

NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

Simplify each expression by combining like terms.

1. $-6b + 4a + 8b - 3a$

$$a + 2b$$

2. $5m - 4n - 7mn + 8n - m + 10n$

$$-7mn + 14n + 4m$$

3. $7x^2y + 14x^2 - 3y + 2y - 8x^2 - 9xy + 3x^2y$

$$10x^2y - 9xy + 6x^2 - 1y$$

4. $8k - 13k^2 + 4k^3 + 2k - 6k^2 - 9$

$$4k^3 - 19k^2 + 10k - 9$$

5. $12r + 5 + 3r - 5$

$$15r$$

6. $n + 4 - 9 - 5n$

$$-4n - 5$$

7. $10x + 36 - 38x - 47$

$$-28x - 11$$

8. $w^3 + 7q + 3w^3 - 5w^2 - 14q + 10$

$$4w^3 - 5w^2 - 7q + 10$$

9. $6v - 12 + 2v + 12 + 2v^2$

$$2v^2 + 8v$$

10. $2p^2q + 18p^2 - 4q + 3q - 7p^2 - 3pq + 4p^2q$

$$6p^2q + 11p^2 - q - 3pq$$

11. **Open Ended** Using the terms a^2 , b and c^3 , write an expression where once it is simplified will give the result of $3a^2 - b + 10c^3$.

Answers will vary...

One possibility: $2a^2 + a^2 - b - 10c^3 + 20c^3$

12. Below are several common errors students make when combining like terms. Find a value for x that makes the statement false. * possible answers

Statement	Counterexample (value of x that make the statement false)	Work
Example: $3x + 4x = 7x^2$	2	$3 \cdot 2 + 4 \cdot 2 \neq 7 \cdot 2^2$ $6 + 8 \neq 7 \cdot 4$ $14 \neq 28$
A. $2x + 4x = 8x$	1	$2x + 4x = 8x$ $2(1) + 4(1) = 8(1)$ $2 + 4 = 8$ $6 \neq 8$
B. $3x - 4x = x$	3	$3x - 4x = x$ $3(3) - 4(3) = 1$ $3 - 4 = 1$ $-1 \neq 1$
C. $3x - 4x = -x^2$	5	$3x - 4x = -x^2$ $3(5) - 4(5) = -(5)^2$ $3 - 4 = -25$ $-1 \neq -25$
D. $3x + x = 3x^2$	-2	$3x + x = 3x^2$ $3(-2) + (-2) = 3(-2)^2$ $-6 - 2 = 3(4)$ $-8 \neq 12$

Lesson 2 Algebraic Expressions—Combining Like Terms

13. **Counterexample** Sam says that $2x^3 - 6x^2 + 4x - 7$ is always a negative number for any value of x . Prove Sam is wrong by finding a value of x that will make the expression positive or equal to zero.

Answers will vary.
One possibility $x=3$

Expression will be 5
 $2(3)^3 - 6(3)^2 + 4(3) - 7$
 $2(27) - 6(9) + 12 - 7$
 $54 - 54 + 12 - 7$
 5

14. Each statement below is correct. Use two different values to show that both sides of the equation are equivalent. Use negative values as well as positive ones.

* possible answers

Statement	First x-value	Work for first x-value	Second x-value	Work for second x-value
Example: $3x + 4x = 7x$	2	$3 \cdot 2 + 4 \cdot 2 = 7 \cdot 2$ $6 + 8 = 14$ $14 = 14$	-2	$3 \cdot (-2) + 4 \cdot (-2) = 7 \cdot (-2)$ $-6 + -8 = 7 \cdot (-2)$ $-14 = -14$
A. $2x + 4x = 6x$	1	$2x + 4x = 6x$ $2(1) + 4(1) = 6$ $2 + 4 = 6$ $6 = 6 \checkmark$	-4	$2x + 4x = 6x$ $2(-4) + 4(-4) = 6(-4)$ $-8 + -16 = -24$ $-24 = -24 \checkmark$
B. $3x - 4x = -x$	-3	$3x - 4x = -x$ $3(-3) - 4(-3) = -(-3)$ $-9 - (-12) = 3$ $-9 + 12 = 3$ $3 = 3 \checkmark$	2	$3x - 4x = -x$ $3(2) - 4(2) = -(2)$ $6 - 8 = -2$ $-2 = -2 \checkmark$

Spiral REVIEW—Evaluating Expressions

For each expression below, $a = 3$, $b = 5$, $c = -1$ and $d = 0$. Substitute the value for each variable and then evaluate the expression.

15. $4a - 2b$

$$\begin{aligned} &4(3) - 2(5) \\ &12 - 10 \\ &\boxed{2} \end{aligned}$$

17. $5c - 3b$

$$\boxed{-20}$$

19. $a + b + c + d$

$$\boxed{7}$$

21. $b - a$

$$\boxed{2}$$

23. cd

$$\boxed{0}$$

25. $-a + b$

$$\boxed{2}$$

16. $-7c + 14d$

$$\boxed{7}$$

18. $a - b$

$$\boxed{-2}$$

20. $a - b - c - d$

$$\boxed{-1}$$

22. ab

$$\boxed{15}$$

24. $abcd$

$$\boxed{0}$$

26. $2b - 4a$

$$\boxed{-2}$$

27. Which of the expressions above gave the same value?

$$\boxed{-2}: 18, 26$$

$$\boxed{7}: 16, 19$$

$$\boxed{2}: 15, 21, 25$$

$$\boxed{0}: 23, 24$$