

## ALGEBRA: Multiplying Binomials

*Find the product.*

- |                    |                  |
|--------------------|------------------|
| 11. $(x+1)(x+2)$   | 12. $(x+4)(x+3)$ |
| 13. $(a+4)(a+4)$   | 14. $(y+5)(y+6)$ |
| 15. $(x-4)(x-3)$   | 16. $(a-4)(a-2)$ |
| 17. $(b-1)(b-5)$   | 18. $(y-9)(y-9)$ |
| 19. $(x-6)(x+3)$   | 20. $(c+2)(c-8)$ |
| 21. $(t+10)(t-10)$ | 22. $(q-2)(q+5)$ |

*Expand.*

- |                    |                    |
|--------------------|--------------------|
| 23. $(c+3)(c-4)$   | 24. $(x+2)(x-5)$   |
| 25. $(y+6)(y-2)$   | 26. $(a+9)(a-5)$   |
| 37. $(2x+3)(2x+1)$ | 38. $(5y-2)(3y-4)$ |
| 39. $(4x+1)(3x-5)$ | 40. $(2y-9)(5y+2)$ |
| 41. $(7y-3)(2y-7)$ | 42. $(3x-2)(8x+5)$ |

*Square.*

- |                 |                 |
|-----------------|-----------------|
| 27. $(y-10)^2$  | 28. $(3a-1)^2$  |
| 29. $(5x+2)^2$  | 30. $(3-x)^2$   |
| 31. $(5-y)^2$   | 32. $(5a+b)^2$  |
| 33. $(3x+y)^2$  | 34. $(4x-3y)^2$ |
| 35. $(7a-2b)^2$ | 36. $(4m+5n)^2$ |

### Answers

10.  $-6x^2 - 10xy$  11.  $x^2 + 3x + 2$  12.  $x^2 + 7x + 12$   
 13.  $a^2 + 8a + 16$  14.  $y^2 + 11y + 30$  15.  $x^2 - 7x + 12$

16.  $a^2 - 6a + 8$  17.  $b^2 - 6b + 5$  18.  $y^2 - 18y + 81$   
 19.  $x^2 - 3x - 18$  20.  $c^2 - 6c - 16$  21.  $x^2 - 100$   
 22.  $q^2 + 3q - 10$  23.  $c^2 - c - 12$  24.  $x^2 - 3x - 10$   
 25.  $y^2 + 4y - 12$  26.  $a^2 + 4a - 45$

27.  $y^2 - 20y + 100$

28.  $9a^2 - 6a + 1$  29.  $25x^2 + 20x + 4$  30.  $9 - 6x + x^2$   
 31.  $25 - 10y + y^2$  32.  $25a^2 + 10ab + b^2$   
 33.  $9x^2 + 6xy + y^2$  34.  $16x^2 - 24xy + 9y^2$   
 35.  $49a^2 - 28ab + 4b^2$  36.  $16m^2 + 40mn + 25n^2$

*Multiply.*

43.  $(x+0.5)(x+2)$  44.  $(x-1.2)(x+3)$   
 45.  $(x-2.5)(x-10)$  46.  $(x-3)(x+2.1)$

*Expand the following.*

47.  $2(x+3)(x+5)$  48.  $4(x-9)(x+5)$   
 49.  $-1(a+3)(a-2)$  50.  $10(x+7)(x-5)$   
 51.  $3(2x-1)(3x-2)$  52.  $2x(x+7)(x-10)$   
 53.  $0.5(x-1)(x+3)$  54.  $1.8(x+1)(x+1)$

56. a) Verify that  $(x+6)(x+2) \neq x^2 + 12$  by substituting 1 for  $x$ .

b) Expand  $(x+6)(x+2)$  correctly.

57. A square building of side  $x$  metres is extended by 10 m on one side and 5 m on the other side to form a rectangle.

a) Express the new area as the product of 2 binomials.

b) Evaluate the new area for  $x = 20$ .

37.  $4x^2 + 8x + 3$   
 38.  $15y^2 - 26y + 8$  39.  $12x^2 - 17x - 5$   
 40.  $10y^2 - 41y - 18$  41.  $14y^2 - 55y + 21$   
 42.  $24x^2 - x - 10$  **Problems and Applications**  
 43.  $x^2 + 2.5x + 1$  44.  $x^2 + 1.8x - 3.6$   
 45.  $x^2 - 12.5x + 25$  46.  $x^2 - 0.9x - 6.3$   
 47.  $2x^2 + 16x + 30$  48.  $4x^2 - 16x - 180$   
 49.  $-a^2 - a + 6$  50.  $10x^2 + 20x - 350$   
 51.  $18x^2 - 21x + 6$  52.  $2x^3 - 6x^2 - 140x$   
 53.  $0.5x^2 + x - 1.5$  54.  $1.8x^2 + 3.6x + 1.8$   
 55. a)  $21 \text{ cm}^3$  b)  $14 \text{ cm}^2$  c)  $7 \text{ cm}^2$  56. a)  $21 \neq 13$   
 b)  $x^2 + 8x + 12$  57. a)  $(x+10)(x+5)$  b)  $750 \text{ m}^2$   
 58. a)  $1000 + 2000r + 1000r^2$  b)  $\$1166.40$