7-5 Exercises

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GUIDED PRACTICE

Vocabulary Match each polynomial on the left with its classification on the right.

1. $2x^3 + 6$
2. $3x^3 + 4x^2 - 7$
3. $5x^2 - 2x + 3x^4 - 6$

a. quartic polynomial
b. quadratic polynomial
c. cubic trinomial
d. cubic binomial

SEE EXAMPLE 1 p. 476

Find the degree of each monomial.

4. 10^6
5. $-7xy^2$
6. $0.4n^8$
7. 2

SEE EXAMPLE 2 p. 476

Find the degree of each polynomial.

8. $x^2 - 2x + 1$
9. $0.75a^2b - 2a^3b^5$
10. $15y - 84y^3 + 100 - 3y^2$
11. $r^3 + r^2 - 5$
12. $a^3 + a^2 - 2a$
13. $3k^4 + k^3 - 2k^2 + k$

SEE EXAMPLE 3 p. 477

Write each polynomial in standard form. Then give the leading coefficient.

14. $-2b + 5 + b^2$
15. $9a^8 - 8a^9$
16. $5s^2 - 3s + 3 - s^7$
17. $2x + 3x^2 - 1$
18. $5g - 7 + g^2$
19. $3c^2 + 5c^4 + 5c^3 - 4$

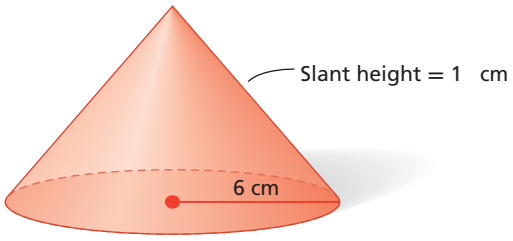
SEE EXAMPLE 4 p. 478

Classify each polynomial according to its degree and number of terms.

20. $x^2 + 2x + 3$
21. $x - 7$
22. $8 + k + 5k^4$
23. $q^2 + 6 - q^3 + 3q^4$
24. $5k^2 + 7k^3$
25. $2a^3 + 4a^2 - a^4$

SEE EXAMPLE 5 p. 478

26. **Geometry** The surface area of a cone is approximated by the polynomial $3.14r^2 + 3.14r\ell$, where r is the radius and ℓ is the slant height. Find the approximate surface area of this cone.



PRACTICE AND PROBLEM SOLVING

Independent Practice

For Exercises	See Example
27–34	1
35–40	2
41–49	3
50–57	4
58	5

Extra Practice

Skills Practice p. S17
Application Practice p. S34

Find the degree of each monomial.

27. $3y^4$
28. $6k$
29. $2a^3b^2c$
30. 325
31. $2y^4z^3$
32. $9m^5$
33. p
34. 5

Find the degree of each polynomial.

35. $a^2 + a^4 - 6a$
36. $3^2b - 5$
37. $3.5y^2 - 4.1y - 6$
38. $-5f^4 + 2f^6 + 10f^8$
39. $4n^3 - 2n$
40. $4r^3 + 4r^6$

Write each polynomial in standard form. Then give the leading coefficient.

41. $2.5 + 4.9t^3 - 4t^2 + t$
42. $8a - 10a^2 + 2$
43. $x^7 - x + x^3 - x^5 + x^{10}$
44. $-m + 7 - 3m^2$
45. $3x^2 + 5x - 4 + 5x^3$
46. $-2n + 1 - n^2$
47. $4d + 3d^2 - d^3 + 5$
48. $3s^2 + 12s^3 + 6$
49. $4x^2 - x^5 - x^3 + 1$

LINK

Transportation

Hybrid III is the crash test dummy used by the Insurance Institute for Highway Safety. During a crash test, sensors in the dummy's head, neck, chest, legs, and feet measure and record forces. Engineers study this data to help design safer cars.

Classify each polynomial according to its degree and number of terms.

50. 12 **51.** $6k$ **52.** $3.5x^3 - 4.1x - 6$ **53.** $4g + 2g^2 - 3$

54. $2x^2 - 6x$ **55.** $6 - s^3 - 3s^4$ **56.** $c^2 + 7 - 2c^3$ **57.** $-y^2$

58. Transportation The polynomial $3.675v + 0.096v^2$ is used by transportation officials to estimate the stopping distance in feet for a car whose speed is v miles per hour on flat, dry pavement. What is the stopping distance for a car traveling at 30 miles per hour?

Tell whether each statement is sometimes, always, or never true.

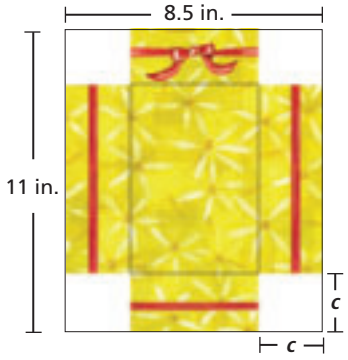
59. A monomial is a polynomial.

60. A trinomial is a 3rd-degree polynomial.

61. A binomial is a trinomial.

62. A polynomial has two or more terms.

63. Geometry A piece of 8.5-by-11-inch cardboard has identical squares cut from its corners. It is then folded into a box with no lid. The volume of the box in cubic inches is $4c^3 - 39c^2 + 93.5c$, where c is the side length of the missing squares in inches.



a. What is the volume of the box if $c = 1$ in.?

b. What is the volume of the box if $c = 1.5$ in.?

c. What is the volume of the box if $c = 4.25$ in.?

d. Critical Thinking Does your answer to part **c** make sense? Explain why or why not.

Copy and complete the table by evaluating each polynomial for the given values of x.

	Polynomial	$x = -2$	$x = 0$	$x = 5$
64.	$5x - 6$	$5(-2) - 6 = -16$	$5(0) - 6 = -6$	
65.	$x^5 + x^3 + 4x$			
66.	$-10x^2$			

Give one example of each type of polynomial.

67. quadratic trinomial **68.** linear binomial **69.** constant monomial

70. cubic monomial **71.** quintic binomial **72.** 12th-degree trinomial

73. Write About It Explain the steps you would follow to write the polynomial $4x^3 - 3 + 5x^2 - 2x^4 - x$ in standard form.

MULTI-STEP TEST PREP

74. This problem will prepare you for the Multi-Step Test Prep on page 508.

a. The perimeter of the rectangle shown is $12x + 6$. What is the degree of this polynomial?

b. The area of the rectangle is $8x^2 + 12x$. What is the degree of this polynomial?