Name: _____ **Period:** _____

Relations & Functions — Day 1 Practice

"Learning ≥ Grading. Be curious, be kind, and use parentheses."

Quick Reference (Read Me!)

Relation: any set of ordered pairs (x, y).
Function: a relation where each input x is paired with *exactly one* output y. (No input gets two different outputs.)
Domain: the set of all inputs (all x-values used).
Range: the set of all outputs (all y-values produced).
Function notation: $f(x)$ means "the output of f when the input is x." To evaluate, replace x by the entire input—*with parentheses*.

1. (10 points) **Is it a function? Domain & Range.**
Consider the relation

$$R = \{(0, 2),\ (1, 5),\ (2, 5),\ (1, 5)\}.$$

(a) Is R a function? Why or why not?

(b) List the domain and the range of R.

2. (12 points) **Fix the relation (table view).**
You're given this table of input/output pairs. Fill in the blank so that the relation *is* a

function.

x	y
-1	3
0	0
1	4
1	

(a) What number should go in the blank? Explain briefly.

(b) After your fix, write the new relation as a set of ordered pairs.

3. (14 points) **Function evaluation (numbers and constants).**
Let

$$f(x) = 3x - 4.$$

Compute each value. *Use parentheses when substituting!*

(a) $f(0)$

(b) $f(5)$

(c) $f(-2)$

(d) $f(a)$, where a is a constant

(e) $f(2a+1)$

4. (12 points) **Solve for the missing number (basic notation).**
Let $g(x) = k - 2x$, where k is a constant.

(a) If $g(4) = 9$, find k.

(b) Find the input x such that $g(x) = 1$ (your answer may involve k).

5. (12 points) **Plain-English interpretation (ACT/SAT style).**
A function p is defined by $p(x) = 2x + 6$. Circle all true statements and explain why each is true or false.

   (A) $p(4) = 14$ means "when the input is 4, the output is 14."

   (B) $p(a) = 2a + 6$ even if we don't know what a is yet.

   (C) If $p(x) = 10$, then $x = 2$.