

## Check Your Understanding

### Practise

1. Which of the ordered pairs are solutions to the given inequality?

- a)  $y < x + 3$ ,  
 $\{(7, 10), (-7, 10), (6, 7), (12, 9)\}$
- b)  $-x + y \leq -5$ ,  
 $\{(2, 3), (-6, -12), (4, -1), (8, -2)\}$
- c)  $3x - 2y > 12$ ,  
 $\{(6, 3), (12, -4), (-6, -3), (5, 1)\}$
- d)  $2x + y \geq 6$ ,  
 $\{(0, 0), (3, 1), (-4, -2), (6, -4)\}$

2. Which of the ordered pairs are *not* solutions to the given inequality?

- a)  $y > -x + 1$ ,  
 $\{(1, 0), (-2, 1), (4, 7), (10, 8)\}$
- b)  $x + y \geq 6$ ,  
 $\{(2, 4), (-5, 8), (4, 1), (8, 2)\}$
- c)  $4x - 3y < 10$ ,  
 $\{(1, 3), (5, 1), (-2, -3), (5, 6)\}$
- d)  $5x + 2y \leq 9$ ,  
 $\{(0, 0), (3, -1), (-4, 2), (1, -2)\}$

3. Consider each inequality.

- Express  $y$  in terms of  $x$ , if necessary. Identify the slope and the  $y$ -intercept.
- Indicate whether the boundary should be a solid line or a dashed line.

- a)  $y \leq x + 3$
- b)  $y > 3x + 5$
- c)  $4x + y > 7$
- d)  $2x - y \leq 10$
- e)  $4x + 5y \geq 20$
- f)  $x - 2y < 10$

4. Graph each inequality without using technology.

- a)  $y \leq -2x + 5$
- b)  $3y - x > 8$
- c)  $4x + 2y - 12 \geq 0$
- d)  $4x - 10y < 40$
- e)  $x \geq y - 6$

5. Graph each inequality using technology.

- a)  $6x - 5y \leq 18$
- b)  $x + 4y < 30$
- c)  $-5x + 12y - 28 > 0$
- d)  $x \leq 6y + 11$
- e)  $3.6x - 5.3y + 30 \geq 4$

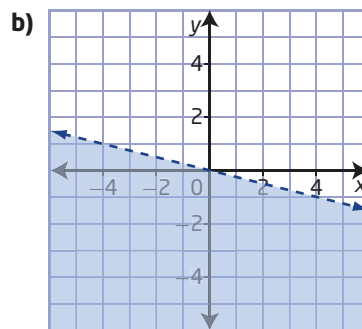
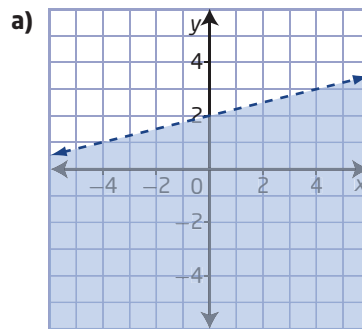
6. Determine the solution to  $-5y \leq x$ .

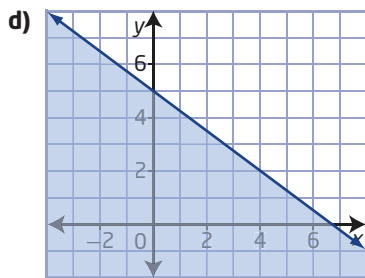
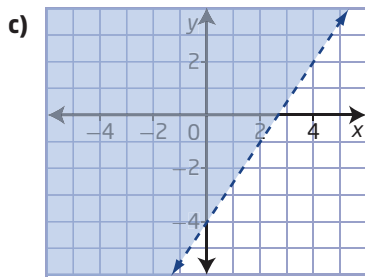
7. Use graphing technology to determine the solution to  $7x - 2y > 0$ .

8. Graph each inequality. Explain your choice of graphing methods.

- a)  $6x + 3y \geq 21$
- b)  $10x < 2.5y$
- c)  $2.5x < 10y$
- d)  $4.89x + 12.79y \leq 145$
- e)  $0.8x - 0.4y > 0$

9. Determine the inequality that corresponds to each graph.





### Apply

10. Express the solution to  $x + 0y > 0$  graphically and in words.
11. Amaruq has a part-time job that pays her \$12/h. She also sews baby moccasins and sells them for a profit of \$12 each. Amaruq wants to earn at least \$250/week.



- a) Write an inequality that represents the number of hours that Amaruq can work and the number of baby moccasins she can sell to earn at least \$250. Include any restrictions on the variables.
- b) Graph the inequality.
- c) List three different ordered pairs in the solution.
- d) Give at least one reason that Amaruq would want to earn income from her part-time job as well as her sewing business, instead of focusing on one method only.

12. The Alberta Foundation for the Arts provides grants to support artists. The Aboriginal Arts Project Grant is one of its programs. Suppose that Camille has received a grant and is to spend at most \$3000 of the grant on marketing and training combined. It costs \$30/h to work with an elder in a mentorship program and \$50/h for marketing assistance.
- a) Write an inequality to represent the number of hours working with an elder and receiving marketing assistance that Camille can afford. Include any restrictions on the variables.
- b) Graph the inequality.



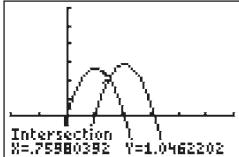
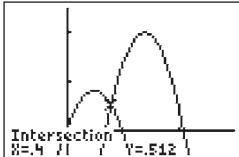
*Mother Eagle* by Jason Carter, artist chosen to represent Alberta at the Vancouver 2010 Olympics. Jason is a member of the Little Red River Cree Nation.

### Web Link

To learn more about the Alberta Foundation for the Arts, go to [www.mhrprecalc11.ca](http://www.mhrprecalc11.ca) and follow the links.

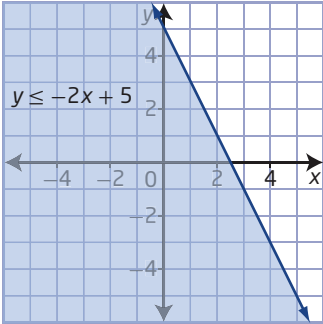
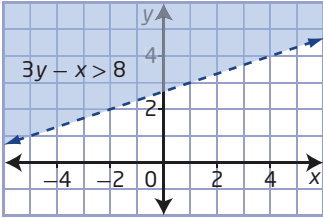
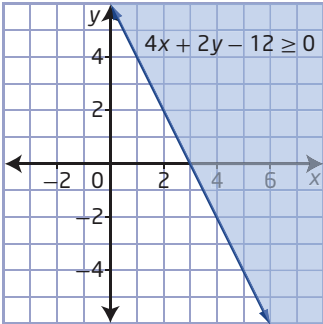
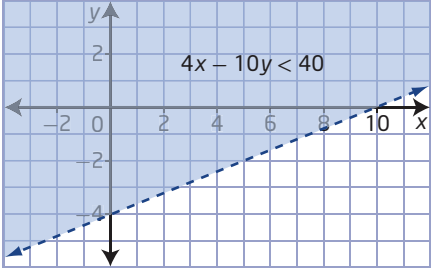
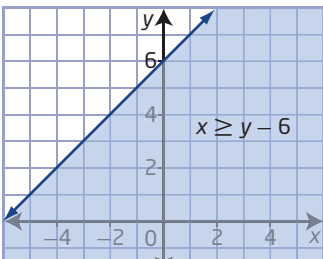
13. Mariya has purchased a new smart phone and is trying to decide on a service plan. Without a plan, each minute of use costs \$0.30 and each megabyte of data costs \$0.05. A plan that allows unlimited talk and data costs \$100/month. Under which circumstances is the plan a better choice for Mariya?

## Chapter 8 Practice Test, pages 459 to 460

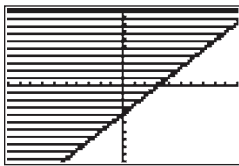
1. C
2. C
3. B
4. D
5. D
6.  $n = -4$
7. a)  $(\frac{3}{4}, -\frac{35}{16})$  and  $(-2, -7)$       b)  $(1, -4)$
8. a)   
(0.76, 1.05)
- b) Example: At this time, 0.76 s after Sophie starts her jump, both dancers are at the same height above the ground.
9. a) perimeter:  $8y = 4x + 28$   
area:  $6y + 3 = x^2 + 14x + 48$
- b) The perimeter is 16 m. The area is 15 m<sup>2</sup>.
10. a)  $y = \frac{1}{3}x^2$  and  $y = \frac{1}{2}(x - 1)^2$
- b)  $(5.45, 9.90)$  and  $(0.55, 0.10)$
11. a) 
- b) Example: At this point, a horizontal distance of 0.4 cm and a vertical distance of 0.512 cm from the start of the jump, the second part of the jump begins.
12. A(-3.52, 0), B(7.52, 0), C(6.03, 14.29)  
area = 78.88 square units

## Chapter 9 Linear and Quadratic Inequalities

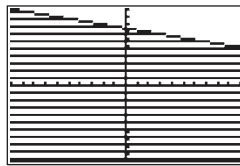
### 9.1 Linear Inequalities in Two Variables, pages 472 to 475

1. a)  $(6, 7), (12, 9)$   
b)  $(-6, -12), (4, -1), (8, -2)$   
c)  $(12, -4), (5, 1)$       d)  $(3, 1), (6, -4)$
  2. a)  $(1, 0), (-2, 1)$       b)  $(-5, 8), (4, 1)$   
c)  $(5, 1)$       d)  $(3, -1)$
  3. a)  $y \leq x + 3$ ; slope of 1; y-intercept of 3; the boundary is a solid line.  
b)  $y > 3x + 5$ ; slope of 3; y-intercept of 5; the boundary is a dashed line.  
c)  $y > -4x + 7$ ; slope of -4; y-intercept of 7; the boundary is a dashed line.
  - d)  $y \geq 2x - 10$ ; slope of 2; y-intercept of -10; the boundary is a solid line.  
e)  $y \geq -\frac{4}{5}x + 4$ ; slope of  $-\frac{4}{5}$ ; y-intercept of 4; the boundary is a solid line.  
f)  $y > \frac{1}{2}x - 5$ ; slope of  $\frac{1}{2}$ ; y-intercept of -5; the boundary is a dashed line.
4. a) 
- b) 
- c) 
- d) 
- e) 

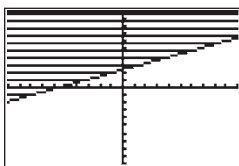
5. a)  $y \geq \frac{6}{5}x - \frac{18}{5}$



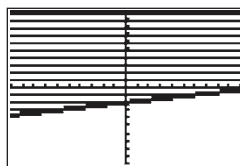
b)  $y < -\frac{1}{4}x + \frac{15}{2}$



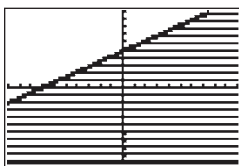
c)  $y > \frac{5}{12}x + \frac{7}{3}$



d)  $y \geq \frac{1}{6}x - \frac{11}{6}$



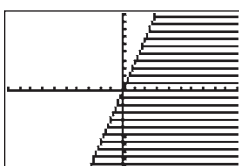
e)  $y \leq \frac{36}{53}x + \frac{260}{53}$



6.  $y \geq -\frac{1}{5}x$

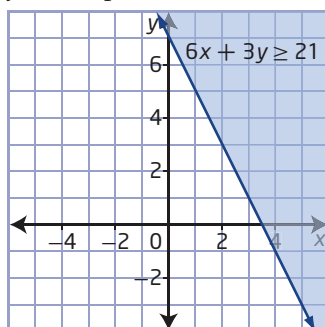


7.  $y < \frac{7}{2}x$

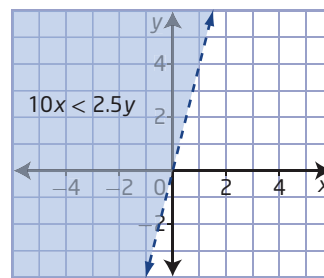


8. Examples:

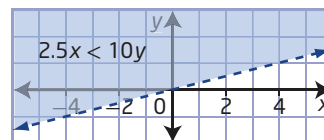
a) Graph by hand because the slope and the y-intercept are whole numbers.



b) Graph by hand because the slope and the y-intercept are whole numbers.

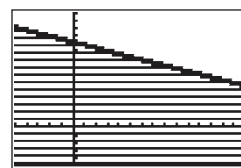


c) Graph by hand because the slope is a simple fraction and the y-intercept is 0.

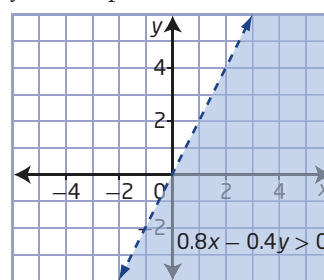


d) Graph using technology because the slope and the y-intercept are complicated fractions.

$y \leq -\frac{489}{1279}x + \frac{14\,500}{1279}$



e) Graph by hand because the slope and the y-intercept are whole numbers.



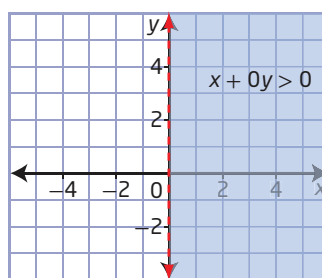
9. a)  $y < \frac{1}{4}x + 2$

b)  $y < -\frac{1}{4}x$

c)  $y > \frac{3}{2}x - 4$

d)  $y \leq -\frac{3}{4}x + 5$

10.



The graph of this solution is everything to the right of the y-axis.