

Rekenrek/MathRack 20 Activities

Rekenreks are also known as an Arithmetic Rack. They are a great tool that allows children to develop number sense at their own pace. With the built-in 5 & 10 structure, they help children build number relationships that lead to more advanced strategies. On the second page are directions on how to build your own, but you can also purchase quality ones known as the MathRack 20 at www.mathrack.com.

Introducing the tool

Have them build their own Rekenrek: Show the students a sample Rekenrek and ask them what they notice. Elicit the idea that there are two rows of 10 beads and the color of the beads change at 5. You can explain that this tool is what students in the Netherlands use to do addition and subtraction.

Show Me (one row only): have them show you a certain number on the Rekenrek – “Show me 7 on the rekenrek.” Then ask questions about how they knew where 7 beads was, what do they notice about how far it is from 10, from 5, etc.

Show Me (using both rows): just like above, but they have to show 7 using both rows. This is a nice way to bring up the ‘math facts’ for 7. Some kids will have 5 on top and 2 on the bottom, some may have 1 on top with 6 on the bottom, etc. Use a context like “There are 8 girls on Kylie’s bunk bed, some are on the top bunk and some are on the bottom bunk. Use your Rekenrek to show me how many might be on the top and how many might be on the bottom.”

Quick Images: Give them a story like “Kylie is having a slumber party, during the party some of the girls were playing on her bunk bed. I’m going to flash my Rekenrek for 5 seconds to show you how many girls were on the bunk bed. I’d like you to show it on your Rekenrek and figure out how many girls were on the bunk bed.” (Flash 9 all on top; 7 all on top; 6 all on top; 5 on top, 3 on the bottom, etc) (Other contexts can be using the Rekenrek as a double-decker bus or as the upstairs and downstairs of a house)

Adding

Give story problems that encourage the use of the Rekenrek (Fosnot, 2007):

- *There are 7 people on the double-decker bus. At the first stop, 8 people got on the bus. How many people are on the bus?*
- *At Kylie’s slumber party, some of the girls were playing on her bunk bed. There were 6 girls sitting on the top bunk and 8 girls on the bottom bunk. How many girls were on the bunk bed?*

Do ‘quick images’ where you flash an amount (7), have them show that amount on their Rekenrek. Next add some beads (6) and flash the new total. Ask them “How many beads did I add?” When you add the beads you can add them as many as you can to the top row then put the remaining on the bottom or you can put them all on the bottom.

Subtracting

Give story problems that encourage the use of the Rekenrek (Fosnot, 2007):

- *There are fifteen people on the double-decker bus. At the first stop, 7 people got off the bus. How many people are still on the bus?*
- *Kylie was having a slumber party. There were 13 girls total at her party and all of them are piled on her bunk bed. Eight girls jumped off the bed, how many are still on the bed?*

Do ‘quick images’ where you flash the total (16), have them show that amount on their Rekenrek. Next move some beads over (7) and flash what is left. Ask them “How many beads did I take away?” When you take the beads away you can take them all from the top row or you can take as many away on the bottom as possible then take the remaining from the top.

For a more comprehensive source of lessons buy the book *Mastering the MathRack* at:

www.mathematicallyminded.com

How to Build Rekenreks/MathRack 20s

The directions below will make 20 individual student rekenreks/MathRack 20s.

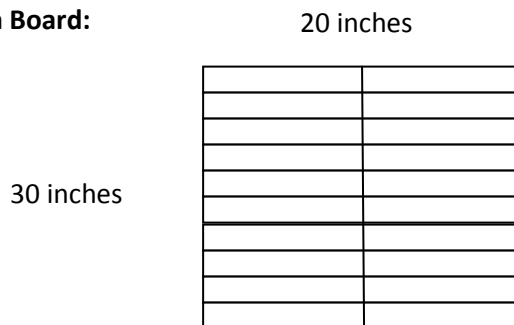
Materials

- 30x20 Foam Board (available at office supply and craft stores)
- 40 pipe cleaners
- Two sets of colored beads, 200 beads of each color. Traditional rekenreks use white and red beads.
- Table saw and drill (or other tools that will cut the foam board and drill the holes)

Directions

- Dimensions I use for the individual rekenreks are 3"x10". This is because on a 30"x20" foam board I can make 20 rekenreks. Mark the middle of the 20" side to give you 10." Then on the 30" side mark off every 3 inches. Using a chop saw, cut out the individual rekenreks.
- Drill two holes at each end of the rekenrek, about 1 inch in from the side. Place one end of each pipe cleaner into the holes at one end; tie the pipe cleaners in a knot on the back so that the children cannot get the pipe cleaners off.
- Place five white and five red beads on each pipe cleaner. When looking at the finished rekenrek, the beads should be pushed over to the right-hand side (this is called the "Start Position") and the white beads should be on the right with the red beads towards the left.
 - The start position has the beads on the right so that when children push beads over they are "reading" the rekenrek from left to right. They count the beads from left to right just like numbers appear on a number path/number line.
- Once all the beads are on the pipe cleaners, thread the pipe cleaners through the holes you drilled on the other end and tie them so the children cannot get the pipe cleaners undone.

Cutting the Foam Board:



Finished Individual Rekenrek:

