

Notice before explaining

Name: _____ Date: _____

Your goal: explain what the slider changes, what keeps a metal-model chain joined, and why two resistant zippers might need different choices. Work on paper or explain aloud to someone who records your ideas. No earlier lesson or internet access is needed.

Quinn wants to carry a project kit. With the bag nearly empty, a fold of lining enters the moving slider body and the slider stops. Later, the route looks clear, but extra card spreads the bag edges wide. He stops again. These are events from the paired story, not measurements of your zipper.

Words to use: tape = fabric strip carrying a row; elements = teeth or repeated joining parts; slider body = moving guide; pull tab = attached part the hand holds; engagement = fitting together; force = push or pull.

MS01 | A closed length stays joined after the little slider has moved away. What can Quinn see, and what about the hidden inside would he have to infer? Complete: I can see... / I would need a model to explain...

MS02 | Predict before the next page: sketch a hidden route that could join two rows and divide them when motion reverses. Mark where two rows would be separate and where they would be joined. Add one reason for your design. Keep this first idea to compare later.

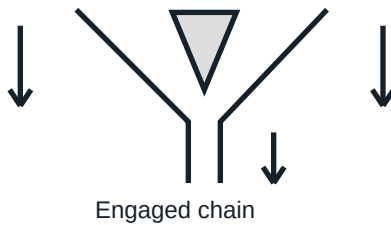
A moving guide, a fit left behind

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Reference for your explanation: the slider has a Y-shaped passage that guides rows together for closing and apart for opening. In the particular metal design used here, opposite-row elements alternate; a projection (sticking-out part) nests in a neighboring recess (hollow). That fitted geometry can retain engagement after the slider passes. Other constructions have different shapes; the chain is not indestructible.

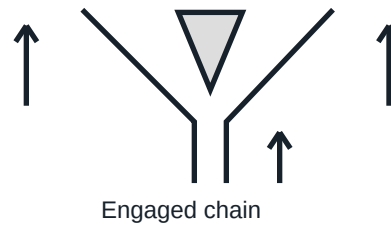
Closing - slider held fixed

Separate rows



Opening - slider held fixed

Separate rows



Two branches meet one route in a schematic slider held fixed. Closing: separate rows travel through the branches toward the joined route. Opening: the engaged chain travels the reverse way and divides at the branches. These arrows describe elements relative to a fixed slider, not the slider moving along a bag. Hidden interior is a model, not to scale.

MS03 | Compare your prediction with the route. Describe closing, then opening. Start each sentence with "With the slider held fixed, the elements..." Say what changed in your idea, or why you kept it.

MS04 | A learner says, "The slider clamps the whole closed length forever." Use the section left behind and the metal-model fit to explain what this misses. Name the guide and the feature that retains the join.

MS05 | Imagine gently opening and closing the same empty, intact case on the same table. List two conditions kept the same and the one intended change. Why would "up always closes" be an unreliable label?

Choose a cause, then a next step

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Sliding friction is contact resistance opposing relative sliding. Resistance alone does not tell you every cause. Think about the two story cases; do not create either problem on a real item. Stop rather than force any zipper that resists normal gentle movement or looks damaged.

MS06 | Case A: a fold occupies the passage. Case B: passage looks clear; packed contents spread the edges wide. For each, name the evidence that differs and a condition Quinn could change. Explain why repeating the same action for both may miss the problem.

MS07 | Hypothetical transfer: a zippered art pouch holds thick card. Its lining is clear, but the opening is stretched wide. Explain one supported packing choice before gentle closing and a condition for stopping. Would success prove that every resistant zipper can be repaired? Why?

MS08 | Write your three takeaways: (1) The slider guides... (2) In this metal model, the join remains because... (3) When a zipper resists, first... Then write one question the model cannot answer.

Source notes: YKK explains the passage/parts and handling; Sundback's original design supplies the bounded metal fit. Coats' invisible-zip brochure supports type-specific clearance; NASA supplies force/friction foundations, not zipper tests. Full descriptive source links are in the paired story. Optional next reading: Force asks what a pull is being asked to do. It can extend the packing-choice question, but this worksheet needs no online lesson. Story: <https://thisworldexplained.com/okay-but/the-bag-that-wouldnt-take-one-more-thing/> Force: <https://thisworldexplained.com/okay-but/force-what-are-you-asking-the-pull-to-do/>