What 17-year-olds know and can do in mathematics

As shown in the item map below, 17-year-olds with a score of 286 were likely to be able to add two fractions with like denominators. Students with a score of 320 were likely to be able to successfully estimate an integer value for the square root of a number that is not a perfect square. Seventeen-year-olds with a score of 341 were likely to be able to analyze a proportional relationship.

Age 17 NAEP Mathematics Item Map

Scale score	Question description
500	
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394	Identify a construction using a compass (MC)
365	Rewrite an expression involving exponents and radicals (CR)
360	Read and interpret data from tables, charts, and graphs (MC)
357	Determine a logical result from a statement (MC)
352	Compute the area of a circle (CR)
350	
341	Analyze a proportional relationship (MC)
338	Identify an inequality from its graph (MC)
331	Find the median (MC)
325	Determine the percent given the part and the whole (MC - age 13)
320	Estimate a square root (CR)
317	Compute the area of a square given its perimeter (MC)
312	Add two fractions with unlike denominators (MC - age 13)
308	Convert between units of weight (MC)
304	Estimate length (MC - age 13)
301	Estimate an outcome in a probability context (MC)
300	
290	Use the transitive property (MC - ages 9 and 13)
289	Rewrite an algebraic expression (MC - age 13)
286	Add two fractions with like denominators (MC - ages 9 and 13)
280	Find the quotient of two negative integers (MC)
278	Identify a particular three-dimensional figure (MC - age 13)
273	Determine a square root (MC)
260	Convert between decimals and percents (MC)
252	Evaluate an algebraic expression for a given value (CR - age 13)
250	
239	Use congruence properties (CR)
224	Identify parallel lines (MC)
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CR Constructed-response question   MC Multiple-choice question

NOTE: Ages in parentheses indicate cross-age questions. 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 17 are boxed.