West Virginia Alternate Academic Achievement Standards

High School Mathematics I

Relationships between Quantities

Reason quantitatively and use units to solve problems.

1 Express quantities to the appropriate precision of measurement (e.g., measure a pencil to the nearest inch). A.M.1HS.1

2 Define appropriate quantities for the purpose of descriptive modeling. A.M.1HS.2

3 Choose the appropriate unit of measurement (e.g., determine when to use feet/inches/meter, cups/gallons/liter, ounces/pounds/gram, etc.). A.M.1HS.3

Cluster: Interpret the structure of expressions.

4 Identify an algebraic expression involving at least one arithmetic operation to represent a real-world problem. A.M.1HS.4

Cluster: Create equations that describe numbers or relationships.

5 Given a real-world problem situation, write, read, and/or solve one-step addition and subtraction equations for an unknown number with a variable standing for the unknown (e.g., $8.50 + c = $12). A.M.1HS.5

6 Determine solutions to equations that model real-world problem situations with two unknowns (e.g., given a set of options, find solutions for x + y = $6.25). A.M.1HS.6

7 Demonstrate an understanding of terms such as “at least” and “fewer than” in solving real-world problems. A.M.1HS.7

8 Solve two-step word problems, represent these problems using formulas with a letter standing for the unknown quantity. A.M.1HS.8

Cluster: Represent and solve equations and inequalities graphically.

9 Interpret the meaning of a point on the graph of a linear function (e.g., on a graph of pizza purchases, trace the graph to a point and tell the number of pizzas purchased and the total cost of the pizzas). A.M.1HS.9

10 Interpret the meaning of the intersection of the two graphs. A.M.1HS.10

11 With the assistance of a graphing calculator and visual cue cards as needed, graph the solutions to a linear inequality in two variables as a halfplane (excluding the boundary in the case of a strict inequality) and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding halfplanes. A.M.1HS.11

Cluster: Understand the concept of a function.

12 Using a calculator and a visual cue card of function rules that describe proportional relationships, solve real-world problems (e.g., Unit Cost x Number of Items = Total Cost). A.M.1HS.12

13 Using a calculator and a visual cue card of function rules, solve real-world problems (e.g., given a $10 off coupon, use Sales Price = Original Price – Discount to find the Sales Price). A.M.1HS.13

14 Determine the missing values in arithmetic sequences. Instructional Note: Limit the common ratio in arithmetic sequences to integers (e.g., 20, 18, 16, ___, 12, 8, … or 3, 7, 11, 15, ___, 23, …). A.M.1HS.14

Cluster: Interpret functions that arise in applications in terms of a context.

15 Interpret data from graphs that represent linear functions with different rates of change and interpret which has the greater rate of change. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative. A.M.1HS.15

16 Given real-world measures, demonstrate an understanding of domains (e.g., there are seven days in a week; twelve months in a year; twelve inches in a foot). A.M.1HS.16

17 Calculate and interpret the rate of change of a function presented as a table (e.g., the following table has a rate of change of -2). A.M.1HS.17

Cluster: Analyze functions using different representations.

18 With the assistance of a graphing calculator and visual cue cards as needed, graph functions expressed symbolically and show key features of the graph. Instructional Note: Focus on linear functions. A.M.1HS.18

19 Identify information for two functions represented in different tables (e.g., Store A's Discount Table and Store B's Discount Table). A.M.1HS.19

Cluster: Build a function that models a relationship between two quantities.

20 Given a linear function represented by a table, determine the rate of change and add additional values to extend the table. A.M.1HS.20

21 Determine the common ratio in arithmetic sequences (e.g., recognize that "down 2" would describe the common ratio for a sequence such as 20, 18, 16, 14, 12… and write it as -2). A.M.1HS.21

	Cluster: Compare linear and exponential models and solve problems. 22 Given a graph, distinguish between linear functions and exponential functions. A.M.1HS.22 23 From a given list recognize linear and exponential functions, including arithmetic sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). A.M.1HS.23 24 Given two tables representing linear real-world function, determine which is increasing at a greater rate. A.M.1HS.24 25 Interpret the parameters in a linear function in terms of a context. Instructional Note: Limit to linear functions. A.M.1HS.25
Reasoning with Equations	**Cluster: Understand solving equations as a process of reasoning and explain the reasoning.** 26 Demonstrate each step in solving a one or two step equation. A.M.1HS.26
Descriptive Statistics	**Cluster: Summarize, represent, and interpret data on a single count or measurement variable.** 27 Represent data with dot plots on a number line. A.M.1HS.27 28 Given a dot plot, identify the maximum value, the minimum value, and the mode. A.M.1HS.28 29 Interpret differences in graphs of data sets. A.M.1HS.29
	Cluster: Summarize, represent, and interpret data on two categorical and quantitative variables. 30 Sort data or objects according to characteristics, similarities, and/or associations. Interpret frequencies in the context of the data (e.g., after surveying students, regarding their favorite ice cream flavor, answer related questions). A.M.1HS.30 31 Represent data of frequency using tally charts in real world situations. A.M.1HS.31
	Cluster: Distinguish between cause and effect. 32 In real world situations, distinguish between the cause and the effect. A.M.1HS.32

Transformations

Cluster: Experiment with transformations in the plane.

33 Know the attributes of perpendicular lines, parallel lines, and line segments; angles; and circles. A.M.1HS.33

34 Using manipulatives, translate, rotate, and/or reflect a geometric figure. A.M.1HS.34

35 Given a rectangle, parallelogram, trapezoid, or regular polygon manipulative, recognize the rotations and reflections that carry it onto itself. A.M.1HS.35

36 Recognize that a geometric shape and its translated/rotated/reflected shape are congruent. A.M.1HS.36

37 Trace a given geometric shape to demonstrate translation, rotation, and/or reflection. A.M.1HS.37

Cluster: Solve real-world problem situations involving parallel line segments, perpendicular line segments, angles, and circles.

38 From a list of examples, identify perpendicular line segments, parallel line segments, angles, and circles. Introduce real world situations involving perpendicular line segments, parallel line segments, angles, and circles (e.g., intersecting or parallel streets). A.M.1HS.38

Coordinates and Measurement

Use coordinates and determine area and perimeter.

39 Given coordinates, identify the geometric shapes using proper terminology. A.M.1HS.39

40 Find perimeters and areas of squares and rectangles to solve real-world problems. A.M.1HS.40