

Compare and Order Integers

- Strand:** Number and Number Sense
- Topic:** Comparing and ordering integers using a number line and using symbols.
- Primary SOL:** 6.3 The student will
- b) compare and order integers;

Materials

- Integer Recording Sheet (attached)
- Integer Cards cutout (attached)
- Ordering Integers activity sheet (attached)

Vocabulary

ascending, descending (earlier grades), equal to, greater than, integer, less than, negative, opposites (6.3), positive

Student/Teacher Actions: What should students be doing? What should teachers be doing?

For students to master their understanding of integers, it is important to build meaning from prior knowledge. Students often get confused about which number is greater, so having a context for them to build from is extremely important. Using visual representations while students learn to compare and order will build their conceptual understanding and allow them to use it later on to justify their thinking.

When building from prior knowledge, it is important to provide real-life experiences based on the students in the classroom. Some examples can include, but are not limited to: golf scores, payments and deposits, temperature, altitude, time lines, and American football. Before beginning this activity, students should have a strong conceptual foundation of integers and their meaning.

1. Before the lesson, print the attached integer cards on card stock and cut them out. All cards must be of the same size and color. Teachers will need enough sets for every pair of students in their classroom.
2. Begin the activity by reviewing the meaning of integers. Remember to use practical situations that are relevant to students. While reviewing integers, have students show on a number line where each integer would be located. Print number lines for students to use or have a large number line in front of the room to use. After placing several integers on the number line, have the students give the teacher comparison statements (e.g., -5 is greater than -13 , $-5 > -13$).
3. Divide the class into pairs; distribute the cut-out integer cards and the Integer Recording Sheet. Each student should fill out their own recording sheet.
4. Once students are in pairs, explain the following activity directions to all students:
 - The students will distribute the cards evenly, facedown between one another.
 - Once all of the cards have been distributed, students should keep the cards facedown.
 - Both students in the pair flip over the top card from their deck.

- Next, students will write their own number under the “Student One” column and their partner’s number under the “Student Two” column.
- After writing their number in the correct column, they will display the two integers by drawing both on the number line.
- Once students have completed the number line problems, they will work on their comparison statements. In order to do this, they will write their comparison statement in the order of the numbers on the paper. For example, if Student 1 draws -10 and Student 2 draws -3 , Student 1 will write $-10 < -3$, and Student 2 will write $-3 > -10$.
- After students have filled out their activity sheet correctly (ensure students are able to check their answers), have them put all of their cards back in the pile facedown. The students, still in pairs, will complete the Ordering Integers activity sheet. Students will follow the instructions on the activity sheet for problems 1 and 2 and check each another’s work. When students have completed problem 3 by themselves, the teacher should check for accuracy before letting students move on to the last activity.
- Once students have completed both activities correctly (ensure students are able to check their answers), the students can play War with their integer cards. The following are the game rules for War:
 - Students shuffle the cards and deal them evenly among the two players with the cards facing down.
 - Each player turns up a card at the same time and the player with the greater integer takes both cards and puts them, facedown, on the bottom of his/her stack.
 - The winner is the person who has all of the cards at the end of the game (or the most, depending on the time available).

Assessment

- **Questions**
 - Which number is greater, -13 or -10 ? Explain your reasoning.
 - Explain the meaning of zero in one of the following situations: temperature, elevation, sea level, or money.
- **Journal/writing prompts (include a minimum of two)**
 - Why do we need negative numbers? Give specific examples.
 - What is the importance of the zero when comparing integers?
- **Other Assessments**
 - Give students different integers and have them write a real-world situation that can be represented by that integer.
 - Create an exit ticket with three different integers. Have students choose two of the integers to compare using a number line, words, and comparison symbols.

Extensions and Connections (for all students)

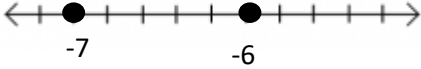
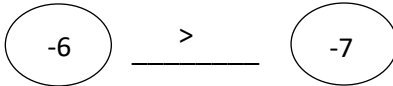
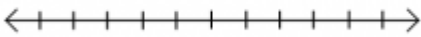
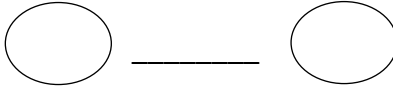
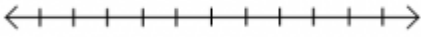
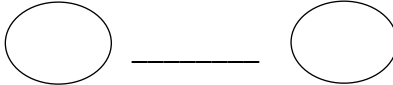
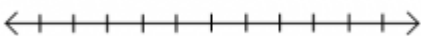
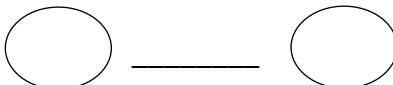
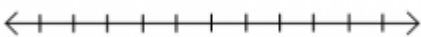
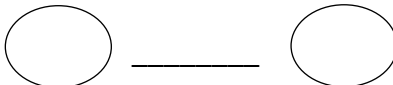
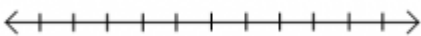
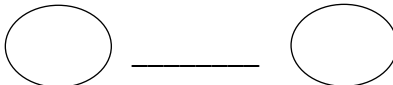
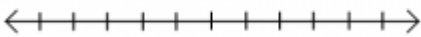

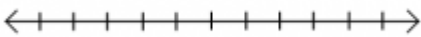

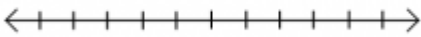
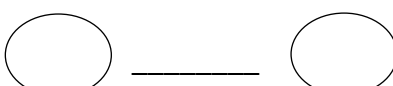

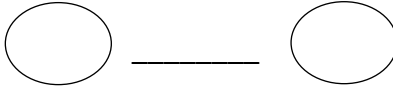
- Have students create a digital presentation about real-world examples of integers being compared (e.g., the temperature in Colorado during the winter vs. New York).

Strategies for Differentiation

- Cut out the activity so a student only does one section (number line) and then the next section (comparison statements).
- Provide a number line for students to use during the activity.
- Create vocabulary cards for common positive and negative terms (e.g., deposit, withdrawal, etc.), or preteach this additional supplementary vocabulary to students as necessary.

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

Integer Recording Sheet

Student 1	Student 2	Number Line Comparison	Comparison with Symbols
Ex. -6	-7	 <p>A horizontal number line with arrows at both ends. There are 11 tick marks. Two points are marked with solid black dots. The first dot is on the 4th tick mark from the left and is labeled '-7'. The second dot is on the 5th tick mark from the left and is labeled '-6'.</p>	<p>Use <, >, or = on the line below.</p> <p>  </p>
		 <p>A horizontal number line with arrows at both ends and 11 tick marks.</p>	<p>Use <, >, or = on the line below.</p> <p>  </p>
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Ordering Integers

Problem 1:

Each student should draw four integers from the pile.

On your own paper, write those integers in ascending order:

____, _____, _____, _____

Check your partner's work. If he or she is correct, move on to the next problem. If incorrect, draw a number line and teach your partner how to order them correctly. Once you and your partner have successfully ordered your four integers, move on to the next problem.

Problem 2:

Each student should draw five integers from the pile.

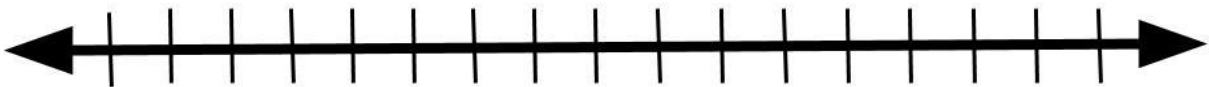
On your own paper, write those integers in descending order:

____, _____, _____, _____, _____

Check your partner's work. If he or she is correct, move on to the next problem. If incorrect, draw a number line and teach your partner how to order them correctly. Once you and your partner have successfully ordered your five integers, move on to the next problem.

Problem 3:

Divide the cards in half evenly between you and your partner. By yourself, use the number line below and place all of your numbers in order, from least to greatest.



Integer Cards

Print on card stock and cut out.

-9	2
9	-2
18	-18
-5	5
0	1

-8	7
-13	10
13	-15
3	-3
22	-20
-14	-16

21

-12