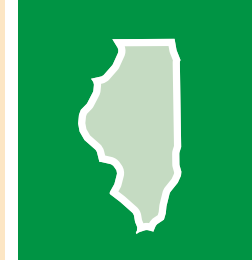
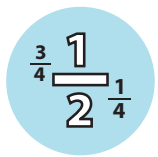


## Regional Educational Laboratory Midwest Teaching Fractions Toolkit Partnership

**Regional Educational Laboratory (REL) Midwest** is partnering with the Illinois State Board of Education and school districts in Illinois to **strengthen grade 6 students' conceptual understanding of fractions** and how to solve fraction computation, ratio, and rate problems.



The **Teaching Fractions Toolkit Partnership** aims to narrow gaps in math achievement among Illinois student groups farthest from opportunity. To achieve this goal, the partnership will develop, evaluate, and refine a **Teaching Fractions Toolkit**, which consists of the following components:



**Professional development and supports for grade 6 math teachers** on evidence-based practices for teaching fractions, rational number computation, and related concepts.



**Supports for math leaders and school/district administrators** to reinforce the broader developmental trajectory of fraction understanding across grades PK–8.

The toolkit will draw on the recommendations in the What Works Clearinghouse practice guide [Developing Effective Fractions Instruction for Kindergarten Through 8th Grade](#).<sup>1</sup>

### Why is this topic important?

**A computational understanding of fractions in grade 6 lays the groundwork for later success in math**,<sup>2</sup> which in turn equips students for a range of in-demand careers in science, technology, engineering, and math (STEM). However, many students—and their teachers—struggle with fractions.<sup>3</sup>

**Grade 6 is a high-leverage milestone for students' mathematical learning:**



Understanding of  
**fractions, rates, and ratios**

**Grade 6**



Understanding of  
**proportional reasoning**

**Grade 7**



Successful completion of  
**Algebra 1**

**Grade 9**



Success in **advanced  
STEM courses**

**High school and beyond**



## Planned partnership activities

In collaboration with **grade 6 math teachers, math leaders, and administrators**, REL Midwest will work with Illinois school districts to develop, test, and refine the Teaching Fractions Toolkit. These activities will take place in phases over 5 years.

Visit our [website](#) and follow us on [Twitter](#) to learn more as the work unfolds.

### Contact us to learn more!



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**REL Midwest is part of a network of 10 regional educational laboratories** funded by the Institute of Education Sciences at the U.S. Department of Education. REL Midwest works in partnership with practitioners in seven midwestern states to support the use of research and data to improve student outcomes, with a focus on students who are farthest from opportunity.

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<sup>1</sup> Siegler, R., Carpenter, T., Fennell, F., Geary, D., Lewis, J., Okamoto, Y., Thompson, L., & Wray, J. (2010). *Developing effective fractions instruction for kindergarten through 8th grade: A practice guide* (NCEE 2010-4039). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. <https://eric.ed.gov/?id=ED512043>

<sup>2</sup> Booth, J. L., & Newton, K. J. (2012). Fractions: Could they really be the gatekeeper's doorman? *Contemporary Educational Psychology*, 37(4), 247–253. <http://eric.ed.gov/?ID=EJ977998>; Empson, S. B., Levi, L., & Carpenter, T. P. (2011). The algebraic nature of fractions: Developing relational thinking in elementary school. In J. Cai & E. Knuth (Eds.), *Early algebraization. Advances in mathematics education* (pp. 409–428). Springer. [https://doi.org/10.1007/978-3-642-17735-4\\_22](https://doi.org/10.1007/978-3-642-17735-4_22)

<sup>3</sup> Liu, Y. (2018). Fraction magnitude understanding and its unique role in predicting general mathematics achievement at two early stages of fraction instruction. *British Journal of Educational Psychology*, 88(3), 345–362. <https://doi.org/10.1111/bjep.12182>; Harvey, R. (2012). Stretching student teachers' understanding of fractions. *Mathematics Education Research Journal*, 24(4), 493–511. <https://eric.ed.gov/?id=EJ984997>; Tekin-Sitrava, R. (2020). Middle school mathematics teachers' reasoning about students' nonstandard strategies: Division of fractions. *International Journal for Mathematics Teaching and Learning*, 21(1), 77–96.