

# Day 4 - More Complex Algebraic Justification Practice

1. Given:  $5j + k = m$   
 $k = 3j$   
 $m = p$

Prove:  $p = 8j$

	Statement		Reason
1	$5j + k = m$	1	Given
2	$k = 3j$	2	Given
3	$m = p$	3	Given
4	$5j + 3j = m$	4	Substitution (1, 2)
5	$8j = m$	5	Combine Like Terms or add
6	$8j = p$	6	Transitive Prop *
7	$p = 8j$	7	Symmetric

2. Given:  $a = b + 9$   
 $2a = b$

Prove:  $a = -9$

	Statement		Reason
1	$a = b + 9$	1	Given
2	$2a = b$	2	Given
3	$a = 2a + 9$	3	Substitution (1, 2)
4	$-a = 9$	4	Subtraction Prop
5	$a = -9$	5	Division Prop

3. Given:  $g + h = j$   
 $j = b$   
 $g = h$

Prove:  $b = 2g$

	Statement		Reason
1	$g + h = j$	1	Given
2	$j = b$	2	Given
3	$g = h$	3	Given
4	$g + g = j$	4	Substitution (1, 3)
5	$2g = j$	5	Combine Like Terms or Add
6	$2g = b$	6	Transitive Prop (2, 5)
7	$b = 2g$	7	Symmetric Prop

4. Given:  $x + y = 2z$   
 $y = z$

Prove:  $x = z$

	Statement		Reason
1	$x + y = 2z$	1	Given
2	$y = z$	2	Given
3	$x + z = 2z$	3	Substitution Prop (1,2)
4	$x = z$	4	Subtraction Prop

5. Given:  $a + b = c$   
 $c = 7d$   
 $a = b$

Prove:  $7d = 2b$

	Statement		Reason
1	$a + b = c$	1	Given
2	$c = 7d$	2	Given
3	$a = b$	3	Given
4	$a + b = 7d$	4	Transitive Prop (1,2)
5	$b + b = 7d$	5	Substitution Prop (3,4) *
6	$2b = 7d$	6	Combine Like Terms or Add
7	$7d = 2b$	7	Symmetric Prop

6. Given:  $3m = b$   
 $m = 4c$   
 $b = h$

Prove:  $12c = h$

	Statement		Reason
1	$3m = b$	1	Given
2	$m = 4c$	2	Given
3	$b = h$	3	Given
4	$3(4c) = b$	4	Substitution Prop (1,2)
5	$12c = b$	5	Multiplication
6	$12c = h$	6	Transitive Prop (3,5) *