Name: _____   Date: _____

ADDING SIGNED NUMBERS
N-GEN MATH® 7

For years you have mastered the four basic operations of addition, subtraction, multiplication, and division of **rational numbers** that were **not negative**. We now begin to learn how to include negative numbers in these calculations. It all starts with a basic idea known as **zero sum pairs** or **additive inverses**.

Exercise #1: Write what you think each of the following would be equal to:

(a) $-5 + 5 =$ _____

(b) $\dfrac{1}{2} + -\dfrac{1}{2} =$ _____

(c) $-125 + 125 =$ _____

It should make sense that each of these sums is equal to zero. These pairs of numbers are called **additive inverses**. Negative numbers often represent **having less than zero** of something.

Exercise #2: When thinking about the money in a bank account there are credits (money put in) and debits (money taken out). Often credits are kept track of with positive numbers and debits are kept track of using negative numbers. If an account started with a zero balance and there was a credit of $250 and a debit of $-$250 why would the balance be zero?

Exercise #3: Let's stick with credits and debits. If a bank account had a balance of zero and then it had debits of $-$25 and $-$10, what would its balance be in terms of a negative number?

Exercise #3 shows how we add two numbers that are negative. When we combine two negative numbers using addition, we are simply keeping track of **how many negative ones** we have.

Exercise #4: What is each of the following sums equal to?

(a) $-6 + -10 =$ _____
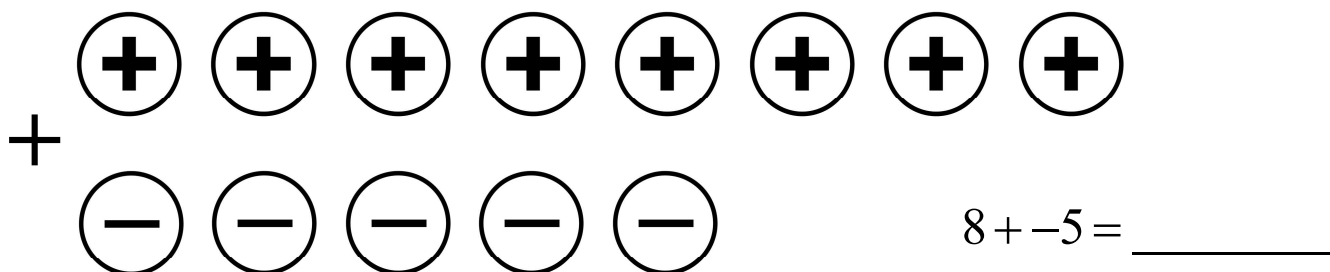
(b) $-7 + -3 =$ _____

(c) $-\dfrac{7}{3} + -\dfrac{2}{3} =$ _____

Now let's begin adding negative and positive numbers together that don't have the same size. The result will likely not surprise you.

Exercise #5: Consider the sum $8+-5$, where we are adding a negative number to a positive number.

(a) The diagram below shows this sum. Cross out all zero sum pairs and state the answer.

$8+-5 =$ _____

(b) This sum is the same as what subtraction problem?

Exercise #6: For each of the following simple sum problems, draw out a representation such as in Exercise #5 and give the result after crossing out zero sum pairs.

(a) $-4+2 =$ _____

(b) $5+-9 =$ _____

(c) $-2+8 =$ _____

(d) $5+-1 =$ _____

ADDING SIGNED NUMBERS
N-GEN MATH® 7 HOMEWORK

FLUENCY

1. Which of the following sums below is equal to zero?

   (1) $-6 + -6$ (3) $-11 + 11$

   (2) $-7 + 4$ (4) $8 + 8$ _____

2. Another name for a zero sum pair is

   (1) subtractive equals
   (2) additive inverses
   (3) cancellation pairs
   (4) sum to none   _____

3. Find each of the following sums of negative integers.

   (a) $-8 + -6$ (b) $-100 + -50$ (c) $-32 + -19$

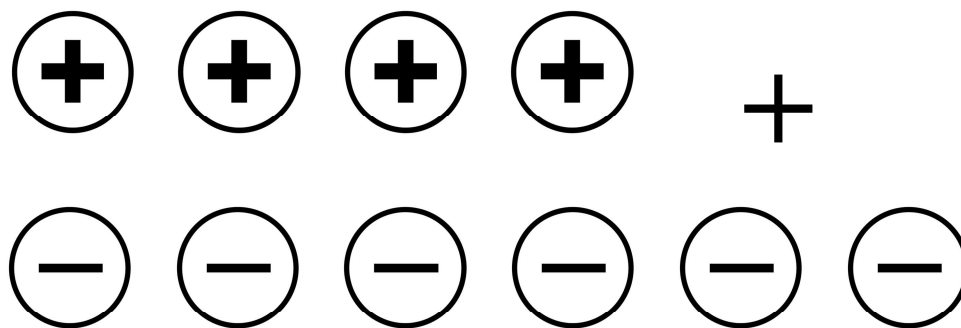   (d) $-2.5 + -4.3$ (e) $-12.75 + -26.42$ (f) $-\dfrac{6}{5} + -\dfrac{8}{5}$

   (g) $-\dfrac{13}{7} + -\dfrac{8}{7}$ (h) $-\dfrac{1}{2} + -\dfrac{1}{6}$ (i) $-\dfrac{3}{4} + -\dfrac{7}{6}$

4. Given the diagram shown below answer the following questions:

(a) What addition problem is represented in the diagram?

(b) What is the value of the sum?

5. For each of the following sums, create a diagram such as the one above that represents it. Then, cross out zero sum pairs and state the answer to the sum.

(a) $3 + -7 =$ _____

(b) $-10 + 4 =$ _____

(c) $-2 + 7 =$ _____

(d) $5 + -11 =$ _____

6. Which of the following sums is *not* equal to -4?

(1) $-9 + 5$

(3) $11 + -7$

(2) $-12 + 8$

(4) $4 + -8$

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