

Just In Time Quick Check
Standard of Learning (SOL) 7.13

Strand: Patterns, Functions, and Algebra

Standard of Learning (SOL) 7.13

The student will solve one- and two-step linear inequalities in one variable, including practical problems, involving addition, subtraction, multiplication, and division, and graph the solution on a number line.

Grade Level Skills:

- Apply properties of real numbers and the multiplication and division properties of inequality to solve one-step inequalities in one variable, and the addition, subtraction, multiplication, and division properties of inequality to solve two-step inequalities in one variable. Coefficients and numeric terms will be rational.
- Represent solutions to inequalities algebraically and graphically using a number line.
- Write verbal expressions and sentences as algebraic expressions and inequalities.
- Write algebraic expressions and inequalities as verbal expressions and sentences.
- Solve practical problems that require the solution of a one or two-step inequality.
- Identify a numerical value(s) that is part of the solution set of a given inequality.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [7.13 - Two-step Inequality Practical Problems](#) (Word) / [PDF Version](#)
- VDOE Co-Teaching Mathematics Instruction Plans (MIPS)
 - [7.13 - Inequalities](#) (Word) / [PDF Version](#)
- VDOE Algebra Readiness Formative Assessments
 - [SOL 7.13](#) (Word) / [PDF](#)
- VDOE Algebra Readiness Remediation Plans
 - [Representing and Solving Practical Situations](#) (Word) / [PDF](#)
 - [Solving and Graphing Practical Situations](#) (Word) / [PDF](#)
- VDOE Word Wall Cards: Grade 7 ([Word](#)) | ([PDF](#))
 - Inequality

Supporting and Prerequisite SOL: [6.14a](#), [6.14b](#)

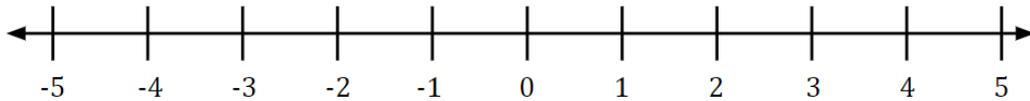
SOL 7.13 - Just in Time Quick Check

1. Identify each value of x that makes $11 + 2x < 13$ true.

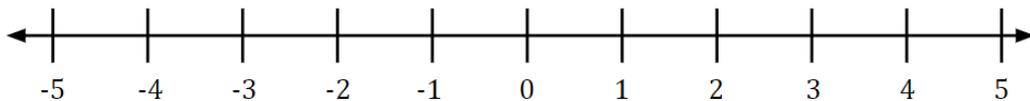
0 -12 -9 -3
1 8 15

2. Write the solution to each inequality. Graph the solution on the number line.

a. $-5x \geq -15$



b. $9 > 13 + 2x$



3. What is the solution to the inequality?

$$18 < \frac{x}{4} - 2$$

4. Solve the inequality and list three values that would make the inequality true.

$$-3 < \frac{3}{4}x$$

5. Translate the sentence below.

The difference of 3 times a number and 7 is at least 20.

6. Martha needs to buy a new pair of shoes and some socks.

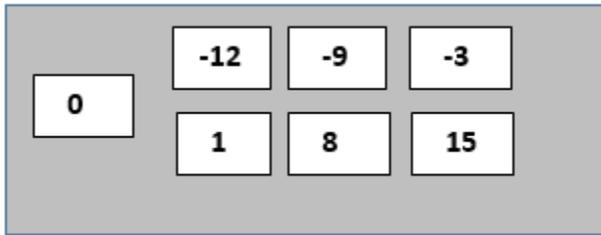
- The shoes cost \$42.
- Each pack of socks costs \$1.50.

Martha has \$53 to buy shoes and socks. If Martha buys one pair of shoes, what is the greatest number of packs of socks she can buy? Write and solve an inequality representing this situation.

SOL 7.13 - Just in Time Quick Check Teacher Notes

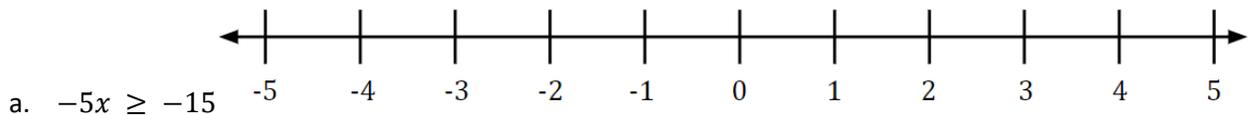
Common Errors/Misconceptions and their Possible Indications

1. Identify each value of x that makes $11 + 2x < 13$ true.

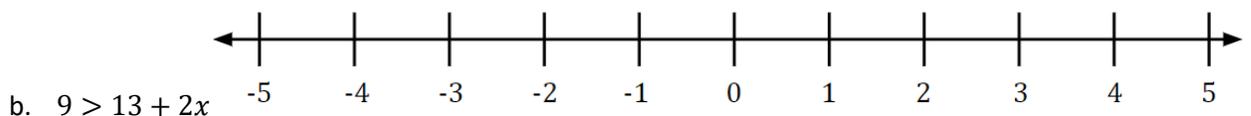


The student may incorrectly select one. This error indicates that the student does not understand that less than does not include the number as part of the solution. Another error is students may not choose zero thinking that only negative numbers would make the inequality true. It may be beneficial for students to graph the solution before selecting answers, building the conceptual understanding that an inequality represents an infinite number of possible solutions.

2. Write the solution to each inequality. Graph the solution on the number line.



A student may not reverse the inequality sign when dividing by negative five resulting in a solution of $x \geq 3$. This indicates that the student does not understand when divide both sides of an inequality by a negative number the inequality symbol reverses. The student may benefit from additional practice solving one-step multiplication and division inequalities with negative coefficients.



A student may reverse the inequality sign when dividing negative four by two resulting in a solution of $x > -2$. This indicates that the student does not understand the inequality symbol reverses only when both sides of the inequality are multiplied or divided by a negative number.

Another common error is that the student incorrectly graphs the inequality as $x > -2$. This error indicates the student does not understand how to graph inequalities when the variable is on the right side or does not reverse the inequality symbol when moving the variable to the right side of the inequality. Refer to SOL 6.14b in the Math 6 Curriculum Framework for additional examples.

3. What is the solution to the inequality?

$$18 < \frac{x}{4} - 2$$

A student may incorrectly say the solution to the inequality is $x < 80$. This indicates the student may not understand how to rewrite an inequality when the variable is on the right side. A student may benefit from additional practice with inequalities where the variable is on the right side of the inequality symbol but the solution is represented with the variable on the left side.

4. Solve the inequality and list three values that would make the inequality true.

$$-3 < \frac{3}{4}x$$

A common error is the student will misinterpret the solution $-4 < x$ and select values that are less than negative four as solutions. This indicates the student may not understand the inequality “negative four is less than x ” represents all values of x that are greater than negative four. The student may benefit practice testing possible solutions and determining whether it results in a true statement with the variable on the right side of the inequality.

Another error might be that the student selects negative four as a solution. This would indicate that the student has misinterpreted the meaning of $<$ or $>$ symbols. Refer to 6.14b the second bullet under Understanding the Standard in the Math 6 Curriculum Framework for an example.

5. Translate the sentence below.

The difference of 3 times a number and 7 is at least 20.

A common error a student may make is translating “at least” to have the same meaning as “less than” or “less than or equal to,” resulting in an answer of $3x - 7 < 20$. This indicates that there may be confusion that “at least” means less than rather than the lower limit in an inequality. The student may benefit from additional practice with translating verbal sentences to algebraic inequalities. Refer to 6.14a for additional practice representing a practical situation with a one-variable linear inequality ([Math 6 Curriculum Framework](#)).

6. Martha needs to buy a new pair of shoes and some socks.

- The shoes cost \$42.
- Each pack of socks costs \$1.50.

Martha has \$53 to buy shoes and socks. If Martha buys one pair of shoes, what is the greatest number of packs of socks she can buy? Write and solve an inequality representing this situation.

A common error is for a student to say that Martha can buy seven and one third socks. Another common mistake is to round the final answer up, resulting in an answer of eight. Both of these errors indicate that the student does not understand what the answer means relating to the context of the problem. Refer to VDOE Mathematics Instructional Plans (MIPS) 7.13 - Two-step Inequality Practical Problems for additional practice.

Another common error would be incorrectly subtracting \$42 and \$1.50 from \$53 before setting up the inequality resulting in $x \leq 9.5$. This error indicates the student does not understand how to translate verbal expressions as inequalities. The student may benefit from additional practice translating verbal expressions. Additionally, Instruction on the 3-read strategy and solving numerical word problems may help the student with conceptual understanding.