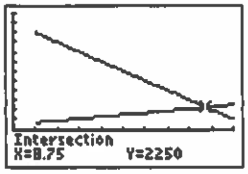
a) The population of fish is decreasing by 1000 each year while the number of fish eaten by osprey is increasing by 200 each year.

b) Example: Let F represent the number of fish. Let x represent the year number. $F = -1000x + 11\ 000$ and $F = 200x + 500$

c) 

The solution is (8.75, 2250). This point indicates that after 8.75 years, the number of trout in the lake will equal the number of trout that are being eaten by the osprey.

d) Example: As the number of trout decreases, the osprey population will also decrease, because there will not be enough trout to keep feeding the osprey population.

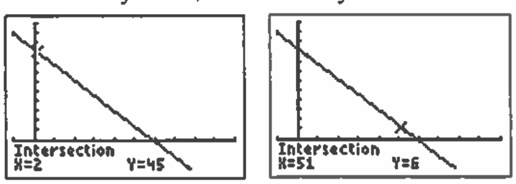
10. Let x represent the depth, in metres, and let y represent the number of minutes the diver can remain at that depth. $60 = 60m + b$ and $90 = 30m + b$; $y = -x + 120$

11. 81.25 min cross-country skiing and 18.75 min playing squash

12. 36.75 square units

a) The constant in the second equation of the second pair is one larger than the constant of the second equation in the first pair.

b) $x = 2$ and $y = 45$; $x = 51$ and $y = 6$

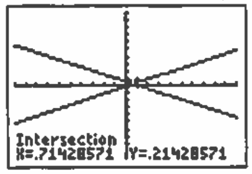
c) 

d) The large numbers make the graphing difficult for both solving for y and finding a good viewing window. The larger numbers make solving the system algebraically (elimination) tedious.

14. a) Example: $3x - y = 5$ and $2x + 7y = 57$ has the solution $x = 4$ and $y = 7$.

b) Example: If it is relatively easy to isolate y in both equations, solving graphically might be preferred. If it is relatively easy to isolate either x or y in only one of the equations, substitution would be recommended. Otherwise, elimination would be preferred.

15. a) Example: $7x - 14y = 2$ and $7x + 14y = 8$ has a solution $x = \frac{5}{7}$ and $y = \frac{3}{14}$.



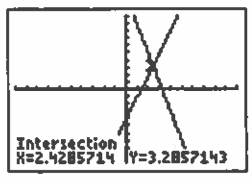
b) Example: This system is difficult to solve graphically, because isolating y in both equations creates equations with fractions as coefficients and/or constants. The solution can only be approximated from the graphs. Solving by elimination is easy, because the coefficients of x are equal and the coefficients of y add to zero.

Chapter 9 Review, pages 502 to 503

1. a) $x = 3$ and $y = 8$

b) $x = 0$ and $y = -2$

c) $x = \frac{2}{9}$ and $y = -\frac{4}{3}$

2. 

$x = 2\frac{3}{7}$ and $y = 3\frac{2}{7}$; Solving algebraically is preferred, because the solution is exact. Graphical solving gives only an approximate solution.

3. 32 000 km

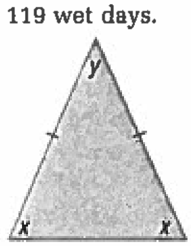
4. $1.40 for one song and $4.20 for one game

5. a) $x = 4$ and $y = -13$

b) $x = 2\frac{4}{7}$ and $y = 1\frac{1}{7}$

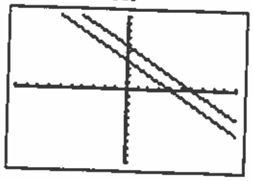
c) $x = \frac{3}{2}$ and $y = 0$

6. Vancouver has 166 wet days and Yellowknife has 119 wet days.

7. 

The two base angles are each 46.5° and the third angle is 87°.

8. Danika ate 121.875 g of grapes and 203.125 g of oranges.
9. washing machine: $800; shower head: $25
10. a) $34 per day; $0.15 per km
    b) Example: The elimination method is easiest, because graphing and substitution are more complicated due to the coefficients of the variables.
11. a) 19 acres for developed sites and 38 acres for basic sites
    b) 76 developed campsites and 57 basic campsites
12. 1 h 40 min
13. a) no solution

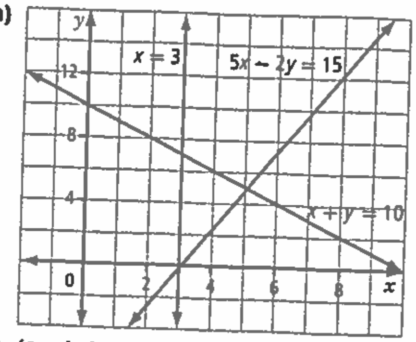


    b) The two lines are parallel, so there is no point of intersection and thus no solution.

Chapter 9 Practice Test, pages 504 to 505

1. D
2. C
3. C
4. C
5. a) $x = 4\frac{1}{4}$ and $y = 5\frac{3}{4}$
   b) $x = -1.5$ and $y = 20.5$
   c) $x = 4.5$ and $y = -3.5$
6. The length is 4 m and the width is 1.4 m.
7. 187.5 g of peanuts and 112.5 g of almonds
8. 17 nickels and 32 quarters
9. The green fee is $22 per game and the annual fee is $150.
10. 667 students and 29 teachers
11. a) Edmonton to Saskatoon took approximately 6.21 h. Saskatoon to Regina took approximately 3.64 h.
    b) The distance from Edmonton to Saskatoon is approximately 546.89 km. Example: Multiply the number of hours to drive from Edmonton to Saskatoon (approximately 6.21 h) by the speed (88 km/h) Mallory travelled.

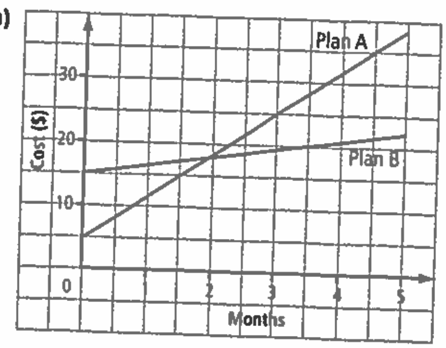
12. a)



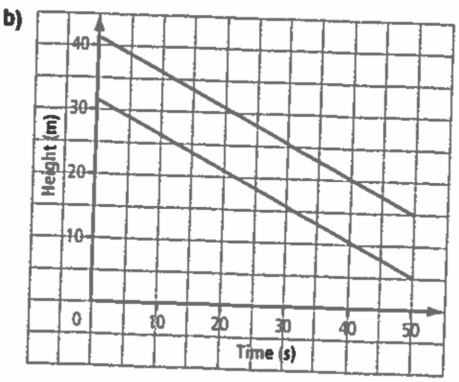
    b) (3, 0), (5, 5), and (3, 7)

Unit 4 Review, pages 507 to 509

1. a)



   b)



   c)