



In this worksheet you will learn to combine various factorisation methods to simplify even the most complex expressions. Work through the problems by identifying common factors, grouping terms and using techniques such as difference of two squares, factorising quadratics and special products where appropriate.

## Easy Questions

1. Factorise  $2x^2 + 4x$ .
2. Factorise  $x^2 + 5x$ .
3. Factorise  $3x^2 + 6x + 2x + 4$ .
4. Factorise  $x^2 - 9$ .
5. Factorise  $6xy + 9xz$ .

## Intermediate Questions

6. Factorise  $x^3 + 2x^2 - x - 2$ .
7. Factorise  $4x^3 - 8x^2 - 3x + 6$ .
8. Factorise  $2x^2y + 4xy^2 + 3xy + 6y^2$ .
9. Factorise  $x^2 + 3x - 10$ .
10. Factorise  $6x^2 + 11x + 3$ .
11. Factorise  $3x^3 + 2x^2 - 9x - 6$ .
12. Factorise  $x^3 - 7x + 6$ .
13. Factorise  $2x^4 - 8x^2$ .
14. Factorise  $6x^2y + 9xy^2 + 2xy + 3y^2$ .
15. Factorise  $8x^3 - 27y^3 + 12x^2y - 18xy^2$ .
16. Factorise  $12x^3 + 8x^2 - 3x - 2$ .
17. Factorise  $9x^3 + 27x^2 + 7x + 21$ .
18. Factorise  $4x^3 + 8x^2 - 5x - 10$ .

19. Factorise  $10x^3 - 5x^2 - 8x + 4$ .
20. Factorise  $12x^4 + 8x^3 - 3x^2 - 2x$ .

## Hard Questions

21. Factorise  $2x^3 + 7x^2 + 7x + 2$ .
22. Factorise  $4x^4 + 8x^3 - 9x^2 - 18x$ .
23. Factorise  $6x^3y + 15x^2y^2 + 2xy + 5y^2$ .
24. Factorise  $8x^3 - 27 + 12x^2 - 18x$ .
25. Factorise  $2x^3 - x^2 - 8x + 4$ .
26. Factorise  $x^4 - 13x^2 + 36$ .
27. Factorise  $2x^3 + 5x^2 - 3x$ .
28. Factorise  $3x^3 + x^2 - 12x - 4$ .
29. Factorise  $4x^4 + 12x^3 + 9x^2 - 16$ .
30. Factorise  $x^5 - 5x^3 + 4x$ .