Reasoning With Properties From Algebra

Algebraic Properties of Equality

Addition Property	If a = b, then a + c = b + c
Subtraction Property	If a = b, then a - c = b - c
Multiplication Property	If a = b, then ac = bc
Division Property	If a = b and c ≠0, then a/c = b/c
Reflexive Property	For all ℜ (real #'s), a = a
Symmetric Property	If a = b, then b = a
Transitive Property	If a = b and b = c, then a = c
Substitution Property	If a = b, then a can be substituted for b

Two-Column Proof

- numbered statements and reasons that show the logical order in an argument

Ex. Solve $3x + 12 = 8x - 18$

Write a **reason** for each step.

Statements	**Reasons**
1.) $3x + 12 = 8x - 18$	1.) Given
2.)	2.)
3.)	3.)
4.)	4.)

Ex. Solve $3(2x + 12) = 9x - 18$

Write a **reason** for each step.

Statements	**Reasons**
1.) $3(2x + 12)=9x - 18$	1.) Given
2.)	2.)
3.)	3.)
4.)	4.)
5.)	

Solve $2(3x + 5) + 15 = 12x + 4$

Write a **reason** for each step.

Statements	**Reasons**
1.)	1.) Given
2.)	2.)
3.)	3.)
4.)	4.)
5.)	5.)
6.)	6.)