Lesson 18 Summary

Working with subtraction and signed numbers can sometimes get tricky. We can apply what we know about the relationship between addition and subtraction—that subtracting a number gives the same result as adding its opposite—to our work with expressions. Then, we can make use of the properties of addition that allow us to add and group in any order. This can make calculations simpler. For example:

$$\frac{5}{8} - \frac{2}{3} - \frac{1}{8}$$

$$\frac{5}{8} + \text{-}\frac{2}{3} + \text{-}\frac{1}{8}$$

$$\frac{5}{8} + \text{-}\frac{1}{8} + \text{-}\frac{2}{3}$$

$$\frac{4}{8} + \text{-}\frac{2}{3}$$

We can also organize the work of multiplying signed numbers in expressions. The product $\frac{3}{2}(6y - 2x - 8)$ can be found by drawing a rectangle with the first factor, $\frac{3}{2}$, on one side, and the three terms inside the parentheses on the other side:

	6y	-2x	-8
$\frac{3}{2}$			

Multiply $\frac{3}{2}$ by each term across the top and perform the multiplications:

	6y	-2x	-8
$\frac{3}{2}$	$\frac{3}{2} \cdot 6y$	$\frac{3}{2} \cdot \text{-}2x$	$\frac{3}{2} \cdot \text{-}8$

	6y	-2x	-8
$\frac{3}{2}$	9y	-3x	-12

Reassemble the parts to get the expanded version of the original expression:

$$\frac{3}{2}(6y - 2x - 8) = 9y - 3x - 12$$