Chapters 1–9 Cumulative Review

1. To verify if the given point is a solution, use the values of x and y in both equations. If the values work in both equations, then the point is a solution.
   a) Yes   **b)** No

2. $238.36

3. **a)** $\frac{4}{5}$ **b)** $\frac{3}{5}$
   c) $\frac{3}{5}$ **d)** $\frac{4}{5}$
   e) $\frac{4}{3}$ **f)** $\frac{3}{4}$

4. **a)** 64   **b)** −625
   c) 49   **d)** $-\frac{27}{5}$
   **e)** $\frac{3}{64}$ **f)** $-\frac{1}{125}$

5. **a)** $-56n^2 + 102n - 27$
   b) $-4s^4 - 6s^3 + 21s^2 + 13s - 15$

6. Example: It takes Jon 5 s to reach the bottom of the first hill on his bike. For a few seconds, Jon pedals to maintain his speed on a flat section of road. He then begins to go down a second hill and continues to accelerate. At the bottom of the hill, the road rises up. Jon coasts up the third hill as his speed slows. At the top, Jon maintains his speed by pedalling until he reaches a slight decline, at which point he begins to accelerate again. He then maintains this speed by pedalling.
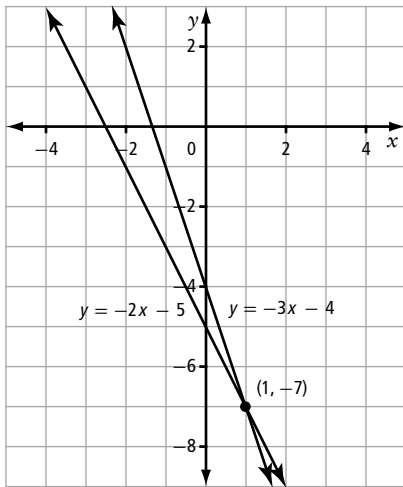
7. **a)** $(6, -10)$
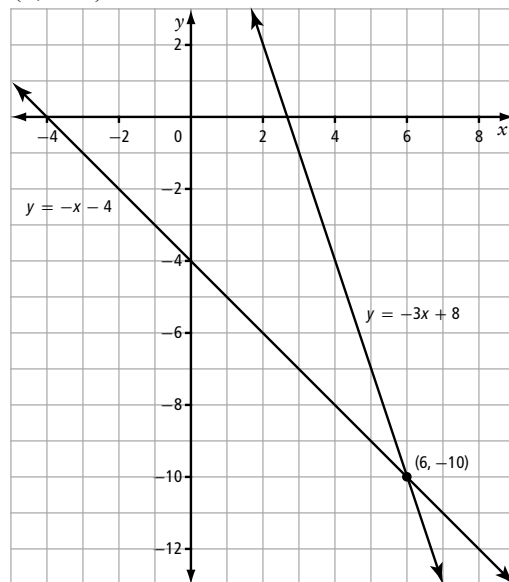
b) $(-3, 0)$
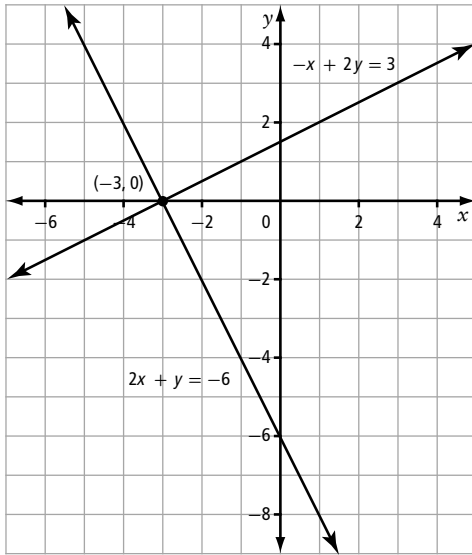
c) $(1, -7)$

8. a) $26.2°$ **b)** $67.4°$
c) $14.3°$

9. a) slope is -5, y-intercept is $(0, 8)$
b) slope is $\frac{3}{7}$, y-intercept is $\left(0, -\frac{10}{7}\right)$

10. a) 2674.75 cm^2 **b)** 133.88 in.^{2}
c) $10\,908$ cm^2 **d)** 3019.07 cm^2

11. a) domain: $\{x \,|\, x \in \mathbb{R}\}$; range: $\{y \,|\, y \in \mathbb{R}\}$;
intercepts are $(-1, 0), (0, -2.5)$; slope is
$-\frac{5}{2}$; equation of the line in general form
is $5x + 2y + 5 = 0$
b) domain: $\{x \,|\, x \in \mathbb{R}\}$; range: $\{-4\}$;
y-intercept is $(0, -4)$; slope is 0; equation
of the line in general form is $y + 4 = 0$

12. a) $2ab^2$ **b)** $9xy^2$
**c)** pq

13. a) linear
b) Example: Let n represent the quantity,
in kilograms, of honey sold. Let R
represent the sales revenue, in dollars.
In this situation, n is the independent
variable and R is the dependent variable.
In order to calculate the money earned
from sales, first you need to know
how much honey was sold. Therefore,
revenue is dependent on the amount of
honey that is sold.

c)

n	R ($)	n	R ($)
0	0	50	549.00
10	109.80	60	658.80
20	219.60	70	768.60
30	329.40	80	878.40
40	439.20	90	988.20

d) The data would be discrete if the
beekeeper sells honey only in quantities
that are in whole units. The data would
be continuous if the beekeeper sells
honey in quantities of any weight.

e)
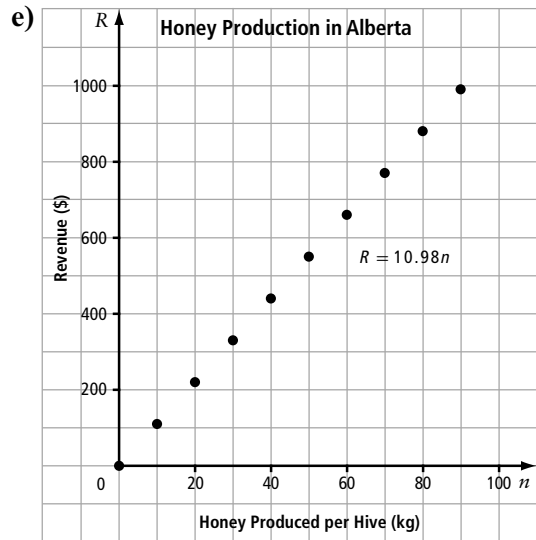
14. a) one solution
b) no solution
c) infinite number of solutions

15. 3.65cm; Example: length of a nail

16 a) $(2, 4)$ **b)** $(0, -5)$

17. a) 14.6 **b)** 8.1
c) 106.7

18. a) $x^{\frac{23}{5}}$ **b)** $\frac{1}{64}$

c) z^4 **d)** $\frac{1}{5p^{\frac{5}{2}}}$

e) $x^{200}y^{125}$ **f)** $\frac{x^{\frac{9}{4}}(0.16)^{\frac{3}{4}}}{y^{\frac{9}{2}}}$

19. a) $(4x - 1)(x + 2)$
   b) $(x - 3)(x - 6)$
   c) $-3(2m - 3n)(4m - n)$
   d) $(7x + 2y)(5x - 3y)$
   e) $12t(s + 6)(s - 4)$

20. a) $(4, -2)$ **b)** $(-1, 8)$

21. 176 miles; 50 km; 66 ft; 213 m

22. a) 0.67 ft **b)** 5.85 cm
   c) 4.33 m **d)** 9.40 cm

23. a) $\frac{4}{9}$, 0.777..., $\sqrt[3]{634}$, $\sqrt{82}$; The last two numbers are irrational.
   b) $\sqrt[5]{67}$, $\sqrt[4]{1296}$, $14\frac{1}{3}$, $\sqrt{289}$; $\sqrt[5]{67}$ is irrational.

24. $[-18.4, 69.8]$

25. a) slope-intercept form: $y = 3x + 5$;
   general form: $3x - y + 5 = 0$
   b) slope-intercept form: $y = \frac{3}{4}x - \frac{45}{4}$;
   general form: $3x - 4y - 45 = 0$

26. a) $(c - 13)(c + 13)$
   b) $(9 + 4y^2)(3 - 2y)(3 + 2y)$
   c) $7(5h - 12f)(5h + 5f)$
   d) $(x - 4)(x + 4)(x - 5)(x + 5)$

27. a) Example: domain: $\{x \mid 0 \le x \le 30\ x \in \mathbb{N}\}$;
   range: $\{y \mid y \ge 40,\ y \in \mathbb{N}\}$

Twyla's Charity Run

$P(n) = 20n + 40$
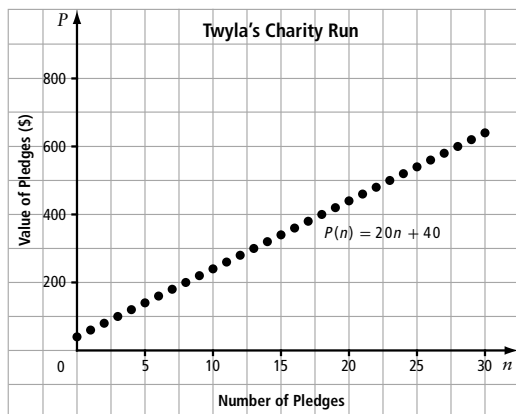
b) If there were 9 pledges, there would be a total of $220 in funds.
   c) 24 pledges

d) This situation depicts a function because for every value in the domain there is a unique value in the range.

28. $y = \frac{5}{4}x + \frac{5}{2}$

29. a) $(3s - 9)^2$ **b)** $s(4s + 12)^2$
   c) $(16 - 5y)^2$

30. a) 15.2 cm; 152 mm **b)** 5.98 in.
   c) No, it is not necessary to measure the figure three times. It only needs to be measured once. That measurement can then be converted to the other required units.

31. 6.3 ft

32. a) $2\sqrt{10}$ **b)** $3\sqrt{2}$
   c) $3\sqrt[3]{4}$ **d)** $3\sqrt[4]{2}$

33. A: undefined; B: $-\frac{3}{5}$; C: $\frac{1}{5}$; D: 5; E: 0