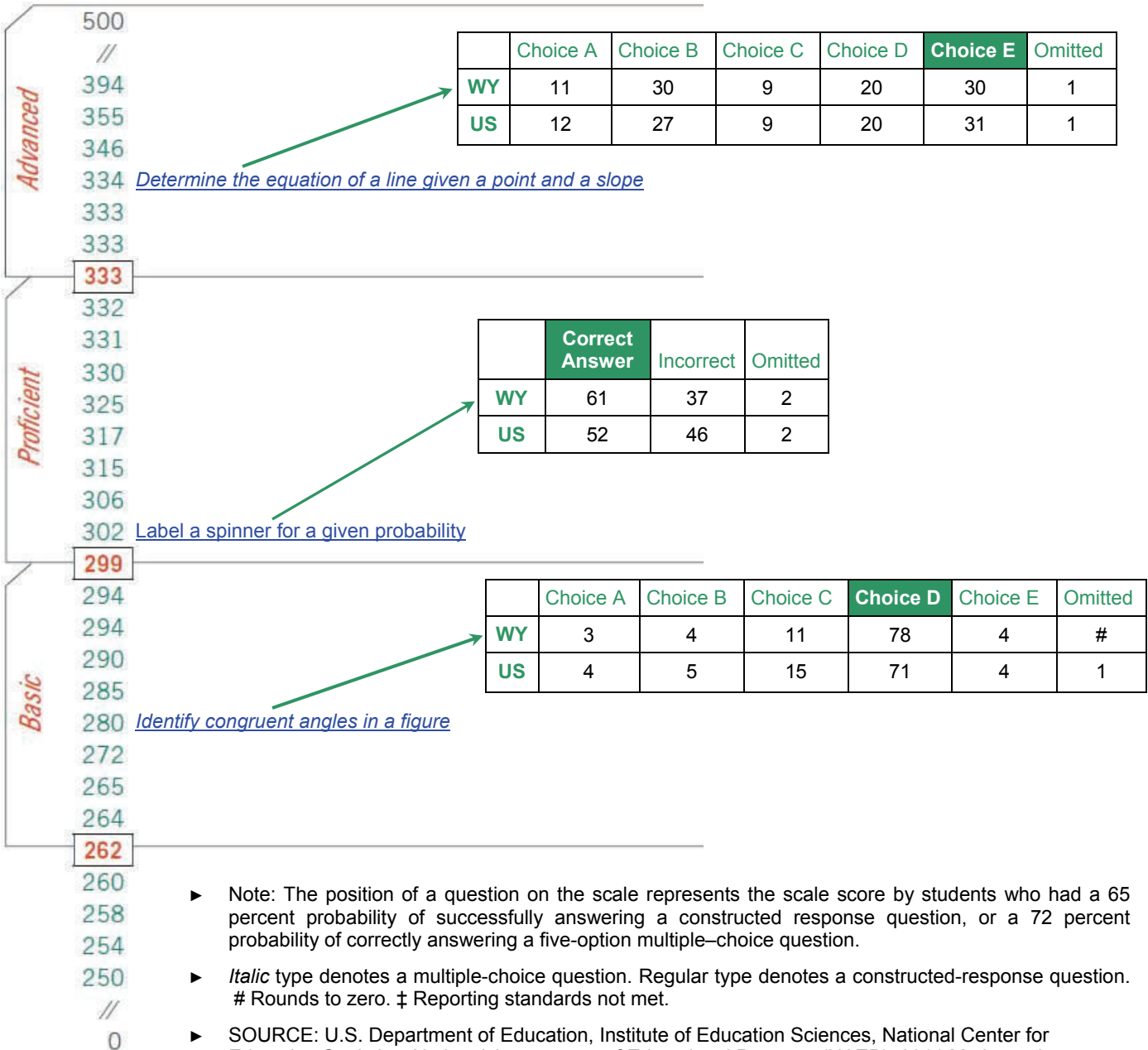


Grade 8 Report

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 72 percent probability of correctly answering a five-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), 2011 Mathematics Assessment.

Released Test Item 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*.

Determine the equation of a line given a point and a slope

This test item measures eighth-graders' performance in the algebra content area. This question asks students to identify an equation of a line that satisfies two conditions: the graph of the line passes through a given point, and it has a negative slope. The given point is the y-intercept of the graph of the line, and all answer choices were presented in slope-intercept form. Students were not permitted to use a calculator to answer this question.

Which of the following is an equation of a line that passes through the point (0, 5) and has a negative slope?

- (A) $y = 5x$
- (B) $y = 5x - 5$
- (C) $y = 5x + 5$
- (D) $y = -5x - 5$
- (E) $y = -5x + 5$

	Choice A	Choice B	Choice C	Choice D	Choice E	Omitted
WY	11	30	9	20	30	1
US	12	27	9	20	31	1

The correct answer (Choice E) was chosen by 30 percent Wyoming of eighth-grade students.

Students who correctly answered this question were able to recognize properties of a line written in slope-intercept form.

The equations in the incorrect answer choices had the following properties:

- ▶ Choice A is an equation of a line having a positive slope and y-intercept at (0, 0),
- ▶ Choice B is an equation of a line having a positive slope and y-intercept at (0, -5),
- ▶ Choice C is an equation of a line with the correct y-intercept at (0, 5), but the slope is positive, and
- ▶ Choice D is an equation of a line having a negative slope, but an incorrect y-intercept at (0, -5).

The most commonly selected incorrect answer (Choice B) may have been the result of reversing the signs of the values

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2011 Mathematics Assessment.

Results are based on statistical tests which account for standard errors related to NAEP's sampling procedures.

For additional results and more information about Wyoming NAEP, please visit:

http://edu.wyoming.gov/Programs/statewide_assessment_system/naep.aspx.

Released Test Item Snapshot

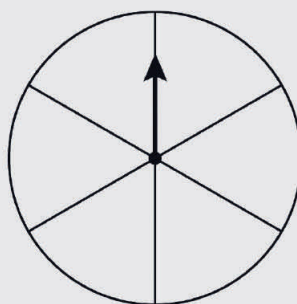
The National Assessment of Educational Progress (NAEP) uses both multiple choice and constructed-response test items to assess fourth graders' mathematical skills in five categories: number properties & operations, measurement, geometry, data analysis & probability, and algebra. Scale scores range from 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*.

Label a spinner for a given probability

This short answer test item asks eighth-graders to label (either yellow or blue) the sectors of a spinner that has been divided into 6 congruent sectors to match a given probability.

- ▶ To answer this question correctly, students must determine how many of the sectors need to be labeled yellow and how many sectors need to be labeled blue, so that the probability of spinning the arrow one time and landing on a sector labeled yellow is $\frac{1}{3}$.
- ▶ Students who correctly answered this question recognized that the given probability, $\frac{1}{3}$, needed to be converted to sixths to correspond to the 6 sectors on the spinner.
- ▶ Since $\frac{1}{3}$ is equivalent to two-sixths, a total of 2 sectors need to be labeled yellow, and the remaining 4 sectors need to be labeled blue. Students were permitted to use a calculator to solve this question.

The circular spinner shown below is divided into 6 congruent sectors. The sectors are yellow or blue.

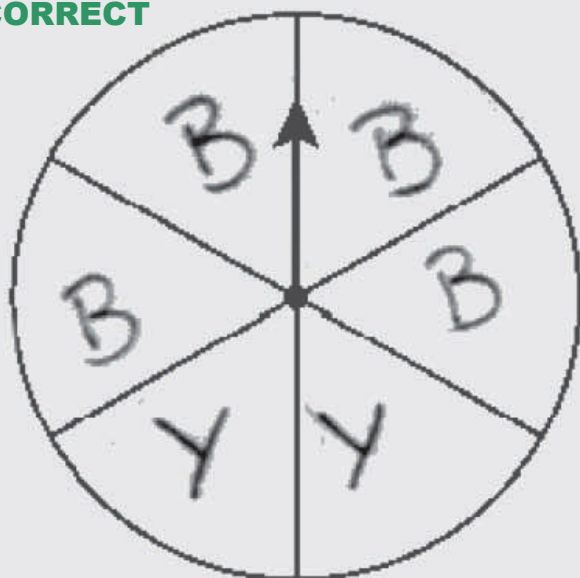


Label each of the sectors either yellow (Y) or blue (B) so that the probability of spinning the arrow once and landing on yellow is $\frac{1}{3}$.

Student responses to this question were rated using two scoring levels—Correct and Incorrect

- ▶ Scoring criteria for Correct and Incorrect are shown below:

CORRECT



$$\frac{2}{6} = \frac{1}{3} \checkmark$$

Label a spinner for a given probability:
Scoring guide

Correct answer	Labeled the spinner so that 2 sectors were labeled yellow and 4 sectors were labeled blue. <ul style="list-style-type: none"> ▶ Part of the requirement for a rating of "Correct" was to label each sector of the spinner, including the number of blue sectors.
Incorrect	Did not have the correct number of sectors labeled yellow or blue.

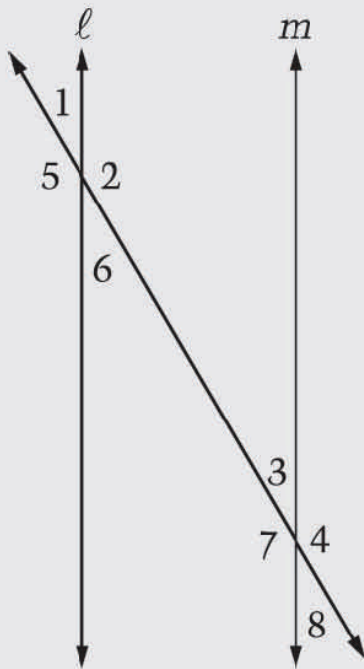
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2011 Mathematics Assessment.

Released Test Item Snapshot

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Identify congruent angles in a figure

This test item measures eighth-graders' performance in the geometry content area. Students are presented with a set of parallel lines cut by a non-perpendicular transversal and are asked to identify a pair of angles that must have the same measure. This question requires students to use properties of parallel lines and transversals to recognize pairs of congruent angles. Students were not permitted to use a calculator to answer this question.



In this figure, line l is parallel to line m . Which of the following pairs of angles must have the same measure?

- (A) Angles 1 and 2
- (B) Angles 1 and 5
- (C) Angles 2 and 3
- (D) Angles 4 and 5
- (E) Angles 4 and 8

A common incorrect answer (Choice C), which was selected by almost one-in-nine or 11 percent of grade 4 students in Wyoming, may have been selected more frequently because it is the only choice where the pair of angles are consecutive interior angles.

	Choice A	Choice B	Choice C	Choice D	Choice E	Omitted
WY	3	4	11	78	4	#
US	4	5	15	71	4	1

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2011 Mathematics Assessment.