

$$a^2 + b^2 = c^2$$

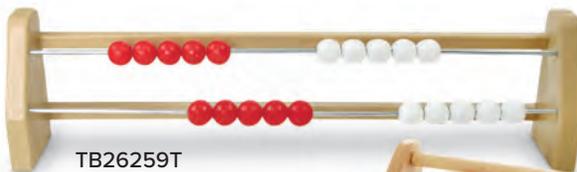
MATH

Works

Rekenrek Adding On Game

Developed by Kristin Ulrich
Grades K-2

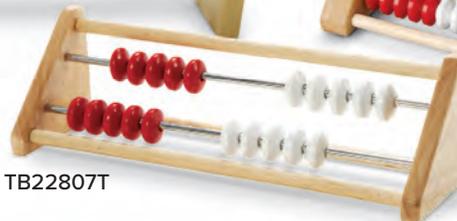
TB20149T



TB26259T



TB20151T



TB22807T



TB25313T

Objectives

Students will...

- Illustrate adding on using the Rekenrek model.
- Apply their adding on skills to a game.
- Create number sentences while practicing with the Rekenrek.



Materials

- Individual Student Rekenrek Up to 20, 1 per student (Cat. No. TB26259T, TB22807T, or TB25313T)
- Set of 12 Number Cubes, 1 number cube per student pair (Cat. No. TB20151T) **OR** Set of 5 Number Spinners with numbers 1-5, 1 spinner per student pair (Cat. No. TB20149T)



Common Core State Standards

- CCSS.Math.Content.K.OA.A.2** — Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- CCSS.Math.Content.1.OA.C.6** — Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on.
- CCSS.Math.Content.2.OA.B.2** — Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two 1-digit numbers.



Activity

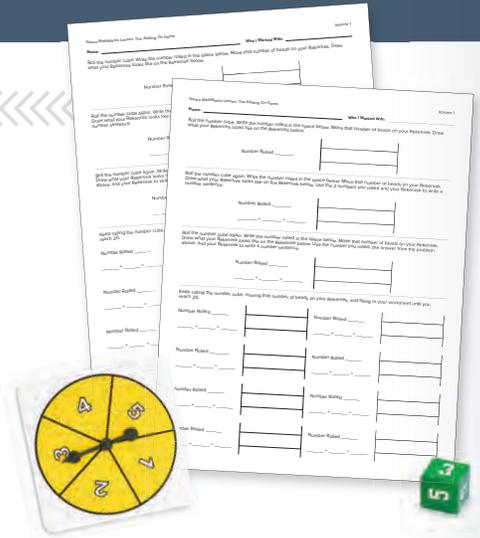
1. Students should be somewhat familiar with the use of the Rekenrek to complete this lesson.
2. Have students move 6 beads to the left on the top row of their Rekenrek. Students should be able to move the 5 red beads and 1 white bead without counting them. Ask students how many more beads they need to get to 10. They should answer 4 more.
3. Repeat the same line of questioning with the numbers 3 and 8 that you did with 6 and 10 above. Look closely to determine that students are able to move the beads without counting each individual bead.
4. Now have students move all 10 beads on the top row over to the left. Explain that they are starting with 10 and counting on from that point.
5. Next, have students move 2 red beads to the left on the bottom row of their Rekenrek. Ask students how many beads they have in all. Remind them that they have already moved 10 on the top row, so they should count on from 10. Students should come up with an answer of 12.
6. Have students move 4 more beads to the left and ask them how many beads they have moved in all. Remind them that they have already moved 12 beads, so they should count on from 12. They should come up with a total of 16 beads.
7. Ask students if they can add on 5 more beads. They should answer no. Ask them why not. They should answer that there are not enough beads. Then ask what the biggest number is that students can add on to 16 using their Rekenreks. They should answer 4. When asked what other numbers could still be added on, students should be able to answer 1, 2, or 3.



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Discussion

1. Give each student a worksheet. Use an interactive whiteboard or overhead projector to project a larger version of the worksheet so students can follow along with you and see how to complete the worksheet. In the Who I Worked With blank at the top, you and the students should write Class. They can use this sheet later as a reference when working with a partner or individually. Students should also be following along with the activity at their desks by moving the appropriate number of beads on their Rekenreks.
2. Roll the number cube (or spin the number spinner) one time and have students write the number rolled into the appropriate blank in the first section on their worksheet. Ask students which beads need to be moved on the Rekenrek. For example, if you roll a 3, students should move 3 red beads on the top row to the left. On the displayed worksheet, draw what the Rekenrek looks like after the correct number of beads have been moved. Students should then be able to duplicate the drawing on the Rekenrek on their worksheet.
3. Roll the number cube a second time and have students write the number rolled in the appropriate blank in the second section on their worksheet. Ask students which beads need to be moved on the Rekenrek now. For example, if a 5 is rolled the second time, students would say that 2 red beads and 3 white beads on the top need to be moved. Once the beads have been moved and the answer has been drawn, record the addends for the first number sentence. Remind students to count on from the first number to figure out the answer. In this example, $3 + 5 = 8$ would be the first number sentence.
4. Continue this process of rolling the number cube, asking students which beads need to be moved, drawing the answer, then recording the addends for the new number sentence. Don't forget to remind students to count on from the existing number of beads to figure out the answer. To continue the example, a 6 is rolled the third time. Students would say that 2 white beads on the top and 4 red beads on the bottom need to be moved. Students would then draw the answer, count on from 8, and figure out that the next number sentence should be $8 + 6 = 14$.
5. When you get close to 20, ask students what numbers need to be rolled to get a number 20 or less. For example, if you have used 17 beads and have 3 left, students would answer that you need to roll a 1, 2, or 3 to get 20 or less. Continue the process until you get exactly 20.



Practice

1. Students will repeat the whole-class activity with a partner. Each student should have another copy of the worksheet to record their results. Be sure they write their partner's name in the Who I Worked With blank.
2. Students should complete the activity at least once with a partner before they move on to completing it individually. Students may complete the activity again with another partner before moving on to individual practice if you wish. Students will need another copy of the worksheet each time they complete the activity.
3. After 1-2 times of completing the activity with a partner, students should complete the activity on their own. In the Who I Worked With blank, they can write No One.

Assessment

During the whole-class activity, students should be completing the worksheet along with you. This allows students to see how the worksheet should be completed and provides students with a concrete example that they can refer to when working with partners and individually. Having students draw what the Rekenrek looks like after each roll ensures that they are adding on correctly and gives a concrete indication that they are using the Rekenrek correctly.



Intervention

Have students add on up to 10 instead of 20.



Extension

Have students add on beyond 20, perhaps up to 30 or 40.



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Name: _____ Who I Worked With: _____

Roll the number cube. Write the number rolled in the space below. Move that number of beads on your Rekenrek. Draw what your Rekenrek looks like on the Rekenrek below.

Number Rolled _____	<div style="border-bottom: 1px solid black; height: 10px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 10px; margin-bottom: 5px;"></div>
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Roll the number cube again. Write the number rolled in the space below. Move that number of beads on your Rekenrek. Draw what your Rekenrek looks like on the Rekenrek below. Use the 2 numbers you rolled and your Rekenrek to write a number sentence.

Number Rolled _____	<div style="border-bottom: 1px solid black; height: 10px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 10px; margin-bottom: 5px;"></div>
_____ + _____ = _____	

Roll the number cube again. Write the number rolled in the space below. Move that number of beads on your Rekenrek. Draw what your Rekenrek looks like on the Rekenrek below. Use the number you rolled, the answer from the problem above, and your Rekenrek to write a number sentence.

Number Rolled _____	<div style="border-bottom: 1px solid black; height: 10px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; height: 10px; margin-bottom: 5px;"></div>
_____ + _____ = _____	

Keep rolling the number cube, moving that number of beads on your Rekenrek, and filling in your worksheet until you reach 20.

Number Rolled _____ _____ + _____ = _____		Number Rolled _____ _____ + _____ = _____	
Number Rolled _____ _____ + _____ = _____		Number Rolled _____ _____ + _____ = _____	
Number Rolled _____ _____ + _____ = _____		Number Rolled _____ _____ + _____ = _____	
Number Rolled _____ _____ + _____ = _____		Number Rolled _____ _____ + _____ = _____	