

4.1 Adding and Subtracting Polynomials

Name _____

Simplify by combining like terms.

1. $3x + 23x$

2. $15x + 5x$

3. $2x + 7 + 8x + 3$

4. $3x + 2 + 5x + 12$

5. $3x^2 - x + 5x^2 + 12 + 3x - 6$

6. $-5x^2 + 4x + 8x^2 - 8 + 2x - 4$

Simplify by adding the polynomials.

7. $(5x + 3) + (-8x + 7)$

8. $(8x - 3) + (4x + 6)$

9. $(2x^2 + 5x - 11) + (4x^2 - x + 7)$

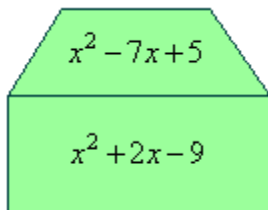
10. $(3x^2 - 7x - 4) + (x^2 + 3x + 5)$

Answers: 1. $26x$; 3. $10x + 10$; 5. $8x^2 + 2x + 6$; 7. $-3x + 10$; 9. $6x^2 + 4x - 4$

Simplify by subtracting the polynomials	
11. $(7x + 8) - (2x + 3)$	12. $(3x - 2) - (2x + 1)$
13. $(3x^2 + 5x + 2) - (x^2 + x - 3)$	14. $(4x^2 - 3x + 6) - (2x^2 + 2x - 1)$
Find the indicated sum or difference	
15. Find the sum of $(3x^2 - 8x + 1)$ and $(x^2 + 8x - 4)$	16. Find the sum of $(-4x^2 + 7x - 5)$ and $(4x^2 + x - 10)$
17. Find the difference of $(3x^2 - 5x - 4)$ and $(x^2 + 5x - 4)$	18. Find the difference of $(4x^2 + x - 9)$ and $(-4x^2 + 7x - 5)$
Answers: 11. $5x + 5$; 13. $2x^2 + 4x + 5$; 15. $4x^2 - 3$; 17. $2x^2 - 10x$	

Simplify.

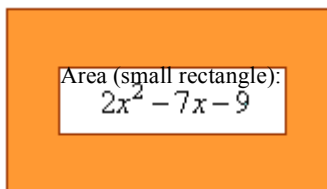
19. Find the total area of the shape below.



Total area of shaded region =

20. Find the area of the shaded region below.

Area (large rectangle): $2x^2 + 13x + 15$



Area of shaded region =

21. A lawn mower manufacturer can approximate its costs for producing x lawn mowers in one week as follows:

Material cost: $-0.003x^2 + 20x$

Labor cost: $0.002x^2 + 18x + 200$

(a) Write the polynomial that represents the total material and labor costs.

(b) Calculate the cost of producing 100 lawn mowers.

(c) Calculate the cost of producing 200 lawn mowers.

22. A vacuum cleaner manufacturer can approximate its costs producing for x vacuum cleaners in one week as follows:

Cost: $0.01x^2 + 51.5x + 250$

Revenue: $-0.17x^2 + 350x$

(a) Write the polynomial that represents the profit.

(b) Calculate the profit from producing 10 vacuum cleaners.

(c) Calculate the profit from producing 20 vacuum cleaners.

Answers: **19.** $2x^2 - 5x - 4$; **21.** (a) $-0.001x^2 + 38x + 200$, (b) \$3990, (c) \$7760