Practice

Adding and Subtracting Polynomials

Find the degree of each monomial.

1. $2b^2c^2$ **4**

2. $5x$ **1**

3. $7y^5$ **5**

4. $19ab$ **2**

5. 12 **0**

6. $\frac{1}{2}z^2$ **2**

7. t **1**

8. $4d^4e$ **5**

Simplify.

9. $2a^3b + 4a^3b$ **$6a^3b$**

10. $5x^3 - 4x^3$ **x^3**

11. $3m^6n^3 - 5m^6n^3$ **$-2m^6n^3$**

12. $-6ab + 3ab$ **$-3ab$**

13. $4c^2d^6 - 7c^2d^6$ **$-3c^2d^6$**

14. $315x^2 - 30x^2$ **$285x^2$**

Write each polynomial in standard form. Then name each polynomial based on its degree and number of terms.

15. $15x - x^3 + 3$
  $-x^3 + 15x + 3$; cubic trinomial

16. $5x + 2x^2 - x + 3x^4$
  $3x^4 + 2x^2 + 4x$; fourth degree trinomial

17. $9x^3$
  $9x^3$; cubic monomial

18. $7b^2 + 4b$
  $7b^2 + 4b$; quadratic binomial

19. $-3x^2 + 11 + 10x$
  $-3x^2 + 10x + 11$; quadratic trinomial

20. $12t^2 + 1 - 3x + 8 - 2x$
  $12t^2 - 5x + 9$; quadratic trinomial

Simplify.

21.
$$\begin{array}{r} 8z - 12 \\ + 6z + 9 \\ \hline \textbf{14z - 3} \end{array}$$

22.
$$\begin{array}{r} 9x^3 + 3 \\ + 4x^3 + 7 \\ \hline \textbf{13x^3 + 10} \end{array}$$

23.
$$\begin{array}{r} 6j^2 - 2j + 5 \\ + 3j^2 + 4j - 6 \\ \hline \textbf{9j^2 + 2j - 1} \end{array}$$

24. $(3k^2 + 5) + (16x^2 + 7)$
  $3k^2 + 16x^2 + 12$

25. $(g^4 - 4g^2 + 11) + (-g^3 + 8g)$
  $g^4 - g^3 - 4g^2 + 8g + 11$

26. A local deli kept track of the sandwiches it sold for three months. The polynomials below model the number of sandwiches sold, where s represents days.

  Ham and Cheese: $4s^3 - 28s^2 + 33s + 250$
  Pastrami: $-7.4s^2 + 32s + 180$

  Write a polynomial that models the total number of these sandwiches that were sold. **$4s^3 - 35.4s^2 + 65s + 430$**

Practice (continued)   *Form G*

Adding and Subtracting Polynomials

Simplify.

27.
$$\begin{array}{r} 11n - 4 \\ -\,(5n + 2) \\ \hline \mathbf{6n - 6} \end{array}$$

28.
$$\begin{array}{r} 7x^4 + 9 \\ -\,(8x^4 + 2) \\ \hline \mathbf{-x^4 + 7} \end{array}$$

29.
$$\begin{array}{r} 3d^2 + 8d - 2 \\ -\,(2d^2 - 7d + 6) \\ \hline \mathbf{d^2 + 15d - 8} \end{array}$$

30. $(28e^3 + 3e^2) + (19e^3 + e^2)$
$47e^3 + 4e^2$

31. $(-12h^4 + h) - (-6h^4 + 3h^2 - 4h)$
$-6h^4 - 3h^2 + 5h$

32. A small town wants to compare the number of students enrolled in public and private schools. The polynomials below show the enrollment for each:

   Public School: $-19c^2 + 980c + 48{,}989$
   Private School: $40c + 4046$

   Write a polynomial for how many more students are enrolled in public school than private school.   **$-19c^2 + 940c + 44{,}943$**

Simplify. Write each answer in standard form.

33. $(3a^2 + a + 5) - (2a - 5)$
$3a^2 - a + 10$

34. $(6d - 10d^3 + 3d^2) - (5d^3 + 3d - 4)$
$-15d^3 + 3d^2 + 3d + 4$

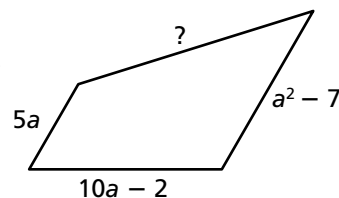**35.** $(-4s^3 + 2s - 3) + (-2s^2 + s + 7)$

$-4s^3 - 2s^2 + 3s + 4$

36. $(8p^3 - 6p + 2p^2) + (9p^2 - 5p - 11)$

$8p^3 + 11p^2 - 11p - 11$

37. The fence around a quadrilateral-shaped pasture is $3a^2 + 15a + 9$ long. Three sides of the fence have the following lengths: $5a$, $10a - 2$, $a^2 - 7$. What is the length of the fourth side of the fence?

   $2a^2 + 18$

38. Error Analysis Describe and correct the error in simplifying the sum shown at the right.

   **two unlike terms, $6x^3$ and $-3x^2$, were added;
   $6x^3 - 3x^2 + 6x - 2$**

$$\begin{array}{r} 6x^3 + 4x - 10 \\ +\ (-3x^2 + 2x + 8) \\ \hline 3x^3 + 6x\ -\ 2 \end{array}$$

39. Open-Ended Write three different examples of the sum of a quadratic trinomial and a cubic monomial.

   **Answers may vary. Sample: $(x^2 + 2x + 1) + x^3$;
   $(2x^2 + 5x + 6) + 3x^3$; $(r^2 + r + 1) + 8r^3$**