Materials:	Teacher: White board/tablet, colored markers
	Especially for Special Ed or EL—pictures of the objects in the problems—bears, trucks, picture books, chapter books, calendar, donuts, boxes or other package for the donuts.
	Kids: paper, pencil, colored pencils to match teacher colors
	For younger students, Special Ed or EL: register tape and cut out, colored hash marks, because they may have difficulty drawing the lines and numbers.
Note:	It is important to follow the series of questions for each problem. This will help the students start to see the patterns and give them a framework to ask themselves the questions as they try to solve other problems.
Lesson Objectives:	Students can demonstrate the ability to draw a number line that shows a one to one relationship for a given number/objects. Lesson intended for 1st grade and up (kindergarten if teacher using lots of prompts and drawings for students). The notion of distances between numbers on the number line would come in a different lesson, as this lesson focuses on the creation and use of a number line in organizing counting. Students will use the number line to write equations (number sentences.)

Head Problem:	Skip count by 2's on one hand. Whisper the number you came up with to your neighbor. Add 5. What number did you get? (*If you have students who are not yet skip counting by 2's, you can have them count the number of fingers on both hands*)
Daily Two:	1. How many fingers would you need to count to 30 by 10's? (have two hands drawn on the paper)

	2. How many fingers would you need to count by 5's to 30?

Lesson Launch:

"Show me on your paper how many toys you have altogether if you have 5 trucks and 4 stuffed animals in your toy box." (For younger students, supply physical representations of objects.)

- Circulate around the room offering positive feedback—"I see some pictures of trucks" or "I see some circles and squares—that's cool, I wonder why s/he chose those?" Keep an eye out for good examples to use if they raise their hands to share.
- Once done circulating, have students share their ideas with their table groups.
- Have **volunteers** share out what they came up with.
- Have different volunteers offer explanations of the reasoning behind the choice

Please click on the link below to see and listen to the Educreations recording about this section of the lesson, before continuing to read the text below. The recording shows how to transition from counting actual toys, to counting hash marks (or tally marks), to counting on a number line.
https://www.educreations.com/lesson/view/numberline-example/13318980/?s=Qii9BK&ref=appemail

> Have the students chorally count out loud the number of trucks (in one color) and the stuffed animals (another color). As they count, write hash marks for each toy (not on a number line yet!)—make it messy so that you can show the contrast of the order of a number line. Once you get the hash marks on the board, suggest that there might be a neater way to write it down so that the numbers are easier to count. Draw a line in black, then erase one picture/tally mark each time you add a hash mark to the number line so they see one-one relationship using the same colors that you did to write the hash marks.

> *Before putting numbers below the hash marks (as shown in the diagram just below), ask the following questions.

> "I'll take a quiet hand for somebody who can tell me what each green line represents." (**1 truck**)
> (*Call on several people, even when you have heard the correct answer to validate all responses.*)
> "How about each red line?" (**1 stuffed animal**)
> "What could I call all the lines?" (**toys**)
> > *For each of the above questions, record all answers on the board and then discuss.*

"Let's try another one:

I go to the library and check out three picture books and five chapter books. How can you show on a number line how many books I have? Discuss in your table groups." (*Keep an ear out for good ideas so you can call on student volunteers.*)
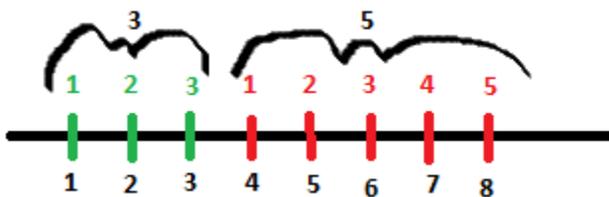

"Somebody get me started on what this would look like." (*Call on volunteers. Ask for feedback between each piece. Break down into small chunks so that you can engage multiple students.*)
Once they have it: "What does each green line represent? Red line? All the lines?"

*Once you have the number line on the board, ask, "How many more books would I need to get to 10?"
(*Use this question if students are ready for it.*)

And another example for them to work through with you:

"Today is the 10ᵗʰ of the month. My friend is coming to visit me in 11 days. Altogether, how many days from the first of the month until she gets here? In other words, what day of the month will it be?"
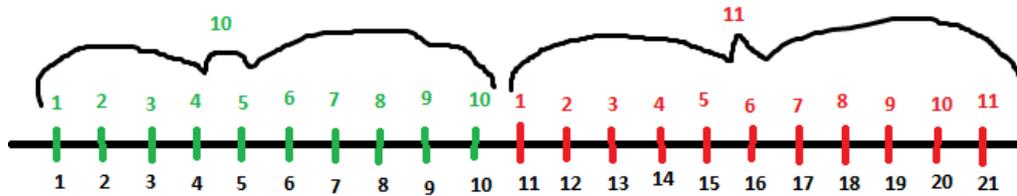
Once they get the number line: "What does each green line represent? Red line? All the lines?
Is there an arithmetic problem *(equation or number sentence)* that I could write so that I wouldn't have to count all of the lines?"

> (Looking for 10 +11 = 21.)

> (Once you get the problem from them, go back and get problems for the previous problems.)

If many students are getting it, challenge them with a **reverse problem** giving them the number line drawing as a start. This sort of reverse problem challenges the students that are getting it, while still providing access for the students that need another example.

Draw a number line with 6 green lines and 7 red lines.

- "If I go back to my toy box, what toys could be used for this number line picture?"
- Write a list of the items you might find in the toy box.
- Select a couple of toys (i.e. dolls and planes) and say: "So what color should the dolls be and what color should the planes be?"
- Once that is decided: "So, how many toys do I have altogether?"
- "How many dolls do I have? How many planes do I have?"
- "What is an equation that I could write to show how many toys I have?

Moving students to seeing counting by 10's can be more efficient…

"I've got some boxes of pencils. There are ten pencils in each box. Write a number line to represent 50 pencils." *

(Once they get the line written with all fifty marks, ask: I wonder if there is a faster way to get there. Erase all of the marks except 10, 20, 30, 40 and 50) Ask some leading questions to check for understanding about the number line in connection to the pencils.

Once the students have marked the line for all 50 pencils, and you are going back to get them to see that they could mark each ten to show a box of pencils, you can draw all the way through the green line with red to show the boxes.)

"I have 7 packages of donuts, with 5 donuts in each package. Draw a number line to show how many donuts there are all together (labeling the donuts and the packages)."

Students will probably offer a number line with all 35 lines, 7 lines counted by 5's and counted by 10's with and extra line going to 5.
Let volunteers explain their number lines and how they came up with the configuration.

Show a number line coded by color. Ask them to identify how many of each item there is based on the color-coded lines. Also, ask them to identify how many total items there are.

An idea for extra support: For students that might need support moving from the concrete toys to the hash marks arranged in a messy fashion, to the hash marks arranged on the number line, you could give them a larger piece of paper and cut out hash marks to represent items.