

NAME _____ DATE _____ PERIOD _____

2-7 Skills Practice
Graphing Inequalities

Graph each inequality.

1. $y > 1$

2. $y \leq x + 2$

3. $x + y \leq 4$

4. $x + 3 < y$

5. $2 - y < x$

6. $y \geq -x$

7. $x - y > -2$

8. $9x + 3y - 6 \leq 0$

9. $y + 1 \geq 2x$

10. $y - 7 \leq -9$

11. $x > -5$

12. $y > |x|$

Lesson 2-7

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2-7 Practice
Graphing Inequalities

Graph each inequality.

1. $y \leq -3$

2. $x > 2$

3. $x + y \leq -4$

4. $y < -3x + 5$

5. $y < \frac{1}{2}x + 3$

6. $y - 1 \geq -x$

7. $x - 3y \leq 6$

8. $y > |x| - 1$

9. $y > -3|x + 1| - 2$

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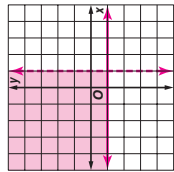
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3-3 Skills Practice

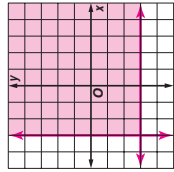
Solving Systems of Inequalities by Graphing

Solve each system of inequalities by graphing.

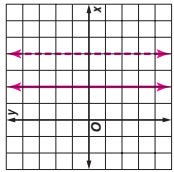
1. $x < 1$
 $y \geq -1$



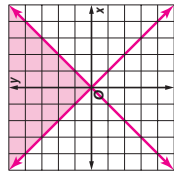
2. $x \geq -3$
 $y \geq -3$



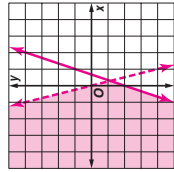
3. $x \leq 2$
 $x > 4$ **no solution**



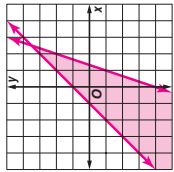
4. $y \geq x$
 $y \geq -x$



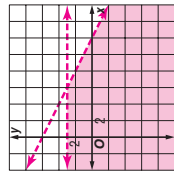
5. $y < -4x$
 $y \geq 3x - 2$



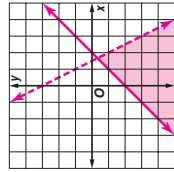
6. $x - y \geq -1$
 $3x - y \leq 4$



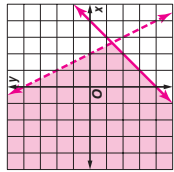
7. $y < 3$
 $x + 2y < 12$



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



9. $x - y \leq 4$
 $2x + y < 4$



Find the coordinates of the vertices of the figure formed by each system of inequalities.

10. $y < 0$
 $x < 0$
 $y \geq -x - 1$

(0, 0), (0, -1), (-1, 0)

11. $y < 3 - x$
 $y \geq 3$
 $x > -5$

(0, 3), (-5, 3), (-5, 8)

12. $x \geq -2$
 $y > x - 2$
 $x + y \leq 2$

(-2, 4), (-2, 0)

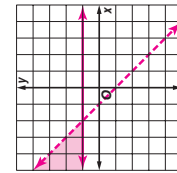
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3-3 Practice (Average)

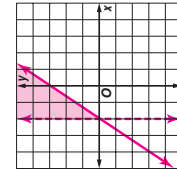
Solving Systems of Inequalities by Graphing

Solve each system of inequalities by graphing.

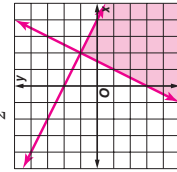
1. $y + 1 < -x$
 $y \geq 1$



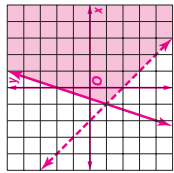
2. $x > -2$
 $2y \geq 3x + 6$



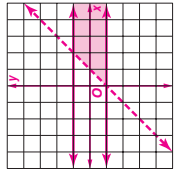
3. $y \leq 2x - 3$
 $y \leq -\frac{1}{2}x + 2$



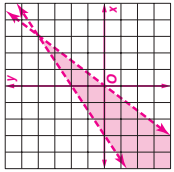
4. $x + y > -2$
 $3x - y \geq -2$



5. $|y| \leq 1$
 $y < x - 1$



6. $3y > 4x$
 $2x - 3y > -6$



Find the coordinates of the vertices of the figure formed by each system of inequalities.

7. $y \geq 1 - x$
 $y \leq x - 1$
 $x \leq 3$

(1, 0), (3, 2), (3, -2)

8. $x - y \leq 2$
 $x + y \leq 2$
 $x \geq -2$

(-2, 4), (-2, -4), (2, 0)

9. $y \geq 2x - 2$
 $2x + 3y \geq 6$
 $y < 4$

(-3, 4), (3/2, 1), (3, 4)

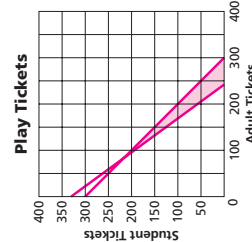
DRAMA For Exercises 10 and 11, use the following information.

The drama club is selling tickets to its play. An adult ticket costs \$15 and a student ticket costs \$11. The auditorium will seat 300 ticket-holders. The drama club wants to collect at least \$3630 from ticket sales.

10. Write and graph a system of four inequalities that describe how many of each type of ticket the club must sell to meet its goal.

$x \geq 0, y \geq 0, x + y \leq 300, 15x + 11y \geq 3630$

11. List three different combinations of tickets sold that satisfy the inequalities. **Sample answer: 250 adult and 50 student, 200 adult and 100 student, 145 adult and 148 student**



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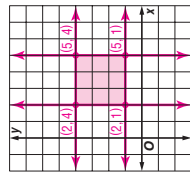
3-4

Skills Practice

Linear Programming

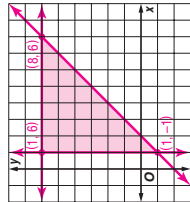
Graph each system of inequalities. Name the coordinates of the vertices of the feasible region. Find the maximum and minimum values of the given function for this region.

1. $x \geq 2$
 $x \leq 5$
 $y \geq 1$
 $y \leq 4$
 $f(x, y) = x + y$



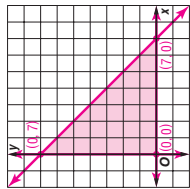
max.: 9, min.: 3

2. $x \geq 1$
 $y \leq 6$
 $y \geq x - 2$
 $f(x, y) = x - y$



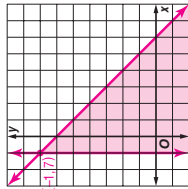
max.: 2, min.: -5

3. $x \geq 0$
 $y \geq 0$
 $y \leq 7 - x$
 $f(x, y) = 3x + y$



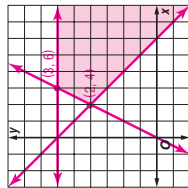
max.: 21, min.: 0

4. $x \geq -1$
 $x + y \leq 6$
 $f(x, y) = x + 2y$



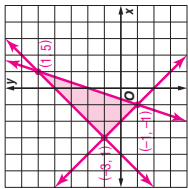
max.: 13, no min.

5. $y \leq 2x$
 $y \geq 6 - x$
 $y \leq 6$
 $f(x, y) = 4x + 3y$



no max., min.: 20

6. $y \geq -x - 2$
 $y \geq 3x + 2$
 $y \leq x + 4$
 $f(x, y) = -3x + 5y$



max.: 22, min.: -2

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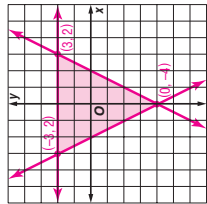
3-4

Practice (Average)

Linear Programming

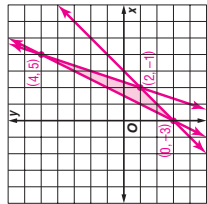
Graph each system of inequalities. Name the coordinates of the vertices of the feasible region. Find the maximum and minimum values of the given function for this region.

1. $2x - 4 \leq y$
 $-2x - 4 \leq y$
 $y \leq 2$
 $f(x, y) = -2x + y$



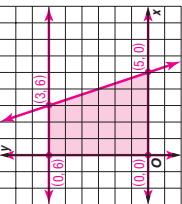
max.: 8, min.: -4

2. $3x - y \leq 7$
 $2x - y \leq 3$
 $y \geq x - 3$
 $f(x, y) = x - 4y$



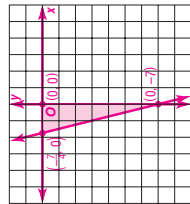
max.: 12, min.: -16

3. $x \geq 0$
 $y \geq 0$
 $y \leq 6$
 $y \leq -3x + 15$
 $f(x, y) = 3x + y$



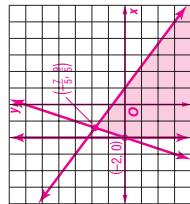
max.: 15, min.: 0

4. $x \leq 0$
 $y \leq 0$
 $4x + y \geq -7$
 $f(x, y) = -x - 4y$



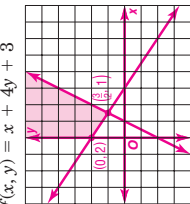
max.: 28, min.: 0

5. $y \leq 3x + 6$
 $4y + 3x \leq 3$
 $x \geq -2$
 $f(x, y) = -x + 3y$



max.: 34, no min.

6. $2x + 3y \leq 6$
 $2x - y \leq 2$
 $x \geq 0$
 $y \geq 0$
 $f(x, y) = x + 4y + 3$



no max., min.: 17/2

PRODUCTION For Exercises 7-9, use the following information.

A glass blower can form 8 simple vases or 2 elaborate vases in an hour. In a work shift of no more than 8 hours, the worker must form at least 40 vases.

7. Let s represent the hours forming simple vases and e the hours forming elaborate vases. Write a system of inequalities involving the time spent on each type of vase.

$s \geq 0, e \geq 0, s + e \leq 8, 8s + 2e \geq 40$

8. If the glass blower makes a profit of \$30 per hour worked on the simple vases and \$35 per hour worked on the elaborate vases, write a function for the total profit on the vases.

$f(s, e) = 30s + 35e$

9. Find the number of hours the worker should spend on each type of vase to maximize profit. What is that profit? **4 h on each; \$260**

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Lesson 3-4

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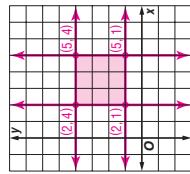
3-4

Skills Practice

Linear Programming

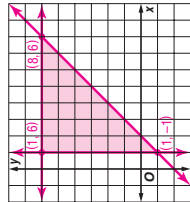
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 $x \leq 5$
 $y \geq 1$
 $y \leq 4$
 $f(x, y) = x + y$



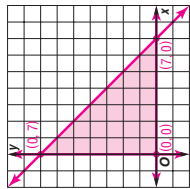
max.: 9, min.: 3

2. $x \geq 1$
 $y \leq 6$
 $y \geq x - 2$
 $f(x, y) = x - y$



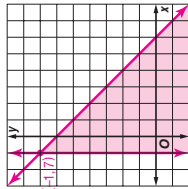
max.: 2, min.: -5

3. $x \geq 0$
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 $y \leq 7 - x$
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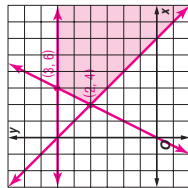
max.: 21, min.: 0

4. $x \geq -1$
 $x + y \leq 6$
 $f(x, y) = x + 2y$



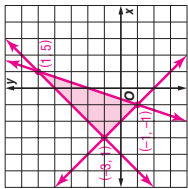
max.: 13, no min.

5. $y \leq 2x$
 $y \geq 6 - x$
 $y \leq 6$
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no max., min.: 20

6. $y \geq -x - 2$
 $y \geq 3x + 2$
 $y \leq x + 4$
 $f(x, y) = -3x + 5y$



max.: 22, min.: -2

7. MANUFACTURING A backpack manufacturer produces an internal frame pack and an external frame pack. Let x represent the number of internal frame packs produced in one hour and let y represent the number of external frame packs produced in one hour. Then the inequalities $x + 3y \leq 18$, $2x + y \leq 16$, $x \geq 0$, and $y \geq 0$ describe the constraints for manufacturing both packs. Use the profit function $f(x) = 50x + 80y$ and the constraints given to determine the maximum profit for manufacturing both backpacks for the given constraints. **\$620**

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