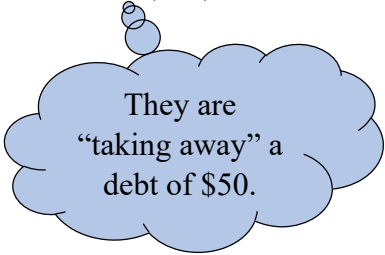


Subtracting a negative number is akin to adding.

Picture the number line. Recall, when we *subtract* a positive number from another, we move to the left. (Picture  $10 - 4 = 6$ .) When we *add* a positive number to another, we move to the right. (Picture  $10 + 4 = 14$ .) Adding negative numbers just reversed which direction we move.

So, what do we do when we *subtract a negative number*? It is often easiest to think of this subtraction as an *elimination* of debt. Say you owe someone \$200, so essentially you “have”  $-200$  dollars. They tell you that they will take \$50 off your bill. That’s  $-200 - (-50)$ .

You only owe 150 now, which we think of as  $-150$  dollars.



They are “taking away” a debt of \$50.

Calculation-wise, we turn the subtraction of a negative number into addition. We’ll write this  $-200 - (-50)$  as  $-200 + 50$ . That gives us  $-150$  dollars.

That is the trick in a nutshell. **Whenever you see subtraction of a negative number, turn that into a plus sign and add.**

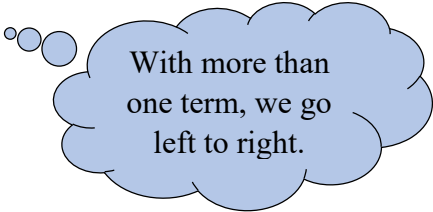
**Definition: Opposites:** Two numbers are **opposites** if they are the same distance from 0 on the number line but one number is positive and the other negative.

Examples are  $-150$  and  $150$  or  $3\frac{1}{2}$  and  $-3\frac{1}{2}$ . The book goes through the process of subtracting negative numbers as “adding its opposite”.

expl 1: Subtract.

a.)  $65 - (-8)$

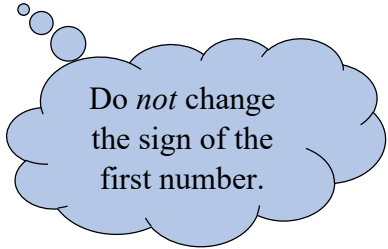
b.)  $-12 - 6 - (-4) - 7$



With more than one term, we go left to right.

c.)  $\frac{5}{6} - \left(-2\frac{2}{3}\right)$

d.)  $0 - (-13)$



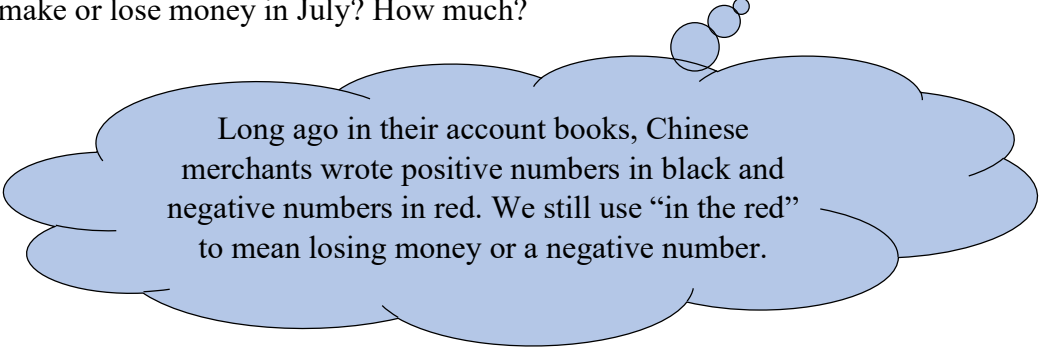
Do *not* change the sign of the first number.

**Calculator:**

Recognize the difference between the button used for subtraction (looks like  $-$  and will be with  $+$ ,  $\times$ , and  $\div$ ) and the button used for negative numbers (looks like  $(-)$  and will likely be in the number pad.)

expl 2: At 6:00 am, it was  $-25$  °F at some very cold town in Canada. At noon, it was  $-37$  °F. By how much did the temperature drop in that time?

expl 3: Freddy's Furniture Store was \$4500 "in the red" on July 1. They were \$5700 "in the red" on August 1. Did they make or lose money in July? How much?



Long ago in their account books, Chinese merchants wrote positive numbers in black and negative numbers in red. We still use "in the red" to mean losing money or a negative number.