Chapter 6

Solving and Graphing Linear Inequalities

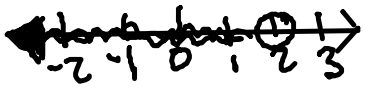
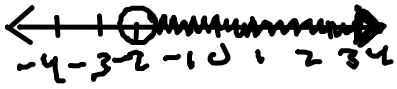
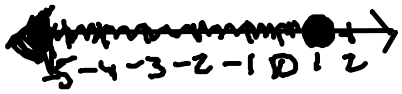
Section 6.1 Solving One-Step Linear Inequalities

Graph of a linear inequality in one variable is all the solutions that satisfy the inequality are graphed on a # line

EXAMPLES

1. Write the linear inequality and draw the graph for each verbal phrase.

*** An open dot is used for $<$ and $>$.
*** A closed dot is used for $\leq$ and $\geq$.

Verbal Phrase	Inequality	Graph
a. All real numbers is less than 2	$x < 2$	
b. All real numbers are greater than -2	$x > -2$	
c. All real numbers are less than or equal to 1	$x \leq 1$	
d. All real numbers are greater than or equal to 1	$x \geq 1$	

2. John was sure that he didn't score less than 74 on his algebra test. Write an inequality to describe John's possible score. Graph the inequality.

x = John's score

$x \geq 74$

3. Solve each inequality and graph the solution on a number line.

*** Solving linear inequalities is similar to solving linear equations. To solve an inequality, isolate the variable by using transformations. **However, when you multiply or divide each side of an inequality by a negative number, you must reverse the inequality symbol to maintain a true statement.**

a. $x + 8 \geq 1$

$-8 \quad -8$

$x \geq -7$

✓ if $x = 0$

$0 + 8 \geq 1$

$8 \geq 1$

b. $3 < m - 5$

$m - 5 > 3$

$+5 \quad +5$

$m > 8$

if $m = 10$

$3 < 10 - 5$

$3 < 5$

c. $\frac{r}{2} < -2 \cdot 2$

$r < -4$

if $r = -6$

✓ $\frac{-6}{2} < -2$

$-3 < -2$

d. $-2.5y \geq 3$

$\frac{}{-2.5} \quad \frac{}{-2.5}$

$y \leq -1.2$

✓ if $y = -2$ $\quad -2.5(-2) \geq 3$

$5 \geq 3$

e. $-\frac{x}{3} \leq 15 \cdot 3$

$x \geq -45$

if $x = 0$

$-\frac{0}{3} \leq 15$

$0 \leq 15$

f. $-42 > 14x$

$\frac{-42}{14} < \frac{14x}{14}$

$-3 > x$

if $x = -5$ $\quad -42 > 14(-5)$

$-42 > -70$