Name _____ Date _____

Equivalent Expressions and the Distributive Property: Expand, Factor and Combine

Directions: Two expressions are equivalent when they have the same value no matter what number each variable stands for. Replacing a variable with a number is a quick test: if the two values differ, the expressions are not equivalent. A number written right next to a variable or a parenthesis means multiply.

1. Which expression is equivalent to $t + t + t + t$?

A. $4t$ B. $t + 4$ C. $t \times t \times t \times t$ D. $4 + 4t$

2. Two students rewrite $4(n + 3)$ without parentheses.

- Tariq writes $4n + 3$, because he multiplies only the n by 4.
- Nia writes $4n + 12$, because she multiplies both the n and the 3 by 4.

Whose expression is equivalent to $4(n + 3)$, and why?

A. Both, because $4n + 3$ and $4n + 12$ are equivalent to each other.

B. Tariq's, because only the variable is multiplied by the number in front.

C. Neither, because $4(n + 3)$ is equivalent to $7n$.

D. Nia's, because the 4 multiplies every term inside the parentheses.

3. Use the distributive property to expand $5(n + 4)$. Which expression do you get?

A. $5n + 9$ B. $n + 20$ C. $5n + 20$ D. $5n + 4$

4. What number completes the equation so that both sides are equivalent?

$3(k + 8) = 3k +$ _____

5. Combine the like terms in $7k + 2k$. Which expression is equivalent?

A. $9 + k$ B. $9k^2$ C. $9k$ D. $14k$

6. Which expression is $12n + 18$ written as a product?

A. $6(2n + 18)$ B. $12(n + 18)$ C. $6(6n + 3)$ D. $6(2n + 3)$

7. Fill in the missing number so that the two expressions are equivalent.

$20n + 28 = 4(5n +$ _____$)$

8. A common factor can be taken out of both terms of $15p + 10r$. Which expression is equivalent to $15p + 10r$?

A. $5(3p + 10r)$ B. $15(p + 10r)$ C. $25pr$ D. $5(3p + 2r)$

9. Which expressions are equivalent to $6(n + 2)$? Select the two equivalent expressions.

☐ A. $6n + 2$ ☐ B. $8n$ ☐ C. $6n + 8$

☐ D. $6n + 12$ ☐ E. $3(2n + 4)$

10. Simplify $3(n + 2) + 4n$. Which expression is equivalent to it?

A. $7n + 6$ B. $7n + 2$ C. $13n$ D. $3n + 10$