6 CHAPTER SUMMARY

BIG IDEAS

For Your Notebook

Big Idea 1

TEKS A.7.B

Applying Properties of Inequality

You can apply the properties of inequality to solve inequalities. The properties listed below are also true for inequalities involving $\le$ and $\ge$.

Property	If $a < b$, then . . .	If $a > b$, then . . .
Addition property of inequality	$a + c < b + c$.	$a + c > b + c$.
Subtraction property of inequality	$a - c < b - c$.	$a - c > b - c$.
Multiplication property of inequality	$ac < bc$ if $c > 0$. $ac > bc$ if $c < 0$.	$ac > bc$ if $c > 0$. $ac < bc$ if $c < 0$.
Division property of inequality	$\frac{a}{c} < \frac{b}{c}$ if $c > 0$. $\frac{a}{c} > \frac{b}{c}$ if $c < 0$.	$\frac{a}{c} > \frac{b}{c}$ if $c > 0$. $\frac{a}{c} < \frac{b}{c}$ if $c < 0$.

Big Idea 2

TEKS A.7.B

Using Statements with *And* or *Or*

An absolute value equation can be rewritten as two equations joined by *or*. An absolute value inequality can be rewritten as a compound inequality with *and* or *or*. In the statements below, $<$ can be replaced by $\le$, and $>$ can be replaced by $\ge$.

Absolute value equation or inequality	Equivalent statement with *and* or *or*
$\lvert ax + b \rvert = c, c \ge 0$	$ax + b = c$ or $ax + b = -c$
$\lvert ax + b \rvert < c, c \ge 0$	$-c < ax + b < c$
$\lvert ax + b \rvert > c, c \ge 0$	$ax + b < -c$ or $ax + b > c$

Big Idea 3

TEKS A.1.D

Graphing Inequalities

You use a number line to graph an inequality in one variable. Similarly, you use a coordinate plane to graph a linear inequality in two variables (including cases where one of the variables has a coefficient of 0, such as $0x + y < 1$, or $y < 1$).

Graphing inequalities in one variable	Graphing linear inequalities in two variables
Graph simple inequalities: 1. Solve for the variable. 2. Draw an open circle for $<$ or $>$ and a closed circle for $\le$ or $\ge$. Draw an arrow in the appropriate direction. Graph compound inequalities: 1. Solve the compound inequality. 2. Use the union of graphs of simple inequalities for *or*. Use the intersection for *and*.	1. Graph the boundary line. Use a solid line for $\le$ or $\ge$ and a dashed line for $<$ or $>$. 2. Test a point that does not lie on the boundary line. 3. Shade the half-plane containing the point if the ordered pair is a solution of the inequality. Shade the other half-plane if the ordered pair is *not* a solution.