

Snow Train Celebration

HOST ONLY - preparation and story

Includes answers. Keep these pages and all hint pages with the adult host.

Welcome to the snow train station. The banner poles are too bulky for some passages between the train carriages. Your team has the original records on the table. First recover five pieces of information, then use the final plan to route the banner delivery. Keep every result beside its badge so another teammate can check your reasoning.

1. Print the six player sheets and two record sheets for each team. Keep answers and hints with the host.
2. Lay out Travel map (one way), Carriage orders, the remaining clue sheets and the final plan. All task records are printed inside the sheets; no extra prop is needed.
3. After each clue, pass roles one seat clockwise. With two players, combine Reader with Recorder and Checker with Builder. With five or six, add a second checker and a source finder; everyone explains one decision.
- 4 players; 1 team. Give each team 6 player sheets and 2 record sheets. Share one host guide and one set of three hint levels.

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

Optional: 4 invitations or certificates, only if selected.

Snow Train Celebration

HOST ONLY - solution guide

1. Path: S-A-C-F

Discard closed roads and paths missing A. Add the costs of every remaining edge; the lowest eligible total determines the whole route. Result: S-A-C-F.

2. Record: NORTH

Check source status first, then join the matching tag. The useful information comes from separate records, not their printed row order. Result: NORTH.

3. Luggage: 9

Remove 3 from 39; share 36 among 4 parcels to get 9. Check $2 \times 9 + 3 = 21$. Result: 9.

4. Staff: 6

Ana has Flag; Eli has Lamp; Max has Bell. Max's item gives 6. Result: 6.

5. Signal: 6

The decoded word is RAIL; its row gives 6. Result: 6.

6. Final: B-C-F-G-K

Recover all five loads. The cheaper road works for a small load; a large load needs the higher-capacity road. The resulting five-leg route records every necessary decision. Checked result: B-C-F-G-K.

Snow Train Celebration

HOST ONLY - timeline, story and ending

3 minutes: Read the opening. Show the evidence record and choose starting roles.

5 minutes: Solve Path. Offer one hint at a time and rotate roles after checking.

5 minutes: Solve Record. Offer one hint at a time and rotate roles after checking.

5 minutes: Solve Luggage. Offer one hint at a time and rotate roles after checking.

5 minutes: Solve Staff. Offer one hint at a time and rotate roles after checking.

5 minutes: Solve Signal. Offer one hint at a time and rotate roles after checking.

7 minutes: Build the five-leg delivery route using all five results.

3 minutes: Read the ending. Ask each teammate to explain one rejected alternative.

After Record: A cheap road can still fail a load limit or miss a required stop. Keep cost and capacity as separate checks. Pass the record sheet to a new checker before opening the next clue.

After Staff: Four results are recorded. Each teammate points to a source supporting one result. Complete the fifth check before building the five-leg delivery route.

Check every result using the solution guide. Offer the next hint only when requested; save the answer reveal until the group is ready.

The delivery follows route B-C-F-G-K; every road can carry its assigned load. Thank each teammate for a different piece of reasoning.

Explain one tempting wrong choice and the evidence that ruled it out. Show how each of the five results affected the five-leg delivery route. If a clue is missing, say what remains uncertain before reopening that sheet.

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

Snow Train Celebration

Player clue 1: Path | Team 1

The banner poles are too bulky for some passages between the train carriages. We will use the records on the table to route the banner delivery. Share the reading, explain each choice and keep the five results for the final plan.

Trace a legal supply journey from S to F. The map's arrows are one-way roads. Visit every required stop, stay inside the travel budget and use the cheapest complete journey. Report all stop letters.

Travel map (one way)

S > A: 2 units

S > B: 1 units

A > C: 2 units

B > C: 2 units

C > F: 2 units

B > F: 2 units

A > F: 7 units

Journey rules

Start S; finish F; limit 7 units.

Visit A. Use the least total cost.

Write every stop in order, with hyphens.

Path result: _____

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Player clue 2: Record | Team 1

Use the carriage orders and platform book to follow the completed record. Match printed keys, then report the requested field. A planned or cancelled entry cannot prove a move.

Carriage orders

item: Tunnel | tag: PINE | status: cancelled

item: Ramp | tag: WAVE | status: draft

item: Deck | tag: STAR | status: checked

Platform book

tag: STAR | bay: NORTH

tag: PINE | bay: EAST

tag: WAVE | bay: WEST

Cross-check

Match A.tag to B.tag.

A.status is not cancelled.

A.status is not draft.

Report B.bay.

Record result: _____

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Player clue 3: Luggage | Team 1

Luggage desk: Every parcel has the same whole-number weight. Remove loose units, find ONE parcel and check the second rule.

4 parcels + 3 loose units = 39 units



2 parcels + 3 loose units = 21 units

One parcel = ? units. Whole numbers 1-9.

All parcels have equal weight.

Luggage result: _____

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Player clue 4: Staff | Team 1

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

Flag digit 3	Bell digit 6	Lamp digit 9
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People: Ana, Eli, Max

Ana does NOT have Lamp.

Eli does NOT have Flag.

Eli does NOT have Bell.

Max does NOT have Flag.

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

Staff result: _____

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Player clue 5: Signal | Team 1

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



star = R



diamond = A



heart = I



cross = L



star



diamond



heart



cross

RAIL = 6

GEAR = 9

TICK = 2

Signal result: _____

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Player clue 6: Final | Team 1

Use each result to recover the load for its leg. At each leg choose the cheapest road that can carry that load. A road with too little capacity is closed to this cargo. Report the five road IDs in journey order.

Use your results from: Path, Record, Luggage, Staff, Signal.

Cargo key, one leg at a time

Leg 1 (Path): S-A-F=2; S-A-C-F=4

Leg 2 (Record): NORTH=2; EAST=4

Leg 3 (Luggage): 1=2; 9=4

Leg 4 (Staff): 3=4; 6=2

Leg 5 (Signal): 6=4; 9=2

Roads: load capacity / travel cost

1: B 6/4 | A 3/2

2: C 3/2 | D 6/4

3: F 6/4 | E 3/2

4: G 3/2 | H 6/4

5: K 6/4 | J 3/2

Route rule

Choose the cheapest road carrying each load.

Report the five road IDs in leg order, with hyphens.

Final result: _____

Ask your host to check your final result and read the ending.

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Hint level 1 - HOST ONLY

1. Path

Find S, F, the required-stop list and any CLOSED edge.

2. Record

Start with the status field in Carriage orders.

3. Luggage

Find the equal parcels and the separate loose units.

4. Staff

Find the three people, the three items and the forbidden pairings.

5. Signal

Find the symbol key and the message strip.

6. Final

Keep the five named results beside the final plan and find the key for each badge.

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Hint level 2 - HOST ONLY

1. Path

A cheap shortcut is not a complete journey if it skips a required stop.

2. Record

The tag links an item to a bay; rows in separate records need not line up.

3. Luggage

Remove the loose units before sharing the remaining weight among equal parcels.

4. Staff

Each item is used once. A person ruled out of two items must have the third.

5. Signal

Use the same key every time a symbol repeats. Read the message in its printed order.

6. Final

Each badge controls a different fact, road leg, order note, pulse or habitat layer. Use the matching key exactly once.

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Hint level 3 - HOST ONLY

1. Path

List the legal complete paths, add their edge costs and compare only paths that meet every condition.

2. Record

Keep only entries meeting every status test. Follow each printed join to the report field; do not guess from row position.

3. Luggage

Find one parcel from the first equation, then substitute that weight into the second equation before recording it.

4. Staff

Place the most restricted person, remove that item from the others, then use the remaining rule. Read the target person only after checking all pairs.

5. Signal

Write the complete decoded word, check every symbol, then use the conversion row for that exact word.

6. Final

Check the completed product against all five recovered facts. If two answers remain, locate the fact that distinguishes them rather than guessing.

Snow Train Celebration

Team 1 result record

Write the complete result from each clue. Results can be words, routes, orders, settings or numbers.

Path: _____

Record: _____

Luggage: _____

Staff: _____

Signal: _____

Keep this record beside the final clue. Copy results exactly, including any leading zero.

Reader / Recorder / Evidence checker / Route or model builder

After each clue, pass roles one seat clockwise. With two players, combine Reader with Recorder and Checker with Builder. With five or six, add a second checker and a source finder; everyone explains one decision.

Snow Train Celebration

Team 1 final result and celebration

Our final challenge: Final

We combined our earlier clues to decide:

We know it works because:

Host: compare the result with your solution guide. Read the ending when it matches, then let the team explain one discovery.

No physical lock or prize is required. Draw a celebration star here if you like.

Snow Train Celebration

You're invited to a mystery!

Join Birthday Explorer for Snow Train Celebration.

The banner poles are too bulky for some passages between the train carriages. Work together to route the banner delivery.

Date: _____

Time: _____

Place: _____

Bring your curiosity. Paper and pencils are provided. Share ideas and solve six clues together.

Designed for ages 8-10. Estimated 35-50 minutes.

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Mystery Explorer

Presented to Birthday Explorer

Team member: _____

For completing Snow Train Celebration with curiosity,
teamwork and kindness.

The delivery follows route B-C-F-G-K; every road can carry its assigned
load. Thank each teammate for a different piece of reasoning.

Date: _____

Host signature: _____

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