

Just In Time Quick Check
Standard of Learning (SOL) 6.3b

Strand: Number and Number Sense

Standard of Learning (SOL) 6.3b

The student will compare and order integers.

Grade Level Skills:

- Compare and order integers using a number line.
- Compare integers, using mathematical symbols ($<$, \leq , $>$, \geq , $=$).

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

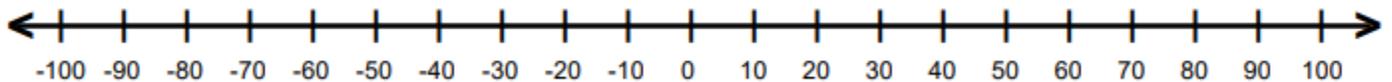
- VDOE Mathematics Instructional Plans (MIPS)
 - [6.3b - Compare and Order Integers](#) (Word) / [PDF Version](#)
- VDOE Co-Teaching Mathematics Instruction Plans (MIPS)
 - [6.3b - Comparing and Ordering Integers](#) (Word) / [PDF Version](#)
- VDOE Algebra Readiness Formative Assessments
 - [SOL 6.3b](#) (Word) / [PDF](#)
- VDOE Algebra Readiness Remediation Plans
 - [Compare Integers](#) (Word) / [PDF](#)
- Desmos Activities
 - [Six Sliding Spots: Opposites and Integers](#)

Supporting and Prerequisite SOL: [6.2a](#), [6.2b](#), [6.3a](#), [5.2a](#), [5.2b](#), [4.1b](#), [4.2a](#), [4.3c](#)

SOL 6.3b - Just in Time Quick Check

1. Use the number line below to put the following integers in descending order.

- -45
- 32
- 0
- -12
- 14
- -62



2. Name an integer that can be found on a number line between -12 and 12. Explain your thinking.

3. Use the symbols $<$, $>$, or $=$ to compare the integers below.

$$-4 \underline{\hspace{1cm}} 5$$

$$-8 \underline{\hspace{1cm}} -8$$

$$6 \underline{\hspace{1cm}} -3$$

$$-9 \underline{\hspace{1cm}} -2$$

4. The lowest temperature in December is -3°F . The lowest temperature in January is -6°F . Which of these months has the lower temperature? Explain using numbers, models, and words.

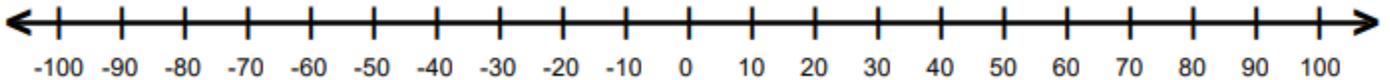
5. Compare -8 and 1. Create three true statements using the symbols $<$, \leq , $>$, \geq , or $=$.

SOL 6.3b - Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

1. Use the number line below to put the following integers in descending order.

- -45
- 32
- 0
- -12
- 14
- -62



Most students are able to put positive integers in descending order, however, may struggle with ordering the negative integers. Using a conventional number line, the teacher can demonstrate that a smaller number is always located to the left of the larger number, as well as the concept that the further a negative number is from zero, the smaller it is. Students can also be encouraged to check their order by placing points on the number line. Descending order would be read from right to left, while ascending order would be read from left to right.

Additionally, since this number line is labeled with intervals of 10, students may have difficulty deciding where the negative integers would be placed. For example, a student may incorrectly place -62 between -60 and -50. Students may need many experiences utilizing integer number lines with various intervals, as well.

2. Name an integer that can be found on a number line between -12 and 12. Explain your thinking.

A common misconception is thinking that there are no integers between a negative number and its opposite positive number. Some students may over generalize the idea of opposites and think that opposite numbers must be beside each other.

Students with this misconception may benefit from practice placing integers on a number line. These students may need to begin with a number line that has each line marked and then build up to an open number line.

Another possible teaching strategy is to use a number line that shows a single integer. Then students can focus on naming as many integers as possible that are greater than the integer or less than the integer. After students can confidently name numbers that are greater than or less than the integer, place two integers on the number line and ask students to name an integer that falls between the two given integers.

3. Use the symbols $<$, $>$, or $=$ to compare the integers below.

$$-4 \underline{\quad} 5$$

$$-8 \underline{\quad} -8$$

$$6 \underline{\quad} -3$$

$$-9 \underline{\quad} -2$$

A common error in comparing negative integers is using positive number thinking. As a result, some students may have difficulty when comparing two negative integers. For example, a student may have responded that -9 is greater than -2 because 9 is greater than 2. Teachers are encouraged to use models – particularly number lines - when teaching how to compare two negative numbers. This will build on student conceptual understanding that the negative number closer to 0 is greater than the negative number that is farther from 0. Additionally, pairing the number line representation with practical applications such as debt and owing money may cement this understanding as well.

4. The lowest temperature in December was -3°F . January had a low temperature of -6°F . Which of these months had the lower temperature? Explain using numbers, models, and words.

Students may have difficulty with comparing two negative numbers within a practical situation. This may indicate that they need more experiences with various practical situations that model integers, particularly negative integers. Connecting negative integers to practical situations such as temperature or altitude gives students a context for their thinking.

5. Compare -8 and 1. Create three true statements using the symbols $<$, \leq , $>$, \geq , or $=$.

Students who struggle with the meanings of $<$, \leq , $>$, or \geq may have difficulty with this question, particularly students who have been taught “tricks” such as the “alligator eats the bigger number.” Some students may be able to come up with the $-8 < 1$, however, are unable to create the reverse inequality $1 > -8$. Furthermore, many students may struggle with understanding the meanings of the \leq and \geq .

For students indicating a lack of understanding of how to use these symbols, they may need more concrete experiences with counters and number lines using comparison words before they can transition to the symbols. When using the \leq and \geq symbols, it may be helpful for students to look at each part of the symbol separately (ie first $<$ and then $=$) and also focus on the OR relationship.