20. $pc - 4cp + c - p + 7pc - 7c = \mathbf{4cp - 6c - p}$

21. $xym^2 + 3xy^2m - 4m^2xy + 5mxy^2$
$= \mathbf{-3m^2xy + 8mxy^2}$

22. $x^2y(x^3 - xyz^3) = (x^2y)(x^3) + (x^2y)(-xyz^3)$
$= \mathbf{x^5y - x^3y^2z^3}$

23. $p(a) - xp(-a) = -2(3) - 4(-2)(-3)$
$= -6 - 24 = \mathbf{-30}$

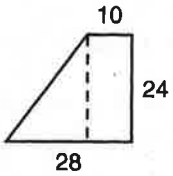
24. $x^3y(x - y) = (-3)^3(1)(-3 - 1) = -27(-4) = \mathbf{108}$

25. $-4(-7 + 5)(-2) - |-2 - 5| = -4(-2)(-2) - |-7|$
$= -16 - 7 = \mathbf{-23}$

26. $-3^2 + (-2)^3 - \sqrt[4]{81} = -9 - 8 - 3 = \mathbf{-20}$

27. $P = \left(5 + 3 + 5 + 3 + \dfrac{2\pi(3)}{2}\right)$ ft
$= \mathbf{(16 + 3\pi)\ ft = 25.42\ ft}$

28.



$A = (10\text{ mi} \times 24\text{ mi}) + \dfrac{1}{2}(18\text{ mi} \times 24\text{ mi})$
$= 240\text{ mi}^2 + 216\text{ mi}^2$
$= \mathbf{456\ mi^2}$

29. Since the sides opposite the angles of equal measure have equal lengths, $x = \mathbf{5}$.

30. $V = (\text{Area}_{\text{base}})(\text{Height})$
$= \left[\dfrac{1}{2}(8\text{ cm} \times 13\text{ cm})\right](12\text{ cm})$
$= (52\text{ cm}^2)(12\text{ cm})$
$= \mathbf{624\ cm^3}$

Practice 29

a. $\dfrac{1}{2^{-3}} = 2^3 = \mathbf{8}$

b. $(-4)^{-2} = \dfrac{1}{(-4)^2} = \mathbf{\dfrac{1}{16}}$

c. $\dfrac{1}{(-3)^{-2}} = (-3)^2 = \mathbf{9}$

d. $8^0 = \mathbf{1}$

e. $-8^0 = \mathbf{-1}$

f. $(-3)^0 = \mathbf{1}$

g. $(p + m + k^2)^0 = \mathbf{1}$

h. $x^{-3}y^{-8}y^5x^4zx^2z^5 = x^{-3}x^4x^2y^{-8}y^5zz^5 = \mathbf{x^3y^{-3}z^6}$

i. $x^6y^{-3}x^2y^3 = x^6x^2y^{-3}y^3 = x^8y^0 = \mathbf{x^8}$

j. $2x^{-2}y^3(x^2y - 3x^{-1}y^{-3})$
$= 2x^{-2}y^3(x^2y) + 2x^{-2}y^3(-3x^{-1}y^{-3})$
$= 2x^{-2}x^2y^3y - 6x^{-2}x^{-1}y^3y^{-3}$
$= 2x^0y^4 - 6x^{-3}y^0 = \mathbf{2y^4 - 6x^{-3}}$

Problem Set 29

1. **(a), (b)**

2. **Parallelogram**

3. $500\text{ ft} \times \dfrac{12\text{ in.}}{1\text{ ft}} \times \dfrac{2.54\text{ cm}}{1\text{ in.}} = \mathbf{500(12)(2.54)\ cm}$
$= \mathbf{15{,}240\ cm}$

4. $180\text{ yd} \cdot \text{yd} \times \dfrac{3\text{ ft}}{1\text{ yd}} \times \dfrac{3\text{ ft}}{1\text{ yd}} = \mathbf{180(3)^2\ ft^2}$
$= \mathbf{1620\ ft^2}$

5. $A = S^2$
$16\text{ in.}^2 = S^2$
Each side is 4 in. because $4\text{ in.} \times 4\text{ in.} = 16\text{ in.}^2$.
$P = 4S = 4(4\text{ in.}) = \mathbf{16\ in.}$

6. $2^{-2} = \dfrac{1}{2^2} = \mathbf{\dfrac{1}{4}}$

7. $\dfrac{1}{4^{-2}} = 4^2 = \mathbf{16}$

8. $3^0 = \mathbf{1}$

9. $2\frac{1}{4}WN = 72$
$\frac{9}{4}WN = 72$
$\frac{4}{9} \cdot \frac{9}{4}WN = 72 \cdot \frac{4}{9}$
$WN = \mathbf{32}$

10. $\left(3\frac{1}{8}\right)(72) = WN$

$$WN = \frac{25}{8} \cdot 72$$

$$WN = \mathbf{225}$$

11. $f(x) = 2x - 1$

$f(3) = 2(3) - 1 = 6 - 1 = \mathbf{5}$

12. $g(x) = 3x + 2$

$g(-2) = 3(-2) + 2 = -6 + 2 = \mathbf{-4}$

13. $-x = 3$

$$\frac{-x}{-1} = \frac{3}{-1}$$

$$x = \mathbf{-3}$$

14. $\dfrac{y}{2\frac{1}{3}} = 6$

$$\frac{2\frac{1}{3}y}{2\frac{1}{3}} = 6 \cdot 2\frac{1}{3}$$

$$y = 6 \cdot \frac{7}{3}$$

$$y = \mathbf{14}$$

15. $\frac{1}{4}x + \frac{1}{2} = \frac{7}{8}$

$$\begin{array}{rr} & -\frac{1}{2} \quad -\frac{1}{2} \\ \hline \frac{1}{4}x & = \frac{3}{8} \end{array}$$

$$\frac{4}{1} \cdot \frac{1}{4}x = \frac{3}{8} \cdot \frac{4}{1}$$

$$x = \mathbf{\frac{3}{2}}$$

16. $0.002k + 0.04 = 2.04$

$$2k + 40 = 2040$$

$$2k = 2000$$

$$k = \mathbf{1000}$$

17. $3x + 5 - x = x + 5$

$$2x + 5 = x + 5$$

$$\begin{array}{rr} -x & -x \\ \hline x + 5 = & 5 \\ -5 & -5 \\ \hline x = & \mathbf{0} \end{array}$$

18. $3m - 2 - m = -2 + m - 5$

$$2m - 2 = m - 7$$

$$\begin{array}{rr} -m & -m \\ \hline m - 2 = & -7 \\ +2 & +2 \\ \hline m = & \mathbf{-5} \end{array}$$

19. $x^5m^2x^{-3}m^{-4} = m^2m^{-4}x^5x^{-3} = \mathbf{m^{-2}x^2}$

20. $a^3b^{-4}a^{-3}b^6 = a^3a^{-3}b^{-4}b^6 = a^0b^2 = \mathbf{b^2}$

21. $4x^2yp - 7px^2y + 3ypx^2 - 4 = \mathbf{-4}$

22. $x^2y^3(3xy - 5y) = (x^2y^3)(3xy) + (x^2y^3)(-5y)$
$= \mathbf{3x^3y^4 - 5x^2y^4}$

23. $x^{-2}y(x^2y + 2x^3y^0) = (x^{-2}y)(x^2y) + (x^{-2}y)(2x^3)$
$= x^0y^2 + 2x^1y = \mathbf{y^2 + 2xy}$

24. $4x(a + x)(-x) = 4(-3)[2 + (-3)][-(-3)]$
$= -12(-1)(3) = \mathbf{36}$

25. $a^2 - (a + b) - |-a^3|$
$= (-2)^2 - (-2 + 3) - |-(-2)^3|$
$= 4 - (1) - 8 = \mathbf{-5}$

26. $\dfrac{2^2 - 3^2 - 4^2}{(-3)^2} = \dfrac{4 - 9 - 16}{9} = -\dfrac{21}{9} = \mathbf{-\dfrac{7}{3}}$

27. $P = (46 + 29 + 46 + 21 + 11 + 19)\text{ ft} = \mathbf{172\text{ ft}}$

28. $A = (12\text{ mi} \times 8\text{ mi}) + \frac{1}{2}(12\text{ mi} \times 4\text{ mi})$
$= 96\text{ mi}^2 + 24\text{ mi}^2 = \mathbf{120\text{ mi}^2}$

29. $\text{Area} = \text{Area}_{\text{triangle}} - \text{Area}_{\text{circle}}$
$= \frac{1}{2}(16\text{ cm} \times 8\text{ cm}) - \pi(3\text{ cm})^2$
$= 64\text{ cm}^2 - 9\pi\text{ cm}^2$
$= \mathbf{(64 - 9\pi)\text{ cm}^2 = 35.74\text{ cm}^2}$

30. $S.A. = 2(\text{Area}_{\text{front}}) + 2(\text{Area}_{\text{side}}) + 2(\text{Area}_{\text{top}})$
$= 2(4\text{ m} \times 3\text{ m}) + 2(3\text{ m} \times 3\text{ m})$
$+ 2(4\text{ m} \times 3\text{ m})$
$= 2(12\text{ m}^2) + 2(9\text{ m}^2) + 2(12\text{ m}^2)$
$= 24\text{ m}^2 + 18\text{ m}^2 + 24\text{ m}^2$
$= \mathbf{66\text{ m}^2}$

Practice 30

a. $\mathbf{5(3N - 5)}$

b. $\mathbf{3(N - 50)}$

c. $5N - 13$

d. $3(-N - 7)$

e. $0.16WN = 10.24$

$$\frac{0.16WN}{0.16} = \frac{10.24}{0.16}$$

$$WN = \mathbf{64}$$

f. $WD(80) = 60$

$$\frac{WD \cdot 80}{80} = \frac{60}{80}$$

$$WD = \frac{3}{4}$$

$$WD = \mathbf{0.75}$$

g. $(0.48)(8) = WN$

$$WN = \mathbf{3.84}$$

Problem Set 30

1. Positive number

2. Trapezoid

3. $10{,}000 \text{ ft} \times \frac{12 \text{ in.}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in.}}$

$= \mathbf{10{,}000(12)(2.54) \text{ cm} = 304{,}800 \text{ cm}}$

4. $135 \text{ mi} \cdot \text{mi} \times \frac{5280 \text{ ft}}{1 \text{ mi}} \times \frac{5280 \text{ ft}}{1 \text{ mi}}$

$= \mathbf{135(5280)^2 \text{ ft}^2 = 3{,}763{,}584{,}000 \text{ ft}^2}$

5.

$$A = \pi r^2$$

$$36\pi \text{ cm}^2 = \pi r^2$$

$$36(3.14) \text{ cm}^2 = (3.14)r^2$$

$$113.04 \text{ cm}^2 = 3.14r^2$$

$$\frac{113.04 \text{ cm}^2}{3.14} = r^2$$

$$36 \text{ cm}^2 = r^2$$

The radius is 6 cm because $6 \text{ cm} \times 6 \text{ cm} = 36 \text{ cm}^2$.

$D = 2r = 2(6 \text{ cm}) = \mathbf{12 \text{ cm}}$

6. $5N - 8$

7. $3(-N - 7)$

8. $0.18WN = 4.68$

$$\frac{0.18WN}{0.18} = \frac{4.68}{0.18}$$

$$WN = \mathbf{26}$$

9. $WD(60) = 45$

$$\frac{WD \cdot 60}{60} = \frac{45}{60}$$

$$WD = \frac{3}{4}$$

$$WD = \mathbf{0.75}$$

10. $(-3)^{-2} = \frac{1}{(-3)^2} = \mathbf{\frac{1}{9}}$

11. $\frac{1}{(-3)^{-3}} = (-3)^3 = \mathbf{-27}$

12. $-3^0 = \mathbf{-1}$

13.

$$3\frac{1}{4}WN = 91$$

$$\frac{13}{4}WN = 91$$

$$\frac{4}{13} \cdot \frac{13}{4}WN = 91 \cdot \frac{4}{13}$$

$$WN = \mathbf{28}$$

14. $\left(\frac{7}{3}\right)(42) = WN$

$$WN = \mathbf{98}$$

15. $f(x) = 3x - 5$

$f(-2) = 3(-2) - 5 = -6 - 5 = \mathbf{-11}$

16. $g(x) = 4x + 2$

$g(2) = 4(2) + 2 = 8 + 2 = \mathbf{10}$

17. $3x - 7 = 42$

$+7 \quad +7$

$3x \quad = 49$

$$\frac{3x}{3} = \frac{49}{3}$$

$$x = \mathbf{\frac{49}{3}}$$

18.

$$\frac{3}{4}y = 4\frac{7}{8}$$

$$\frac{4}{3} \cdot \frac{3}{4}y = \frac{39}{8} \cdot \frac{4}{3}$$

$$y = \mathbf{\frac{13}{2}}$$

19. $\frac{1}{2}x + \frac{1}{2} = 2\frac{1}{5}$

$$\begin{array}{rr} & -\frac{1}{2} \quad -\frac{1}{2} \\ \hline \frac{1}{2}x & = 1\frac{7}{10} \end{array}$$

$$\frac{2}{1} \cdot \frac{1}{2}x = 1\frac{7}{10} \cdot \frac{2}{1}$$

$$x = \frac{17}{10} \cdot \frac{2}{1}$$

$$x = \mathbf{\frac{17}{5}}$$

20. $0.03x - 0.6 = 2.4$

$$3x - 60 = 240$$

$$3x = 300$$

$$x = \mathbf{100}$$

21. $7p - 15 = 4p - 5 + p$

$$7p - 15 = 5p - 5$$

$$\begin{array}{rr} -5p & -5p \\ \hline 2p - 15 = & -5 \\ +15 & +15 \\ \hline 2p = & 10 \end{array}$$

$$\frac{2p}{2} = \frac{10}{2}$$

$$p = \mathbf{5}$$

22. $x^{-5}y^5axy^3a^{-3} = aa^{-3}x^{-5}xy^5y^3 = \mathbf{a^{-2}x^{-4}y^8}$

23. $m^2p^{-4}m^{-2}p^6 = m^2m^{-2}p^{-4}p^6 = m^0p^2 = \mathbf{p^2}$

24. $5m^2x^2y - 2x^2m^2y + 8m^2y^2x = \mathbf{3m^2x^2y + 8m^2xy^2}$

25. $x^{-4}y^0(x^4 - 3y^2x^5p^0)$

$= (x^{-4}y^0)(x^4) + (x^{-4}y^0)(-3y^2x^5p^0)$

$= x^0y^0 - 3x^{-4}x^5y^2 = \mathbf{1 - 3xy^2}$

26. $-c(ac - a) = -4[-3(4) - (-3)] = -4(-12 + 3)$

$= -4(-9) = \mathbf{36}$

27. $-n(n - m) - |m^2| = -(-4)(-4 - 3) - |3^2|$

$= 4(-7) - 9 = -28 - 9 = \mathbf{-37}$

28. $P = \left(18 + 12 + 18 + 12 + \frac{2\pi(12)}{2}\right)$ m

$= \mathbf{(60 + 12\pi)\ m = 97.68\ m}$

29. $A = \frac{1}{2}(15\text{ km})(20\text{ km}) = \mathbf{150\ km^2}$

30. $V = (\text{Area}_{\text{base}})(\text{Length})$

$= [\pi(4\text{ in.})^2](10\text{ in.})$

$= (16\pi\text{ in.}^2)(10\text{ in.})$

$= \mathbf{160\pi\ in.^3 = 502.4\ in.^3}$

Practice 31

a. $-3(2 - c) = c - 2$

$$-6 + 3c = c - 2$$

$$\begin{array}{rr} & -c \quad -c \\ \hline -6 + 2c = & -2 \\ +6 & +6 \\ \hline 2c = & 4 \end{array}$$

$$c = \mathbf{2}$$

b. $-(6c - 5) = 4(7c - 8) + 3$

$$-6c + 5 = 28c - 32 + 3$$

$$-6c + 5 = 28c - 29$$

$$\begin{array}{rr} -28c & -28c \\ \hline -34c + 5 = & -29 \\ -5 & -5 \\ \hline -34c = & -34 \end{array}$$

$$c = \mathbf{1}$$

c. $-(7 - 9)z - 6z = 8(-6 + 2)$

$$2z - 6z = 8(-4)$$

$$-4z = -32$$

$$z = \mathbf{8}$$

Problem Set 31

1. **(a), (c)**

2. (a) **A rectangle is a parallelogram with four angles of equal measure.**

(b) **A rhombus is a parallelogram with four sides of equal length.**

(c) **A square is a rhombus with four angles of equal measure.**

(d) **Yes**

3. $20\text{ m} \times \frac{100\text{ cm}}{1\text{ m}} \times \frac{1\text{ in.}}{2.54\text{ cm}} = \mathbf{\frac{20(100)}{(2.54)}\ in.}$

$= \mathbf{787.40\ in.}$

4. $1800\text{ m} \cdot \text{m} \times \frac{1\text{ km}}{1000\text{ m}} \times \frac{1\text{ km}}{1000\text{ m}}$

$= \mathbf{\frac{1800}{(1000)^2}\ km^2 = 0.0018\ km^2}$

5. $P = 4S$

$20\text{ in.} = 4S$

$\frac{20\text{ in.}}{4} = S$

$5\text{ in.} = S$

$A = S^2 = (5\text{ in.})^2 = \mathbf{25\ in.^2}$

6. $7(N - 5)$

7. $2(-N) - 7$

8. $7N - 51$

9. $4N - 15$

10. $0.21WN = 7.98$

$$\frac{0.21WN}{0.21} = \frac{7.98}{0.21}$$

$$WN = \mathbf{38}$$

11. $(0.32)(62) = WN$

$$WN = \mathbf{19.84}$$

12. $2^{-4} = \frac{1}{2^4} = \mathbf{\frac{1}{16}}$

13. $\frac{1}{3^{-2}} = 3^2 = \mathbf{9}$

14. $(-4)^0 = \mathbf{1}$

15. $WF(60) = 42$

$$\frac{WF \cdot 60}{60} = \frac{42}{60}$$

$$WF = \mathbf{\frac{7}{10}}$$

16. $\left(5\frac{1}{3}\right)(120) = WN$

$$WN = \frac{16}{3} \cdot 120$$

$$WN = \mathbf{640}$$

17. $f(x) = -2x + 3$

$f(3) = -2(3) + 3 = -6 + 3 = \mathbf{-3}$

18. $5k - 4 = -30$

$$+4 \quad +4$$

$$5k = -26$$

$$k = \mathbf{-\frac{26}{5}}$$

19. $3\frac{1}{3}x - \frac{1}{2} = 5$

$$+\frac{1}{2} \quad +\frac{1}{2}$$

$$3\frac{1}{3}x = 5\frac{1}{2}$$

$$\frac{3\frac{1}{3}x}{3\frac{1}{3}} = \frac{5\frac{1}{2}}{3\frac{1}{3}}$$

$$x = \frac{\frac{11}{2}}{\frac{10}{3}}$$

$$x = \frac{11}{2} \cdot \frac{3}{10}$$

$$x = \mathbf{\frac{33}{20}}$$

20. $0.002k + 0.02 = 2.06$

$$2k + 20 = 2060$$

$$2k = 2040$$

$$k = \mathbf{1020}$$

21. $3(p - 2) = p + 7$

$$3p - 6 = p + 7$$

$$-p \quad -p$$

$$2p - 6 = 7$$

$$+6 \quad +6$$

$$2p = 13$$

$$p = \mathbf{\frac{13}{2}}$$

22. $2(3x - 5) = 7x + 2$

$$6x - 10 = 7x + 2$$

$$-7x \quad -7x$$

$$-x - 10 = 2$$

$$+10 \quad +10$$

$$-x = 12$$

$$x = \mathbf{-12}$$

23. $(-1)^2 + 5(-1) = -4$ $\qquad$ $(4)^2 + 5(4) = -4$

$1 - 5 = -4$ $\qquad$ $16 + 20 = -4$

$-4 = -4$ $\qquad$ $36 \neq -4$

Therefore, **–1 is a root of the equation.**

24. $xmp^{-2} - 4p^{-2}xm + 6p^{-2}mx - 5mx$

$= \mathbf{3mp^{-2}x - 5mx}$

25. $p^0x^{-1}(x - 2x^0) = (p^0x^{-1})(x) + (p^0x^{-1})(-2x^0)$

$= p^0x^0 - 2p^0x^{-1} = \mathbf{1 - 2x^{-1}}$

26. $y^0x^{-4}(x^4 - 5y^4x^4)$
$= (y^0x^{-4})(x^4) + (y^0x^{-4})(-5y^4x^4)$
$= y^0x^0 - 5x^0y^4 = \mathbf{1 - 5y^4}$

27. $-a^2 - 3a(a - b) = -(-2)^2 - 3(-2)[-2 - (-1)]$
$= -4 + 6(-2 + 1) = -4 + 6(-1) = -4 - 6$
$= \mathbf{-10}$

28. $-c(ac - a^0) = -4[-3(4) - (-3)^0] = -4(-12 - 1)$
$= -4(-13) = \mathbf{52}$

29. $P = \left(10 + 6 + 10 + \dfrac{2\pi(3)}{2}\right)$ ft
$= \mathbf{(26 + 3\pi)\ ft = 35.42\ ft}$

30. $V = (\text{Area}_{\text{base}})(\text{Height})$
$= (58\ \text{cm}^2)(15\ \text{cm}) = \mathbf{870\ cm^3}$

Practice 32

a. $4N - 8 = 92$
$+8 \quad +8$
$4N = 100$
$N = \mathbf{25}$

$4(25) - 8 = 92$
$100 - 8 = 92$
$92 = 92$ Check

b. $4N - 12 = 2(-N)$
$4N - 12 = -2N$
$+2N \quad +2N$
$6N - 12 = 0$
$+12 \quad +12$
$6N = 12$
$N = \mathbf{2}$

$4(2) - 12 = 2(-2)$
$8 - 12 = -4$
$-4 = -4$ Check

Problem Set 32

1. (a) **Surface area**

(b) **Multiply the perimeter of a base by the height of the right solid.**

2. (a) **Natural numbers (or counting numbers)**

(b) **Whole numbers**

(c) **Integers**

3. $1828\ \text{cm} \times \dfrac{1\ \text{in.}}{2.54\ \text{cm}} \times \dfrac{1\ \text{ft}}{12\ \text{in.}} = \dfrac{\mathbf{1828}}{\mathbf{(2.54)(12)}}\ \mathbf{ft}$
$= \mathbf{59.97\ ft}$

4. $57\ \text{ft} \cdot \text{ft} \times \dfrac{1\ \text{yd}}{3\ \text{ft}} \times \dfrac{1\ \text{yd}}{3\ \text{ft}} = \dfrac{\mathbf{57}}{\mathbf{(3)^2}}\ \mathbf{yd^2} = \mathbf{6.33\ yd^2}$

5. $C = 2\pi r$
$14\pi\ \text{cm} = 2\pi r$
$14(3.14)\ \text{cm} = 2(3.14)r$
$43.96\ \text{cm} = 6.28r$
$\dfrac{43.96\ \text{cm}}{6.28} = r$
$7\ \text{cm} = r$
$D = 2r = 2(7\ \text{cm}) = \mathbf{14\ cm}$

6. $2N + 17 = 55$
$-17 \quad -17$
$2N = 38$
$N = \mathbf{19}$

7. $2N - 16 = 84$
$+16 \quad +16$
$2N = 100$
$N = \mathbf{50}$

8. $DP(25) = 1.25$
$\dfrac{DP \cdot 25}{25} = \dfrac{1.25}{25}$
$DP = \mathbf{0.05}$

9. $(-5)^{-2} = \dfrac{1}{(-5)^2} = \mathbf{\dfrac{1}{25}}$

10. $\dfrac{1}{(-4)^{-3}} = (-4)^3 = \mathbf{-64}$

11. $\mathbf{-5^0 = -1}$

12. $\left(2\frac{1}{9}\right)WN = 76$

$\dfrac{2\frac{1}{9}WN}{2\frac{1}{9}} = \dfrac{76}{2\frac{1}{9}}$

$WN = \dfrac{76}{\frac{19}{9}}$

$WN = 76 \cdot \dfrac{9}{19}$

$WN = \mathbf{36}$

13. $g(x) = -5x - 4$

$g(-5) = -5(-5) - 4 = 25 - 4 = \mathbf{21}$

14. $2\frac{1}{2}x - 5 = 15$

$+5 \quad +5$

$2\frac{1}{2}x = 20$

$\frac{2\frac{1}{2}x}{2\frac{1}{2}} = \frac{20}{2\frac{1}{2}}$

$x = \frac{20}{\frac{5}{2}}$

$x = 20 \cdot \frac{2}{5}$

$x = \mathbf{8}$

15. $2\frac{1}{4}k + \frac{1}{4} = \frac{1}{8}$

$-\frac{1}{4} \quad -\frac{1}{4}$

$2\frac{1}{4}k = -\frac{1}{8}$

$\frac{2\frac{1}{4}k}{2\frac{1}{4}} = \frac{-\frac{1}{8}}{2\frac{1}{4}}$

$k = \frac{-\frac{1}{8}}{\frac{9}{4}}$

$k = -\frac{1}{8} \cdot \frac{4}{9}$

$k = \mathbf{-\frac{1}{18}}$

16. $0.025x + 0.03 = 1.03$

$25x + 30 = 1030$

$25x = 1000$

$x = \mathbf{40}$

17. $3p - 4 - 6 = -2(p - 5)$

$3p - 10 = -2p + 10$

$+2p \quad +2p$

$5p - 10 = 10$

$+10 \quad +10$

$5p = 20$

$p = \mathbf{4}$

18. $-(x - 3) - 2(x - 4) = 7$

$-x + 3 - 2x + 8 = 7$

$-3x + 11 = 7$

$-11 \quad -11$

$-3x = -4$

$x = \mathbf{\frac{4}{3}}$

19. (a) **4**

(b) **−4**

(c) **No**

(d) **No**

20. $k^2p^{-4}y - 5k^2yp^{-4} + 2yk^2p^{-4} - 5k^2yp^{-4}$

$= \mathbf{-7k^2p^{-4}y}$

21. $2x^{-2}y^0(x^2y^0 - 4x^{-6}y^4)$

$= (2x^{-2}y^0)(x^2y^0) + (2x^{-2}y^0)(-4x^{-6}y^4)$

$= 2x^0y^0 - 8x^{-8}y^4 = \mathbf{2 - 8x^{-8}y^4}$

22. $(x^2 - 4x^5y^{-5})3p^0x^{-2}$

$= (3p^0x^{-2})(x^2) + (3p^0x^{-2})(-4x^5y^{-5})$

$= 3p^0x^0 - 12p^0x^3y^{-5} = \mathbf{3 - 12x^3y^{-5}}$

23. $-a^3(a^0 - b) = -(-2)^3[(-2)^0 - 4]$

$= 8(1 - 4) = 8(-3) = \mathbf{-24}$

24. $x(x^0 - y)(y - 2x) = -3[(-3)^0 - 5][5 - 2(-3)]$

$= -3(1 - 5)(5 + 6) = -3(-4)(11) = \mathbf{132}$

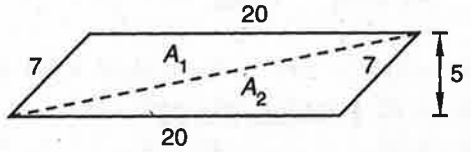
25. $-3^2 + (-3)^3 - 3^0 - |-3 - 3|$

$= -9 - 27 - 1 - 6 = \mathbf{-43}$

26. $\frac{-3[5(-2 - 1) - (6 - 3)]}{2(-3 - 4)} = \frac{-3[5(-3) - 3]}{2(-7)}$

$= \frac{-3(-15 - 3)}{-14} = \frac{-3(-18)}{-14} = \frac{54}{-14} = \mathbf{-\frac{27}{7}}$

27.



Area $= A_1 + A_2$

$= \frac{1}{2}(20\text{ m} \times 5\text{ m}) + \frac{1}{2}(20\text{ m} \times 5\text{ m})$

$= \frac{1}{2}(100\text{ m}^2) + \frac{1}{2}(100\text{ m}^2)$

$= 50\text{ m}^2 + 50\text{ m}^2$

$= \mathbf{100\text{ m}^2}$

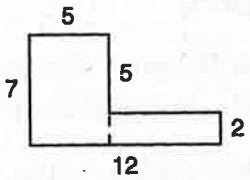
28. $$\begin{array}{r} -2.03 \\ -46\overline{)93.38} \\ \underline{92} \\ 1\,38 \\ \underline{1\,38} \end{array}$$

29. $14\frac{2}{5} - 4\frac{3}{10} - 3\frac{1}{2} = 14\frac{4}{10} - 4\frac{3}{10} - 3\frac{5}{10}$

$= 10\frac{1}{10} - 3\frac{5}{10} = 9\frac{11}{10} - 3\frac{5}{10} = 6\frac{6}{10}$

$= \mathbf{6\frac{3}{5}\ km}$

30.



$S.A. = 2(\text{Area}_{base}) + \text{Lateral Surface Area}$

$= 2[(7\text{ in.} \times 5\text{ in.}) + (7\text{ in.} \times 2\text{ in.})]$
$+ (\text{Perimeter}_{base})(\text{Height})$

$= 2(35\text{ in.}^2 + 14\text{ in.}^2)$
$+ [(12 + 7 + 5 + 5 + 7 + 2)\text{ in.}$
$\cdot (10\text{ in.})]$

$= 2(49\text{ in.}^2) + (38\text{ in.})(10\text{ in.})$

$= 98\text{ in.}^2 + 380\text{ in.}^2$

$= \mathbf{478\text{ in.}^2}$

Practice 33

a. $8N = -N + 36$

$$\begin{array}{rrr} +N & & +N \\ \hline 9N & = & 36 \end{array}$$

$N = 4$

$8(4) = -4 + 36$

$32 = 32$ Check

b. $2(N + 6) = N + 10$

$2N + 12 = N + 10$

$$\begin{array}{rrr} -N & & -N \\ \hline N + 12 & = & 10 \\ -12 & & -12 \\ \hline & N = -2 & \end{array}$$

$2(-2 + 6) = -2 + 10$

$2(4) = 8$

$8 = 8$ Check

c. $108 \quad \frac{108}{2} = 54 \quad \frac{54}{2} = 27 \quad \frac{27}{3} = 9$

$\frac{9}{3} = 3 \quad \mathbf{2 \cdot 2 \cdot 3 \cdot 3 \cdot 3}$

d. $400 \quad \frac{400}{2} = 200 \quad \frac{200}{2} = 100$

$\frac{100}{2} = 50 \quad \frac{50}{2} = 25 \quad \frac{25}{5} = 5$

$\mathbf{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5}$

Problem Set 33

1. Negative number

2. The angles opposite the sides of equal length have equal measures.

3. $9140\text{ cm} \times \frac{1\text{ in.}}{2.54\text{ cm}} \times \frac{1\text{ ft}}{12\text{ in.}} = \frac{9140}{(2.54)(12)}\text{ ft}$

$= \mathbf{299.87\text{ ft}}$

4. $28{,}000\text{ ft} \cdot \text{ft} \times \frac{1\text{ mi}}{5280\text{ ft}} \times \frac{1\text{ mi}}{5280\text{ ft}}$

$= \frac{28{,}000}{(5280)^2}\text{ mi}^2 = \mathbf{0.0010\text{ mi}^2}$

5. $A = lw$

$24\text{ cm}^2 = (8\text{ cm})w$

$\frac{24\text{ cm}^2}{8\text{ cm}} = w$

$3\text{ cm} = w$

$P = 2l + 2w$

$P = 2(8\text{ cm}) + 2(3\text{ cm})$

$P = 16\text{ cm} + 6\text{ cm}$

$P = \mathbf{22\text{ cm}}$

6. $3N - 15 = 2(-N)$

$3N - 15 = -2N$

$$\begin{array}{rrr} +2N & & +2N \\ \hline 5N - 15 & = & 0 \\ +15 & & +15 \\ \hline 5N & = & 15 \end{array}$$

$N = 3$

7. $2N = -104 - 36$

$2N = -140$

$N = \mathbf{-70}$

8. $60 \quad \frac{60}{2} = 30 \quad \frac{30}{2} = 15 \quad \frac{15}{3} = 5$

$\mathbf{2 \cdot 2 \cdot 3 \cdot 5}$

9. $105 \quad \frac{105}{3} = 35 \quad \frac{35}{5} = 7 \quad \mathbf{3 \cdot 5 \cdot 7}$