

# Lesson 3.2

## Adding and Subtracting Linear Expressions

### 3.2 Notes

Get out your spiral notebooks!

#### Example 1:

Find each sum.

a.  $(x - 2) + (3x + 8)$

$$\begin{aligned}x + 3x &= 4x \\ -2 + 8 &= 6\end{aligned}$$

$$4x + 6$$

b.  $(-4y + 3) + (11y - 5)$

$$\begin{aligned}-4y + 11y &= 7y \\ 3 - 5 &= -2\end{aligned}$$

$$7y - 2$$

**Example 2:**Find  $2(-7.5z + 3) + (5z - 2)$ 

$$\underline{2(-7.5z)} + \underline{2(3)} + 5z - 2$$

$$-15z + 6 + 5z - 2$$

$$-15z + 5z = -10z$$

$$6 - 2 = 4$$

$$\boxed{-10z + 4}$$

Find the sum.

1.  $(4 - n) + 2(-5n + 3)$

$$4 - n - 10n + 6$$

$$4 + 6 = 10$$

$$-n - 10n = -11n$$

$$\boxed{10 - 11n}$$

2.  $\frac{1}{2}(w - 6) + \frac{1}{4}(w + 12)$

$$\frac{1}{2}w - 3 + \frac{1}{4}w + 3$$

$$\frac{1}{2}w + \frac{1}{4}w = \frac{2}{4}w + \frac{1}{4}w = \frac{3}{4}w$$

$$-3 + 3 = 0$$

$$\boxed{\frac{3}{4}w}$$

**Example 3:**

Find each difference.

a.  $(5x + 6) - (-x + 6)$

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

$$x - 6$$

$$5x + 6 + x - 6$$

$$5x + x = 6x$$

$$6 - 6 = 0$$

$$6x$$

b.  $(7y + 5) - 2(4y - 3)$

$$-2(4y - 3)$$

$$-8y + 6$$

$$7y + 5 - 8y + 6$$

$$7y - 8y = -y$$

$$5 + 6 = 11$$

$$-y + 11$$

Find the difference.

3.  $(m - 3) - (-m + 12)$

$$m - 3 + m - 12$$

$$m + m = 2m$$

$$-3 - 12 = -15$$

$$2m - 15$$

4.  $-2(c + 2.5) - 5(1.2c + 4)$

$$-2c - 5 - 6c - 20$$

$$-2c - 6c = -8c$$

$$-5 - 20 = -25$$

$$-8c - 25$$

**Example 4:**

The original price of a cowboy hat is  $d$  dollars. You use a coupon and buy the hat for  $(d - 2)$  dollars. You decorate the hat and sell it for  $(2d - 4)$  dollars. Write an expression that represents your earnings from buying and selling the hat. Interpret the expression.

Spend  $(d-2)$ Earn  $(2d-4)$ 

$$-(d-2) + (2d-4)$$

$$-d+2+2d-4$$

I earned \$2 less than the original price of the hat.

$$-d+2d=d$$

$$2-4=-2$$

$$d-2$$

Work with a partner to simplify the expression.

a.  $(2x+1) + (x-1)$

$$2x+x=3x$$

$$1-1=0$$

$$3x$$

b.  $(2x-6) + (3x+2)$

$$2x+3x=5x$$

$$-6+2=-4$$

$$5x-4$$

c.  $(2x+4) - (x+2)$

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

$$2x-x=x$$

$$4-2=2$$

$$x+2$$

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

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

$$4x-2x=2x$$

$$3+1=4$$

$$2x+4$$