

# Wyoming Mathematics 2009

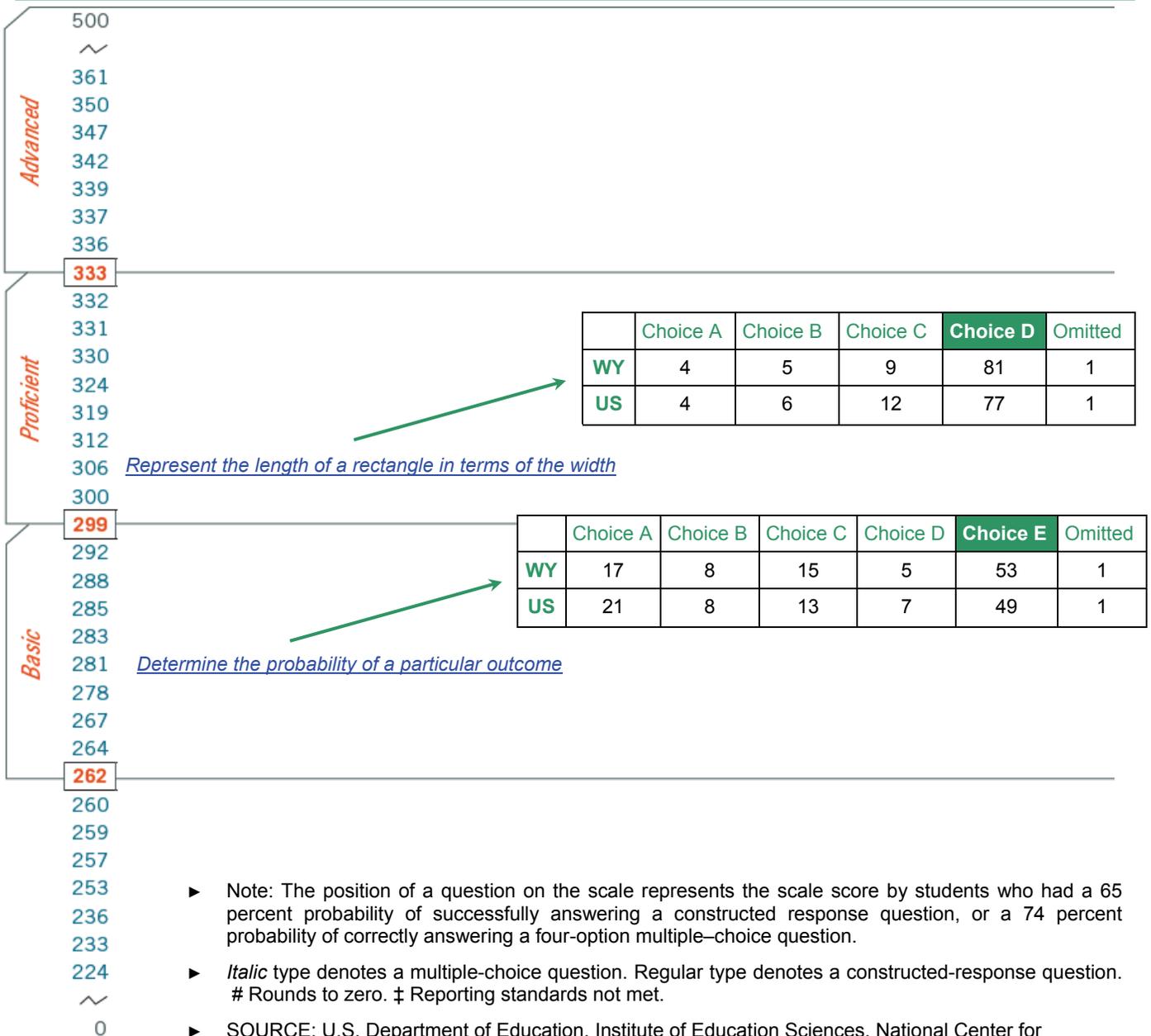


## Grade 8 Report

### Item Map and Performance Snapshot

The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess fourth graders' mathematical skills in five categories: number properties & operations, measurement, geometry, data analysis & probability, and algebra. Scale scores range from 0 to 500, wherein a 262 score denotes NAEP's *Basic* achievement benchmark (i.e., approximately a "grade level" performance); 299 reflects *Proficient* results or competency on challenging material, and 333 is considered to be *Advanced*.

### Wyoming and the Nation — Performance on Test Items



- ▶ Note: The position of a question on the scale represents the scale score by students who had a 65 percent probability of successfully answering a constructed response question, or a 74 percent probability of correctly answering a four-option multiple-choice question.
- ▶ *Italic* type denotes a multiple-choice question. Regular type denotes a constructed-response question. # Rounds to zero. ‡ Reporting standards not met.
- ▶ SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Mathematics Assessment.

Released Test Item Snapshot

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Represent the length of a rectangle in terms of width

This test item measures eighth-graders' performance in the algebra content area. The question asks students to identify an algebraic expression that models a relationship that is given in a geometric context.

Students were not permitted to use a calculator to answer this question.

SAMPLE QUESTION:

The length of a rectangle is 3 feet less than twice the width,  $w$  (in feet). What is the length of the rectangle in terms of  $w$ ?

- (A)  $3 - 2w$
- (B)  $2(w + 3)$
- (C)  $2(w - 3)$
- (D)  $2w + 3$
- (E)  $2w - 3$

About one-half (53 percent) of the eighth-grade students selected the correct answer (Choice E).

The most common incorrect answer (Choice A) represents a common error when translating "less" into an algebraic expression.

The average score for students likely to select the correct answer was 306 on the item map.

	Choice A	Choice B	Choice C	Choice D	Choice E	Omitted
WY	17	8	15	5	53	1
US	21	8	13	7	49	1

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Mathematics Assessment.

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Determine the probability of a particular outcome

This test item measures eighth-graders' performance in the data analysis, statistics, and probability content area. The question asks students to determine the probability of a simple event. Obtaining the correct answer requires first determining that there is a total of 15 pencils to choose from (6 red plus 4 green plus 5 blue).

Students were not permitted to use a calculator to answer this question.

SAMPLE QUESTION:

Marty has 6 red pencils, 4 green pencils, and 5 blue pencils. If he picks out one pencil without looking, what is the probability that the pencil he picks will be green?

- (A) 1 out of 3
- (B) 1 out of 4
- (C) 1 out of 15
- (D) 4 out of 15

Since 4 of these pencils are green, the correct answer is 4 out of 15 (Choice D), which was selected by 81 percent of Wyoming's eighth-grade students.

The most common incorrect answer (Choice C), selected by 9 percent of Wyoming's students, represents the probability of picking any one pencil from the total of 15 pencils.

	Choice A	Choice B	Choice C	Choice D	Omitted
<b>WY</b>	4	5	9	81	1
<b>US</b>	4	6	12	77	1

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Mathematics Assessment.