

objective: To introduce proofs 1/23/19  
using algebraic properties.

Proofs: Two column proofs where 1 column are statements (steps in logical order) and the second column are Reasons (justifications for the steps).

1.) Given:  $7x - 84 = 2x + 61$

Prove:  $x = 29$

statements	Reasons
1.) $7x - 84 = 2x + 61$ <del><math>-2x</math></del> <del><math>-2x</math></del>	1.) Given
2.) $5x - 84 = 61$ <del><math>+84</math></del> <del><math>+84</math></del>	2.) subtraction property of =
3.) $\frac{5x}{5} = \frac{145}{5}$	3.) Addition property of =
4.) $x = 29$	4.) Division property of =

$$\text{Given: } 4(5n+7) - 3n = 3(4n-9)$$

$$\text{Prove: } n = -11$$

Statements	Reasons
1.) $4(5n+7) - 3n = 3(4n-9)$	1.) Given
2.) $20n + 28 - 3n = 12n - 27$	2.) Distributive property of multiplication over addition
3.) $17n + 28 = 12n - 27$ <del><math>-12n</math></del> <del><math>-12n</math></del> <hr/>	3.) combine like terms
4.) $5n + 28 = -27$ <del><math>-28</math></del> <del><math>-28</math></del> <hr/>	4.) subtraction property of =.
5.) $5n = -55$ <del><math>5</math></del> <del><math>5</math></del> <hr/>	5.) subtraction property of =.
6.) $n = -11$	6.) Division property of =.

$$-11 = n$$

$$n = -11 \longrightarrow \text{symmetric property}$$