



In this worksheet you will learn techniques to simplify algebraic fractions, making them easier to work with. You will practise factoring numerators and denominators and cancelling common factors in order to rewrite expressions in their simplest form.

## Easy Questions

1. The instruction: Simplify  $\frac{x^3}{x}$ .
2. The instruction: Simplify  $\frac{8x}{4}$ .
3. The instruction: Simplify  $\frac{6x^2}{9x}$ .
4. The instruction: Simplify  $\frac{x^2 - y^2}{x - y}$ .
5. The instruction: Simplify  $\frac{x^2 + 2x}{x}$ .

## Intermediate Questions

6. The instruction: Simplify  $\frac{2x^2 + 4x}{2x}$ .
7. The instruction: Simplify  $\frac{3x^2 - 12}{3x}$ .
8. The instruction: Simplify  $\frac{6x^3 - 9x^2}{3x}$ .
9. The instruction: Simplify  $\frac{4x^2 - 9}{2x - 3}$ .
10. The instruction: Simplify  $\frac{x^2 + 3x}{x}$ .
11. The instruction: Simplify  $\frac{x^2 - 4}{x^2 - 2x}$ .
12. The instruction: Simplify  $\frac{2x^2 + 8x}{4x}$ .

13. The instruction: Simplify  $\frac{3x^2 + 9x}{6x}$ .
14. The instruction: Simplify  $\frac{x^2 - 5x}{x^2 - 25}$ .
15. The instruction: Simplify  $\frac{2x^2 - 8}{x^2 - 4}$ .
16. The instruction: Simplify  $\frac{4x^2 - 12x}{2x}$ .
17. The instruction: Simplify  $\frac{x^2 - 9x + 18}{x - 3}$ .
18. The instruction: Simplify  $\frac{x^2 - 2x}{x^2 + x}$ .
19. The instruction: Simplify  $\frac{3x - 6}{9x^2 - 36}$ .
20. The instruction: Simplify  $\frac{2x^2 - 18}{4x - 12}$ .

## Hard Questions

21. The instruction: Simplify  $\frac{x^3 - x^2 - x + 1}{x^2 - 1}$ .
22. The instruction: Simplify  $\frac{x^3 + 2x^2 - x - 2}{x^2 - 4}$ .
23. The instruction: Simplify  $\frac{2x^3 + 4x^2 - 6x}{4x^2 - 16}$ .
24. The instruction: Simplify  $\frac{x^3 - 8}{x^2 + 2x + 4}$ .
25. The instruction: Simplify  $\frac{x^4 - 16}{x^2 - 4}$ .
26. The instruction: Simplify  $\frac{2x^2 - 3x - 5}{4x^2 - 25}$ .
27. The instruction: Simplify  $\frac{x^3 + 2x^2 - 5x - 10}{x^2 - 4}$ .
28. The instruction: Simplify  $\frac{x^4 - 5x^2 + 4}{x^2 - 4}$ .
29. The instruction: Simplify  $\frac{2x^3 - 4x^2 - 2x + 4}{2x^2 - 8}$ .
30. The instruction: Simplify  $\frac{3x^3 - 3x^2 - 12x + 12}{3x^2 - 12}$ .