Name Answer Key Date

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.

$6 + 3z + 2$

$= 3z +$ 6 $+ 2$ ← Commutative Property of Addition

$= 3z +$ 8

$4(10j - 5)$

$= 4($ 10j $) - 4($ 5 $)$ ← Distributive Property Across Subtraction

$=$ 40j $-$ 20

$(5 + 9t) + 3t$

$= 5 + ($ 9t $+$ 3t $)$ ← Associative Property of Addition

$=$ 5 $+$ 12t

$3a \cdot 2$

$= 2 \cdot$ 3a ← Commutative Property of Multiplication

$=$ 6 a

$7 \cdot (3n)$

$= ($ 7 $\cdot$ 3 $)n$ ← Associative Property of Multiplication

$=$ 21 n

$12y + 5y + y$

$= ($ 12 $+$ 5 $+$ 1 $)y$ ← Distributive Property Across Addition

$=$ 18 y

Use the properties of operations to write equivalent expressions. Expressions may vary.

$99 + (1 + w)$	$3m + 2m$	$6(r + 3)$	$4f \cdot 5$
$100 + w$	$5m$	$6r + 18$	$20f$
$7c + (2c + 8)$	$8 \cdot (4b)$	$7(3h - 10)$	$(3x + 11) + 5x$
$9c + 8$	$32b$	$21h - 70$	$8x + 11$