Name_____ Date_____ Period_____

**LESSON 6-6 · SESSION 2 · PRACTICE · FORM B**

# Testing and Justifying Equivalence

Learning target – I can test whether two expressions are equivalent by substituting values and by reasoning. · 6.EE.A.4

**REMEMBER**

- Equivalent expressions have the **same value for every** value of the variable.
- **Test** with the same value in both. One value with different results proves they are **not** equivalent.
- Matching values do not prove it. **Justify** with properties, like the Distributive Property.

**WORKED EXAMPLE**

Are $4(n + 3)$ and $4n + 12$ equivalent?

**Step 1** Test $n = 2$: $4(2 + 3) = 20$ and $4 \times 2 + 12 = 20$.

**Step 2** One match is not proof, so use a property.

**Step 3** Distributive Property: $4(n + 3) = 4n + 4 \times 3 = 4n + 12$.

**Answer** **Yes, equivalent**

**WORDS** **equivalent expressions** *(expresiones equivalentes)* · **counterexample** *(contraejemplo)* · **Distributive Property** *(propiedad distributiva)* · **Commutative Property** *(propiedad conmutativa)*

## PRACTICE

*show your work · label units*

**1.** Evaluate each expression when $y = 6$. Which two might be equivalent?

**a.** $4(y + 3) =$ ___ **b.** $4y + 12 =$ ___ **c.** $4y + 3 =$ ___

**2.** **Rental Formulas.** Shop A uses $4b + 7 + 5b$ for the cost of renting $b$ bikes. Shop B uses $9b + 7$.

**a.** Substitute $b = 2$. A: ___ B: ___

**b.** Substitute $b = 6$. A: ___ B: ___

**c.** Are they equivalent? How do you know for every $b$? _____

**d.** Which property lets you reorder $4b + 7 + 5b$? _____

**3.** **One Test Is Enough.** Compare $5(k + 1)$ and $5k + 1$ using $k = 3$. Are they equivalent?

**Hint** *Do the parentheses first in $5(k + 1)$.*

*Show your work.*

**Equivalent?**_____

**4.** **Properties.** Look at $4 + (m + 9)$ and $(4 + m) + 9$.

**Hint** *Only the grouping changed.*

**a.** Which property is shown?

_____

**b.** Test both with $m = 4$. _____

**5. Theo's Claim.** Theo says $7 + 2j$ and $9j$ are equivalent because $7 + 2 = 9$. Test $j = 3$ to justify or correct his claim.

**Hint** *Substitute 3 into both expressions.*

*Show your work.*

**Values**_____

**6. Two Test Values.** Compare $8v + 4$ and $4(2v + 1)$ using $v = 1$ and then $v = 5$. Are they equivalent?

**Hint** *Matching values support it; a property proves it.*

*Show your work.*

**Values**_____

**7. Lila's Claim.** Lila says $15n - 6n$ and 9 are equivalent because $15 - 6 = 9$. Test $n = 4$ to justify or correct her claim.

**Hint** *Subtracting coefficients leaves a term that still has n.*

*Show your work.*

**Values**_____

**8. Three Expressions.** Use $2(k + 5)$, $2k + 10$ and $2k + 5$.

**a.** Evaluate all three when $k = 3$. _____

**b.** Which two are equivalent? _____

**c.** Justify with a property, not a test value. _____

## FIND THE ERROR

*explain the mistake, then fix it*

**9. Priya's Work.** Priya tested $4p + 6$ and $10p$ using $p = 1$. Both gave 10, so she said they are always equivalent. Explain her mistake. Test $p = 3$.

_____

_____

_____

## TEST PRACTICE

*choose the best answer*

**10.** One matching test value is –

**A** not enough to prove equivalence

**B** enough to prove equivalence

**C** a counterexample

**D** always wrong

**11.** $5(a + 2)$ is equivalent to –

**A** $5a + 2$ **B** $5a + 10$ **C** $a + 10$ **D** $7a$

**SELF-CHECK CODE** *find your answer · copy its letter into that problem's box · spell a math word*

| 41 | 11 | 36 | 17 | 20 | 25 | 44 | 30 | 13 | 61 |
|---|---|---|---|---|---|---|---|---|---|
| Q | T | N | S | N | C | A | Z | T | O |

| #2a | #2b | #3 | #4b | #5 | #6 | #7 | #8a |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| CHECK YOURSELF | ☐ I can do this on my own | ☐ I need a little help | ☐ I have a question about #___ |
|---|---|---|---|