U1A L2 Solving Two-Step Equations — NOTES	Name: _____ HR: _____

Target Skill: Solve two-step linear equations by undoing operations in the reverse order of operations.

Quick Review: Order of Operations, in Reverse

Evaluating (forward)	**Solving for x (backward)**
1. Parentheses 2. Exponents 3. Multiply / Divide 4. Add / Subtract	1. Add / Subtract (undo this first — usually easiest) 2. Multiply / Divide (undo this second — usually easiest)

- Big Idea: The ONLY real rule is that whatever you undo, you must apply it to the ENTIRE side of the equation. You are free to undo Add/Subtract or Multiply/Divide first — both work!
- Why we usually undo Add/Subtract FIRST: it keeps the numbers whole longer and avoids introducing fractions/decimals early.
- Undoing Multiply/Divide first still gets the right answer, just with messier numbers along the way.

Examples of solving **Both Ways: 2x + 3 = 9**

Undo Add/Subtract FIRST	**Undo Multiply/Divide FIRST**
Whole numbers the whole way through.	Same answer — but decimals show up right away.

Reminder — Rules of the Math Game

1. Add or subtract the SAME number from BOTH sides. (Addition/Subtraction Property of Equality)
2. Multiply or divide BOTH sides by the SAME nonzero number. (Multiplication/Division Property of Equality)
3. You can exchange the left and right sides. (Symmetric Property)

The Two-Step Process

Step 1: Undo addition or subtraction to isolate the term with x.
Step 2: Undo multiplication or division to isolate x.

Worked Example 1

Step	**Property / Reason**
$-3x + 4 = 16$	Original equation
	Simplify
	Simplify

Example 2

Step	Property / Reason
$\frac{x}{3} - 2 = 4$	Original equation
	Simplify
	Simplify

3 — Fraction Coefficient

Step	Property / Reason
$\frac{2}{3}x - 1 = 5$	Original equation
	Simplify
	Simplify

Watch Out! Common Mistakes

- Doing an operation to only ONE side of the equation, not both.
- Sign errors when a coefficient or constant is negative.

Guided Practice — Determine x. State the RULE(S) used.

1. $3x + 2 = 11$ `property(s) Used` x = ____	**2.** $5 - 2x = 1$ `property(s) Used` x = ____	**3.** $\frac{x}{4} + 1 = 3$ `property(s) Used` x = ____
4. $-2x + 5 = -1$ `property(s) Used` x = ____	**5.** $5 = \frac{2}{3}x + 1$ `property(s) Used` x = ____	**6.** $\frac{3}{4}x - 2 = 4$ `property(s) Used` x = ____