Lesson 6-6 · Session 1

Simplifying to Show Equivalence

Name _____ Date _____ Period _____

Maryland Standard 6.AT.7 · Learning target — I can simplify an expression by combining like terms to test whether two expressions are equivalent.

Show a model, calculation, or explanation. Answer every part and label units when needed.

Exercises 1–12 earn 1 point for a correct response and 1 for supporting work. Spiral Review and Test Practice earn 1 point each.

Learn from a model

REMEMBER

- Use properties (distributive, combining like terms) to simplify an expression into a shorter, equivalent form.
- Like terms have the same variable raised to the same power — combine their coefficients.
- Watch out — only terms with exactly the same variable can be combined.
- Check it — count the variable terms and the constants separately in each expression.

WORKED EXAMPLE

Simplifying to Test Equivalence Are 7c + 9 + 6c and 13c + 9 equivalent? Simplify to decide.

Step 1 Find the like terms. 7c and 6c both have the letter c.

Step 2 Combine the like terms. 7c + 6c = 13c

Step 3 Keep the constant. The 9 has no letter, so it stays alone.

Step 4 Compare. 13c + 9 matches the second expression.

Answer Yes. Both expressions simplify to 13c + 9, so they are equivalent.

Practice

1. Simplify: 3x + 5x. _____

Answer _____

SHOW YOUR THINKING

2. Simplify: 4(x + 2). _____ (use the distributive property)

Answer _____

SHOW YOUR THINKING

3. Simplify: 2x + 3 + 5x − 1.

Answer _____

SHOW YOUR THINKING

4. Simplify each expression by combining like terms.

a. 7m + 4m = _____
b. 9k + 6 + 2k = _____
c. 5y + 8 − 3y = _____
d. 4c + 10 + 7 = _____
e. 12w − 5w + 3 = _____

Answer _____

SHOW YOUR THINKING

5. Supply Boxes. Simplify the expression 6b + 9 + 4b + 11. Then name the terms you combined in each group.

Answer _____

RECORD YOUR RESPONSE

6. Two Forms. Show that 3j + 14 + 5j and 8j + 14 are equivalent by simplifying the first expression.

Answer _____

SHOW YOUR THINKING

7. Two Letters. Simplify the expression 5q + 7r + 2q as far as you can. Then explain why your answer still has two terms.
Sentence Frame: "I know this because..."

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

8. Tariq simplified 9v + 5 + 3 and wrote 17v. Explain his mistake, then write the correct simplified expression.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

9. Simplify 9k + 6 + 4k.

Answer _____ simplified expression

SHOW YOUR THINKING

10. Are 8t + 2 + t and 9t + 2 equivalent? Explain.

Answer _____ your answer and reasoning

EXPLAIN WITH MATHEMATICAL EVIDENCE

11. Two Simplifications. Simplify 12w − 5w + 7 and 3d + 8 + 2d − 3.

Answer _____ both expressions

SHOW YOUR THINKING

12. Find the Mistake. Rae simplified 5x + 7 to 12x. Explain the mistake.

Answer _____ the mistake

EXPLAIN WITH MATHEMATICAL EVIDENCE

Spiral review

13. From Lesson 6-5 Session 2. Find the value of $6m - 2$ when $m = 5$.

Answer _____

SHOW YOUR THINKING

14. From Lesson 6-2 Session 1. Find $8/9 \div 4/9$.

Answer _____

SHOW YOUR THINKING

15. From Lesson 5-5 Session 1. A prism is 6 in. by 6 in. by 2 in. Find its volume.

Answer _____

SHOW YOUR THINKING

Test practice

16. Simplify $4b + 9b$.

□ A. 13	□ B. 36b
□ C. 13b	□ D. b13

17. Simplify $10y + 3 - 4y$.

□ A. 13y	□ B. 9y
□ C. 6y3	□ D. 6y + 3

18. A plain number with no variable is called a —

□ A. constant	□ B. variable
□ C. coefficient	□ D. term ratio

Check and revise

CHECK YOUR MATHEMATICS	HOW DID IT GO?
Testing one value cannot prove equivalence for every input; a mismatch can disprove it. Every part answered / Work shown / Units labeled when needed	I can do this: Independently / With a hint / With help Question to revisit: _____

One correction or question I want to discuss: _____

Check one result with a model, an inverse operation, or substitution. Explain why the values agree.
Sentence Frame: "I know this because..."