Key

5.5 Binomial Products

MATHPOWER™ *Nine*, pp. 193–194

To expand a binomial product, use the distributive property. Multiply each term in the first binomial by each term in the second binomial. You can remember this method with the acronym FOIL, which stands for First terms, Outside terms, Inside terms, and Last terms.

$$(2x + 1)(3x + 2) = 2x(3x + 2) + 1(3x + 2)$$
$$= 6x^2 + 4x + 3x + 2$$
$$= 6x^2 + 7x + 2$$

$$(2x + 1)(3x + 2) = (2x + 1)(3x + 2)$$

F O I L

$$= 6x^2 + 4x + 3x + 2$$
$$= 6x^2 + 7x + 2$$

Express each area as a product and in expanded form. Let G represent green tiles and R represent red tiles.

1.

G	G	G
G	R	R

$(x+1)(x+2)$
$= x^2 + 3x + 2$

2.

G	G	G	G	G	G	
G	R	R	R	R	R	
G	R	R	R	R	R	

$(x+2)(x+5)$
$= x^2 + 7x + 10$

Expand.

3. $2(x + 4)$ $2x + 8$

4. $y(2x - 3)$ $2xy - 3y$

5. $2b(3b - 2)$ $6b^2 - 4b$

6. $4a(2a^2 - 5)$ $8a^3 - 20a$

Find the product.

7. $(a + 3)(a + 2)$ $a^2 + 5a + 6$

8. $(2 + k)(3 + k)$ $6 + 5k + k^2$

9. $(x - 1)(x - 2)$ $x^2 - 3x + 2$

10. $(c - 5)(c - 3)$ $c^2 - 8c + 15$

11. $(2 - q)(3 - q)$ $6 - 5q + q^2$

12. $(y - 4)(y + 6)$ $y^2 + 2y - 24$

13. $(t + 5)(t - 1)$ $t^2 + 4t - 5$

14. $(3 - b)(4 + b)$ $12 - b - b^2$

Expand.

15. $(6v + 3)(v + 1)$ $6v^2 + 9v + 3$

16. $(5 + 2x)(2 + x)$ $10 + 9x + 2x^2$

17. $(y - 5)(2y - 2)$ $2y^2 - 12y + 10$

18. $(5 - 2n)(3 - n)$ $15 - 11n + 2n^2$

19. $(m + 4)(3m - 2)$ $3m^2 + 10m - 8$

20. $(4g - 3)(g + 4)$ $4g^2 + 13g - 12$

21. $(2y + 3)(3y + 2)$ $6y^2 + 13y + 6$

22. $(5h - 1)(2h - 3)$ $10h^2 - 17h + 3$

23. $(3 - 2s)(2 - 3s)$ $6 - 13s + 6s^2$

24. $(4 + 2p)(3 - 4p)$ $12 - 10p - 8p^2$

Multiply.

25. $(x + 0.4)(x - 2)$ $x^2 - 1.6x - 0.8$

26. $(c - 1.5)(-c + 5)$ $-c^2 + 6.5c - 7.5$

27. $(d - 0.6)(3d - 1.2)$ $3d^2 - 3d + 0.72$

28. $(5s + 0.2)(2s + 0.3)$ $10s^2 + 1.9s + 0.06$

29. $3(x + 2)(x + 3)$ (Do First) $= 3(x^2 + 5x + 6) = 3x^2 + 15x + 18$

30. $-2(y - 3)(-y + 2) =$ $2y^2 - 10y + 12$ (then use distributive law)

31. $0.2(x + 1)(x + 2)$ $0.2x^2 + 0.6x + 0.4$