Grade 8 Mathematics Item Map: A Resource to Understanding Student Scores

Virginia students participate in grades 3-8 Virginia Growth Assessments and Standards of Learning tests in reading and mathematics. This item map is a resource that provides descriptions and examples of items students were likely to answer correctly based on the vertical scaled score they achieved on their test. A vertical scaled score is a score that allows comparisons between Virginia Growth Assessments and Standards of Learning tests.

The item map shown in the tables below provides examples of test question descriptions at different score points from 1170-1945 the vertical scaled score range for Grade 8 Mathematics. These examples represent what students may see on the state assessments in Grade 8 Mathematics.

The descriptions are examples of what students may know or be able to do at each score point. Some descriptions include a released test question and answer options to further show what the student would *most likely answer correctly* if they achieved at or above that score point. This information, along with a student's test results, may be used to plan conversations with families, determine intervention strategies to strengthen student understanding, or establish a plan to accelerate learning.

Match the student's score to the closest number in the left column. In the right column is a description of an item the student would *most likely answer correctly*, based on their score. The student would also most likely correctly answer questions at all score points below the score they achieved.

## Students who scored in the range 1675 – 1945 are well prepared for learning new grade-level content.

Score	Description of Test Item
1821	Verify the Pythagorean Theorem using models. (Measurement and Geometry)
1751	Create and solve a multistep linear inequality in one variable from a contextual situation. (Probability, Statistics, Patterns, Functions, and Algebra)

| 1713 | Determine the slope and y-intercept of a linear function. (Probability, Statistics, Patterns, Functions, and Algebra) |

Directions: Drag the correct answers to the boxes. Each answer may be used more than one time.

Line h is drawn on a coordinate plane.
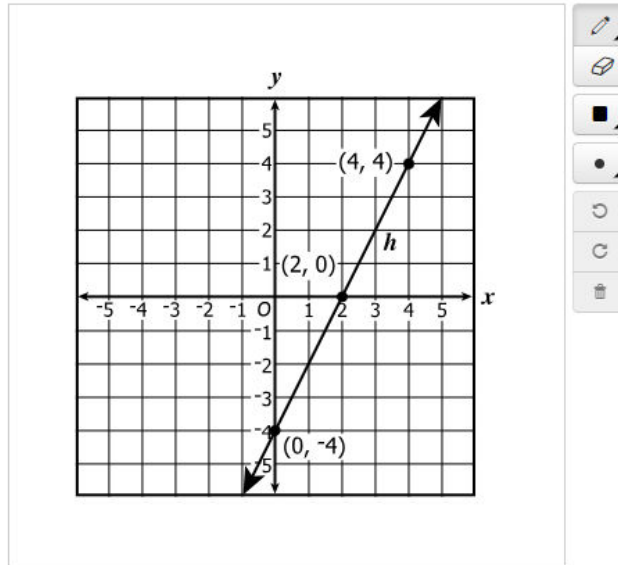
Complete the sentences to describe line h.

The slope of line h is ☐ .

The y-intercept of line h is ☐ .

| -4 | -2 | $-\frac{1}{2}$ | $\frac{1}{2}$ | 2 | 4 |
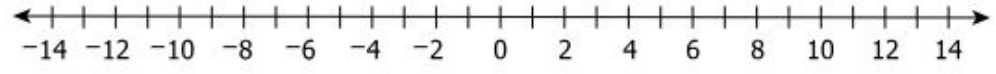
1696	Determine the probability of two independent events in a contextual situation. (Probability, Statistics, Patterns, Functions, and Algebra)
	The probability of the arrow on a spinner landing on the section labeled "R" is 20%. What is the probability the arrow will land on "R" on the first spin and NOT land on "R" on the second spin? ○ A. 4% ○ B. 16% ○ C. 40% ○ D. 64%
1676	Describe and verify angle relationships among vertical and supplementary angles. (Measurement and Geometry)

Students who scored in the range 1575 – 1674 are at risk for needing additional support with learning grade-level content.

Score	Description of Test Item
1659	Analyze and interpret data on a scatterplot. (Probability, Statistics, Patterns, Functions, and Algebra)

1653	Compare decimals, fractions, percents, and numbers written in scientific notation. (Number, Number Sense, Computation, and Estimation)
	Which statement is true? ○ A. $1\frac{4}{5} = 1.45$ ○ B. $\frac{1}{8} = 0.125\%$ ○ C. $1.3 \times 10^1 = 130$ ○ D. $0.39\% = 0.0039$
1627	Solve an area problem involving a composite plane figure created by rectangles. (Measurement and Geometry)
1619	Determine the two consecutive whole numbers between which a square root lies using a number line. (Number, Number Sense, Computation, and Estimation)
	Directions: Plot each point on the number line. Identify the two consecutive integers between which $^-\sqrt{115}$ lies. -14 -12 -10 -8 -6 -4 -2 0 2 4 6 8 10 12 14
1590	Organize and represent a data set using a boxplot. (Probability, Statistics, Patterns, Functions, and Algebra)

Students who scored in the range 1170 – 1574 need additional support with prior knowledge and foundational skills while learning grade-level content.

Score	Description of Test Item
1559	Describe how changing one measured attribute of a prism affects the volume. (Measurement and Geometry)
	Directions: Type your answer in the box.
	A rectangular prism has a length of 4 inches, a width of 8 inches, and a height of 5 inches. A second rectangular prism has the same length and width, and a height of 10 inches.
	The volume of the second prism is [ ] times the volume of the first prism.
1551	Compare decimals, fractions, percents, and numbers written in scientific notation. (Number, Number Sense, Computation, and Estimation)
	Which number is less than 1.63 ?
	○ A. $\dfrac{19}{11}$
	○ B. $1\dfrac{3}{4}$
	○ C. 1.74×10^{-1}
	○ D. 1.52×10^{1}

1546	Identify all natural numbers given a set of real numbers. (Number, Number Sense, Computation, and Estimation)
1529	Determine the domain of a given set of data. (Probability, Statistics, Patterns, Functions, and Algebra)
1491	Apply two translations to a figure graphed in the coordinate plane. (Measurement and Geometry)