

Many topics rated most important as prerequisites by instructors of credit-bearing first-year college mathematics courses are typically covered in high school Algebra I or earlier.

Every three to five years, the ACT National Curriculum Survey asks educators about what they teach (or don't teach) in their courses and how important they feel various topics in their discipline are for students to know to be successful in future coursework. The survey also asks educators for their opinions on educational topics of current interest, such as the college readiness of their students or the implementation of improved standards like the ACT College and Career Readiness Standards or the Common Core State Standards.

This brief highlights a finding from the 2012 *Mathematics* survey.

# ACT National Curriculum Survey®: College Mathematics Instructors' Ratings of Topics as Prerequisites for Their Courses

Ranking of the 20 Topics Rated Most Important as Prerequisites by Instructors of Credit-Bearing First-Year College Mathematics Courses

Rank	Topic
1	Evaluate algebraic expressions
2	Perform addition, subtraction, multiplication, and division on signed rational numbers
3	Solve linear equations in one variable
4	Solve multistep arithmetic problems
5	Locate points on the number line
6	Perform operations (add, subtract, multiply) on linear expressions
7	Find the slope of a line
8	Find equivalent fractions
9	Find and use multiples and factors
10	Perform operations (add, subtract, multiply) on polynomials
11	Locate points in the coordinate plane
12	Write expressions, equations, or inequalities to represent mathematical and real-world settings
13	Evaluate functions at a given value of $x$
14	Graph linear equations in two variables
15	Order rational numbers
16	Determine the absolute value of rational numbers
17	Manipulate equations and inequalities to highlight a specific unknown
18	Manipulate expressions containing rational exponents
19	Solve linear inequalities in one variable
20	Solve problems using ratios and proportions

Note: These results are described in terms of a traditional math course sequence, but they apply equally well to an integrated math sequence.

The table shows the 20 topics rated most important as prerequisites by instructors of credit-bearing first-year college mathematics courses in the 2012 ACT National Curriculum Survey.<sup>1</sup> Nine—or 45%—of the topics are typically covered in grade 7 or earlier, while 10 are topics from Algebra I. The one remaining topic is typically taught in Algebra II.

This finding suggests that an important contributor to students' college and career readiness is the ability of teachers throughout K–12 to keep strengthening many of the topics students learn in earlier grades as well as to develop connections, deepen understanding, or increase fluency. It's said that students don't learn the skills from one mathematics course until they take the next. It's not enough for students to stay at the same level. ■

<sup>1</sup> ACT, Inc., *ACT National Curriculum Survey 2012: Mathematics* (Iowa City, IA: Author, 2013). <http://www.act.org/research/policymakers/pdf/NCS-Mathematics.pdf>.

## KEY

Typically taught in grade 7 or earlier

Typically taught in Algebra I

Typically taught in Algebra II