12-1 NAME _____ DATE _____ PERIOD _____

Study Guide

Student Edition Pages 504–508

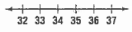
Inequalities and Their Graphs

Many mathematical relationships can be expressed with inequalities. For example, the President of the United States must be at least 35 years old. If a represents his or her age, this can be expressed with the inequality $a \geq 35$. Some verbal phrases that can be used for inequalities are listed in the chart below.

$<$	$\leq$	$>$	$\geq$
• less than • fewer than	• less than or equal to • at most • no more than • a maximum of	• greater than • more than	• greater than or equal to • at least • no less than • a minimum of

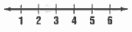
Example 1: Write and graph an inequality to describe the age of people who *cannot* be President of the United States.

Let a represent the age of a person who is less than 35 years old. Then $a < 35$. Since a cannot equal 35, graph a *circle* at 35. Then graph all numbers less than 35 by drawing a line and an arrow to the left.



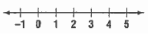
Example 2: Graph $n \geq 2.5$ on a number line.

Since n can equal 2.5, graph a *bullet* at 2.5. Then graph all numbers greater than 2.5 by drawing a line and an arrow to the right.

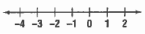


Write an inequality to describe each number. Then graph the inequality on a number line.

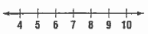
1. a number less than 3



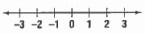
2. a number more than −2



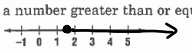
3. a maximum number of 8



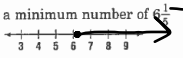
4. a number that is at least −1



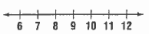
5. a number greater than or equal to $1\frac{1}{2}$



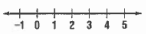
6. a minimum number of $6\frac{1}{2}$



7. a number that is at most 10.2



8. a number less than 2.4



12-1 NAME _____ DATE _____ PERIOD _____

Practice

Student Edition Pages 504–508

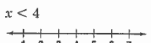
Inequalities and Their Graphs

Write an inequality to describe each number.

1. a number less than or equal to 11
2. a number greater than 3
3. a number that is at least 6
4. a number that is no less than −7
5. a maximum number of 9
6. a number that is less than −2

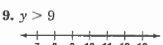
Graph each inequality on a number line.

7. $x < 4$

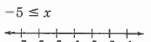


8. $x \geq 8$

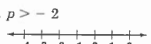
9. $y > 9$



10. $-5 \leq x$

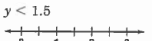


11. $p > -2$



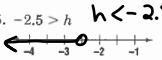
12. $7 \geq g$

13. $y < 1.5$



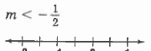
14. $x \geq 0.5$

15. $-2.5 > h$ $h < -2.5$

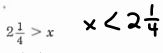


16. $x \leq \frac{1}{3}$

17. $m < -\frac{1}{2}$

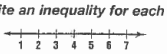


18. $2\frac{1}{4} > x$ $x < 2\frac{1}{4}$

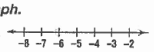


Write an inequality for each graph.

19.



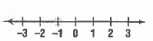
20.



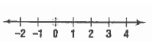
21.

$x < -1\frac{1}{2}$

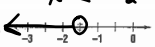
22.



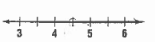
23.



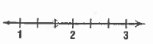
24.



25.



26.



27.

12-2

NAME _____ DATE _____ PERIOD _____

Study Guide

Student Edition Pages 509–513

Solving Addition and Subtraction Inequalities

Suppose you already have $50 and want to earn at least enough money to buy a DVD player for $325. Let m = the amount of money you earn. You can represent this situation with the inequality $m + 50 \geq 325$. Then the solution to $m + 50 \geq 325$ is the amount of money you must earn. You can use the Addition and Subtraction Properties for Inequalities to solve inequalities involving addition or subtraction. The properties are summarized below.

Addition and Subtraction Properties for Inequalities

For all numbers a, b, and c,
1. if $a > b$, then $a + c > b + c$, and $a - c > b - c$.
2. if $a \geq b$, then $a + c \geq b + c$, and $a - c \geq b - c$.
3. if $a < b$, then $a + c < b + c$, and $a - c < b - c$.
4. if $a \leq b$, then $a + c \leq b + c$, and $a - c \leq b - c$.

Example: Solve $m + 50 \geq 325$. Check your solution.

$m + 50 \geq 325$
$m + 50 - 50 \geq 325 - 50$ *Subtract 50 from each side.*
$m \geq 275$

Check: Substitute a number less than 275, the number 275, and a number greater than 275 into the inequality.

Let $m = 200$.	Let $m = 275$.	Let $m = 300$.
$m + 50 \geq 325$	$m + 50 \geq 325$	$m + 50 \geq 325$
$200 + 50 \stackrel{?}{\geq} 325$	$275 + 50 \stackrel{?}{\geq} 325$	$300 + 50 \stackrel{?}{\geq} 325$
$250 \geq 325$; *false*	$325 \geq 325$; *true*	$350 \geq 325$; *true*

In *set-builder notation* the solution is {all numbers greater than or equal to 275}, or $\{m \mid m \geq 275\}$.

Solve each inequality. Check your solution.

1. $n + 3 > 6$
2. $x - 6 > -2$
3. $-2 + y \leq 8$
4. $x - 4 \leq 12$
5. $-3 \leq t + 2$
6. $1 + p > -1$
7. $y + 1.2 < 3.4$
8. $-2.6 + x > 1.9$
9. $-1.8 + y \leq 0$
10. $x - \frac{1}{2} > \frac{3}{4}$
11. $1 \leq y - \frac{2}{3}$
12. $p + 1\frac{1}{8} \geq 1\frac{1}{2}$

12-2

NAME _____ DATE _____ PERIOD _____

Practice

Student Edition Pages 509–513

Solving Addition and Subtraction Inequalities

Solve each inequality. Check your solution.

1. $x + 7 > 16$
2. $b - 4 < 3$
3. $y - 6 \geq -12$
4. $f + 9 < 24$
5. $a - 2 \leq 9$
6. $3 + w > -1$
7. $n - 1 \leq 7$
8. $-10 + c \geq 13$
9. $q - 9 < 4$
10. $-5 \geq d - 7$
11. $17 \geq v + 11$
12. $14 > h - 9$
13. $x + 1.7 \leq 5.8$
14. $2.9 + s < 5.7$
15. $0.3 \leq g - 4.4$
16. $y + \frac{1}{2} \geq 2\frac{3}{4}$
17. $1\frac{1}{4} + m \leq 4\frac{5}{8}$
18. $2\frac{1}{6} > r - \frac{2}{3}$

Solve each inequality. Graph the solution.

19. $5x - 2 > 6x$ see notes
20. $n + 7 \leq 2n - 1$
21. $2y + 6 < 3y + 9$
22. $7p \leq 3(2p + 1)$ see notes
23. $9m - 6 < 8m - 5$
24. $2h - 11 < 3h - 7$

19) $5x + 2 > 6x$

$+-5x \quad = +-5x$

$-2 > 1x$

$+1 \quad +1$

$-2 > x$

$x < -2$

22) $7p \leq 3 \cdot (2p + 1)$

$+7p \leq 6p + 3$

$+-6p = +-6p$

$p \leq 3$

12-3

NAME _____ DATE _____ PERIOD _____

Study Guide

Student Edition Pages 514–518

Solving Multiplication and Division Inequalities

Suppose the family car gets 25 miles to a gallon of gasoline and you want to calculate how many gallons of gasoline you will need for a trip that is more than 300 miles long. Let g = the number of gallons of gasoline you will need. You can represent this situation with the inequality $25g > 300$. You can use the Multiplication and Division Properties for Inequalities to solve inequalities involving multiplication or division. The properties are summarized below. They are also true for $\geq$ and $\leq$.

Multiplication and Division Properties for Inequalities

For all numbers a, b, and c,

1. if c is positive and $a > b$, then $ac > bc$ and $\frac{a}{c} > \frac{b}{c}$.
2. if c is positive and $a < b$, then $ac < bc$ and $\frac{a}{c} < \frac{b}{c}$.
3. if c is negative and $a > b$, then $ac < bc$ and $\frac{a}{c} < \frac{b}{c}$.
4. if c is negative and $a < b$, then $ac > bc$ and $\frac{a}{c} > \frac{b}{c}$.

reverse symbol when × or ÷ by negative on each side

Example 1: Solve $25g \geq 300$.

$25g \geq 300$

$\frac{25g}{25} \geq \frac{300}{25}$ *Divide by 25.*

$g \geq 12$

$\{g \mid g \geq 12\}$

Example 2: Solve $\frac{y}{-2} \leq 8$.

$\frac{y}{-2} \leq 8$

$-2\left(\frac{y}{-2}\right) \geq -2(8)$ *Multiply by −2 and reverse the symbol.*

$y \geq -16$

$\{y \mid y \geq -16\}$

Solve each inequality. Check your solution.

1. $\frac{3n}{3} > \frac{6}{3}$; $n > 2$
2. $\frac{x}{1} \cdot 4 < 18 \cdot (4)$; $x < 72$
3. $\frac{-2y}{-2} \leq \frac{8}{-2}$; $y \geq -4$
4. $3x > -9$
5. $-8 \leq \frac{t}{-2}$
6. $-2p > -1$
7. $2.4y < -4.8$
8. $\frac{-1.5x}{-1.5} > \frac{7.2}{-1.5}$; x
9. $6.2y \leq 3.1$
10. $\frac{x}{12} > -3$
11. $\frac{n}{-3} \geq 1.4$
12. $7p > -7$

15 | 72 −60 12 → $4\frac{12}{15} = 4\frac{4}{5} = 4.8$

$x < -4.8$

12-3

NAME _____ DATE _____ PERIOD _____

Practice

Student Edition Pages 514–518

Solving Multiplication and Division Inequalities

Solve each inequality. Check your solution.

1. $4y < 16$
2. $-3q \leq 18$
3. $9g \leq -27$
4. $\frac{p}{5} > 5$
5. $\frac{a}{2} < -4$
6. $-\frac{m}{7} \geq 7$
7. $-6x \leq 30$
8. $-4z > -28$
9. $16 \geq 2e$
10. $-\frac{n}{3} \geq -3$
11. $4 \leq \frac{f}{6}$
12. $-\frac{w}{5} > 8$
13. $-81 < 9v$
14. $6r \leq -42$
15. $-12a \leq -60$
16. $-4 > \frac{u}{9}$
17. $-\frac{d}{6} < -8.1$ see notes
18. $\frac{l}{8} > -8$
19. $4k \leq 6$
20. $-0.9b \geq -2.7$ see notes
21. $-1.6 < 4t$
22. $\frac{2}{3}y > 6$
23. $-\frac{3}{5}c < 15$ see notes
24. $-\frac{5}{8}j \geq -10$

17) $\frac{-6}{1} \cdot -\frac{d}{6} < -8.1 \cdot -6$

$d > 48.6$

$8.1 \times 6 = 48.6$

20) $\frac{-0.9b}{-0.9} \geq \frac{-2.7}{-0.9}$

$b \leq +3$

$-09\overline{)27}$ → 03, 27, 0

23) $\frac{15}{3} \cdot -\frac{3}{5} \cdot c < \frac{15}{1} \cdot \frac{-5}{3}$ $\quad -\frac{75}{3}$

$-\frac{15}{1} \cdot \frac{-5}{3}$ $\quad -25$

$c > -25$

12-4

NAME _____ DATE _____ PERIOD _____

Study Guide

Student Edition Pages 519–523

Solving Multi-Step Inequalities

Solving inequalities may require more than one operation. The best strategy to use is to undo the operations in reverse order. In other words, first undo addition or subtraction and then undo multiplication or division, just as you did in solving equations with more than one operation. Remember that multiplying or dividing by a negative number reverses the inequality symbol.

Example 1: Solve $6 + 4x \geq 18$.

$6 + 4x \geq 18$

$6 + 4x - 6 \geq 18 - 6$ *Subtract 6 from each side.*

$4x \geq 12$

$\frac{4x}{4} \geq \frac{12}{4}$ *Divide each side by 4.*

$x \geq 3$ or $\{x \mid x \geq 3\}$

Example 2: Solve $4 - 3x < -8 + x$.

$4 - 3x < -8 + x$

$4 - 3x - 4 < -8 + x - 4$ *Subtract 4 from each side.*

$-3x < -12 + x$

$-3x - x < -12 + x - x$ *Subtract x from each side.*

$-4x < -12$

$\frac{-4x}{-4} > \frac{-12}{-4}$ *Divide each side by −4. Reverse the symbol.*

$x > 3$ or $\{x \mid x > 3\}$

Solve each inequality. Check your solution.

1. $2n + 8 > 26$
2. $6x - 12 \leq 48$
3. $-12 - 4y \leq 16$
4. $3x - 1 > -9 - x$
5. $-8 \leq \frac{t}{-2} + 2$
6. $3 \leq 3p + 2$
7. $2 - y < -1.6$
8. $-2x - 8 > 4.2$
9. $y - 3 \leq 2y - 3.1$
10. $3.2x - 16 > -3.2$ see notes
11. $6y - 8.2 \leq 36.8$
12. $-1 - 2x < 2$

10) $3.2x + 16 > -3.12 + 160$

$+16 \quad +16 \quad +3.2 \quad +3.2$

$\frac{3.2x}{3.2} > \frac{12.8}{3.2} \quad 12.8$

$x > 4$

$32\overline{)128}$ 4

-128

0 $\quad 32 \times 4 = 128$

P
E
M
D
A
S

Start

NAME _____ DATE _____ PERIOD _____

12-4 **Practice**

Student Edition Pages 519–523

Solving Multi-Step Inequalities

Solve each inequality. Check your solution.

1. $3x + 5 < 14$
2. $3t - 6 > 15$
3. $-5y + 2 \geq 32$
4. $-2n - 3 \geq -11$
5. $6 \leq 4a + 10$
6. $-28 < 7 + 7w$
7. $5 - 1.3z \leq 31$
8. $1.7b - 1.1 < 2.3$
9. $6.4 \geq 8 + 2g$
10. $-6 < \frac{k}{2} - 1$
11. $-\frac{c}{6} + 9 \leq 3$
12. $\frac{5m - 5}{3} \geq -15$ see notes
13. $\frac{-2n + 6}{4} > 8$
14. $\frac{6 - 3n}{6} \leq -5$ see notes
15. $9 - 5j < j - 3$
16. $7p - 4 \geq 3p + 12$
17. $2f - 5 \leq 4f + 13$
18. $5(7 - 2a) \geq -15$ see notes
19. $2(q + 2) > 3(q - 6)$
20. $3(h + 5) < -6(h - 4)$ see notes
21. $-2(b - 3) \leq 4(b - 9)$ see notes

12) $\frac{3}{1}\cdot\left(\frac{5m-5}{3}\right) \geq \left(\frac{-15}{1}\right)\left(\frac{3}{1}\right)$

$5m - 5 \geq -45$

$+5 \quad = \quad +5$

$\frac{5m}{5} \geq \frac{-40}{5}$

$m \geq -8$

14) $\frac{6}{1}\left(\frac{6-3n}{6}\right) \leq \left(\frac{-5}{1}\right)\cdot\frac{6}{1}$

$\frac{-33}{6}$

$-5\frac{3}{6} = -5\frac{1}{2}$

$6 - 3n \leq -30$

$-6 \quad = \quad -6$

$\frac{-3n}{-3} \leq \frac{-36}{-3}$

$n \geq +12$

18) $5(7+-2A) \geq -15$

$35 + -10a \geq -15$

$-35 \quad -35$

$\frac{-10a}{-10} \geq \frac{-50}{-10}$

$a \leq 5$

20) $3(h+5) < -6(h+-4)$

$3h+15 < -6h+24$

$+6h \quad +6h$

$9h+15 < 24$

$+15 \quad +15$

$\frac{9h}{9} < \frac{9}{9}$

$h < 1$

21) $-2(b+3) \leq 4(b+9)$

$-2b + -6 \leq 4b + -36$

$+2b \quad\quad +2b$

$-6 \leq 6b + -36$

$+6 \quad\quad +6$

$0 \leq 6b + -42$

$+42 \quad\quad +42$

$\frac{42}{6} \leq \frac{6b}{6}$

$7 \leq b$

$b \geq 7$

$6\overline{)42}$ -42 0 $\quad 7$

NAME _____ DATE _____ PERIOD _____

12-5 **Study Guide**

Student Edition Pages 524–529

Solving Compound Inequalities

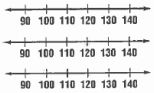
In a doctor's office, you may see a sign that displays the normal weight range for a person of your age and height. For example, if you are a 14-year-old girl who is 5 foot 2 inches tall, it may say that your normal weight is between 100 and 120 pounds, inclusive. Another way to write this information is to use an inequality. If w represents weight, then $100 \leq w \leq 120$ is a **compound inequality** that represents this situation. Another way to write the inequality is to write two inequalities using the word *and*: $100 \leq w$ and $w \leq 120$. A compound inequality using *and* is true if and only if both inequalities are true. The graph of a compound inequality using *and* is the intersection of the graphs of the inequalities, as shown below.

Example 1: Graph $100 \leq w$ and $w \leq 120$.

Step 1 Graph $100 \leq w$.

Step 2 Graph $w \leq 120$

Step 3 Find the intersection of the graphs.



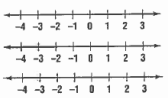
Another type of compound inequality uses the word *or*. A compound inequality using *or* is true if and only if either or both inequalities are true. Its graph is the union of the graphs of the inequalities, as shown below.

Example 2: Graph the solution of $x > 2$ or $x \leq -3$.

Step 1 Graph $x > 2$.

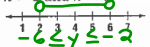
Step 2 Graph $x \leq -3$.

Step 3 Find the union of the graphs.

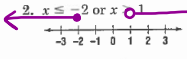


Graph the solution of each compound inequality.

1. $n > 2$ and $n \leq 6$ — $2 < n \leq 6$

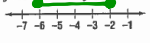


2. $x \leq -2$ or $x > 1$

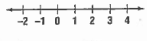


$-6 \leq y \leq -2$

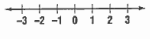
3. $y \leq -2$ and $y \geq -6$



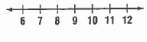
4. $1 \geq p$ and $p > 0$



5. $2 \leq y$ or $y < -1$



6. $h > 8$ and $h \leq 10$



12-5 NAME _____ DATE _____ PERIOD _____

Practice

Student Edition Pages 524–529

Solving Compound Inequalities

Write each compound inequality without using and.

1. $a > 2$ and $a < 7$
2. $b \le 9$ and $b \ge 6$ $6 \le b \le 9$
3. $w \le 4$ and $w > -3$
4. $k \ge -4$ and $k < 1$
5. $z < 0$ and $z > -6$
6. $p \ge -8$ and $p < 5$

Graph the solution of each compound inequality.

7. $f > -1$ and $f < 5$
8. $x < 7$ and $x \ge 4$
9. $y \le -3$ or $y \ge 1$
10. $h < -3$ or $h \ge -2$

Solve each compound inequality. Graph the solution.

11. $4 > c + 6 \ge 2$ $-4 \le c < -2$
12. $-6 < u - 5 < 0$
13. $6 < -2m < 10$
14. $10 > \frac{n}{4} > -\frac{2}{4}$ $-\frac{1}{2} < n < 2\frac{1}{2}$
15. $0 \le \frac{t}{3} \le 2$ "AND" $0 \le t \le 6$
16. $r - 2 < -3$ or $5r > 25$
17. $v + 3 \le -4$ or $v + 7 > 2$ $v \le -6$ $v > -5$
18. $a - 5 < -3$ or $-5a \ge -30$
19. $-4y > -6$ or $2.5y > 5$
20. $\frac{w}{2} < -1$ or $\frac{w}{3} \le -2$

12-6 NAME _____ DATE _____ PERIOD _____

Study Guide

Student Edition Pages 530–534

Solving Inequalities Involving Absolute Value

You have already studied equations of the form $|x| = n$ involving absolute value, where n is a nonnegative number. Inequalities involving absolute value are similar. They are of the form $|x| > n$ or $|x| < n$, where n is a nonnegative number.

To solve both equations and inequalities involving absolute value, there are two cases to consider.

Case 1 The value of the expression within the absolute value symbol is positive.

Case 2 The value of the expression within the absolute value symbol is negative.

Example 1: Solve $|x - 4| < 2$. Graph the solution.

$|x| = 5$ $x = -5$ or $x = +5$

Case 1 $x - 4$ is positive.

$+(x - 4) < 2$
$x - 4 + 4 < 2 + 4$
$x < 6$

Case 2 $x - 4$ is negative.

$-(x - 4) < 2$
$-(x - 4)(-1) > 2(-1)$ *Reverse the symbol.*
$x - 4 > -2$
$x - 4 + 4 > -2 + 4$
$x > 2$

The solution is $\{x \mid 2 < x < 6\}$.

Example 2: Solve $|x + 1| \ge 4$. Graph the solution.

Case 1 $x + 1$ is positive.

$x + 1 \ge 4$
$x + 1 - 1 \ge 4 - 1$
$x \ge 3$

Case 2 $x + 1$ is negative.

$-(x + 1) \ge 4$
$-(x + 1)(-1) \le 4(-1)$ *Reverse the symbol.*
$x + 1 \le -4$
$x + 1 - 1 \le -4 - 1$
$x \le -5$

$n \le 5$ or $n \le 5$ or $-(n) \le 5$ $n \ge -5$

The solution is $\{x \mid x \ge 3$ or $x \le -5\}$.

Solve each inequality. Graph the solution.

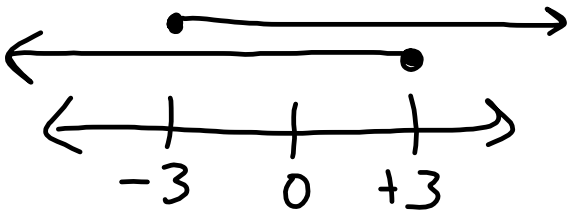
1. $|n| \le 5$
2. $|4x| \le 12$ see notes
3. $|y + 1| > 2$
4. $|6p| > 2.4$ see notes $p > 0.4$ $p < -0.4$
5. $|t + 3| \ge 2$
6. $|h + 2| < 6$

2) $|4x| \leq 12$

$+(4x) \leq 12$ or $-(4x) \leq 12$

$\frac{4x}{4} \leq \frac{12}{4}$ $\quad \frac{-4x}{-4} \geq \frac{12}{-4}$

$x \leq 3$ $\quad x \geq -3$



4) $|6p| > 2.4$

$+(6p) > 2.4$ or $-(6p) > 2.4$

$\frac{+6p}{+6} > \frac{2.4}{+6}$ $\quad \frac{-6p}{-6} > \frac{2.4}{-6}$

$p > 6\overline{)2.4}$ $\quad$ (0.4)

$p > 0.4$ or $p < -0.4$

12-6

NAME _____ DATE _____ PERIOD _____

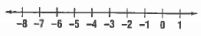
Practice

Student Edition Pages 530–534

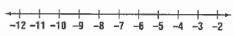
Solving Inequalities Involving Absolute Value

Solve each inequality. Graph the solution.

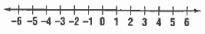
1. $|k + 2| < 1$



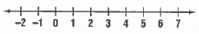
2. $|m + 7| \leq 4$



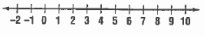
3. $|4p| < 16$



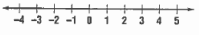
4. $|w - 3| < 3$



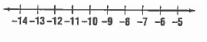
5. $|a - 5| \leq 4$



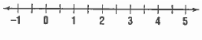
6. $|6t| < 12$



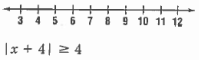
7. $|v + 9| \leq 3$



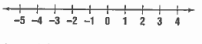
8. $|q - 2| < 2.5$



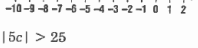
9. $|b - 8| > 2$



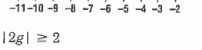
10. $|y + 1| \geq 3$



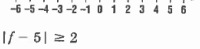
11. $|x + 4| \geq 4$



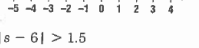
12. $|z + 7| > 2$



13. $|5c| > 25$



14. $|2g| \geq 2$



15. $|f - 5| \geq 2$

16. $|s - 6| > 1.5$

12-7

NAME _____ DATE _____ PERIOD _____

Study Guide

Student Edition Pages 535–539

Graphing Inequalities In Two Variables

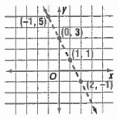
Inequalities, like equations, may have two variables instead of one. The solution of an inequality having two variables contains many ordered pairs. The graph of these ordered pairs fills an area of the coordinate plane called a **half-plane.** The graph of the related equation defines the **boundary** or edge for each half-plane.

Example: Graph $y < -2x + 3$.

Step 1 Determine the boundary by graphing the related equation, $y = -2x + 3$.

Make a table of values.

x	$-2x + 3$	y
-2	$-2(-2) + 3$	7
-1	$-2(-1) + 3$	5
0	$-2(0) + 3$	3
1	$-2(1) + 3$	1
2	$-2(2) + 3$	-1



> < ≥ ≤

Step 2 Draw a dashed line because the boundary is not included. *Note:* If the inequality involved ≤ or ≥, the boundary would be included, and you would make the boundary a solid line.

Step 3 Use a point not on the boundary to find which half-plane is the solution. Use (0, 0).

$y < -2x + 3$
$0 < -2(0) + 3$
$0 < 3$ *true*

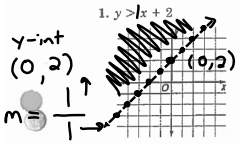
Since $0 < 3$ is true, shade the half-plane containing (0, 0). *Note:* If the result were false, you would shade the other half-plane.

Graph each inequality.

1. $y > |x + 2$

y-int (0, 2)

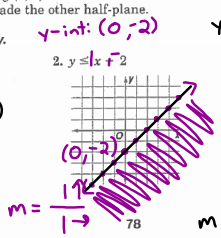
$m = \frac{1}{1}$ or $m = \frac{-1}{-1}$



2. $y \leq |x + 2$

y-int: (0, 2)

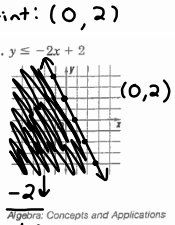
$m = \frac{1}{1}$ or $m = \frac{-1}{-1}$

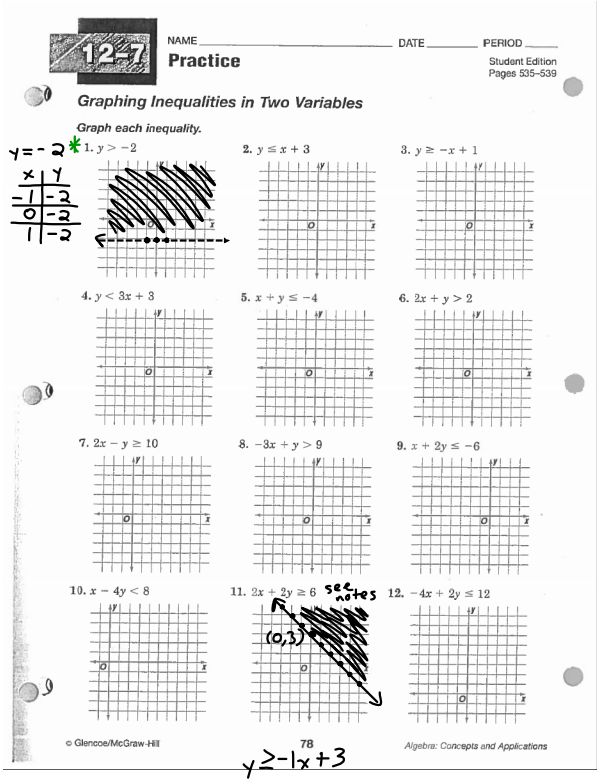


3. $y \leq -2x + 2$

y-int: (0, 2)

$m = \frac{-2}{1}$ or $m = \frac{+2}{-1}$





12-7 Practice

NAME _____ DATE _____ PERIOD _____

Student Edition Pages 535–539

Graphing Inequalities in Two Variables

Graph each inequality.

1. $y > -2$
2. $y \le x + 3$
3. $y \ge -x + 1$
4. $y < 3x + 3$
5. $x + y \le -4$
6. $2x + y > 2$
7. $2x - y \ge 10$
8. $-3x + y > 9$
9. $x + 2y \le -6$
10. $x - 4y < 8$
11. $2x + 2y \ge 6$ see notes
12. $-4x + 2y \le 12$

$y = -2$

x	y
-1	-2
0	-2
1	-2

(0,3)

$y \ge -1x + 3$

11) $2x + 2y \ge 6$

$+ -2x \quad = + -2x$

$\frac{2y}{2} \ge \frac{-2x}{2} + \frac{6}{2}$

$y \ge -1x + 3$

y-int: $(0, 3)$

$m = \frac{-1 \downarrow}{1 \rightarrow}$ or $m = \frac{1 \uparrow}{-1 \leftarrow}$