

03B Practice: Factoring by Grouping and Factoring Quadratic Expressions

For 1 – 8, factor by the method of grouping.

1. $5ax + 5a + 7bx + 7b$	2. $6ax + 4x + 15ay + 10y$
3. $6ax - 2a - 15bx + 5b$	4. $15by + 25cy + 6bz + 10cz$
5. $5x^3 + 10x^2 - 7x - 14$	6. $28x^3 - 8x^2 - 35x + 10$
7. $3ax + 7bx + 15a + 35b$	8. $10x^3 - 15x^2 - 14x + 21$

For 9 – 12, factor the quadratic by the method of greatest common factor or difference of two squares (whichever one applies).

9. $5x^2 + 15x$	10. $12x^2 - 18x$
11. $49x^2 - 64$	12. $25x^2 - 9$
13. $24x^2 - 12x$	14. $16x^2 - 9$

For 15 – 30, factor by the method of reverse FOIL (or grouping).

15. $x^2 + 8x + 15$	16. $x^2 - 9x + 14$
17. $x^2 + 10x + 16$	18. $2x^2 - 11x + 15$
19. $3x^2 + 10x + 7$	20. $5x^2 - 17x + 6$

21. $5x^2 - 31x + 6$	22. $3x^2 + 17x + 14$
23. $x^2 - 2x - 15$	24. $2x^2 + 7x - 15$
25. $3x^2 - x - 10$	26. $11x^2 - 54x - 5$
27. $7x^2 + 26x - 8$	28. $5x^2 + 11x - 12$
29. $3x^2 - 5x - 22$	30. $6x^2 - 7x - 55$

Answers:

- | | |
|-------------------------------|--------------------------------|
| 1. $(x + 1)(5a + 7b)$ | 2. $(3a + 2)(2x + 5y)$ |
| 3. $(3x - 1)(2a - 5b)$ | 4. $(3b + 5c)(5y + 2z)$ |
| 5. $(x + 2)(5x^2 - 7)$ | 6. $(7x - 2)(4x^2 - 5)$ |
| 7. $(x + 5)(3a + 7b)$ | 8. $(2x - 3)(5x^2 - 7)$ |
| 9. $5x(x + 3)$ | 10. $6x(2x - 3)$ |
| 11. $(7x + 8)(7x - 8)$ | 12. $(5x + 3)(5x - 3)$ |
| 13. $12x(2x - 1)$ | 14. $(4x + 3)(4x - 3)$ |
| 15. $(x + 3)(x + 5)$ | 16. $(x - 7)(x - 2)$ |
| 17. $(x + 8)(x + 2)$ | 18. $(2x - 5)(x - 3)$ |
| 19. $(3x + 7)(x + 1)$ | 20. $(5x - 2)(x - 3)$ |
| 21. $(5x - 1)(x - 6)$ | 22. $(3x + 14)(x + 1)$ |
| 23. $(x + 3)(x - 5)$ | 24. $(2x - 3)(x + 5)$ |
| 25. $(3x + 5)(x - 2)$ | 26. $(11x + 1)(x - 5)$ |
| 27. $(7x - 2)(x + 4)$ | 28. $(5x - 4)(x + 3)$ |
| 29. $(3x - 11)(x + 2)$ | 30. $(3x - 11)(2x + 5)$ |