

First Grade: Mathematics

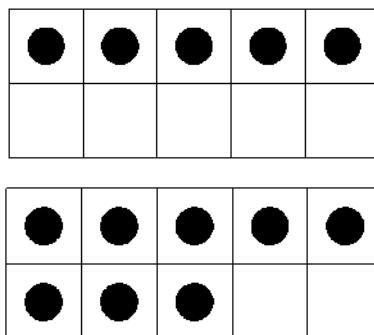
Unit 1: Models to Represent Addition & Subtraction

Models to Represent Addition & Subtraction

Double Ten-Frames

The example below shows $5 + 8$ using double ten-frames.

Use counters to show 5 on the top frame and 8 on the bottom frame.



You can pull out the two fives to make a combination of a ten and then add three.

$$5 + 5 = 10$$

$$10 + 3 = 13$$

$$5 + 8 = 13$$

Rekenrek (Number Rack)

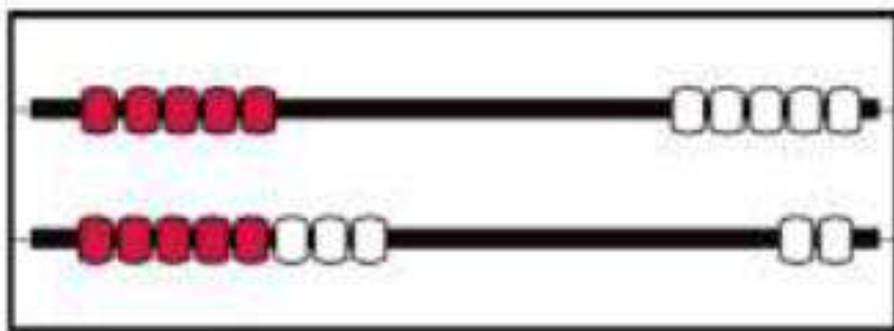
The example below shows $5 + 8$ using a rekenrek.

The model is made of 2 strings of 10 beads. Each string is broken into a group of 5 red and 5 white beads. Beads start at the right hand side and are slid to the left when in use.

For $5 + 8$, the first string shows 5 beads. The second string shows 8 beads. You can pull out the two fives to make a ten and then add three more. It's easy to see the two fives that make a ten because of the color.

$$5 + 5 = 10$$

$$10 + 3 = 13$$



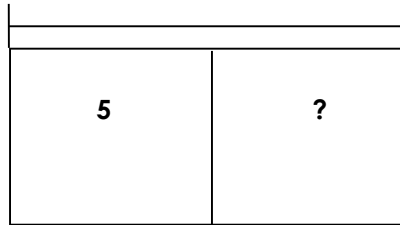
Part-Part Whole Mat (Bar or Tape Diagram)

The example below shows $13 - 5$ using a Part-Part Whole Mat.

The Part-Part Whole Mat helps students see the relationship between addition and subtraction. It shows the whole being broken up into smaller parts. It helps them see that subtraction is the missing part.

For $13 - 5$, the whole is 13. The part is 5 and one of the parts is missing.

13



Ask yourself, "5 and what is 13? Or 5 plus what is 13?"

5 and 8 is 13 so $13 - 5$ is 8.

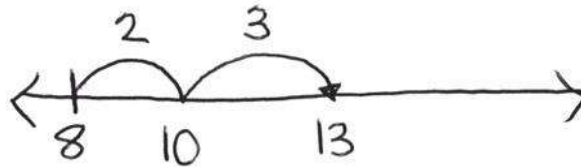
$$5 + \underline{8} = 13$$

Open Number Line

The example below shows $5 + 8$ using an Open Number Line.

The Open Number Line allows students to partition the number line as they see fit and use friendly numbers that are comfortable for them. It provides a way for students to develop strategies, keep track of the steps involved and communicate about their thinking with others.

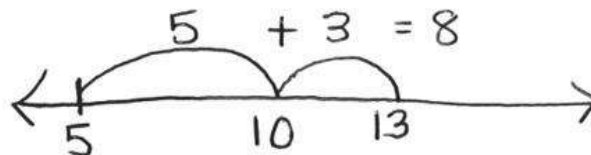
For $5 + 8$, you need to draw a blank number line and place the larger addend on the left. Then make a jump of 5 to add 5 to 8. Since 5 can be decomposed into 2 and 3, you can make one small jump of 2 to land on 10 and then another jump of 3 to land on 13.



$$5 + 8 = 13$$

The example below shows $13 - 5$ using an Open Number Line.

For $13 - 5$, you need to draw a blank number line and place the smaller number on the left. Then make jumps leading to 13. You can make one jump of 5 to land on 10 and make a smaller jump of 3 to land on 13. Add the jumps together to get your answer.



$$13 - 5 = 8$$