

# Intro to Proofs Using Algebra

• Two-column proof:

Given: $\square \square \square$	
Prove: $\triangle \triangle \triangle$	
<u>Statement</u>	<u>Reason</u>
1. $\square \square \square$	1. Given
2. ....	2. ....
3. $\triangle \triangle \triangle$	3. ....

Q.E.D. or  $\square$

Ex: Rewrite Do Now as a proof:

$$\begin{array}{r} x - 3 = 9 \\ \quad +3 \quad +3 \\ \hline x = 12 \end{array}$$

Given:  $x - 3 = 9$

Prove:  $x = 12$

<u>Statement</u>	<u>Reason</u>
1. $x - 3 = 9$	1. Given
2. $x - 3 + 3 = 9 + 3;$ $x = 12$	2. Addition Prop.

$\square$



Redoing prior example w/ Distributive Prop:

Ex:

$$-3(p-9) = 18$$

$$-3\boxed{p} + \cancel{27} = +18$$

$-27 \quad -27$

$$\frac{-3p}{-3} = \frac{-9}{-3}$$

$$p = 3$$

Statement

1.  $-3(p-9) = 18$

2.  $-3p + 27 = 18$

3.  $-3p + 27 - 27 = 18 - 27$  ;

$$-3p = -9$$

4.  $\frac{-3p}{-3} = \frac{-9}{-3}$  ;  $p = +3$

Reason

1. Given

2. Distributive Prop.

3. Subtraction Prop.

4. Division Prop

QED