

THINK AND DISCUSS

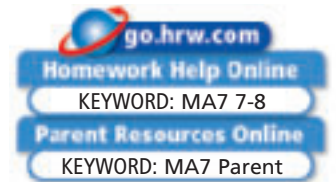
- Use the FOIL method to verify that $(a + b)(a - b) = a^2 - b^2$.
- When a binomial is squared, the middle term of the resulting trinomial is twice the _____ of the first and last terms.
- GET ORGANIZED** Copy and complete the graphic organizer. Complete the special product rules and give an example of each.



Special Products of Binomials		
Perfect-Square Trinomials		Difference of Two Squares
$(a + b)^2 = ?$	$(a - b)^2 = ?$	$(a + b)(a - b) = ?$

7-8

Exercises



GUIDED PRACTICE

- Vocabulary** In your own words, describe a *perfect-square trinomial*.

SEE EXAMPLE 1

Multiply.

p. 501

2. $(x + 7)^2$

3. $(2 + x)^2$

4. $(x + 1)^2$

5. $(2x + 6)^2$

6. $(5x + 9)^2$

7. $(2a + 7b)^2$

SEE EXAMPLE 2

8. $(x - 6)^2$

9. $(x - 2)^2$

10. $(2x - 1)^2$

p. 502

11. $(8 - x)^2$

12. $(6p - q)^2$

13. $(7a - 2b)^2$

SEE EXAMPLE 3

14. $(x + 5)(x - 5)$

15. $(x + 6)(x - 6)$

16. $(5x + 1)(5x - 1)$

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17. $(2x^2 + 3)(2x^2 - 3)$

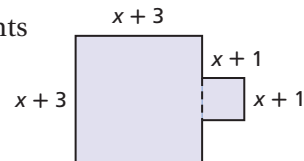
18. $(9 - x^3)(9 + x^3)$

19. $(2x - 5y)(2x + 5y)$

SEE EXAMPLE 4

- Geometry** Write a polynomial that represents the area of the figure.

p. 503



PRACTICE AND PROBLEM SOLVING

Independent Practice

For Exercises	See Example
21–26	1
27–32	2
33–38	3
39	4

Extra Practice

Skills Practice p. S17
Application Practice p. S34

Multiply.

21. $(x + 3)^2$

22. $(4 + z)^2$

23. $(x^2 + y^2)^2$

24. $(p + 2q^3)^2$

25. $(2 + 3x)^2$

26. $(r^2 + 5t)^2$

27. $(s^2 - 7)^2$

28. $(2c - d^3)^2$

29. $(a - 8)^2$

30. $(5 - w)^2$

31. $(3x - 4)^2$

32. $(1 - x^2)^2$

33. $(a - 10)(a + 10)$

34. $(y + 4)(y - 4)$

35. $(7x + 3)(7x - 3)$

36. $(x^2 - 2)(x^2 + 2)$

37. $(5a^2 + 9)(5a^2 - 9)$

38. $(x^3 + y^2)(x^3 - y^2)$

39. **Entertainment** Write a polynomial that represents the area of the circular puzzle. Remember that the formula for area of a circle is $A = \pi r^2$, where r is the radius of the circle. Leave the symbol π in your answer.
40. **Multi-Step** A square has sides that are $(x - 1)$ units long and a rectangle has a length of x units and a width of $(x - 2)$ units.
- What are the possible values of x ? Explain.
 - Which has the greater area, the square or the rectangle?
 - What is the difference in the areas?



Multiply.

41. $(x + y)^2$ 42. $(x - y)^2$ 43. $(x^2 + 4)(x^2 - 4)$
 44. $(x^2 + 4)^2$ 45. $(x^2 - 4)^2$ 46. $(1 - x)^2$
 47. $(1 + x)^2$ 48. $(1 - x)(1 + x)$ 49. $(x^3 - a^3)(x^3 - a^3)$
 50. $(5 + n)(5 + n)$ 51. $(6a - 5b)(6a + 5b)$ 52. $(r - 4t^4)(r - 4t^4)$

Copy and complete the tables to verify the special products of binomials.

	a	b	$(a - b)^2$	$a^2 - 2ab + b^2$
	1	4	$(1 - 4)^2 = 9$	$1^2 - 2(1)(4) + 4^2 = 9$
53.	2	4	■	■
54.	3	2	■	■

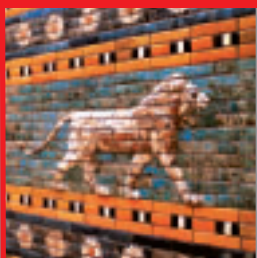
	a	b	$(a + b)^2$	$a^2 + 2ab + b^2$
55.	1	4	■	■
56.	2	5	■	■
57.	3	0	■	■

	a	b	$(a + b)(a - b)$	$a^2 - b^2$
58.	1	4	■	■
59.	2	3	■	■
60.	3	2	■	■

61. **Math History** The Babylonians used tables of squares and the formula $ab = \frac{(a + b)^2 - (a - b)^2}{4}$ to multiply two numbers. Use this formula to find the product $35 \cdot 24$.
62. **Critical Thinking** Find a value of c that makes $16x^2 - 24x + c$ a perfect-square trinomial.
63. **ERROR ANALYSIS** Explain the error below. What is the correct product?
 $(a - b)^2 = a^2 - b^2$



Math History



Beginning about 3000 B.C.E., the Babylonians lived in what is now Iraq and Turkey. Around 575 B.C.E., they built the Ishtar Gate to serve as one of eight main entrances into the city of Babylon. The image above is a relief sculpture from a restoration of the Ishtar Gate.