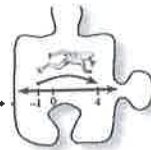


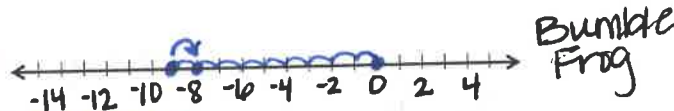
3.2.3 How do the distances compare?

Absolute Value



3-113 Dr. Frog and Bumble Frog were in a jumping competition. Both frogs started

at zero on a number line, but they had trouble jumping in the same direction consistently. Dr. Frog hopped 8 feet to the right and then 3 feet to the left. Bumble Frog hopped 9 feet to the left and then 1 foot to the right.



number sentence

- Write expressions to represent the jumps for each frog.
- Which frog is ahead? (That is another way of asking which frog is sitting on a larger number on the number line.)
- Imagine now that the winner of the frog-jumping contest is the frog that lands farthest from zero and that the direction the frog jumps does not matter. In this case, which frog would win? Explain.

key
idea

3-114 Absolute value represents the distance of a number from zero. Whether a frog is 3 feet to the left of zero on a number line (-3), or if a frog is 3 feet to the right of zero on the number line (+3), either way, the frog is still just 3 feet away from zero! This is the idea of absolute value.

The absolute value statement for -3 would look like: $|-3| = 3$

The absolute value statement for 3 would look like: $|3| = 3$

Your Task: Write an inequality statement (using < or >) to compare the values of each frog's landing points. For each frog, write an absolute value statement that shows the distance that each frog ended up from zero. Which frog was farthest from zero?

- Mr. Wizzard started at 0 and jumped left 7 feet. Auntie Long Legs started at 0 and jumped right 5 feet.
- Hopping Hannover: $7 - 5$
GG: $-1 - 6 + 4$

ther

e
s

ard

zero.

= 2
= 3

3-113

a) Dr. Frog: $0 + 8 - 3$

Bumble Frog: $0 - 9 + 1$

b) Dr. Frog is ahead because he is further right on the number line.

c) Bumble Frog would win because he is 8 away from zero and Dr. Frog is only 5 away from zero.

3-114

a) $-7 < 5$

$| -7 | = 7$

Mr. Wizard

$| 5 | = 5$

A.L.L.

Mr. Wizard was 2 further from zero.

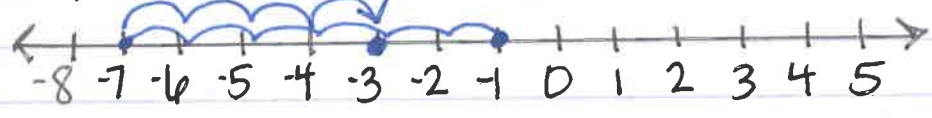
b) HH: $7 - 5 = 2$

$2 > -3$

$| 2 | = 2$

GG: $-1 - 6 + 4 = -3$

$| -3 | = 3$



GG is 1 further from zero.