

EXTRA PRACTICE 12
Factoring Polynomials
Use after Section 5.5

Name _____

Examples. Factor completely.

- a) $36x^2 - 25 = (6x)^2 - 5^2 = (6x + 5)(6x - 5)$
b) $8x^2 - 56x + 98 = 2(4x^2 - 28x + 49) = 2(2x - 7)^2$
c) $y^3 + 64 = y^3 + 4^3 = (y + 4)(y^2 - 4y + 16)$
d) $3x^2 - 10x - 8 = (3x + 2)(x - 4)$
e) $8x^3 - 27 = (2x)^3 - 3^3 = (2x - 3)(4x^2 + 6x + 9)$
f) $x^3 - 5x^2 - 14x = x(x - 7)(x + 2)$

Factor completely.

- | | |
|---|-----------------------------------|
| 1. $125x^3 - 1 =$ _____ | 2. $w^2 - 64 =$ _____ |
| 3. $y^2 - 12y + 36 =$ _____ | 4. $x^2 - 8x - 48 =$ _____ |
| 5. $a^3 - 7a^2 + 12a =$ _____ | 6. $25a^2 + 8b^2 =$ _____ |
| 7. $(x - 3)(x + 7) + (x - 3)(x - 4) =$
_____ | 8. $6x^2 + 12x + 6 =$ _____ |
| 9. $y^2 - 11y + 18 =$ _____ | 10. $40 + 3b - b^2 =$ _____ |
| 11. $3x^5 - 12x^2 =$ _____ | 12. $250x^3 + 2 =$ _____ |
| 13. $7xy^4 - 7xz^4 =$ _____ | 14. $2y^4 + 5y^3 - 12y^2 =$ _____ |
| 15. $24x^2 - 7x - 5 =$ _____ | 16. $y^2 + 14y - 32 =$ _____ |
| 17. $0.04w^2 + 0.28w + 0.49 =$ _____ | 18. $4x^3 + 40x^2 + 64x =$ _____ |
| 19. $64y^3 + 27 =$ _____ | 20. $\frac{1}{81} - x^2 =$ _____ |

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21. $5x^2 - 2x + 3 =$ _____

23. $40y^2 + 28y - 48 =$ _____

25. $8c^6 - 125d^6 =$ _____

27. $x^4 + 10x^3 + 25x^2 =$ _____

29. $y^2 + 5y - 36 =$ _____

31. $7a^2 - 7b^2 =$ _____

33. $81 + 18y + y^2 =$ _____

35. $q^4 - 10q^3 + 21q^2 =$ _____

37. $105 + 8x - x^2 =$ _____

39. $6y^3 + 48 =$ _____

41. $3y^2 - 34y - 24 =$ _____

43. $y^2 - 121 =$ _____

45. $9x^3 - 24x^2 + 16x =$ _____

47. $10w^2 + 29w - 21 =$ _____

49. $27x^2 - 30x - 8 =$ _____

51. $x^2 - 0.6x + 0.09 =$ _____

53. $125x^6 - 81 =$ _____

55. $40y^2 + 7y - 3 =$ _____

57. $0.04a^2 - 0.49b^2 =$ _____

59. $2x^6 - 54y^6 =$ _____

22. $x^3 - 343 =$ _____

24. $3ab - 5bc + bd =$ _____

26. $81 - 18z + z^2 =$ _____

28. $xz - xw - yz + yw =$ _____

30. $x^2 - 11x - 42 =$ _____

32. $216 - a^3 =$ _____

34. $b^2 - 5b - 14 =$ _____

36. $9x^2y^2 - 25y^4 =$ _____

38. $x^2 - 3x - 2 =$ _____

40. $a^3 - 14a^2 + 49a =$ _____

42. $a^2 + 8a + 16 =$ _____

44. $42 + a - a^2 =$ _____

46. $x^3 - \frac{1}{8} =$ _____

48. $16x^2 + 54x - 7 =$ _____

50. $x^6 - 1 =$ _____

52. $4x^2 - 13x - 35 =$ _____

54. $49x^3 - 14x^2 + x =$ _____

56. $15w^2 - 15w - 90 =$ _____

58. $x^3y^2 + 7x^2y^2 - 18xy^2 =$ _____

60. $\frac{1}{4}x^2 - 5x + 25 =$ _____