

NOVA & MAYA - Learning Companion

Chapter 11 Printable Two-Answers Packet

The Door with Two Answers

Before printing

- Print one-sided at 100% size. An adult handles scissors.
- All cases are tabletop fiction. Never test real heat, doors, equipment, alarms, electrical systems, or building routes.
- Keep unit, context, check-result, and answer-key pages covered until their reveal points.
- Explain after the activity that the missing labels and contexts were staged. Every first interpretation was reasonable under missing information.
- In real danger, children follow trusted adults and official instructions.

No-printer version

Show one stage at a time. Children identify card numbers and choices aloud while later pages remain covered.

Packet contents

- Younger number puzzle and question cards
- Younger sensor case, WHAT / WHERE / WHEN mat, conclusion and result cards
- Two complete older sensor cases with selectable checks and staged results
- Verified-marker cards, responsibility sort, positions, and adult key

Younger Number Puzzle - Stage 1

ANSWER A 30	ANSWER B 2
QUESTION 1 How long is the box?	QUESTION 2 How heavy is the box?
QUESTION 3 How old is the box?	QUESTION 4 What is the room temperature?
FIRST MATCH Answer A might answer Question ____ because _____ Answer B might answer Question ____ because _____	

Younger Number Puzzle - Stage 2 Reveal

ANSWER A WITH UNIT 30 centimetres long	ANSWER B WITH UNIT 2 kilograms
CONCLUSION BOTH CAN BE TRUE	CONCLUSION NEED ONE MORE WAY TO CHECK
CONCLUSION ONE MAY BE WRONG	THINK AGAIN KEEP / REVISE / REPLACE the first match
WHAT CHANGED? The unit changed my thinking because: _____	

Younger Sensor Case - Stage 1

FICTIONAL SETTING

A paper model shows a quiet workshop. No child touches a machine or tests a real surface.

Reading Cards

READING 1

22 degrees Celsius - room air - 3:00

READING 2

48 degrees Celsius - outside surface of a model machine - 3:00

SOURCE 1

Recognized room-air sensor

SOURCE 2

Recognized surface sensor

Conclusion Cards

CHOICE A

BOTH CAN BE TRUE

CHOICE B

NEED ONE MORE WAY TO CHECK

CHOICE C

ONE MAY BE WRONG

RECORD

First conclusion: _____

Younger WHAT / WHERE / WHEN Mat

[illegible]

Younger Sensor Case - Safe Check Reveal

ONE MORE WAY TO CHECK

A fictional maintenance camera shows the machine is running normally. A third remote sensor reads 23 degrees Celsius in the room air and 47 degrees Celsius on the machine surface.

DECIDE AGAIN

KEEP / REVISE / REPLACE: _____

Do the readings conflict now? _____

Why? _____

REMEMBER

Two correct readings can describe different things in different places.

What a Verified Marker Does - and Does Not - Mean

Status Cards

SOURCE RECOGNIZED The system knows which listed sensor sent the data.	SENSOR HEALTH UNKNOWN Recognition does not prove the sensor works correctly.
CONTEXT MISSING The label may omit what, where, when, or how.	CURRENTNESS UNKNOWN A recognized report may still be old.
UNDERSTANDING NOT PROVED Receiving data does not prove people interpreted it correctly.	

Older Case 1: Air and Equipment

FICTIONAL SETTING

A paper control-room puzzle shows a closed corridor. No one touches or approaches real equipment.

Sensor Reports

REPORT A

22 C | corridor air | center of corridor | 4:10 |
recognized air sensor

WHY THEY SEEM TO CONFLICT

Both are called 'corridor temperature' on the summary screen.

REPORT B

68 C | equipment surface | power panel | 4:10 |
recognized surface sensor

WHAT IS MISSING

Sensor health and the exact meaning of the summary label.

Independent-Check Cards

CHECK 1

Remote thermal image of the corridor and panel

CHECK 3

Power-panel status log

CHECK 2

Third room-air sensor reading

CHECK 4

Current camera view for visible smoke

Chosen check: _____ We predict it could change: _____

Older Case 1 - Check Results - Reveal Only the Chosen One

Results

RESULT 1 Thermal image: air near 23 C; panel surface 67 C; heat concentrated at panel.	RESULT 2 Third air sensor: 23 C at 4:12.
RESULT 3 Panel log: temperature warning active; automatic shutdown available.	RESULT 4 Camera: no visible smoke; corridor clear; panel warning light on.
DECISION KEEP / REVISE / REPLACE: _____ Safer next step we can undo: _____ What remains unknown: _____	

Action Choices

ACTION A Keep the paper route closed and request a trusted adult technician.	ACTION B Use the remote shutdown, then recheck.
ACTION C Declare the entire corridor safe because the air reading is normal.	ACTION D Declare a fire because the panel surface is hot.

Older Case 2: The Cooler Doorway

FICTIONAL SETTING

A paper food-storage puzzle compares two recognized sensors. No real food-safety decision is made by children.

Sensor Reports

REPORT A

4 C | cooler interior air | back shelf | 2:02 |
recognized sensor

REPORT B

21 C | doorway air | open doorway | 2:02 |
recognized sensor

WHY THEY SEEM TO CONFLICT

The dashboard labels both 'cooler temperature.'

WHAT IS MISSING

How long the door has been open and whether
each sensor is healthy.

Independent-Check Cards

CHECK 1

Second interior sensor

CHECK 2

Door-open history

CHECK 3

Inspect full sensor labels

CHECK 4

Cooling-system power log

Chosen check: _____ We predict it could change: _____

Older Case 2 - Check Results - Reveal Only the Chosen One

Results

RESULT 1 Second interior sensor: 5 C at 2:04.	RESULT 2 Door opened at 2:00 and remains open.
RESULT 3 Report A measures back-shelf air; Report B measures doorway air.	RESULT 4 Cooling system is powered and running.
DECISION KEEP / REVISE / REPLACE: _____ Safer next step we can undo: _____ What remains unknown: _____	

Action Choices

ACTION A Close the paper-model door and recheck both locations.	ACTION B Ignore the interior reading and shut down cooling.
ACTION C Average 4 and 21 and call the cooler 12.5 C.	ACTION D Ask a responsible adult to inspect if readings stay unusual.

Responsibility Case: Solve Now, Investigate Later

FICTIONAL SITUATION

Kai, a fictional demonstration operator, raised a device sensitivity setting beyond the approved range. The device began giving disruptive warnings. No participating child is Kai.

Responsibility Cards

CARD 1 Pause the paper demonstration.	CARD 2 Keep people away from the fictional device.
CARD 3 Tell the supervising adult what changed.	CARD 4 Return the setting to the approved range if the adult directs it.
CARD 5 Record which setting changed and when.	CARD 6 Kai gives an honest apology.
CARD 7 Investigate why the change was possible.	CARD 8 Repair any damaged configuration.
CARD 9 Add a permission check to prevent a repeat.	CARD 10 Preserve the logs for later review.

Responsibility Mat

SOLVE NOW	INVESTIGATE LATER	BOTH

Position Cards

POSITION A

When two trustworthy readings conflict, pause until another check explains the difference.

POSITION B

When two readings conflict, it can be reasonable to take the safer step you can undo before the difference is fully explained.

UNSURE

I need another reason, example, or piece of evidence.

EVIDENCE

Case / card: _____ Reason: _____

COUNTEREXAMPLE

A time the other position might work better: _____

MOVE

I stayed / moved because: _____

Flexible Adult Answer Key

Younger number puzzle

- Before units appear, many matches are reasonable. Do not praise guessing the intended pair.
- With units, 30 centimetres answers length and 2 kilograms answers weight. They do not conflict because they answer different questions.

Younger sensor case

- Both readings can be true: one measures room air and one measures a machine surface at the same time.
- Choosing one more safe fictional check is also reasonable. The third readings support the different-location explanation.

Older Case 1

- The recognized-source marker proves source identity only. Sensor health and interpretation still require checking.
- Checks 1-3 support localized equipment heat with normal room air. Check 4 reduces but does not eliminate uncertainty. Actions A or B are defensible; C and D overclaim.

Older Case 2

- The readings describe different locations while the door is open. Checks 1-4 each reduce a different unknown.
- Action A is a safe, reversible first step; D becomes appropriate if the readings stay unusual. Averaging different contexts hides the problem.

Responsibility

- Likely SOLVE NOW: 1-4. Likely INVESTIGATE LATER: 6-9. BOTH: 3, 5, and 10 are defensible because communication and records help now and later.
- Different placements may pass with evidence. Responsibility preserves apology, repair, and prevention; it is not blame arithmetic.

Adult debrief

Disclose the staged omissions. Ask which labels, checks, or contexts changed the conclusion and why. Accept supported uncertainty rather than forcing one final answer.