ Tell learners to answer the questions based on the pictograph.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ How many symbols are shown for Guitar?
- ❖ If one symbol represents 2 votes, how many votes does that make?
- ❖ Which instrument has the most votes?

Encourage learners to count the symbols carefully before multiplying.

Teacher Guidance

Help learners understand that:

- ❖ A pictograph uses symbols to represent numbers.
- ❖ The key tells how many items each symbol represents.

Reinforce

Pictographs help display information in an easy and visual way.

Coding Link

Computers use symbols to represent numbers in a simple way. When learners read a pictograph and count symbols, they are understanding how computers display and read data visually.

⇒ Activity B: Count and Record the Quantity

Teacher Instructions

- ❖ Ask learners to observe the items shown at the bottom of the page.
- ❖ Tell them to count each type of item carefully.
- ❖ Ask learners to write the total quantity of each item in the table provided.

Items include:

- ❖ Beach ball
- ❖ Sunglasses
- ❖ Ice cream
- ❖ Shorts

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ How many balls can you count?
- ❖ Which item appears the most times?
- ❖ Which item appears the least times?

Encourage learners to count each item one by one.

Teacher Guidance

Help learners understand that:

- ❖ Data collection involves counting items carefully.
- ❖ Tables help organise information clearly.

Reinforce

Tables help us record and compare information easily.

Coding Link

Computers collect and organise data into tables. When learners count items and record them, they are organising information just like a computer system.

Activity C: Candy Data Table

Teacher Instructions

- ❖ Ask learners to work in small groups and observe the candies shown next to each person's name carefully.
- ❖ Tell learners to count the candies for each person one by one.
- ❖ Ask learners to use the information given to complete the table individually in their own book.
- ❖ Encourage learners to add the candies carefully before writing the totals.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ How many candies does Fifi have?
- ❖ How many candies do Awo and Korkor have altogether?
- ❖ What is the total number of candies for Abiba and Fifi?
- ❖ How many candies do Fifi, Awo, and Abiba have together?

Encourage learners to count and add the candies step by step.

Teacher Guidance

Help learners understand that:

- ❖ Data interpretation often requires counting and adding information carefully.
- ❖ Tables help organise information and totals clearly.
- ❖ Checking calculations helps avoid mistakes.

Reinforce

Interpreting pictorial data helps learners analyse and understand information logically.

Coding Link

Computers analyse data by counting and combining values. When learners add and compare quantities in the table, they are processing information like a computer.

Concept 3.2: Processing Data

(LB Pages 46–47)

Teaching Intent

To help learners understand how coded information can be interpreted and processed to find answers.

These activities develop learners' logical reasoning, decoding skills, and basic mathematical thinking by interpreting symbols and performing simple calculations.

⇒ Activity A: Decode the Symbols and Find the Sum

Teacher Instructions

- ❖ Ask learners to observe the pictures and the numbers assigned to each picture.
- ❖ Explain that each picture represents a specific number (code).
- ❖ Tell learners to replace each picture with its corresponding number.
- ❖ Ask them to add the numbers to find the correct answer.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What number does this picture represent?
- ❖ What do we get when we add the numbers together?
- ❖ Can you replace the pictures with numbers and solve the sum?

Encourage learners to write the numbers first and then perform the addition.

Teacher Guidance

Help learners understand that:

- ❖ Pictures can represent coded numbers.
- ❖ Decoding the symbols helps solve the problem.

Reinforce

Coding and decoding activities help learners develop logical thinking and pattern recognition.

Coding Link

Computers use codes to represent numbers and information. When learners replace symbols with numbers and solve sums, they are decoding and processing data like a computer.

Activity B: Solve the Code Using Letters and Numbers

Teacher Instructions

- ❖ Ask learners to work in pairs and observe the letter codes provided at the top carefully.

Example:

- | | |
|---------|---------|
| • A = 1 | • D = 3 |
| • B = 4 | • E = 6 |
| • C = 5 | • F = 9 |

- ❖ Explain that each letter represents a number.
- ❖ Tell learners to replace the letters with the correct numbers.
- ❖ Ask learners to solve each expression and write the answers in their own book.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What number does A represent?
- ❖ What number does B represent?
- ❖ What do we get when we add C + D?
- ❖ What happens when we subtract B – D?

Encourage learners to write the numbers below each letter before solving the expressions.

Teacher Guidance

Help learners understand that:

- ❖ Letters and symbols can represent coded numbers.
- ❖ Replacing letters with numbers helps decode the information correctly.
- ❖ Careful calculation helps learners solve the expressions accurately.

Reinforce

Processing coded information strengthens logical reasoning, decoding skills, and mathematical understanding.

Coding Link

Computers convert coded data into meaningful results. When learners change letters into numbers and solve problems, they are processing coded information just like a computer program.

Coding Challenge – 3: Maze Route

(LB Page 48)

Teaching Intent

To help learners apply their understanding of numbers, logical reasoning, and data processing while solving a maze puzzle. In this activity, learners follow directional arrows and perform simple calculations to reach a target number. This strengthens problem-solving skills, logical thinking, and decision making, which are important elements of computational thinking.

⇒ Activity: Find the Correct Maze Route

Teacher Instructions

- ❖ Ask learners to look carefully at the maze shown in the activity.
- ❖ Explain that the maze begins with the number 0.
- ❖ Learners must follow the arrows and perform the calculations shown on each step.
- ❖ The goal is to reach a final total of 15.
- ❖ Inform learners that there are two possible routes that lead to the correct answer.
- ❖ Encourage learners to try different paths and check their calculations as they move through the maze.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What number do we start with?
- ❖ If we add 4 to 0, what do we get?
- ❖ Which arrow should we follow next to reach the correct total?

Encourage learners to calculate step by step while moving through the maze.

Teacher Guidance

Encourage learners to:

- ❖ Start from the number 0 as instructed.
- ❖ Follow only the direction of the arrows.
- ❖ Perform the calculation at each step carefully.
- ❖ Keep track of the running total while moving through the maze.
- ❖ Check different paths to discover the two possible correct routes.

Reinforce

Problem solving often requires testing different paths and checking results. In coding, algorithms may explore different steps to reach the correct solution.

Coding Link

Computers solve problems step by step by following instructions and checking results. When learners follow arrows and perform calculations in the maze, they are solving a problem like a computer algorithm.

Review Exercise

1. From which number does the maze start?
2. What number must you reach at the end of the maze?
3. Why is it important to follow the arrows carefully?
4. How many correct routes are possible in the maze?

Differentiated Lessons

Remedial Activity

- ❖ Provide a simpler maze with fewer steps and smaller numbers.
- ❖ Ask learners to practise adding numbers while following the path.

Challenging Activity

- ❖ Ask learners to create their own number maze puzzle.
- ❖ They can choose a starting number and design paths that lead to a target number.

Teacher Closure for Level 3

Summarise the key learning points:

Learners have learned to:

- ❖ Represent information using pictures and symbols
- ❖ Organise information in tables
- ❖ Interpret and analyse data
- ❖ Solve problems using coded values
- ❖ Perform calculations to process information
- ❖ Apply logical reasoning to solve puzzles

These activities help learners develop data analysis, reasoning, and logical thinking skills, which are important foundations for computational thinking and programming.

Algorithmic intelligence helps learners understand how problems can be solved by following clear and organised steps. In computational thinking, an algorithm is a sequence of instructions used to complete a task or solve a problem.

In this level, learners explore how everyday tasks can be broken into simple step-by-step actions, how programs follow instructions, how decisions are made using conditions, and how repeated actions form loops.

Through activities such as arranging steps in order, drawing figures using instructions, understanding simple programs, making decisions based on conditions, and recognising repeating actions, learners begin to understand the fundamental ideas behind coding and programming.

These activities help learners develop logical sequencing, decision-making skills, and an understanding of instructions, which are essential for learning programming concepts.

Concept 4.1: Step-by-Step

(LB Pages 50-51)

Teaching Intent

To help learners understand the concept of step-by-step thinking, where a task is completed by following a sequence of ordered steps.

This concept introduces learners to algorithmic thinking, which is the foundation of coding. It helps learners learn that complex tasks can be completed by breaking them into smaller, simple steps.

Concept Explanation

Step-by-step thinking means completing one action before moving to the next action.

Many everyday tasks follow a sequence of steps, such as:

- ❖ Drawing a picture
- ❖ Following a recipe
- ❖ Solving a puzzle

In this example, the picture of a cock (rooster) is drawn step by step. Each step adds a new part to the drawing until the complete picture is formed.

⇒ Activity: Drawing Step by Step

Teacher Instructions

- ❖ Ask learners to observe the sequence of pictures carefully.
- ❖ Explain that each picture shows one step in drawing the cock.
- ❖ Demonstrate how each step adds a new part to the drawing.
- ❖ Encourage learners to follow the steps in order.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What is drawn in Step 1?
- ❖ What new part is added in Step 2?
- ❖ How does the picture change in each step?

Encourage learners to observe how the drawing develops gradually.

Teacher Guidance

Help learners understand that:

- ❖ Tasks become easier when they are completed one step at a time.
- ❖ Following steps in the correct order helps achieve the desired result.

Reinforce

Step-by-step thinking is important for problem solving, drawing, instructions, and coding tasks.

■ Coding Link

This is what programmers do. Computers follow instructions step by step to complete a task. When learners observe and follow each drawing step, they are understanding sequencing like a computer program.

⇒ Activity A: Draw the Owl Step by Step

Teacher Instructions

- ❖ Ask learners to observe the sequence of owl drawings carefully.
- ❖ Explain that each picture shows a new step in completing the drawing.
- ❖ Encourage learners to trace the lines in the correct order from the first step to the last step.
- ❖ Tell learners to colour the completed owl as shown in the final picture.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What shape is drawn in the first step?
- ❖ What new part is added in the next step?
- ❖ When do the eyes and facial details appear?

Encourage learners to compare each step with the previous one.

Teacher Guidance

Help learners understand that:

- ❖ Each step adds a new part of the picture.
- ❖ Following the correct order helps complete the drawing easily.

Reinforce

Step-by-step drawing helps learners develop sequencing skills, concentration, and creativity, which are useful in problem solving and coding activities.

Coding Link

Computers complete tasks by following each step in order. When learners draw the owl step by step, they are following instructions just like a computer executes a program.

Concept 4.2: Algorithm

(LB Pages 52-55)

Teaching Intent

To help learners understand the concept of an algorithm, which is a step-by-step set of instructions used to solve a problem or complete a task.

This concept introduces learners to computational thinking, helping them realise that tasks can be solved by following a clear sequence of steps.

Concept Explanation

An algorithm is a step-by-step process used to solve a logical problem or complete a task.

Algorithms are used in many everyday activities, such as:

- ❖ Following a recipe
- ❖ Assembling a toy
- ❖ Giving directions to reach a place
- ❖ Solving a puzzle

In this example, an algorithm is used to draw a rectangle by following a sequence of steps.

Steps in the Algorithm

Step 1: Start from the starting point.

Step 2: Take three steps to the right.

Step 3: Take two steps down.

Step 4: Take three steps to the left.

Step 5: Take two steps up.

Following these steps forms a rectangle.

A rectangle has:

- ❖ 4 sides
- ❖ 4 corners
- ❖ Opposite sides are equal

⇒ Activity: Follow the Algorithm

Teacher Instructions

- ❖ Ask learners to observe the starting point and the path shown.
- ❖ Explain each step of the algorithm carefully.
- ❖ Demonstrate how following the instructions forms a rectangle.
- ❖ Encourage learners to trace the path step by step.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What is the first step in the algorithm?
- ❖ Which direction do we move after starting?
- ❖ How many steps do we move down?

Encourage learners to follow the directions with their finger.

Teacher Guidance

Help learners understand that:

- ❖ Algorithms are clear and ordered instructions.
- ❖ Following steps in the correct order helps solve a problem or complete a task.

Reinforce

Algorithms are the foundation of coding, where computers follow instructions step by step to perform tasks.

Coding Link

Computers use algorithms, which are step-by-step instructions to solve a problem. When learners follow directions to draw a shape, they are using an algorithm just like in coding.

⇒ Activity A: Complete the Algorithm

Teacher Instructions

- ❖ Ask learners to work with a partner and observe the pictures in each step carefully.
- ❖ Explain that each picture shows a stage in completing a drawing.
- ❖ Tell learners to read the instruction below each picture carefully.
- ❖ Ask learners to identify and fill in the missing words to complete the algorithm in their own book.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What shape is drawn in Step 1?
- ❖ What shape is added in front of the rectangle in Step 2?
- ❖ What shape is drawn behind the rectangle in Step 3?
- ❖ What object appears at the bottom in Step 5?

Encourage learners to compare the pictures carefully to identify the missing instructions.

Teacher Guidance

Help learners understand that:

- ❖ Algorithms give clear step-by-step instructions for completing a task.
- ❖ Each step must be followed in the correct order.
- ❖ Careful observation helps learners identify missing instructions correctly.

Reinforce

Following step-by-step instructions helps learners solve problems efficiently and logically.

⇒ Activity: Making a Banana–Apple Shake

Teacher Instructions

- ❖ Ask learners to observe the sequence of pictures.
- ❖ Explain that making a banana–apple shake involves a series of steps.
- ❖ Describe each step and how it leads to the final result.

Steps include:

1. Wash the bananas and apples.
2. Cut them into slices.

3. Put the pieces in a jar and add honey.
4. Add milk.
5. Blend the ingredients to make the shake.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What should we do first before making the shake?
- ❖ When do we add milk?
- ❖ What happens in the final step?

Encourage learners to describe the steps in order.

Teacher Guidance

Help learners understand that:

- ❖ Many daily tasks follow clear sequences of steps.
- ❖ Following the steps correctly leads to the desired result.

Reinforce

Algorithms help organise tasks systematically.

Coding Link

Computers follow instructions in the correct order to get the right result. When learners arrange and understand steps of making a shake, they are learning sequencing like in coding.

⇒ Activity B: Arrange the Steps to Make a Sandwich

Teacher Instructions

- ❖ Ask learners to read the instructions given on the page.
- ❖ Explain that the steps are not arranged in the correct order.
- ❖ Tell learners to arrange the steps logically to make a sandwich.
- ❖ Ask them to write the correct step numbers.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What is the first step when making a sandwich?
- ❖ When should we add the vegetables?
- ❖ What is the final step?

Encourage learners to think about the real-life process of making a sandwich.

Teacher Guidance

Help learners understand that:

- ❖ Correct sequencing is important for completing a task successfully.
- ❖ Each step depends on the previous step.

Reinforce

Sequencing activities help learners develop logical thinking and algorithmic understanding, which are key concepts in coding.

Coding Link

Computers cannot skip or change steps randomly. When learners arrange steps in the correct order, they are building an algorithm just like a computer program.

Concept 4.3: Understanding Programs

(LB Pages 56-57)

Teaching Intent

To help learners understand that a program is a set of instructions given to a computer to perform a specific task.

This concept introduces learners to the idea that computers follow clear and ordered instructions, similar to algorithms used in everyday activities.

Concept Explanation

A program is a series of instructions that tells a computer what to do and how to do it.

Programs are created by writing instructions in a particular order. The computer follows these instructions step by step to complete a task.

In the example shown, a program is used to draw a rectangle by following these instructions:

1. Move three steps right.
2. Move two steps down.
3. Move three steps left.
4. Move two steps up.

Following these steps forms a rectangle.

Program for Drawing a Square

A similar set of instructions can be written to draw a square:

1. Move two steps right.
2. Move two steps down.
3. Move two steps left.
4. Move two steps up.

Because all sides of a square are equal, each movement uses the same number of steps.

⇒ Activity: Follow the Program

Teacher Instructions

- ❖ Ask learners to observe the starting point and the path shown in the diagram.
- ❖ Explain the instructions step by step.
- ❖ Demonstrate how following the instructions forms the rectangle and square shapes.
- ❖ Encourage learners to trace the path using their finger.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What is the first instruction in the program?
- ❖ Which direction do we move after moving right?
- ❖ Why are all steps equal in the square?

Encourage learners to visualise the movement as they follow the instructions.

Teacher Guidance

Help learners understand that:

- ❖ Programs contain clear instructions arranged in order.
- ❖ Computers follow these instructions exactly as written.

Reinforce

Programs are important in coding because they help computers perform tasks step by step.

■ Coding Link

A program is a set of instructions that a computer follows. When learners trace steps to draw shapes, they are understanding how a program works.

⇒ Activity A: Write a Program to Draw the Figure

Teacher Instructions

- ❖ Ask learners to observe the figure carefully.
- ❖ Point out the starting point shown in the diagram.
- ❖ Explain that the figure can be drawn by moving step by step in different directions.
- ❖ Ask learners to identify the direction and number of steps needed to draw each line.
- ❖ Tell learners to write the instructions in sequence to form a program.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Where do we start drawing the figure?

- ❖ Which direction should we move first?
- ❖ How many steps do we move before changing direction?

Encourage learners to trace the path with their finger before writing the instructions.

Teacher Guidance

Help learners understand that:

- ❖ A program consists of clear instructions arranged in order.
- ❖ Each movement must follow the correct direction and number of steps.

Reinforce

Writing programs helps learners practise logical thinking, sequencing, and problem solving, which are key skills in coding.

Coding Link

Programmers write instructions to tell computers what to do. When learners write steps to draw a figure, they are creating a simple program like in coding.

Concept 4.4: Decision Making

(LB Pages 58-60)

Teaching Intent

To help learners understand how decisions are made by choosing between different options based on given conditions.

This concept introduces learners to the If–Else condition, which is an important idea in computational thinking and programming.

Concept Explanation

Decision making is the process of choosing an action based on certain conditions or information.

In programming and everyday life, decisions are often made using If–Else statements.

Example

Kojo has a play schedule:

- ❖ If it is an even-numbered day,
Then he will play football.
- ❖ Else (if the condition is not true),
he will play tennis.

This means:

- ❖ If the condition is true (Yes) → choose the first action.
- ❖ If the condition is false (No) → choose the second action.

⇒ Activity: Understanding the Decision

Teacher Instructions

- ❖ Ask learners to observe the example carefully.
- ❖ Explain the condition (even-numbered day) in the example.
- ❖ Show how the action changes depending on whether the condition is true or false.
- ❖ Encourage learners to discuss similar decisions in daily life.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What happens if the day number is even?
- ❖ What will Kojo do if the day number is not even?
- ❖ Can you think of another situation where we make a choice?

Encourage learners to think about everyday examples of making decisions.

Teacher Guidance

Help learners understand that:

- ❖ Decisions are made by checking conditions.
- ❖ If the condition is true, one action is taken; if false, another action is taken.

Reinforce

Decision-making is important in coding because programs often need to choose between different actions based on conditions.

■ Coding Link

Computers make decisions based on conditions. When learners understand ‘if–else’ situations, they are learning how computers choose actions.

⇒ Activity A: Follow the Condition

Teacher Instructions

- ❖ Ask learners to observe the picture carefully.
- ❖ Read the condition aloud to the learners:
If the girl is wearing a blue T-shirt
Then colour the circle blue
Else colour the diamond red
- ❖ Ask learners to check the colour of the girl’s T-shirt.
- ❖ Tell them to follow the correct instruction based on the condition.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ What colour T-shirt is the girl wearing?
- ❖ Does the condition say blue T-shirt?
- ❖ Which instruction should we follow?

Encourage learners to think before choosing the correct action.

Teacher Guidance

Help learners understand that:

- ❖ A decision depends on whether the condition is true or false.
- ❖ If the condition is true, follow the first instruction; otherwise follow the else instruction.

Reinforce

Conditional thinking is important in coding because programs must often choose between two actions.

Coding Link

Computers check conditions and then follow instructions. When learners choose actions based on a condition, they are using logic like a computer program.

⇒ Activity B: Choose the Correct Outcome

Teacher Instructions

- ❖ Ask learners to work with a partner and read the condition carefully.
- ❖ Example:
If Abena gets good marks → She will get a new dress
Else → She will get nothing
- ❖ Explain that Abena scored good marks.
- ❖ Ask learners to think carefully about the condition given.
- ❖ Tell learners to tick (✓) the correct outcome in their own book.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Did Abena get good marks?
- ❖ What happens when the condition is true?

Which option matches the condition given?

Encourage learners to discuss the result with their partner before answering.

Teacher Guidance

Help learners understand that:

- ❖ When the condition is true, the Then action happens.
- ❖ The Else action happens only when the condition is false.
- ❖ Conditions help us make decisions logically.

Reinforce

Decision-making helps learners analyse situations logically.

Coding Link

Computers decide outcomes depending on whether a condition is true or false. When learners select the correct result, they are applying decision-making like coding.

⇒ Activity C: Understand the Condition

Teacher Instructions

- ❖ Ask learners to work with a partner and read the condition carefully.
- ❖ Example:
If it is Sunday → Kwame will go on a picnic
Else → He will stay indoors
- ❖ Ask learners to observe the calendar carefully.
- ❖ Guide learners to identify the day shown on the calendar.
- ❖ Ask learners to decide what Kwame will do based on the condition.

Teacher-Learner Interaction

Ask guiding questions such as:

- ❖ What day is shown on the calendar?
- ❖ Is the day Sunday?
- ❖ What will Kwame do according to the condition?

Encourage learners to check the condition carefully before answering.

Teacher Guidance

Help learners understand that:

- ❖ Conditions must be checked before making a decision.
- ❖ The action depends on whether the condition is true or false.
- ❖ Careful observation helps learners choose the correct outcome.

Reinforce

Decision-making skills help learners develop logical reasoning and computational thinking used in coding.

Coding Link

Computers always check conditions before taking action. When learners analyse the situation and decide the outcome, they are thinking like a computer.

Concept 4.5: Loop Programs

(LB Pages 61-62)

Teaching Intent

To help learners understand the concept of a loop, where an action or instruction repeats again and again.

This concept introduces learners to an important idea in coding called repetition, which helps perform tasks efficiently without repeating the same instructions many times.

Concept Explanation

A loop occurs when an action or instruction repeats itself continuously.

Many activities in daily life involve repetition. Examples include:

- ❖ The movement of a clock
- ❖ The rotation of a fan
- ❖ Repeated steps in a game or dance

In the illustration, the clocks are arranged in a circular path, showing that the movement continues repeatedly. This circular movement represents a loop.

Activity: Understanding Loops

Teacher Instructions

- ❖ Ask learners to observe the illustration of the clocks carefully.
- ❖ Explain that the arrows show movement repeating in a circular pattern.
- ❖ Demonstrate how the movement continues again after reaching the last clock.
- ❖ Explain that this repeated action forms a loop.

Teacher-Learner Interaction

Ask guiding questions such as:

- ❖ What do you notice about the arrangement of the clocks?
- ❖ Do the arrows show movement repeating?
- ❖ Can you think of other things that repeat again and again?

Encourage learners to identify examples of repetition in everyday life.

Teacher Guidance

Help learners understand that:

- ❖ A loop means repeating an action several times.
- ❖ Loops help perform tasks more efficiently.

Reinforce

Loops are an important concept in coding because they allow computers to repeat instructions automatically.

Coding Link

This is how computers repeat actions again and again. This repetition is called a loop. When learners observe repeating actions, they are understanding loops in coding.

Activity A: Identify the Loop

Teacher Instructions

- ❖ Ask learners to read each statement carefully.
- ❖ Explain that a loop occurs when an action repeats continuously.
- ❖ Tell learners to identify whether the action described repeats regularly.
- ❖ If the action represents a loop, ask them to colour the flower pink.
- ❖ If it does not represent a loop, ask them to colour the flower yellow.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Does this action happen again and again?
- ❖ Is the event repeated regularly?
- ❖ Can you think of similar actions that repeat?

Encourage learners to connect the examples with everyday experiences.

Teacher Guidance

Help learners understand that:

- ❖ A loop represents continuous repetition of an action.
- ❖ Not all actions repeat regularly.

Examples of loops include:

- ❖ Day and night cycle
- ❖ Different seasons in a year
- ❖ Revolution of Earth around the Sun

Reinforce

Recognising loops helps learners understand how computers repeat instructions efficiently in programming.

Coding Link

Computers use loops to repeat tasks automatically. When learners identify which actions repeat, they are recognising loops just like in a computer program.

Teaching Intent

To help learners understand that a program is a sequence of instructions used to complete a task. In this activity, learners follow step-by-step directions to colour a mat correctly. The task reinforces algorithmic thinking, sequencing, and careful execution of instructions—key ideas in coding and programming.

⇒ Activity: Colour the Mat by Following the Program

Teacher Instructions

- ❖ Ask learners to observe the grid mat carefully.
- ❖ Explain that the colouring must be done by following the steps of the program in order.
- ❖ Read each step aloud and explain what it means.
- ❖ Tell learners to colour the blocks according to the given directions such as above, below, left, and right.

Steps include:

1. Colour blue above yellow.
2. Colour red below yellow.
3. Colour orange to the right of red.
4. Colour pink above orange.
5. Colour black above pink.
6. Colour purple to the left of blue.
7. Colour brown below purple.
8. Colour green to the left of red.

Teacher–Learner Interaction

Ask guiding questions such as:

- ❖ Where is the yellow block located?
- ❖ What colour should be placed above yellow?
- ❖ Which block should be coloured to the right of red?

Encourage learners to follow each instruction one by one.

Teacher Guidance

Encourage learners to:

- ❖ Read the instructions one step at a time.
- ❖ Follow the sequence exactly as given.
- ❖ Colour only the parts mentioned in each instruction.
- ❖ Check whether their colouring matches the instructions.

Reinforce

Computers perform tasks by following a program, which is a set of instructions written in the correct order. If the order changes, the result may also change.

Coding Link

Computers follow a program step by step to complete tasks correctly. When learners follow instructions to colour the mat, they are executing a program just like a computer.

Review Exercise

1. What is a program?
2. Why must instructions be followed in the correct order?
3. What might happen if we skip a step in a program?
4. How does following instructions help us complete the colouring task?

Differentiated Lessons

Remedial Activity

- ❖ Provide learners with a simple picture and a few colouring instructions.
- ❖ Ask them to follow the instructions step by step.

Challenging Activity

- ❖ Ask learners to create their own step-by-step colouring instructions for a picture.
- ❖ Exchange instructions with a classmate and try to follow each other's program.

Teacher Closure for Level 4

Summarise the key learning points:

Learners have learned to:

- ❖ Follow instructions step by step
- ❖ Understand algorithms as sequences of steps
- ❖ Recognise that programs are sets of instructions
- ❖ Make decisions using conditions
- ❖ Identify repeating actions known as loops

These activities help learners develop algorithmic thinking, logical reasoning, and problem-solving skills, which are essential foundations for learning programming and coding.

Answer Key

1.1

Play with Numbers

A. Count and tick (✓) the correct answer.



5

4 ✓

3



2 ✓

3

1



7

6

5 ✓



8 ✓

7

9



4

2 ✓

1



7

8

9 ✓



5 ✓

6

4



2

4

3 ✓

- B.** Let's look for apples in this fruit mart.
Circle all the apples you see. Count them and write the number.

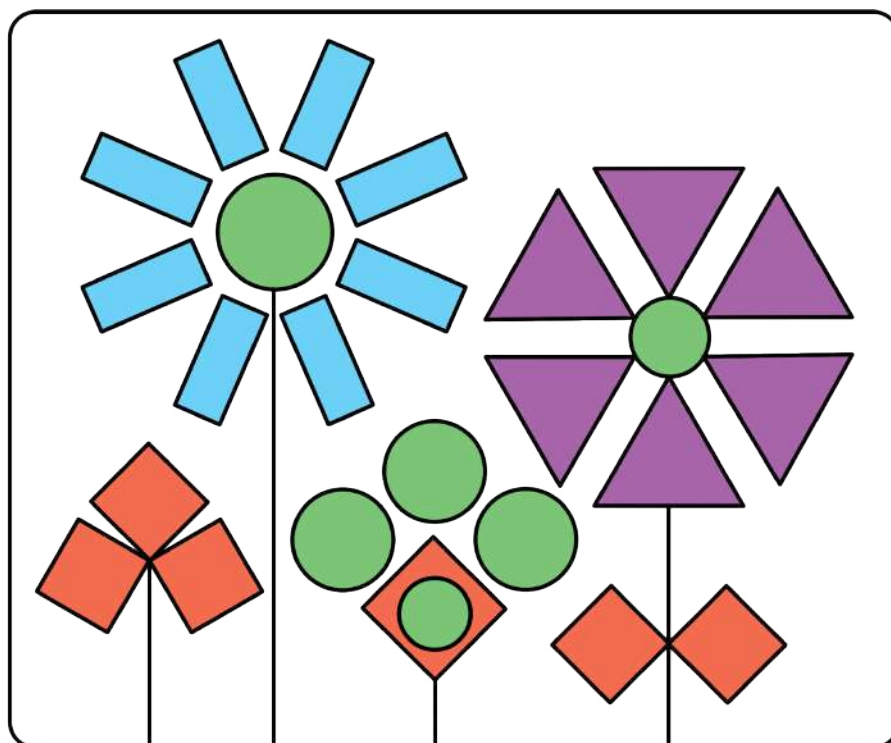


Total number of
apples are:

13

Shapes

- A.** In groups of four, choose one shape each—square, triangle, circle, or rectangle. Work together to count your shapes and colour the correct number of boxes in your own book.

[illegible]

B. Read the sentences and write the correct shape.

1. Book is in the shape of a

rectangle



2. Clock is in the shape of a

circle



3. Lemon is in the shape of a

circle



4. Radio is in the shape of a

rectangle



5. Pizza slice is in the shape of a

triangle



6. Window is in the shape of a

square



7. Umbrella is in the shape of a

triangle



8. Ball is in the shape of a

circle



9. Envelope is in the shape of a

rectangle



10. Chessboard is in the shape of a

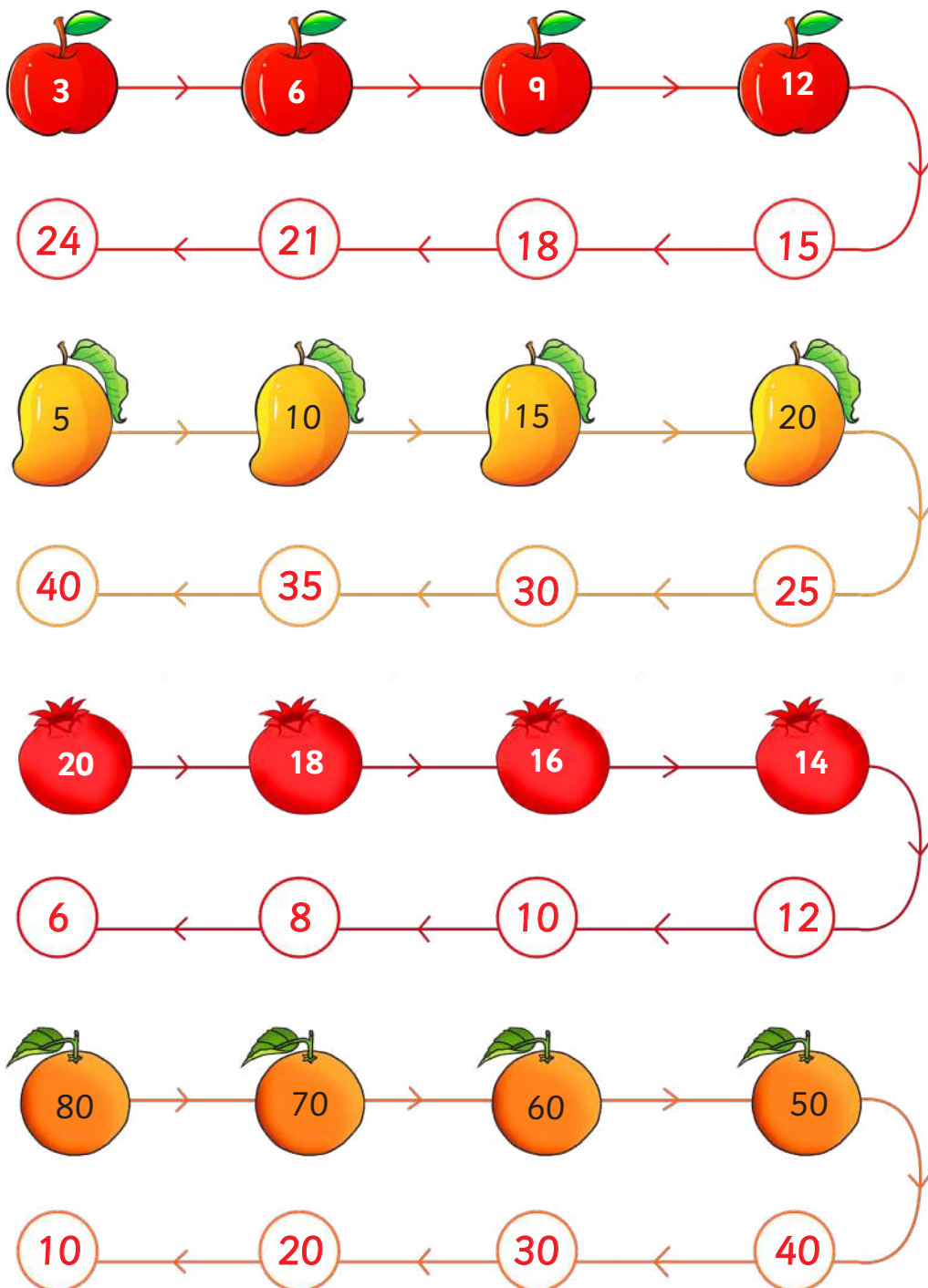
square



1.3

Number Pattern

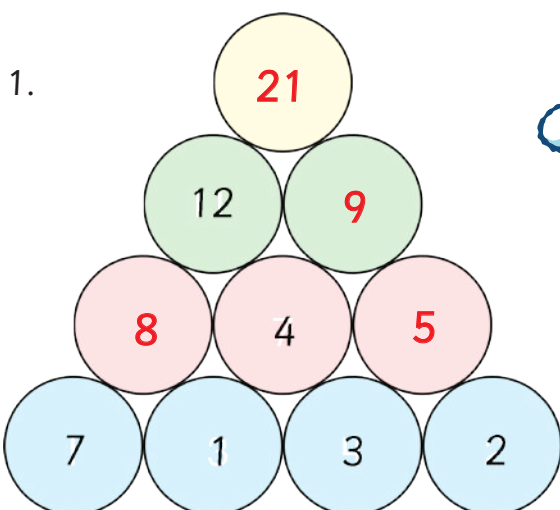
A. Complete the number patterns.



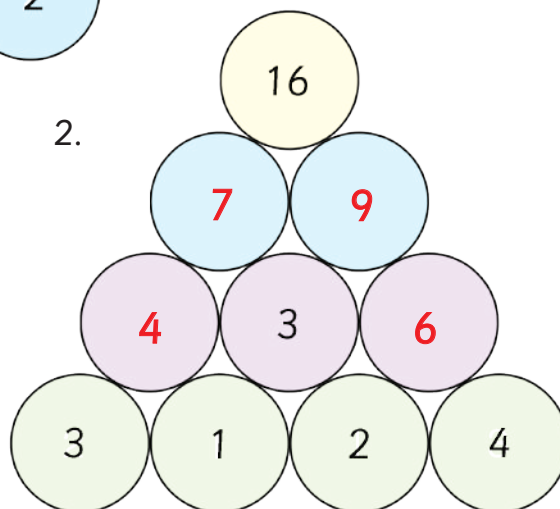
1.4

Number Pyramid

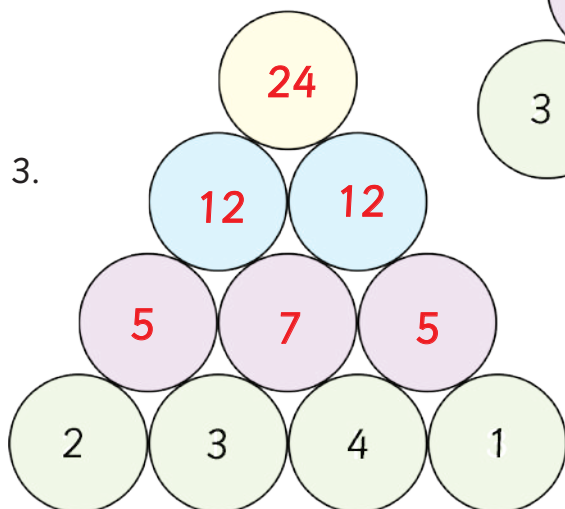
- A.** Work in pairs and complete the number pyramids by filling in the missing numbers.



2.



3.



1.5

Number Grid

A. Solve the given number grid.

	Smallest 2-digit number	
Greatest 1-digit number	Zero in numeral	Smallest 1-digit number
	Greatest 2-digit number	

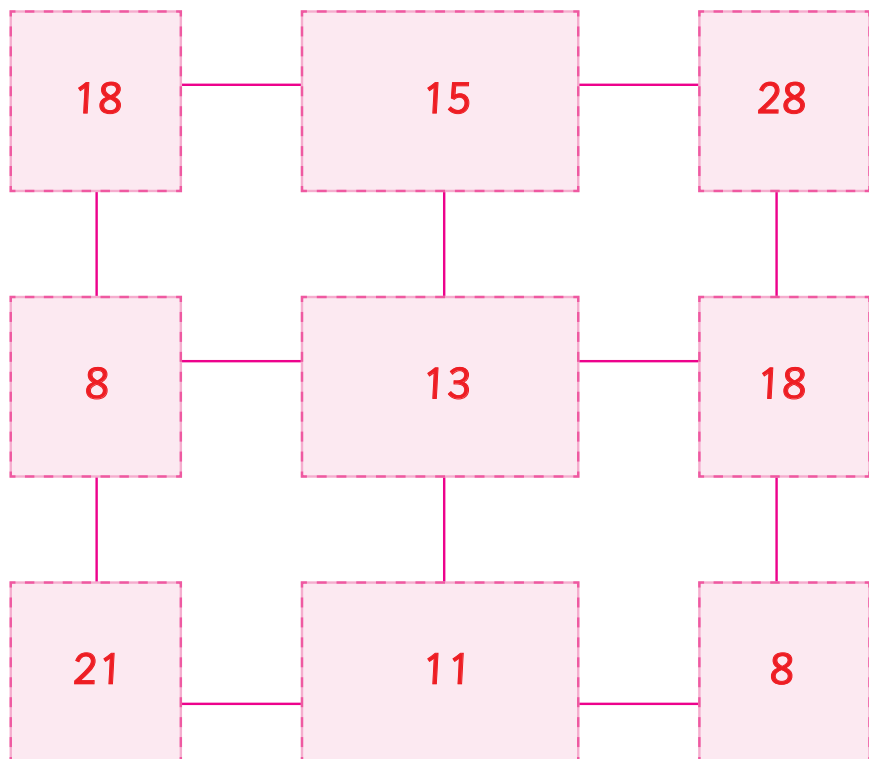
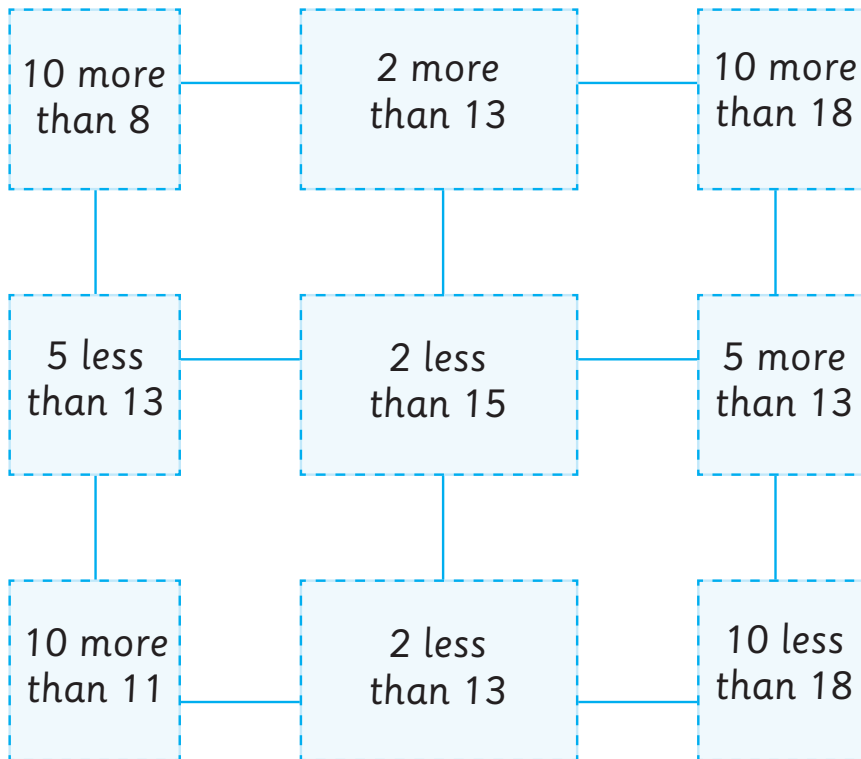
	10	
9	0	1
	99	

B. Solve the given number grid.

	What comes just before 20 ?	
What comes 3 places before 20 ?	20	What comes 3 places after 20 ?
	What comes just after 20 ?	

	19	
17	20	23
	21	

C. Read the instructions and solve the grid.



1.6

Built - A - Word

A. Match two words to form a new word. One is done for you.

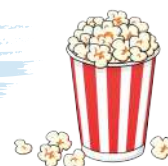
Sun

book



Note

corn



Pop

flower



Nap

bow



Rain

fly



Butter

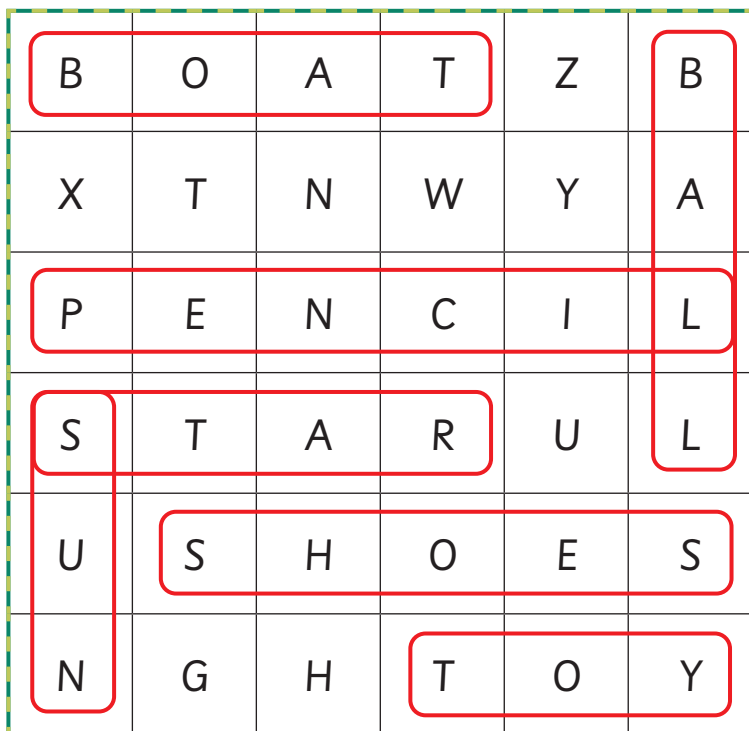
kin



1.7

Word Search

A. Find and circle the hidden words in the word search.



Ball



Boat



Toy



Shoes



Pencil

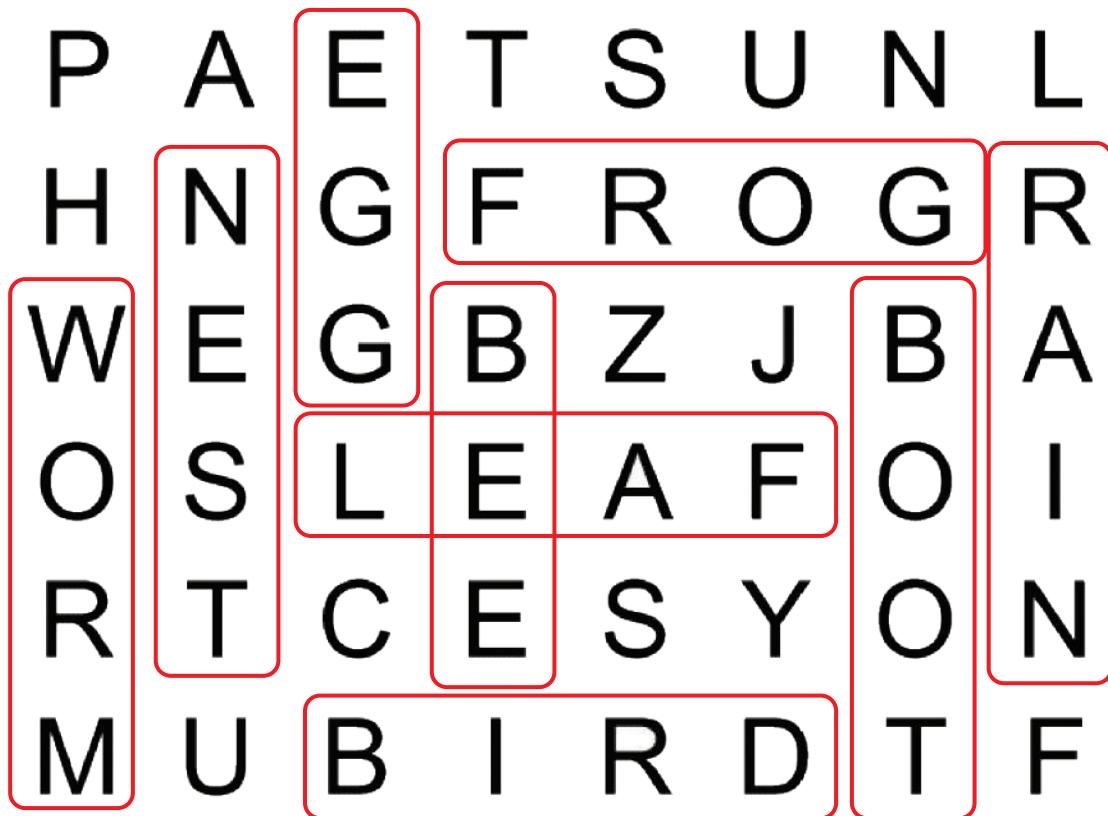


Star



Sun

B. Find the hidden words in the word search.



Bee



Bird



Boot



Egg



Frog



Leaf



Nest



Rain



Sun



Worm

Coding Challenge-1

I-Spy!

Find the objects and write their numbers in the blanks given below.



2.1

Spot the Difference

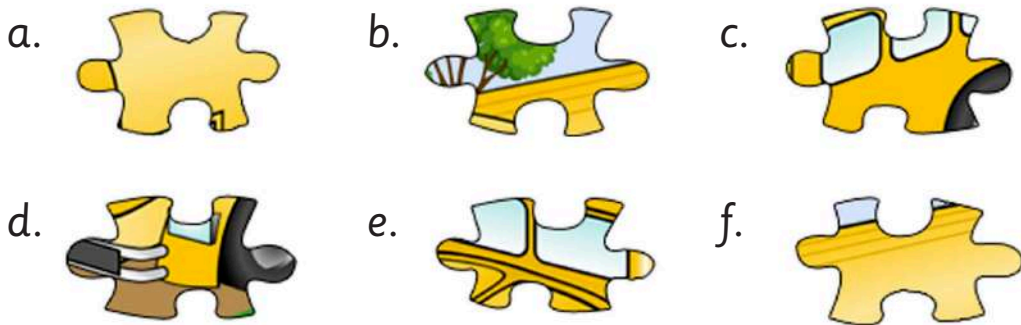
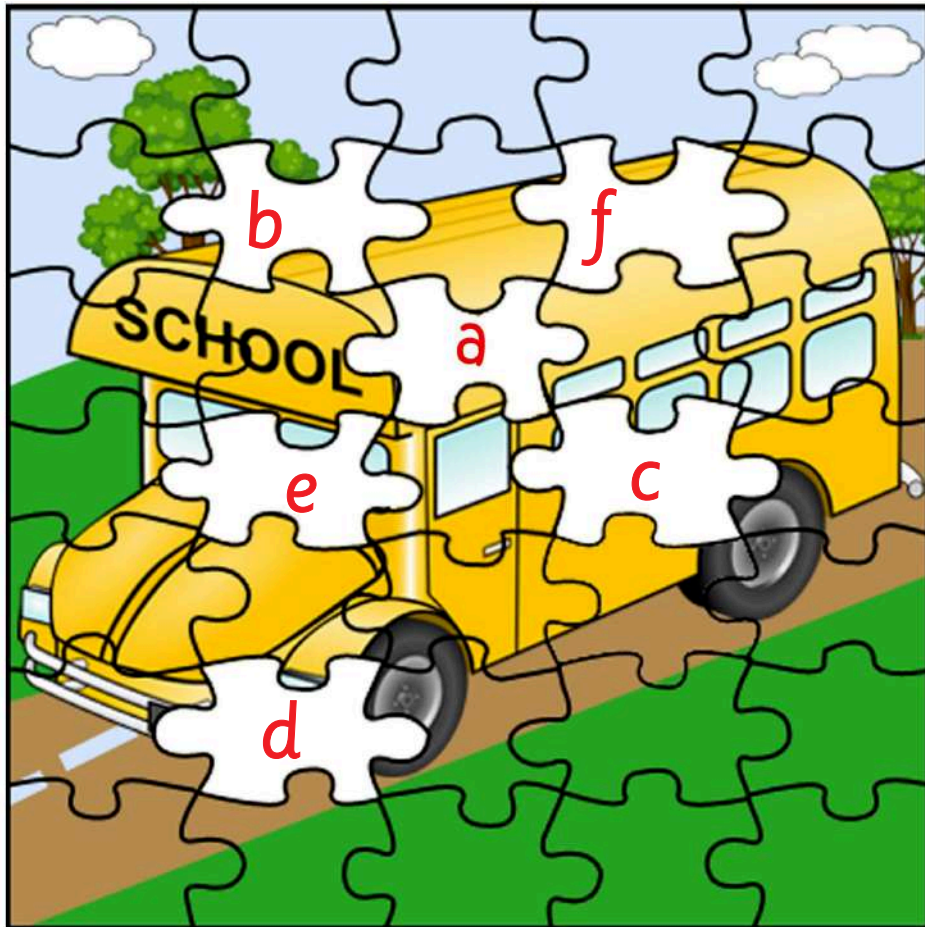
- A.** Work in pairs and carefully compare the pictures. Discuss your observations and circle the differences you find in your book.



2.2

Puzzled Pictures

- A.** Fit the missing pieces of the puzzle. One has been done for you.



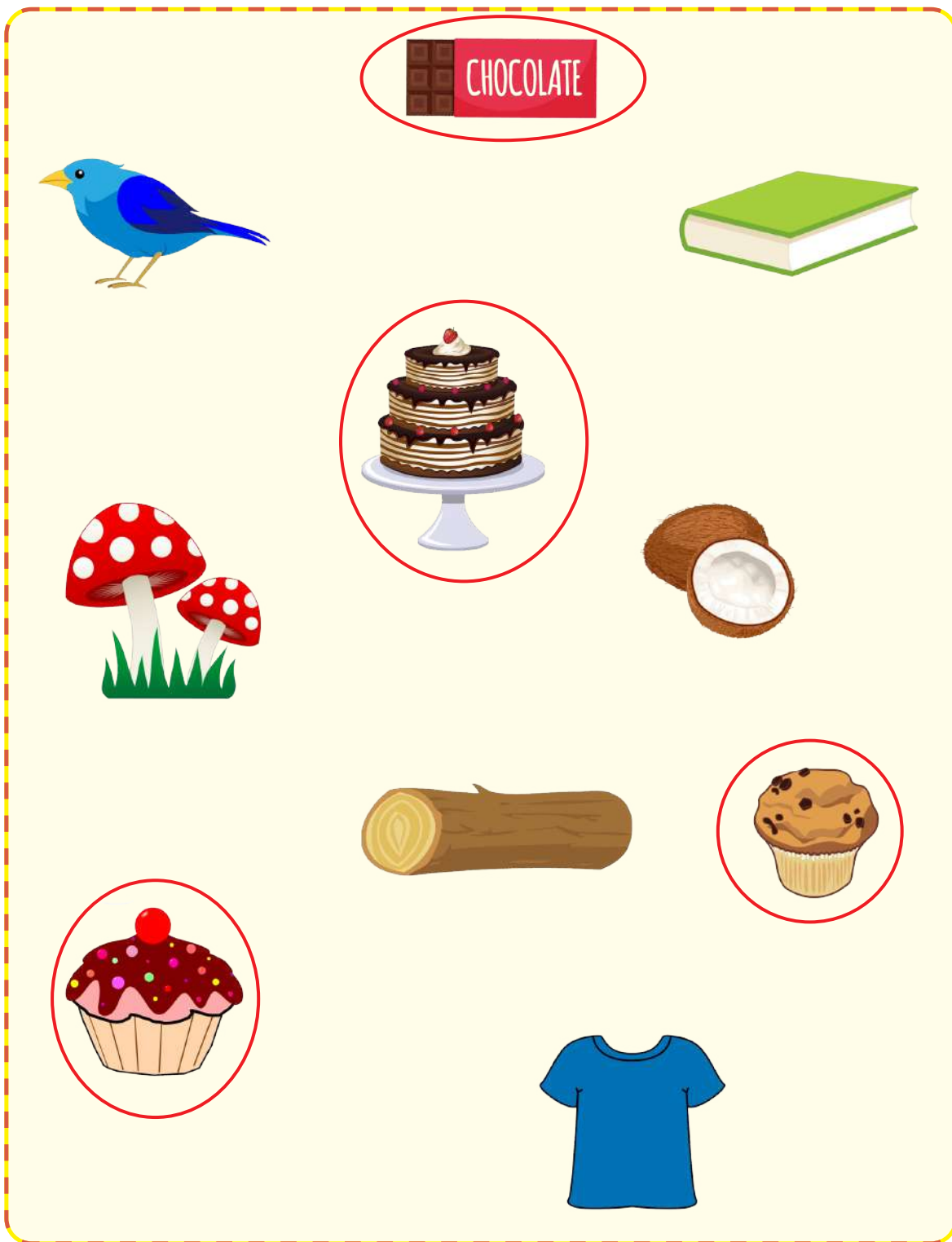
2.3

Similar Images

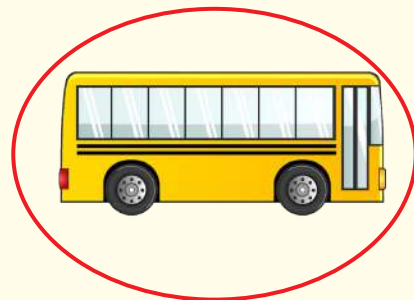
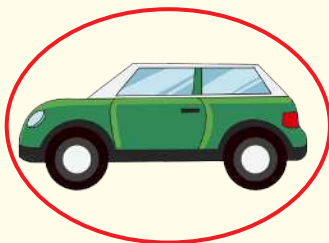
A. Circle the images which are hot.



B. Circle the brown things that you can eat.



C. Circle the images which have wheels.



2.4

Rhyme Time

- A.** Colour the first picture in each row. Then colour the pictures in that row which rhymes with the first one.

Ans.



B. Use the word wall to find the rhyming words.

Log	Book	Pup
Day	Bright	Past

1.

Hay and

Day

2.

Look and

Book

3.

Cup and

Pup

4.

Dog and

Log

5.

Last and

Past

6.

Night and

Bright

2.5

Directions

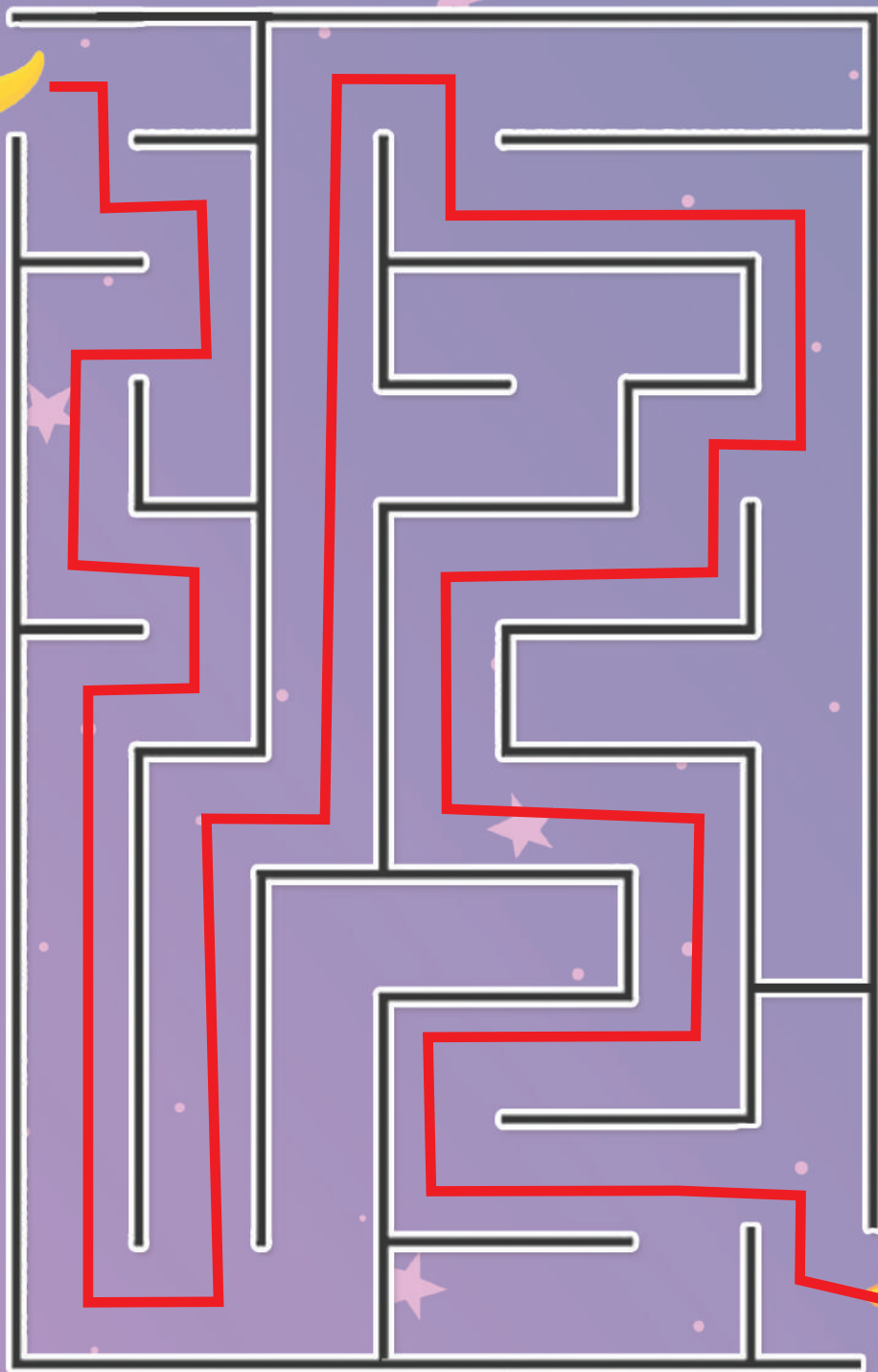
- A.** Match the pictures showing the same direction and also write the name of the direction.

South

East

North

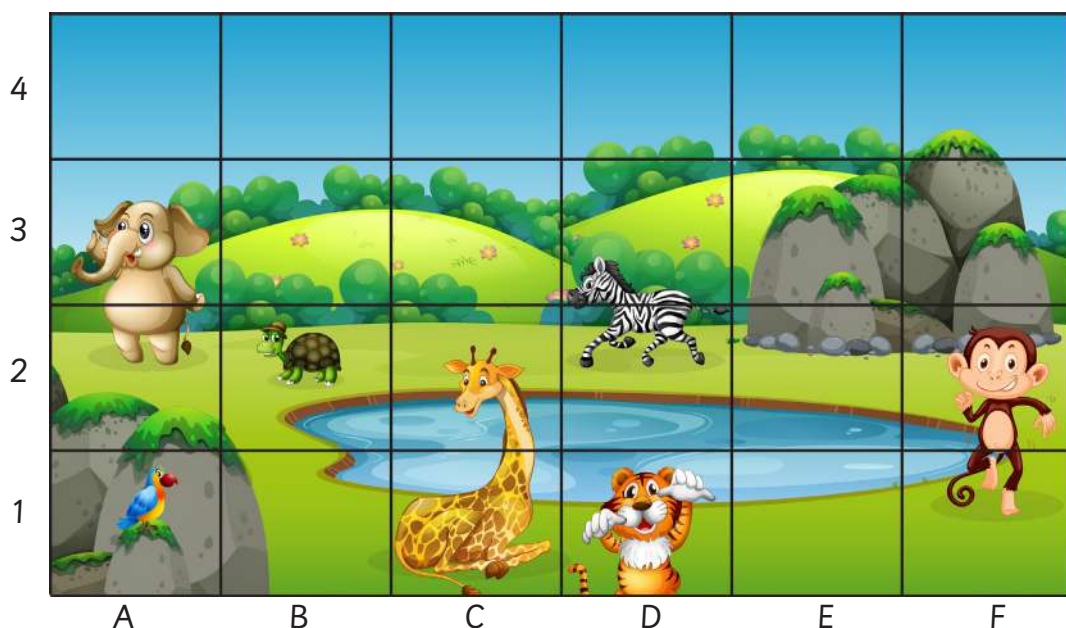
West



2.6

Grid Maps

- A.** Look at the picture given below and write the correct answer. One is done for you.



- The giraffe is located at
- The tiger is located at
- The elephant is located at
- The turtle is located at
- The zebra is located at
- The parrot is located at

C1, C2

D1

A2, A3

B2

D2, D3

A1

B. Draw the following objects at the given place.



Mango



Fish



Star



Doll



Leaf



Hut



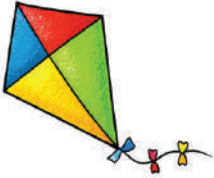
Kite



Apple



Sun

3			
2			
1			
	A	B	C

2.7

Riddles

A. Work in small groups to read the riddles together. Discuss the hints and work as a team to solve each riddle. Write the answers in your own book.

1. What has hands but can't hold anything? Clock
2. Kofi's mother has three children: Fifi, Esi, and Kofi
3. The English alphabet goes from A to Z but my name goes from Z to A. What am I? Zebra
4. What has a thumb and four fingers, but is not a hand? Glove
5. What gets wetter and wetter the more it dries? Towel
6. I am taller when I am young and shorter when I am old. What am I? Candle
7. I have a tail and a head, but no body. What am I? Coin
8. In which month people sleep the least? February

Clock

Kofi

Zebra

Towel

Candle

February

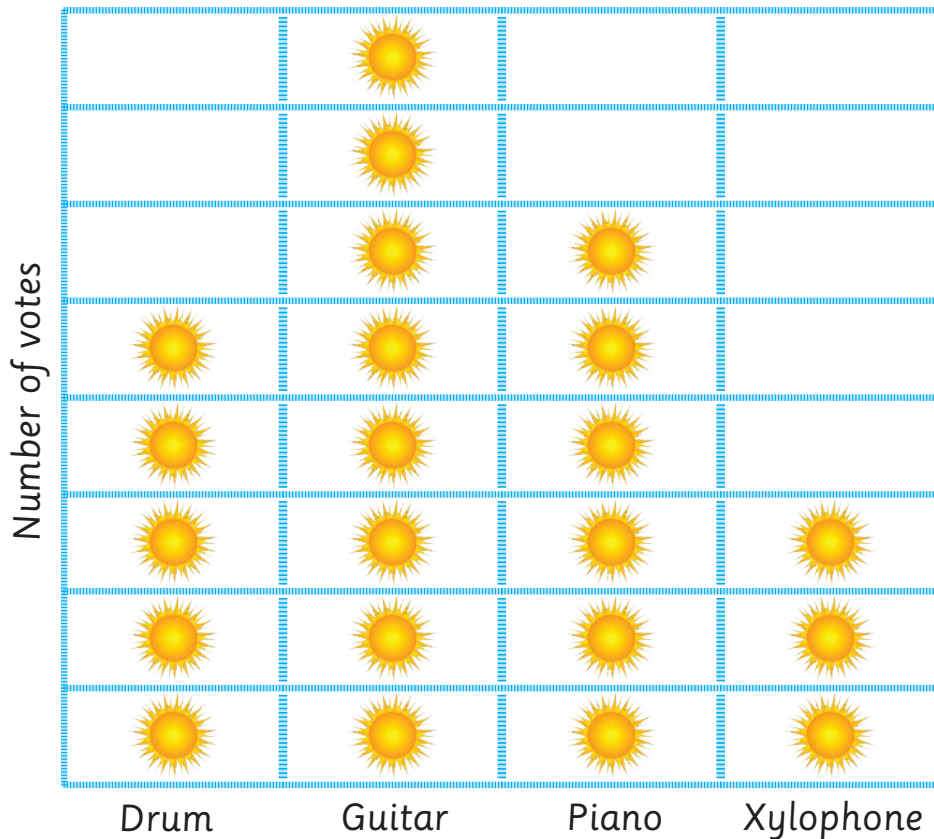
Glove

Coin

3.1

Representing Data

A. Children voted for their favourite musical instrument.



1. Total number of votes guitar gets.

Ans. 16

2. Who got the most votes?

Ans. Guitar

3. Who got the least votes?

Ans. Xylophone

4. How many votes did the tabla and flute have together?

Ans. 0



= 2 vote

B. Count the items and write their quantity in the table given below:

ITEMS	QUANTITY
	5
	4
	8
	5



- C. Four friends bought some candies from the grocery store.

Abiba	     
Fifi	   
Awo	       
Korkor	  

In small groups, study the data given above carefully and, complete the following table individually.

Persons	Total number of candies
Fifi	4
Awo and Korkor	11
Abiba and Fifi	10
Fifi, Awo and Abiba	18

3.2

Processing Data

A. Look at the codes given below and find the sum.



$$\text{Pink snail} + \text{Purple butterfly} + \text{Green grasshopper} = 9$$

$$\text{Pink butterfly} + \text{Blue bee} + \text{Pink butterfly} = 12$$

$$\text{Brown beetle} + \text{Green grasshopper} + \text{Yellow ladybug} = 17$$

$$\text{Purple butterfly} + \text{Blue bee} + \text{Blue bee} = 11$$

$$\text{Pink butterfly} + \text{Yellow ladybug} + \text{Brown beetle} = 18$$

$$\text{Green grasshopper} + \text{Pink snail} + \text{Pink butterfly} = 12$$

B. Work in pairs. Study the codes carefully with your partner and answer the questions in your book.

$$A = 1$$

$$B = 4$$

$$C = 5$$

$$D = 3$$

$$E = 6$$

$$F = 9$$

$$C + D$$

$$=$$
$$8$$

$$B - D$$

$$=$$
$$1$$

$$F - A$$

$$=$$
$$8$$

$$E - C$$

$$=$$
$$1$$

$$A + B + D$$

$$=$$
$$8$$

$$C + E + A$$

$$=$$
$$12$$

$$F + E + C$$

$$=$$
$$20$$

$$F + B + D$$

$$=$$
$$16$$

$$A + C + D + E$$

$$=$$
$$15$$

$$B + C + E + A$$

$$=$$
$$16$$

$$F + E + D + C$$

$$=$$
$$23$$

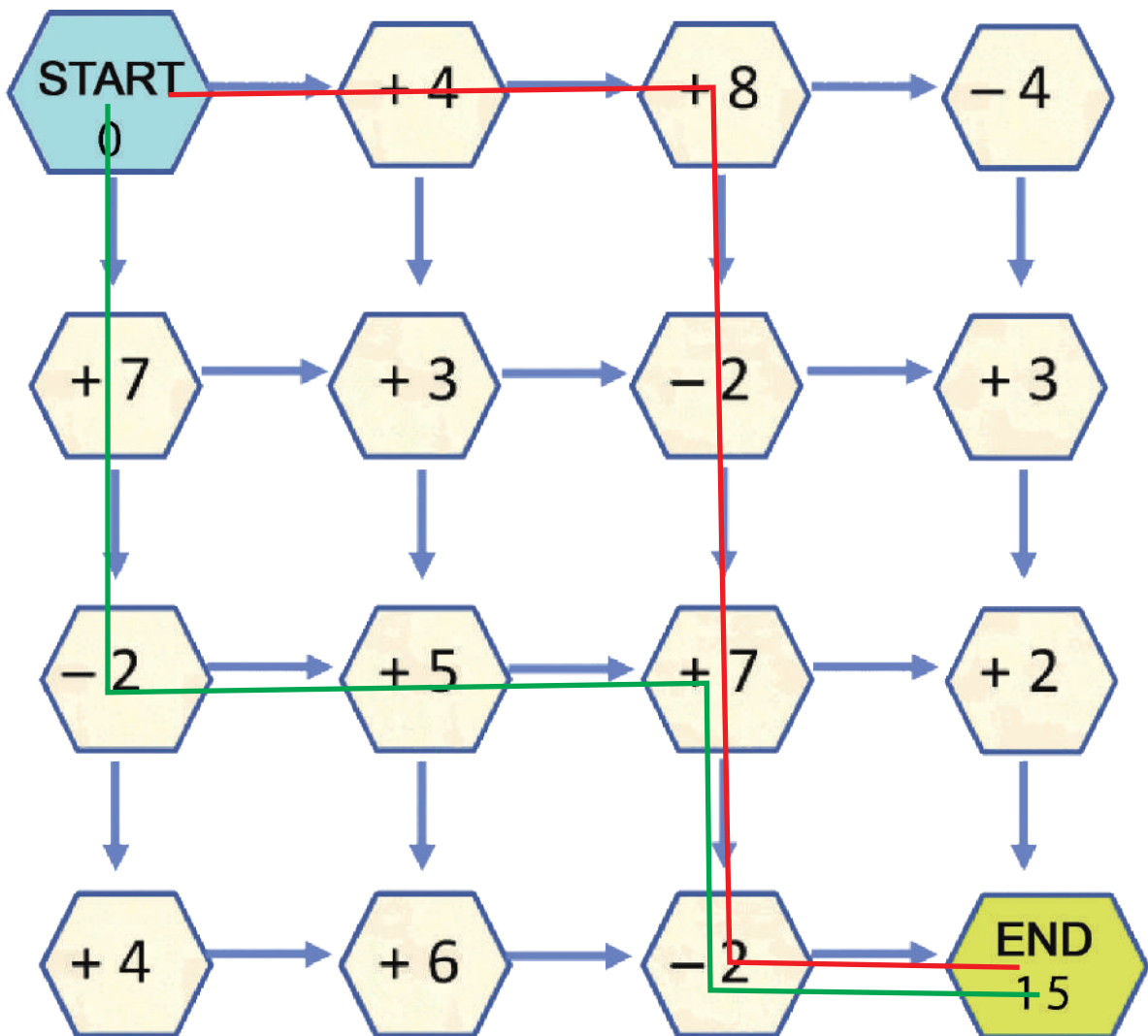
$$A + B + F + F$$

$$=$$
$$23$$

Coding Challenge-3

Maze Route

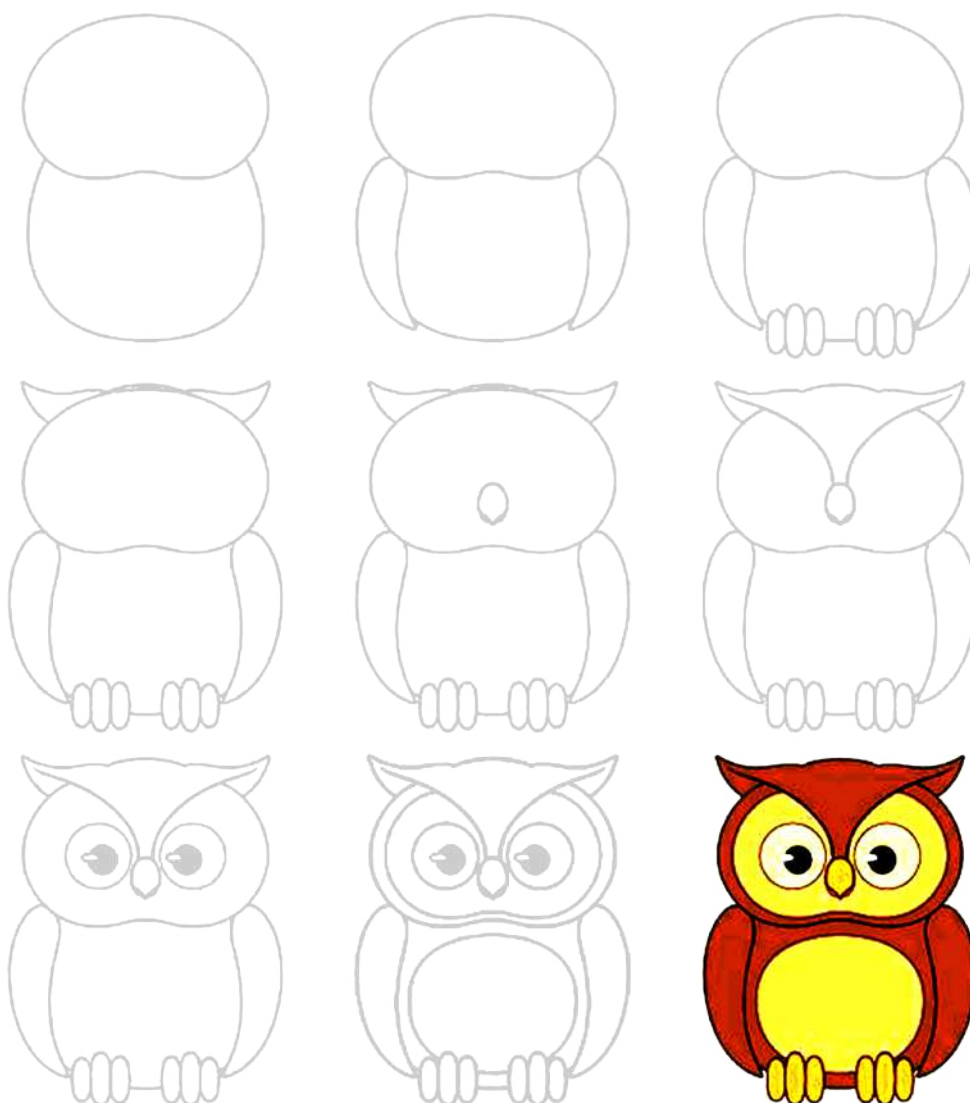
- Start the maze with zero.
- Finish the maze with a total of 15.
- Follow one of the arrows each time.
- Can you find the two possible routes?



4.1

Step-by-Step

- A.** Draw the owl by tracing the lines stepwise and colour as shown below.



Ans. Do it yourself.

Teacher's Note: Guide students to trace the owl step by step as shown. After completing the drawing, ask them to colour it like the last picture.

4.2

Algorithm

- A.** Work with your partner to read the algorithm carefully. Discuss the missing words and fill in the blanks in your book.

Start →

Step: 1



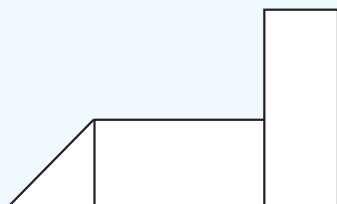
Draw a rectangle.

Step: 2



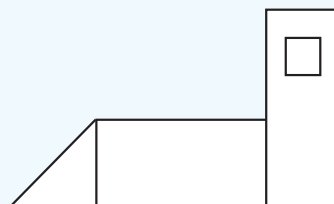
Draw a triangle in front of a rectangle.

Step: 3



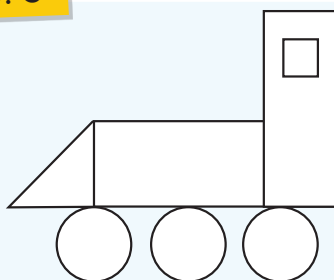
Draw a rectangle behind the rectangle.

Step: 4



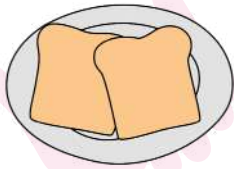
Draw a square inside the second rectangle.

Step: 5



Draw three circles.

B. Given below are the steps to make a sandwich. Arrange the given steps in sequence and write numbers to make an algorithm.



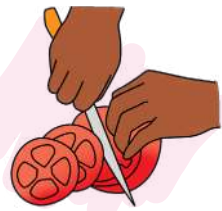
Step : **3** Take another slice of bread and spread green chutney on it.



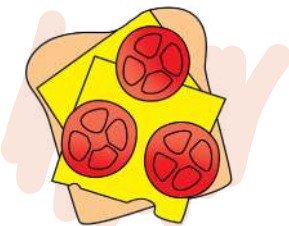
Step : **1** Take a slice of bread and spread cheese evenly on it.



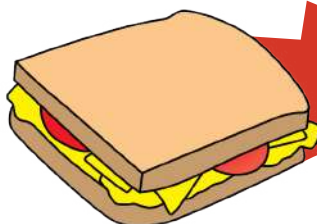
Step : **5** A sandwich is ready to serve.



Step : **4** Put that bread slice on the prepared bread. Press slightly.



Step : **2** Put slices of cucumber, shredded carrot, capsicum slices and tomato slices on the bread.

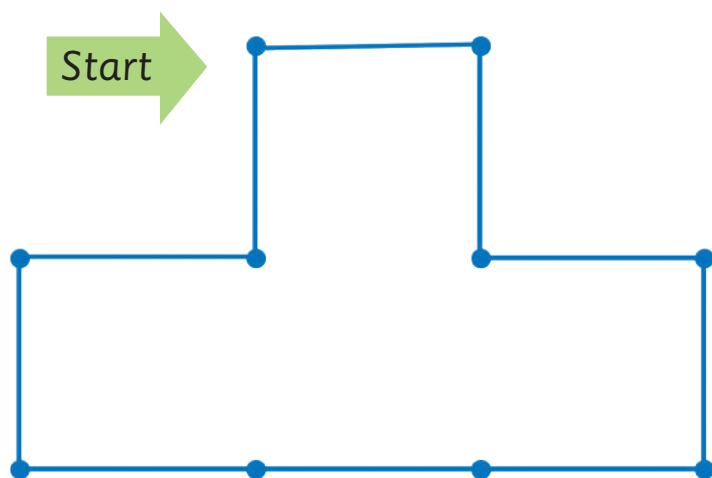


Your sandwich is ready.

4.3

Understanding Programs

A. Write a program to draw the figure given below.



Start and move one step right

Move one step down

Move one step right

Move one step down

Move three steps left

Move one step up

Move one step right

Move one step up

4.4

Decision Making

A. Look at the image and do as instructed.



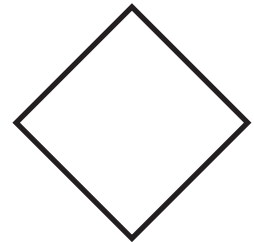
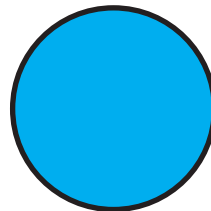
If (girl is wearing a blue t-shirt)

Then

Colour the circle blue

Else

Colour the diamond red



- B.** Read the conditions given below with your partner and tick (✓) the correct option:

Abena's father told her.

If (she get good marks)

Then

She will get a new dress.

Else

She will get nothing.



Result came and Abena scored good marks.

Now, she will get new dress.

nothing



new dress



- C.** Read the conditions given below with your partner:

If (it's Sunday)

Then

Kwame will go on picnic.

Else

He will stay indoors.



Look at the given picture and answer the following:

Kwame saw it's Sunday.

He will go on picnic.

4.5

Loop Programs

A. Colour the flower pink if the option given is a loop and yellow if it is not a loop.

1.

Different seasons in a year

2.

Writing a poem

3.

Hoola hoop

4.

Day and night

5.

Eating breakfast

6.

Talking to a friends

7.

Revolution of earth around sun

8.

Taking bath



Coding Challenge-4

Understanding Program

Colour the mat according to the given steps:

Step 1	→	Colour blue above yellow.
Step 2	→	Colour red below yellow.
Step 3	→	Colour orange to the right of red.
Step 4	→	Colour pink above orange.
Step 5	→	Colour black above pink.
Step 6	→	Colour purple to the left of blue.
Step 7	→	Colour brown below purple.
Step 8	→	Colour green to the left of red.

Follow the steps and colour it



ESSENTIAL CODING

Basic 3

Facilitator's Guide

In today's fast-changing digital world, coding is more than just using computers — it is about **thinking, reasoning, and problem-solving**.

The **ESSENTIAL Coding Basic 3 Facilitator's Guide** is designed to support teachers in delivering coding concepts effectively, even before learners begin programming on computers.

The **ESSENTIAL Coding Basic 3 Facilitator's Guide** provides:

- Clear, step-by-step teaching support for every lesson
- Structured lesson delivery with guided teacher–learner interaction
- **Coding Link** sections that explain how each activity connects to real coding
- Strong focus on computational thinking and problem-solving
- Classroom-ready strategies for engaging young learners
- Progress tracking and assessment support

This guide helps teachers understand that:

- Coding starts with thinking, not typing
- Every activity builds coding skills
- Learners are already “coding” when they count, follow steps, recognise patterns, and make decisions

Through this approach, teachers confidently guide learners to **think like programmers from an early stage**.

With clear instructions, reinforcement strategies, and practical examples, this guide transforms lessons into:

- Interactive learning experiences
- Logical thinking development
- Structured problem-solving sessions

Teachers are not just teaching activities —
They are building **future coders and critical thinkers**.

