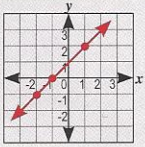
Objective 1 – Functional Relationships

FUNCTIONS

function: relation such that each x-value (input) has just one y-value (output); for the set of ordered pairs (x, y) belonging to a function, no x-coordinate is repeated

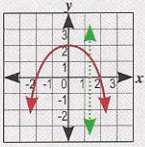
Example: {(2, 2), (3, 2)} is a function, but {(2, 2), (2, 3)} is not.

Example: A function in which the y-values are one more than their corresponding x-values can be represented in several ways.

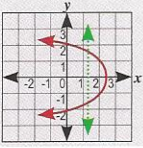
Table	Graph	Equation	Function Notation	List	Map
x | y -2 | -1 -1 | 0 1 | 2		$y = x + 1$	$f(x) = x + 1$	{(−2, −1), (−1, 0), (1, 2)}	

vertical line test: a vertical line drawn on a function's graph only crosses at one point; if a vertical line crosses at more than one point, it is not a function

Example:
Function
Each x-value has only one y-value.



Example:
Not a function
Some x-values have more than one y-value.



INDEPENDENT AND DEPENDENT QUANTITIES

independent quantity: amount that can be changed or manipulated

dependent quantity: amount that changes because of another quantity

Example: A room has four chairs, c, around each table, t, and 1 chair for the teacher. $c = 4t + 1$ The dependent quantity of c changes based on t.

EQUATIONS AND INEQUALITIES

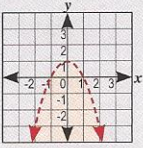
equality: describes two equal terms; uses = sign

inequality: describes two terms that are not equal

Description	Symbol	Line
Less than	$<$	dashed
Greater than	$>$	dashed
Less than or equal to	$\leq$	solid
Greater than or equal to	$\geq$	solid

shading: for inequalities, shade above line or graph for >, and shade below line or graph for <

Example: $y < -x^2 + 1$



Point (0, 0) is a possible solution, but (0, 1) is not.