Compare Integers

STRAND: **Number and Number Sense**

STRAND CONCEPT: **Rational Numbers-Compare and Order**

SOL 6.3a, b

Remediation Plan Summary

Students compare integers using a number line.

Common Errors and Misconceptions

- Students ignore the sign of the number and think the larger "number" (without the sign) is the greater value instead of looking at the placement of the number on a number line.
- Students sometimes think that a number and its opposite are equal values.

Materials

- Comparing Warm Up
- Comparing Integers Practice

Introductory Activity

- Distribute the "Comparing Warm-up" worksheet, and have students complete it. Assist any students having difficulty. Discuss the answers and have students explain their thinking.

Plan for Instruction

1. Draw a number line on the board similar to the one shown below for each question you ask students. Leave the number lines up for the ensuing discussion.
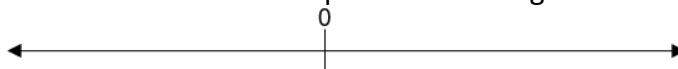

2. Ask students a series of questions, such as the following:

- John has $3 in his wallet. Joan has $5 but owes it to her mother. Who has more money? (John)
- Monday's high temperature was 7°. Tuesday's was −3°. Which day had the higher temperature? (Monday)
- Jamal is 10 years old. Maggie is 12. Who is older? (Maggie)
- In Alaska, Friday's temperature was −10°. On Saturday, it was −15°. Which day had the higher temperature? (Friday)
- The Titans gained 7 yards on the first play of the game. The Eagles gained 11 yards. Who gained more yards?

As you ask each question, write the corresponding integers on one of the number lines. Use a different number line for each question. Each time the students decide which number is greater, circle that number on its number line.

3. After asking the questions, ask students what they notice about all of the answers. Students should be able to point out that the *larger* number on each number line is circled. Ask them to compare the number lines and say what these larger numbers have in common. (The larger number in each pair of numbers is always the number on the *right*.)

4. Erase the number lines, and put up the following number line:

$$\begin{array}{ccccccccc} z & y & & x & 0 & a & & e & c \end{array}$$
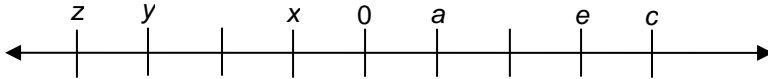
Ask the students the following questions:
- Which letter, *a* or *e*, represents the larger number? (*e*)
- Which letter, *c* or *x*, represents the larger number? (*c*)
- Which letter, *z* or *y*, represents the larger number? (*y*)
- Which is larger, the number represented by a or 0? (*a*)
- Which letter, *x* or *y*, represents the larger number? (*x)*

Ask the students to explain or defend their answers.

5. Ask the students to work in pairs to make a rule about comparing integers. Students should decide that for numbers on the numbers line, the farther to the right they are the larger they are, and the farther to the left they are the smaller they are.

6. Distribute the "Comparing Integers Practice" worksheet, and allow students to work in pairs. Provide assistance as needed noting any misconceptions to discuss as a group. Discuss answers as a whole group.

Pulling It All Together (Reflection)

Use one or both of the options below to summarize the lesson.

- Ask students to create their own number line with five letters representing numbers. Have them write three "Which is greater?" questions about this number line, exchange questions with a partner, and answer them.

- Exit Slip: Write a sentence that explains how you can compare integers, using a number line.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Name:

Comparing Warm-up

1. Which of the following statements says that 100,100 is less than 101,001?

    A   101,001 < 100,100

    B   100,100 = 101,001

    C   100,100 < 101,001

    D   100,100 > 101,001

2. Which of the following statements should be read, "6,195,854 is greater than 6,195,845?"

    F   6,195,854 = 6,195,845

    G   6,195,854 > 6,195,845

    H   6,195,845 > 6,195,854

    J   6,195,854 < 6,195,845

3. Which number would make the statement "_____ < 1,731,251" true?

    A   1,874,196

    B   1,741,069

    C   1,734,691

    D   1,724,691

Comparing Integers Practice
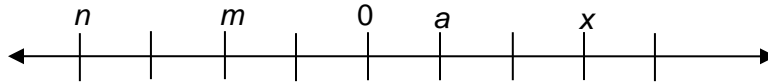
1. True or False?

    $a > m$ _____ $m < a$ _____ $n > a$ _____

    $x > a$ _____ $m < x$ _____ $x < m$ _____

2. Fill in the symbol > or < to make each statement true. Use a number line to help you.

    5 __ −6   0 __ −2   −4 __ 4   18 __ −16

    14 __ −7   −7 __ −3   27 __ −30   −20 __ 14

3. On Monday, Bob received his bank statement. He had −5 dollars in his account. Hakeem had 5 dollars in his account. Which inequality below best represents the comparison of their accounts?

    A   −5 > 5

    B   −5 = 5

    C   −5 < 5

    D   5 < −5

4. Order the following integers from smallest to largest: −5, 8, −11, 15, −30. Use a number line to help you.

5. True or false:

    −13 > 11   _____