# Algebra I and College Preparatory Diploma Outcomes Among Virginia Students: Findings and Discussion

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REL Appalachia at SRI International

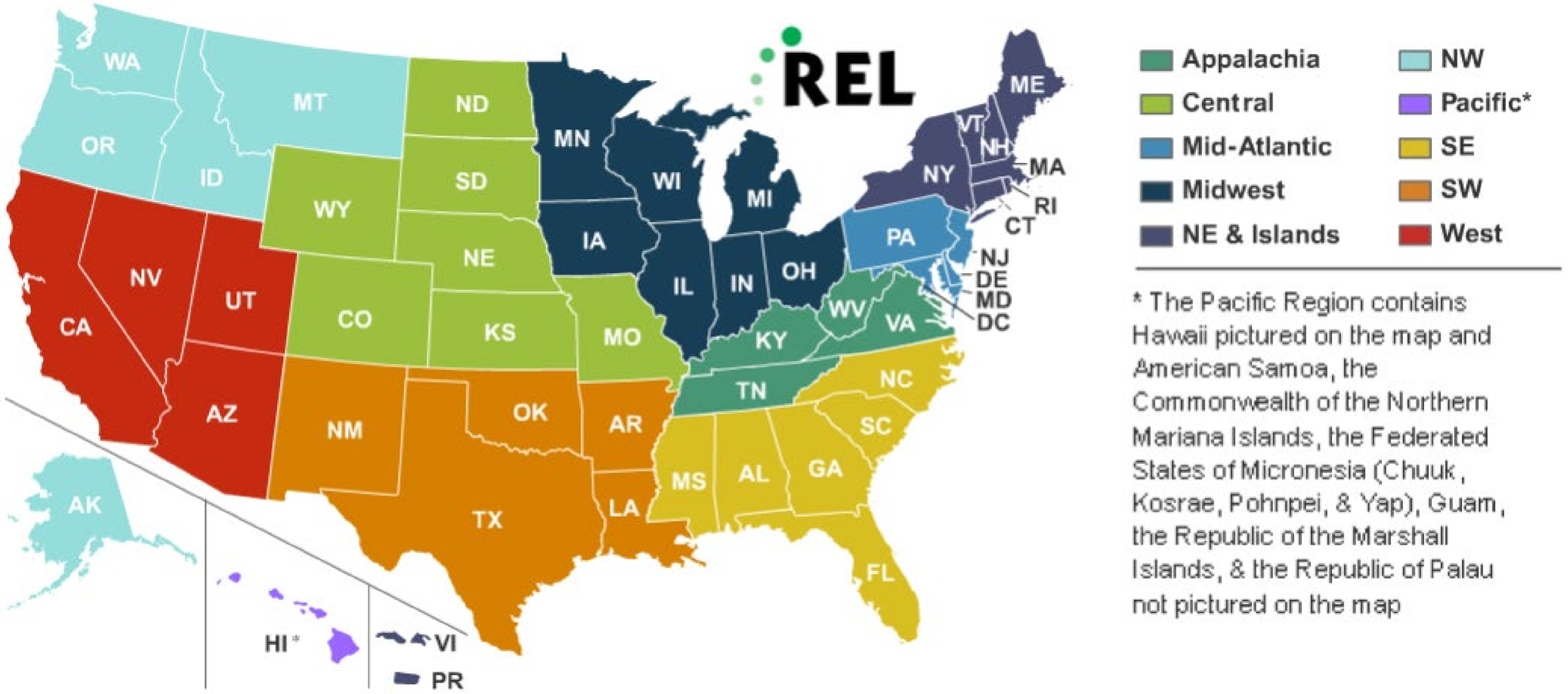
# Introductions

**Deborah Jonas**

# Agenda

- Introductions
- The importance of algebraic reasoning and Algebra I
- Results from the study: Algebra I and College Preparatory Diploma Outcomes among Virginia Students Who Completed Algebra I in Grades 7–9
- Implications for policy and practice

# The Regional Educational Laboratories

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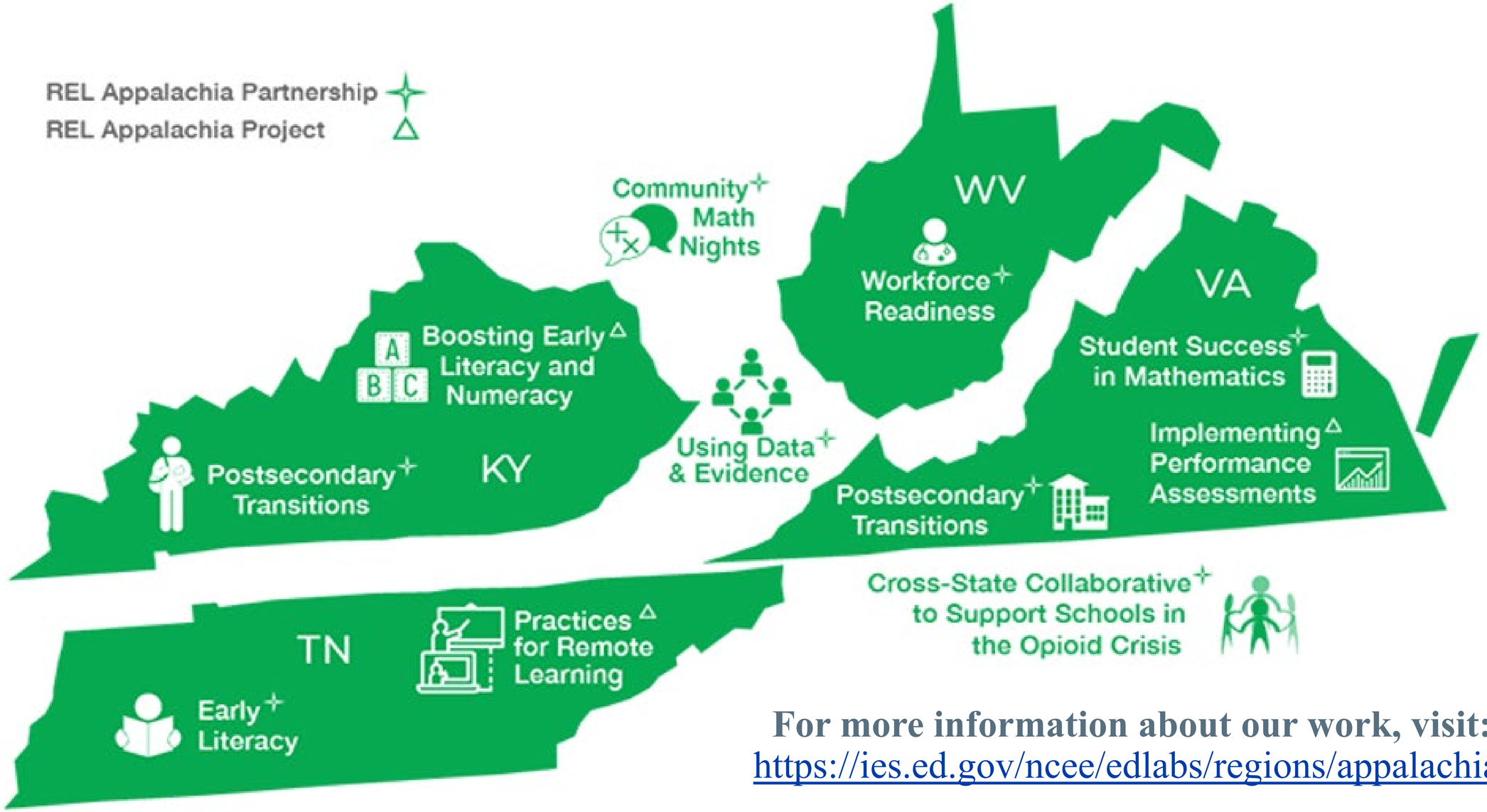



**For more information about our work, visit:**
https://ies.ed.gov/ncee/edlabs/regions/appalachia/

# Student Success in Mathematics partnership: Virginia school divisions

# The Importance of Algebraic Reasoning and Algebra I

**Jill Neumayer DePiper**

# Importance of algebraic reasoning

Algebraic reasoning

| Research | Measurement | Policy context |
| --- | --- | --- |
| Includes foundational skills that are critical for success in advanced mathematics courses. | Skills are measured in multiple ways and at multiple points in time through formative and summative assessments. | State standards emphasize algebraic reasoning starting in elementary grades. |

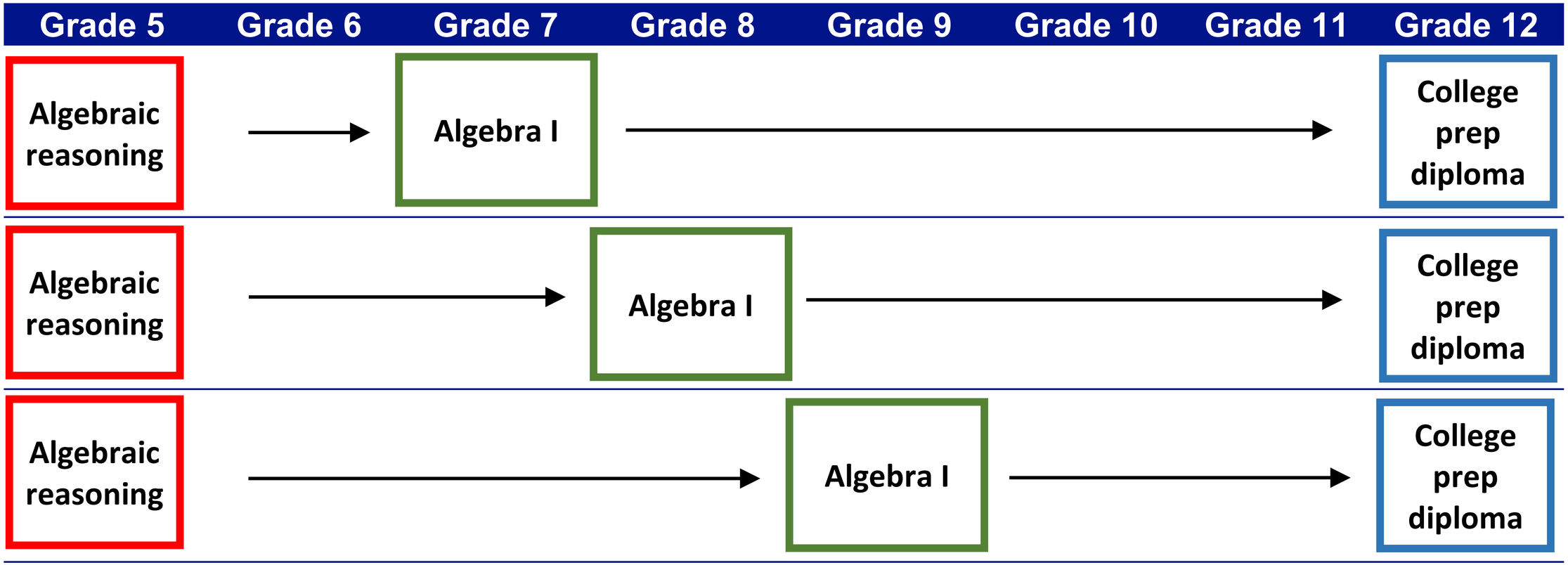
*(Empson et al, 2011; Siegler et al., 2012; Stein et al., 2011)*

# Importance of Algebra I

| | Research | Measurement | Policy context |
|---|---|---|---|
| Algebra I | Passing Algebra I by grade 9 is associated with graduating high school college-ready. | Proficiency is measured at a single point in time on a summative state assessment. | Algebra I is a gateway for higher-level mathematics courses and often required as a verified credit for high school graduation. |

*(Adelman, 2006; Allensworth et al., 2009; Holian & Mokher, 2011; Jonas et al., 2014; Matthews & Farmer, 2008; Tierney et al., 2009)*

# Mathematics coursetaking pathways



# Results from the study: Algebra I and College Preparatory Diploma Outcomes among Virginia Students Who Completed Algebra I in Grades 7–9

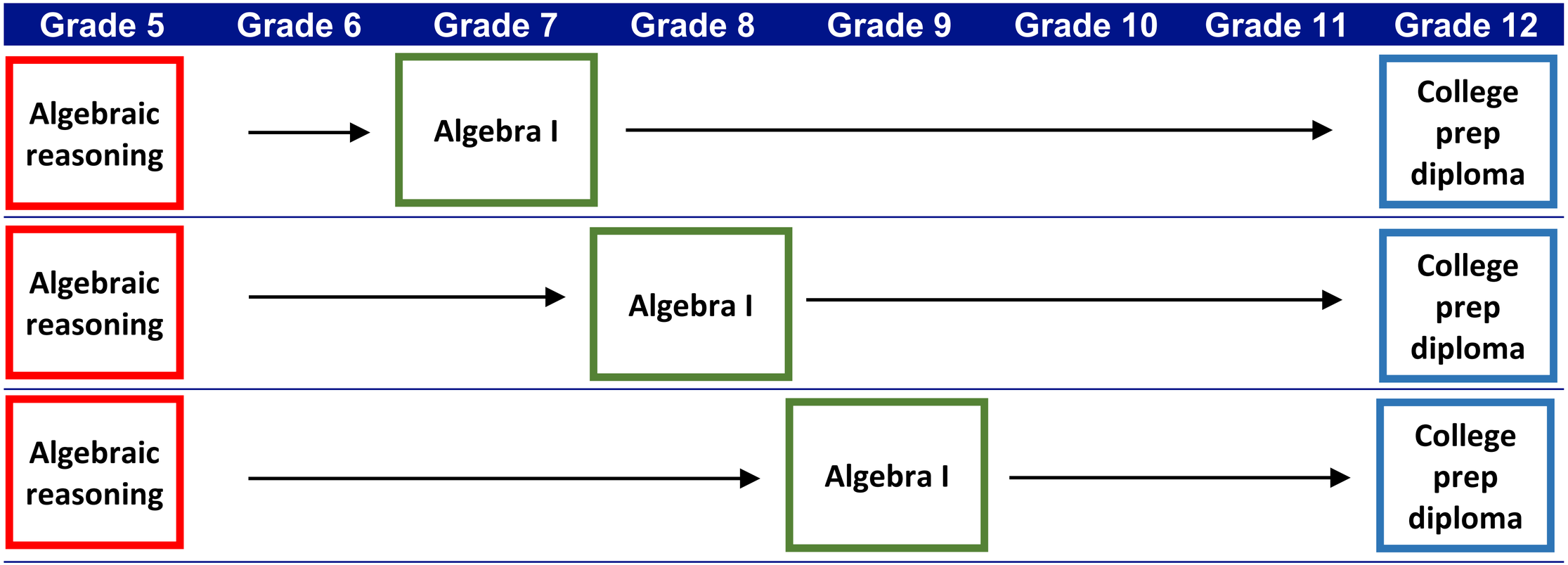

**Ryoko Yamaguchi**

**Deborah Jonas**

# Goals of the study

- Goal 1: Understanding the **characteristics** of students in different math coursetaking pathways of Algebra I by grade 9.
- Goal 2: Understanding the **outcomes** of students in different math coursetaking pathways of Algebra I by grade 9.

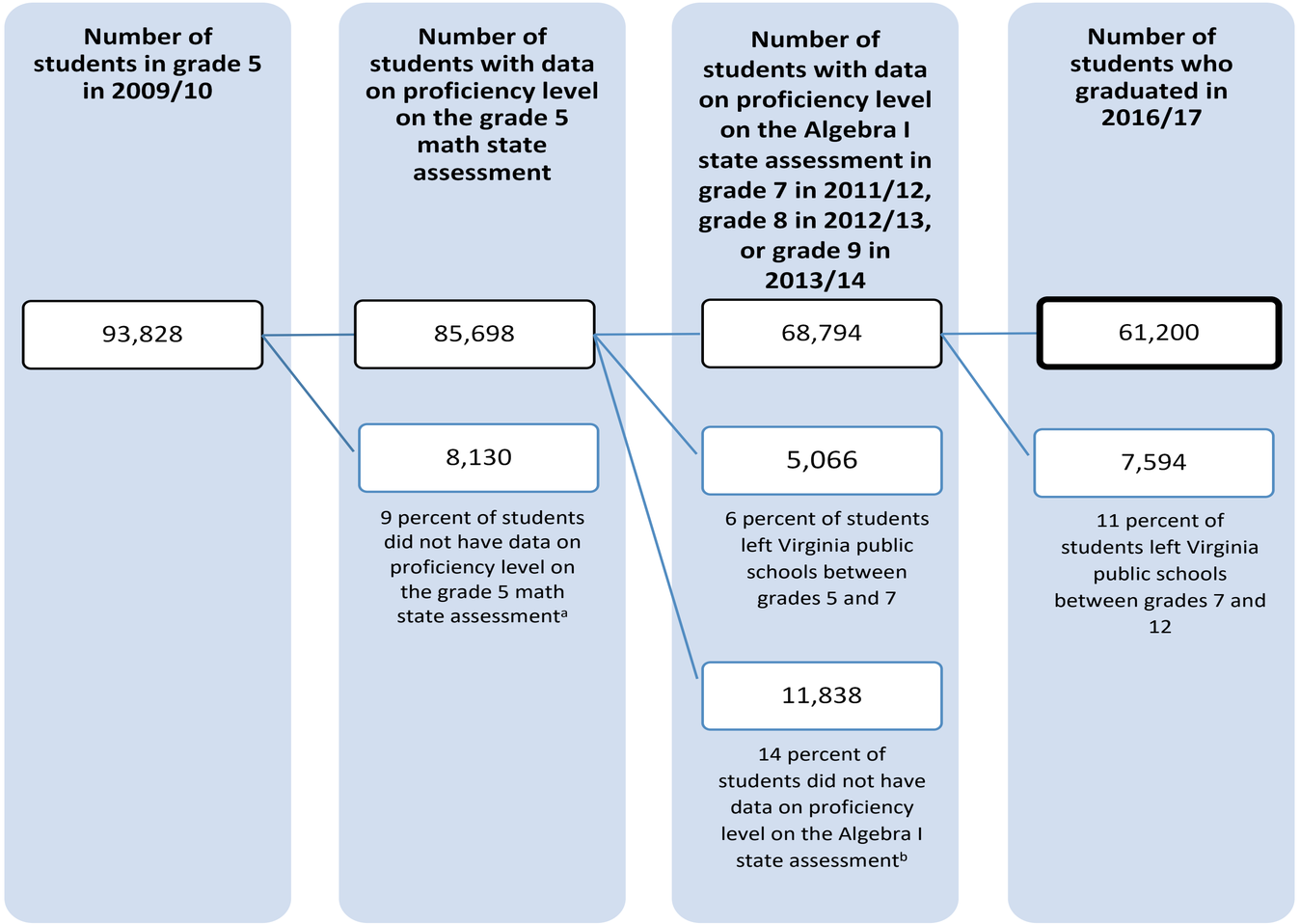
# Description of the study



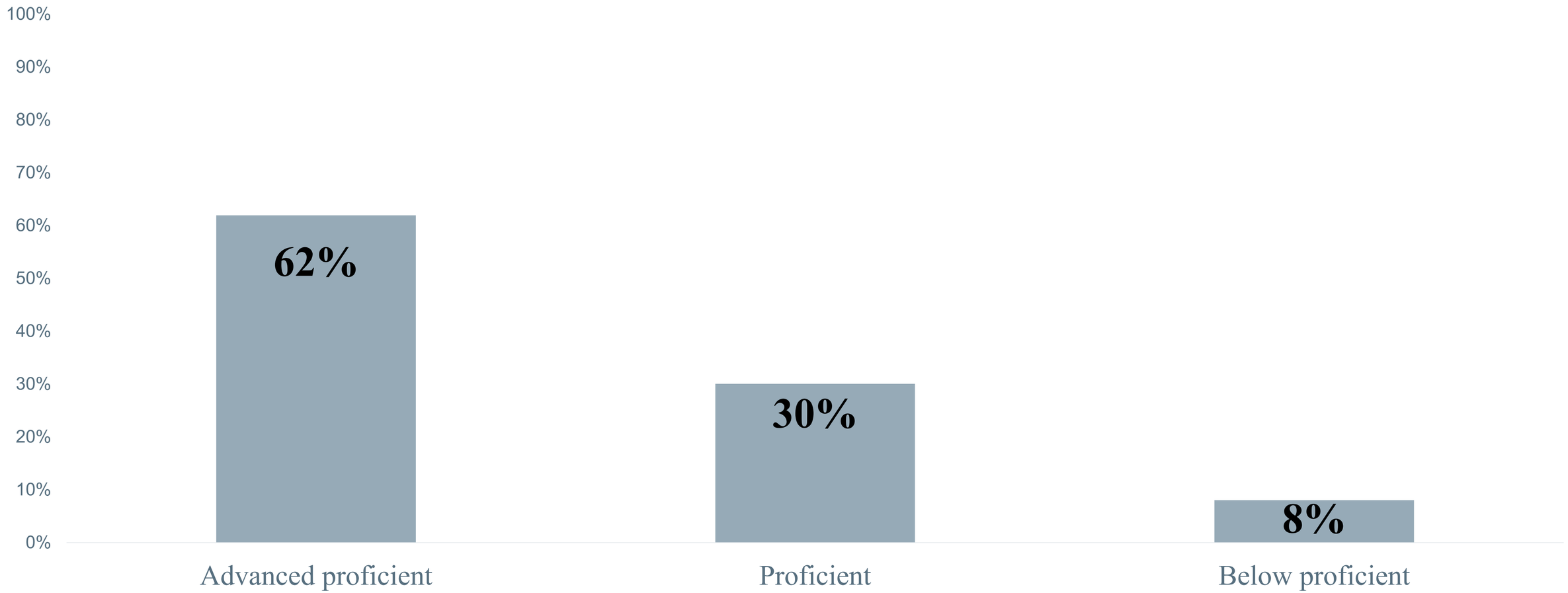
# Study population from the Virginia Longitudinal Data System

## Graduating cohort of 2017

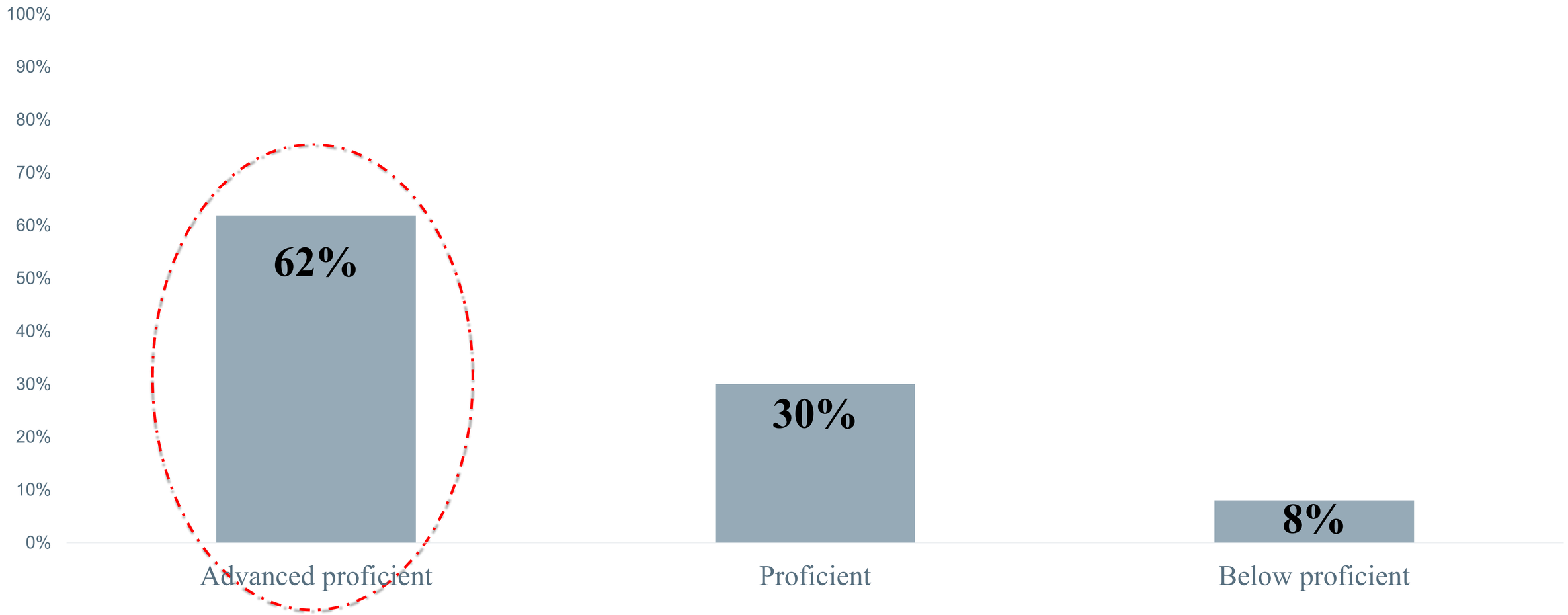
- All students: 61,200
- Economically disadvantaged (ED) students: 22,196 (36 percent)
- English learner (EL) students: 3,108 (5 percent)



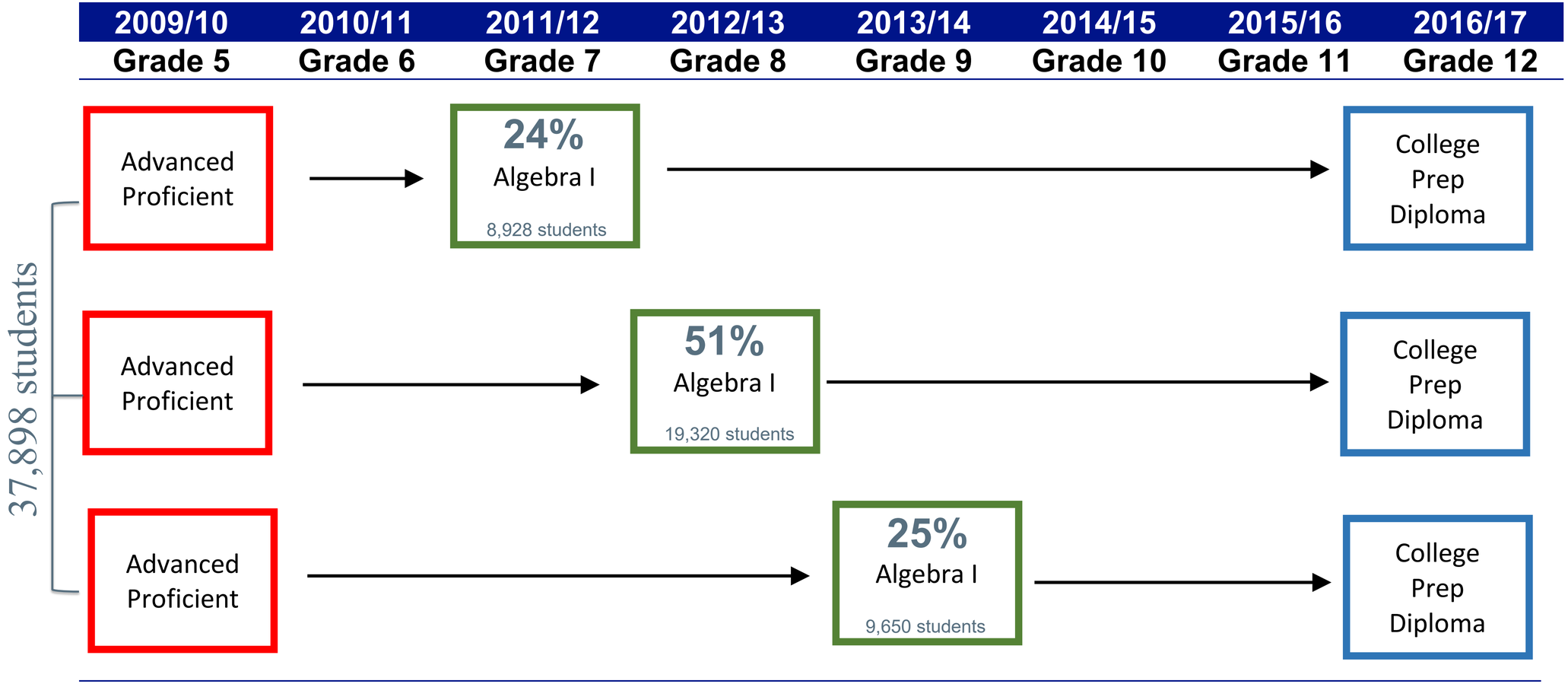
# Of the 61,200 students in the study, 62 percent scored Advanced Proficient in grade 5 mathematics.



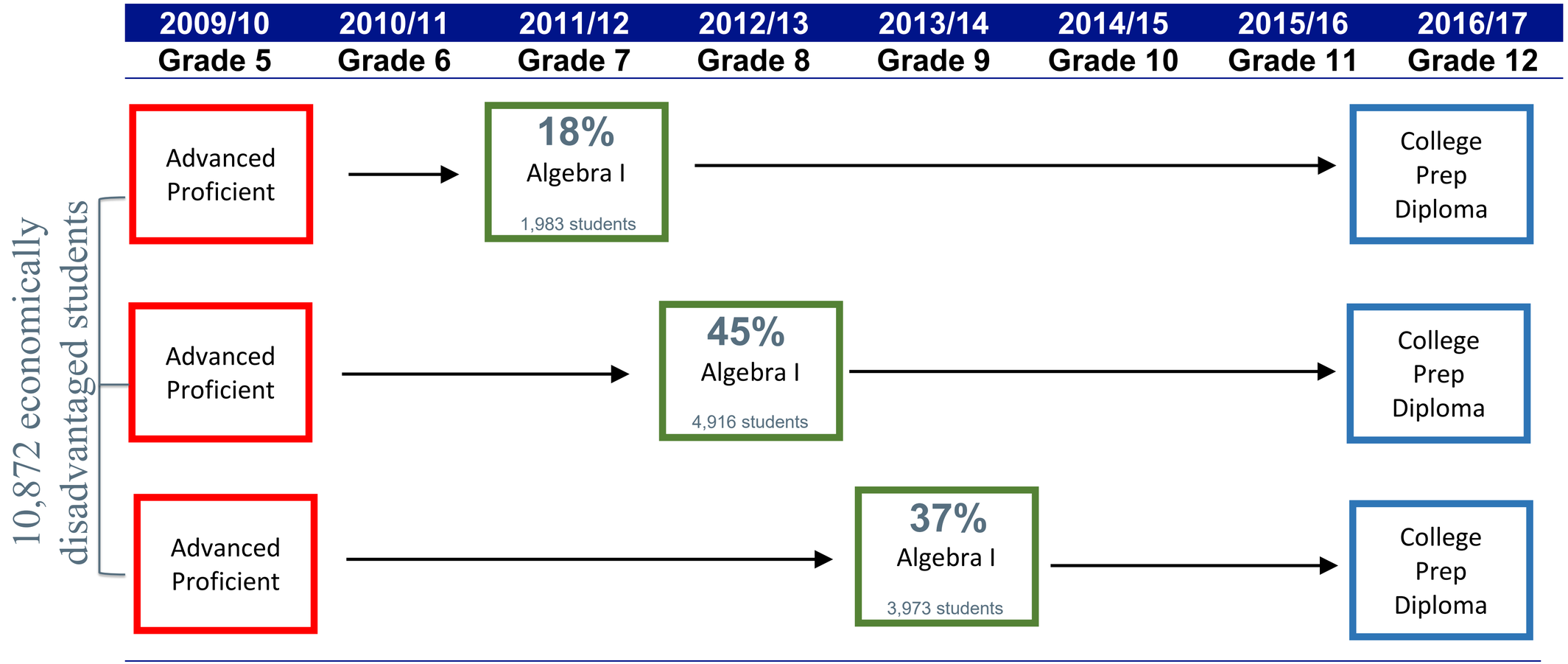
# Let’s drill down and consider the students who scored Advanced Proficient in grade 5 mathematics.



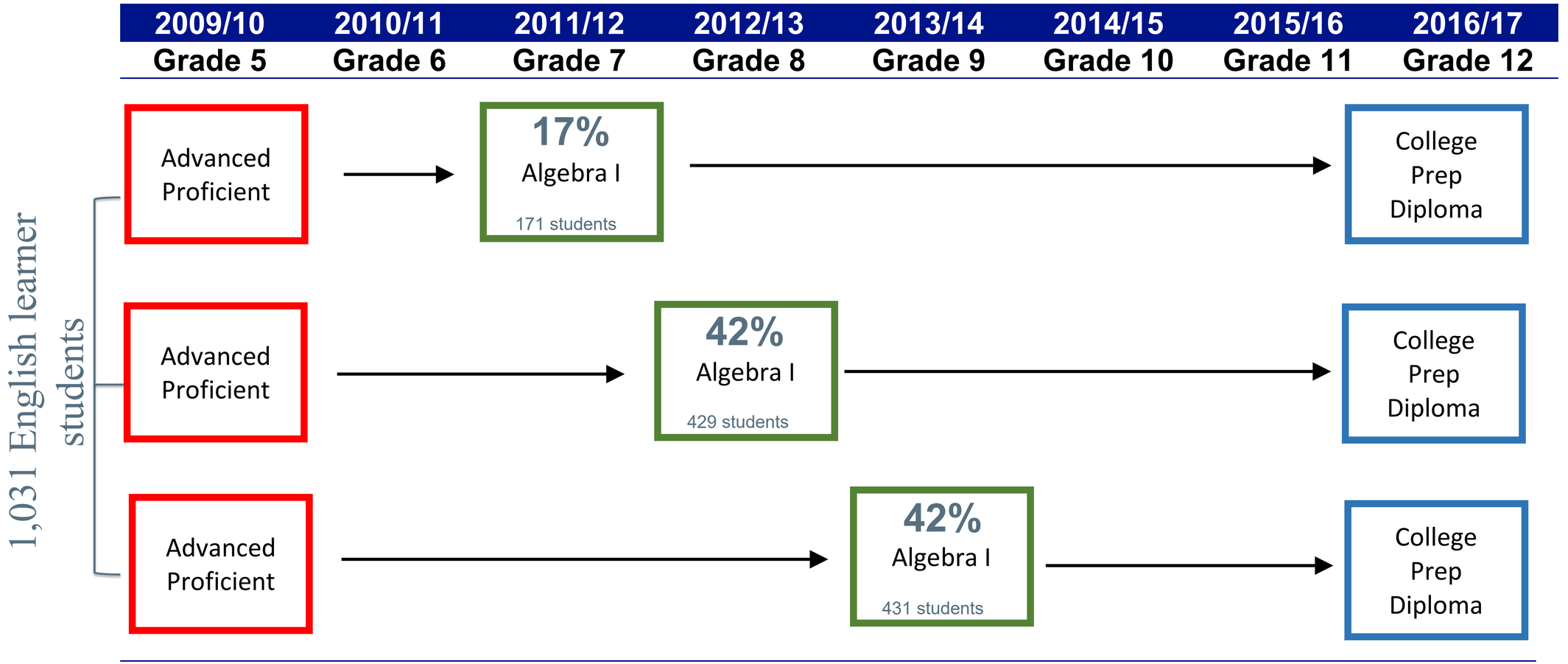
# Among students who scored Advanced Proficient in grade 5, 51 percent completed Algebra I in grade 8.



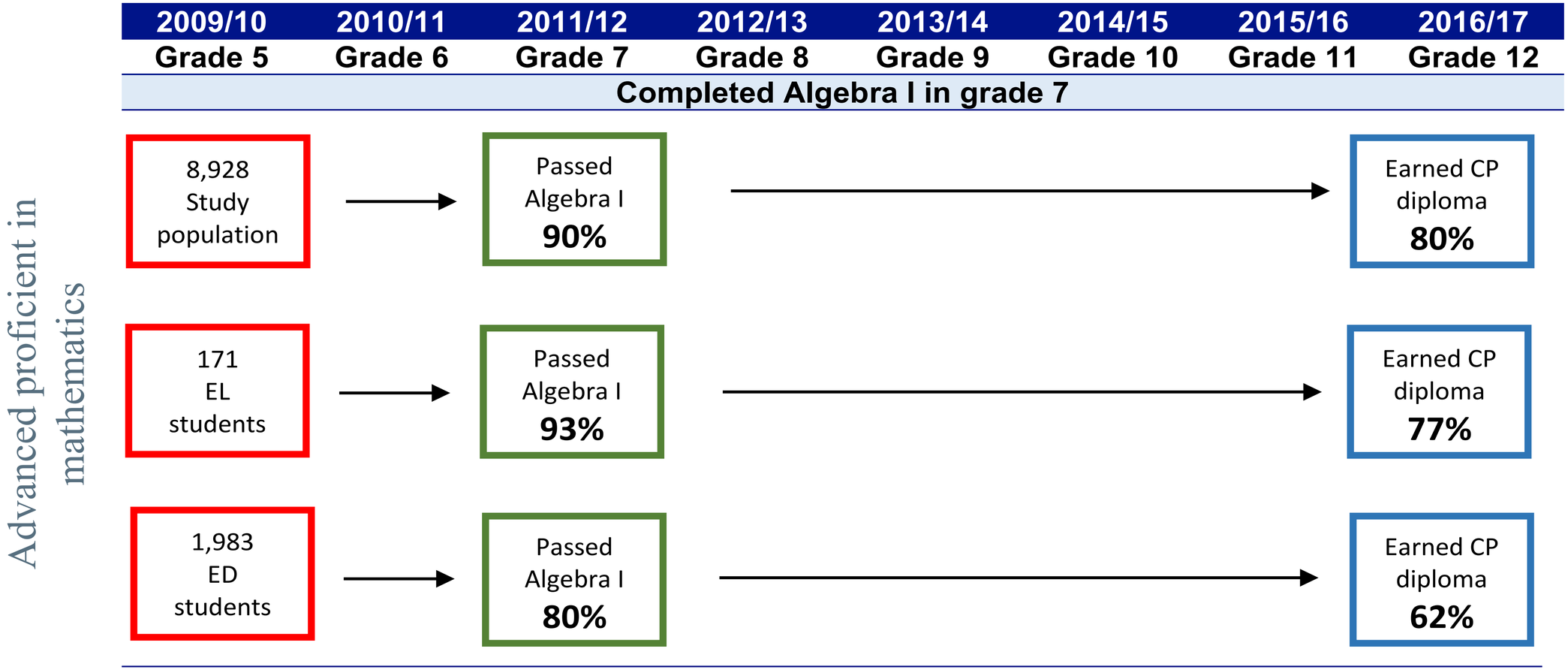
# Among **economically disadvantaged students** who scored Advanced Proficient in grade 5, 45 percent completed Algebra I in grade 8.



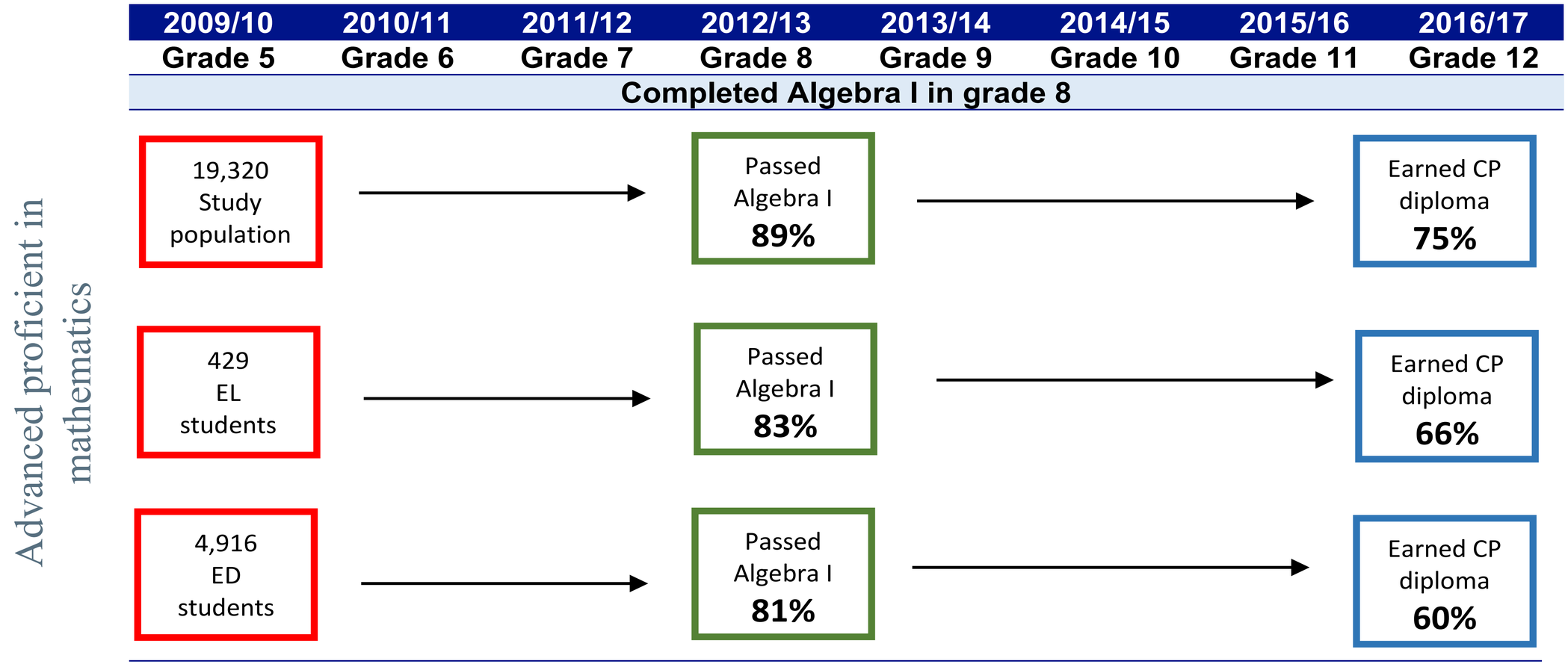
# Among **English learner students** who scored Advanced Proficient in grade 5, 42 percent completed Algebra I in grade 8.



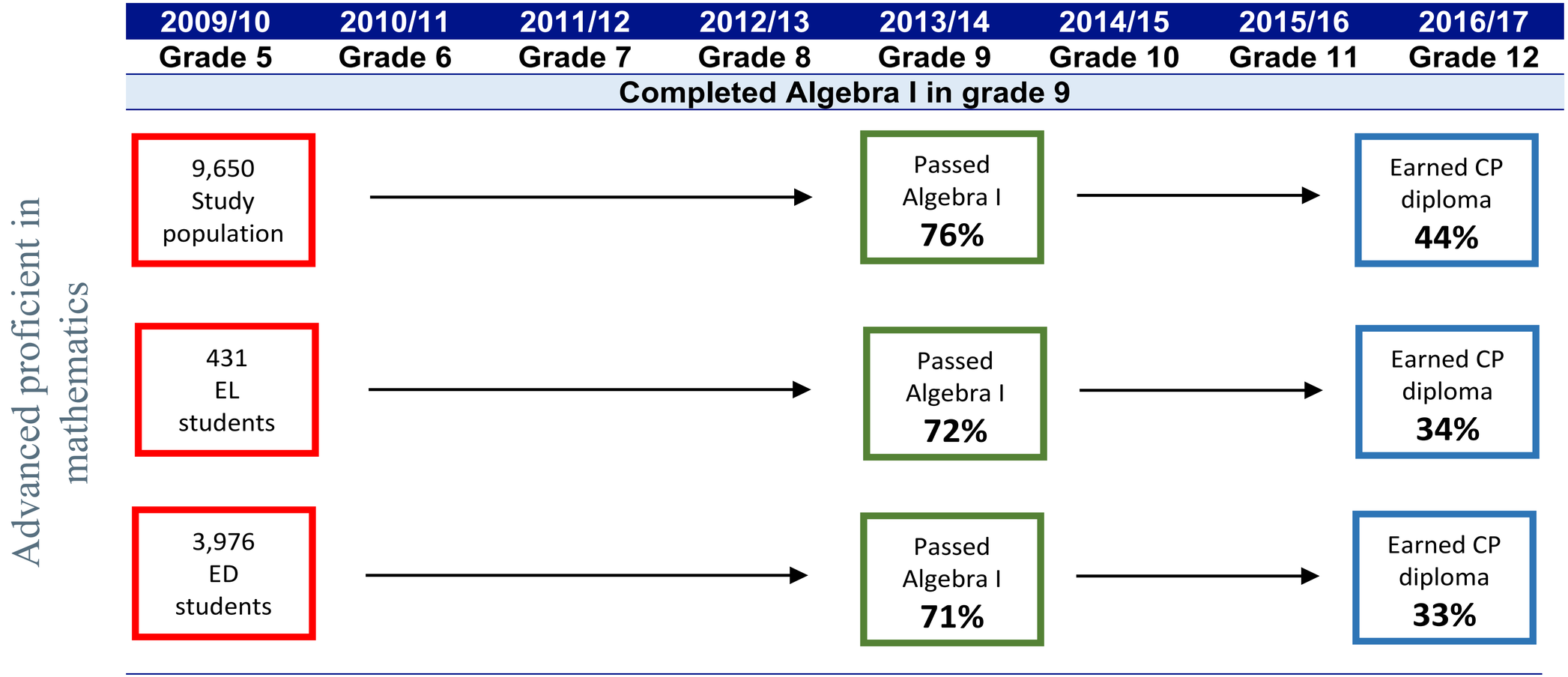
# Among students who scored **Advanced Proficient in grade 5** and **completed Algebra I in grade 7**, 80 percent earned a college preparatory diploma.



# Among students who scored **Advanced Proficient in grade 5** and **completed Algebra I in grade 8**, 75 percent earned a college preparatory diploma.



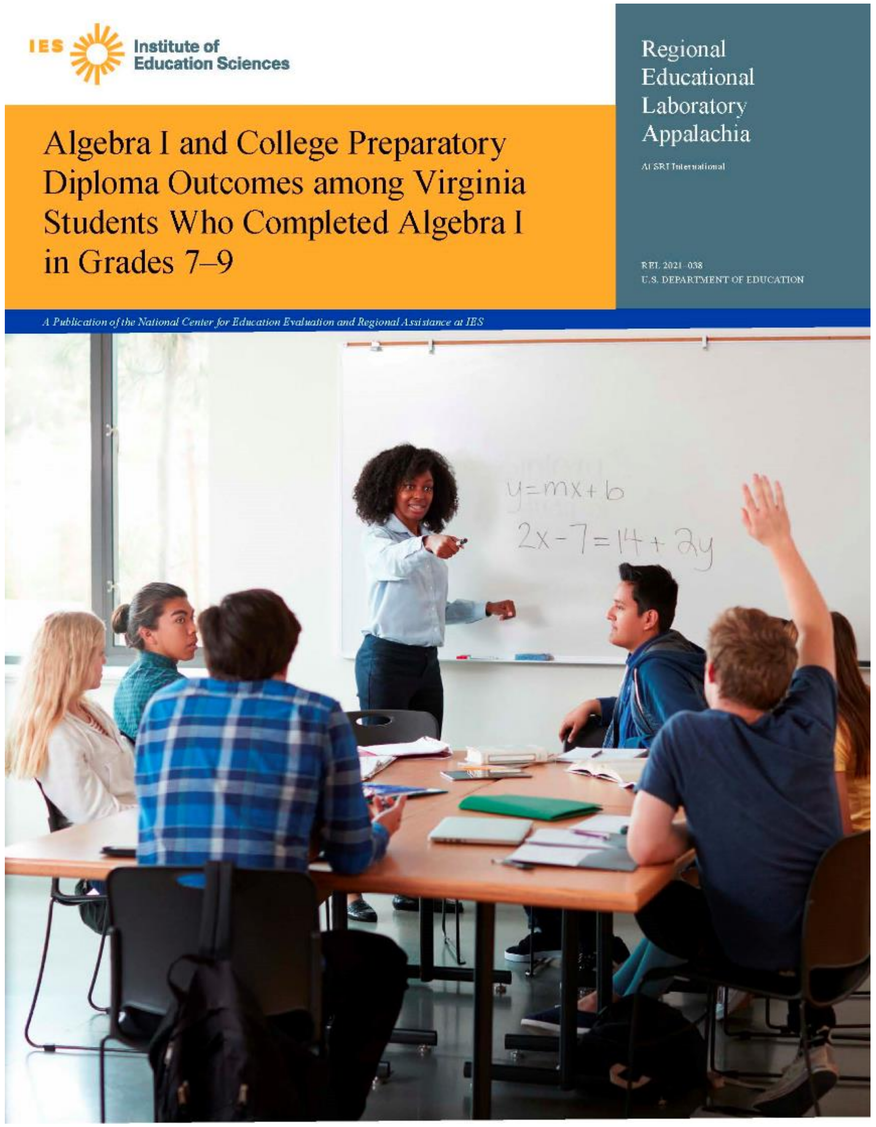
# Among students who scored **Advanced Proficient in grade 5** and **completed Algebra I in grade 9**, 44 percent earned a college preparatory diploma.



# For more information

Access the full report, appendices that include results for additional student groups, and study snapshot on the U.S. Department of Education Institute of Education Sciences website:

https://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=4577



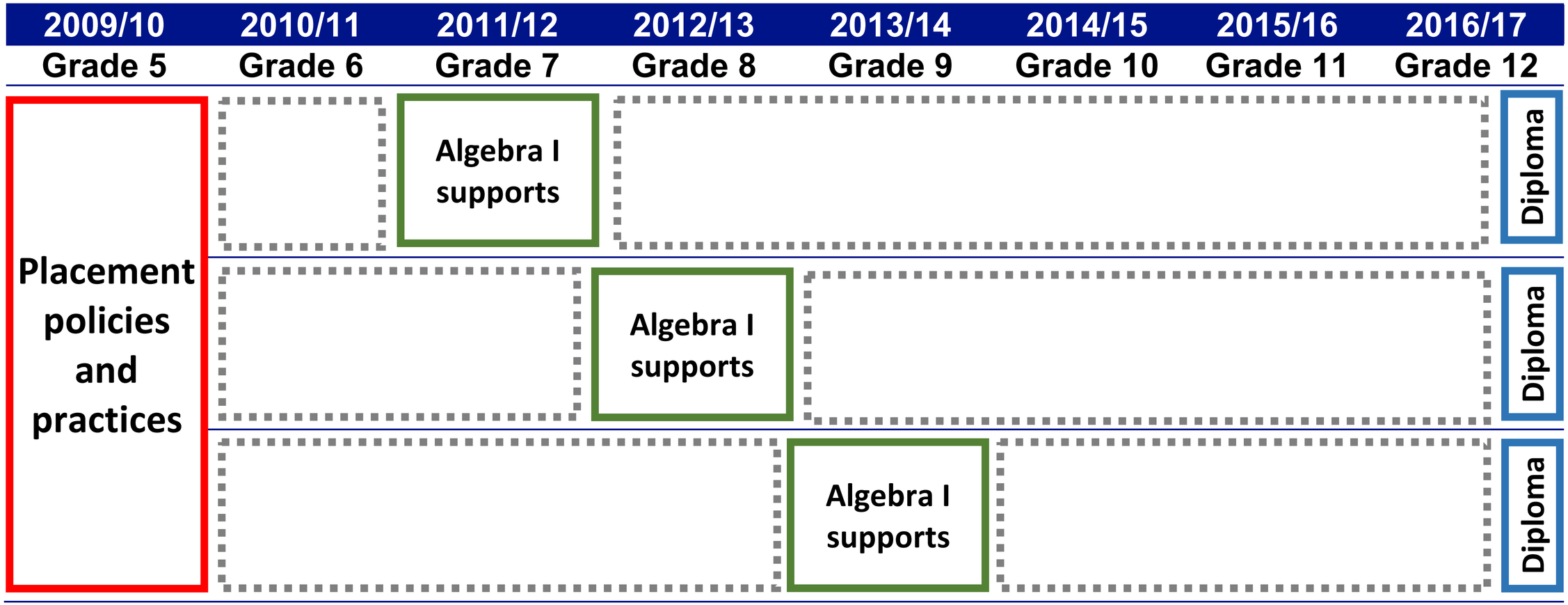
# Implications for Policy and Practice

**Jill Neumayer DePiper**

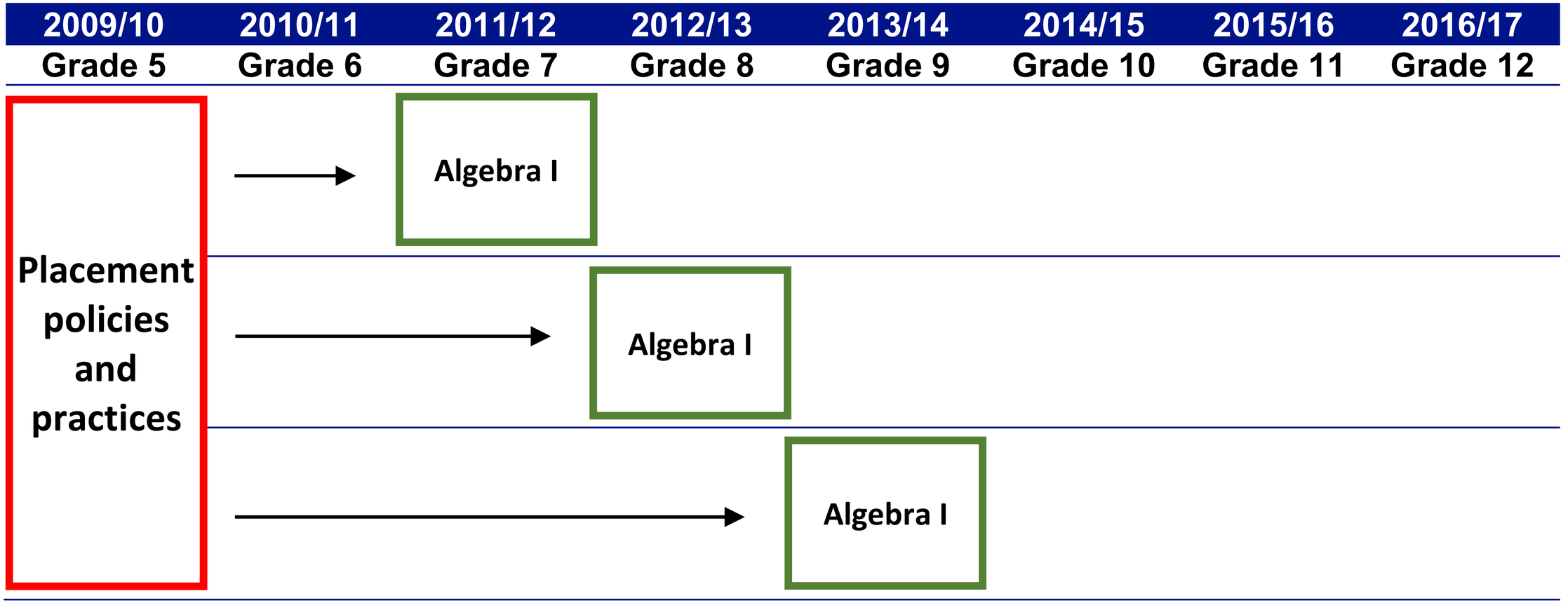
**Deborah Jonas**

**Ryoko Yamaguchi**

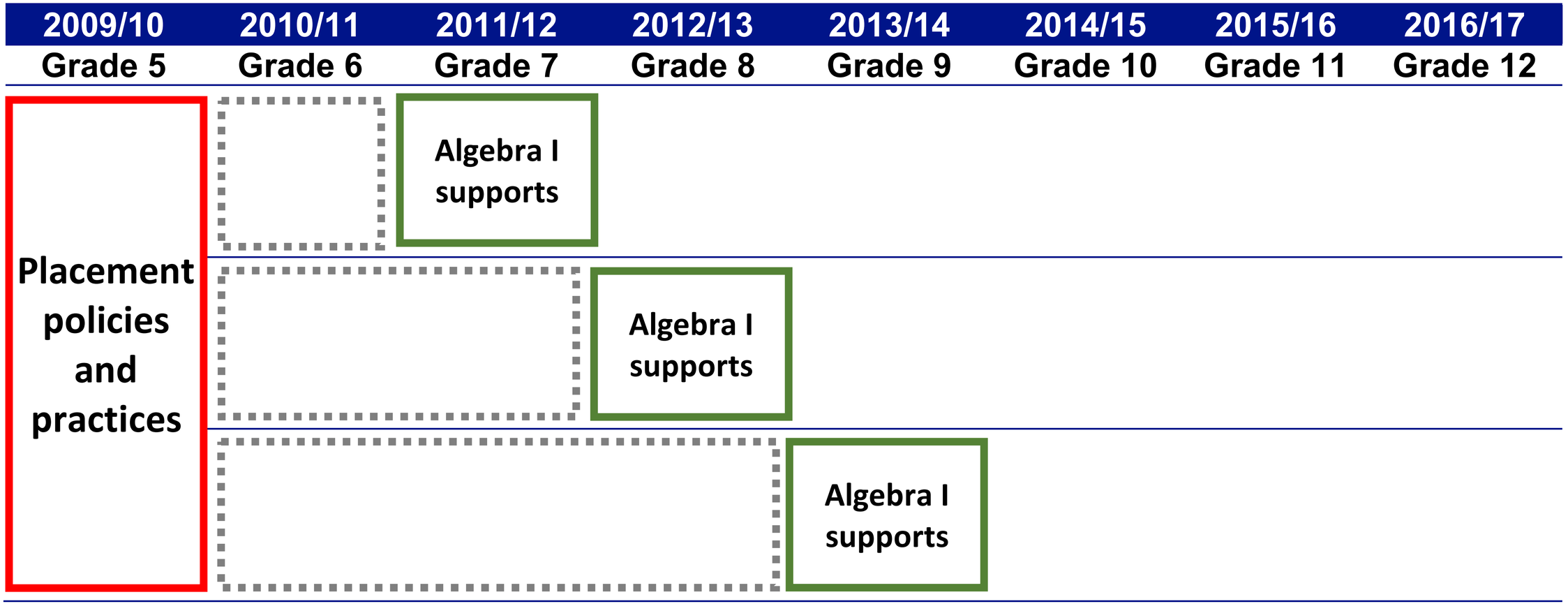
# Improving policies and practices throughout each student's mathematics coursetaking pathway: Reflect on your context



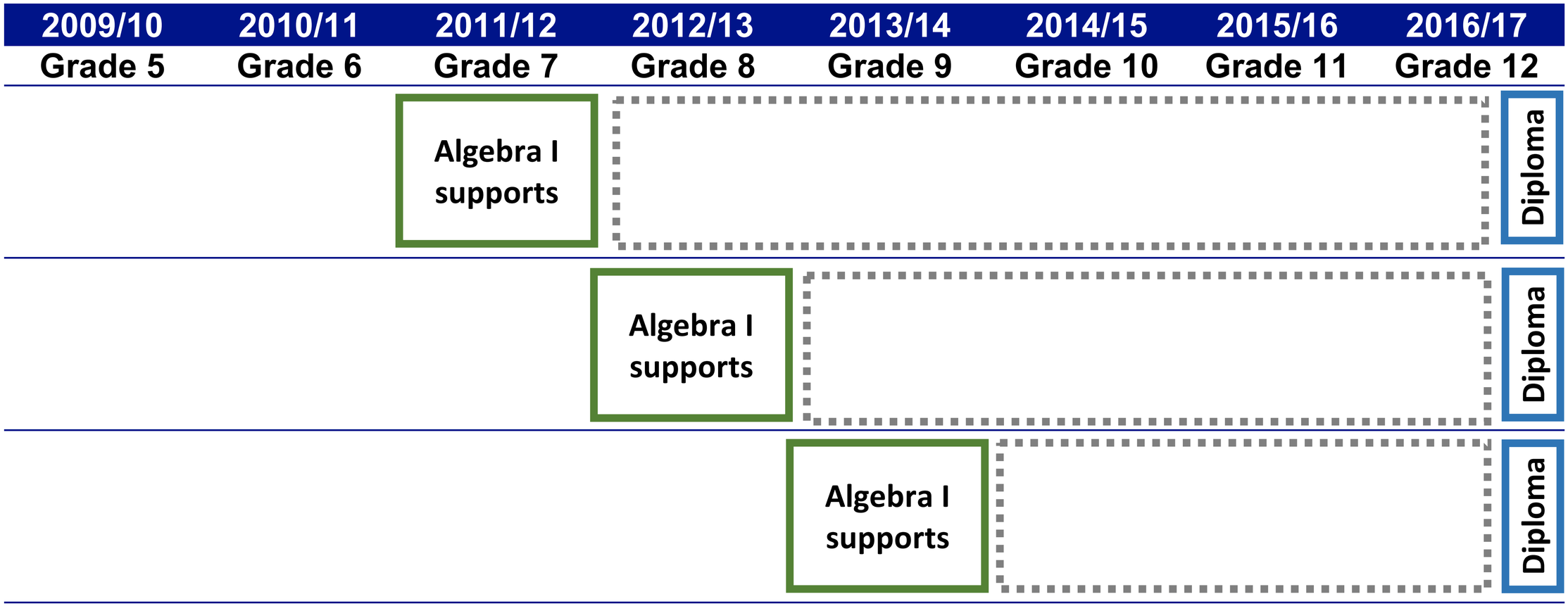
# Share and discuss: Algebra I placement policies and practices



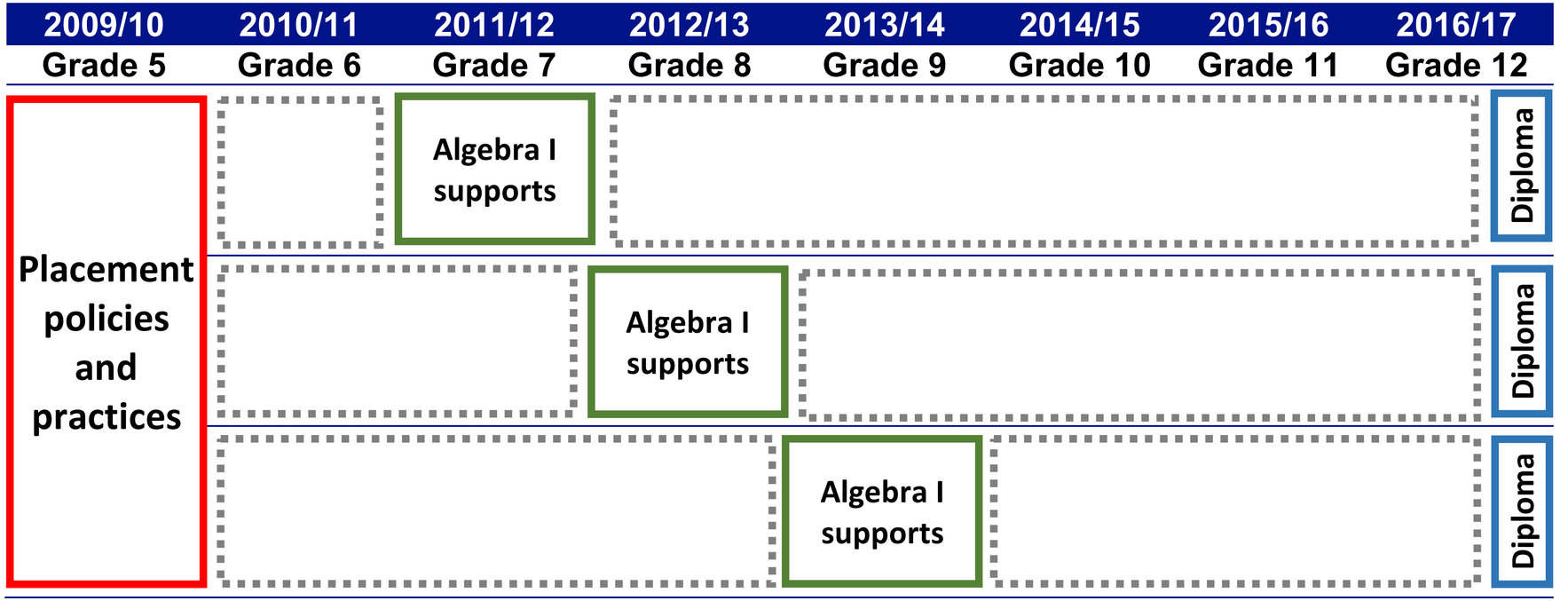
# Share and discuss: Instructional supports before and during algebra



# Share and discuss: Instructional supports after algebra to ensure college and career readiness at graduation



# Pause and reflect




What is something that **squared** with your experience?

What are **three points** you want to remember?

What is a lingering question still going **around** in your mind?

# Thank you!

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