

## 13.2 (pg. 562) Adding and Subtracting Linear Expressions

A **linear expression** is an algebraic expression in which the exponent of the variable is 1.

<b>Linear Expressions</b>	$-4x$	$3x + 5$	$5 - \frac{1}{6}x$
<b>Nonlinear Expressions</b>	$x^2$	$-7x^3 + x$	$x^5 + 1$

You can use a **vertical** or a **horizontal** method to add linear expressions.

### Adding Linear Expressions:

**Vertical:**  $(x - 2) + (3x + 8)$

$$\begin{array}{r} x - 2 \\ + 3x + 8 \\ \hline 4x + 6 \end{array}$$

**Horizontal:**  $(-4y + 3) + (11y - 5)$

$$-4y + 3 + 11y + (-5) \quad \text{Rewrite as Sum}$$

$$-4y + 11y + 3 - 5 \quad \text{Commutative Prop.}$$

$$(-4 + 11)y + 3 - 5 \quad \text{Distributive Prop.}$$

$$7y - 2 \quad \text{Simplify}$$

## Subtracting Linear Expressions:

Vertical:  $(5x + 6) - (-x + 6)$

$$\begin{array}{r} 5x + 6 \\ -(-x + 6) \longrightarrow + \\ \hline 6x \end{array}$$

Horizontal  $(7y + 5) - 2(4y - 3)$

$$7y + 5 - 8y + 6 \quad \text{Distributive Prop.}$$

$$7y + 5 + (-8y) + 6 \quad \text{RAS}$$

$$7y + (-8y) + 5 + 6 \quad \text{CP}$$

$$\{7 + (-8)\}y + 5 + 6 \quad \text{DP}$$

$$-y + 11 \quad \text{Simplify!}$$