

## What 13-year-olds know and can do in mathematics

As shown in the item map below, 13-year-olds with a score of 236 were likely to be able to use geometric properties to determine the measure of an angle in a set of intersecting lines. Students with a score of 307 were likely to be able to successfully write an improper fraction as a decimal.

### Age 13 NAEP Mathematics Item Map

Scale score	Question description
500	
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340	Compare units of length (MC)
337	Identify fractional models (MC)
320	Determine the percent given the part and the whole (MC - age 17)
310	Rewrite an algebraic expression (MC - age 17)
307	Write an improper fraction as a decimal (CR)
302	Compute the area of a square (CR)
300	Add two fractions with unlike denominators (MC - age 17)
<b>300</b>	
296	Use place value to identify a decimal number (MC)
291	Identify a relationship between two unknown values (MC)
287	Estimate length (MC - age 17)
285	Use and interpret number models (CR - age 9)
277	Read and interpret data from a table (CR - age 17)
271	Use the transitive property (MC - ages 9 and 17)
268	Find factors of numbers (MC)
260	Identify a figure based on relationship to other figures (MC - age 9)
257	Identify a particular three-dimensional figure (MC - age 17)
255	Add two fractions with like denominators (MC - ages 9 and 17)
254	Find the value of a variable that makes an equation true (CR)
<b>250</b>	
248	Determine probability (MC)
240	Compute the perimeter of a square (MC - age 9)
236	Use geometric properties to determine angle measure (MC)
231	Read and interpret data from a bar graph (MC)
224	Evaluate an algebraic expression for a given value (CR - age 17)
216	Multiply a three-digit number by a single-digit number (MC - age 9)
206	Subtract a two-digit number from a two-digit number (CR)
<b>200</b>	
186	Identify a symmetric shape (MC - age 9)
165	Read and interpret a circle graph (MC - age 9)
158	Solve a problem in context (MC)
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CR Constructed-response question    MC Multiple-choice question

NOTE: Ages in parentheses indicate a cross-age question. The position of a question on the scale represents the scale score attained by students who had a 65 percent probability of successfully answering a constructed-response question, a 77 percent probability of correctly answering a three-option multiple-choice question, a 74 percent probability of correctly answering a four-option multiple-choice question, a 72 percent probability of correctly answering a five-option multiple-choice question, or a 71 percent probability of correctly answering a six-option multiple-choice question. For constructed-response questions, the question description represents students' performance rated as completely correct. Scores associated with the three performance levels reported for age 13 are boxed.