Chapter 7 Answers

Practice 7-1

1. $(1, 2)$ **2.** $(4, 3)$ **3.** no solution **4.** $(-1, 3)$ **5.** $(7, 4)$
6. infinitely many solutions **7.** $(-5, 2)$ **8.** no solution
9. $(-1, -1)$ **10.** $(0, -3)$ **11.** $(6, 6)$ **12.** $(-2, -4)$
13. no solution **14.** $(-3, 5)$ **15.** $(7, 11)$ **16.** infinitely many solutions **17.** $(8, 7)$ **18.** $(-2, -2)$ **19.** $(5, 6)$ **20.** $(1, -2)$
21. $(5, 4)$ **22.** $(-3, 3)$ **23.** no solution **24.** $(0, 0)$
25. $\left(\frac{1}{2}, \frac{1}{2}\right)$ **26.** $\left(\frac{3}{2}, \frac{3}{2}\right)$ **27.** $\left(-\frac{1}{2}, 0\right)$ **28.** $\left(-4, -2\frac{1}{2}\right)$
29. $(13, 19)$ **30.** $(8, 22)$ **31.** $(18, 16)$ **32.** no solution
33. $(25, -30)$ **34.** $(0, -10)$ **35.** $(40, 30)$ **36.** $(28, 14)$
37. no solution **38.** $(36, 42)$ **39.** $(16, 24)$ **40.** $(18, -8)$
41. $(-1.5, -2.25)$ **42.** $(-2, -1)$ **43.** $(1.5, -2.5)$

Practice 7-2

1. $(1, 1)$ **2.** $(2, 6)$ **3.** $(5, 5)$ **4.** $(-3, 2)$ **5.** $(0.6, 8)$ **6.** $(7, 4)$
7. $(5, -2)$ **8.** infinitely many solutions **9.** $(100, 50)$
10. no solution **11.** $(1, 9)$ **12.** $(-2, -3)$ **13.** infinitely many solutions **14.** no solution **15.** $(1, -2)$ **16.** $(-2, -2)$
17. no solution **18.** infinitely many solutions **19.** $(4, 8)$
20. $(2, -2)$ **21.** no solution **22.** $(-3, 0)$ **23.** $(0, -1)$
24. infinitely many solutions **25.** $\left(3, -\frac{2}{3}\right)$ **26.** $(1.5, 3.6)$
27. $(6.7, 2.4)$ **28.** infinitely many solutions **29.** $(13, 11)$
30. no solution **31.** $(10.5, 8.2)$ **32.** $(-6, -24)$ **33.** infinitely many solutions **34.** $(28, -36)$ **35.** no solution
36. $(-18, -30)$ **37.** 88 cones **38.** paint: \$17/gal, brush: \$5.50

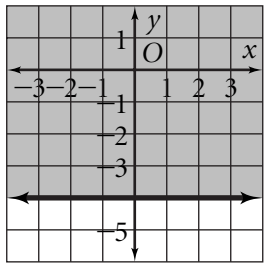
Practice 7-3

1. $(1, 3)$ **2.** $(4, 8)$ **3.** $(7, 6)$ **4.** $(2, -1)$ **5.** $(2, 0)$ **6.** $\left(\frac{1}{2}, 2\right)$
7. $(2, -2)$ **8.** $(6, -1)$ **9.** $(18, 12)$ **10.** $(3, 6)$ **11.** $(-1, 5)$
12. $(0, 2)$ **13.** $(5, 7)$ **14.** $(-1, -3)$ **15.** $(0, 0)$ **16.** $\left(4, -\frac{1}{3}\right)$
17. $(8, 7)$ **18.** $(2, 6)$ **19.** $(4, 11)$ **20.** $(3, 9)$ **21.** $(11, 7)$
22. $(8, -3)$ **23.** $(7, -3)$ **24.** $(0, 8)$ **25.** $(-1, 2)$ **26.** $(1, 6)$
27. $(8, -1)$ **28.** $\left(\frac{3}{2}, 3\right)$ **29.** $(4, -3)$ **30.** $(7, -9)$ **31.** $(4, 3)$
32. $(-7, 11)$ **33.** $(9, 2)$ **34.** $(6, 13)$ **35.** $\left(-3, \frac{2}{3}\right)$
36. $(1, 1)$ **37.** $(2, 5)$ **38.** $(8, 1)$ **39.** $(10, -3)$ **40.** $(7, -7)$
41. $(8, 8)$ **42.** $(2, 3)$ **43.** $(9, 7)$ **44.** $(6, 11)$ **45.** $\left(-\frac{1}{9}, 1\right)$
46. shirts: \$7.50; pants: \$18.50 **47.** 20 cherry pies; 16 apple pies

Practice 7-4

1. 30 2-pt; 10 4-pt **2.** 15 offices **3.** \$20; \$15
4. 2.5 mi/h; 0.5 mi/h **5.** 150 min/wk; 100 min/wk
6. 89 T-shirts **7.** 160 mi/h, 10 mi/h **8.** \$2.50; \$1.50
9. 330 spaces; 120 spaces **10.** 37.5 m/min; 12.5 m/min

Practice 7-5

1.


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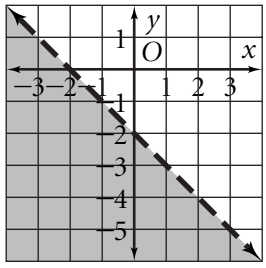

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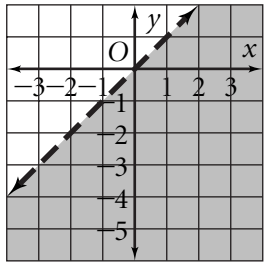

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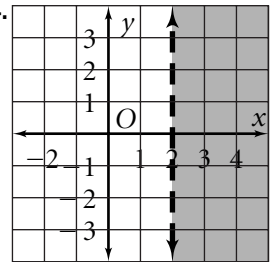

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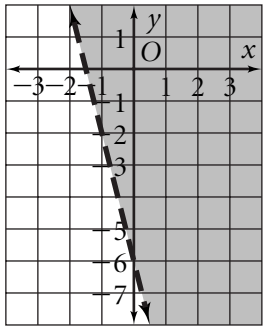

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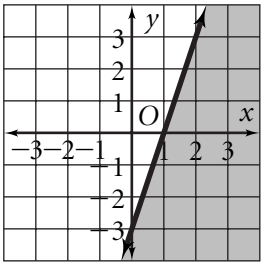

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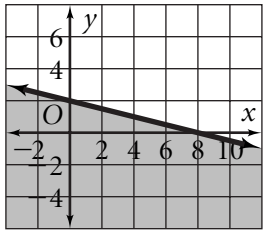

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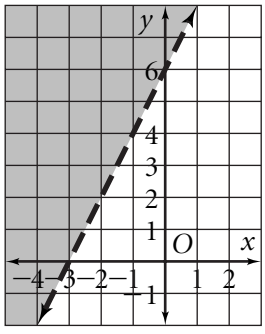

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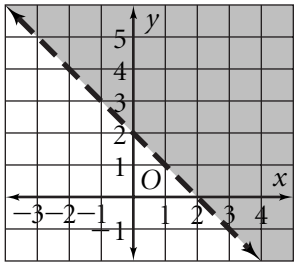

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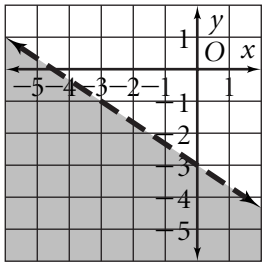

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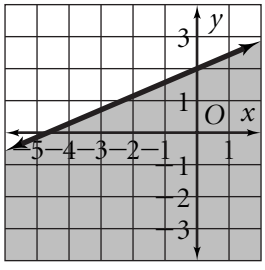

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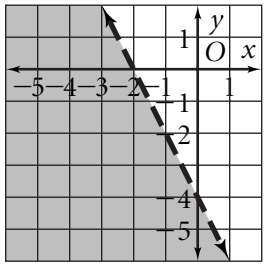

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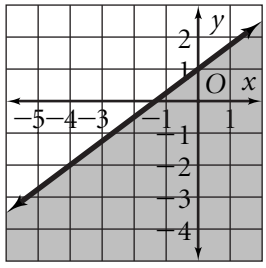

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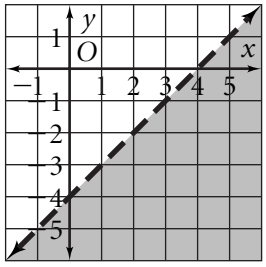

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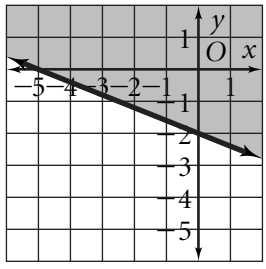
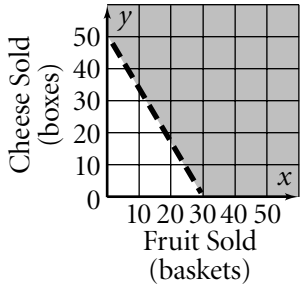


16a. $5x + 3y > 150$

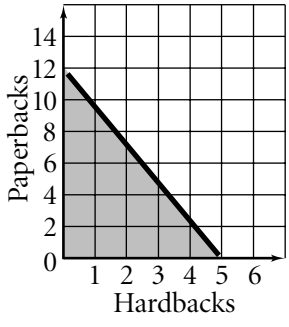
16b.



16c. Answers may vary. The solutions are all of the coordinates of the points that are both positive integers within the shaded region. Samples: 20 fruit baskets and 20 cheese boxes; 25 fruit baskets and 10 cheese boxes

17a. $12x + 5y \leq 60$

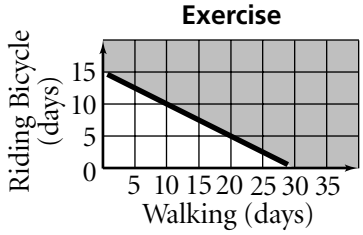
17b.



17c. Answers may vary. The solutions are all of the coordinates of the points that are both positive integers within the shaded region or on the boundary line. Samples: 5 hardbacks and no paperbacks; 3 hardbacks and 2 paperbacks

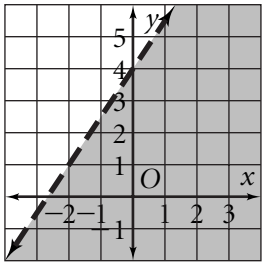
18a. $5x + 10y \geq 150$

18b.



18c. Answers may vary. Samples: 10 days walking and 11 days riding bicycle, 12 days walking and 10 days riding bicycle

19.



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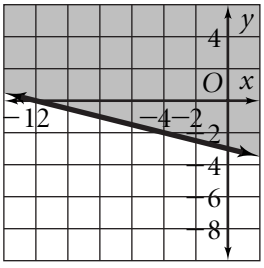

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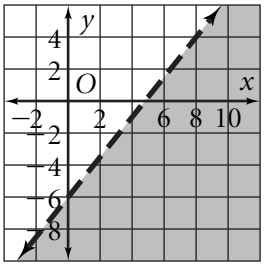

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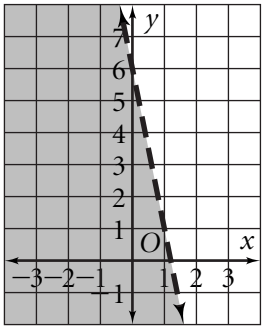

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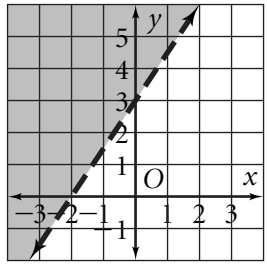

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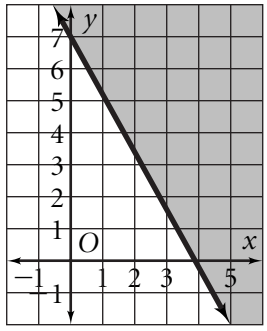

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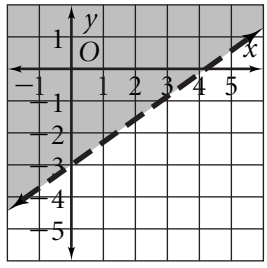

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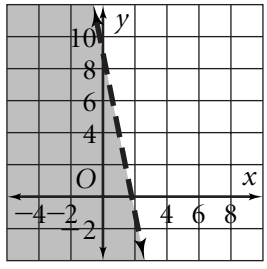

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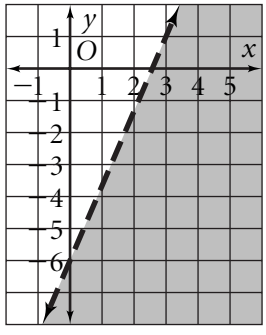

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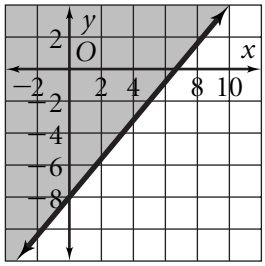

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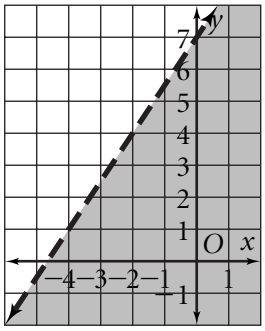

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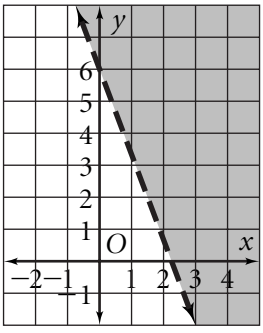
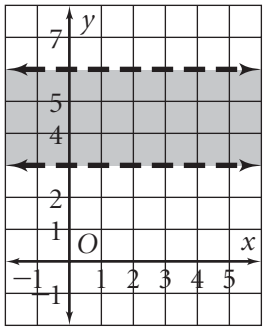


Practice 7-6

1.



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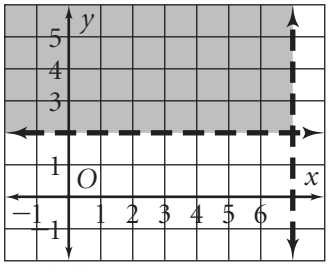
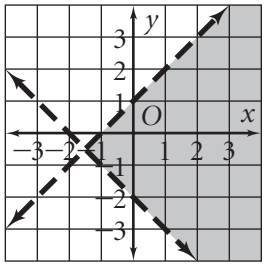


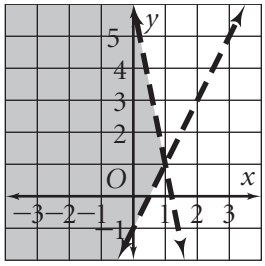
3. no solution

4.



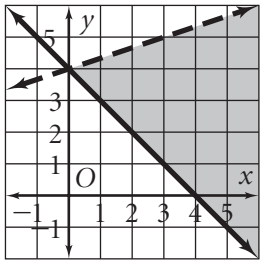
5. no solution

6.



7. no solution

8.



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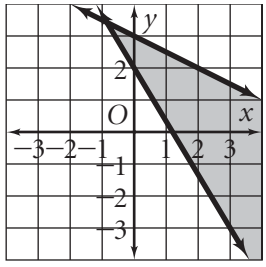

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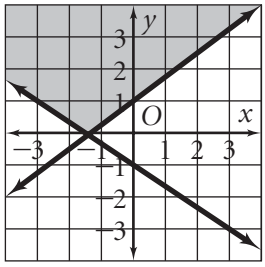

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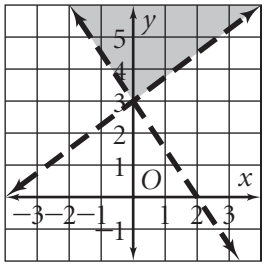

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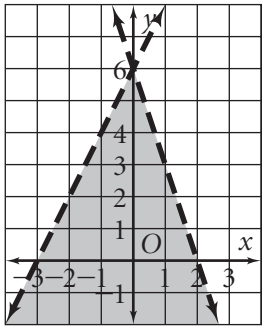
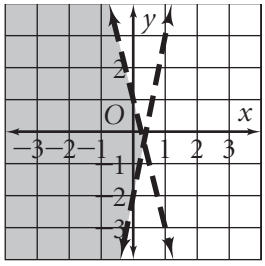


13. no solution

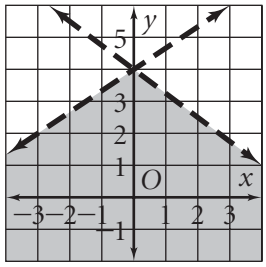
14.



15. no solution

16. no solution

17.



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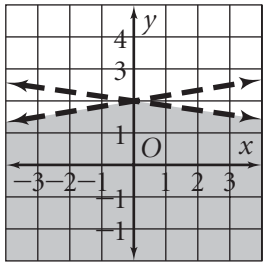
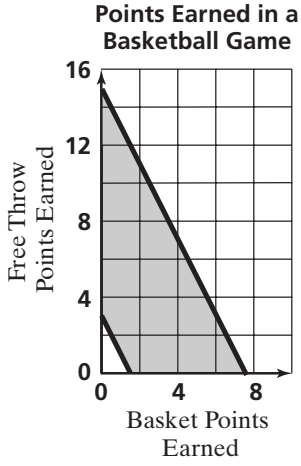


19a. $2x + y \geq 3; 2x + y \leq 15$

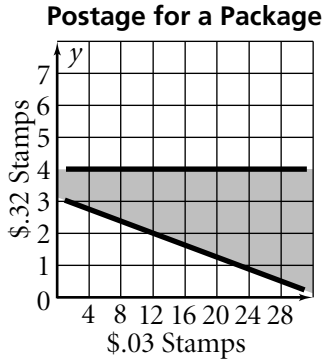
19b.



19c. Answers may vary. The solutions are all of the coordinates of the points that are both positive integers within the shaded region or on the boundary lines. Sample: 4 baskets and 5 free throws

20a. $3x + 32y \geq 100; y \leq 4$

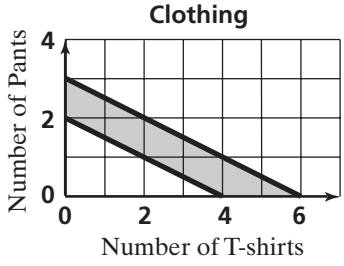
20b.



20c. Answers may vary. The solutions are all of the coordinates of the points that are both positive integers within the shaded region or on the boundary lines. Sample: 4 3-cent stamps and 3 32-cent stamps

21a. $10x + 20y \geq 40; 10x + 20y \leq 60$

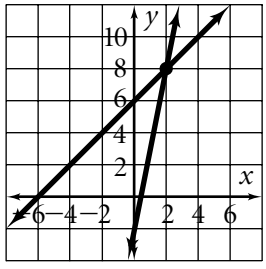
21b.



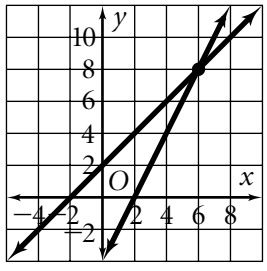
21c. Answers may vary. The solutions are all of the coordinates of the points that are both positive integers within the shaded region or on the boundary lines. Samples; 3 T-shirts and 1 pair of pants, 1 T-shirt and 2 pairs of pants.

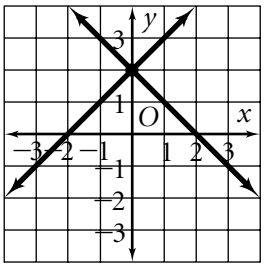
Reteaching 7-1

1. (2, 8);



2. (6, 8);



3. (0, 2); 

4. no solution **5.** infinite number of solutions **6.** (3, 0)
7. (−1, −4) **8.** (−2, −7) **9.** no solution

Reteaching 7-2

1. (4, 10) **2.** (−12, −16) **3.** (−1, 1) **4.** (1.5, 1) **5.** (2, −1)
6. (3, 0.5) **7.** (−2, −1) **8.** no solution **9.** infinitely many solutions

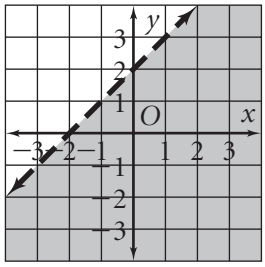
Reteaching 7-3

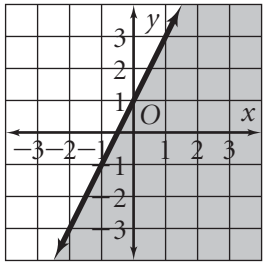
1. $\left(-\frac{4}{3}, 2\right)$ **2.** (6, −4) **3.** (−1, 1)

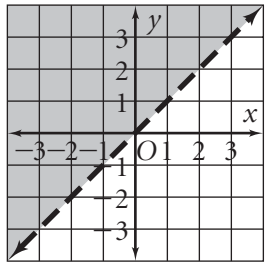
Reteaching 7-4

1. $5x + 4y = 7, 4x + 4y = 6$; \$1.00, \$.50; Elimination is easiest since the equations can be written in the form $Ax + By = C$ and the values of B are the same.
2. $82 - 5x = y, 37 - 2x = y$; \$15.00, \$7.00; Use substitution since the equations are in $y = mx + b$ form.

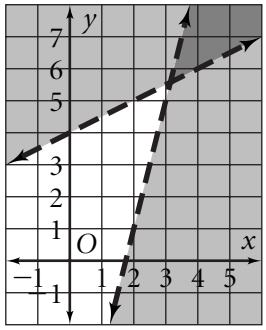
Reteaching 7-5

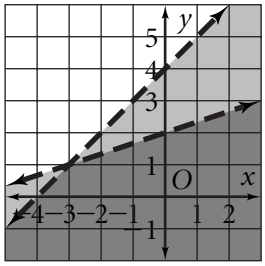
1. 

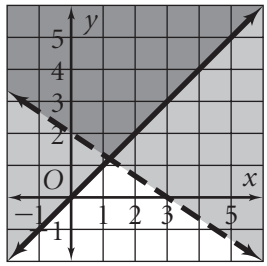
2. 

3. 

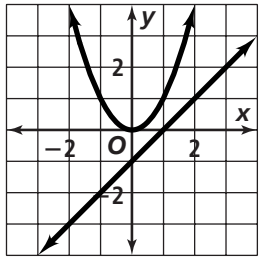
Reteaching 7-6

1. 

2. 

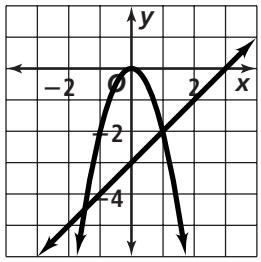
3. 

Enrichment 7-1

1. 

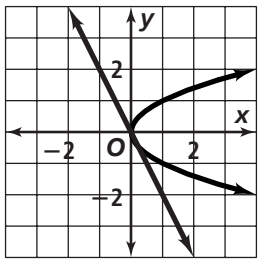
no intersection

2.



2 points of intersection

3.



2 points of intersection

Enrichment 7-2

1. $(-3, -8, -5)$ **2.** $(-1, 3, 1)$ **3.** $\left(3, 2, \frac{1}{2}\right)$ **4.** $\left(-4, \frac{3}{4}, 0\right)$

5. $\left(\frac{1}{2}, \frac{15}{2}, 4\right)$ **6.** $(4, 3, -2)$

Enrichment 7-3

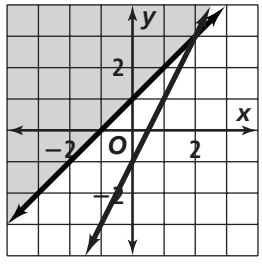
1. $(-12, 11)$ **2.** $(2, 5)$ **3.** $\left(\frac{67}{22}, \frac{19}{11}\right)$ **4.** $\left(\frac{46}{9}, \frac{29}{9}\right)$

Enrichment 7-4

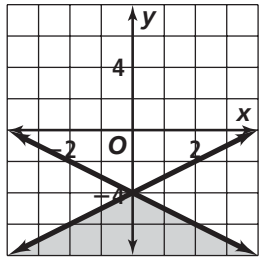
1. 270 mi/h; **2.** 170 mi/h; **3.** 50 mi/h

Enrichment 7-5

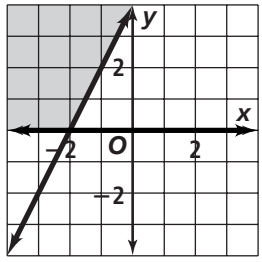
1.



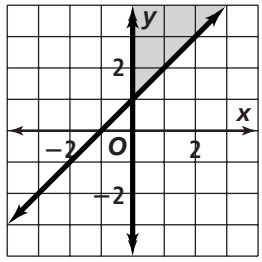
2.



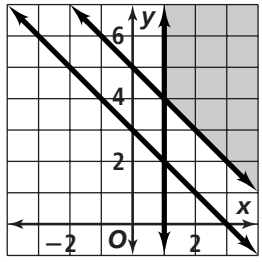
3.



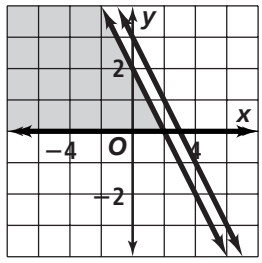
4.



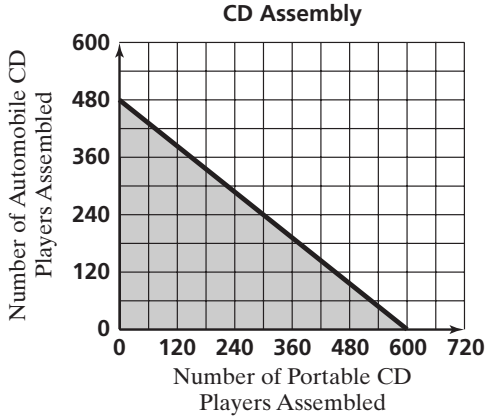
5.



6.



7. $x \geq 0, y \geq 0, 4x + 5y \leq 2400$



Enrichment 7-6

1. $x \leq 0; y < 5; y \geq -x$

2. $y \leq 2x; y \leq 4; y \geq -3; y \geq 2x - 8$

3. $y \leq x + 4; y > x - 4; y \leq -x + 8; y \geq 0; x \geq 0$

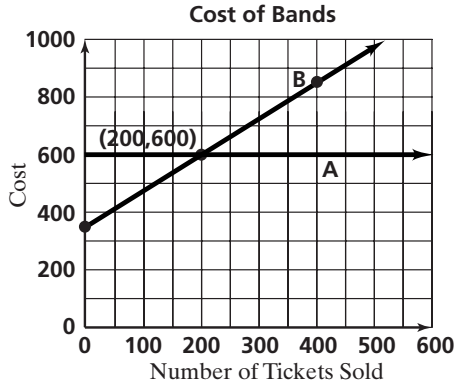
4. $x > -1; y \geq \frac{1}{2}x - 2; y \leq -x + 4$

5. no **6.** yes **7.** yes **8.** no

Chapter Project

Activity 1: Graphing

Let y represent the cost of each band when x tickets are sold.
Band A: $y = 600$; Band B: $y = 350 + 1.25x$



Activity 2: Calculating

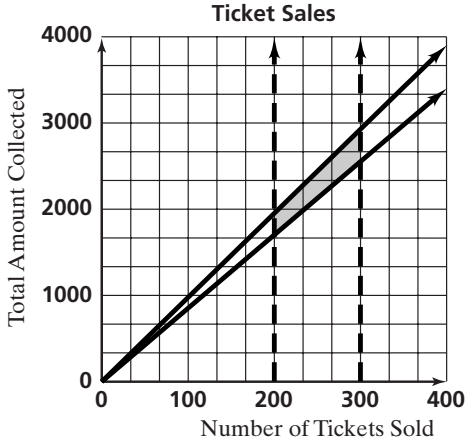
fixed cost: \$150; cost per person served: \$6

Activity 3: Writing

For 200 people: cost of Band A: \$600, cost of Band B: \$600, select either band, cost of caterer: \$1350, total cost: \$1950, cost per ticket to cover expenses: \$9.75; For 300 people: cost of Band A: \$600, cost of Band B: \$725, select Band A, cost of caterer: \$1950, total cost: \$2550, cost per ticket to cover expenses: \$8.50

Activity 4: Graphing

\$8.50; $y = 8.50x$; $y \geq 8.50x$; \$9.75; $y = 9.75x$; $y \leq 9.75x$



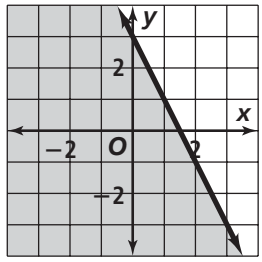
✔ Checkpoint Quiz 1

1. $(3, -1)$ **2.** $(-2, -1)$ **3.** $(-4, 0)$ **4.** $(5, 1)$ **5.** $(1, 3)$ **6.** $(-1, -1)$ **7.** $(4, 1)$ **8.** $(3, 2)$ **9.** $(1, 2)$ **10.** 246 acres of wheat and 184 acres of corn **11.** 40 ft

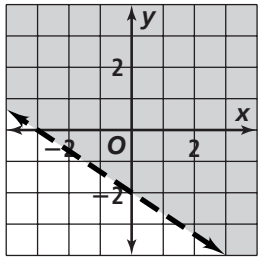
✔ Checkpoint Quiz 2

1. $(0, 8)$ **2.** $(3, -2)$ **3.** $(-3, -2)$

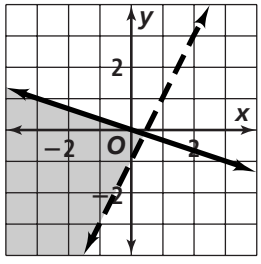
4.



5.

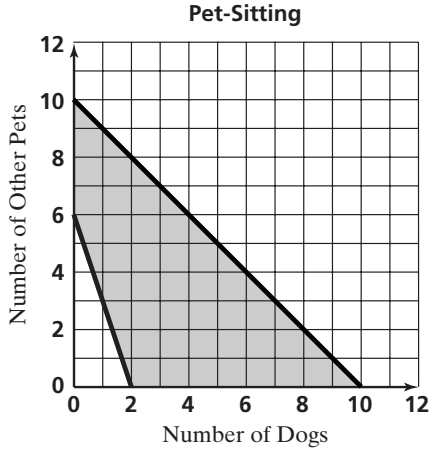


6.



7. $n + q = 25, 5n + 25q = 385$; 12 nickels, 13 quarters

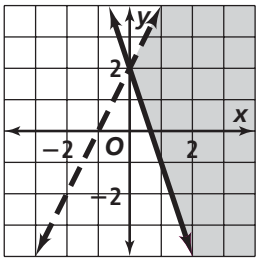
8. $x + y \leq 10; 15x + 5y \geq 30$



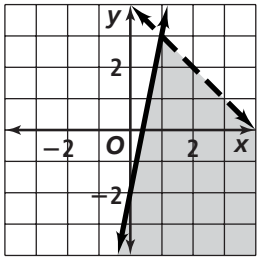
Chapter Test, Form A

1. $(-2, 3)$ **2.** $(-3, -3)$ **3.** one **4.** one **5.** one **6.** infinitely many **7.** one **8.** none **9.** $(-2, 7)$ **10.** $(-2, -11)$ **11.** $(-21, -10)$ **12.** $(4, 1)$ **13.** $(-1, 4)$ **14.** $(1, 2)$ **15.** \$6; \$2 **16.** 63 string instruments; 28 wind instruments **17.** 625 loaves **18.** D **19.** Answers may vary. Sample: The lines would share no common points; therefore, the system would have no solution.

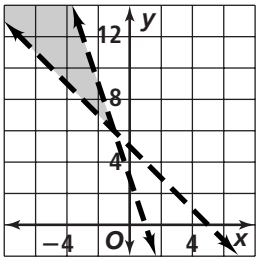
20.



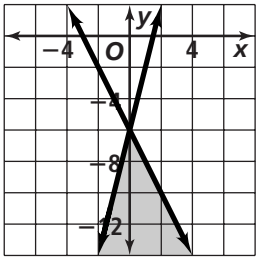
21.



22.



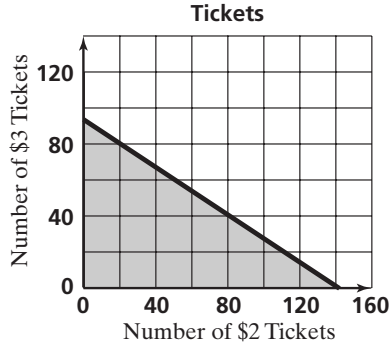
23.



24. Check students' work.

25a. $2x + 3y \leq 282$

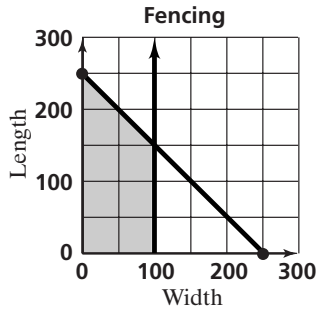
25b.



25c. 141 tickets **25d.** 94 tickets

26a. $2x + 2y \leq 500; x \leq 100$

26b.



26c. Answers may vary. The solutions are all of the coordinates of the points within the shaded region or on its boundary line. Samples: width of 50 ft and length of 100 ft; width of 100 ft and length of 150 ft

27a. $x + y = 101$
$0.22x + 0.08y = 0.12\ (101)$

27b. 29 mL of 22% acid solution,
72 mL of 8% acid solution

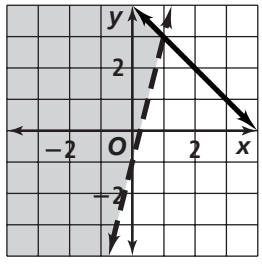
28a. $x + y = 22$
$9x + 12y = 219$

28b. 15 rolls of 24-exposure, 7 rolls of 36-exposure film

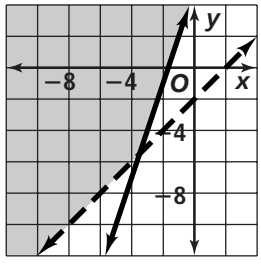
Chapter Test, Form B

1. $(-2, 5)$ **2.** $(4, -6)$ **3.** one **4.** one **5.** none **6.** one **7.** infinitely many **8.** one **9.** $(-1, -2)$ **10.** $(-4, -3)$ **11.** $(1, 2)$ **12.** $(7, 3)$ **13.** $(-6, 4)$ **14.** $(3, 0)$ **15.** \$5; \$1 **16.** 49 cars; 35 trucks **17.** 10 performances **18.** Answers may vary. Sample: First graph each inequality, drawing a solid line for a $\leq$ or $\geq$ inequality and a dashed line for a $<$ or $>$ inequality. Shade the appropriate side of each line. The region where the two shaded areas overlap is the solution region for the system. **19.** B

20.



21.



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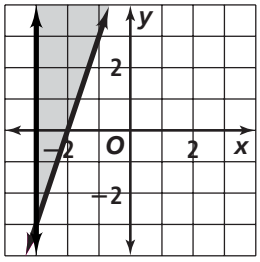
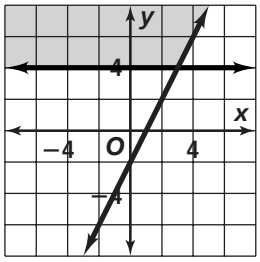


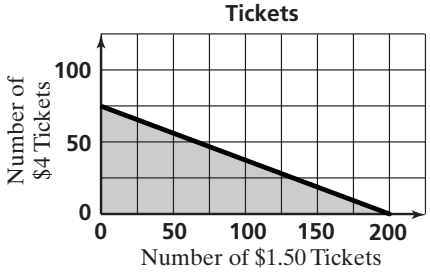
23.



24. Check students' work.

25a. $1.5x + 4y \leq 300$

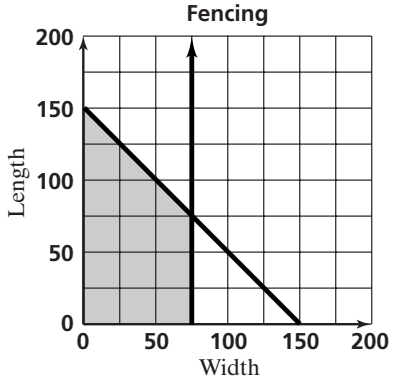
25b.



25c. 200 tickets **25d.** 75 tickets

26a. $2x + 2y \leq 300; x \leq 75$

26b.



26c. Answers may vary. The solutions are all of the coordinates of the points within the shaded region or on its boundary line. Samples: width of 50 ft and length of 100 ft; width of 75 ft and length of 75 ft

27a. $x + y = 90$
$0.13x + 0.03y = 0.08\ (90)$

27b. 45 mL of 13% acid solution, 45 mL of 3% acid solution

28a. $x + y = 15$
$8x + 11y = 153$

28b. 4 rolls of 24-exposure, 11 rolls of 36-exposure film

Alternative Assessment, Form C

TASK 1 Scoring Guide:

a. substitution; no solution

b. elimination; $(-2, \frac{1}{4})$

c. elimination; $(-4, \frac{1}{7})$

3 Student's selection is well reasoned and supported. Each system is solved correctly using the chosen method.

2 Student provides a correct explanation for selecting the particular method. Solutions are mostly correct.

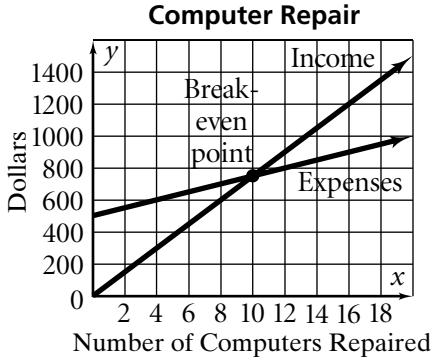
1 Student provides a partial explanation. Solutions are partially correct.

0 Student makes no attempt, or no solution is present.

TASK 2 Scoring Guide:

a. Answers may vary. Sample: Their expenses are $25 for replacement parts and they earn $75 for each computer they repair; $y = 25x + 500$, where y represents the amount of dollars of expenses; $y = 75x$, where x represents the amount of dollars of income

b. Answers may vary. Sample:



c. The break-even point is the point where income and expenses are equal. For the sample graph, the break-even point is (10, 750), which means that the business must repair 10 computers, taking in $750, to recover all expenses, or break even.

3 Student thoughtfully selects income and expense items. Computations are correct, and the graph clearly demonstrates the break-even point for the equations. Explanations are clear and complete.

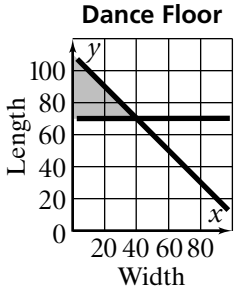
2 Computations are accurate, and the graph is mostly correct. Explanations demonstrate some understanding of the concepts.

1 The student's income and expense items demonstrate a minimum understanding of the issues involved. Explanations are limited and the graph contains many errors.

0 Student makes no attempt, or no solution is present.

TASK 3 Scoring Guide:

a. $2x + 2y \leq 220$
$y \geq 70$,
where $x \geq 0$ and $y \geq 0$.



b. Answers may vary. The solutions are all of the coordinates of the points within the shaded region or on its boundary line. Samples: width of 20 ft and length of 80 ft, width of 40 ft and length of 70 ft; Check students' work.

3 Graph is correct and student identifies a reasonable solution with appropriate explanation.

2 Graph is correct but explanation lacks thorough support of decision.

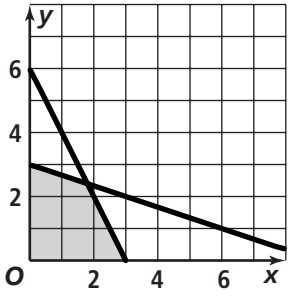
1 Graph is partially correct and limited detail is provided in the explanation.

0 Student makes no attempt, or no solution is present.

TASK 4 Scoring Guide:
Solve the first equation for y.
$3y \leq -x + 9$

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

Graph each equation and shade appropriately.



3 Student explanations are exemplary and computations are correct. Graph is accurate.

2 Student explanation is lacking in clarity. Computations are correct. Graph is mostly accurate.

1 Written explanations are satisfactory. Computation contains errors and the graph has many errors.

0 Student makes no attempt, or no solution is present.

Cumulative Review

1. B **2.** D **3.** A **4.** C **5.** B **6.** D **7.** D **8.** A **9.** B **10.** C
11. C **12.** B **13.** B **14.** Check students' work. **15.** $(-2, 1)$
16. $7x + 8y \leq 200$ **17.** $y \geq x; y \geq 3; y \leq 7; x \geq 0$
18. Answers may vary. Sample: $y = 3x - 4$.
19. about 715 airliners **20.** 6 or more games