Keys

Given: $\dfrac{4x+6}{2}=9$

Prove: x = 3

Statements	Reasons
1. $\dfrac{4x+6}{2}=9$	1. given
2. $2\left(\dfrac{4x+6}{2}\right)=2(9)$	2. multiplication
3. $4x+6=18$	3. distributive
4. $4x+6-6=18-6$	4. subtraction
5. $4x=12$	5. substitution
6. $\dfrac{4x}{4}=\dfrac{12}{4}$	6. division
7. $x=3$	7. substitution

Given: $4x+8=x+2$

Prove: x = -2

Statements	Reasons
1. $4x+8=x+2$	1. given
2. $4x+8-x=x+2-x$	2. subtraction
3. $3x+8=2$	3. substitution
4. $3x+8-8=2-8$	4. Subtraction Property
5. $3x=-6$	5. Substitution Property
6. $\dfrac{3x}{3}=\dfrac{-6}{3}$	6. division
7. $x=-2$	7. substitution

DIRECTIONS: Use algebra properties to fill in the right sides of these proofs.

1

$4x - 5 = -2$		Given
$4x = 3$		addition
$x = 3/4$		division

2

$\dfrac{3a}{2} = \dfrac{6}{5}$		Given
$3a = \dfrac{12}{5}$		multiplication
$a = \dfrac{4}{5}$		division

3

$\dfrac{z+7}{3} = -11$		Given
$z + 7 = -33$		multiplication
$z = -40$		subtraction

4

$15y + 7 = 12 - 20y$		Given
$35y + 7 = 12$		Addition
$35y = 5$		subtraction
$y = 1/7$		division

5

$\dfrac{2}{3}b = 8 - 2b$		Given
$2b = 3(8 - 2b)$		multiplication
$2b = 24 - 6b$		distributive
$8b = 24$		addition
$b = 3$		division

6

$x - 2 = \dfrac{2x+8}{5}$		Given
$5(x - 2) = 2x + 8$		multiplication
$5x - 10 = 2x + 8$		distributive
$3x - 10 = 8$		subtraction
$3x = 18$		addition
$x = 6$		division

Given: $3k + 5 = 17$
Prove: $k = 4$

Statements		Reasons
1.	$3k + 5 = 17$	1. given
2.	$3k = 12$	2. Subtraction
3.	$k = 4$	3. division

Given: $-6a - 5 = -95$
Prove: $a = 15$

Statements	Reasons
1) $-6a - 5 = -95$	1) Given
2) $-6a = -90$	2) addition
3) $a = 15$	3) division

Given: $7y - 84 = 2y + 61$
Prove: $y = 29$

Statements	Reasons
1) $7y - 84 = 2y + 61$	1) Given
2) $5y - 84 = 61$	2) subtraction
3) $5y = 145$	3) addition
4) $y = 29$	4) division

Given: $4(5n + 7) - 3n = 3(4n - 9)$
Prove: $n = -11$

Statements	Reasons
1) $4(5n+7) - 3n = 3(4n-9)$	1) Given
2) $20n+28 - 3n = 12n-27$	2) Distributive
3) $17n +28 = 12n-27$	3) Substitution
4) $5n + 28 = -27$	4) subtraction
5) $5n = -55$	5) subtraction
6) $n = -11$	6) division

Given: $3(5x + 1) = 13x + 5$
Prove: $x = 1$

Statements	Reasons
1) $3(5x+1) = 13x+5$	1) Given
2) $15x+3 = 13x+5$	2) Distributive
3) $2x+3 = 5$	3) subtraction
4) $2x = 2$	4) subtraction
5) $x = 1$	5) division