

Accelerated Math Notes
(Lessons 7-3 and 7-4)
Adding and Subtracting Linear Expressions

A linear expression is an algebraic expression in which the variable is raised to the first power.

Linear expression

$$-3x + 2$$

NOT a Linear expression

$$-3x^2 + x - 7$$

Addition of Linear Expressions

$$(x + 7) + (3x + 9)$$

$$\underline{x + 7} + \underline{3x + 9}$$

$$4x + 16$$

$$(-3x + 8) + (x + 4)$$

$$\underline{-3x + 8} + \underline{1x + 4}$$

$$-2x + 12$$

$$(3x + 2) + (x + 1) + (4x + 3)$$

$$\underline{3x + 2} + \underline{1x + 1} + \underline{4x + 3}$$

$$8x + 6$$

$$(7x - 9) + (-3x - 2)$$

$$\underline{7x - 9} + \underline{-3x - 2}$$

$$4x - 11$$

$$4x - 11$$

Subtraction of Linear Expressions

$$(x + 7) - (3x + 9)$$

$$\underline{x + 7} + \underline{-1(3x + 9)}$$

$$\underline{x + 7} + \underline{-1(3x)} + \underline{-1(9)}$$

$$\underline{x + 7} + \underline{-3x} + \underline{-9}$$

$$-2x + -2$$

$$-2x - 2$$

$$(-3x + 8) - (x + 4)$$

$$\underline{-3x + 8} + \underline{-1(x + 4)}$$

$$\underline{-3x + 8} + \underline{-1x} + \underline{-4}$$

$$-4x + 4$$

$$(3x + 2) - (x + 1) - (4x + 3)$$

$$\underline{3x + 2} + \underline{-1(x + 1)} + \underline{-1(4x + 3)}$$

$$\underline{3x + 2} + \underline{-1x} + \underline{-1} + \underline{-4x} + \underline{-3}$$

$$-2x + -2$$

$$(7x - 9) - (-3x - 2)$$

$$\underline{7x - 9} + \underline{-1(-3x - 2)}$$

$$\underline{7x - 9} + \underline{3x} + \underline{2}$$

$$10x - 7$$

$$-2x - 2$$

$$10x - 7$$

You may drop parentheses if they have these things in front of them:

- *nothing $(x + 2)$
 $x + 2$
- *addition sign $(x + 2) + (x + 8)$
 $x + 2 + x + 8$

You may NOT drop parentheses if they have these things in front of them:

- *subtraction sign $(x + 9) - (x + 2)$
 $x + 9 + -1(x + 2)$

- *A number that is being multiplied by the parentheses
 $3(9x + 7) + 2(x + 4)$

Mario jogged $(10x + 2)$ miles.
 Jen jogged $4x$ miles.
 How many more miles did Mario jog than Jen?

$$m - j$$

$$(10x + 2) - 4x$$

$$10x + 2 + -4x$$

$$\underline{6x + 2}$$

miles

What is the difference between the length and width of this rectangle?

$$\begin{array}{r} 4x - 5 \\ \text{rectangle} \\ -6x + 1 \end{array}$$

$$(4x - 5) - (-6x + 1)$$

$$4x - 5 + -1(-6x + 1)$$

$$\underline{4x - 5} + \underline{6x - 1}$$

$$10x - 6$$

$$\underline{10x - 6}$$

The expression $2m - 1$ represents the distance driven by the Easton family on Day 1 of a 3-day family vacation. The expression $5m + 6$ represents the total miles driven on the vacation. Write an expression that represents the miles driven on Days 2 and 3. Then simplify the expression.

$$D_1 + D_2 + D_3 = \text{Total}$$

$$T - D_1$$

$$(5m + 6) - (2m - 1)$$

$$5m + 6 + -1(2m - 1)$$

$$\underline{5m + 6} + \underline{-2m + 1}$$

$$\underline{3m + 7}$$

miles

The expression $(6x + 36)$ represents the total amount of money the soccer team earned from selling x T-shirts. If their expenses were $(2x - 3)$ dollars, write a simplified expression to represent their profit.

$$\text{Profit} = \text{Money Earned} - \text{Expenses}$$

$$(6x + 36) - (2x - 3)$$

$$6x + 36 + -1(2x - 3)$$

$$6x + 36 + -2x + 3$$

$$\underline{4x + 39}$$

dollars