

## Choosing a Factoring Method (ALG.FAC.07)

Factor each expression completely.

$$1. 5a^3 - 30a^2 + 7a - 42 \\ (5a^2 + 7)(a - 6)$$

$$3. 3c^2 - c - 2 \\ (3c + 2)(c - 1)$$

$$5. e^3 - 5e^2 + 4e - 20 \\ (e^2 + 4)(e - 5)$$

$$7. 3g^3 - 27g \\ 3g(g - 3)(g + 3)$$

$$9. j^4 - 81 \\ (j - 3)(j + 3)(j^2 + 9)$$

$$11. x^2(2x - 1) + 6(2x - 1) \\ (x^2 + 6)(2x - 1)$$

$$13. 4p^2 + 12p + 9 \\ (2p + 3)^2$$

$$15. 4u^2 + 2u - 20 \\ 2(2u + 5)(u - 2)$$

$$17. 4w^4 - 4 \\ 4(w^2 + 1)(w - 1)(w + 1)$$

$$19. y^2 - 17y + 70 \\ (y - 10)(y - 7)$$

$$21. 12b^2 + 32b - 35 \\ (6b - 5)(2b + 7)$$

$$23. 4 - 25d^2 \\ (2 - 5d)(2 + 5d)$$

$$25. 9x^4y - 4x^2y^3 \\ x^2y(3x - 2y)(3x + 2y)$$

$$27. 5h^2 - 7h - 6 \\ (5h + 3)(h - 2)$$

$$29. x^3 - 5x^2y + 2xy - 10y^2 \\ (x^2 + 2y)(x - 5y)$$

$$31. 15m^2 - 10m + 3mn - 2n \\ (5m + n)(3m - 2)$$

$$33. 2p^2 + 4p + 2 \\ 2(p + 1)^2$$

$$35. 4u^2 - 60u + 225 \\ (2u - 15)^2$$

$$37. f^2 - 10f - 12f + 120 \\ (f - 10)(f - 12)$$

$$2. b^2 + 5b + 4 \\ (b + 1)(b + 4)$$

$$4. d^2 - 16 \\ (d - 4)(d + 4)$$

$$6. 2f^4 - 10f^3 - 28f^2 \\ 2f^2(f - 7)(f + 2)$$

$$8. 10h^2 - 21h - 10 \\ (5h + 2)(2h - 5)$$

$$10. k^3 + 9k^2 + 18k \\ k(k + 3)(k + 6)$$

$$12. 3n^5 + 12n^4 - 12n^3 - 48n^2 \\ 3n^2(n + 4)(n - 2)(n + 2)$$

$$14. t^2 - t - 30 \\ (t - 6)(t + 5)$$

$$16. 30v^4 + 20v^3 - 12v^2 - 8v \\ 2v(3v + 2)(5v^2 - 2)$$

$$18. 21x^2 + 58x + 21 \\ (7x + 3)(3x + 7)$$

$$20. a^2 + 3a - 4 \\ (a + 4)(a - 1)$$

$$22. 4c^3 - 12c^2 - c + 3 \\ (c - 3)(2c - 1)(2c + 1)$$

$$24. 7e^2 - 18e + 8 \\ (e - 2)(7e - 4)$$

$$26. 5f^3 + 10f^2 + 5f \\ 5f(f + 1)^2$$

$$28. 36j^2 - 12j + 1 \\ (6j - 1)^2$$

$$30. k^2 - 6k - 7 \\ (k - 7)(k + 1)$$

$$32. 3n^2 - 48 \\ 3(n - 4)(n + 4)$$

$$34. 3t^3 - 3t \\ 3t(t - 1)(t + 1)$$

$$36. 49b^5 - b \\ b(7b^2 - 1)(7b^2 + 1)$$

$$38. x^2 - 2x - 24 \\ (x - 6)(x + 4)$$

39.  $3y^2 - 10y + 8$   
 $(3y - 4)(y - 2)$
40.  $2a^2 - 12ab - 7ab + 42b^2$   
 $(2a - 7b)(a - 6b)$
41.  $c^2 - 20c + 19$   
 $(c - 19)(c - 1)$
42.  $3w^2 - 19w - 72$   
 $(3w + 8)(w - 9)$
43.  $14y^2 - 2yz - 7y + z$   
 $(7y - z)(2y - 1)$
44.  $4r^3 - 20r^2 + 25r$   
 $r(2r - 5)^2$
45.  $w^8 + 5w^5 - 4w^4 - 20w$   
 $w(w^3 + 5)(w^2 + 2)(w^2 - 2)$
46.  $y^2 - 12y - 160$   
 $(y - 20)(y + 8)$
47.  $-f^2 + 15f - 54$   
 $-(f - 6)(f - 9)$
48.  $g^4 - 16$   
 $(g^2 + 4)(g + 2)(g - 2)$
49.  $v^2 + 27vw + 72w^2$   
 $(v + 3w)(v + 24w)$
50.  $36 - 13x + x^2$   
 $(x - 9)(x - 4)$
51.  $20b^2 - b - 1$   
 $(5b + 1)(4b - 1)$
52.  $6c^2 - c - 15$   
 $(3c - 5)(2c + 3)$
53.  $6y^2 + 5y + 1$   
 $(3y + 1)(2y + 1)$
54.  $15 - 41d + 14d^2$   
 $(7d - 3)(2d - 5)$
55.  $9m^2 - 42m + 49$   
 $(3m - 7)^2$
56.  $4t^2 - 24t + 36$   
 $4(t - 3)^2$
57.  $3x^2 - 9x - 12$   
 $3(x + 1)(x - 4)$
58.  $50y^2 - 10y - 12$   
 $2(5y + 2)(5y - 3)$
59.  $2d^2 + 16d + 32$   
 $2(d + 4)^2$
60.  $3x^3 - 9x^2 - 12x + 36$   
 $3(x - 3)(x - 2)(x + 2)$
61.  $5p^2 - 20$   
 $5(p - 2)(p + 2)$
62.  $3ab - 6a + 9b - 18$   
 $3(a + 3)(b - 2)$
63.  $x^2y + 2xy - 6xy - 12y$   
 $y(x + 2)(x - 6)$
64.  $2x^2y - 18y$   
 $2y(x - 3)(x + 3)$
65.  $12n^2 + 4n - 16$   
 $4(n - 1)(3n + 4)$
66.  $2rs^2 - 10rs - 48r$   
 $2r(s - 8)(s + 3)$
67.  $12a^2 + 36a + 27$   
 $3(2a + 3)^2$
68.  $8y^2 - 23y - 3$   
 $(8y + 1)(y - 3)$
69.  $5x^2 - xy + 20xy - 4y^2$   
 $(5x - y)(x + 4y)$
70.  $k^2 + 11k + 18$   
 $(k + 2)(k + 9)$
71.  $-4m^2 + 9m - 5$   
 $-(m - 1)(4m - 5)$
72.  $9g^2 - 12g + 4$   
 $(3g - 2)^2$
73.  $64 - 25n^8$   
 $(8 - 5n^4)(8 + 5n^4)$
74.  $8g^2 - 4g - 2g + 1$   
 $(4g - 1)(2g - 1)$
75.  $t^3 - 5t^2 - 36t$   
 $t(t - 9)(t + 4)$
76.  $4a^2 - 16ab + 15b^2$   
 $(2a - 3b)(2a - 5b)$
77.  $n^2 + 3n - 40$   
 $(n + 8)(n - 5)$
78.  $-w^3 + 17w^2 - 72w$   
 $-w(w - 8)(w - 9)$
79.  $6h^2 - 29h - 5$   
 $(6h + 1)(h - 5)$
80.  $8h(h - 1) - 3(h - 1)$   
 $(8h - 3)(h - 1)$

