ANSWERS

Chapter 7   THE FOUR OPERATIONS OF DECIMALS

Exercise 7A   Addition and Subtraction of Decimals (1)

1. **(a)**

7 tenths + 2 tenths
= ___9___ tenths

0.7 + 0.2 = ___0.9___

(b)

10 tenths = ___1___ one

12 tenths + 9 tenths
= ___21___ tenths

1.2 + 0.9 = ___2.1___

(c) 0.03 + 0.45 = ___0.48___

(d)

10 hundredths = ___1___ tenth

17 hundredths + 15 hundredths
= ___32___ hundredths

0.17 + 0.15 = ___0.32___

2. **(a)** 1.5   **(b)** 0.73   **(c)** 3.4

Exercise 7A   Addition and Subtraction of Decimals (2)

1. **(a)** 5.13 + 3.82 = ___8.95___

```
    5 . 1   3
+   3 . 8   2
    8 . 9   5
```

(b) 7.54 + 0.35 = ___7.89___

```
    7 . 5   4
+   0 . 3   5
    7 . 8   9
```

(c) 3.65 + 1.06 = ___4.71___

```
    3 . 6   5
+   1 . 0   6
    4 . 7   1
```

(d) 10.62 + 0.9 = ___11.52___

```
    1   0 . 6   2
+       0 . 9   0
    1   1 . 5   2
```

(e) 12.56 + 4.07 = ___16.63___

```
    1   2 . 5   6
+       4 . 0   7
    1   6 . 6   3
```

(f) 15.54 + 7.08 = ___22.62___

```
    1   5 . 5   4
+       7 . 0   8
    2   2 . 6   2
```

(g) 0.78 + 2.56 = ___3.34___

```
    0 . 7   8
+   2 . 5   6
    3 . 3   4
```

(h) 0.69 + 3.87 = ___4.56___

```
    0 . 6   9
+   3 . 8   7
    4 . 5   6
```

2. **(a)** 7.05 + 0.32 = ___7.37___

```
    7 . 0   5
+   0 . 3   2
    7 . 3   7
```

(b) 6.25 + 3.62 = ___9.87___

```
    6 . 2   5
+   3 . 6   2
    9 . 8   7
```

(c) 0.79 + 0.58 = ___1.37___

```
    0 . 7   9
+   0 . 5   8
    1 . 3   7
```

(d) 0.37 + 0.98 = __1.35__

```
    |   |
  0 . 3   7
+ 0 . 9   8
  1 . 3   5
```

(e) 4.25 + 9.87 = __14.12__

```
      |   |
    4 . 2   5
+   9 . 8   7
  1 4 . 1   2
```

(f) 18.5 + 4.6 = __23.1__

```
    |   |
  1 8 . 5
+   4 . 6
  2 3 . 1
```

(g) 26.8 + 0.75 = __27.55__

```
        |
  2 6 . 8   0
+   0 . 7   5
  2 7 . 5   5
```

(h) 4.65 + 17.57 = __22.22__

```
    |   |   |
  1 7 . 5   7
+   4 . 6   5
  2 2 . 2   2
```

3. 3.85 + 7.75 = 11.60
Albert paid $11.60 for the wallet.

4.
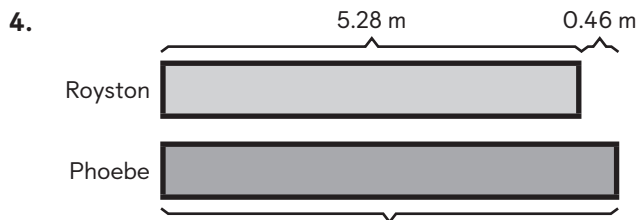
5.28 + 0.46 = 5.74
Phoebe jumped 5.74 meters.

5.
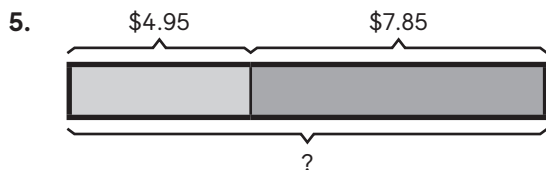
4.95 + 7.85 = 12.80
Mr. Reyna paid $12.80 in all.

6.

```
      |           |
  2 . [8]  [5]
+ [4] . 6    8
  ─────────────
  7 . 5    3
```

Exercise 7A   Addition and Subtraction of Decimals (3)

1. **(a)**

> 9 tenths − 4 tenths
> = __5__ tenths

0.9 − 0.4 = __0.5__

(b)

> 7 hundredths − 3 hundredths
> = __4__ hundredths
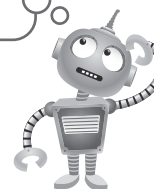
0.07 − 0.03 = __0.04__

(c)

> 5 hundredths − 4 hundredths
> = __1__ hundredth
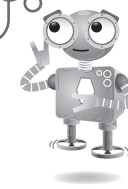
0.45 − 0.04 = __0.41__

(d) 3 − 0.6 = __2.4__

2. **(a)** 2.32   **(b)** 4.6

(c) 0.33   **(d)** 2.92

Exercise 7A   Addition and Subtraction of Decimals (4)

1. **(a)** 29.8 − 14.3 = __15.5__

```
  2 9 . 8
− 1 4 . 3
  1 5 . 5
```

(b) 15.7 − 3.6 = __12.1__

```
  1 5 . 7
−   3 . 6
  1 2 . 1
```

Additional Practice Grade 5B

(c) $19.99 - 9.5 =$ __10.49__

```
    1  9 . 9  9
  -    9 . 5  0
  ─────────────
    1  0 . 4  9
```

(d) $2.06 - 1.43 =$ __0.63__

```
        1  10
     2 . 0  6
  -  1 . 4  3
  ───────────
     0 . 6  3
```

(e) $0.81 - 0.36 =$ __0.45__

```
        7   11
     0 . 8   1
  -  0 . 3   6
  ────────────
     0 . 4   5
```

(f) $8.01 - 6.53 =$ __1.48__

```
          9
       7  10  11
     8 . 0   1
  -  6 . 5   3
  ────────────
     1 . 4   8
```

(g) $89.55 - 19.69 =$ __69.86__

```
         18  14
       7  8   5   15
     8  9 . 5   5
  -  1  9 . 6   9
  ──────────────────
     6  9 . 8   6
```

(h) $34.59 - 9.95 =$ __24.64__

```
          13
       2  4   15
     3  4 . 5   9
  -     9 . 9   5
  ────────────────
     2  4 . 6   4
```

2. (a) $6.9 - 6.2 =$ __0.7__

```
     6 . 9
  -  6 . 2
  ────────
     0 . 7
```

(b) $18.57 - 8.23 =$ __10.34__

```
     1  8 . 5  7
  -     8 . 2  3
  ──────────────
     1  0 . 3  4
```

(c) $32.35 - 13.12 =$ __19.23__

```
       2  12
     3  2 . 3  5
  -  1  3 . 1  2
  ──────────────
     1  9 . 2  3
```

(d) $0.74 - 0.45 =$ __0.29__

```
        6   14
     0 . 7   4
  -  0 . 4   5
  ────────────
     0 . 2   9
```

(e) $12.3 - 7.4 =$ __4.9__

```
         11
       0  1   13
     1  2 . 3
  -     7 . 4
  ──────────────
        4 . 9
```

(f) $22.21 - 5.8 =$ __16.41__

```
          11
       1  1   12
     2  2 . 2   1
  -     5 . 8   0
  ────────────────
     1  6 . 4   1
```

(g) $11 - 7.6 =$ __3.4__

```
          10
       0  0   10
     1  1 . 0
  -     7 . 6
  ──────────────
        3 . 4
```

(h) $5.3 - 1.52 =$ __3.78__

```
          12
       4  2   10
     5 . 3   0
  -  1 . 5   2
  ────────────
     3 . 7   8
```

3. $2.4 - 0.65 = 1.75$
The mass of the onions was 1.75 kilograms.

4.
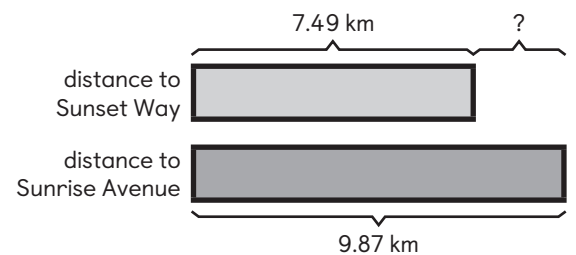
$9.87 - 7.49 = 2.38$
Sunrise Avenue is 2.38 kilometers farther than Sunset Way from Martin's house.

5.

$74.95

coat and pair of shoes

coat and pair of pants
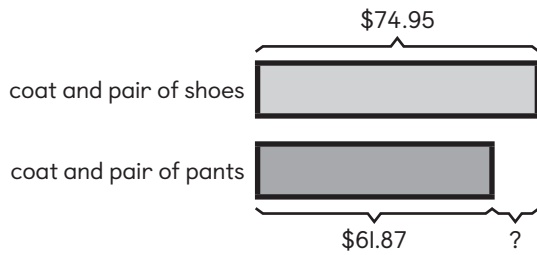
$61.87   ?

The coat costs the same in both the cases, so the difference in amounts is the difference between the cost of the pair of shoes and the pair of pants.

From the bar model, we can see that the pair of pants is cheaper.

74.95 − 61.87 = 13.08

The pair of pants is $13.08 cheaper than the pair of shoes.

6. Accept all correct explanations. Example: The digit in the ones place of the difference is 9. This means that there is renaming involved (9 − 0 is not possible as there is no digit 0 available), and the digits in the ones place of the subtrahend and minuend must be consecutive.

I use guess and check to solve.

Guess 1	20.34 − 17.65 = 2.69 (✗)
Guess 2	30.14 − 27.65 = 2.49 (✓)

$$
\begin{array}{ccccc}
 & 3 & 0 & . & 1 & 4 \\
- & 2 & 7 & . & 6 & 5 \\
\hline
 & & 2 & . & 4 & 9
\end{array}
$$

Exercise 7B   Multiplication of Decimals (I)

1. **(a)** 1.6   **(b)** 0.12

2. **(a)** $0.7 \times 6 = \underline{4.2}$

$$
\begin{array}{r}
 \overset{4}{}\,0.7 \\
\times \quad 6 \\
\hline
4.2
\end{array}
$$

(b) $5.8 \times 4 = \underline{23.2}$

$$
\begin{array}{r}
\overset{3}{}\,5.8 \\
\times \quad 4 \\
\hline
23.2
\end{array}
$$

(c) $19.7 \times 3 = \underline{59.1}$

$$
\begin{array}{r}
1\,\overset{2}{9}\,.\,\overset{2}{7} \\
\times \quad 3 \\
\hline
59.1
\end{array}
$$

(d) $0.75 \times 5 = \underline{3.75}$

$$
\begin{array}{r}
0\,.\,\overset{3}{7}\,\overset{2}{5} \\
\times \quad 5 \\
\hline
3.75
\end{array}
$$

(e) $0.48 \times 7 = \underline{3.36}$

$$
\begin{array}{r}
0\,.\,\overset{3}{4}\,\overset{5}{8} \\
\times \quad 7 \\
\hline
3.36
\end{array}
$$

(f) $1.59 \times 8 = \underline{12.72}$

$$
\begin{array}{r}
1\,.\,\overset{4}{5}\,\overset{7}{9} \\
\times \quad 8 \\
\hline
12.72
\end{array}
$$

3. **(a)** $19.7 \times 4 = \underline{78.8}$

$$
\begin{array}{r}
1\,\overset{3}{9}\,.\,\overset{2}{7} \\
\times \quad 4 \\
\hline
78.8
\end{array}
$$

(b) $1.99 \times 8 = \underline{15.92}$

$$
\begin{array}{r}
1\,.\,\overset{7}{9}\,\overset{7}{9} \\
\times \quad 8 \\
\hline
15.92
\end{array}
$$

(c) $9.7 \times 5 = \underline{48.5}$

$$
\begin{array}{r}
\overset{3}{9}\,.\,7 \\
\times \quad 5 \\
\hline
48.5
\end{array}
$$

(d) $2.58 \times 4 = \underline{10.32}$

$$
\begin{array}{r}
2\,.\,\overset{2}{5}\,\overset{3}{8} \\
\times \quad 4 \\
\hline
10.32
\end{array}
$$

(e) $4.3 \times 7 = \underline{30.1}$

$$
\begin{array}{r}
\overset{2}{4}\,.\,3 \\
\times \quad 7 \\
\hline
30.1
\end{array}
$$

(f) $5.46 \times 6 = \underline{32.76}$

$$
\begin{array}{r}
5\,.\,\overset{2}{4}\,\overset{3}{6} \\
\times \quad 6 \\
\hline
32.76
\end{array}
$$

4. 1.25 × 6 = 7.5

Darren bought 7.5 kilograms of roasted sesame.

5. 1.35 × 7 = 9.45

The capacity of the container is 9.45 liters.

6.

8.5 in.

?
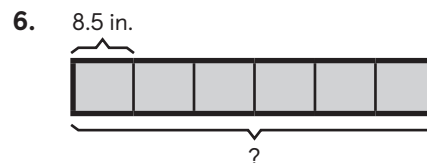
8.5 × 6 = 51

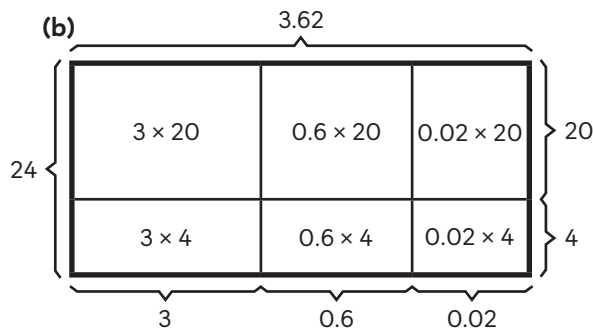The total length of 6 such books is 51 inches.

7.

$2.65

cup

tumbler

?
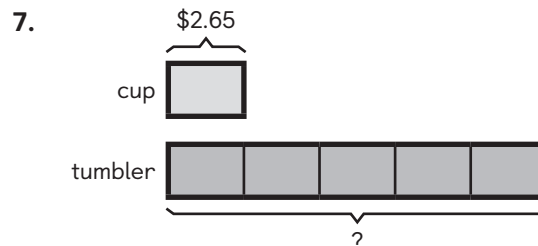
2.65 × 5 = 13.25

The tumbler costs $13.25.

Exercise 7B Multiplication of Decimals (2)

I. **(a)** 5 **(b)** 0.7

   (c) 5.9 **(d)** 83.5

   (e) 2.18 **(f)** 70.09

2. **(a)** $0.09 \times 40 = 0.09 \times \underline{\ 4\ } \times 10$

   $= \underline{\ 0.36\ } \times 10$

   $= \underline{\ 3.6\ }$

   (b) $2.08 \times 60 = 2.08 \times 6 \times 10$

   $= 12.48 \times 10$

   $= 124.8$

   (c) $3.85 \times 70 = 3.85 \times 7 \times 10$

   $= 26.95 \times 10$

   $= 269.5$

3. **(a)** $4.8 \times 16 = (4 \times 10) + (0.8 \times 10) + (4 \times 6) +$

   (0.8×6)

   $= 40 + 8 + 24 + 4.8$

   $= \underline{\ 76.8\ }$

   (b)

   $3.62 \times 24 = (3 \times 20) + (0.6 \times 20) +$
   $(0.02 \times 20) + (3 \times 4) + (0.6 \times 4)$
   $+ (0.02 \times 4)$
   $= 60 + 12 + 0.4 + 12 + 2.4 + 0.08$
   $= 86.88$

4. $1.85 \times 30 = 55.5$
   John drank 55.5 liters of water in all.

5. $2.65 \times 16 = 42.4$
   42.4 meters of fabric are needed to make
   16 curtains.

Exercise 7B Multiplication of Decimals (3)

I.

	Number	× 10	× 100	× 1,000
(a)	0.6	6	60	600
(b)	0.23	2.3	23	230
(c)	8.06	80.6	806	8,060

2. **(a)** 0.6 **(b)** 35.2

   (c) 82 **(d)** 8,006

   (e) 90 **(f)** 570

   (g) 5,360 **(h)** 67,300

3. **(a)** 10^3 **(b)** 10^2

   (c) 10^2 **(d)** 10^3

4. **(a)** $0.003 \times 400 = 0.003 \times 4 \times 100$

   $= 0.012 \times 100$

   $= 1.2$

   (b) $0.928 \times 500 = 0.928 \times 5 \times 100$

   $= 4.64 \times 100$

   $= 464$

   (c) $0.253 \times 3,000 = 0.253 \times 3 \times 1,000$

   $= 0.759 \times 1,000$

   $= 759$

   (d) $2.37 \times 200 = 2.37 \times 2 \times 100$

   $= 4.74 \times 100$

   $= 474$

   (e) $19.65 \times 300 = 19.65 \times 3 \times 100$

   $= 58.95 \times 100$

   $= 5,895$

   (f) $4.37 \times 7,000 = 4.37 \times 7 \times 1,000$

   $= 30.59 \times 1,000$

   $= 30,590$

   (g) $2.58 \times 3,000 = 2.58 \times 3 \times 1,000$

   $= 7.74 \times 1,000$

   $= 7,740$

5. $0.45 \times 500 = 225$
   There are 225 liters of apple juice in
   500 juice cartons.

6. I do not agree with Danny.
$480 = 0.48 × 1,000$
$\quad = 0.48 × 10^3$
This shows that the mass of a tiger is
1,000 times the mass of a hamster.

Exercise 7B   Multiplication of Decimals (4)

1. **(a)** $0.9 × 0.1 = \dfrac{9}{10} × \dfrac{1}{10}$

$\qquad = \dfrac{9}{100}$

$\qquad = 0.09$

(b) $50 × 0.01 = \dfrac{50}{100} × \dfrac{1}{100}$

$\qquad = \dfrac{50}{100}$

$\qquad = 0.5$

2. **(a)** 1.86   **(b)** 2.57

(c) 0.805   **(d)** 0.309

(e) 0.368   **(f)** 5.73

(g) 0.213   **(h)** 0.452

(i) 5.73   **(j)** 0.062

(k) 0.8   **(l)** 7

3. $2.48 × 0.1 = (2 × 0.1) + (0.4 × 0.1) + (0.08 × 0.1)$

$\qquad = 0.2 + 0.04 + 0.008$

$\qquad = 0.248$

4. $19.50 × 0.1 = 1.95$
0.1 kilogram of salmon fillet costs $1.95.

Exercise 7B   Multiplication of Decimals (5)

1.

Method 1:

$0.6 × 0.9 = \dfrac{6}{10} × \dfrac{9}{10}$

$\qquad = \dfrac{54}{100}$

$\qquad = 0.54$

Method 2:

$0.6 × 0.9$
$= 6 × 0.1 × 9 × 0.1$
$= 6 × 9 × 0.1 × 0.1$
$= 54 × 0.01$
$= 0.54$

2. **(a)** $5.4 × 3.6 = 19.44$

```
            1
            2
        5 . 4
    ×   3 . 6
        3 2 4
    1   6 2 0
    1   9 . 4 4
```

(b) $0.98 × 6.5 = 6.37$

```
        5   4
        4   4
      0 . 9 8
    ×     6 . 5
        4 9 0
      5 8 8 0
      6 . 3 7 0
```

(c) $0.93 × 4.6 = 4.278$

```
        3   1
        5   1
      0 . 9 3
    ×     4 . 6
        5 5 8
      3 7 2 0
      4 . 2 7 8
```

(d) $7.2 × 0.37 = 2.664$

```
            1
        7 . 2
    ×   0 . 3 7
        5 0 4
      2 1 6 0
      2 . 6 6 4
```

3. **(a)** $27.4 × 0.09 = 2.466$

```
        6   3
      2 7 . 4
    ×   0 . 0 9
      2 . 4 6 6
```

(b) $0.45 × 3.8 = 1.71$

```
        1   1
        3   4
      0 . 4 5
    ×     3 . 8
        3 6 0
      1 3 5 0
      1 . 7 1 0
```

(c) 6.8 × 0.54 = 3.672

```
          4
          3
        6 . 8
  ×   0 . 5 4
      2 7 2
    3 4 0 0
    3 . 6 7 2
```

(d) 2.05 × 8.4 = 17.22

```
            4
        2   2
      2 . 0 5
  ×       8 . 4
      8 2 0
  1 6 4 0 0
  1 7 . 2 2 0
```

(e) 6.53 × 3.7 = 24.161

```
        1
      3   2
    6 . 5 3
  ×     3 . 7
    4 5 7 1
  1 9 5 9 0
  2 4 . 1 6 1
```

(f) 5.7 × 2.3 = 13.11

```
      1
      2
    5 . 7
  ×   2 . 3
  1 7 1
  1 1 4 0
  1 3 . 1 1
```

4. 3.65 × 1.8 = 6.57
The area of the rectangle is 6.57 square inches.

5. 4.5 × 0.85 = 3.825
The snail will crawl 3.825 meters in 4.5 minutes.

6. I agree with Jonathon.
41.8 is about 42 and 0.52 is about 0.5 or half.
42 ÷ 2 = 21
The product of 41.8 and 0.52 should be close to 21.
So, Jonathon is correct.

Exercise 7C   Division of Decimals (1)

1. **(a)**

16 tenths ÷ 4
= 4 tenths

1.6 ÷ 4 = 0.4

(b)

16 hundredths ÷ 4
= 4 hundredths

0.16 ÷ 4 = 0.04

2. **(a)** 1.05 ÷ 7 = 0.15   **(b)** 0.48 ÷ 6 = 0.08

```
      0 . 1 5              0 . 0 8
  7) 1 . 0 5          6) 0 . 4 8
     7                      4 8
     ‾‾‾                    ‾‾‾
     3 5                      0
     3 5
     ‾‾‾
       0
```

(c) 8.28 ÷ 3 = 2.76   **(d)** 25 ÷ 4 = 6.25

```
      2 . 7 6              6 . 2 5
  3) 8 . 2 8          4) 2 5 . 0 0
     6                    2 4
     ‾                    ‾‾
     2 2                    1 0
     2 1                       8
     ‾‾                     ‾‾‾
       1 8                    2 0
       1 8                    2 0
       ‾‾                     ‾‾
         0                      0
```

(e) 34 ÷ 8 = 4.25   **(f)** 37 ÷ 5 = 7.4

```
      4 . 2 5              7 . 4
  8) 3 4 . 0 0        5) 3 7 . 0
     3 2                  3 5
     ‾‾                   ‾‾
       2 0                  2 0
       1 6                  2 0
       ‾‾                   ‾‾
         4 0                  0
         4 0
         ‾‾
           0
```

3. **(a)** $15.6 \div 2 =$ __7.8__   **(b)** $9.2 \div 4 =$ __2.3__

```
      7 . 8
  2 ) 1   5 . 6
      1   4
          1   6
          1   6
              0
```

```
      2 . 3
  4 ) 9 . 2
      8
      1   2
      1   2
          0
```

(c) $18.6 \div 5 =$ __3.72__   **(d)** $6.88 \div 8 =$ __0.86__

```
      3 . 7   2
  5 ) 1   8 . 6
      1   5
          3   6
          3   5
              1   0
              1   0
                  0
```

```
      0 . 8   6
  8 ) 6 . 8   8
      6   4
          4   8
          4   8
              0
```

(e) $21.35 \div 7 =$ __3.05__   **(f)** $42 \div 8 =$ __5.25__

```
      3 . 0   5
  7 ) 2   1 . 3   5
      2   1
          3
          0
          3   5
          3   5
              0
```

```
      5 . 2   5
  8 ) 4   2 . 0   0
      4   0
          2   0
          1   6
              4   0
              4   0
                  0
```

4. $15 \div 6 = 2.5$
Each friend received 2.5 feet of ribbon.

5.

11.68 L

?
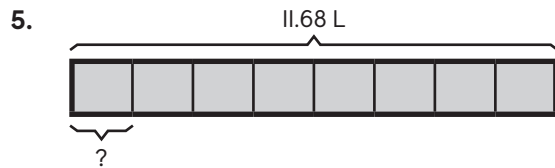
$11.68 \div 8 = 1.46$
1.46 liters of mango juice are poured into each bottle.

Exercise 7C   Division of Decimals (2)

1. **(a)**

> 7 ones ÷ 10 = __70__ tenths ÷ 10
> = __7__ tenths

$7 \div 10 =$ __0.7__

(b) 0.07   **(c)** 0.007

2. **(a)** 0.05   **(b)** 0.005

3. **(a)** 3.06   **(b)** 0.432

4. **(a)** $6.5 \div 50 = 6.5 \div 5 \div 10$
$= 1.3 \div 10$
$=$ __0.13__

(b) $40.2 \div 60 = 40.2 \div 6 \div 10$
$= 6.7 \div 10$
$=$ __0.67__

(c) $95.4 \div 90 = 95.4 \div 9 \div 10$
$= 10.6 \div 10$
$=$ __1.06__

(d) $76.3 \div 70 = 76.3 \div 7 \div 10$
$= 10.9 \div 10$
$=$ __1.09__

5. **(a)** 2.4   **(b)** 3.5

```
         2 . 4
  18 ) 4   3 . 2
       3   6
           7   2
           7   2
               0
```

```
         3 . 5
  23 ) 8   0 . 5
       6   9
           1   1   5
           1   1   5
                   0
```

6. $5.8 \div 50 = 0.116$
Amanda jogged 0.116 kilometer in 1 minute.

7. $5.4 \div 12 = 0.45$
0.45 liter of lemonade was in each glass.

Exercise 7C   Division of Decimals (3)

1. **(a)** 0.236   **(b)** 0.305

(c) 5.082   **(d)** 2.14

2. **(a)** 100   **(b)** 100

(c) 30.8   **(d)** 0.6

3. **(a)** $450 \div 600 = 450 \div 6 \div 100$
$= $ __75__ $\div 100$
$=$ __0.75__

(b) $576 \div 900 = 576 \div 9 \div 100$
$= 64 \div 100$
$= 0.64$

(c) $202.4 \div 800 = 202.4 \div 8 \div 100$
$= 25.3 \div 100$
$= 0.253$

(d) $2,142 \div 700 = 2,142 \div 7 \div 100$
$= 306 \div 100$
$= 3.06$

4. **(a)** 0.607   **(b)** 0.8

(c) 0.327   **(d)** 0.492

(e) 0.253   **(f)** 5.82

(g) 7.08   **(h)** 4.5

(i) 6.23   **(j)** 9.25

5.

	Number	÷ 10	÷ 100	÷ 1,000
(a)	2,000	200	20	2
(b)	5,300	530	53	5.3
(c)	657	65.7	6.57	0.657
(d)	30,600	3,060	306	30.6
(e)	21,050	2,105	210.5	21.05

6. **(a)** $800 \div 2,000 = 800 \div 2 \div 1,000$
$= \underline{\ 400\ } \div 1,000$
$= \underline{\ 0.4\ }$

(b) $852 \div 3,000 = 852 \div 3 \div 1,000$
$= 284 \div 1,000$
$= 0.284$

(c) $650 \div 5,000 = 650 \div 5 \div 1,000$
$= 130 \div 1,000$
$= 0.13$

(d) $2,358 \div 6,000 = 2,358 \div 6 \div 1,000$
$= 393 \div 1,000$
$= 0.393$

7. **(a)** 100   **(b)** 60

(c) 1,000   **(d)** 10

(e) 1,000   **(f)** 100

(g) 100   **(h)** 1,000

(i) 7.4   **(j)** 7,130

8. $525 \div 300 = 1.75$
The length of each shorter piece of ribbon is 1.75 meters.

9. $125 \div 500 = 0.25$
0.25 liter of apple juice is packed into each carton.

10. $90 \div 2,000 = 0.045$
Each golf ball weighs 0.045 kilogram.

Exercise 7C   Division of Decimals (4)

1. **(a)** 6

(b) 0.9   **(c)** 38

(d) 46.2   **(e)** 307

2. **(a)** 400   **(b)** 800

(c) 320   **(d)** 602

(e) 70   **(f)** 5

3. $2.6 \div 0.1 = 26$
Evan needs 26 packs of nuts.

4. $0.3 \div 0.01 = 30$
Elaine can rinse her mouth 30 times with one bottle.

5. In 1 minute, Jackson runs 0.1 kilometer.
$5 \div 0.1 = 50$
Jackson only needs 50 minutes to complete the run.
He can complete the run within 60 minutes.

Exercise 7C   Division of Decimals (5)

1. **(a)** $9.36 \div 0.9 = 93.6 \div 9$
$= \underline{\ 10.4\ }$

$$
\begin{array}{r}
10.4 \\
9\,\overline{)\,93.6} \\
\underline{9} \\
3 \\
\underline{0} \\
3\ 6 \\
\underline{3\ 6} \\
0
\end{array}
$$

(b) $1.5 \div 0.04 = 150 \div 4$

$= \underline{37.5}$

```
        3   7 . 5
    4 ) 1   5   0 . 0
        1   2
            3   0
            2   8
                2   0
                2   0
                    0
```

(c) $5.88 \div 0.6 = \underline{9.8}$

$5.88 \div 0.6 = 58.8 \div 6$

```
        9 . 8
    6 ) 5   8 . 8
        5   4   0
            4   8
            4   8
                0
```

(d) $5.04 \div 0.08 = \underline{63}$

$5.04 \div 0.08 = 504 \div 8$

```
        6   3
    8 ) 5   0   4
        4   8
            2   4
            2   4
                0
```

(e) $3.45 \div 0.46 = \underline{7.5}$

$3.45 \div 0.46 = 345 \div 46$

```
            7 . 5
    46 ) 3   4   5 . 0
         3   2   2
             2   3   0
             2   3   0
                     0
```

(f) $20.28 \div 0.78 = \underline{26}$

$20.28 \div 0.78 = 2,028 \div 78$

```
            2   6
    78 ) 2   0   2   8
         1   5   6
             4   6   8
             4   6   8
                     0
```

2. (a) $8.64 \div 2.7 = 86.4 \div 27$

$= \underline{3.2}$

```
            3 . 2
    27 ) 8   6 . 4
         8   1   0
             5   4
             5   4
                 0
```

(b) $24.48 \div 6.8 = 244.8 \div 68$

$= \underline{3.6}$

```
            3 . 6
    68 ) 2   4   4 . 8
         2   0   4
             4   0   8
             4   0   8
                     0
```

(c) $13.34 \div 2.3 = \underline{5.8}$

$13.34 \div 2.3 = 133.4 \div 23$

```
            5 . 8
    23 ) 1   3   3 . 4
         1   1   5
             1   8   4
             1   8   4
                     0
```

(d) $20.28 \div 7.8 = \underline{2.6}$

$20.28 \div 7.8 = 202.8 \div 78$

```
            2 . 6
    78 ) 2   0   2 . 8
         1   5   6
             4   6   8
             4   6   8
                     0
```

(e) $26.64 \div 4.8 = \underline{5.55}$

$26.64 \div 4.8 = 266.4 \div 48$

```
            5 . 5   5
    48 ) 2   6   6 . 4   0
         2   4   0
             2   6   4
             2   4   0
                 2   4   0
                 2   4   0
                     0
```

(f) $25.42 \div 6.2 = \underline{4.1}$
$25.42 \div 6.2 = 254.2 \div 62$

```
        4 . 1
   ─────────────
62) 2  5  4 . 2
    2  4  8
    ─────────
          6  2
          6  2
       ─────────
              0
```

3. $8.5 \div 0.25 = 850 \div 25$
$= 34$

```
      3  4
   ─────────
25) 8  5  0
    7  5
    ──────
    1  0  0
    1  0  0
    ─────────
          0
```

Amy uses 34 glasses.

4. $8.25 \div 0.15 = 825 \div 15$
$= 55$

```
      5  5
   ─────────
15) 8  2  5
    7  5
    ──────
    7  5
    7  5
    ──────
       0
```

Mr. Cooper bought 55 pencils in all.

5. $13.95 \div 0.45 = 1,395 \div 45$
$= 31$

```
        3  1
   ────────────
45) 1  3  9  5
    1  3  5
    ─────────
          4  5
          4  5
       ─────────
              0
```

Liza could tie 31 presents.

6. $8.4 \div 0.25 = 840 \div 25$
$= 33.6$

```
      3  3 . 6
   ────────────
25) 8  4  0 . 0
    7  5
    ──────
    9  0
    7  5
    ──────
    1  5  0
    1  5  0
    ─────────
          0
```

Adrian uses 34 packs for all the walnuts.

Exercise 7D   Conversion of Measurement Units (I)

1. **(a)** 2.38 m = $\underline{238}$ cm
2.38 m = 2.38 × 100 cm
= 238 cm

(b) 7.06 m = $\underline{7,060}$ cm
7.06 m = 7.06 × 100 cm
= 706 cm

(c) $7\frac{3}{4}$ m = $\underline{775}$ cm

$7\frac{3}{4}$ m = 7.75 × 100 cm

= 775 cm

(d) 8.04 km = $\underline{8,040}$ m
8.04 km = 8.04 × 1,000 m
= 8,040 m

(e) 3.75 km = $\underline{3,750}$ m
3.75 km = 3.75 × 1,000 m
= 3,750 cm

(f) 5.3 km = $\underline{5,300}$ m
5.3 km = 5.3 × 1,000 m
= 5,300 m

(g) $4\frac{1}{4}$ km = $\underline{4,250}$ m

$4\frac{1}{4}$ km = 4.25 × 1,000 m

= 4,250 m

(h) 0.75 kg = $\underline{750}$ g
0.75 kg = 0.75 × 1,000 g
= 750 g

(i) 3.6 kg = $\underline{3,600}$ g
3.6 kg = 3.6 × 1,000 g
= 3,600 g

(j) $5\frac{1}{10}$ kg = <u>5,100</u> g

$5\frac{1}{10}$ kg = 5.1 × 1,000 g

= 5,100 g

(k) 3.05 L = <u>3,050</u> mL

3.05 L = 3.05 × 1,000 mL

= 3,050 mL

(l) 2.7 L = <u>2,700</u> mL

2.7 L = 2.7 × 1,000 mL

= 2,700 mL

(m) $9\frac{3}{5}$ L = <u>9,600</u> mL

$9\frac{3}{5}$ L = 9.6 × 1,000 mL

= 9,600 mL

(n) $4\frac{5}{8}$ L = <u>4,625</u> mL

$4\frac{5}{8}$ L = (4 × 1,000) mL + ($\frac{5}{8}$ × 1,000) mL

= 4,000 mL + 625 mL

= 4,625 mL

2. **(a)** 7.5 ft = <u>90</u> in.

7.5 ft = 7.5 × 12 in.

= 90 in.

(b) $3\frac{3}{4}$ ft = <u>45</u> in.

$3\frac{3}{4}$ ft = 3.75 × 12 in.

= 45 in.

(c) 5.6 yd = <u>16.8</u> ft

5.6 yd = 5.6 × 3 ft

= 16.8 ft

(d) $6\frac{1}{8}$ yd = <u>18.375</u> ft

$6\frac{1}{8}$ yd = (6 × 3) ft + ($\frac{1}{8}$ × 3) ft

= 18 ft + 0.375 ft

= 18.375 ft

(e) 2.8 lb = <u>44.8</u> oz

2.8 lb = 2.8 × 16 oz

= 44.8 oz

(f) $6\frac{5}{8}$ lb = <u>106</u> oz

$6\frac{5}{8}$ lb = (6 × 16) oz + ($\frac{5}{8}$ × 16) oz

= 96 oz + 10 oz

= 106 oz

(g) 7.5 gal = <u>30</u> qt

7.5 gal = 7.5 × 4 qt

= 30 qt

(h) $9\frac{1}{4}$ gal = <u>37</u> qt

$9\frac{1}{4}$ gal = 9.25 × 4 qt

= 37 qt

(i) 10.8 qt = <u>21.6</u> pt

10.8 qt = 10.8 × 2 pt

= 21.6 pt

(j) $15\frac{1}{2}$ qt = <u>31</u> pt

$15\frac{1}{2}$ qt = 15.5 × 2 pt

= 31 pt

Exercise 7D   Conversion of Measurement Units (2)

1. **(a)** 205 cm = <u>2.05</u> m

205 cm = 205 ÷ 100 m

= 2.05 m

(b) 1,408 cm = <u>14.08</u> m

1,408 cm = 1,408 ÷ 100 m

= 14.08 m

(c) 45 cm = <u>0.45</u> m

45 cm = 45 ÷ 100 m

= 0.45 m

(d) 950 m = <u>0.95</u> km

950 m = 950 ÷ 1,000 km

= 0.95 km

(e) 2,830 m = <u>2.83</u> km

2,830 m = 2,830 ÷ 1,000 km

= 2.83 km

(f) 725 g = <u>0.725</u> kg

725 g = 725 ÷ 1,000 kg

= 0.725 kg

(g) 850 g = <u>0.85</u> kg

850 g = 850 ÷ 1,000 kg

= 0.85 kg

(h) 1,250 g = <u>1.25</u> kg

1,250 g = 1,250 ÷ 1,000 kg

= 1.25 kg

(i) 7,080 g = <u>7.08</u> kg

7,080 g = 7,080 ÷ 1,000 kg

= 7.08 kg

(j) 750 mL = __0.75__ L

750 mL = 750 ÷ 1,000 L

$\quad$ = 0.75 L

(k) 50 mL = __0.05__ L

50 mL = 50 ÷ 1,000 L

$\quad$ = 0.05 L

(l) 9,065 mL = __9.065__ L

9,065 mL = 9,065 ÷ 1,000 L

$\quad$ = 9.065 L

2. (a) 5 ft 6 in. = __$5\frac{1}{2}$__ ft

5 ft 6 in. = 5 ft + $\frac{6}{12}$ ft

$\quad$ = 5 ft + $\frac{1}{2}$ ft

$\quad$ = $5\frac{1}{2}$ ft

(b) 51 in. = __$4\frac{1}{4}$__ ft

51 in. = $\frac{51}{12}$ ft

$\quad$ = $(\frac{48}{12} + \frac{3}{12})$ ft

$\quad$ = $4\frac{1}{4}$ ft

(c) 20 ft = __$6\frac{2}{3}$__ yd

20 ft = $\frac{20}{3}$ yd

$\quad$ = $(\frac{18}{3} + \frac{2}{3})$ yd

$\quad$ = $6\frac{2}{3}$ yd

(d) 37 ft = __$12\frac{1}{3}$__ yd

37 ft = $\frac{37}{3}$ yd

$\quad$ = $(\frac{36}{3} + \frac{1}{3})$ yd

$\quad$ = $12\frac{1}{3}$ yd

(e) 50 oz = __$3\frac{1}{8}$__ lb

50 oz = $\frac{50}{16}$ lb

$\quad$ = $(\frac{48}{16} + \frac{2}{16})$ lb

$\quad$ = $3\frac{1}{8}$ lb

(f) 85 oz = __$5\frac{5}{16}$__ lb

85 oz = $\frac{85}{16}$ lb

$\quad$ = $(\frac{80}{16} + \frac{5}{16})$ lb

$\quad$ = $5\frac{5}{16}$ lb

(g) 30 qt = __$7\frac{1}{2}$__ gal

30 qt = $\frac{30}{4}$ gal

$\quad$ = $(\frac{28}{4} + \frac{2}{4})$ gal

$\quad$ = $7\frac{1}{2}$ gal

(h) 50 qt = __$12\frac{1}{2}$__ gal

50 qt = $\frac{50}{4}$ gal

$\quad$ = $(\frac{48}{4} + \frac{2}{4})$ gal

$\quad$ = $12\frac{1}{2}$ gal

(i) 27 pt = __$13\frac{1}{2}$__ qt

27 pt = $\frac{27}{2}$ qt

$\quad$ = $(\frac{26}{2} + \frac{1}{2})$ qt

$\quad$ = $13\frac{1}{2}$ qt

(j) 45 pt = __$22\frac{1}{2}$__ qt

45 pt = $\frac{45}{2}$ qt

$\quad$ = $(\frac{44}{2} + \frac{1}{2})$ qt

$\quad$ = $22\frac{1}{2}$ qt

(k) 15 c = __$3\frac{3}{4}$__ qt

15 c = $\frac{15}{4}$ qt

$\quad$ = $(\frac{12}{4} + \frac{3}{4})$ qt

$\quad$ = $3\frac{3}{4}$ qt

(l) 38 c = __$9\frac{1}{2}$__ qt

38 c = $\frac{38}{4}$ qt

$\quad$ = $(\frac{36}{4} + \frac{2}{4})$ qt

$\quad$ = $9\frac{1}{2}$ qt
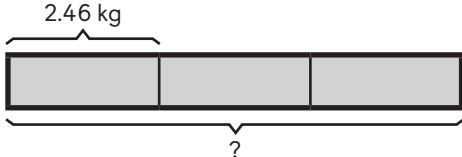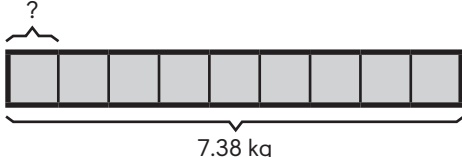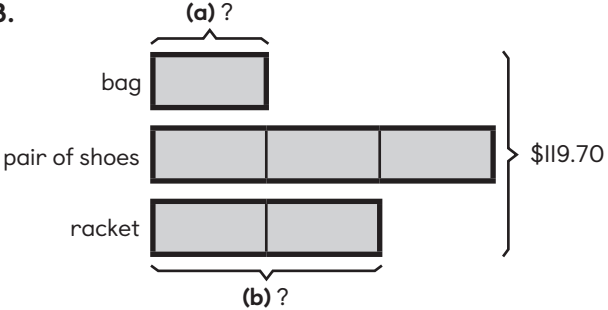
Chapter Practice

1. C

2. C

3. A

4. D

5. C

6. C

7. B

8. 57.38

9. 470

10. 7 L 650 mL = 7.65 L
7.65 ÷ 9 = 0.85
0.85 liter of water is in each jug.

11. 0.36 × 40 = 14.4
The storekeeper has 14.4 kilograms of raisins altogether.

12. 165 in. = 165 ÷ 12 ft
= 13.75 ft
13.75 ÷ 0.25 = 55
There were 55 pieces of wire.

13. (a) I do not agree with Amos.
9.50 ÷ 0.25 = 38
Benny took 38 days to save $9.50 more than Amos.

(b) 0.85 × 38 = 32.30
Amos saved $32.30.

14. (a) 7.90 × 2 = 15.80
Wayne paid $15.80 for the butter cookies.
18.90 × 4 = 75.60
Wayne paid $75.60 for the milk chocolates.
15.80 + 75.60 = 91.40 < 100
It was enough to pay for Wayne's purchase.

(b) 100 − 91.40 = 8.60
Wayne would get $8.60 change.

(c) 91.40 − 50 = 41.40
Michelle spent $41.40 on marshmallow.
41.40 ÷ 4.60 = 9
Michelle bought 9 packs of marshmallow.

Chapter 8   WORD PROBLEMS: THE FOUR OPERATIONS OF DECIMALS

Exercise 8A   Word Problems (1)

1. (a) 18 × 0.65 = 11.7
Janet needs 11.7 meters of ribbon.

(b) 2.6 ÷ 0.65 = 4
Mike needs 4 pieces of ribbon.

2. (a)

2.46 × 3 = 7.38
The mass of the flour when the bag is full is 7.38 kilograms.

(b)

7.38 ÷ 9 = 0.82
The flour in each pack weighs 0.82 kilogram.

3.

(a) 6 units = $119.70
1 unit = $119.70 ÷ 6
= $19.95
Isaac paid $19.95 for the bag.

(b) 2 units = 2 × $19.95
= $39.90
Isaac paid $39.90 for the racket.

4.

(a) ?

3 pens

2 markers

$5.45

$0.35 $0.35

(b) ?
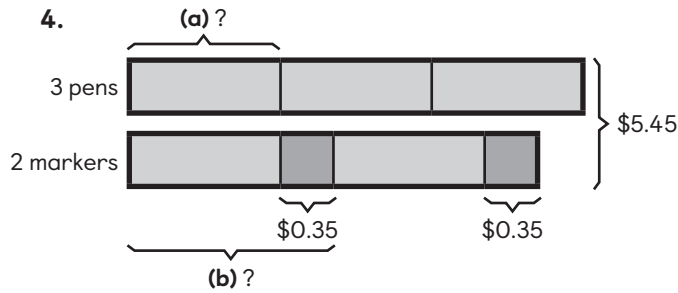
(a) 7 units = $5.45 − $0.35 − $0.35
= $4.75
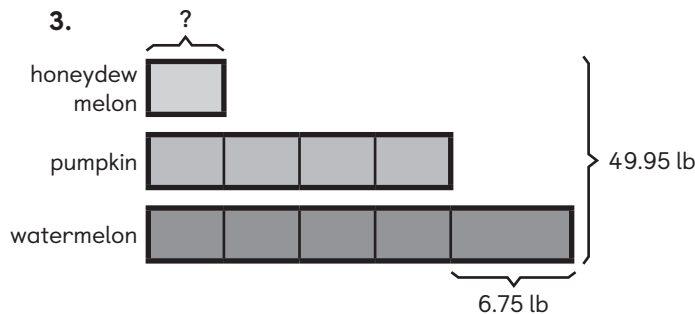1 unit = $4.75 ÷ 5
= $0.95
The cost of each pen is $0.95.

(b) 0.95 + 0.35 = 1.30
The cost of each marker is $1.30.

Exercise 8A   Word Problems (2)

1.   0.85 × 10 = 8.5
Laura makes 8.5 liters of orange juice.
8.5 ÷ 0.25 = 34
There are 34 cups of orange juice.

2.

?

5 pairs
of gloves

4 scarves

$27.85

$1
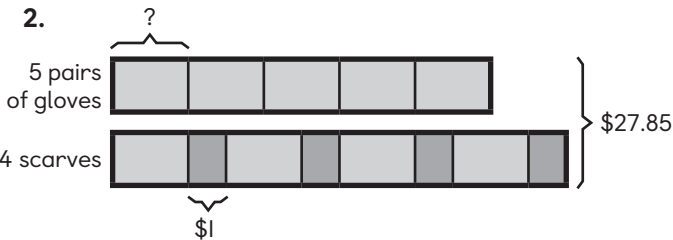
9 units = $27.85 − $4
= $23.85
1 unit = $23.85 ÷ 9
= $2.65
Dewayne paid $2.65 for a pair of gloves.

3.

?

honeydew
melon

pumpkin

watermelon

49.95 lb

6.75 lb

9 units = 49.95 − 6.75
= 43.2 lb
1 unit = 43.2 ÷ 9
= 4.8 lb
The mass of the honeydew melon is
4.8 pounds.

4.

1.45 m

blue cloth

yellow cloth

5.95 m

1 unit, ?

red cloth

34.35 m
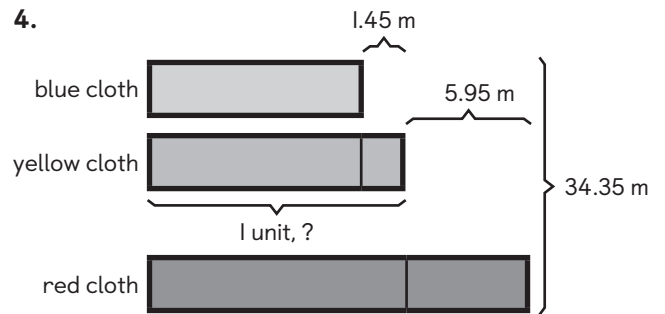
3 units = 34.35 + 1.45 − 5.95
= 29.85 m
1 unit = 29.85 ÷ 3
= 9.95 m
The yellow cloth is 9.95 meters long.

Exercise 8A   Word Problems (3)

1.   8 units = 4.29 + 0.19
= 4.48 m
1 unit = 4.48 ÷ 8
= 0.56 m
3 units = 3 × 0.56
= 1.68 m
The horse is 1.68 meters tall.

2.   0.25 + 2 × 0.10 = 0.45
1 set of one quarter and two dimes is $0.45.

? sets

$0.45 $0.45
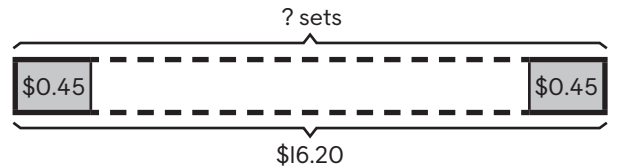
$16.20

16.20 ÷ 0.45 = 36
There are 36 sets of one dime and two
quarters.
36 × 2 = 72
There are 72 dimes in the coin box.
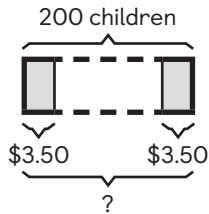
3.

11.78 lb

Mia   6.35 lb

Seth   11.78 lb

1 unit   2 units

?
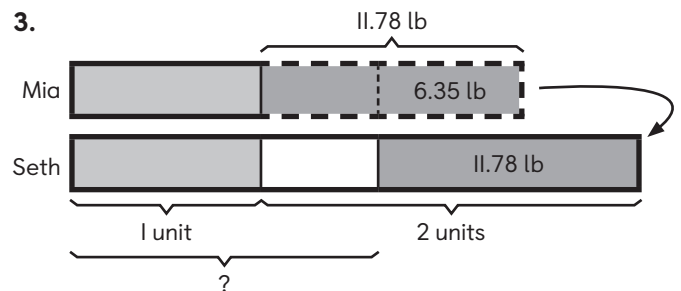
11.78 − 6.35 = 5.43
2 units = 11.78 + 5.43
= 17.21 lb
1 unit = 17.21 ÷ 2
= 8.605 lb
8.605 + 5.43 = 14.035
Seth has 14.035 pounds of flour at first.

4. $3.50 $6.50

?

6.50 + 3.50 = 10
The admission fee of one adult and one child was $10.

200 children

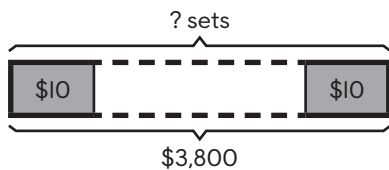$3.50 $3.50

?

200 × 3.50 = 700
The total admission fee of 200 children was $700.

$700   ?
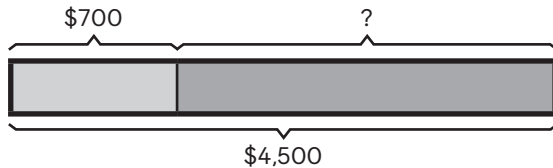
$4,500

4,500 − 700 = 3,800
The total admission fee for the adults and the remaining children was $3,800.

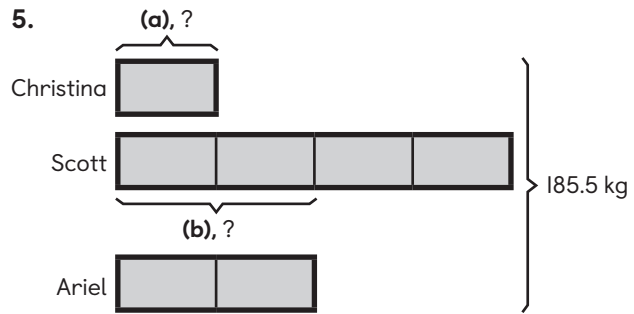In this $3,800, the number of adults and children were the same.

? sets

$10 $10

$3,800

3,800 ÷ 10 = 380
There were 380 sets of one adult and one child.
380 adults visited the exhibition.

Chapter Practice

1. C

2. C

3. B

4. **(a)** 50

   (b) 9.5

5.

185.5 kg

(a) 7 units = 185.5 kg
   1 unit = 185.5 ÷ 7
       = 26.5 kg
   Christina bought 26.5 kilograms of rice.

(b) 2 units = 2 × 26.5
       = 53 kg
   Scott used 53 kilograms of rice.

6. 0.25 + 4 × 0.01 = 0.29
   1 set of one quarter and four pennies is $0.29.

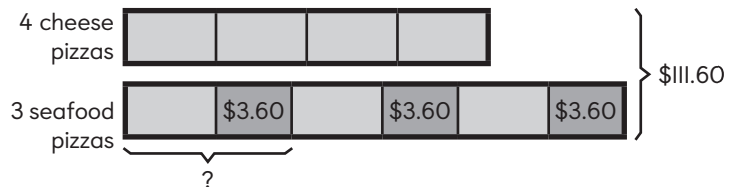? sets

$0.29 $0.29

$6.96
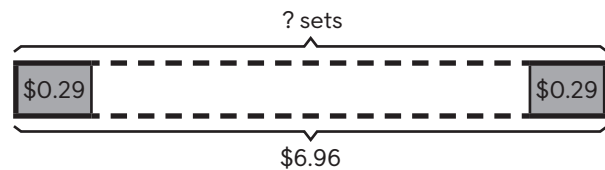
6.96 ÷ 0.29 = 24
There are 24 sets of one quarter and four pennies.
Martin has 24 quarters.

7.

$111.60

A seafood pizza cost $3.60 more than a cheese pizza.
3 × 3.60 = 10.80
111.60 − 10.80 = 100.80
7 cheese pizzas cost $100.80.
100.80 ÷ 7 = 14.40
Each cheese pizza cost $14.40.
14.40 + 3.60 = 18
Each seafood pizza cost $18.

8. **(a)** Ms. Kaplan can choose to buy 7 boxes of 4 markers or 4 boxes of 7 markers.
7 × $4.80 = $33.60
7 boxes of 4 markers cost $33.60.
4 × $7.20 = 28.80
4 boxes of 7 markers cost $28.80.
Ms. Kaplan should buy 4 boxes of 7 markers. The minimum amount she needs to pay is $28.80.

(b) 33.60 − 28.80 = 4.80
Mr. Stone pays $4.80 more than Ms. Kaplan.

Chapter 9 VOLUME

Exercise 9A Measure and Compare Volumes

I. **(a)**

Solid	A	B	C	D	E
Number of Unit Cubes	10	13	16	10	11
Volume (cubic units)	10	13	16	10	11

(b) Solid __C__ has the greatest volume.

(c) Solids __A__ and __D__ have the same volume.

**(d)** Solids B, C, and E are formed by at least 11 unit cubes.

2.

Solid	A	B	C	D	E	F
Number of Unit Cubes	14	16	12	19	27	16
Volume (cubic units)	14	16	12	19	27	16

Exercise 9B Volume of Rectangular Prisms

I. **(a)** 8 cm³ **(b)** 36 cm³

2. Volume = 4 × 4 × 12
= 192 in³
The volume of the rectangular prism is 192 cubic inches.

3. **(a)** Volume = 15 × 10 × 9
= 1,350 cm³

(b) Volume = 30 × 20 × 18
= 10,800 cm³

(c) Volume = 2 × 2 × 4
= 16 m³

(d) Volume = 40 × 15 × 20
= 12,000 cm³

(e) Volume = 5 × 2 × 4
= 40 ft³

(f) Volume = 16 × 10 × 40
= 6,400 in³

4. Number of 1-cm cubes = 2 + 6
= 8
Number of cubes on each side = 4
Total number of 1-cm cubes = 4 × 4 × 4
= 64
64 − 8 = 56
56 more 1-centimeter cubes must be added.

Exercise 9C Volume of Composite Solids

I. Volume of the cube = 10 × 10 × 10
= 1,000 cm³
Volume of the rectangular prism = 6 × 6 × 20
= 720 cm³
Volume of the solid = 1,000 + 720
= 1,720 cm³

2. Volume of the rectangular prism = 9 × 9 × 20
= 1,620 cm³
15 − 9 = 6
The edge length of the cube is 6 centimeters.
Volume of the cube = 6 × 6 × 6
= 216 cm³
Volume of the solid = 1,620 + 216
= 1,836 cm³

3.
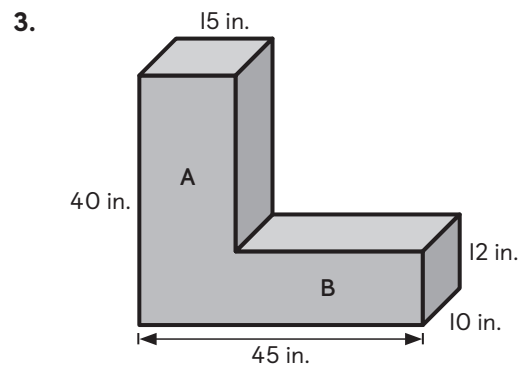
Volume of Prism A = 15 × 10 × 40
= 6,000 in³
45 − 15 = 30
The length of Prism B is 30 inches.
Volume of Prism B = 30 × 10 × 12
= 3,600 in³
Volume of the solid = 6,000 + 3,600
= 9,600 in³

4.
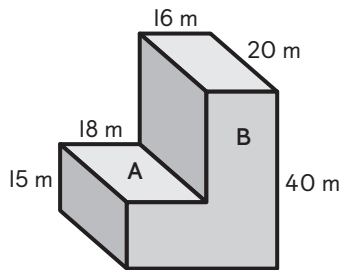
Volume of Prism A = 18 × 20 × 15
= 5,400 m³
Volume of Prism B = 16 × 20 × 40
= 12,800 m³
Volume of the solid = 5,400 + 12,800
= 18,200 m³

Exercise 9D   Word Problems: Volume of Solids

1. (a) 16 × 4 = 64
Julie uses 64 cubes in all.

(b) Volume of 1 cube = 2 × 2 × 2
= 8 cm³
Volume of the game cube = 64 × 8
= 512 cm³
The volume of the game cube is
512 cubic centimeters.

2. Volume of the bottom rectangular prism
= 11 × 6 × 5
= 330 cm³
Volume of the top rectangular prism = 330 cm³
30 − 6 − 6 = 18
The height of the middle rectangular prism
is 18 centimeters.
Volume of the middle rectangular prism
= 6 × 5 × 18
= 540 cm³
330 + 330 + 540 = 1,200
The volume of the periscope is 1,200 cubic
centimeters.

3. Volume of the lower part of container
= 25 × 20 × 7
= 3,500 in³
25 − 15 = 10
The length of the upper part of the container
is 10 inches.
20 − 12 = 8
The width of the upper part of the container
is 8 inches.
Volume of the upper part of container
= 10 × 8 × 20
= 1,600 in³
Volume of the container = 3,500 + 1,600
= 5,100 in³
The volume of the container is
5,100 cubic inches.

4.
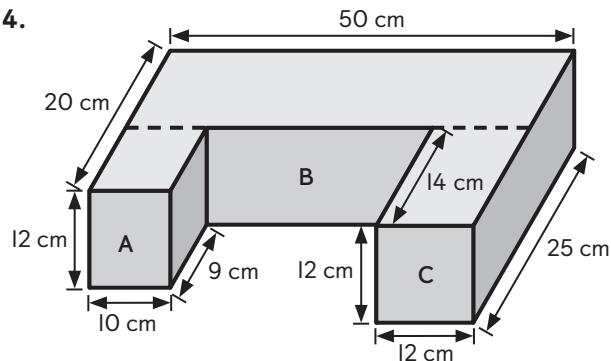
Volume of Prism A = 10 × 9 × 12
= 1,080 cm³
Volume of Prism C = 12 × 12 × 14
= 2,016 cm³
20 − 9 = 11
The width of Prism B is 11 centimeters.
Volume of Prism B = 50 × 11 × 12
= 6,600 cm³
Volume of the model = 6,600 + 1,080 + 2,016
= 9,696 cm³
The volume of the model is 9,696 cm³.

Chapter Practice

1. C

2. A

3. D

4. C

5. B

6. Number of unit cubes in the box = 19
1 layer of unit cubes in the box = 5 × 4
= 20
3 layers of unit cubes in the box = 3 × 20
= 60
60 − 19 = 41
41 unit cubes are needed to fill up the box
completely.

7. Volume of a cube = 3 × 3 × 3
= 27 cm³
Volume of the solid = 27 × 7
= 189 cm³
The volume of the solid is 189 cm³.

8. Volume of the solid = (10 × 10 × 12) − (5 × 5 × 12)
= 1,200 − 300
= 900 m³
The volume of the solid is 900 cubic meters.

9. 128 ÷ 2 = 64
64 = 8 × 8
Volume of 1 cube = 8 × 8 × 8
$\qquad$ = 512 cm³
Volume of the figure = 512 × 3
$\qquad$ = 1,536 cm³
The volume of the figure is 1,536 cubic centimeters.

10. (a) I find the volume of two parts of Solid A.
20 × 10 × 2 = 400 cm³
16 × 10 × 2 = 320 cm³
Volume of Solid A = 400 + 320
$\qquad$ = 720 cm³
The volume of Solid A is 720 cubic centimeters.

(b) There are 8 blocks (Solid A) in the tower.
Volume of the tower = 720 × 8
$\qquad$ = 5,760 cm³
The volume of the tower is 5,760 cubic centimeters.

11. (a) No, I do not agree with Eric because the given areas are each product of two dimensions. Multiplying them won't give us the correct volume of the rectangular prism.

(b) Use the "Guess and Check" strategy to find the factors of three given numbers, 63, 28, and 36:
63 = 7 × 9
28 = 4 × 7
36 = 4 × 9
Hence, length = 9 cm, width = 7 cm, and height = 4 cm.
Volume of the rectangular prism
= 9 × 7 × 4
= 252 cm³
The volume of the rectangular prism is 252 cubic centimeters.

Chapter 10 PROPERTIES AND CLASSIFICATION OF 2–D SHAPES

Exercise 10A Properties and Classification of Triangles

1. (a)

Equilateral	Isosceles	Scalene
A, E	B, D	C, F

(b) Isosceles triangle: Two of the sides are equal in length.
Equilateral triangle: All three sides are equal in length.
Scalene triangle: All three sides are different in length.

2. (a)

Right Triangles	Obtuse Triangles	Acute Triangles
Q, U	P, R	S, T

(b) Right triangle: The measure of one angle must be 90°.
Obtuse triangle: The measure of one angle must be greater than 90°.
Acute triangle: The measure of all three angles must be less than 90°.

3. (a) Measure of $\angle BAC$ = __50__°
Measure of $\angle ABC$ = __50__°
ABC is an __isosceles__ triangle.

(b) DE = __3__ cm
EF = __3__ cm
DF = __3__ cm
DEF is an __equilateral__ triangle.

(c) Measure of $\angle PQR$ = __70__°
Measure of $\angle QRP$ = __30__°
Measure of $\angle QPR$ = __80__°
PQR is a __scalene__ triangle.

(d) XZ = __3.2__ cm
YZ = __3.2__ cm
XY = __4.6__ cm
XYZ is an __isosceles__ triangle.

4.

Exercise 10B Properties and Classification of Quadrilaterals

1.

Quadrilateral	Name of the Quadrilateral	Properties
	trapezoid	It has 1 pair of parallel sides. It has 1 line of symmetry.
	parallelogram	It has 2 pairs of equal and parallel sides. Its opposite angles are equal.
	rhombus	It has 4 equal sides and 2 pairs of parallel sides. Its opposite angles are equal. It has 2 lines of symmetry.
	rectangle	It has 2 pairs of parallel and equal sides. It has 4 right angles. It has 2 lines of symmetry.
	square	It has 4 equal sides and 2 pairs of parallel sides. It has 4 right angles. It has 4 lines of symmetry.
	kite	It has 2 pairs of equal sides. It has 1 line of symmetry. It has no parallel sides.

2. (a)

Quadrilateral	Parallelogram	Trapezoid	Rhombus	Rectangle	Square
A		✓			
B		✓			
C	✓			✓	
D	✓				
E	✓		✓	✓	✓
F	✓			✓	

(b) Both quadrilaterals have 4 equal sides. Quadrilateral E is a square with 4 right angles. It is a special type of rhombus.

3.

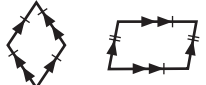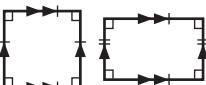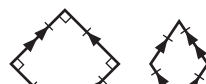| Properties	Quadrilaterals
4 right angles	EFGH, TUVW
Only 1 pair of parallel sides	ABCD
2 pairs of equal angles	PQRS, WXYZ
2 pairs of parallel sides	EFGH, PQRS, TUVW, WXYZ
At least 1 line of symmetry	ABCD, EFGH, JKLM, TUVW, WXYZ

4. Accept all correct differences. Examples:

(a)		A parallelogram has 2 pairs of parallel sides while a trapezoid has only 1 pair of parallel sides.
(b)		A trapezoid has only 1 pair of parallel sides while a rhombus has 2 pairs of parallel sides.
(c)		In a rhombus, all 4 sides are equal. In a parallelogram, only opposite sides are equal.
(d)		In a rectangle, all angles are equal, while in a parallelogram, only opposite angles are equal.
(e)		In a square, all angles are equal, while in a rhombus, only opposite angles are equal.

Chapter Practice

1. B

2. D

3. A, C

4. D

5. Accept all correct similarities. Examples:

(a)		The rhombus and the parallelogram have 2 pairs of parallel sides.
(b)		The square and the rectangle have 4 right angles.
(c)		The square and the rhombus have 4 equal sides.

6.

Isosceles Triangles	Equilateral Triangles	Scalene Triangles
B, C, E, F, G	C, G	A, D, H

7. **(a)**

Parallelogram	Rhombus	Trapezoid
M, N, R, P	R, M	Q, S

(b)
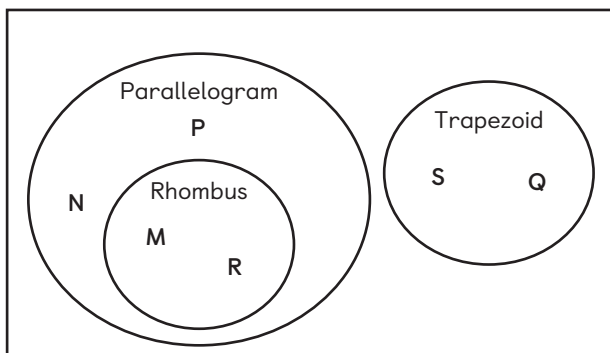
8. Yes, I agree with Kirk. Triangle *ABC* has 2 equal angles.
Measure of ∠*ABC* = 45°, measure of ∠*ACB* = 45°, Hence, *AB* = *AC*.
Triangle *ABC* is an isosceles triangle with 2 equal sides.
Since measure of ∠*BAC* = 90°, it is also a right triangle.
We can say that Triangle *ABC* is an isosceles right triangle.

9. No, I disagree with Jasmine.
Even though the quadrilateral has 4 equal sides, I can only say it is a rhombus. For a rhombus to be a square, the 4 angles must be right angles.
However, the angles are 85°, 85°, 95°, and 95°.
Therefore, Quadrilateral *PQRS* is not a square.

Chapter II   LINE PLOTS AND THE COORDINATE PLANE

Exercise IIA   Line Plots

I.   (a)
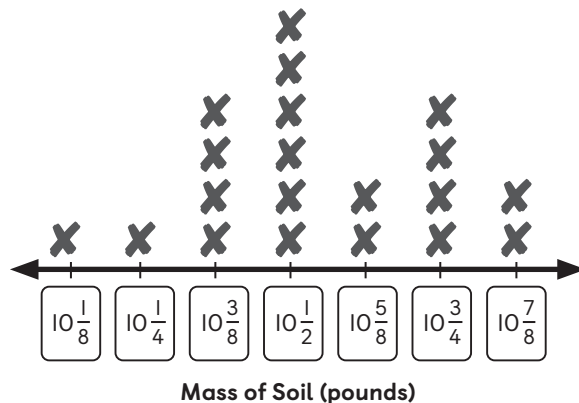
Time Taken to Receive Dental Treatment

Time taken (minutes)
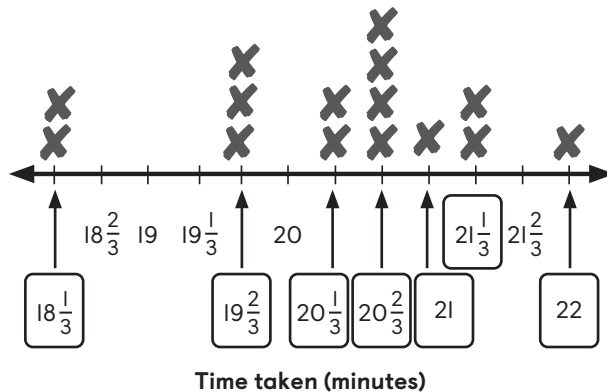
Key: Each ✗ represents I patient.

(b) $(2 \times 18\frac{1}{3}) + (3 \times 19\frac{2}{3}) + (2 \times 20\frac{1}{3}) + (4 \times 20\frac{2}{3}) +$

$(1 \times 21) + (2 \times 21\frac{1}{3}) + (1 \times 22)$

$= 36\frac{2}{3} + 59 + 40\frac{2}{3} + 82\frac{2}{3} + 21 + 42\frac{2}{3} + 22$

$= 304\frac{2}{3}$

The total time spent by the patients at the clinic is $304\frac{2}{3}$ minutes.

2.   (a)   **Mass of Packs of Soil**

Mass of Soil (pounds)

Key: Each ✗ represents I pack of soil.

(b) $(1 \times 10\frac{1}{8}) + (1 \times 10\frac{1}{4}) + (4 \times 10\frac{3}{8}) + (6 \times 10\frac{1}{2}) +$

$(2 \times 10\frac{5}{8}) + (4 \times 10\frac{3}{4}) + (2 \times 10\frac{7}{8})$

$= 10\frac{1}{8} + 10\frac{1}{4} + 41\frac{1}{2} + 63 + 21\frac{1}{4} + 43 + 21\frac{3}{4}$

$= 210\frac{7}{8}$

The gardener has $210\frac{7}{8}$ pounds of soil.

(c) $210\frac{7}{8} \times \frac{3}{5} = \frac{1,687}{8} \times \frac{3}{5}$

$= \frac{5,061}{40}$

$= 126\frac{21}{40}$

$126\frac{21}{40}$ pounds of soil are left.

3. (a)

Mass of Bags of Flour
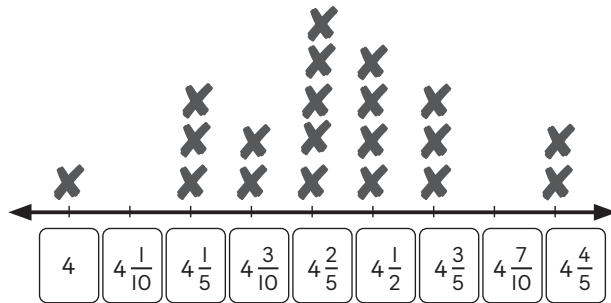
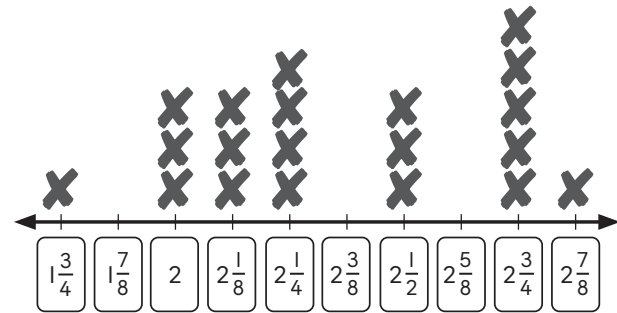**Mass of Flour (kilograms)**

Key: Each ✖ represents 1 bag.

(b) $(1 \times 4) + (3 \times 4\frac{1}{5}) + (2 \times 4\frac{3}{10}) + (5 \times 4\frac{2}{5}) +$

$(4 \times 4\frac{1}{2}) + (3 \times 4\frac{3}{5}) + (2 \times 4\frac{4}{5})$

$= 4 + 12\frac{3}{5} + 8\frac{3}{5} + 22 + 18 + 13\frac{4}{5} + 9\frac{3}{5}$

$= 88\frac{3}{5}$

The total mass of the 20 bags of flour is $88\frac{3}{5}$ kilograms.

(c) $\frac{3}{10} \times 88\frac{3}{5} = \frac{3}{10} \times \frac{443}{5}$

$= \frac{1,329}{50}$

$= 26\frac{29}{50}$

$26\frac{29}{50} \div 10 = \frac{1,329}{50} \times \frac{1}{10}$

$= \frac{1,329}{500}$

$= 2\frac{329}{500}$

The mass of flour in each smaller pack is $2\frac{329}{500}$ kilograms.

4. (a)

Juice in Jugs

Amount of Juice (quarts)

Key: Each ✖ represents 1 jug.

(b) $(1 \times 1\frac{3}{4}) + (3 \times 2) + (3 \times 2\frac{1}{8}) + (4 \times 2\frac{1}{4}) +$

$(3 \times 2\frac{1}{2}) + (5 \times 2\frac{3}{4}) + (1 \times 2\frac{7}{8})$

$= 1\frac{3}{4} + 6 + 6\frac{3}{8} + 9 + 7\frac{1}{2} + 13\frac{3}{4} + 2\frac{7}{8}$

$= 47\frac{1}{4}$

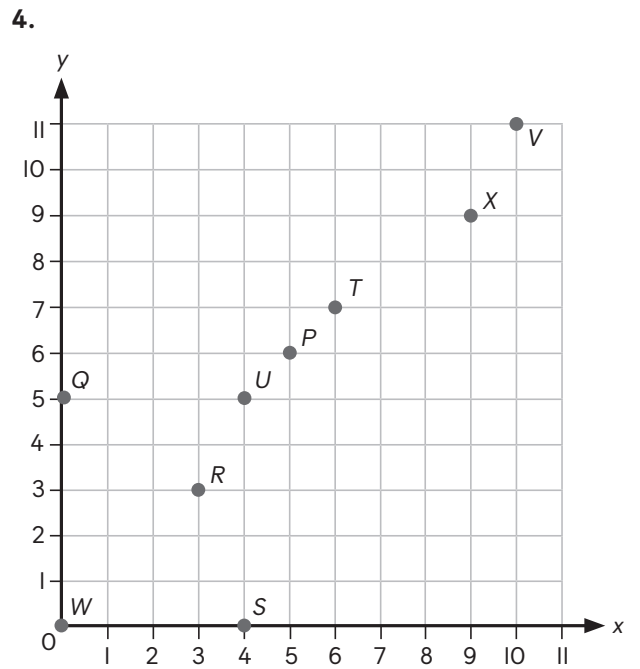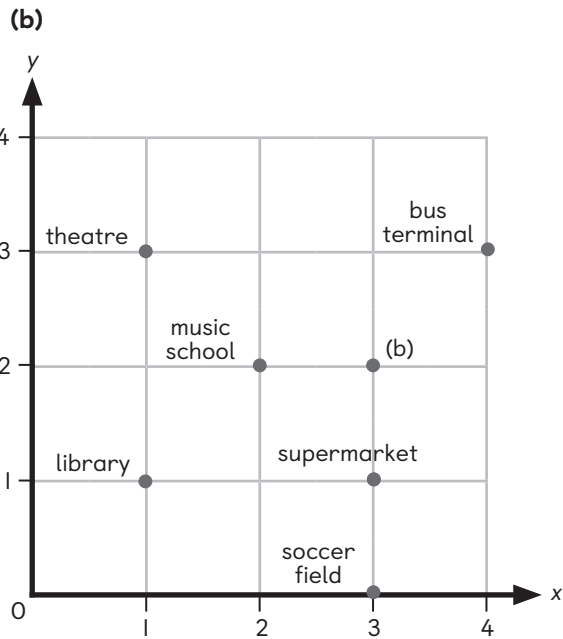The total amount of juice prepared for the party is $47\frac{1}{4}$ quarts.

(c) $1 - \frac{1}{4} = \frac{3}{4}$

$\frac{3}{4} \times 47\frac{1}{4} = \frac{3}{4} \times \frac{189}{4}$

$= \frac{567}{16}$

$= 35\frac{7}{16}$

$35\frac{7}{16}$ quarts of juice were consumed.

Exercise 11B   The Coordinate Plane

1. (a)

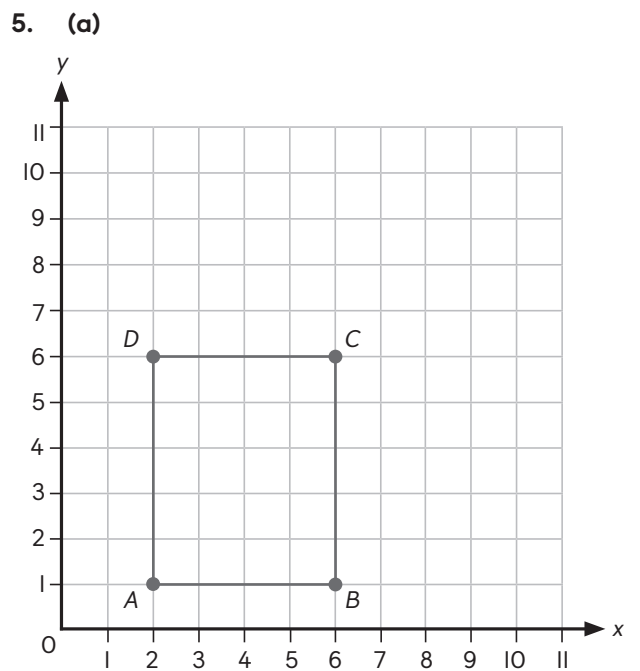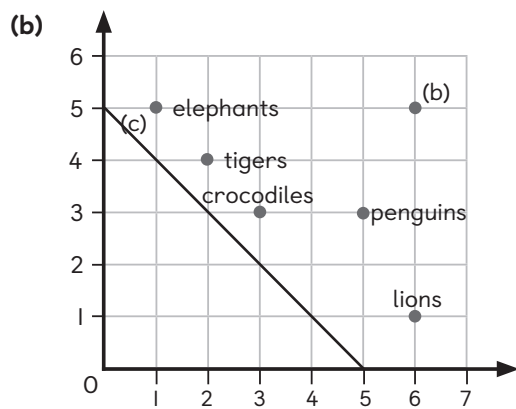| Landmarks	Coordinates
Music School	(2, 2)
Soccer Field	(3, 0)
Bus Terminal	(4, 3)
Library	(1, 1)
Theatre	(1, 3)
Supermarket	(3, 1)

(b)

4.

2. (a)

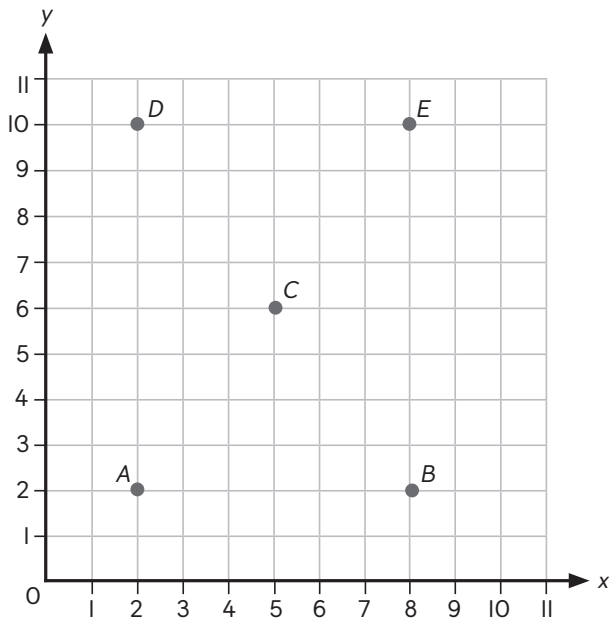| Animals	Coordinates
Penguins	(5, 3)
Lions	(6, 1)
Tigers	(2, 4)
Elephants	(1, 5)
Crocodiles	(3, 3)

(b)

3. Point A (5, 8)   Point B (3, 0)

Point C (5, 4)   Point D (0, 4)

Point E (2, 9)   Point F (2, 7)

Point G (4, 6)   Point H (6, 3)

5. (a)

(b) rectangle

(c) Area = 4 × 5

= 20 square units
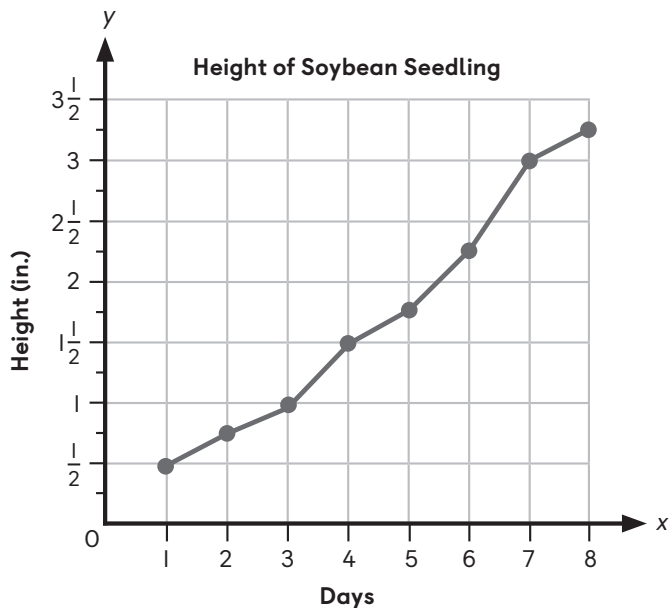
6. (a)

(b) isosceles triangle
(c) Accept all correct answers. See figure in **(a)** for example.

Exercise 11C   Line Graphs

1. (a) Between 0 and 1 month
4,800 − 3,200 = 1,600
The increase was 1,600 grams.

(b) The mass will increase.
Accept all correct explanations.
Example: The newborn baby will grow.
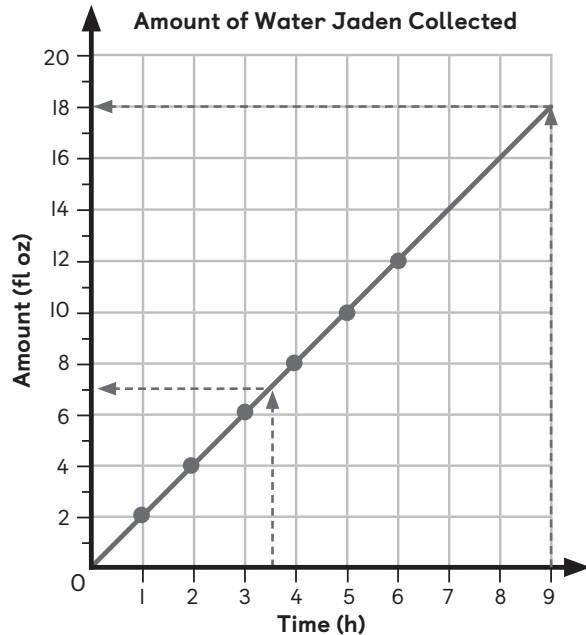
2. (a)

(b) Between Day 6 and Day 7
$3 - 2\frac{1}{4} = \frac{3}{4}$
The increase was $\frac{3}{4}$ inches.

(c) $3\frac{1}{4} - \frac{1}{2} = 2\frac{3}{4}$
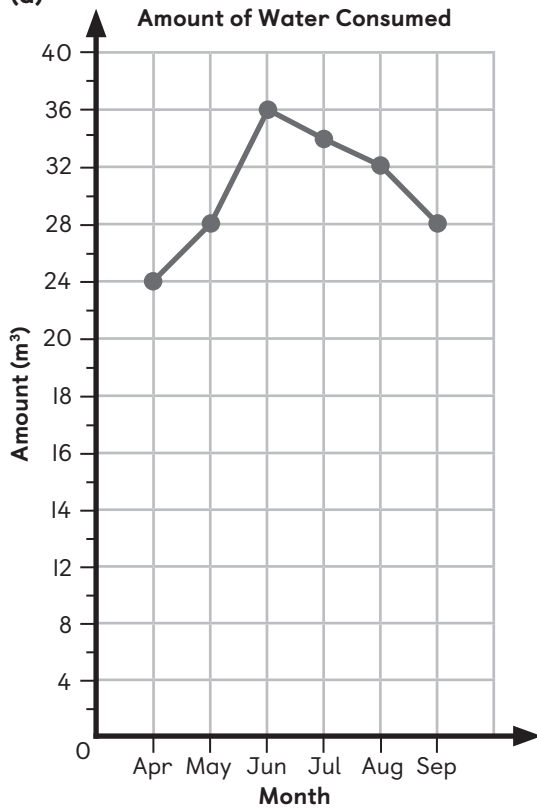The increase in height over 8 days was $2\frac{3}{4}$ inches.

3. (a)

(b) 7 fluid ounces

(c) 18 fluid ounces

4. (a)

Amount of Water Consumed

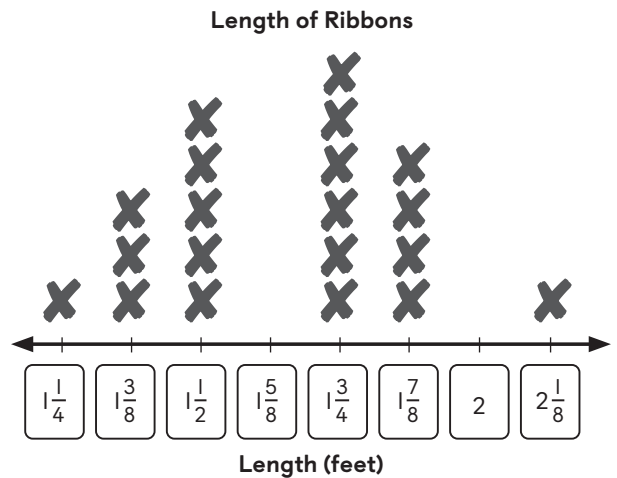**(b)** Between August and September
32 − 28 = 4
The decrease was 4 cubic meters.

(c) June, 36 m³
Accept all correct explanations.
Example:
It was summer. That is why the members of David's family drank more water than other months.

Chapter Practice

1. B

2. A

3. C

4. C

5. B

6. (a)

Length of Ribbons

Length (feet)
Key: Each ✗ represents 1 ribbon.

(b) $(1 \times 1\frac{1}{4}) + (3 \times 1\frac{3}{8}) + (5 \times 1\frac{1}{2}) + (6 \times 1\frac{3}{4}) +$

$(4 \times 1\frac{7}{8}) + (1 \times 2\frac{1}{8})$

$= 1\frac{1}{4} + 4\frac{1}{8} + 7\frac{1}{2} + 10\frac{1}{2} + 7\frac{1}{2} + 2\frac{1}{8}$

$= 33$

The total length of ribbon Victoria used is 33 feet.

(c) There are 16 ribbons that are at least $1\frac{1}{2}$ feet long.

$\frac{16}{20} = \frac{4}{5}$

$\frac{4}{5}$ of the ribbons are at least $1\frac{1}{2}$ feet long.

7. (a)
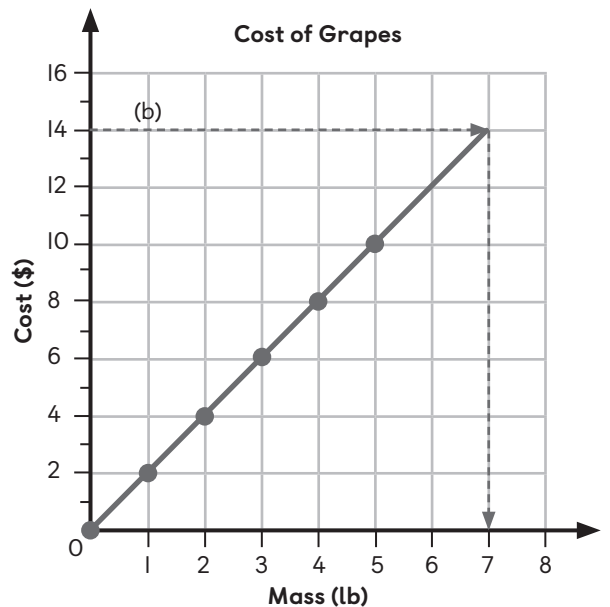
Cost of Grapes

(b) 7 pounds

(c) Each pound of grapes costs $2.
24 ÷ 2 = 12
The customer buys 12 pounds of grapes.

8. (a)

Amount of Rainfall Recorded

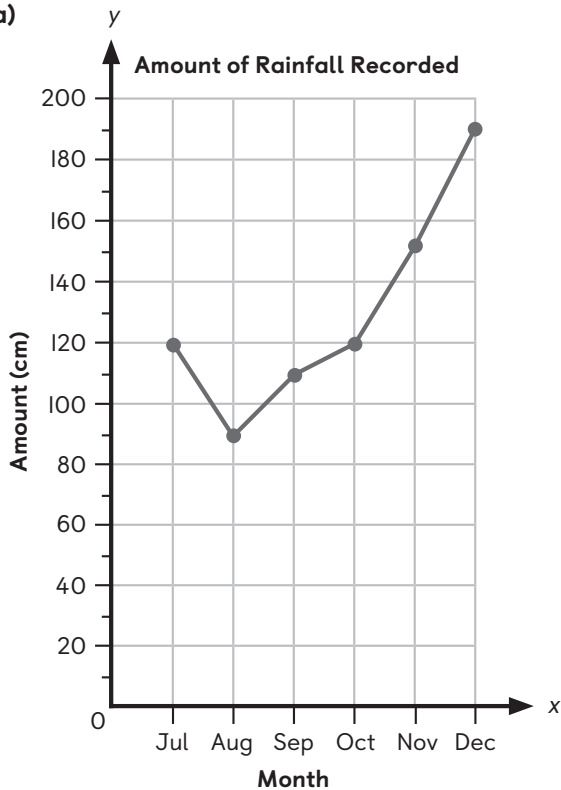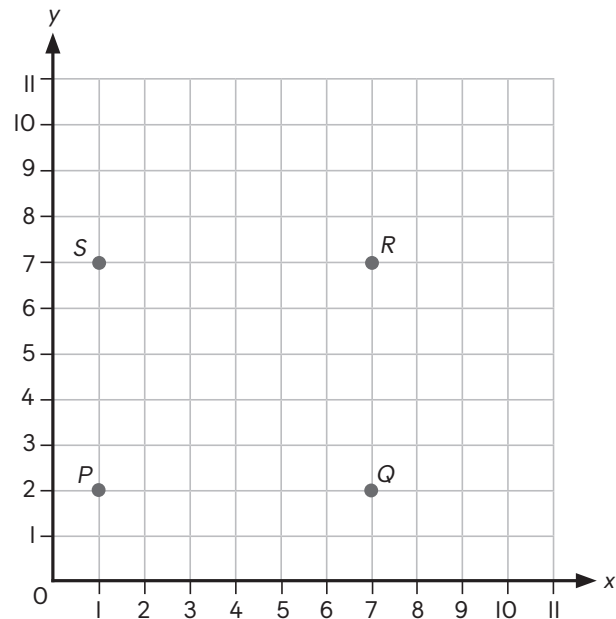**(b)** The driest month was August, which recorded 90 centimeters of rainfall. The wettest month was December, which recorded 190 centimeters of rainfall.
190 − 90 = 100
The difference in the amount of rainfall was 100 centimeters.

(c) 150 − 120 = 30
There was an increase of 30 centimeters in the amount of rainfall recorded from October to November.

9. (a)

(b) See answer for Coordinate *R* in the figure in **(a)**.
R (7, 7)

(c) Area = 6 × 5
= 30 square units

10. (a) No, I do not agree with Adam.
The coordinates of Adam's house are (3, 7) and the coordinates of his school are (7, 5). Adam walks 4 units to the right and 2 units down to reach school.

(b) Yes, I agree with Adam.
The coordinates of the post office are (7, 1) and the coordinates of the library are (3, 2).

(c) They walk 4 units to the right and 1 unit up to reach the restaurant for dinner. After dinner, they walk 2 units to the right and 1 unit up to reach the cinema.

Chapter 12 NUMBER PATTERNS AND RELATIONSHIPS

Exercise 12A Number Patterns and Relationships (1)

1. (a)

Figure Number	Number of Dots on Each side	Total Number of Dots
1	2	5
2	3	10
3	4	15
4	5	20
5	6	25

(b) $10 + 1 = 11$

(c) $10 \times 5 = 50$

(d) The total number of dots is 5 times the figure number.

(e) $90 \div 5 = 18$
Figure 18

2. (a)

Figure Number	1	2	3	4	5
Number of Stars	1	2	3	4	5
Number of Dots	5	9	13	17	21

(b) Multiply the figure number by 4 and add 1 to find the total number of dots.

(c) $4 \times 10 + 1 = 41$

(d) $(61 - 1) \div 4 = 15$
Figure 15

3. (a)

Figure Number	1	2	3	4	5
Number of Hexagons	1	2	3	4	5
Number of Sticks	6	11	16	21	26

(b) Multiply the figure number by 5 and add 1 to find the total number of sticks used.

(c) $5 \times 12 + 1 = 61$
61 sticks are needed to form Figure 12.

4. (a)

Figure Number	Number of Black Tiles	Number of White Tiles	Total Number of Tiles
1	3	1	4
2	6	3	9
3	9	7	16
4	12	13	25
5	15	21	36

(b) Add 1 to the figure number and multiply it by itself to find the total number of tiles.

(c) $11 \times 11 = 121$

(d) $400 = 20 \times 20$
$20 - 1 = 19$
The figure number is 19.

Exercise 12A Number Patterns and Relationships (2)

1. (a)

Term Number	1	2	3	4	5
Value (Pattern P)	2	6	10	14	18
Value (Pattern Q)	20	18	16	14	12

(b)
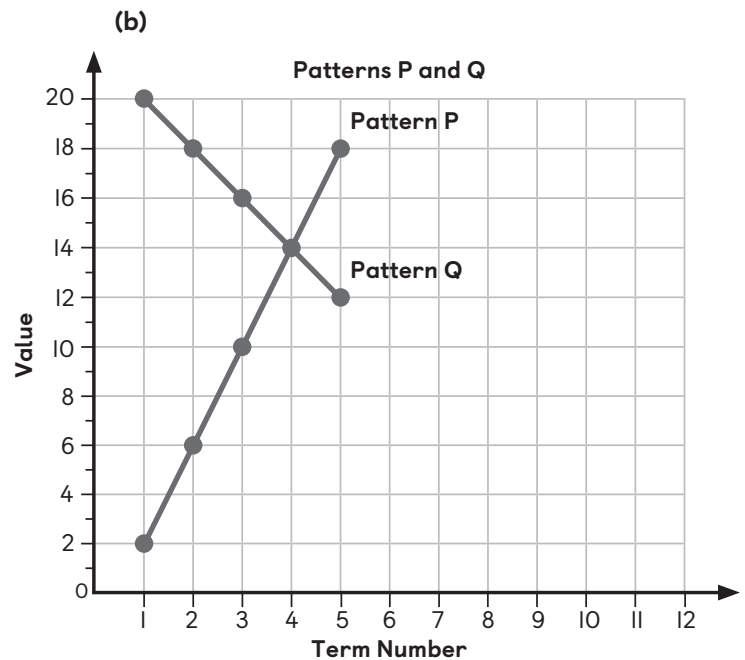
(c) Term number 4. The value is 14.

(d) Continue to draw the line for Pattern Q until it reaches 0. It is the 11th term.

2. (a)

Day	0	1	2	3	4	5	6	7
Amount Steve Has Left ($)	80	76	72	68	64	60	56	52
Amount Tracy Has Left ($)	80	72	64	56	48	40	32	24

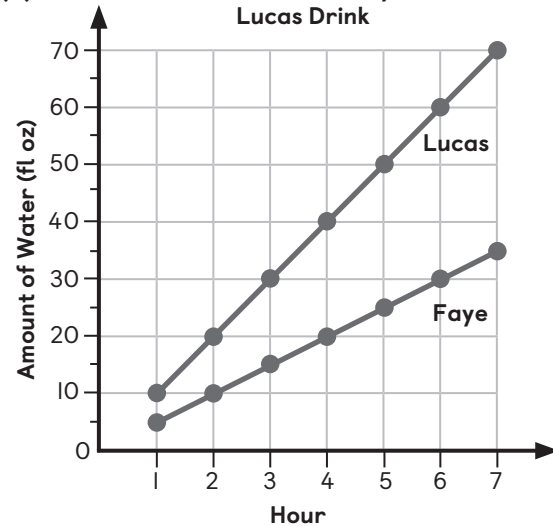**(b)**

Amount Steve and Tammy Have Left After Each Day
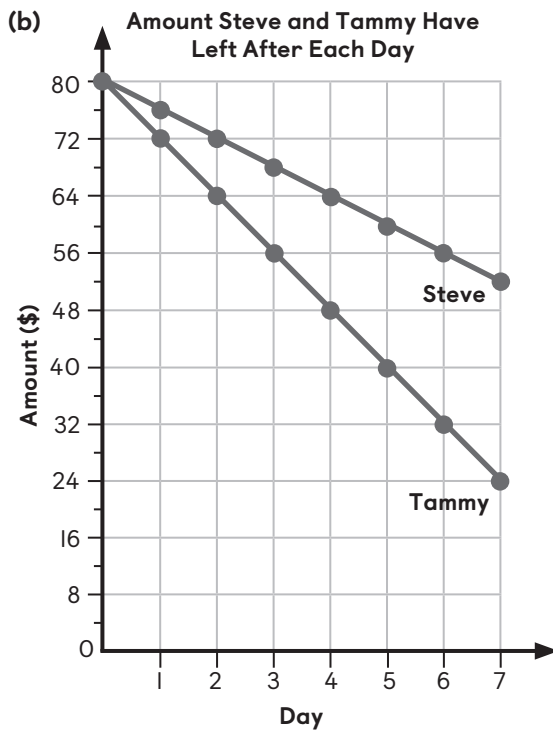
(c) Steve had more money left.
Steve had $52 left. Tammy had $24 left.
52 − 24 = 28
Steve had $28 more left than Tammy by the end of the week.

3. (a)

| Hour	1	2	3	4	5	6	7
Amount of Water Faye Drinks (fl oz)	5	10	15	20	25	30	35
Amount of Water Lucas Drinks (fl oz)	10	20	30	40	50	60	70

(b)

Amount of Water Faye and Lucas Drink

(c) 70 fl oz

(d) Lucas drinks twice as much water as Faye after each hour.
OR
Faye drinks half as much water as Lucas after each hour.

4. (a)

Number of Packs	1	2	3	4	5	6	7
Mass of Peanuts in Small Packs (g)	40	80	120	160	200	240	280
Mass of Peanuts in Large Packs (g)	60	120	180	240	300	360	420

(b)

Mass of Peanuts
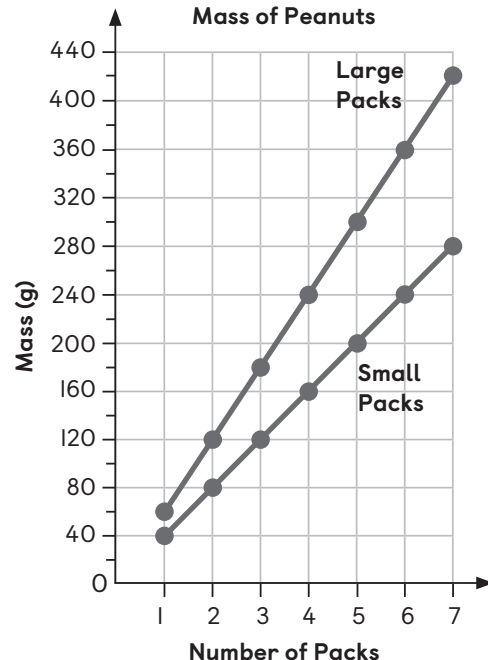
(c) Amount of peanuts in *n* small
packs = 40*n* g
Amount of peanuts in *n* large
packs = 60*n* g

Chapter Practice

I. C

2. C

3. A, D

4. B

5. C

6. C

7. Laura saves 4 times as much money as Ken
each week.
OR
Ken saves a fourth of the money Laura saves
each week.

8. Laura will save $60*n* after *n* weeks.
Ken will save $15*n* after *n* weeks.

9. 135 ÷ 15 = 9
Ken has saved $135 after 9 weeks.
9 × 60 = 540
Laura has saved $540 then.

IO. (a)

Figure	Number of Craft Sticks
1	5
2	8
3	11
4	14
5	17
6	20

(b) 3*n* + 2

(c) 92 − 2 = 90
90 ÷ 3 = 30
Figure 30 will have 92 craft sticks.

II. (a) Sunshine Café

Number of People	0	1	2	3	4	5	6	7	8	9	10
Total Cost ($)	35	40	45	50	55	60	65	70	75	80	85

Novel Café

Number of People	0	1	2	3	4	5	6	7	8	9	10
Total Cost ($)	0	10	20	30	40	50	60	70	80	90	100

(b)

Cost Between Two Cafés
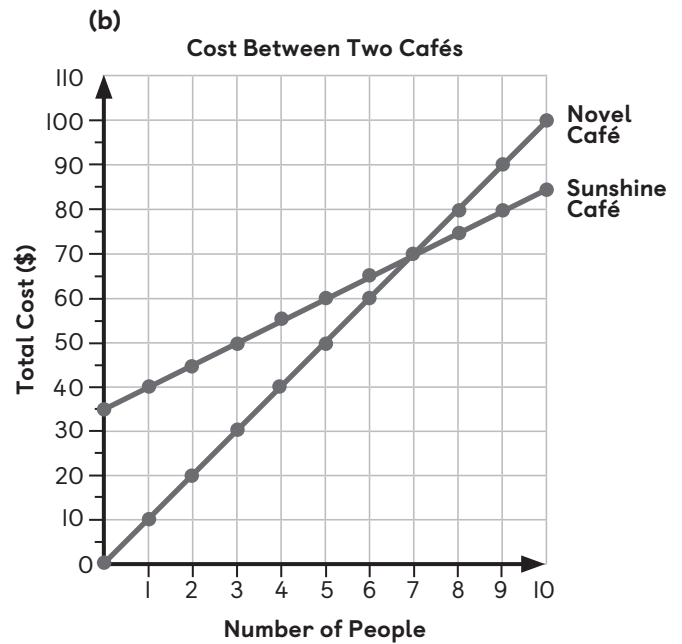
(c) Novel Café will give a better offer if
there are 5 people.

(d) Sunshine Café will give a better offer if
there are 10 people.

(e) There will be 1 + 7 = 8 people, including
himself, attending the party. Steve will
choose Sunshine Café. He will pay $75.