7.1 Inequalities and Absolute Value

Review of Inequality Symbols

<  
>  
≥  
≤  
≠

Brust is broke...
he has less than $9 in his wallet

Kelly has no less than $5 in his wallet.

Sully does not have $8.

Inequality Graphing

When should you have an open dot?

When should you have a closed dot?

\( x > -7 \)

\( -7 < x \)

\( g \leq 14 \)

\( 14 \geq g \)

\( h \neq -8 \)

Time to flip it

Absolute Value:
Find the following absolute values.

How about these...

Try these...

**SUMMARY:**

7.1 Inequalities and Absolute Value

Directions: Write each situation as an inequality and then graph it.

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<table>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Ktown has less than 50 teachers.</td>
<td>2</td>
<td>Ramstein has no less than 1050 students.</td>
<td>3</td>
<td>Baumholder does not have 400 students.</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>The Cavs will win no more than 44 games next season.</td>
<td>5</td>
<td>The Browns will not win 6 games.</td>
<td>6</td>
<td>The Buckeyes will win more than 9 games this season.</td>
<td></td>
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</tbody>
</table>

Directions: Graph each inequality.

<p>| | | | | | | | |</p>
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</thead>
<tbody>
<tr>
<td>7</td>
<td>( x \geq -5 )</td>
<td>8</td>
<td>( 5 \geq n )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>( 1 &gt; k )</td>
<td>10</td>
<td>( y &lt; 2 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>( x \leq 5 )</td>
<td>12</td>
<td>( -5 \leq x )</td>
<td></td>
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</tbody>
</table>
Directions: Write the inequality for the given graph.

13) 

14) 

15) 

16) 

Solve each absolute value equation.

17) \(|x| = 10\)  
18) \(|x| = 0.225\)  
19) \(-15 = |x|\)  
20) \(\frac{9}{5} = |x|\)  
21) \(|x| = 0\)  
22) \(\frac{1258}{45} = |x|\)  

Skillz Review

Graph the line.

1) \(x = 4\) 

Evaluate.

2) \(b^3 - a^2\), when \(a = -4\) and \(b = -3\)  
3) \(-129 = 3b - 3(1 - 5b)\)  

Solve.

4) \(y = \frac{1}{3}x - 5\) 

5) \(-2g^2 - 3g\), when \(g = -4\)  
6) \(-5n + 3n = 6 - 3n\)
1) Graph the following inequality.

\[ 6 < x \]

2) Solve: \( |x| = 8 \)

3) a) Mr. Brust decides that he wants at least 2 kids. Write an inequality and graph it.

\[ x \geq 2 \]

b) Mr. Brust’s wife decides that she wants no more than 7 kids. Write an inequality and graph it.

\[ 0 \leq x \leq 7 \]

c) Complete the following inequality that combines Mr. Brust’s decision and his wife’s.

\[ __ \leq x \leq ____ \]

Lowest amount of kids \( \rightarrow \) Highest amount of kids

4) a) Complete the following table for \( f(x) = |x| \). Then graph it.

<table>
<thead>
<tr>
<th>( x )</th>
<th>( F(x) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td></td>
</tr>
<tr>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

b) What shape is the graph?

c) Remember the definition of what a function is? Hmm...probably not. Well a function is a relationship between two variables in which the independent variable(x) goes to one and only one dependent variable(y). Is this a function?