



14-6 Multiplying Binomials (Pages 728–731)

You can use the distributive property to multiply binomials.

EXAMPLES

Find each product.

A $(x + 2)(x + 3)$
 $(x + 2)(x + 3)$
 $= (x + 2)x + (x + 2)3$ *Distributive property*
 $= (x)x + (2)x + (x)3 + (2)3$
 $= x^2 + 2x + 3x + 6$ *Multiply.*
 $= x^2 + 5x + 6$ *Combine like terms.*

B $(3x + 4)(2x - 1)$
 $(3x + 4)(2x - 1)$
 $= (3x + 4)2x + (3x + 4)(-1)$ *Distributive property*
 $= 3x(2x) + 4(2x) + 3x(-1) + 4(-1)$
 $= 6x^2 + 8x - 3x - 4$ *Multiply.*
 $= 6x^2 + 5x - 4$ *Combine like terms.*

Try These Together

Find each product.

1. $(x + 2)(x - 4)$ 2. $(-2x + 5)(-x + 5)$ 3. $(c - 3)(c + 7)$

HINT: Use the distributive property to multiply each term in the first binomial by each term in the second binomial.

PRACTICE

Find the product.

4. $(-9x + 3)(-3x - 2)$ 5. $(-6c + 4)(4c - 3)$
 6. $(m + 8)(m - 7)$ 7. $(5x + 5)(5x + 5)$
 8. $(n - 4)(n - 4)$ 9. $(x + 6)(x + 6)$
 10. $(p + 4)(p - 5)$ 11. $(-5x + 3)(-3x - 4)$
 12. $(r - 6)(9 + r)$ 13. $(k + 5)(k - 4)$
 14. $(s + 2)(s + 2)$ 15. $(7 + x)(-8 + x)$

16. **Algebra** Write a polynomial that represents the result of multiplying 3 times a number plus six by 2 less than 4 times the same number.



17. **Standardized Test Practice** Find the product $(x + 6)(x - 9)$.

- A** $x^2 + 9x + 6x + 54$ **B** $x^2 + 3x - 54$
C $x^2 + 3x - 54$ **D** $x^2 - 3x - 54$

Answers: 1. $x^2 - 2x - 8$ 2. $2x^2 - 15x + 25$ 3. $c^2 + 4c - 21$ 4. $27x^2 + 9x - 6$ 5. $-24c^2 + 34c - 12$ 6. $m^2 + m - 56$
 7. $25x^2 + 50x + 25$ 8. $n^2 - 8n + 16$ 9. $x^2 + 12x + 36$ 10. $p^2 - p - 20$ 11. $15x^2 + 11x - 12$ 12. $r^2 + 3r - 54$
 13. $k^2 + k - 20$ 14. $s^2 + 4s + 4$ 15. $x^2 - x - 56$ 16. $12m^2 + 18m - 12$ 17. **D**