Writing Equivalent Expressions Using Properties

The table below shows some common properties of operations.

Commutative Property of Addition	$a + b = b + a$	Commutative Property of Multiplication	$a \cdot b = b \cdot a$
Associative Property of Addition	$(a + b) + c = a + (b + c)$	Associative Property of Multiplication	$(a \cdot b) \cdot c = a \cdot (b \cdot c)$
Distributive Property Across Addition	$a \cdot (b + c) = a \cdot b + a \cdot c$	Distributive Property Across Subtraction	$a \cdot (b - c) = a \cdot b - a \cdot c$

Complete the equivalent expressions using the properties listed.

$6 + 3z + 2$

$= 3z + \underline{\quad} + 2$ ← Commutative Property of Addition

$= 3z + \underline{\quad}$

$4(10j - 5)$

$= 4(\underline{\quad}) - 4(\underline{\quad})$ ← Distributive Property Across Subtraction

$= \underline{\quad} - \underline{\quad}$

$(5 + 9t) + 3t$

$= 5 + (\underline{\quad} + \underline{\quad})$ ← Associative Property of Addition

$= \underline{\quad} + \underline{\quad}$

$3a \cdot 2$

$= 2 \cdot \underline{\quad}$ ← Commutative Property of Multiplication

$= \underline{\quad} a$

$7 \cdot (3n)$

$= (\underline{\quad} \cdot \underline{\quad})n$ ← Associative Property of Multiplication

$= \underline{\quad} n$

$12y + 5y + y$

$= (\underline{\quad} + \underline{\quad} + \underline{\quad})y$ ← Distributive Property Across Addition

$= \underline{\quad} y$

Use the properties of operations to write equivalent expressions.

$99 + (1 + w)$	$3m + 2m$	$6(r + 3)$	$4f \cdot 5$
$7c + (2c + 8)$	$8 \cdot (4b)$	$7(3h - 10)$	$(3x + 11) + 5x$