

<u>Lesson Information</u>			
Teacher Name		Course	Math 6
Date	May 4, 2023	Lesson Title	Solving Inequalities
<u>Desired Results</u>			
The "What" Standards, Objectives, and Key Points	<p>Standards:</p> <p>Daily Objectives Students will be able to solve simple (one-step) inequalities, including where dividing or multiplying by a negative number requires reversing the sign</p> <p>Key Points Key Point 0 : An equation is a mathematical sentence that includes an equal sign. Key Point 1: An inequality is a mathematical sentence that has an inequality symbol such as: Key Point 2: Inequalities read left to right just like a book. Key Point 3: An algebraic equation usually has one solution (or answer) that makes it true. Key Point 4: An algebraic inequality has many solutions that make it true. We call the answer to an inequality a solution set. Key Point 5: Solving inequalities involves most of the same steps as solving equations, except one very important difference: If you multiply or divide both sides of the inequality by a negative value, you MUST also reverse the inequality sign.</p>		
Student Output	<p>Students will complete an exit ticket where they must:</p> <ul style="list-style-type: none"> - Solve two inequalities, one that involves dividing by a negative - Identify a number that is part of the solution set for an inequality (Multiple Choice) - Respond to an error analysis question on solving a simple inequality 		
Alignment to Summative Assessment	<p>Multiple Choice from Summative Assessment:</p> <p>Given the inequality $4x < 24$. Which of the following answer choices represents a number that is part of the inequality's solution set?</p> <ul style="list-style-type: none"> a. 6 b. 3 c. 10 d. 24 <p>Free Response from Summative Assessment:</p> <p>What is the solution set for the inequality $-3x \leq -18$?</p>		
Criteria for Success	<p>Solving Inequalities: Identify the operation you see Perform the inverse of that operation to both sides</p> <ul style="list-style-type: none"> • IMPORTANT: If you multiply or divide both sides by a negative value, you MUST reverse the inequality sign 		

	<p>Check to see if your answer makes sense by evaluating (plugging in your answer to the original inequality and seeing if it is true)</p> <ul style="list-style-type: none"> • <p>Student Output:</p> <ul style="list-style-type: none"> - Work is shown using the inverse operation to solve the inequality - If multiplying or dividing by a negative value, the inequality sign is flipped - A number in the solution set is plugged in to the original inequality to check it
The “Why”	To be shared after the Engage – There are many times in life where we use ranges to describe situations. You must be <i>at least</i> 18 years old to vote. You can miss <i>up to</i> 9 days of school during a semester. It is important we are able to use our mathematical skills with inequalities, not just equations.

Agenda

Internalize the “How” from your unit plan and personalize it for your classroom.

Time (min)	Lesson Element	Notes															
5 min	Do First	Students are practicing solving equations, review from past lessons, and refreshing skills they’ll use during today’s lesson.															
8 min	Engage	<ul style="list-style-type: none"> • Students are working in groups to determine their answers to three different inequalities (opinion questions) • As you circulate, listen for students using “inequality phrases” such as <i>at least</i>, <i>at most</i>, <i>more than</i>, <i>less than</i> • Bring back for a whole group discussion and highlight those phrases and what they mean • Include the idea that these answers define a range of possibilities (solution set) where multiple values are true. . 															
8 min	Explain (part 1)	<p>Students are introduced to the idea of inequality symbols, and circle algebraic inequalities from a set of equations and inequalities. They are also given the resource:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #f5f5f5;">Symbol</th> <th style="background-color: #f5f5f5;">Meaning</th> <th style="background-color: #f5f5f5;">Examples</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><</td> <td> <p>Less than</p> <p>“Is less than”</p> <p>“Is fewer than”</p> </td> <td> <p style="text-align: center;">$X < 5$</p> <p>X is less than 5</p> <p style="text-align: center;">$2x < 15$</p> <p>2x is fewer than 15</p> </td> </tr> <tr> <td style="text-align: center;">≤</td> <td> <p>Less than or equal to</p> <p>“At most”</p> <p>“Is no more than”</p> </td> <td> <p style="text-align: center;">$X \leq 5$</p> <p>X is less than or equal to 5</p> <p style="text-align: center;">$2x \leq 15$</p> <p>2x is no more than 15</p> </td> </tr> <tr> <td style="text-align: center;">></td> <td> <p>Greater than</p> <p>“Is greater than”</p> <p>“Is more than”</p> </td> <td> <p style="text-align: center;">$X > 5$</p> <p>x is greater than 5</p> <p style="text-align: center;">$2x > 15$</p> <p>2x is more than 15</p> </td> </tr> <tr> <td style="text-align: center;">≥</td> <td> <p>Greater than or equal to</p> <p>“At least”</p> <p>“Is no less than”</p> </td> <td> <p style="text-align: center;">$X \geq 5$</p> <p>X is greater than or equal to 5</p> <p style="text-align: center;">$2x \geq 15$</p> <p>2x is at least 15</p> </td> </tr> </tbody> </table>	Symbol	Meaning	Examples	<	<p>Less than</p> <p>“Is less than”</p> <p>“Is fewer than”</p>	<p style="text-align: center;">$X < 5$</p> <p>X is less than 5</p> <p style="text-align: center;">$2x < 15$</p> <p>2x is fewer than 15</p>	≤	<p>Less than or equal to</p> <p>“At most”</p> <p>“Is no more than”</p>	<p style="text-align: center;">$X \leq 5$</p> <p>X is less than or equal to 5</p> <p style="text-align: center;">$2x \leq 15$</p> <p>2x is no more than 15</p>	>	<p>Greater than</p> <p>“Is greater than”</p> <p>“Is more than”</p>	<p style="text-align: center;">$X > 5$</p> <p>x is greater than 5</p> <p style="text-align: center;">$2x > 15$</p> <p>2x is more than 15</p>	≥	<p>Greater than or equal to</p> <p>“At least”</p> <p>“Is no less than”</p>	<p style="text-align: center;">$X \geq 5$</p> <p>X is greater than or equal to 5</p> <p style="text-align: center;">$2x \geq 15$</p> <p>2x is at least 15</p>
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4 min	Explain (part 3)	<p>Teacher explains that an algebraic inequality has many solutions that make it true (key point 4). May be helpful to relate this back to the engage.</p> <p>Teacher explains key point 5 and models solving the example problems.</p> <p>Check for Understanding (CFU) Students independently circle whether the inequality symbol reverses or stays the same for 6 inequalities. Common misconception: students may think that anytime they are using a negative number they must reverse the inequality symbol (see problems 2 and 3).</p>															
2 min	Explain (part 4)	<p>Teacher models one more time solving the inequality and writing the answer as a <i>solution set</i>.</p> <p>CFU: Students silently and independently attempt to solve the CFU inequality. <i>Common misconception: Students writing the answer with an = rather than <.</i></p>															
15 min	Elaborate	<p>Students practice four problems on worksheet silently and independently Further practice will be completed in Delta Math</p>															
10 min	Evaluate	<p>Students Complete Exit Ticket</p>															