

Mathematics

Grade 8

2011

Maryland Common Core State Curriculum Framework

Adapted from the Common Core State Standards for Mathematics



DOMAIN: FUNCTIONS (F)		
Cluster	Standard	Mathematical Practices
Define, evaluate, and compare functions.	<p>8.F.1: Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output (function notation is not required in Grade 8).</p> <p><u>Essential Skills and Knowledge</u></p> <ul style="list-style-type: none"> • Ability to recognize functional relationships and apply the following: <ul style="list-style-type: none"> ○ Function Tables ○ Vertical Line Test ○ Domain/Input/Independent (x-coordinate) ○ Range/Output/Dependent (y-coordinate) <p>8.F.2: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i></p> <p><u>Essential Skills and Knowledge</u></p> <ul style="list-style-type: none"> • Ability to compare properties – constant rate of change/slope, increasing, decreasing, y-intercept, parallel lines, slopes of horizontal/vertical lines (see 8.EE.5 and 8.EE.6) • Ability to calculate slope/rate of change of a line graphically from a table or verbal description • Ability to determine y-intercept from table, equation, graph, or verbal description <p>8.F.3: Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function $A = S^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1, 1), (2, 4) and (3, 9), which are not on a straight line.</i> (SC 8)</p> <p><u>Essential Skills and Knowledge</u></p> <ul style="list-style-type: none"> • Ability to distinguish between linear and non-linear functions • Ability to identify and define independent variables and dependent variables in equations that represent authentic scenarios 	<ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.

DOMAIN: FUNCTIONS (F)... continued		
Cluster	Standard	Mathematical Practices
Use functions to model relationships between quantities.	<p>8.F.4: Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.</p> <p><u>Essential Skills and Knowledge</u></p> <ul style="list-style-type: none"> • Ability to calculate and interpret constant rate of change /slope from a scenario, table, graph, or two points • Ability to calculate and interpret initial value (y-intercept) from a scenario, graph, or table • Ability to represent linear relationships numerically, graphically (table), and algebraically (equation) <p>8.F.5: Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.</p> <p><u>Essential Skills and Knowledge</u></p> <ul style="list-style-type: none"> • Ability to distinguish rate of change within an interval of a function • Ability to interpret directionality and steepness of the graph of a function • Ability to sketch a graph given algebraic context or a scenario (slope and initial value) • Ability to create a plausible story given a graph 	<ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.