



Using the Concrete-Representational-Abstract Approach to Investigate Adding and Subtracting Integers

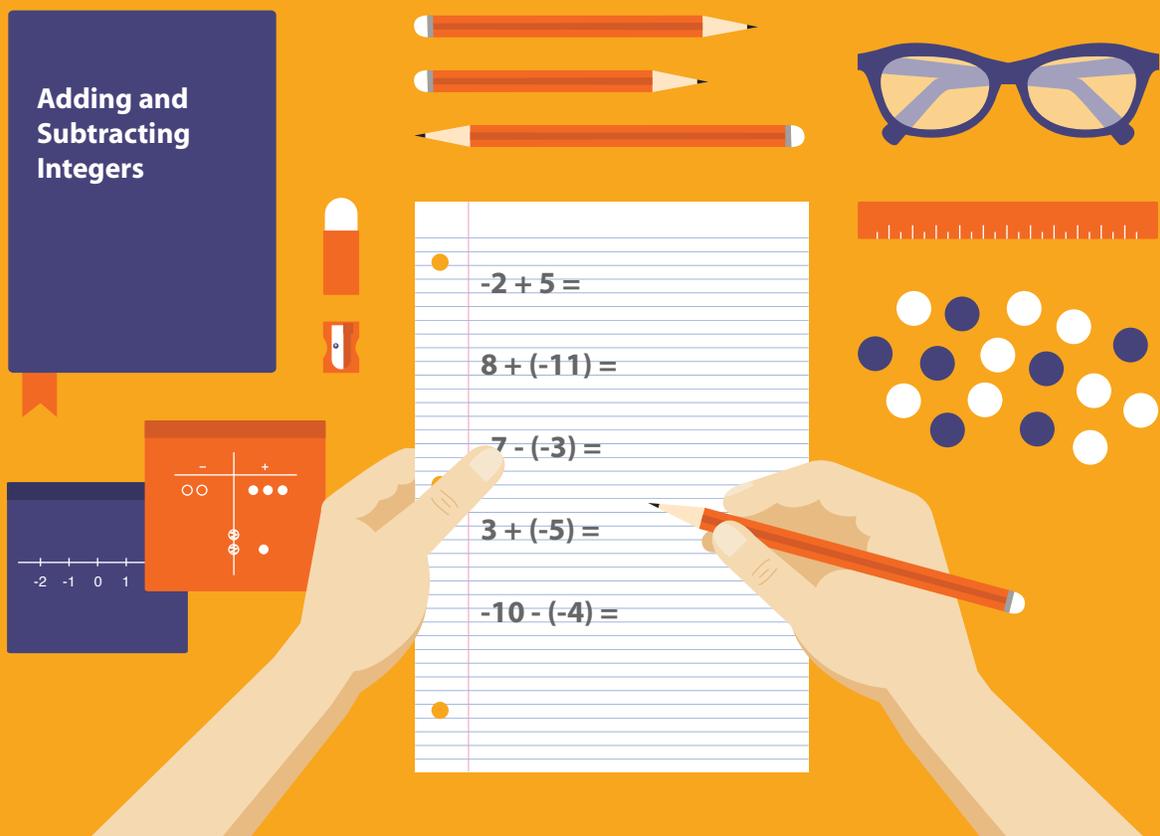
Ontario Grade Level: Seven

Learning Goal

Add and subtract integers, using a variety of tools (e.g., two-colour counters, virtual manipulatives, number lines)

(Ministry of Education, 2005, p.101).

LD@school has gathered ideas from a number of resources to help outline how the Concrete-Representational-Abstract approach can be used to investigate adding and subtracting integers. Educators can build these ideas into their own lesson plans to suit the needs of their students.





Suggested Strategies & Resources

As with any subject, there are a multitude of ways by which educators can introduce new mathematical concepts to students. Below, we have compiled some ideas from a variety of resources for you to consider when lesson planning:

Concrete – A collection of counting objects, half dark and half light; students use one set to represent positive units and the other to represent negative units; when adding and subtracting, they pair the oppositely coloured objects and whatever is remaining represents the solution (MathVIDS, n.d.)

Concrete – EDUGains has created a document to help students experiment with integers using concrete manipulatives.

➤ [Click here to access the document, including sample questions for students to practice with.](#)

Concrete & Representational – Using coloured chips, educators can demonstrate the differences between adding and subtracting numbers using an approach from *The Resource Room*.

➤ [Click here to access the lesson plan.](#)

Representational – Use a number line for students to represent how numbers move in the positive and negative directions depending on their sign and whether they are adding or subtracting

Concrete, Representational & Abstract – The IRIS Centre at Vanderbilt University has created a guide entitled *Algebra (Part 1): Applying Learning Strategies to Beginning Algebra*. Pages 12 and 13 of the guide offer educators a summary of how CRA can be applied to learning about integers, tips for implementation, and ideas for activities to implement in the classroom.

➤ [Click here to view a full example of how to use the process to explore adding and subtracting integers from the Iris Center at Vanderbilt University.](#)

References

MathVIDS. (n.d.). *Concrete – Representational – Abstract Sequence of Instruction*. The Virginia Department of Education. Retrieved from:

➤ <http://www.coedu.usf.edu/main/departments/sped/mathvids/strategies/cra.html>

Ministry of Education. (2005). *The Ontario Curriculum, Grades 1 – 8: Mathematics (Revised)*. Queen's Printer for Ontario: Toronto. Retrieved from:

➤ <http://www.edu.gov.on.ca/eng/curriculum/elementary/math18curr.pdf>

