

## CASE FILE 001 · STUDENT MISSION PACK

# Question Detective

## THE 3-DAY CHALLENGE

Three short missions. Ten minutes a day.

One new habit: understand the question before calculating.

### YOUR ASSIGNMENT

Find the target. Judge the evidence. Catch the reasoning mistake. Then solve the final case without being told what method to use.

| DAY 1           | DAY 2              | DAY 3             |
|-----------------|--------------------|-------------------|
| Find the Target | Judge the Evidence | Catch the Mistake |

DETECTIVE NAME

START DATE

**CLASS 6 MATHS · FREE FOUNDING EDITION V1**

*Includes a parent Thinking Snapshot — not another pile of worksheets.*

DISHANTRA

## MISSION BRIEFING

# What this file contains

### INSIDE THE CASE FILE

Three short student missions, three case reveals, transfer checks, daily mission records, and a two-page parent or caregiver Thinking Snapshot. Each mission takes about 10 minutes.

## FORMAT AT A GLANCE

| Day | Case skill         | Students will learn how to...                                                 |
|-----|--------------------|-------------------------------------------------------------------------------|
| 1   | Find the Target    | Name the exact target before calculating.                                     |
| 2   | Judge the Evidence | Separate useful facts from distractions and stop when information is missing. |
| 3   | Catch the Mistake  | Inspect a reasoning error and transfer the habits to a new case.              |

## What students will learn

By the end, students will be better able to identify the target, judge which facts matter, recognise missing information, explain a reasoning error, and carry those habits into a new problem.

## Mission rules

- Work independently for about 10 minutes each day. Use a pencil; no calculator is needed. If stuck, open only the Detective Hint.
- Do not look at the reveal until you have written a complete answer. Then record whether you solved alone, used the hint, or needed an explanation.

## Your four detective tools

|                          |                                                                          |
|--------------------------|--------------------------------------------------------------------------|
| <b>TARGET</b>            | The exact thing your final answer must name.                             |
| <b>USEFUL CLUE</b>       | A fact that can change the answer to the target.                         |
| <b>INFORMATION CHECK</b> | Do you have enough facts to solve without inventing one?                 |
| <b>REASONING CHECK</b>   | What does each number mean, and does the final result answer the target? |

### FOR THE PARENT OR CAREGIVER

Set the timer, step away, and let the student make the first attempt. You do not need to teach the chapter or mark each line. The two-page Thinking Snapshot at the end shows what to notice.

DAY 1  
CASE 01

# The Exhibition Packs

SKILL: FIND THE TARGET · 10 MIN

## THE BRIEF

The school makers' exhibition needs 168 visitor badges. The badges are packed 12 per sleeve. Nine full sleeves are already ready. The organiser asks: How many more sleeves must be packed?

### 1 Lock the target before you calculate.

- ☐ A. The number of badges in each sleeve
- ☐ B. The total number of sleeves needed
- ☐ C. How many more sleeves still have to be packed

### 2 Write the two-step plan in words.

#### FIRST FIND

*What must you know before you can find 'more'?*

#### THEN FIND

*How will the 9 ready sleeves be used?*

### 3 Solve. Show what each number in your working represents.

#### WORKING

*Number sentence(s) + labels*

#### FINAL ANSWER

*Write a sentence that answers the organiser's exact question.*

#### DETECTIVE HINT — OPEN ONLY IF YOU ARE STUCK

Your first result may tell you the total number of sleeves. Check whether the organiser asked for the total — or how many more.

DAY 1  
REVEAL

# The Target Was Hiding After Step One

SKILL: CHECK + TRANSFER · 3 MIN

## CASE SOLUTION

$168 \div 12 = 14$  total sleeves. Nine are already ready, so  $14 - 9 = 5$  more sleeves. The complete answer is 5 more sleeves.

## Why 14 is a convincing — but incomplete — answer

**14 is mathematically correct**, but it answers “How many sleeves are needed in total?” The organiser asked how many **more** must be packed. A correct calculation can still answer the wrong target.

## QUICK TRANSFER · SOLVE BEFORE OPENING THE CHECK

### THE MEAL-COUPON BUNDLES

A school event needs 480 meal coupons. They are packed in bundles of 20. Seventeen bundles are ready. How many more bundles are needed?

### MY TARGET + WORKING + FINAL ANSWER

## CHECK

$480 \div 20 = 24$  bundles in total.  $24 - 17 = 7$  more bundles.

## The habit you just trained

### BEFORE CALCULATING, COMPLETE THIS SENTENCE

I need to find \_\_\_\_\_.

## DAY 1 MISSION RECORD

☐ Solved independently

☐ Used the hint

☐ Needed an explanation

**NEXT CASE → Some facts matter. Some do not. One case cannot be solved at all.**

DAY 2  
CASE  
02A

# The Stage-Marking Tape

SKILL: USEFUL CLUE OR DISTRACTION · 5 MIN

## THE BRIEF

The drama club must mark six stage zones, each 75 cm long. It has one unopened roll of tape 5 m long. The receipt shows that the roll cost ₹120. Is the roll long enough? If yes, how much tape will remain?

## 1 Judge each piece of evidence. Tick one column.

| Evidence       | Useful                   | Not needed               | Why? |
|----------------|--------------------------|--------------------------|------|
| 6 stage zones  | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 75 cm per zone | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 5 m tape roll  | <input type="checkbox"/> | <input type="checkbox"/> |      |
| ₹120 receipt   | <input type="checkbox"/> | <input type="checkbox"/> |      |

## 2 Information check: do you have enough useful information?

☐ Yes — I can solve now

☐ No — one fact is missing

## 3 Solve in one unit, then answer both parts of the question.

### WORKING

*Tape needed · tape available · tape remaining*

### FINAL ANSWER

*Is it enough? How much remains?*

## DETECTIVE HINT — OPEN ONLY IF YOU ARE STUCK

Convert metres and centimetres to the same unit before comparing them.

DAY 2  
CASE  
02B

# The Incomplete Purchase Order

SKILL: MISSING INFORMATION · 5 MIN

## THE BRIEF

A school science club has 24 members and a budget of ₹1,680. It plans to buy identical solar-model kits. The organiser asks: How many kits can the club buy?

### 1 Can the organiser's question be answered exactly?

- ☐ Yes — solve it now ☐ No — the file is incomplete

### 2 Name the one fact that is missing.

### 3 Which question should the detective ask next?

- ☐ A. How many students are in Class 6?  
☐ B. What is the price of one solar-model kit?  
☐ C. What colour are the kits?

### 4 Trap check: another detective writes $1,680 \div 24 = 70$ and reports '70 kits'. What does ₹70 actually represent?

## EXPLAIN THE MISMATCH

What did the calculation divide, and what unit should the target have?

## EVIDENCE RULE

Do not invent a connection just because two numbers appear in the same problem. If a necessary fact is missing, the mathematically correct response is to identify it precisely.

## MY EXACT RESPONSE TO THE ORGANISER

DAY 2  
REVEAL

# Evidence Must Connect to the Target

SKILL: CHECK + TRANSFER · 3 MIN

## Case 02A · Stage-marking tape

- Useful: 6 zones, 75 cm per zone, and the 5 m roll. The ₹120 cost does not change a length answer.
- 5 m = 500 cm. Tape needed =  $6 \times 75 \text{ cm} = 450 \text{ cm}$ .
- The roll is long enough, and  $500 - 450 = 50 \text{ cm}$  will remain.

## Case 02B · Incomplete purchase order

- The exact number of kits cannot be found because the price of one kit is missing.
- $₹1,680 \div 24 = ₹70$  is the budget per member if shared equally; it is not a number of kits.
- The useful next question is: What is the price of one solar-model kit?

### QUICK TRANSFER

#### THE TICKET DESK

A school trip has ₹2,400 available for museum tickets. Each ticket costs ₹80. A notice says the bus leaves at 8:15. How many tickets can be bought?

#### USEFUL FACTS · FACT NOT NEEDED · ANSWER

#### CHECK

Useful: ₹2,400 and ₹80 per ticket. The departure time does not affect ticket quantity.  $2,400 \div 80 = 30$  tickets.

#### TWO EVIDENCE QUESTIONS TO KEEP

- Which facts can change my target?
- Do I have enough information to solve without inventing a fact?

### DAY 2 MISSION RECORD

☐ Solved independently

☐ Used the hint

☐ Needed an explanation

**FINAL DAY → The arithmetic is correct. The answer is still wrong. Find out why.**

DAY 3  
CASE  
03A

# The Cone Count

SKILL: CATCH THE MISTAKE · 5 MIN

## THE BRIEF

At sports day, 96 students are split into teams of 8. Each team needs 3 marker cones. How many cones must the school prepare?

## DEV'S CASE REPORT

**$96 \div 8 = 12$ . Therefore, the school needs 12 cones.**

**1 Which part of Dev's report is definitely correct?**

**2 What does the number 12 represent?**

☐ Students

☐ Teams

☐ Cones

**3 What is the first reasoning mistake?**

☐ A. Dev made an arithmetic error.

☐ B. Dev used a number that was not in the case.

☐ C. Dev stopped at the number of teams instead of finding cones.

**4 Repair the reasoning and write the final answer.**

## CORRECTED CASE REPORT

*Keep the correct step. Add the missing step. Label the final unit.*

**5 Write one check that shows your answer fits the case.**

## DETECTIVE HINT — OPEN ONLY IF YOU ARE STUCK

Circle the unit attached to 12. The target is cones, so one more connection is needed.

DAY 3

## FINAL CASE

# The Seedling Trays

SKILL: INDEPENDENT TRANSFER · 5 MIN

### THE BRIEF

A community garden club has 144 seedlings. Each tray holds 12 seedlings. The seedlings from seven full trays have already been planted. Planting each tray took 5 minutes. How many seedlings still need to be planted?

### FINAL-CASE RULE

This time, no method is supplied. Build the case report yourself. You may use any correct method, but every number in your working must have a meaning.

### TARGET

*What must the final answer name?*

### INVESTIGATION

*Show your plan and working. Label what each result represents.*

### FINAL ANSWER

*Write a complete sentence.*

### EVIDENCE NOT USED

*Name any fact you did not need and explain why.*

### REASONING CHECK

*How do you know the result answers the target and makes sense?*

### DETECTIVE HINT — OPEN ONLY IF YOU ARE STUCK

Find how many seedlings have already been planted, then compare that with the original 144.

DAY 3

**CASE  
CLOSED**

## You Investigated the Thinking

SKILL: REVEAL + REFLECT · 3 MIN

### Case 03A · Cone count

#### CORRECTED REPORT

$96 \div 8 = 12$  teams. Each team needs 3 cones, so  $12 \times 3 = 36$  cones. Dev's division was correct; he stopped at an intermediate result.

### Final case · Seedling trays

- Target: the number of seedlings still needing to be planted.
- The seedlings from seven full trays total  $7 \times 12 = 84$  seedlings.
- $144 - 84 = 60$  seedlings still need to be planted.
- The 5 minutes relates to time, not the number of seedlings, so it is not needed.
- Check: 60 is less than 144 and is exactly 5 trays of 12 seedlings.

### Four habits now belong in every case

| 01              | 02              | 03                | 04                     |
|-----------------|-----------------|-------------------|------------------------|
| Name the target | Judge the clues | Check information | Match answer to target |

### Your own discovery

BEFORE THIS CHALLENGE, MY FIRST MOVE WAS OFTEN...

NOW, BEFORE I CALCULATE, I WILL...

### DAY 3 MISSION RECORD

- ☐ Solved independently
 ☐ Used the hint
 ☐ Needed an explanation

#### QUESTION DETECTIVE · CHALLENGE COMPLETE

You did more than get answers: you practised deciding what the question means, what evidence matters, and whether the reasoning reaches the real target.

## FOR THE PARENT OR CAREGIVER

# Thinking Snapshot

### WHAT THIS IS

A short evidence sample of how the student approached unfamiliar problems over three days. It is not a grade, diagnosis, or permanent label. You do not need to re-teach the activities.

**How to use it:** Compare the completed pages with the evidence below. Mark **Shown** if the student demonstrated the habit independently, **Emerging** if it appeared after a hint or prompt, and **Not yet seen** if the evidence is absent. Read the pattern, not a total score.

| Capability           | Evidence to look for                                                           | Shown                    | Emerging                 | Not yet                  |
|----------------------|--------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| Target Finder        | Day 1: names 'more sleeves'; gives 5; explains why 14 is not final.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Clue Judge           | Day 2: excludes ₹120; final case: excludes 5 minutes from a seedling target.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Information Checker  | Day 2: stops and asks for the price of one kit instead of forcing a number.    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Reasoning Checker    | Day 3: sees that 12 means teams, then continues to 36 cones.                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Independent Transfer | Final case: reaches 60 seedlings with labelled reasoning and a sensible check. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Quick answer key

|                   |                                                                       |
|-------------------|-----------------------------------------------------------------------|
| <b>Day 1</b>      | 5 more sleeves; quick transfer: 7 more bundles.                       |
| <b>Day 2A</b>     | Yes; 450 cm needed; 50 cm remains; ₹120 not needed.                   |
| <b>Day 2B</b>     | Cannot determine; price per kit is missing; ₹70 is budget per member. |
| <b>Day 3A</b>     | 12 teams; 36 cones; the report stopped at an intermediate result.     |
| <b>Final case</b> | 60 seedlings remain; 5 minutes is not needed for this target.         |

### IMPORTANT INTERPRETATION

A calculation slip does not erase a reasoning habit if the target, clues and plan are sound. A correct answer with no explainable path gives less evidence of transfer. Use the student's words and working, not only the final number.

## FOR THE PARENT OR CAREGIVER

# One next move — without becoming the Maths tutor

Choose the **first capability marked Emerging or Not yet seen**. During a future homework problem, use the matching prompt once, then give the student time to think. No extra worksheet is required.

| If this is next...   | Use this one prompt                            | What it trains                                                    |
|----------------------|------------------------------------------------|-------------------------------------------------------------------|
| Target Finder        | "What exactly must your final answer name?"    | Stops calculation before the goal is clear.                       |
| Clue Judge           | "Which facts could change that answer?"        | Separates useful evidence from available evidence.                |
| Information Checker  | "Can this be solved without inventing a fact?" | Makes 'not enough information' a valid conclusion.                |
| Reasoning Checker    | "What does this number represent?"             | Prevents correct intermediate work becoming a wrong final answer. |
| Independent Transfer | "Tell me your plan before you calculate."      | Builds a bridge from unfamiliar wording to a method.              |

### PARENT RELIEF RULE

Ask one thinking prompt. Do not explain the entire chapter, correct every line, or turn this snapshot into a label. The purpose is to reveal the next capability — not create a new teaching burden.

## What the free challenge has already delivered

- The student practised four problem-reading habits across unfamiliar Class 6 situations.
- You now have evidence of where the process is working and what capability should come next.
- The next step is deeper transfer practice — not simply more questions of the same kind.

## Next from Dishantra

|                                         |                                                                             |
|-----------------------------------------|-----------------------------------------------------------------------------|
| QUESTION DETECTIVE · 7-DAY CONTINUATION | Make the Connection · Explain · Check Reasonableness · Independent Transfer |
| CLASS 6 MATHS · FIRST CURRICULUM MODULE | Working with Fractions · Understand · Apply · Catch the Mistake · Transfer  |

### CONTINUE THE CASE FILES

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