

Math 105 - Factoring and Distribution**Name:** _____*Simplify the following products by expanding. As always, show your work.*

1. $3(x - 4)$

2. $(x + y - 2z)(-3x)$

3. $(x - 2)(x + 3)$

4. $(r - 2)(4r - 1)$

5. $(a - b)(a + b)$

6. $(a + b)(a^2 - ab + b^2)$

7. $4(z - \frac{1}{2})(4z - 2)$

8. $\frac{(3x - 6)(x + 1)}{3}$

9. $\frac{1}{2}(1 - x)(2 + 2x)$

Factor the following expressions as completely as you can.

10. $10x + 5$

11. $-15ab + 6ac$

12. $3x^2 + 2xy$

13. $12xy^2 - 24x^2y$

14. $4x^2(x - 1) - 12x(x - 1)$

15. $5y^2(y^2 + 3) - 10y(y^2 + 3)$

Simplify each of the following expressions as much as you can.

16. $3u + 7 - \frac{24 - 16u}{8}$

17. $\frac{5x - 10y}{5} + \frac{4x + 8y}{x + 2y}$

18. $\frac{(4x^2 - x)(3x - 3)}{(x - 1)(4x - 1)}$

19. $\frac{\frac{3}{a} + \frac{2}{b}}{\frac{a}{b}}$

$$20. \frac{\frac{(a+b)(a-b)}{2}}{\frac{a+b}{4}}$$

$$21. 4x^2 \left(\frac{3}{2x^2 - 14x} - \frac{x}{x - 7} \right)$$

Solve the equations below using factoring and/or distribution.

$$22. 10(x + 5) + 2(x + 3) = 8$$

$$23. \frac{2}{x-3} + \frac{1}{x+1} = \frac{1}{(x-3)(x+1)}$$

Solve for x.

$$24. xy - 2x = 4$$

$$25. Ax + Bx + Cx = 1$$

$$26. \frac{x}{y} + 4x = 3$$

Factor the polynomials below.

$$27. x^2 - 7x + 10$$

$$28. z^2 + z - 6$$

$$29. x^2 - 9$$

Simplify.

$$30. \frac{x^2 + 8x + 16}{x^2 + 11x + 28}$$

$$31. \frac{x^2 - 9x + 20}{x^2 + x - 20}$$

$$32. \frac{\frac{x^2 + 4x - 5}{3x + 18}}{\frac{x + 5}{3}}$$

$$33. \left(\frac{4x + 12}{x^2 - 5x + 6} \right) \left(\frac{x^2 - 3x + 2}{x + 3} \right)$$