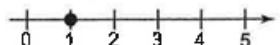


## Unit 6 Study Guide

Skill	Description	Example
Solving Equations	<p>To solve an equation, find the value of the variable that makes the left side of the equation equal to the right side.</p> <p>To solve an equation, isolate the variable on one side of the equation.</p> <p>Use inverse operations or a balance strategy to perform the same operation on both sides of the equation:</p> <ul style="list-style-type: none"> <li>• Add the same quantity to each side</li> <li>• Subtract the same quantity from each side</li> <li>• Multiply or divide each side by the same non-zero quantity</li> </ul> <p>Algebra tiles and balance scales can help model the steps in the solution.</p>	<p>Solve the equation:  <math>3y - 2 = y + 4</math></p> <p><b>Solution</b></p> $3y - 2 = y + 4$ $3y - 2 + 2 = y + 4 + 2$ $3y = y + 6$ $3y - y = y - y + 6$ $2y = 6$ $\frac{2y}{2} = \frac{6}{2}$ $y = 3$
Solving Inequalities	<p>An inequality is a statement that one quantity is less than (<math>&lt;</math>) another, greater than (<math>&gt;</math>) another, less than or equal to (<math>\leq</math>) another, or greater than or equal to (<math>\geq</math>) another.</p> <p>The inequality sign reverses when you multiply or divide each side of the inequality by the same negative number.</p> <p>A linear inequality may be true for many values of the variable. We can graph the solutions on a number line.</p>	<p>Solve the inequality and graph the solution:  <math>-2s - 2 \leq s - 5</math></p> <p><b>Solution</b></p> $-2s - 2 + 2 \leq s - 5 + 2$ $-2s \leq s - 3$ $-2s - s \leq s - 3 - s$ $-3s \leq -3$ $\frac{-3s}{-3} \geq \frac{-3}{-3}$ $s \geq 1$ <p>Since we divide each side by the same negative number, the inequality sign is reversed.</p> 

**Unit 6 Review****6.1 1.** Solve each equation. Verify the results.

**a)**  $f + 6 = 3$

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 $f = \underline{\quad}$  is correct.

**b)**  $g - 5 = -2$

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\_\_\_\_\_  
 $g = \underline{\quad}$  is correct.

**c)**  $5h = 25$

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\_\_\_\_\_  
 $h = \underline{\quad}$  is correct.

**d)**  $-2k = 6$

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\_\_\_\_\_  
 $k = \underline{\quad}$  is correct.

**2.** Solve each equation. Verify the solution.

**a)**  $4x - 2 = 6$

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 $x = \underline{\quad}$  is correct.

**b)**  $2 - 3c = -7$

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 $c = \underline{\quad}$  is correct.

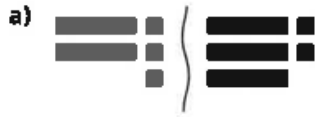
**c)**  $2v - 3 = -9$

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 $v = \underline{\quad}$  is correct.

**d)**  $-2(2 + w) = -20$

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 $w = \underline{\quad}$  is correct.

**6.2 3.** Write the equation modelled by each set of algebra tiles. Solve the equation.




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**4.** Solve each equation.

a)  $9 - 2w = w - 6$

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b)  $e - 6 = 6 - e$

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c)  $3n + 1 = 3 + n$

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d)  $m - 2 = 3m + 4$

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**5.** Solve each equation. Verify the solution.

a)  $6 + \frac{s}{2} = 7$

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Left side =  $6 + \frac{s}{2}$

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Right side = \_\_\_\_\_

$s = \underline{\quad}$  is correct.

**b)**  $4 + \frac{2x}{3} = 2$

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Left side =  $4 + \frac{2x}{3}$

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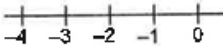
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Right side = \_\_\_\_\_

$x = \underline{\quad}$  is correct.

**6.3** 6. Graph each inequality.

Write 3 numbers that are possible solutions for each inequality.

**a)**  $q > -3$  


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**b)**  $w \leq 0$  

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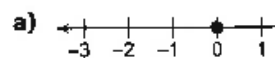
**c)**  $t \geq -1$  

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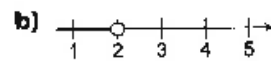
**d)**  $r < 6$  

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7. Write an inequality whose solution is graphed on the number line.



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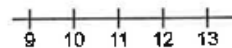
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**6.4** 8. Solve each inequality. Graph the solution.

**a)**  $d - 6 > 4$

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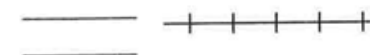
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**b)**  $2f + 1 < -3$

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9. Solve each inequality. Graph the solution.

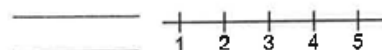
**a)**  $4j - 1 \geq 2j + 3$

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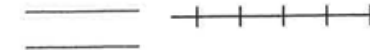
**b)**  $k - 2 < 2 - k$

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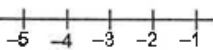


**6.5 10.** State whether you would reverse the inequality sign to solve each inequality.

**a)**  $2z < -4$  \_\_\_\_\_ **b)**  $-2x \geq 4$  \_\_\_\_\_

**c)**  $\frac{c}{-2} < 4$  \_\_\_\_\_ **d)**  $\frac{k}{2} \geq -4$  \_\_\_\_\_

**11.** Solve each inequality in question 10. Graph the solution.

**a)**  $2z < -4$  

**b)**  $2x \geq 4$  

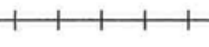
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**c)**  $\frac{c}{-2} < 4$  

**d)**  $\frac{k}{2} \geq -4$  

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**12.** Solve each inequality and graph the solution.

**a)**  $-3b + 4 \geq -5$

**b)**  $n + 2 < 2n - 2$

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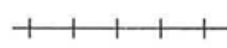
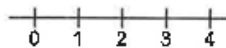
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**c)**  $-5 - m < 3 + m$

**d)**  $2 - \frac{k}{2} > 1$

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