Bridge – Locating Negative Numbers Name:_____

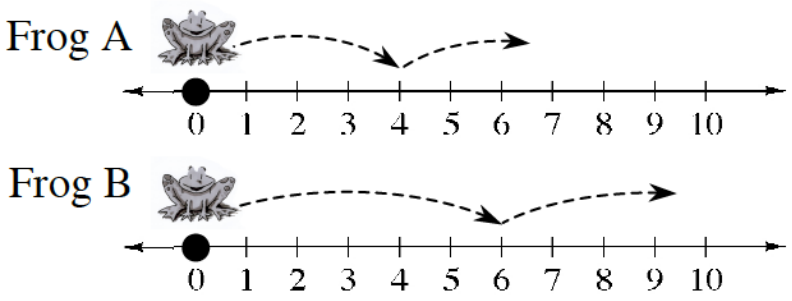
In the last lesson, you looked at how a frog could hop in different directions along a number line. Sometimes it could end up on the other (opposite) side of zero and other times end up in the same place after a series of hops. In this lesson, you will also develop an understanding of "greater than" or "less than" when working with negative numbers. You will also work at getting the frog to land between integers on a number line.

3-99.

Elliot is working on his frog video game again. He has designed a new game with two frogs, each on their own number line. Each frog starts at 0, each hop is the same distance, and each hop is always to the right. The person playing the game gets to choose numbers on the number line. Points are scored for choosing a number that both frogs will land on.

a. **Your Task:** Determine if the frogs in the games below will ever land on the same number(s). If not, why not? If so, which number(s) will they both land on? Draw diagrams to justify your answers.

   i. What if Frog A hops to the right 4 units at a time and Frog B hops to the right 6 units at a time?
   ii. What if Frog A hops 15 units at a time and Frog B hops 9 units at a time?



b. How did you use the length of the frogs' jumps to determine your answers in part (a)? With your team, find a method for determining all of the numbers that both frogs will land on.
c. The numbers in your lists from part (a) are referred to as common multiples. For example, 24 is a common multiple of 4 and 6 because 24 is a multiple of 4 and also a multiple of 6. The smallest number on your list is called the **least common multiple**. Find the least common multiple of 8 and 12.

3-100.

Each expression below could represent the hops of a frog on a number line. Draw a number line on your paper and use it to find the answer. Be ready to share your strategy.

a. $-2-9$

b. $5-5$

c. $-(-4)+7$

d. $-6+2$

e. $-(-1)-8$

Bridge – Locating Negative Numbers Name:_____
Vertical Questions:

Resource Managers are in charge of soliciting ideas from everyone and has final say on answers.

3-102. (Facilitator writes)
In one frog-jumping contest, a frog named ME-HOP started at zero, hopped 7 feet to the right, and then hopped 4 feet to the left. Meanwhile, Mr. Toad also started at zero, hopped 8 feet to the left, and then hopped 1 foot to the right.

a. Write expressions to represent these hops for each frog.

b. Which frog is farther ahead (that is, more to the right on the number line)? Explain. Use an inequality to record your answer.

3-103. (Task Manager writes)
In each of the four contests below, two frogs are hopping. The two numbers given in each part show the frogs' final landing points. In each contest, which frog is farther ahead? (This question is another way of asking which frog is at the larger number.) Write an inequality statement (using $<$ or $>$) to record your answer.

a. -2 or 1

b. 3 or -17

c. $-(3)$ or $-(-3)$

d. 2 or 0

3-104. (Recorder / Reporter Writes)

Who was ahead in each of the following contests? Plot the landing point given for each frog on a number line, and represent your answer with an inequality.

a. Froglic: $-\frac{5}{2}$ feet
Green Eyes: -2 feet

b. Warty Niner: -3.85 feet
Slippery: -3.8 feet

c. Rosie the Ribbiter: $-4\frac{1}{3}$
Pretty Lady: $-4\frac{2}{3}$

Vertical Page

Bridge – Locating Negative Numbers Name:_____

Reflection

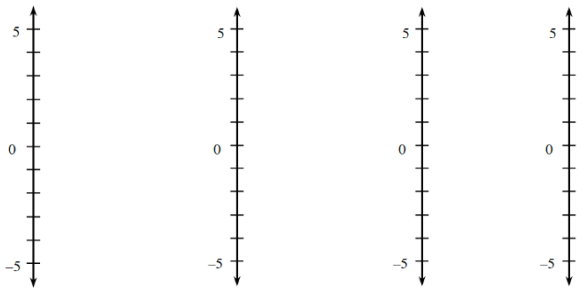
1. The symbol for minus ("–") can be translated into words such as *subtract*, *take away*, *negative*, or *opposite*. Explain how you think of this symbol when moving along a number line. Give examples. Fold this paper on the line below. Then, title it "Meanings for Minus (–)" and label it with today's date.

2. Find the missing value in each number sentence.

a. $4 - 3.5 + 3.5 - 1 = \_\_\_\_$ b. $-2 + 4 + 4 = \_\_\_\_$ c. $5\frac{1}{3} - 7 - 5\frac{1}{3} = \_\_\_\_$

3. In parts (a) and (b) below, use the number lines to show the solution to the problems. Then, answer (c) and (d).

a. 5−2 b. 2+1



Using the digits 1-9 without repeating, create two numerical expression whose result is negative. Show both on the number line.

c. $\square + \square - \square = -\square$

d. $\square - \square + \square = -\square$

----------Fold and Answer #1----------

4. An important part of mathematics is compiling valid arguments and justifying things mathematically. Consider the following situation:

A carwash company charges $12 for their elite wash. You can also buy a monthly pass for unlimited elite washes for the cost of $50. What is the minimum number of washes needed to justify buying the monthly pass?

The answer to this question is 5. Justify mathematically why this answer is correct.

5. Take a look at the four questions just previously answered. Choose a question that you believe is the most challenging. What steps did you take to overcome this challenge?

Least Common Multiple

METHODS AND MEANINGS
MATH NOTES

4	8	**12**	16	20	24	28	32
6	**12**	18	24	30	36	42	48

The **least common multiple** (LCM) of two or more positive or negative whole numbers is the lowest positive whole number that is divisible by both (or all) of the numbers.

For example, the multiples of 4 and 6 are shown in the table above. 12 is the least common multiple, because it is the lowest positive

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