

Grade 9 Algebraic Expressions

Ex. 8.3 Pg. 74 No 1, 2ac, 4ab, 5ac

$$\begin{aligned} 1a) & (x+2)(x-4) \\ & = x^2 - 4x + 2x - 8 \\ & = x^2 - 2x - 8 \end{aligned}$$

$$\begin{aligned} 1b) & (2x+1)(3x-5) \\ & = 6x^2 - 10x + 3x - 5 \\ & = 6x^2 - 7x - 5 \end{aligned}$$

$$\begin{aligned} 1c) & (x+y)(x+2y) \\ & = x^2 + 2xy + xy + 2y^2 \\ & = x^2 + 3xy + 2y^2 \end{aligned}$$

$$\begin{aligned} 1d) & (3x-4y)(2x-5y) \\ & = 6x^2 - 15xy - 8xy + 20y^2 \\ & = 6x^2 - 23xy + 20y^2 \end{aligned}$$

$$\begin{aligned} 2a) & (x-4)^2 \\ & = (x-4)(x-4) \\ & = x^2 - 4x - 4x + 16 \\ & = x^2 - 8x + 16 \end{aligned}$$

$$\begin{aligned} 2c) & (6x-5y)^2 \\ & = (6x-5y)(6x-5y) \\ & = 36x^2 - 30xy - 30xy + 25y^2 \\ & = 36x^2 - 60xy + 25y^2 \end{aligned}$$

$$\begin{aligned} 4a) & (2a-3b)(4c+5d) \\ & = 8ac + 10ad - 12bc - 15bd \\ & \text{(No Like terms)} \end{aligned}$$

$$\begin{aligned} 4b) & (9y-7)(7+9y) \\ & = 63y + 81y^2 - 49 - 63y \\ & = 81y^2 - 49 \end{aligned}$$

$$\begin{aligned} 5a) & (x+3)^2 + (2x+1)^2 \\ & = (x+3)(x+3) + (2x+1)(2x+1) \\ & = x^2 + 3x + 3x + 9 + 4x^2 + 2x + 2x + 1 \\ & = 5x^2 + 10x + 10 \end{aligned}$$

$$\begin{aligned} c) & (2a-3b)^2 - (2a+3b)^2 \\ & = (2a-3b)(2a-3b) - (2a+3b)(2a+3b) \\ & = 4a^2 - 6ab - 6ab + 9b^2 - (4a^2 + 6ab + 6ab + 9b^2) \\ & = 4a^2 - 6ab - 6ab + 9b^2 - 4a^2 - 6ab - 6ab - 9b^2 \\ & = -24ab \end{aligned}$$