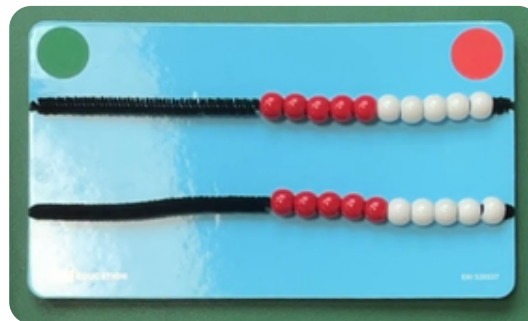
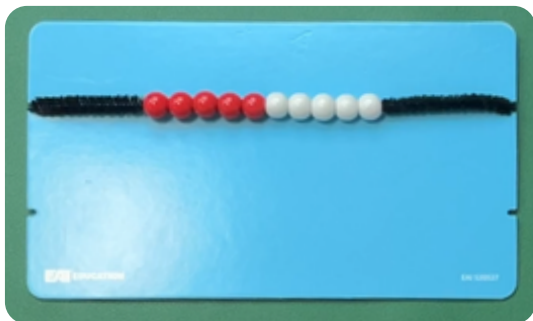
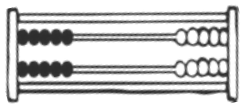




Overview

A rekenrek, also called a “bead rack” or “number rack”, uses the organization and color coding of beads to support students in seeing the 5 and 10 structure of numbers and to use those structures to efficiently add and subtract. Rekenrek routines offer classroom structures for engaging students in meaningful use of the rekenrek.

Representing Numbers

Position the rack so that the red beads (or whichever beads are a darker color) are on the left and the lighter color beads, usually white, are on the right. “White is on the right” can be a helpful reminder. Green & red sticker dots, like the ones shown here, can also help with orientation. When all of the beads are to the right, on the red or “resting side”, the rack shows zero. Represent a quantity by sliding beads to the left, so that numbers are “read” left to right. In the example here, we see the top row as 5 red and 2 white, so 7 in all. Pushing over 7 more beads on the bottom row creates a total of 14.



Getting Started

The first time using the rekenrek, orient students to the tool by asking questions such as:

- What do you see?
- How many beads? How are they organized?
- How many beads in this group of red? How many red beads in all? How many white?

With students watching, in one push move 5 beads to the left. Ask questions such as

- How many did I push over? How do you know?

Repeat for various quantities in one row, then extend to pushing over amounts in both rows.

Provide students with sufficient time to explore the rekenrek and develop a shared understanding of how numbers are represented. The goal is for students to focus on the mathematical structure and use of the tool, rather than its novelty. Provide students with time and opportunities to build quantities on the rekenrek, encouraging “one-push” movement as they become more proficient with the tool and number structures.



The following four routines provide ideas about possible ways for integrating the rekenrek into daily instruction. Grounded in the Kentucky Academic Standards for Mathematics across Kindergarten through Grade 2, these structures shift student thinking from basic counting-by-ones to sophisticated spatial and visual reasoning.



Flash and Tell

Grade Level: Kindergarten - Grade 2

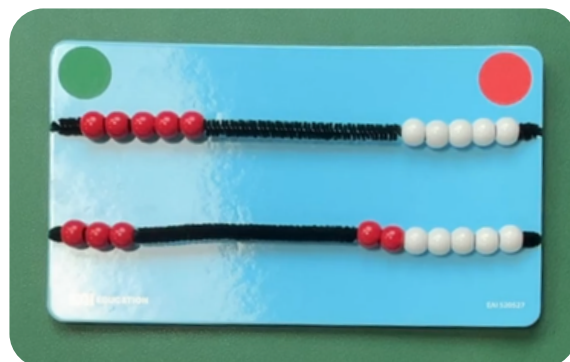
Standards: KY.K.CC.5, KY.K.OA.3, KY.1.OA.6, KY.2.OA.2

What is the routine?

Flash and Tell helps students develop subitizing and flexible number sense by encouraging them to recognize quantities using the rekenrek's visual structure rather than counting beads one at a time. Students briefly see a quantity and explain how they saw the number.

How it works:

Briefly show a quantity on the rekenrek for 2–3 seconds, then cover it. Ask students to identify the quantity and, most importantly, describe how they recognized it. Listen for students using the color groups, rows, and/or known quantities to make sense of what they saw.



Try It: Target Number = 8

Teacher: "Look carefully. How many beads do you see? How did you see them?"

Flash 8 beads on the top row (5 on top, 3 on bottom), then cover the rekenrek.

Student: "I saw 8 because I saw 5 beads and 3 more beads on the bottom."

Teacher: "How could you show that with an equation?"

Student: " $5 + 3 = 8$."

Teacher Moves to Consider

- Ask, "How did you see it?" rather than simply asking for the number.
- Invite students to share different ways of seeing the same quantity. For example, in the above example, a student might notice that all but 2 red beads are pushed over, and solve $10 - 2$ to know there are 8.
- Highlight students' use of the rekenrek's 5-and-10 structure.
- Encourage students to describe quantities using known parts rather than counting by ones.
- Over time, vary the arrangement and quantity to support increasingly flexible ways of seeing numbers.





Guess My Way

Grade Level: Kindergarten - Grade 2

Standards: KY.K.OA.1, KY.K.OA.3, KY.1.OA.6, KY.2.OA.2

What is the routine?

Guess My Way helps students develop flexible ways to compose and decompose numbers. Students use the two rows of the rekenrek to think about how a target number can be represented in different ways.

How it works:

Choose a target number and hide your rekenrek so students cannot see the arrangement. Students take turns guessing how the target number might be split across the two rows. Encourage students to explain their thinking and listen for different ways to make the same number.

Try It: Target Number = 6

Teacher: "I have 6 beads showing on my rekenrek, but you can't see how I arranged them. What do you think my way might be?"

Student A: "Could it be 5 on top and 1 on the bottom?"

Teacher: "That's a good way, but it's not my way."

Student B: "I know! Its 3 on top and 3 on the bottom"

Teacher: "That's a good way, but it's not my way."

Student C: "Is it 4 on top and 2 on bottom?"

Teacher: "Yes - that's my way." Teacher shows rekenrek to class, then picks a new way for the class to discover.

Teacher Moves to Consider

- Ask students to explain how they know their guess makes the target number.
- Invite students to find another way to represent the same number.
- Compare different representations and discuss what stays the same and what changes.
- Encourage students to use the rekenrek's 5-and-10 structure rather than counting each bead.



Variation

Students play in pairs or small groups. One student plays the role of "teacher" by choosing the target number and target arrangement. The other student(s) try to guess the arrangement.





Build It, Break It

Grade Level: Grades 1-2

Standards: KY.1.OA.6, KY.2.OA.2

What is the routine?

Build It, Break It helps students develop flexible addition and subtraction strategies within 20. Students use the rekenrek to build quantities, decompose numbers, and reorganize parts to make the problem easier to solve. Encourage students to look for helpful structures such as doubles, near-doubles, make-a-ten, and 5-and-10 relationships.

How it works:

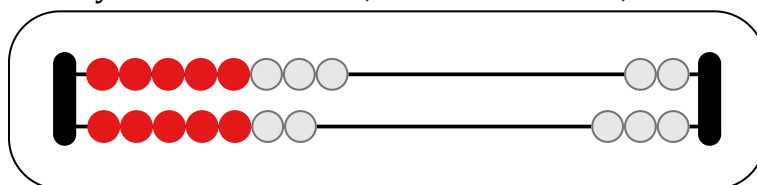
Present an addition or subtraction problem. Have students build the quantities on the rekenrek and then look for ways to break apart or combine the quantities strategically. Ask students to explain how they reorganized the numbers and why their strategy works.

Try It: $8 + 7$

Ask students to build, solve and explain their reasoning for the addition problem " $8 + 7$ ".

- Student builds 8 on the top row and 7 on the bottom row and might say "I see $5 + 5 = 10$ in the red beads, and $3 + 2 = 5$ in the white beads."
- Teacher: "How does that help you solve the problem?"
- Student: " $10 + 5 = 15$, so $8 + 7 = 15$."

Students might also use a near-double strategy. They might change 8 on the top to seven by moving one bead to the right (hiding) and and say "I know $7 + 7 = 14$, and 8 is one more, so $8 + 7 = 15$."



Try It: $17 - 9$

Ask students to build, solve, and explain their reasoning for the subtraction problem " $17 - 9$ ".

- A student might build 17 on the rekenrek by moving 10 on the top row and 7 on the bottom. They decide to break apart 9 to subtract. They might say, "I can take away all 7 on the bottom row to get to 10, and then take away 2 more. So it's 8."
- Teacher: "How does breaking apart 9 help you solve the problem?"
- Student: "It helps me get to 10 first. I know $17 - 7 = 10$, and $10 - 2 = 8$. So, $17 - 9 = 8$."

Students might instead use a compensation strategy. They could take away the entire top row, then put 1 bead back. They might say "I know $17 - 10 = 7$, but that's removing 1 too much, so it's 8."





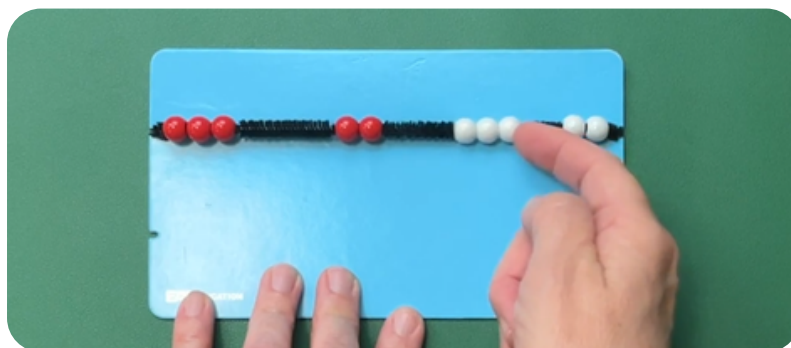
Meet Me in the Middle

Grade Level: Kindergarten

Standards: KY.K.OA.5

What is the routine?

Meet Me in the Middle gives students a playful way to explore composing and decomposing numbers within 5. Working with a partner, or with the teacher, students take turns building a quantity and figuring out how many more are needed to reach the target number.



How it works:

Choose a target number. One player slides a set number of beads to the center. The second player determines how many more beads are needed to reach the target and slides that amount from the opposite side. The two groups meet in the middle.

Try It: Target Number = 5

Student 1: Slides 2 beads from the left to the center.

Student 2: Thinks, “I need 3 more to make 5.” Slides 3 beads from the right to meet the first group.

Together: “2 and 3 make 5!”

Teacher Moves to Consider

- Ask, “How many more do you need to make 5? How do you know?”
- Encourage students to use what they see on the rekenrek rather than counting each bead.
- Switch roles so students have opportunities to build a quantity and find the missing part.
- Ask students to describe the two parts: “What parts did you put together to make 5?”
- As students become comfortable, vary the starting amount and target to encourage flexible thinking.

Summary

Integrating rekenrek routines into daily instruction builds a strong foundation for early visual reasoning and computational fluency. By consistently engaging students in these structured, hands-on tasks from initial exploration in Kindergarten through derived-fact strategies in Grade 2 teachers support a flexible understanding of number relationships that moves students far beyond counting by ones. As students internalize the visual structures of 5 and 10, they gain the confidence and strategic thinking necessary for long-term mathematical success.

