7.2 Practice WITH CalcChat® AND CalcView®

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In Exercises 1–8, find the product. *Example 1*

1. $2c(5c^2)$
2. $6d^4(-3c^3)$
3. $-4r^2(9r + 6)$
4. $12t^3(5t^5 - 2)$
5. $7w^3(w^2 - 4w - 1)$
6. $-z^2(2z^4 + 10z^2 - 16)$
7. $(15 - 3g^2)(8g^5)$
8. $(9h^2 - 18 + 9h^4)(-4h^3)$

In Exercises 9–16, find the quotient. *Example 2*

9. $\frac{2n^3 + 8n^2 - 20n}{2n}$
10. $\frac{-6k^4 + 15k^3 - 9k^2}{3k^2}$
11. $\frac{4x^5 - x^7 + 7x^4}{x^3}$
12. $\frac{10y^2 + 6y^4 + 8y^3}{2y^2}$
13. $\frac{7b + 14}{b + 2}$
14. $\frac{-9h + 27}{h - 3}$
15. $\frac{(5p - 20)(p - 3)}{p - 4}$
16. $\frac{(3q + 12)(2q - 1)}{(2q - 1)(q + 4)}$

In Exercises 17–24, use the Distributive Property to find the product. *Example 3*

17. $(x + 1)(x + 3)$
18. $(y + 6)(y + 4)$
19. $(z - 5)(z + 3)$
20. $(a + 8)(a - 3)$
21. $\left(g - \frac{1}{2}\right)\left(g - \frac{3}{2}\right)$
22. $(n - 0.4)(n - 0.5)$
23. $(3m + 1)(m + 9)$
24. $(5s + 6)(s - 2)$

In Exercises 25–30, use a table to find the product. *Example 4*

25. $(x + 3)(x + 2)$
26. $(h - 8)(h - 9)$
27. $(3k - 1)(4k + 9)$
28. $(5g + 3)(g + 8)$
29. $(-3 + 2j)(4j - 7)$
30. $(5d - 12)(-7 + 3d)$

In Exercises 31–40, use the FOIL Method to find the product. *Example 5*

31. $(b + 3)(b + 7)$
32. $(w + 9)(w + 6)$
33. $(k + 5)(k - 1)$
34. $(x - 4)(x + 8)$
35. $\left(q - \frac{3}{4}\right)\left(q + \frac{1}{4}\right)$
36. $\left(z - \frac{5}{3}\right)\left(z - \frac{2}{3}\right)$
37. $(9 - r)(2 - 3r)$
38. $(8 - 4x)(2x + 6)$
39. $(w + 5)(w^2 + 3w)$
40. $(v - 3)(v^2 + 8v)$

ERROR ANALYSIS **In Exercises 41 and 42, describe and correct the error in finding the product of the binomials.**

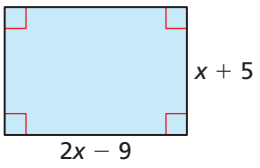
41. ✗
$$(t - 2)(t + 5) = t - 2(t + 5)$$
$$= t - 2t - 10$$
$$= -t - 10$$

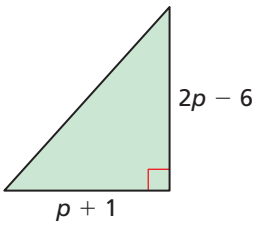
42. ✗
$$(x - 5)(3x + 1)$$

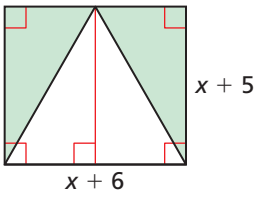
	$3x$	1
x	$3x^2$	x
5	$15x$	5

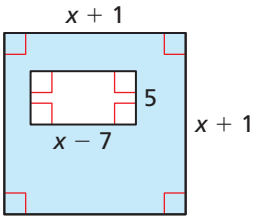
$$(x - 5)(3x + 1) = 3x^2 + 16x + 5$$

CONNECTING CONCEPTS **In Exercises 43–46, write a polynomial that represents the area of the shaded region.**

43. 

44. 

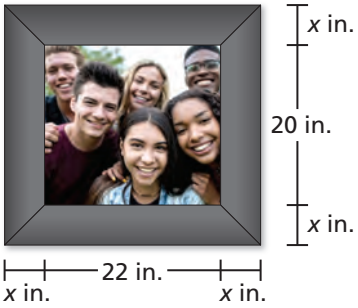
45. 

46. 

In Exercises 47–54, find the product. *Example 6*

47. $(x + 4)(x^2 + 3x + 2)$
48. $(f + 1)(f^2 + 4f + 8)$
49. $(y + 3)(y^2 + 8y - 2)$
50. $(t - 2)(t^2 - 5t + 1)$
51. $(4 - b)(5b^2 + 5b - 4)$
52. $(6 + d)(2d^2 - d + 7)$
53. $(3e^2 - 5e + 7)(6e + 1)$
54. $(6v^2 + 2v - 9)(4 - 5v)$

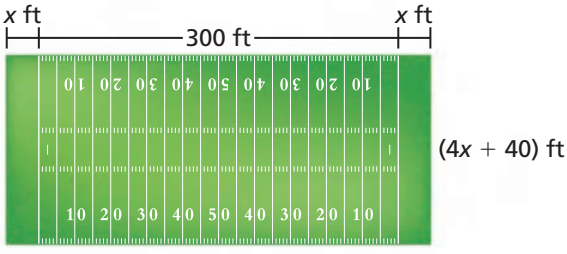
55. MODELING REAL LIFE You design a frame to surround a rectangular photo. The width of the frame is the same on each side, as shown. *Example 7*



a. Write a polynomial that represents the combined area of the photo and the frame.

b. Find the combined area of the photo and the frame when the width of the frame is 4 inches.

56. MODELING REAL LIFE The football field is rectangular.



a. Write a polynomial that represents the area of the football field.

b. Find the area of the football field when the length of the field is 360 feet.

57. COMPARING METHODS Describe two ways to find the product of two binomials. Which method do you prefer? Explain.

58. MP REASONING Can you use the FOIL Method to multiply a binomial by a trinomial? two trinomials? Explain your reasoning.

59. MAKING AN ARGUMENT You use the Distributive Property to multiply $(x + 3)(x - 5)$. Your friend uses the FOIL Method to multiply $(x - 5)(x + 3)$. Should your answers be equivalent? Justify your answer.

60. MP STRUCTURE Find the values of a, b, and c that make the equation true.

$$(2x - 1)(3x + 4) = ax^2 + bx + c$$

61. WRITING When multiplying two binomials, explain how the degree of the product is related to the degree of each binomial.

62. HOW DO YOU SEE IT?
The table shows one method of finding the product of two binomials.

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	$-4x$	3
$-8x$	a	b
-9	c	d

a. Write the two binomials being multiplied.

b. Determine whether a, b, c, and d will be positive or negative when $x > 0$.

63. COLLEGE PREP The shipping container is a rectangular prism. Which polynomial represents the volume of the container?

Ⓐ $4x^3 + 9x^2 - x - 6$ Ⓑ $4x^3 - 3x^2 + 12x - 9$

Ⓒ $4x^3 + 8x^2 - 3x - 6$ Ⓓ $4x^3 + 4x^2 - 6x - 6$

64. MP REPEATED REASONING When dividing two monomials, is it possible for the degree of the quotient to be greater than the degree of the dividend? the divisor? Explain.

65. MODELING REAL LIFE The area of the tablet screen (in square centimeters) is represented by $2x^2 - 4x$.

a. Write a polynomial that represents the length of the screen.

b. Find the length of the screen when the width is 12 centimeters.

66. DIG DEEPER The volume of the locker (in cubic inches) is represented by $(5x^2 + 15x)(x + 3)$.

a. Write a polynomial that represents the height of the locker.

b. Find the height of the locker (in feet) when the side length of the base is 15 inches.