

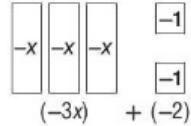
## Lesson 7 - Subtract Linear Expressions

When subtracting expressions, subtract like terms. You can use models or the additive inverse.

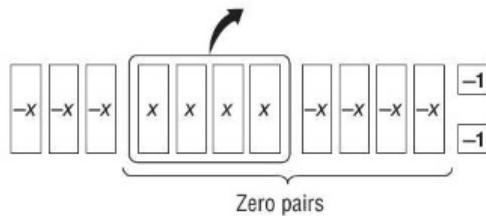
### Example 1

Find  $(-3x - 2) - (4x)$ .

**Step 1** Model the expression  $-3x - 2$ .



**Step 2** Since there are no positive  $x$ -tiles to remove, add four zero pairs of  $x$ -tiles.  
Remove four positive  $x$ -tiles.



$$\text{So, } (-3x - 2) - (4x) = -7x - 2.$$

### Example 2

Subtract  $(4x + 6) - (-7x + 1)$ .

The additive inverse of  $-7x + 1$  is  $7x - 1$ .

$$\begin{array}{r}
 4x + 6 & \text{Arrange like terms in columns.} \\
 + 7x - 1 & \text{Add.} \\
 \hline
 11x + 5
 \end{array}$$

$$\text{So, } (4x + 6) - (-7x + 1) = 11x + 5.$$

### Exercises

Subtract. Use models if needed.

1.  $\underline{(9x + 10)} - \underline{(2x + 4)}$

AND AND

① 
$$\begin{array}{c|c}
 x & \text{CONSTANTS} \\
 \hline
 9x & 10 \\
 -2x & -4 \\
 \hline
 7x & 6
 \end{array}$$

$7x + 6$

\$7 AND 50¢  
- \$3 AND 10¢  
\$4 AND 40¢  
\$4.40

⑤ 
$$\begin{array}{c|c}
 x & \text{CONSTANTS} \\
 \hline
 3x & -1 \\
 -2x & -(-6) \\
 \hline
 1x & 5
 \end{array}$$

$x + 5$

$-1 - (-6)$

$-1 + 6 = 5$

3.  $\underline{(6x + 3)} - \underline{(-x - 2)}$

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

③ 
$$\begin{array}{c|c}
 x & \text{CONSTANTS} \\
 \hline
 6x & 3 \\
 -(-1x) & -(-2) \\
 \hline
 7x & 5
 \end{array}$$

$7x + 5$

$6 - (-1) = 6 + 1 = 7$   
 $3 - (-2) = 3 + 2 = 5$

5.  $\underline{(3x - 1)} - \underline{(2x - 6)}$

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

# Lesson 7 Skills Practice

## Subtract Linear Expressions

**Subtract.** Use models if needed.

1.  $(5x + 7) - (x + 2)$

$$\begin{array}{c|c} x & \text{CONSTANTS} \\ \hline 5x & 7 \\ -1x & -2 \\ \hline 4x & \text{AND} 5 \end{array}$$

$4x + 5$

5.  $(-x + 3) - (4x - 10)$

$$(2x + -6) - (x + -7)$$

2.  $(2x - 6) - (x - 7)$

$$\begin{array}{c|c} x & \text{CONSTANTS} \\ \hline 2x & -6 \\ -1x & -(-7) \\ \hline x & \text{AND} 1 \end{array}$$

$x + 1$

$$\begin{array}{r} -6 - (-7) \\ -6 + 7 = 1 \end{array}$$

6.  $(5x + 4) - (-8x - 2)$

$$\begin{array}{r} -x - x - (-x) \\ -x - x + x + x = -7x \end{array}$$

9.  $(-9x + 1) - (-7x + 8)$

10.  $(-3x - 9) - (4x + 8)$

$$\begin{array}{r} (-3x + -9) - (4x + 8) \\ \uparrow \quad \uparrow \\ \text{AND} \quad \text{AND} \end{array}$$

$$\begin{array}{c|c} x & \text{CONSTANTS} \\ \hline -3x & -9 \\ +(-4x) & +(-8) \\ \hline -7x & \text{AND} -17 \end{array}$$

$$\begin{array}{r} -7x + (-17) \\ -7x - 17 \end{array}$$

13.  $(5x - 1) - (-3x + 7)$

14.  $(-5x + 4) - (-9x - 2)$

19.  $(2x + 4) - (5x - 2)$

20.  $(-12x - 6) - (-4x + 3)$

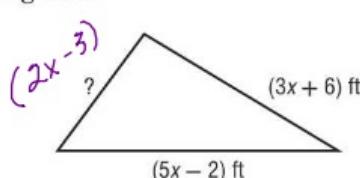


PERIMETER = 20  
? How much is x?

$$\begin{array}{r} 6 + 11 = 17 \\ \downarrow \\ 17 + 3 = 20 \end{array} \Rightarrow 20 - 17 = 3$$

21. GEOMETRY The perimeter of the triangle shown is  $(10x + 1)$  feet. Find the length of the missing side.

$$6 + (-2) \\ (+) (+) (+) (+) (+) \\ (+) (-)$$



$$\begin{array}{r} \sqrt{\text{TOTAL}} \\ (3x + 6) + (5x - 2) + (-2) \end{array}$$

$$\begin{array}{c|c} x & \text{CONSTANT} \\ \hline 3x & 6 \\ +5x & +(-2) \\ \hline 8x & +4 \end{array}$$

$$\begin{array}{c|c} x & \text{CONSTANT} \\ \hline 8x & 4 \\ 2x & -3 \\ \hline 10x & +1 \end{array}$$