**Grades 6-8 Proportional Reasoning Progression**

| SOL 6.12 | SOL 7.10 | SOL 8.16 |
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| Essential Knowledge and Skills | Essential Knowledge and Skills | Essential Knowledge and Skills |
| The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to   * Make a table of equivalent ratios to represent a proportional relationship between two quantities, when given a ratio. (a) * Make a table of equivalent ratios to represent a proportional relationship between two quantities, when given a practical situation. (a) * Identify the unit rate of a proportional relationship represented by a table of values or a verbal description, including those represented in a practical situation. Unit rates are limited to positive values. (b) * Determine a missing value in a ratio table that represents a proportional relationship between two quantities using a unit rate. Unit rates are limited to positive values. (b) * Determine whether a proportional relationship exists between two quantities, when given a table of values or a verbal description, including those represented in a practical situation. Unit rates are limited to positive values. (c) * Determine whether a proportional relationship exists between two quantities given a graph of ordered pairs. Unit rates are limited to positive values. (c) * Make connections between and among multiple representations of the same proportional relationship using verbal descriptions, ratio tables, and graphs. Unit rates are limited to positive values. (d) | The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to   * Determine the slope, *m*, as rate of change in a proportional relationship between two quantities given a table of values or a verbal description, including those represented in a practical situation, and write an equation in the form *y* = *mx* to represent the relationship. Slope will be limited to positive values. (a) * Graph a line representing a proportional relationship, between two quantities given an ordered pair on the line and the slope, *m*, as rate of change. Slope will be limited to positive values. (b) * Graph a line representing a proportional relationship between two quantities given the equation of the line in the form  *y* = *mx*, where *m* represents the slope as rate of change. Slope will be limited to positive values. (b) * Determine the *y-*intercept, *b*, in an additive relationship between two quantities given a table of values or a verbal description, including those represented in a practical situation, and write an equation in the form *y* = *x* + *b*, *b* ≠ 0, to represent the relationship. (c) * Graph a line representing an additive relationship (*y* = *x* + *b,  b* ≠ 0) between two quantities, given an ordered pair on the line and the *y*-intercept (*b*). The *y*-intercept (*b*) is limited to integer values and slope is limited to 1. (d) * Graph a line representing an additive relationship between two quantities, given the equation in the form *y* = *x* + *b, b* ≠ 0. The *y*-intercept (*b*) is limited to integer values and slope is limited to 1. (d) * Make connections between and among representations of a proportional or additive relationship between two quantities using verbal descriptions, tables, equations, and graphs. (e) | The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to   * Recognize and describe a line with a slope that is positive, negative, or zero (0). (a) * Given a table of values for a linear function, identify the slope and *y*-intercept. The table will include the coordinate of the *y*-intercept. (b) * Given a linear function in the form *y* = *mx* + *b*, identify the slope and *y*-intercept. (b) * Given the graph of a linear function, identify the slope and *y*-intercept. The value of the *y*-intercept will be limited to integers. The coordinates of the ordered pairs shown in the graph will be limited to integers. (b) * Identify the dependent and independent variable, given a practical situation modeled by a linear function. (c) * Given the equation of a linear function in the form  *y* = *mx* + *b*, graph the function. The value of the *y*-intercept will be limited to integers. (d) * Write the equation of a linear function in the form  *y* = *mx* + *b* given values for the slope, *m,* and the  *y*-intercept or given a practical situation in which the slope, *m*, and *y*-intercept are described verbally. (e) * Make connections between and among representations of a linear function using verbal descriptions, tables, equations, and graphs. (e). |