

Inventor Relay Assembly

HOST ONLY - preparation and story

Includes answers. Keep these pages with an adult.

The invention desk mixed its build sequence with a cancelled parts entry. Match the builders, compare the relay diagrams and decode the final test signal. Collect five named badge digits and use the final sheet. Every clue is on the table; ask the host for one hint at a time.

1. Print one player pack and two record sheets per team. Keep the host answers and all three hint levels with the adult.
2. Keep every clue as a full sheet at one table. Put the final sheet face down until all five results are recorded. Nothing needs cutting, folding or hiding.
3. Give each child a pencil. Choose a reader, recorder and checker, and swap jobs after each clue. Use one team for 2-4 children or two teams for 5-6.

Players: 4; teams: 1. Print one player and prop set per team. Invitations and certificates: 4 each.

Paper and pencils are enough. Keep whole sheets at one table; nothing needs cutting, folding or hiding.

Inventor Relay Assembly

HOST ONLY - solution guide

1. Build: 9

The only order is Read plan > Fit lever > Join relay > Test model. Position 2 carries 9.

2. Parts: 1

Known stock: $11 + 3 - 2 = 12$. Closing stock 13 minus 12 gives the missing return 1. Cancelled +7 never arrived.

3. Builder: 0

Dee has Wheel; Mo has Lever; Xin has Relay. Xin's item gives 0.

4. Diagram: 3

Different positions are 2, 5, 8. There are 3 differences.

5. Test: 1

The decoded word is TEST; its row gives 1.

6. Final: 90311

A1 > C1 > D1 > B1 > E1

Inventor Relay Assembly

HOST ONLY - timeline and paper check

3 minutes: Read the story, show the badge record and choose roles.

5 minutes: Solve Build. Offer one hint level at a time if wanted.

5 minutes: Solve Parts. Offer one hint level at a time if wanted.

6 minutes: Solve Builder. Offer one hint level at a time if wanted.

3 minutes: Solve Diagram. Offer one hint level at a time if wanted.

4 minutes: Solve Test. Offer one hint level at a time if wanted.

5 minutes: Use the five results on the final sheet.

2 minutes: Read the ending and thank each teammate.

Paper completion: check each badge against the solution guide, then check the final code. No device is required.

The relay test record is recovered. Draw your own imaginary invention on the unlock card. Thank your team for checking the evidence together. Confirmed final control code: 90311.

Duration and ages are estimates. Adjust pace and offer help for your group.

Inventor Relay Assembly

Player clue 1: Build | Team 1

The invention desk mixed its build sequence with a cancelled parts entry. Match the builders, compare the relay diagrams and decode the final test signal. Find five badge digits, then use the final sheet. Help each other and ask for hints.

Build desk: Combine every BEFORE rule to order the four actions. Write positions on the whole-sheet cards. Read position 2.

Test model [3]	Fit lever [9]
Read plan [7]	Join relay [1]

- Read plan BEFORE Join relay
- Fit lever BEFORE Test model
- Join relay BEFORE Test model
- Read plan BEFORE Fit lever
- Fit lever BEFORE Join relay

Read position 2 (positions start at 1).

Build badge: _____

Inventor Relay Assembly

Player clue 2: Parts | Team 1

Parts desk: A return entry lost its amount. Use the opening and closing stock to find the missing return. Apply DONE entries; ignore the CANCELLED plan.

Opening stock: 11. Closing stock: 13.

Received: +3 DONE
Planned: +7 CANCELLED
Issued: -2 DONE
Returned: ? DONE

Missing return = ? units. Ignore cancelled plans.

Parts badge: _____

Inventor Relay Assembly

Player clue 3: Builder | Team 1

Builder desk: Each person has ONE different item. Use all four NOT rules.
Find Xin's item and copy its digit.

Lever digit 4	Wheel digit 7	Relay digit 0
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People: Dee, Mo, Xin

- Dee does NOT have Lever.
- Mo does NOT have Wheel.
- Mo does NOT have Relay.
- Xin does NOT have Wheel.

Find Xin's item. Each item is used once.

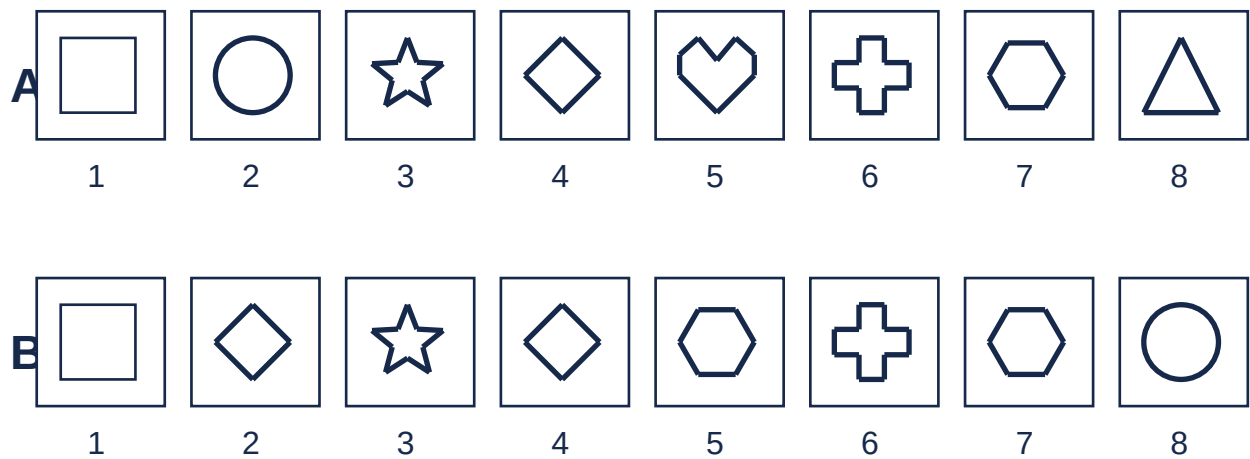
Builder badge: _____

Inventor Relay Assembly

Player clue 4: Diagram | Team 1

Diagram desk: Compare the two records at matching numbered positions.
Count different pairs once each; ignore box outlines.

Compare matching numbered positions.



Do not count title, labels, or boxes as differences.

Diagram badge: _____

Inventor Relay Assembly

Player clue 5: Test | Team 1

Test desk: Decode all shapes in message order. Repeated shapes repeat their letter. Convert the full word using the table.



square = T



circle = E



star = S



square



circle



star



square

TEST = 1

GEAR = 4

RAIL = 7

Test badge: _____

Inventor Relay Assembly

Player clue 6: Final | Team 1

Copy each badge digit into its named slot. Read the slots in the printed order; join all five digits.

A1: Build ?	B1: Parts ?	C1: Builder ?
D1: Diagram ?	E1: Test ?	

READ SLOTS IN THIS ORDER:

A1 > C1 > D1 > B1 > E1

Final badge: _____

Need help? Ask your host for one hint at a time.

Inventor Relay Assembly

Hint cards - level 1 (spoilers; keep with host)

1. Build

The printed cards are deliberately out of order.

2. Parts

The missing amount is a return into stock. The cancelled delivery never happened.

3. Builder

No item can belong to two people. Cross out each forbidden pairing.

4. Diagram

Compare position 1 with position 1, not with a nearby matching shape.

5. Test

Use the letter under each named shape.

6. Final

Keep all five named badge results beside this sheet.

Inventor Relay Assembly

Hint cards - level 2 (spoilers; keep with host)

1. Build

Read plan must come first. Work out which action comes directly after it.

2. Parts

Start with 11. Apply +3 then -2. Ignore the cancelled +7.

3. Builder

Mo cannot have two items, so Mo must have Lever.

4. Diagram

Position 2 is one difference: circle in A, diamond in B. Mark it once.

5. Test

The first two shapes give T then E. Decode the remaining shapes the same way.

6. Final

A1 is read first; it holds Build.

Inventor Relay Assembly

Hint cards - level 3 (spoilers; keep with host)

1. Build

The first two actions are Read plan, then Fit lever. Finish the chain and read position 2.

2. Parts

The known entries leave 12. How much must return to reach the closing stock of 13?

3. Builder

Cross Lever off for the other two people. Apply the last NOT rule, then find Xin's item.

4. Diagram

Compare the remaining numbered pairs one by one. Add one mark for each unequal pair, then count all your marks.

5. Test

Write TE first, then one letter per remaining shape. Choose the table row matching the whole message.

6. Final

Read slots A1, C1, D1, B1, E1. Copy every stored digit in that order, including zero.

Inventor Relay Assembly

Team 1 badge record (no cutting needed)

Write a digit beside each badge as you solve its clue.

Build: _____

Parts: _____

Builder: _____

Diagram: _____

Test: _____

Reader: reads the clue. Recorder: writes the digit. Path finder: traces routes. Swap roles every clue.

Inventor Relay Assembly

Team 1 paper unlock card

Our five badges are ready. We used the final sheet to find this code:

Host: compare this with your solution guide. When it matches, read the ending and celebrate.

No physical lock or prize is required. You may draw a celebration star on this card.

Inventor Relay Assembly

You're invited to a birthday mystery!

Join Birthday Explorer for Inventor Relay Assembly.

Find the correct final test record for a paper relay machine.

Date: _____

Time: _____

Place: _____

Bring your curiosity. Paper and pencils are provided. Work together, share ideas and solve six clues.

Designed for ages 8-10. Estimated 30-45 minutes.

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Inventor Relay Assembly

Birthday Mystery Explorer

Presented to Birthday Explorer

Team member: _____

For completing Inventor Relay Assembly with curiosity,
teamwork and kindness.

The relay test record is recovered. Draw your own imaginary
invention on the unlock card. Thank your team for checking the
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Date: _____

Host signature: _____

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