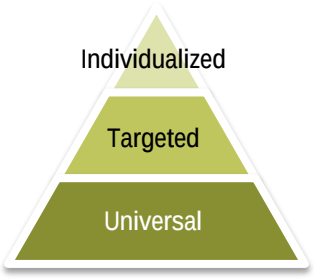
Open Number Line

Strategies that make a difference

Mathematics

The open number line is a visual model used to represent numbers as distances on an unmarked line. It is a tool for developing and modelling strategies for addition and subtraction. Students can decide what increments the line might represent depending on the context.



A teacher's understanding of their students' learning needs helps determine when to provide universal, targeted, or individualized instructional strategies. For some students, universal instructional strategies may be enough to meet their learning needs. For others, more targeted instructional strategies are the starting point for implementing the curriculum. The strategy described is a guideline that teachers can use depending on the learning context.

Why use this strategy in an inclusive learning environment

- Supports students in understanding the relationship between numbers and their values.
- Develops visualization skills important in mathematics.
- Encourages students to use number relations and benchmarks for calculating.

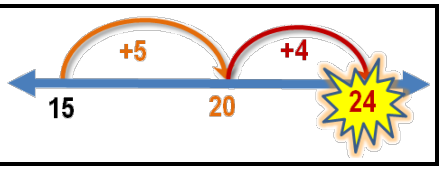
How this strategy could be used in an inclusive learning environment

1. Model placing numbers on the line using benchmarks and other numbers as referents.
2. Review mental math strategies that students use for computation, such as:
   - making 10
   - building on a known double
   - skip counting
3. Encourage students to take "jumps" (e.g., multiples of 10s) rather than counting one by one on the number line. Students should mark only the numbers they need for their calculation on the number line. Model jumping both forward and backward on the number line.
4. Accept approximations of distances. The most important criterion is the relationship between the numbers, not the accuracy of the distance between them.
5. As students refine their strategies using the open number line, encourage them to identify what makes the strategy more effective and how to use it to solve problems.

Examples

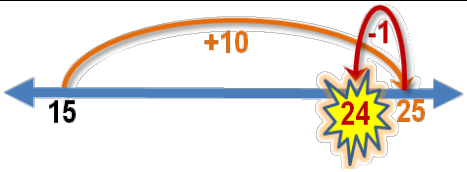
15 + 9

Partition 9 into 5 and 4, then jump **five** to the nearest ten, "20", and **four** more to "24."



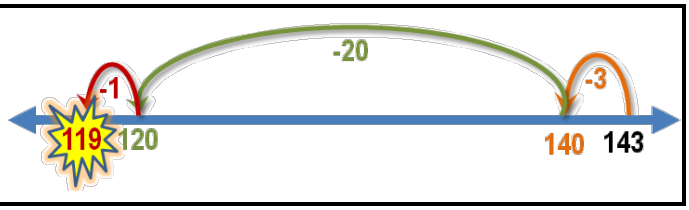
15 + 9

Jump forward **ten** to "25", then **one** back to "24."



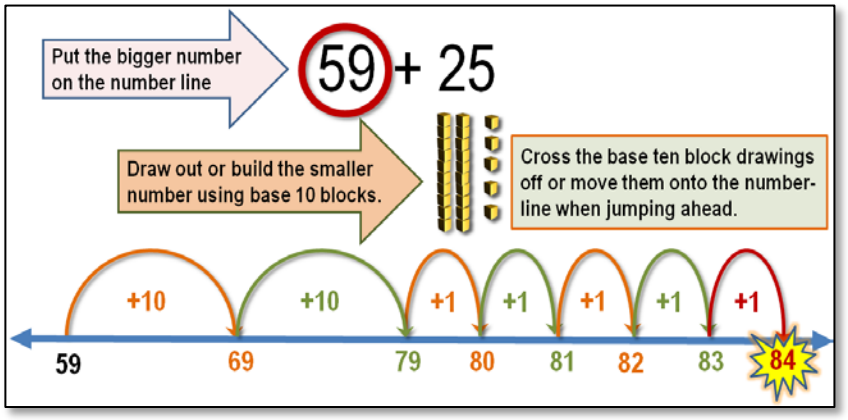
143 – 24

Jump **three** back to the nearest ten, "140." Subtract **twenty** and then jump back **one** more.



Tips for individualized supports

- Use place value blocks so that students can physically manipulate the blocks to better understand how jumps are made on the open number line.



- Use different colours to landmark the number line.
- Create an open number line on the floor of the classroom with, for example, painter's tape so that students can move about to refer to it.
- Use videos of open number lines to supplement demonstrations or have students create their own videos.
- Teach students key phrases to describe their moves on the number line:
  - *take a jump of 10*
  - *I land on _____*
  - *jump back _____*
  - *_____ is ten more than _____*
  - *First I jump _____ to get to _____*
  - *then _____ more*