

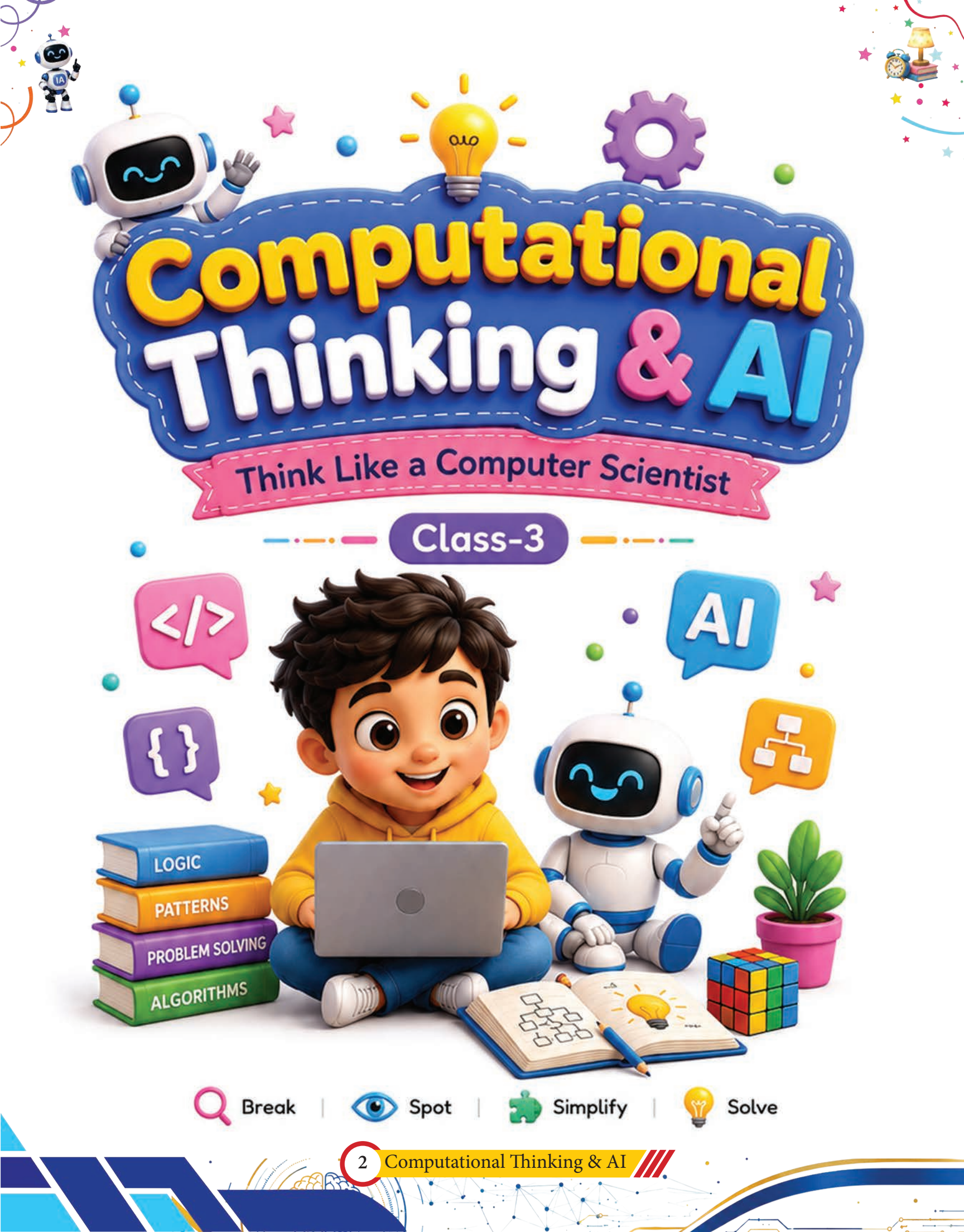
Class-3



# Computational Thinking & AI

Think Like a Computer Scientist





# Computational Thinking & AI

Think Like a Computer Scientist

Class-3



 Break |  Spot |  Simplify |  Solve



Welcome



# A Note for Grown-Ups







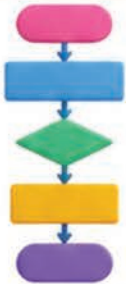
Dear Teacher and Parent,

This is the most important book in our CT & AI series so far! In Class 3, the official CBSE Computational Thinking curriculum begins. Your child will be introduced to **the four pillars of computational thinking** that all computer scientists use:



## The Four CT Pillars:

-  **Decomposition** – breaking big problems into small pieces
-  **Pattern Recognition** – finding what repeats
-  **Abstraction** – focusing on what matters most
-  **Algorithmic Thinking** – step-by-step solutions



## NEW for Class 3 – Flowcharts!

Children learn to draw algorithms using flowchart shapes – oval, rectangle, and diamond. This builds the foundation for coding in later classes.



## Deeper AI:

How AI learns from examples, why AI can make mistakes, what makes AI fair, and India's growing AI innovations.



50 hours over the year • NEP 2020 aligned • CBSE CT 2026–27 ready • screen-free 90% and activities





Guide



# How to Use This Book



This book is built on five chapters, each one packed with new tools for your brain!



## Big Idea Page

A new thinking skill from CBSE CT curriculum.



## Activity Page

Try out the skill with hands-on activities.



## India Page

Connect thinking skills to Indian life and culture.



## Flowchart

NEW! Draw algorithms with shapes.



## Mini-Project

A bigger task with multiple steps.



## Bug Hunt

Find and fix mistakes in algorithms.



## 50 hours of learning

About 1 hour every week. Take your time and have fun!



In Class 3, you write more in the book. Use a pencil so you can change your answers if you change your mind!



Hello!



# Meet Your Thinking Friends

Your 5 friends are now in Class 3 too – and there's a brand new face!



**Diya**

Class 3 science champion!



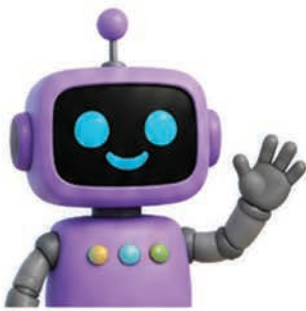
**Arjun**

Loves solving puzzles!



**Mithu**

Pattern expert!



**Beep**

Beep can do FLOWCHARTS now!



**Tara**

Planner extraordinaire!



**Veer ✨ NEW!**

A scientist! Loves to break things into parts and study them.

6 friends now! More brains = more fun! ✨



Inside



# What's in this Book?



**Chapter 1 – Break It Down! (Decomposition)**

Page 7



**Chapter 2 – Pattern Detectives**

Page 19



**Chapter 3 – Keep What Matters (Abstraction)**

Page 31



**Chapter 4 – Flowchart Power!**

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**Chapter 5 – AI & Me**

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**Big Brain Review (1, 2, 3)**

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**Mega Maze**

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**Picture, Logic & Pattern Puzzles**

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**Things I Can Do Now**

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**My Notes & Drawings**

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**My Certificate**

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# Chapter 1 · CT Pillar #1



# Break It Down!



Big problems? Make them tiny!



## Chapter 1



# What is Decomposition?



**When something is BIG, break it into smaller parts!**



### Big Word Alert!

**DECOMPOSITION** (dee-com-po-zi-shun) means breaking a big problem into many small problems. Each small problem is easier to solve!

Look at this car. Veer has decomposed it into parts:



A whole car



Wheels



Doors



Seats



Engine



Lights



Windows



Computer scientists **ALWAYS** break problems into smaller parts. That's their **#1** trick!



Chapter 1



# Break Down a Sandwich!



## Activity • Decompose Food

A sandwich looks simple — but it has many parts! List them all:



One yummy sandwich



Bread



Butter



Lettuce



Tomato



Cheese



Cucumber

Now you try! Break down a pizza 🍕 into 6 parts:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_



Pizza parts: base, sauce, cheese, toppings, herbs, crust!



## Activity · Time Breakdown

A school day is BIG. Let's break it into smaller parts!



### Morning

Bus ride · Assembly · Prayer



### Classes

Math · English · Hindi · EVS



### Lunch

Wash hands · Eat · Drink water



### Activities

Art · Sports · Music · Dance



### Recess

Friends · Games · Talk



### Going Home

Pack bag · Bus · Reach home



**Why this helps:** If you forget your tiffin, you only need to fix ONE part – Lunch! You don't have to redo the WHOLE day!



## Chapter 1



# Decompose a Story



## Activity · Story Parts

Every story has THREE big parts. Let's break them down!



### BEGINNING

Who is the story about? Where does it happen?



### MIDDLE

What problem happens? What do they do?



### END

How does the problem get solved?

### Example – The Thirsty Crow:

**Beginning:** A thirsty crow flies looking for water on a hot day.



**Middle:** He finds a pot with very little water. He can't reach it!



**End:** He drops pebbles in the pot. Water rises. He drinks happily!



**Your turn!** Decompose YOUR favourite story:

**Beginning:** \_\_\_\_\_

**Middle:** \_\_\_\_\_

**End:** \_\_\_\_\_




# Chapter 1

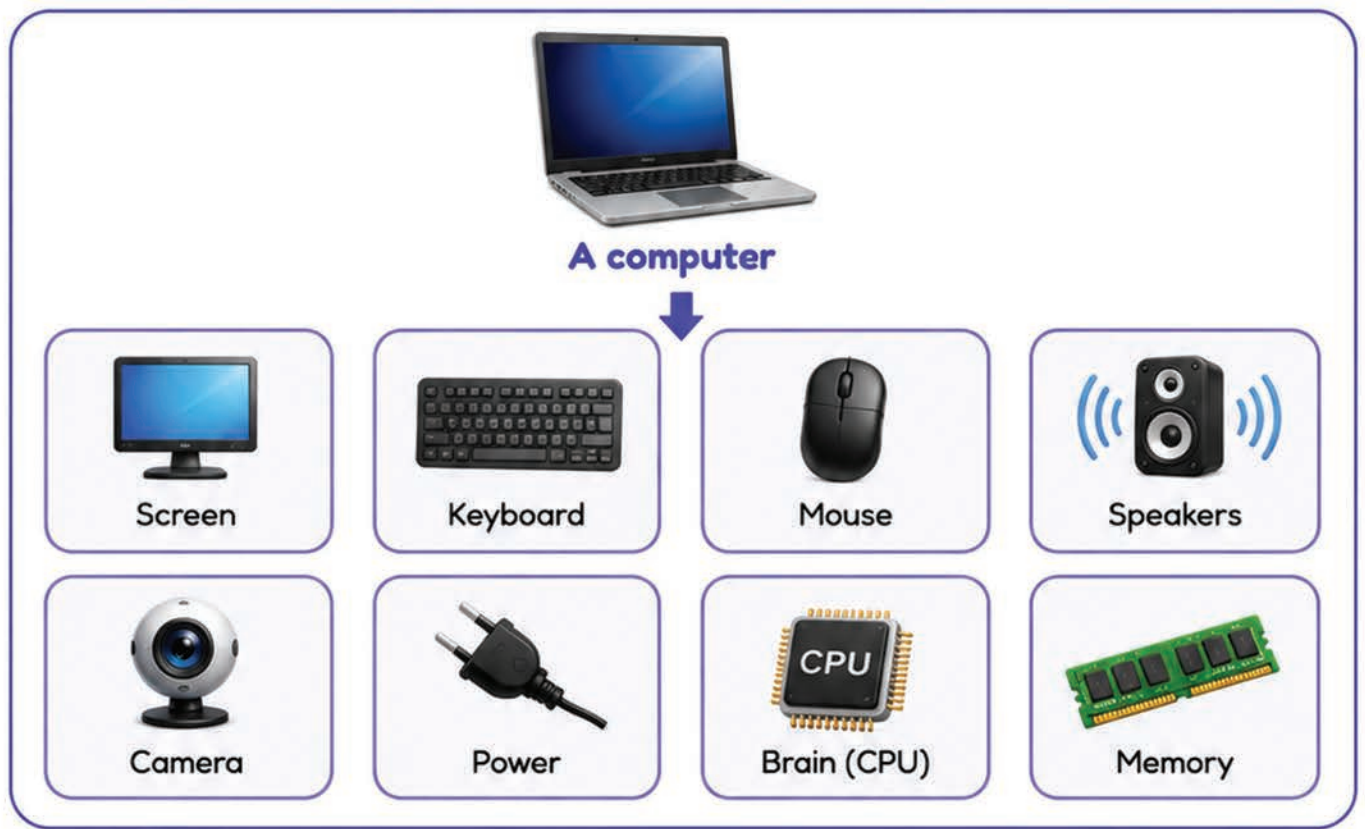


# Decompose a Machine



## Activity · How Machines Work

Big machines have small parts. Let's decompose a computer !



**Now you:** Decompose a bicycle  into at least 5 parts:

1. _____	2. _____	3. _____
4. _____	5. _____	6. _____





A thali looks beautiful – and it has **MANY** small dishes!



One Indian thali



Rice



Roti



Dal



Sabzi



Salad



Curd



Sweet



Pickle



**Try this:** Different states have different thalis! Rajasthan has dal-baati-churma. South Indian thali has sambhar and rasam. Bengali thali has fish curry!

**Decompose YOUR favourite Indian meal:**

Meal name: \_\_\_\_\_

Part 1: \_\_\_\_\_

Part 2: \_\_\_\_\_

Part 3: \_\_\_\_\_





# Decompose Your Day



## ★ Activity • 5 Parts of My Day

Every day has many small parts. Decompose YOUR day into 5 big chunks!

### ● The 5 chunks of a day:



Morning



Noon



Afternoon



Evening



Night

List 3 things you do in each chunk:



Morning: \_\_\_\_\_



Noon: \_\_\_\_\_



Afternoon: \_\_\_\_\_



Evening: \_\_\_\_\_



Night: \_\_\_\_\_



When something feels **HUGE** (like a whole day!), break it into small chunks. Each chunk is easy!



# Chapter 1


# Big Task → Small Steps



## ★ Activity · Big to Tiny

Veer wants to clean his room. That's a BIG task! Let's break it down:



 **See?** Each small task is easy. Together they finish the BIG task!

**Your turn!** Pick a BIG task and break it into 5 small parts:

 **Big Task:** \_\_\_\_\_

**1** **Small 1:** \_\_\_\_\_

**2** **Small 2:** \_\_\_\_\_

**3** **Small 3:** \_\_\_\_\_

**4** **Small 4:** \_\_\_\_\_

**5** **Small 5:** \_\_\_\_\_





# Chapter 1



# Decompose Your House!



## Mini-Project · A House Map



**Mission:** Your house is one big building. Break it into all its small parts!

**Step 1:** List every room you have:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

**Step 2:** Pick ONE room. List 5 big things inside it:

Room: \_\_\_\_\_ → Things: 1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_

**Step 3:** Draw a simple map of your house:



# Chapter 1

# Decomposition Puzzle



## Brain Puzzle · Match the Parts!

Match each BIG thing to its small parts. Draw a line!

### BIG THINGS

### SMALL PARTS



**A Tree**



**Head, hands, legs, eyes**



**A Book**



**Wings, engine, seats, tail**



**A Body**



**Cover, pages, words, pictures**



**A Plane**



**Roots, trunk, branches, leaves**

  Did you see? **EVERY** big thing can be broken into parts!



## Chapter 1



# Try it Yourself!



## Decomposition Master Challenge

1. **Body Parts:** Decompose YOUR body into 10 parts! Name them all!
2. **Birthday Plan:** Decompose “throw a birthday party” into 7 small tasks!
3. **Game Decompose:** Pick your favourite game (cricket, ludo, etc.). Break the rules into 5 small parts!
4. **City Tour:** If you make a city, decompose it: roads, houses, parks, shops... write 10 parts!
5. **Help Mom:** “Make dinner” is BIG. Decompose it with mom — write all the small steps!



### In Chapter 1 you learned CT Pillar #1:

- **DECOMPOSITION** = breaking big into small
- Sandwiches, machines, days, stories — all have parts
- Small parts are easier to fix
- Real Indian examples like thali!



 **Decomposition Master!** 



Next: Pattern Recognition!



## Chapter 2 · CT Pillar #2



# Pattern Detectives



Spot what repeats. Predict the next!



➤ **Patterns are everywhere – if you know where to look!** ➤



## Big Word Alert!

**PATTERN RECOGNITION** means finding what repeats. Once you see the pattern, you can predict what comes next!

Mithu spots many patterns every day:



### Days of week

Mon → Tue → Wed... always repeat!



### Sunrise & sunset

Every single day!



### Seasons

Summer · Monsoon · Winter



### Daily routines

Brush · Bath · School · Sleep



When you SEE a pattern, you can guess the future! Like guessing what day comes after Saturday!



## ★ Activity · Pattern Predictor

Read the pattern, find the rule, then predict what comes next!



★ Rule: \_\_\_\_\_



★ Rule: each number DOUBLES!



★ Rule: one more circle each time



★ Rule: skip one letter each time



★ Rule: moon getting brighter!



**Detective trick:** Look carefully at each step.  
What CHANGES? What stays the SAME?





## Chapter 2

# Patterns in Nature



**Nature is the world's biggest pattern maker!**



### Sunflower seeds

Seeds grow in spirals – exactly 21, 34, or 55 spirals!



### Shells

Snails grow in spiral patterns!



### Animal stripes

Zebras, tigers – every stripe is different but they make a pattern!



### Snowflakes

Each one has 6 sides! Always.



### Leaves

Most leaves grow opposite or in spirals!



### Spider webs

Circles inside circles – same pattern always!



**Did you know?**

Bees build hives in **hexagons** (6-sided shapes). It saves space and wax!





## ★ Activity • Number Patterns

Math is FULL of patterns. Look at the times tables!



### Table of 5:

5 • 10 • 15 • 20 • 25 • 30 • 35 • 40 • 45 • 50

Pattern: Each ends in 5 or 0!



### Table of 10:

10 • 20 • 30 • 40 • 50 • 60 • 70 • 80 • 90 • 100

Pattern: Each ends in 0!



### Table of 11:

11 • 22 • 33 • 44 • 55 • 66 • 77 • 88 • 99

Pattern: Both digits are the SAME (up to 9x11)!

**Pattern hunt:** Look at the table of 2. What's the pattern?



2      4      6      8      10      12      14



Pattern I see: \_\_\_\_\_



Computers use number patterns to do math FAST.  
Some patterns help robots think!





## Chapter 2



# Patterns in Language



## Words and sounds also make patterns!



### Rhyme patterns:

"Twinkle twinkle little **star**,  
 How I wonder what you **are**!  
 Up above the world so **high**,  
 Like a diamond in the **sky**!"

Pattern: lines 1+2 rhyme, lines 3+4 rhyme!

### Find rhyming patterns in Hindi too:



"मछली जल की **रानी** है,  
 जीवन उसका **पानी** है!"

Pattern: रानी and पानी rhyme!

### Word patterns: Sounds and letters repeat!



**cat · bat · rat · sat · mat**

All end in -at!

**go · so · no · ho · jo**

All end in -o!



### Make 5 words that rhyme with "play":



1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_





# Pattern Detective Game



## Game • Find the Pattern Rule!

For each pattern, write the **RULE** and the next item:



— — —

**Rule:** \_\_\_\_\_ **Next:** \_\_\_\_\_

1, 4, 9, 16, 25, \_\_\_\_\_

**Rule:**  $1 \times 1$ ,  $2 \times 2$ ,  $3 \times 3$ ,  $4 \times 4$ ,  $5 \times 5$  **Next:** \_\_\_\_\_



— — —

**Rule:** triangles GROW each time **Next:** \_\_\_\_\_

Z, Y, X, W, V, \_\_\_\_\_

**Rule:** alphabet going BACKWARD **Next:** \_\_\_\_\_

100, 95, 90, 85, 80, \_\_\_\_\_

**Rule:** subtract 5 **Next:** \_\_\_\_\_



A pattern detective looks at **MANY** items before deciding the rule!





Chapter 2



# India Page · Patterns Around Us




India is rich with patterns – see them everywhere!



**Kolam · Rangoli**  
Tamil women draw dot-and-line patterns daily!



**Mehndi**  
Henna patterns of flowers and lines on hands!




**Temple carvings**  
Stone temples have perfect repeating patterns!



**Sari borders**  
Beautiful patterns on every sari edge!



**Tala (rhythm)**  
Indian music has many tala patterns!



**Pottery**  
Madhubani, Bidri – all patterns!

★ **Try this:** Draw a simple kolam pattern (dots connected by lines):

Draw here ↓



## Activity · Spot the Mistake

Each pattern has **ONE** wrong item. Circle the mistake!



Pattern was red-blue. Which one breaks it?

5 · 10 · 15 · 20 · 24 · 30 · 35

Counting by 5. Which is wrong?

Mon · Tue · Wed · Fri · Thu · Sat · Sun

Days of the week — which day is in the wrong place?



Stars should grow by 1 each time. Which set is wrong?



**Spot-the-error** is what computer scientists do every day!  
It's called debugging!



## Chapter 2



# My Pattern Journal



## Mini-Project: 5-Day Pattern Hunt



**Mission:** For 5 days, find **ONE** pattern in your day. Draw or describe each one!



**Day 1:** Pattern I found ↓



**Day 2:** Pattern I found ↓



**Day 3:** Pattern I found ↓



**Day 4:** Pattern I found ↓



**Day 5:** Pattern I found ↓



## ⇒ Symmetry: same on both sides! ⇒

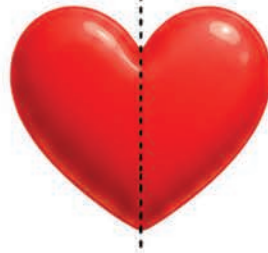
### ★ Big Word: SYMMETRY

When one half looks EXACTLY like the other half (like a mirror!).



**Butterfly**

Left wing = Right wing



**Heart**

Two same halves



**Leaf**

Two halves match

**Activity:** Draw the OTHER half to make these symmetrical!

Half of a face — complete it!



Half of a tree — complete it!



Look in the mirror! Your face is mostly symmetric — but not perfectly!



## Chapter 2



# Try it Yourself!



## Pattern Detective Challenge

1. **Calendar Hunt:** Find 3 patterns on this month's calendar!
2. **Family Patterns:** Spot a pattern in YOUR family (e.g., everyone has the same eye colour).
3. **Sound Patterns:** Listen to your favourite song. Find a sound that repeats!
4. **Number Detective:** Pick any number table (3, 4, 6, 7) and find 1 pattern!
5. **Mehndi Math:** Ask mom or sister to draw mehndi on your hand. Count how many times the SAME shape appears!



## In Chapter 2 you learned CT Pillar #2:

- **PATTERN RECOGNITION** = spotting what repeats
- Patterns in numbers, nature, words, art
- How to predict the next item
- Finding broken patterns (debugging)
- Symmetry!



## Pattern Detective!



Next: Abstraction! ●

