

# ANSWERS

## Chapter I MULTI-DIGIT WHOLE NUMBERS

### Exercise IA Numbers to 10 Million

- (a) 2,367,459 (b) 3,287,905
- 9,407,256
- three million, two hundred five thousand, eight hundred seventy
- (a) 7,005,420 (b) 6,450,025  
(c) 800,000 (d) 8,000,000
- (a) 700,000 (b) 7,000  
(c) 10 (d)  $\frac{1}{10}$
- (a) 1,023,596 (b) 9,653,201  
(c) Accept all correct answers.  
Example: 6,095,312

### Exercise IB Multiply by Tens, Hundreds, and Thousands (I)

- (a) 350; 3,500; 35,000  
(b) 560; 5,600; 56,000  
(c) 7,280; 72,800; 728,000  
(d) 9,430; 94,300; 943,000
- (a) 100 (b) 10  
(c) 1,000
- (a) 1,000 (b) 10  
(c) 100
- (a) 3,360 (b) 37,760  
(c) 313,830 (d) 11,100  
(e) 332,800 (f) 291,000  
(g) 1,652,000 (h) 9,245,000

5.  $12 \times 3,000 = 12 \times 3 \times 1,000$   
 $= 36 \times 1,000$   
 $= 36,000$   
Mr. Dave will earn \$36,000 in 1 year.

6.  $489,500 \times 10 = 4,895,000$   
The population of Town B is 4,895,000.

### Exercise IB Multiply by Tens, Hundreds, and Thousands (2)

- (a) 5,400 (b) 54,000  
(c) 540,000
- (a) 8,970 (b) 89,700  
(c) 897,000
- (a)  $10^1$  (b)  $10^2$   
(c)  $10^3$
- (a)  $\frac{8,572}{10} \times \frac{10^1}{10}$  (b)  $\frac{8,572}{10} \times \frac{10^2}{10}$   
(c)  $\frac{8,572}{10} \times \frac{10^3}{10}$
- (a)  $\frac{25}{10} \times \frac{10^2}{10}$  (b)  $\frac{97}{10} \times \frac{10^2}{10}$   
(c)  $\frac{293}{10} \times \frac{10^2}{10}$  (d)  $\frac{897}{10} \times \frac{10^3}{10}$   
(e)  $\frac{263}{10} \times \frac{10^3}{10}$  (f)  $\frac{359}{10} \times \frac{10^3}{10}$
- (a)  $365 \times 300 = 365 \times 3 \times 100$   
 $= \frac{1,095}{10} \times 100$   
 $= \frac{1,095}{10} \times \frac{10^2}{10}$   
(b)  $587 \times 400 = 587 \times 4 \times 100$   
 $= \frac{2,348}{10} \times 100$   
 $= \frac{2,348}{10} \times \frac{10^2}{10}$   
(c)  $7,340 \times 600 = 7,340 \times 6 \times 100$   
 $= \frac{44,040}{10} \times 100$   
 $= \frac{4,404}{10} \times \frac{10^3}{10}$   
(d)  $4,820 \times 700 = 4,820 \times \frac{7}{10} \times 100$   
 $= \frac{33,740}{10} \times 100$   
 $= \frac{3,374}{10} \times \frac{10^3}{10}$   
(e)  $394 \times 8,000 = 394 \times 8 \times 1,000$   
 $= 3,152 \times 1,000$   
 $= 3,152,000$   
 $= 3,152 \times 10^3$

**Exercise IC Divide by Tens, Hundreds, and Thousands**

1. (a) 300 (b) 30  
(c) 3
2. (a) 10 (b) 100  
(c) 1,000
3. (a) 82,500 (b) 825,000  
(c) 1,000
4. (a) 730 (b) 4,362
5. (a) 1,700 (b) 170  
(c) 17
6. (a) 1,600 (b) 160  
(c) 16
7. (a) 1,300 (b) 130
8. (a) 280 (b) 240  
(c) 180 (d) 260  
(e) 170 (f) 42
9. (a) 315,000 (b) 31,500  
(c) 3,150

**Chapter Practice**

1. B
2. C
3. D
4. A
5. D
6. 807,000
7. 36

8.  $3 \times 10^3 = 3,000$   
 $768,000 \div 3,000 = 768,000 \div 1,000 \div 3$   
 $= 768 \div 3$   
 $= 256$   
 The number is 256.

9.  $543 \times 6 \times 10^2 = 3,258 \times 100$   
 $= 325,800$   
 The number is 325,800.

10.  $11,400 \div 300 = 11,400 \div 100 \div 3$   
 $= 114 \div 3$   
 $= 38$   
 The cost of each pot of plant was \$38.

11. (a) 7,654,203 (b) 2,034,576

12.

| Hundred Thousands | Ten Thousands | Thousands | Hundreds | Tens | Ones |
|-------------------|---------------|-----------|----------|------|------|
| 7                 | 8             | 9         | 3        | 4    | 0    |

Digit in the ten thousands place =  $4 \times 2$   
 $= 8$

Value of the digit in the ten thousands place  
 $= 300 \times 30$   
 $= 9,000$

Digit in the hundred thousands place =  $9 - 2$   
 $= 7$

The number is 789,340.

**Chapter 2 THE FOUR OPERATIONS WITH WHOLE NUMBERS**

**Exercise 2A Order of Operations (I)**

1. (a)  $205 - 149 + 96 = 56 + 96$   
 $= 152$
- (b)  $588 \div 7 \times 4 = 84 \times 4$   
 $= 336$
- (c)  $100 - 68 + 37 \times 5 = 100 - 68 + 185$   
 $= 32 + 185$   
 $= 217$
- (d)  $204 \div 6 + 38 \times 4 = 34 + 38 \times 4$   
 $= 34 + 152$   
 $= 186$
- (e)  $136 \div 4 \times 5 - 68 + 19 = 34 \times 5 - 68 + 19$   
 $= 170 - 68 + 19$   
 $= 102 + 19$   
 $= 121$

$$\begin{aligned} \text{(f)} \quad 40 \div 2 \times 5 - 36 + 16 &= 20 \times 5 - 36 + 16 \\ &= 100 - 36 + 16 \\ &= 64 + 16 \\ &= 80 \end{aligned}$$

$$\begin{aligned} \text{(g)} \quad 103 + 47 \times 8 \div 4 - 29 &= 103 + 376 \div 4 - 29 \\ &= 103 + 94 - 29 \\ &= 197 - 29 \\ &= 168 \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad 390 \div 6 \times 7 - 29 \times 3 &= 65 \times 7 - 29 \times 3 \\ &= 455 - 29 \times 3 \\ &= 455 - 87 \\ &= 368 \end{aligned}$$

2. (a)  $38 + 2 \times 20$

$$\begin{aligned} \text{(b)} \quad 38 + 2 \times 20 &= 38 + 40 \\ &= 78 \end{aligned}$$

Kirk has 78 marbles.

3. (a)  $3 \times 8 - 6$

$$\begin{aligned} \text{(b)} \quad 3 \times 8 - 6 &= 24 - 6 \\ &= 18 \end{aligned}$$

Megan has 18 muffins left.

### Exercise 2A Order of Operations (2)

1. (a)  $(24 + 18) \div 6 = 42 \div 6$   
 $= 7$

(b)  $(20 - 13) \times 9 = 7 \times 9$   
 $= 63$

2. (a)  $80 - (9 + 11) \times 3 = 80 - 20 \times 3$   
 $= 80 - 60$   
 $= 20$

(b)  $(40 - 26) \div 2 \times 3 = 14 \div 2 \times 3$   
 $= 7 \times 3$   
 $= 21$

(c)  $4 \times (7 + 3) - 48 \div 8 = 4 \times 10 - 48 \div 8$   
 $= 40 - 48 \div 8$   
 $= 40 - 6$   
 $= 34$

(d)  $(19 + 17) \div 6 + 14 = 36 \div 6 + 14$   
 $= 6 + 14$   
 $= 20$

(e)  $7 \times (14 + 26) \div 8 - 18 = 7 \times 40 \div 8 - 18$   
 $= 280 \div 8 - 18$   
 $= 35 - 18$   
 $= 17$

$$\begin{aligned} \text{(f)} \quad (73 + 27) \times 3 - 136 \div 4 &= 100 \times 3 - 136 \div 4 \\ &= 300 - 136 \div 4 \\ &= 300 - 34 \\ &= 266 \end{aligned}$$

3. (a)  $8 + 7 \times 5 = 8 + 35$   
 $= 43$   
 $(8 + 7) \times 5 = 15 \times 5$   
 $= 75$

$8 + 7 \times 5 = (8 + 7) \times 5$  is not true.

(b)  $5 + 3 \times 8 = 5 + 24$   
 $= 29$   
 $8 \times 8 = 64$   
 $5 + 3 \times 8 = 8 \times 8$  is not true.

(c)  $6 \times 5 - 10 \div 2 = 30 - 10 \div 2$   
 $= 30 - 5$   
 $= 25$   
 $30 - 5 = 25$   
 $6 \times 5 - 10 \div 2 = 30 - 5 = 25$  is true.

4. (a)  $(9 + 8) \times 6 = 17 \times 6$   
 $= 102$   
 $(9 \times 6) + (6 \times 6) = 54 + (6 \times 6)$   
 $= 54 + 36$   
 $= 90$

$(9 + 8) \times 6$   $>$   $(9 \times 6) + (6 \times 6)$

(b)  $10 \times (6 + 7) = 10 \times 13$   
 $= 130$   
 $(10 \times 6) + (10 \times 7) = 60 + (10 \times 7)$   
 $= 60 + 70$   
 $= 130$

$10 \times (6 + 7)$   $=$   $(10 \times 6) + (10 \times 7)$

(c)  $15 \times (10 - 8) = 15 \times 2$   
 $= 30$   
 $(15 \times 10) - (15 \times 2) = 150 - (15 \times 2)$   
 $= 150 - 30$   
 $= 120$

$15 \times (10 - 8)$   $<$   $(15 \times 10) - (15 \times 2)$

5. (a)  $(5 + 7) \div 2 = 6$

(b)  $9 - (7 - 4) \times 2 = 3$

(c)  $(4 + 5) \times 2 - 8 = 10$

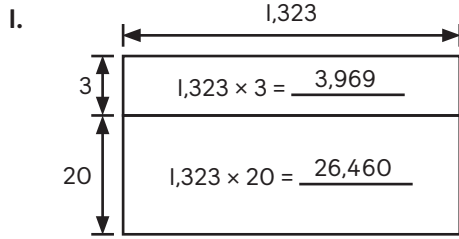
(d)  $3 \times (8 \div 2) - 5 = 7$

6. (a)  $(40 + 35) \div 3$

(b)  $(40 + 35) \div 3 = 75 \div 3$   
 $= 25$

There were 25 seashells in each box.

**Exercise 2B Multiply by a 2-Digit Number Fluently**



$$\begin{array}{r} 1\ 3\ 2\ 3 \\ \times \quad 2\ 3 \\ \hline 3\ 9\ 6\ 9 \\ 2\ 6\ 4\ 6\ 0 \\ \hline 3\ 0\ 4\ 2\ 9 \end{array}$$

$1,323 \times 23 = \underline{30,429}$

2. (a)  $132 \times 31 = \underline{4,092}$

$$\begin{array}{r} 1\ 3\ 2 \\ \times \quad 3\ 1 \\ \hline 1\ 3\ 2 \\ 3\ 9\ 6\ 0 \\ \hline 4\ 0\ 9\ 2 \end{array}$$

(b)  $398 \times 75 = \underline{29,850}$

$$\begin{array}{r} \phantom{0}^6\ \phantom{0}^5 \\ \phantom{0}^4\ \phantom{0}^4 \\ 3\ 9\ 8 \\ \times \quad 7\ 5 \\ \hline 1\ 9\ 9\ 0 \\ 2\ 7\ 8\ 6\ 0 \\ \hline 2\ 9\ 8\ 5\ 0 \end{array}$$

(c)  $495 \times 47 = \underline{23,265}$

$$\begin{array}{r} \phantom{0}^3\ \phantom{0}^2 \\ \phantom{0}^6\ \phantom{0}^3 \\ 4\ 9\ 5 \\ \times \quad 4\ 7 \\ \hline 3\ 4\ 6\ 5 \\ 1\ 9\ 8\ 0\ 0 \\ \hline 2\ 3\ 2\ 6\ 5 \end{array}$$

(d)  $856 \times 76 = \underline{65,056}$

$$\begin{array}{r} \phantom{0}^3\ \phantom{0}^4 \\ \phantom{0}^3\ \phantom{0}^3 \\ 8\ 5\ 6 \\ \times \quad 7\ 6 \\ \hline 5\ 1\ 3\ 6 \\ 5\ 9\ 9\ 2\ 0 \\ \hline 6\ 5\ 0\ 5\ 6 \end{array}$$

(e)  $4,235 \times 36 = \underline{152,460}$

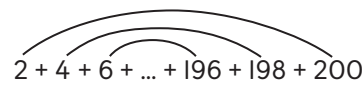
$$\begin{array}{r} \phantom{0}^1\ \phantom{0}^1 \\ \phantom{0}^1\ \phantom{0}^2\ \phantom{0}^3 \\ 4\ 2\ 3\ 5 \\ \times \quad 3\ 6 \\ \hline 2\ 5\ 4\ 1\ 0 \\ 1\ 2\ 7\ 0\ 5\ 0 \\ \hline 1\ 5\ 2\ 4\ 6\ 0 \end{array}$$

(f)  $7,283 \times 78 = \underline{568,074}$

$$\begin{array}{r} \phantom{0}^1\ \phantom{0}^5\ \phantom{0}^2 \\ \phantom{0}^2\ \phantom{0}^6\ \phantom{0}^2 \\ 7\ 2\ 8\ 3 \\ \times \quad 7\ 8 \\ \hline 5\ 8\ 2\ 6\ 4 \\ 5\ 0\ 9\ 8\ 1\ 0 \\ \hline 5\ 6\ 8\ 0\ 7\ 4 \end{array}$$

3.  $200 \div 2 = 100$

There are 100 even numbers from 2 to 200.



$2 + 200 = 202$

$100 \div 2 = 50$

There are 50 pairs of 202.

$202 \times 50 = 10,100$

So,  $2 + 4 + 6 + \dots + 196 + 198 + 200 = 10,100$ .

4. (a) Yes, I agree with Linda.

$(1,470 \times 60) + (3 \times 60)$  or the sum of 1,470 groups of 60 and 3 groups of 60 is the same as 1,473 groups of 60 or  $(1,473 \times 60)$ .

Now, we have  $(1,470 \times 60) + (3 \times 60) + (1,473 \times 2) = (1,473 \times 60) + (1,473 \times 2)$ .

$(1,473 \times 60) + (1,473 \times 2)$  or the sum of 1,473 groups of 60 and 1,473 groups of 2 is 1,473 groups of 62.

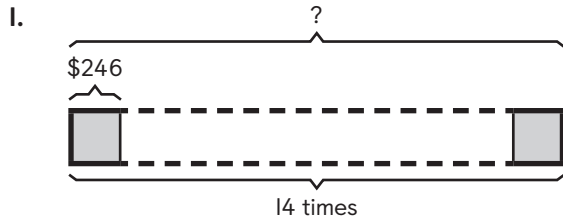
(b)  $1,470 \times 60 = 88,200$

$3 \times 60 = 180$

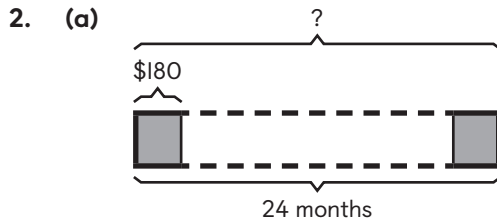
$1,473 \times 2 = 2,946$

$1,473 \times 62 = 88,200 + 180 + 2,946$   
 $= 91,326$

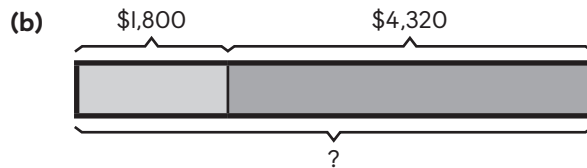
### Exercise 2C Word Problems: Multiplying by a 2-Digit Number



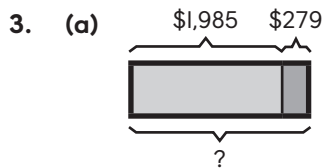
$14 \times 246 = 3,444$   
The sofa set costs \$3,444.



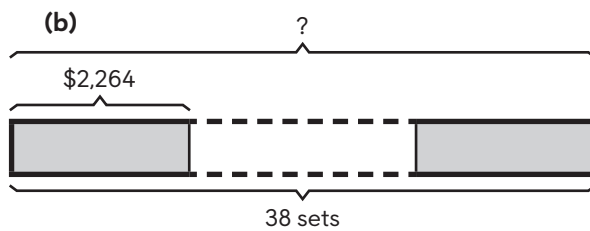
$24 \times 180 = 4,320$   
Angela will save \$4,320 in 2 years.



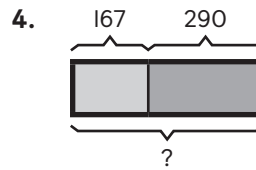
$4,320 + 1,800 = 6,120$   
Angela's total savings by the end of the next 2 years is \$6,120.



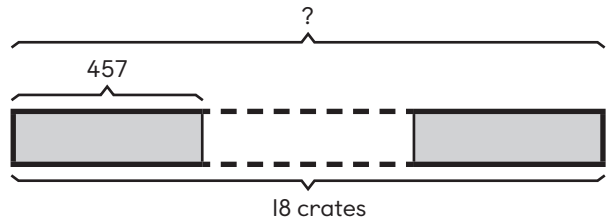
$1,985 + 279 = 2,264$   
The store owner paid \$2,264 for a laptop and a printer.



$38 \times 2,264 = 86,032$   
The store owner paid \$86,032 for all the laptops and printers.



$167 + 290 = 457$   
There are 457 T-shirts in each crate.



$18 \times 457 = 8,226$   
There are 8,226 T-shirts in all.

### Exercise 2D Divide by Tens

1. (a)  $1,560 \div 40 = \underline{39}$

$$\begin{array}{r} 39 \\ 40 \overline{) 1560} \\ \underline{120} \phantom{0} \\ 360 \\ \underline{360} \\ 0 \end{array}$$

(b)  $2,490 \div 30 = \underline{83}$

$$\begin{array}{r} 83 \\ 30 \overline{) 2490} \\ \underline{240} \phantom{0} \\ 90 \\ \underline{90} \\ 0 \end{array}$$

(c)  $2,650 \div 50 = \underline{53}$

$$\begin{array}{r} 53 \\ 50 \overline{) 2650} \\ \underline{250} \phantom{0} \\ 150 \\ \underline{150} \\ 0 \end{array}$$

(d)  $2,870 \div 70 = \underline{41}$

$$\begin{array}{r} 41 \\ 70 \overline{) 2870} \\ \underline{280} \phantom{0} \\ 70 \\ \underline{70} \\ 0 \end{array}$$

(e)  $4,320 \div 60 = \underline{72}$

$$\begin{array}{r} 72 \\ 60 \overline{) 4320} \\ \underline{420} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

(f)  $3,440 \div 80 = \underline{43}$

$$\begin{array}{r} 43 \\ 80 \overline{) 3440} \\ \underline{320} \\ 240 \\ \underline{240} \\ 0 \end{array}$$

(g)  $5,600 \div 90 = \underline{62 \text{ R } 20}$

$$\begin{array}{r} 62 \text{ R } 20 \\ 90 \overline{) 5600} \\ \underline{540} \\ 200 \\ \underline{180} \\ 20 \end{array}$$

(h)  $9,280 \div 70 = \underline{132 \text{ R } 40}$

$$\begin{array}{r} 132 \text{ R } 40 \\ 70 \overline{) 9280} \\ \underline{70} \\ 228 \\ \underline{210} \\ 180 \\ \underline{140} \\ 40 \end{array}$$

(i)  $9,320 \div 30 = \underline{310 \text{ R } 20}$

$$\begin{array}{r} 310 \text{ R } 20 \\ 30 \overline{) 9320} \\ \underline{90} \\ 32 \\ \underline{30} \\ 20 \\ \underline{0} \\ 20 \end{array}$$

(j)  $1,815 \div 20 = \underline{90 \text{ R } 15}$

$$\begin{array}{r} 90 \text{ R } 15 \\ 20 \overline{) 1815} \\ \underline{180} \\ 15 \\ \underline{0} \\ 15 \end{array}$$

(k)  $2,820 \div 40 = \underline{70 \text{ R } 20}$

$$\begin{array}{r} 70 \text{ R } 20 \\ 40 \overline{) 2820} \\ \underline{280} \\ 20 \\ \underline{0} \\ 20 \end{array}$$

(l)  $3,780 \div 50 = \underline{75 \text{ R } 30}$

$$\begin{array}{r} 75 \text{ R } 30 \\ 50 \overline{) 3780} \\ \underline{350} \\ 280 \\ \underline{250} \\ 30 \end{array}$$

2. (a)  $370 \div 20 = 18 \text{ R } 10$   
There were 18 cookies in each box.  
(b) 10 cookies were left unpacked.

### Exercise 2E Divide by a 2-Digit Number (I)

1. (a)  $98 \div 14 = \underline{7}$

$$\begin{array}{r} 7 \\ 14 \overline{) 98} \\ \underline{98} \\ 0 \end{array}$$

(b)  $90 \div 18 = \underline{5}$

$$\begin{array}{r} 5 \\ 18 \overline{) 90} \\ \underline{90} \\ 0 \end{array}$$

(c)  $96 \div 16 = \underline{6}$

$$\begin{array}{r} 6 \\ 16 \overline{) 96} \\ \underline{96} \\ 0 \end{array}$$

(d)  $90 \div 15 = \underline{6}$

$$\begin{array}{r} 6 \\ 15 \overline{)90} \\ \underline{90} \\ 0 \end{array}$$

(e)  $92 \div 23 = \underline{4}$

$$\begin{array}{r} 4 \\ 23 \overline{)92} \\ \underline{92} \\ 0 \end{array}$$

(f)  $76 \div 19 = \underline{4}$

$$\begin{array}{r} 4 \\ 19 \overline{)76} \\ \underline{76} \\ 0 \end{array}$$

(g)  $89 \div 12 = \underline{7 \text{ R } 5}$

$$\begin{array}{r} 7 \text{ R } 5 \\ 12 \overline{)89} \\ \underline{84} \\ 5 \end{array}$$

(h)  $78 \div 14 = \underline{5 \text{ R } 8}$

$$\begin{array}{r} 5 \text{ R } 8 \\ 14 \overline{)78} \\ \underline{70} \\ 8 \end{array}$$

(i)  $98 \div 13 = \underline{7 \text{ R } 7}$

$$\begin{array}{r} 7 \text{ R } 7 \\ 13 \overline{)98} \\ \underline{91} \\ 7 \end{array}$$

(j)  $90 \div 17 = \underline{5 \text{ R } 5}$

$$\begin{array}{r} 5 \text{ R } 5 \\ 17 \overline{)90} \\ \underline{85} \\ 5 \end{array}$$

(k)  $78 \div 24 = \underline{3 \text{ R } 6}$

$$\begin{array}{r} 3 \text{ R } 6 \\ 24 \overline{)78} \\ \underline{72} \\ 6 \end{array}$$

(l)  $99 \div 18 = \underline{5 \text{ R } 9}$

$$\begin{array}{r} 5 \text{ R } 9 \\ 18 \overline{)99} \\ \underline{90} \\ 9 \end{array}$$

2.  $99 \div 16 = 6 \text{ R } 3$

Ms. Davies had 3 stickers left.

## Exercise 2E Divide by a 2-Digit Number (2)

1.

$$\begin{aligned} &2,976 \div 24 \\ &= (2,400 \div 24) + (480 \div 24) + (96 \div 24) \\ &= \underline{100} + \underline{20} + \underline{4} \\ &= \underline{124} \end{aligned}$$

$$2,976 \div 24 = \underline{124}$$

2. (a)  $810 \div 45 = \underline{18}$

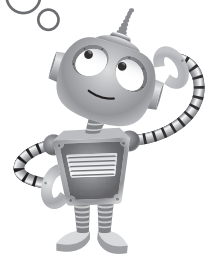
$$\begin{array}{r} 18 \\ 45 \overline{)810} \\ \underline{45} \\ 360 \\ \underline{360} \\ 0 \end{array}$$

(b)  $936 \div 36 = \underline{26}$

$$\begin{array}{r} 26 \\ 36 \overline{)936} \\ \underline{72} \\ 216 \\ \underline{216} \\ 0 \end{array}$$

(c)  $989 \div 43 = \underline{23}$

$$\begin{array}{r} 23 \\ 43 \overline{)989} \\ \underline{86} \\ 129 \\ \underline{129} \\ 0 \end{array}$$



(d)  $998 \div 37 = 26 \text{ R } 36$

$$\begin{array}{r} 26 \text{ R } 36 \\ 37 \overline{) 998} \\ \underline{74} \phantom{0} \\ 258 \\ \underline{222} \\ 36 \end{array}$$

(e)  $994 \div 28 = 35 \text{ R } 14$

$$\begin{array}{r} 35 \text{ R } 14 \\ 28 \overline{) 994} \\ \underline{84} \phantom{0} \\ 154 \\ \underline{140} \\ 14 \end{array}$$

(f)  $3,116 \div 38 = 82$

$$\begin{array}{r} 82 \\ 38 \overline{) 3116} \\ \underline{304} \phantom{0} \\ 76 \\ \underline{76} \\ 0 \end{array}$$

3. (a)  $78 \times 34 = 2,652$

$2,652 \div 34 = 78$

$$\begin{array}{r} 78 \\ 34 \overline{) 2652} \\ \underline{238} \phantom{0} \\ 272 \\ \underline{272} \\ 0 \end{array}$$

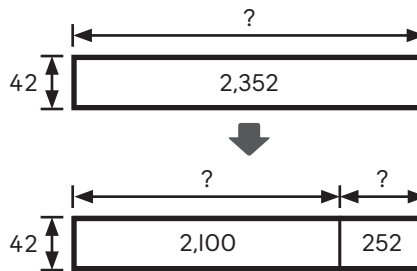
(b)  $55 \times 80 = 4,400$

$4,400 \div 55 = 80$

$$\begin{array}{r} 80 \\ 55 \overline{) 4400} \\ \underline{440} \phantom{0} \\ 00 \\ \underline{00} \\ 0 \end{array}$$

4. Yes, I agree with Jamie.

$2,352 = 2,100 + 252$



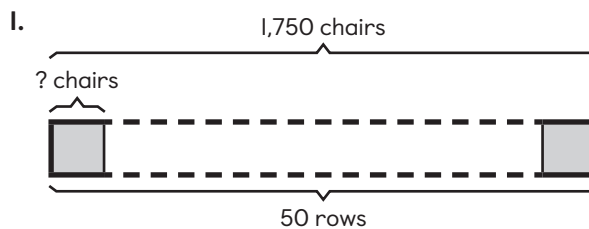
$2,100 \div 42 = 50$

$252 \div 42 = 6$

$50 + 6 = 56$

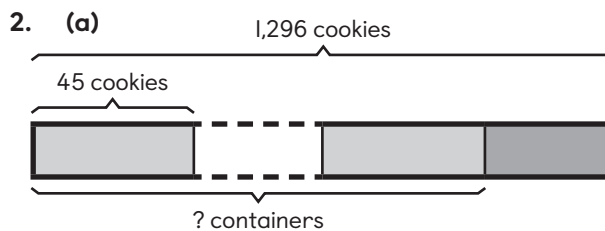
So,  $2,352 \div 42 = 2,100 \div 42 + 252 \div 42$   
 $= 50 + 6$   
 $= 56.$

### Exercise 2F Word Problems: Dividing by a 2-Digit Number



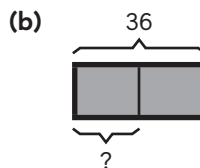
$1,750 \div 50 = 35$

There are 35 chairs in each row.



$1,296 \div 45 = 28 \text{ r } 36$

There are 28 containers of 45 cookies.

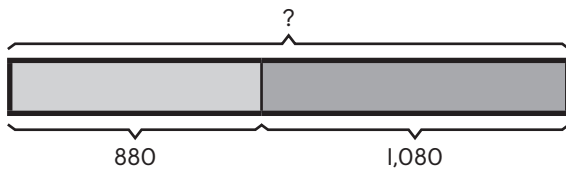


$36 \div 2 = 18$

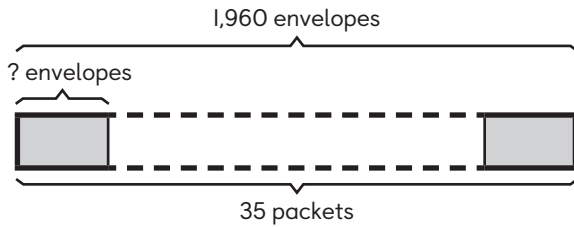
Each child receives 18 cookies.



3.

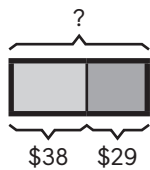


$880 + 1,080 = 1,960$   
There are 1,960 envelopes altogether.

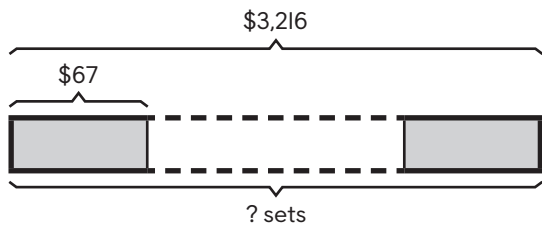


$1,960 \div 35 = 56$   
There are 56 envelopes in each packet.

4.



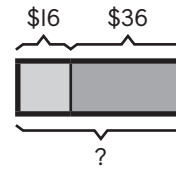
$38 + 29 = 67$



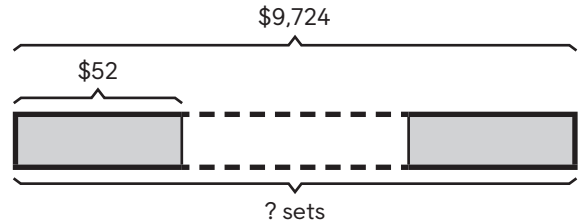
$3,216 \div 67 = 48$   
Mr. Vasquez sold 48 frying pans.

### Exercise 2G Word Problems (I)

1.

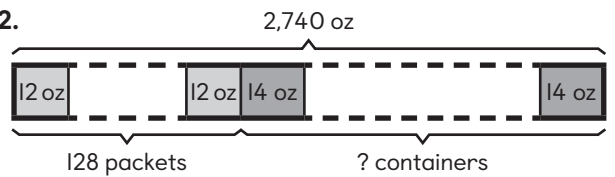


$16 + 36 = 52$   
The cost of 1 adult and 1 child ticket was \$52.



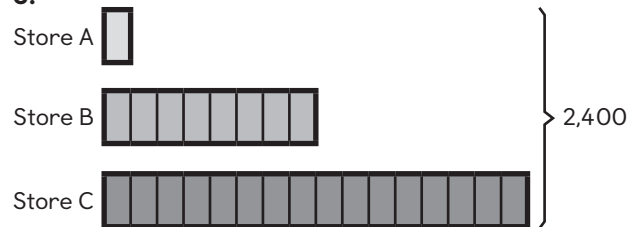
$9,724 \div 52 = 187$   
There were 187 sets of 1 adult and 1 child.  
 $2 \times 187 = 374$   
There were 374 people at the theater.

2.

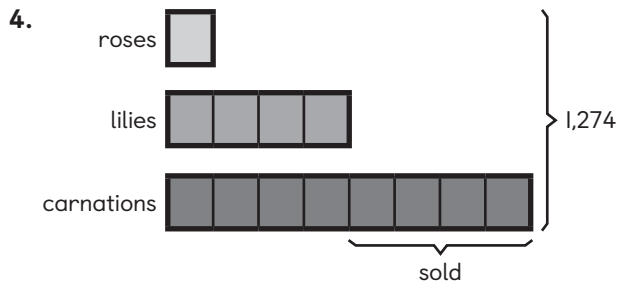


$128 \times 12 = 1,536$   
1,536 ounces of coffee powder were packed into 128 packets.  
 $2,740 - 1,536 = 1,204$   
1,204 ounces of coffee powder were packed in containers altogether.  
 $1,204 \div 14 = 86$   
86 containers were used.

3.

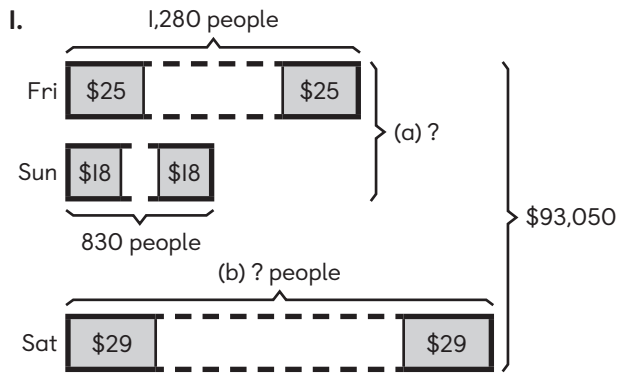


$25 \text{ units} = 2,400$   
 $1 \text{ unit} = 2,400 \div 25$   
 $= 96$   
 $17 \text{ units} = 17 \times 96$   
 $= 1,632$   
Stores A and C had 1,632 toys.  
 $1,632 \div 2 = 816$   
Store A had 816 toys in the end.



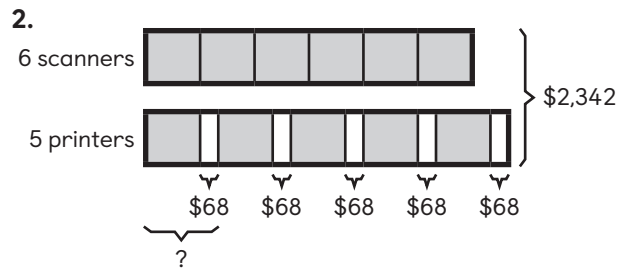
13 units = 1,274  
 1 unit =  $1,274 \div 13$   
 = 98  
 9 units =  $9 \times 98$   
 = 882  
 882 flowers were left before 390 flowers were donated.  
 $882 - 390 = 492$   
 492 flowers were left at the florist.

**Exercise 2G Word Problems (2)**



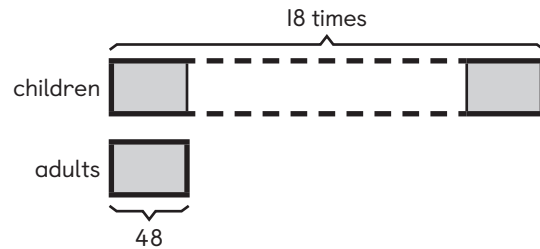
(a)  $1,280 \times 25 = 32,000$   
 $\$32,000$  was collected on Friday.  
 $830 \times 18 = 14,940$   
 $\$14,940$  was collected on Sunday.  
 $32,000 + 14,940 = 46,940$   
 $\$46,940$  was collected on Friday and Sunday.

(b)  $93,050 - 46,940 = 46,110$   
 $\$46,110$  was collected on Saturday.  
 $46,110 \div 29 = 1,590$   
 1,590 people watched the play on Saturday.



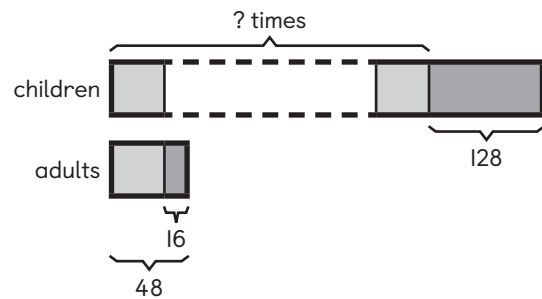
$5 \times 68 = 340$   
 $11 \text{ units} = 2,342 - 340$   
 =  $\$2,002$   
 1 unit =  $2,002 \div 11$   
 =  $\$182$   
 $182 + 68 = 250$   
 The cost of each printer was  $\$250$ .

3. Before:



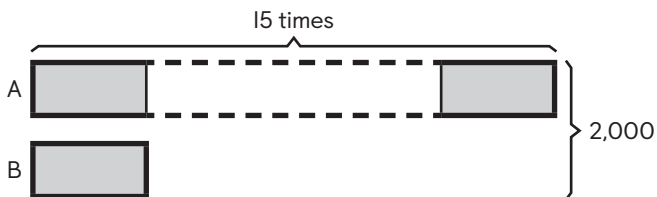
$18 \times 48 = 864$   
 There were 864 children.

After:



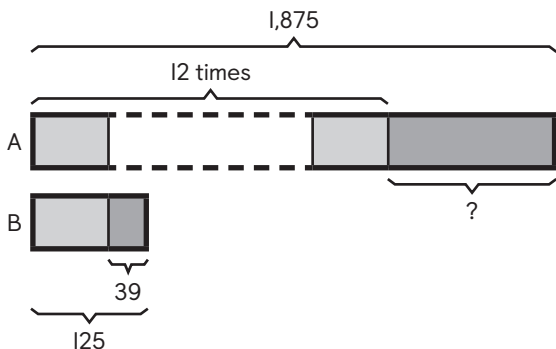
$48 - 16 = 32$   
 32 adults remained.  
 $864 - 128 = 736$   
 736 children remained.  
 $736 \div 32 = 23$   
 23 times as many children as adults remained at the carnival.

4. Before:



$2,000 \div 16 = 125$   
 There were 125 apples in Basket B.  
 $2,000 - 125 = 1,875$   
 There were 1,875 apples in Basket A.

After:



$125 - 39 = 86$   
 There were 86 apples left in Basket B.  
 $12 \times 86 = 1,032$   
 There were 1,032 apples left in Basket A.  
 $1,875 - 1,032 = 843$   
 843 apples were sold from Basket A.

9.  $884$

$884 \div 13 = 68$   
 The cost of a chair was \$68.

10.  $350$

$350 \times 24 = 8,400$   
 Luke bought all the toys for \$8,400.

$268$

$268 \times 36 = 9,648$   
 Luke received \$9,648 from selling the toys.

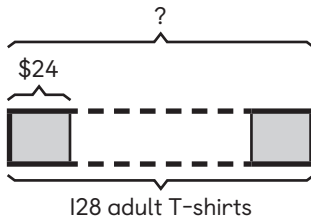
$9,648$

$9,648 - 8,400 = 1,248$   
 Luke earned \$1,248 from selling the toys.

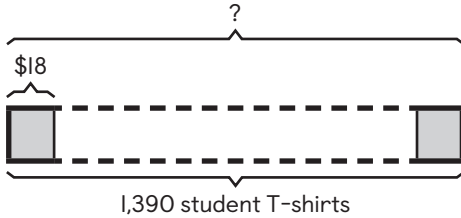
### Chapter Practice

1. A, D
2. C
3. B
4. C
5. 122
6. 32,289
7. 86
8.  $(18 + 42) \div (3 \times 9 - 7) = 60 \div (3 \times 9 - 7)$   
 $= 60 \div (27 - 7)$   
 $= 60 \div 20$   
 $= 3$

11.

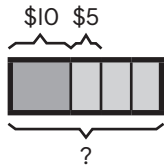


$128 \times 24 = 3,072$   
All the adult T-shirts will cost \$3,072.

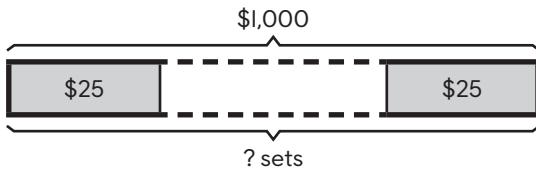


$1,390 \times 18 = 25,020$   
All the student T-shirts will cost \$25,020.  
 $3,072 + 25,020 = 28,092$   
All the T-shirts will cost the school \$28,092.  
 $\$28,092 < \$30,000$   
The school has enough money to pay for all the T-shirts.

12.



$10 + (5 \times 3) = 25$   
A set of 1 ten-dollar bill and 3 five-dollar bills is \$25.



$1,000 \div 25 = 40$   
There are 40 sets.  
 $4 \times 40 = 160$   
There are 160 bills in total.  
Jane is correct.

## Chapter 3 ADDITION AND SUBTRACTION OF FRACTIONS

### Exercise 3A Add and Subtract Unlike Fractions (I)

$$\begin{aligned} \text{1. (a)} \quad \frac{1}{3} + \frac{2}{9} &= \frac{3}{9} + \frac{2}{9} \\ &= \frac{5}{9} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad \frac{2}{5} + \frac{3}{10} &= \frac{4}{10} + \frac{3}{10} \\ &= \frac{7}{10} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad \frac{5}{12} + \frac{1}{3} &= \frac{5}{12} + \frac{4}{12} \\ &= \frac{9}{12} \\ &= \frac{3}{4} \end{aligned}$$

$$\begin{aligned} \text{(d)} \quad \frac{2}{9} + \frac{1}{2} &= \frac{4}{18} + \frac{9}{18} \\ &= \frac{13}{18} \end{aligned}$$

$$\begin{aligned} \text{2. (a)} \quad \frac{7}{10} + \frac{3}{4} &= \frac{14}{20} + \frac{15}{20} \\ &= \frac{29}{20} \\ &= 1\frac{9}{20} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad \frac{4}{5} + \frac{2}{3} &= \frac{12}{15} + \frac{10}{15} \\ &= \frac{22}{15} \\ &= 1\frac{7}{15} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad \frac{5}{8} + \frac{5}{6} &= \frac{15}{24} + \frac{20}{24} \\ &= \frac{35}{24} \\ &= 1\frac{11}{24} \end{aligned}$$

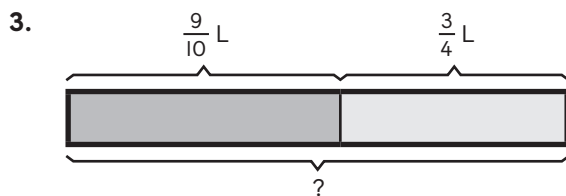
$$\begin{aligned} \text{(d)} \quad \frac{5}{6} + \frac{3}{5} &= \frac{25}{30} + \frac{18}{30} \\ &= \frac{43}{30} \\ &= 1\frac{13}{30} \end{aligned}$$

$$\begin{aligned} \text{(e)} \quad \frac{2}{5} + \frac{3}{4} &= \frac{8}{20} + \frac{15}{20} \\ &= \frac{23}{20} \\ &= 1\frac{3}{20} \end{aligned}$$

$$\begin{aligned} \text{(f)} \quad \frac{5}{6} + \frac{7}{9} &= \frac{15}{18} + \frac{14}{18} \\ &= \frac{29}{18} \\ &= 1\frac{11}{18} \end{aligned}$$

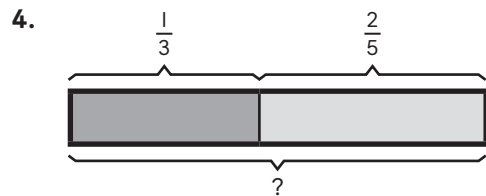
$$\begin{aligned} \text{(g)} \quad \frac{1}{2} + \frac{3}{5} &= \frac{5}{10} + \frac{6}{10} \\ &= \frac{11}{10} \\ &= 1\frac{1}{10} \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad \frac{6}{7} + \frac{3}{4} &= \frac{24}{28} + \frac{21}{28} \\ &= \frac{45}{28} \\ &= 1\frac{17}{28} \end{aligned}$$



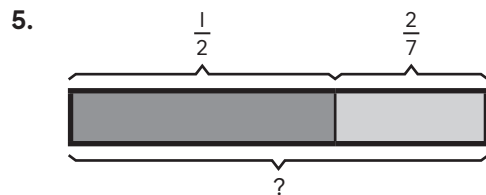
$$\begin{aligned} \frac{9}{10} + \frac{3}{4} &= \frac{18}{20} + \frac{15}{20} \\ &= \frac{33}{20} \\ &= 1\frac{13}{20} \end{aligned}$$

There are  $1\frac{13}{20}$  liters of juice in both bottles.



$$\begin{aligned} \frac{1}{3} + \frac{2}{5} &= \frac{5}{15} + \frac{6}{15} \\ &= \frac{11}{15} \end{aligned}$$

Cheryl spent  $\frac{11}{15}$  of her savings in all.



$$\begin{aligned} \frac{1}{2} + \frac{2}{7} &= \frac{7}{14} + \frac{4}{14} \\ &= \frac{11}{14} \end{aligned}$$

Mike completed  $\frac{11}{14}$  of the puzzle in all.

### Exercise 3A Add and Subtract Unlike Fractions (2)

1. (a)  $\frac{4}{5} - \frac{3}{10} = \frac{8}{10} - \frac{3}{10}$   
 $= \frac{5}{10}$   
 $= \frac{1}{2}$

(b)  $\frac{7}{12} - \frac{1}{3} = \frac{7}{12} - \frac{4}{12}$   
 $= \frac{3}{12}$   
 $= \frac{1}{4}$

(c)  $\frac{2}{3} - \frac{2}{5} = \frac{10}{15} - \frac{6}{15}$   
 $= \frac{4}{15}$

2. (a)  $\frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12}$   
 $= \frac{7}{12}$

(b)  $\frac{5}{6} - \frac{3}{8} = \frac{20}{24} - \frac{9}{24}$   
 $= \frac{11}{24}$

(c)  $\frac{4}{5} - \frac{3}{4} = \frac{16}{20} - \frac{15}{20}$   
 $= \frac{1}{20}$

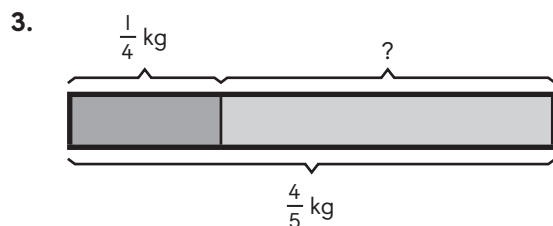
(d)  $\frac{6}{7} - \frac{2}{3} = \frac{18}{21} - \frac{14}{21}$   
 $= \frac{4}{21}$

(e)  $\frac{7}{8} - \frac{3}{5} = \frac{35}{40} - \frac{24}{40}$   
 $= \frac{11}{40}$

(f)  $\frac{7}{9} - \frac{1}{2} = \frac{14}{18} - \frac{9}{18}$   
 $= \frac{5}{18}$

(g)  $\frac{5}{6} - \frac{7}{10} = \frac{25}{30} - \frac{21}{30}$   
 $= \frac{4}{30}$   
 $= \frac{2}{15}$

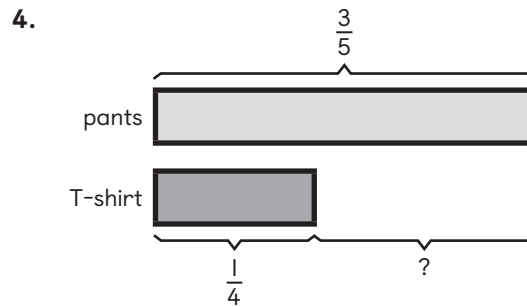
(h)  $\frac{8}{9} - \frac{1}{6} = \frac{16}{18} - \frac{3}{18}$   
 $= \frac{13}{18}$



$$\frac{4}{5} - \frac{1}{4} = \frac{16}{20} - \frac{5}{20}$$

$$= \frac{11}{20}$$

Dawn had  $\frac{11}{20}$  kilogram of flour left.



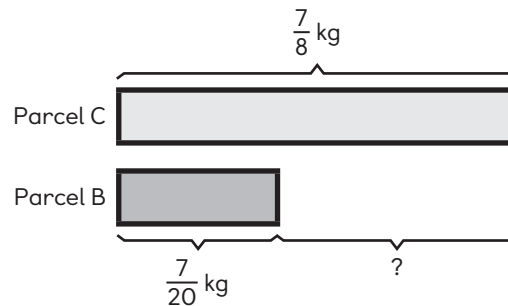
$$\frac{3}{5} - \frac{1}{4} = \frac{12}{20} - \frac{5}{20}$$

$$= \frac{7}{20}$$

Nelson spent  $\frac{7}{20}$  of his money more on the pair of pants than on the T-shirt.

5.  $\frac{3}{5} = \frac{24}{40}$      $\frac{7}{20} = \frac{14}{40}$      $\frac{7}{8} = \frac{35}{40}$

The heaviest parcel is Parcel C.  
 The lightest parcel is Parcel B.



$$\frac{7}{8} - \frac{7}{20} = \frac{35}{40} - \frac{14}{40}$$

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

The difference is  $\frac{21}{40}$  kilogram.

### Exercise 3B Add and Subtract Mixed Numbers (I)

1. (a)  $2\frac{1}{2} + 1\frac{2}{3} = 2\frac{\boxed{\frac{3}{6}}}{6} + 1\frac{\boxed{\frac{4}{6}}}{6}$

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

$$= 4\frac{1}{6}$$

$$\begin{aligned} \text{(b)} \quad 2\frac{1}{2} + 1\frac{3}{5} &= 2\frac{\boxed{5}}{10} + 2\frac{\boxed{6}}{10} \\ &= 4\frac{11}{10} \\ &= \underline{5\frac{1}{10}} \end{aligned}$$

$$\begin{aligned} \text{2. (a)} \quad 4\frac{4}{5} + 2\frac{2}{3} &= 4\frac{\boxed{12}}{15} + 2\frac{\boxed{10}}{15} && 4\frac{\boxed{12}}{15} \\ &= 6\frac{22}{15} && + \quad 2\frac{\boxed{10}}{15} \\ &= \underline{7\frac{7}{15}} && \hline &&& \boxed{6} \quad \frac{\boxed{22}}{15} \\ &&& = \boxed{7} \quad \frac{\boxed{7}}{15} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad 4\frac{7}{9} + 3\frac{5}{6} &= 4\frac{\boxed{14}}{18} + 3\frac{\boxed{15}}{18} && 4\frac{\boxed{14}}{18} \\ &= 7\frac{29}{18} && + \quad 3\frac{\boxed{15}}{18} \\ &= \underline{8\frac{11}{18}} && \hline &&& \boxed{7} \quad \frac{\boxed{29}}{18} \\ &&& = \boxed{8} \quad \frac{\boxed{11}}{18} \end{aligned}$$

$$\begin{aligned} \text{3. (a)} \quad 1\frac{5}{7} + 2\frac{1}{2} &= 1\frac{10}{14} + 2\frac{7}{14} \\ &= 3\frac{17}{14} \\ &= \underline{4\frac{3}{14}} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad 3\frac{2}{3} + 2\frac{3}{8} &= 3\frac{16}{24} + 2\frac{9}{24} \\ &= 5\frac{25}{24} \\ &= \underline{6\frac{1}{24}} \end{aligned}$$

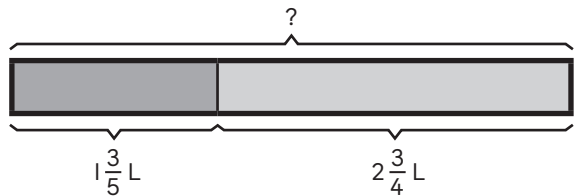
$$\begin{aligned} \text{(c)} \quad 3\frac{7}{10} + 2\frac{5}{8} &= 3\frac{28}{40} + 2\frac{25}{40} \\ &= 5\frac{53}{40} \\ &= \underline{6\frac{13}{40}} \end{aligned}$$

$$\begin{aligned} \text{(d)} \quad 5\frac{7}{9} + 2\frac{7}{12} &= 5\frac{28}{36} + 2\frac{21}{36} \\ &= 7\frac{49}{36} \\ &= \underline{8\frac{13}{36}} \end{aligned}$$

$$\begin{aligned} \text{(e)} \quad 3\frac{9}{10} + 3\frac{5}{8} &= 3\frac{36}{40} + 3\frac{25}{40} \\ &= 6\frac{61}{40} \\ &= \underline{7\frac{21}{40}} \end{aligned}$$

$$\begin{aligned} \text{(f)} \quad 5\frac{3}{4} + 5\frac{3}{10} &= 5\frac{15}{20} + 5\frac{6}{20} \\ &= 10\frac{21}{20} \\ &= \underline{11\frac{1}{20}} \end{aligned}$$

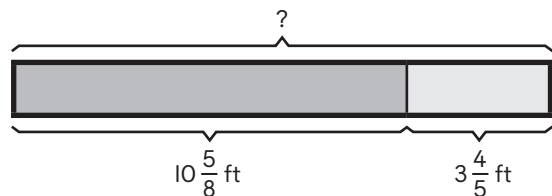
4.



$$\begin{aligned} 1\frac{3}{5} + 2\frac{3}{4} &= 1\frac{12}{20} + 2\frac{15}{20} \\ &= 3\frac{27}{20} \\ &= \underline{4\frac{7}{20}} \end{aligned}$$

Mr. Benson had  $4\frac{7}{20}$  liters of milk at first.

5.



$$\begin{aligned} 10\frac{5}{8} + 3\frac{4}{5} &= 10\frac{25}{40} + 3\frac{32}{40} \\ &= 13\frac{57}{40} \\ &= \underline{14\frac{17}{40}} \end{aligned}$$

Helen used  $14\frac{17}{40}$  feet of cloth in all.

**Exercise 3B Add and Subtract Mixed Numbers (2)**

1. (a)  $3\frac{7}{10} - 1\frac{1}{2} = 3\frac{\boxed{7}}{\boxed{10}} - 1\frac{\boxed{5}}{\boxed{10}}$   
 $= 2\frac{\boxed{2}}{\boxed{10}}$   
 $= 2\frac{\boxed{1}}{\boxed{5}}$

(b)  $4\frac{5}{6} - 2\frac{1}{4} = 4\frac{\boxed{10}}{\boxed{12}} - 2\frac{\boxed{3}}{\boxed{12}}$   
 $= 2\frac{\boxed{7}}{\boxed{10}}$

2. (a)  $3\frac{7}{9} - 1\frac{1}{2} = 3\frac{\boxed{14}}{\boxed{18}} - 1\frac{\boxed{9}}{\boxed{18}} \quad 3\frac{\boxed{14}}{\boxed{18}}$   
 $= 2\frac{\boxed{5}}{\boxed{18}} \quad - \quad 1\frac{\boxed{9}}{\boxed{18}}$   
 $= \boxed{2}\frac{\boxed{5}}{\boxed{18}}$

(b)  $8\frac{2}{3} - 3\frac{4}{5} = 8\frac{\boxed{10}}{\boxed{15}} - 3\frac{\boxed{12}}{\boxed{15}} \quad 7\frac{\boxed{25}}{\boxed{15}}$   
 $= 7\frac{\boxed{25}}{\boxed{15}} - 3\frac{\boxed{12}}{\boxed{15}} \quad - \quad 3\frac{\boxed{12}}{\boxed{15}}$   
 $= 4\frac{\boxed{13}}{\boxed{15}} \quad = \boxed{4}\frac{\boxed{13}}{\boxed{15}}$

(c)  $7\frac{5}{12} - 3\frac{5}{8} = 7\frac{\boxed{10}}{\boxed{24}} - 3\frac{\boxed{15}}{\boxed{24}} \quad 6\frac{\boxed{34}}{\boxed{24}}$   
 $= 6\frac{\boxed{34}}{\boxed{24}} - 3\frac{\boxed{15}}{\boxed{24}} \quad - \quad 3\frac{\boxed{15}}{\boxed{24}}$   
 $= 3\frac{\boxed{19}}{\boxed{24}} \quad = \boxed{3}\frac{\boxed{19}}{\boxed{24}}$

3. (a)  $3\frac{2}{3} - 2\frac{1}{2} = 3\frac{\boxed{4}}{\boxed{6}} - 2\frac{\boxed{3}}{\boxed{6}}$   
 $= 1\frac{\boxed{1}}{\boxed{6}}$

(b)  $4\frac{4}{5} - 2\frac{1}{2} = 4\frac{\boxed{8}}{\boxed{10}} - 2\frac{\boxed{5}}{\boxed{10}}$   
 $= 2\frac{\boxed{3}}{\boxed{10}}$

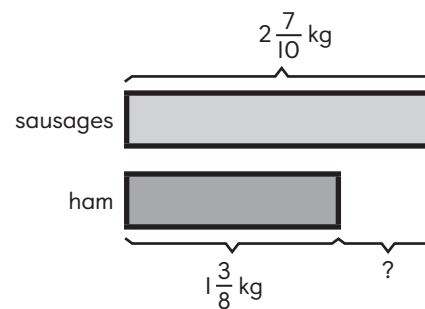
(c)  $5\frac{7}{8} - 3\frac{2}{3} = 5\frac{\boxed{21}}{\boxed{24}} - 3\frac{\boxed{16}}{\boxed{24}}$   
 $= 2\frac{\boxed{5}}{\boxed{24}}$

(d)  $4\frac{7}{24} - 1\frac{1}{6} = 4\frac{\boxed{7}}{\boxed{24}} - 1\frac{\boxed{4}}{\boxed{24}}$   
 $= 3\frac{\boxed{3}}{\boxed{24}}$

(e)  $6\frac{1}{10} - 2\frac{3}{8} = 6\frac{\boxed{4}}{\boxed{40}} - 2\frac{\boxed{15}}{\boxed{40}}$   
 $= 5\frac{\boxed{44}}{\boxed{40}} - 2\frac{\boxed{15}}{\boxed{40}}$   
 $= 3\frac{\boxed{29}}{\boxed{40}}$

(f)  $3\frac{2}{7} - 2\frac{5}{6} = 3\frac{\boxed{12}}{\boxed{42}} - 2\frac{\boxed{35}}{\boxed{42}}$   
 $= 2\frac{\boxed{54}}{\boxed{42}} - 2\frac{\boxed{35}}{\boxed{42}}$   
 $= 1\frac{\boxed{19}}{\boxed{42}}$

4.

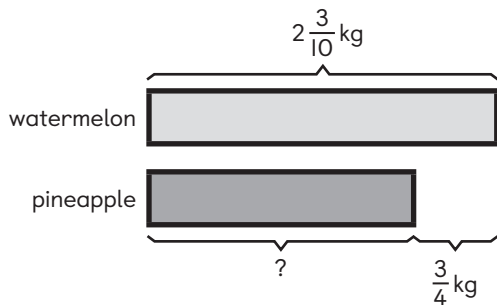


$2\frac{7}{10} - 1\frac{3}{8} = 2\frac{\boxed{28}}{\boxed{40}} - 1\frac{\boxed{15}}{\boxed{40}}$   
 $= 1\frac{\boxed{13}}{\boxed{40}}$

Ms. Hanson bought  $1\frac{13}{40}$  kilograms more sausages than ham.



5.

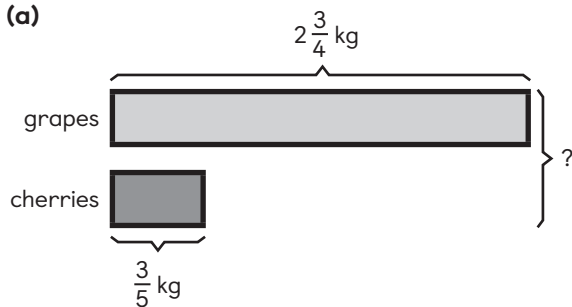


$$\begin{aligned} 2\frac{3}{10} - \frac{3}{4} &= 2\frac{6}{20} - \frac{15}{20} \\ &= 1\frac{26}{20} - \frac{15}{20} \\ &= 1\frac{11}{20} \end{aligned}$$

The mass of the pineapple is  $1\frac{11}{20}$  kilograms.

### Exercise 3C Word Problems (I)

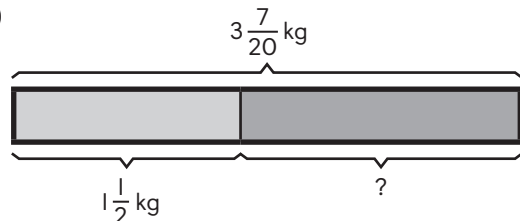
1. (a)



$$\begin{aligned} 2\frac{3}{4} + \frac{3}{5} &= 2\frac{15}{20} + \frac{12}{20} \\ &= 2\frac{27}{20} \\ &= 3\frac{7}{20} \end{aligned}$$

Sally bought  $3\frac{7}{20}$  kilograms of fruit.

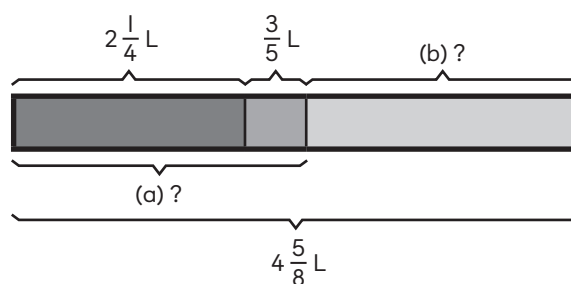
(b)



$$\begin{aligned} 3\frac{7}{20} - 1\frac{1}{2} &= 3\frac{7}{20} - 1\frac{10}{20} \\ &= 2\frac{27}{20} - 1\frac{10}{20} \\ &= 1\frac{17}{20} \end{aligned}$$

$1\frac{17}{20}$  kilograms of fruit were left.

2.



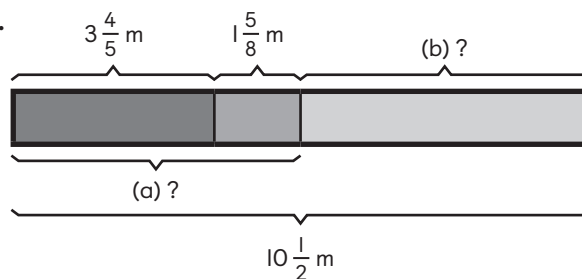
$$\begin{aligned} \text{(a)} \quad 2\frac{1}{4} + \frac{3}{5} &= 2\frac{5}{20} + \frac{12}{20} \\ &= 2\frac{17}{20} \end{aligned}$$

Justin used  $2\frac{17}{20}$  liters of paint altogether.

$$\begin{aligned} \text{(b)} \quad 4\frac{5}{8} - 2\frac{17}{20} &= 4\frac{25}{40} - 2\frac{34}{40} \\ &= 3\frac{65}{40} - 2\frac{34}{40} \\ &= 1\frac{31}{40} \end{aligned}$$

Justin had  $1\frac{31}{40}$  liters of paint left.

3.

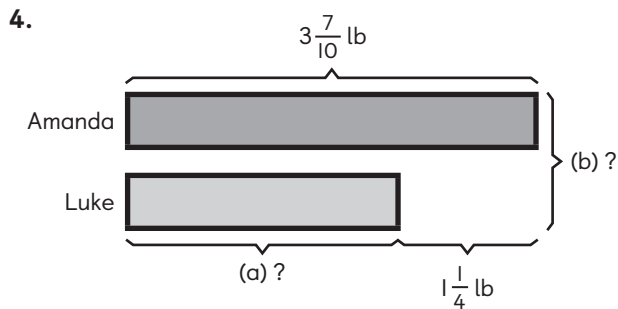


$$\begin{aligned} \text{(a)} \quad 3\frac{4}{5} + 1\frac{5}{8} &= 3\frac{32}{40} + 1\frac{25}{40} \\ &= 4\frac{57}{40} \\ &= 5\frac{17}{40} \end{aligned}$$

Carol used  $5\frac{17}{40}$  meters of ribbon in all.

$$\begin{aligned} \text{(b)} \quad 10\frac{1}{2} - 5\frac{17}{40} &= 10\frac{20}{40} - 5\frac{17}{40} \\ &= 5\frac{3}{40} \end{aligned}$$

$5\frac{3}{40}$  meters of ribbon were left.



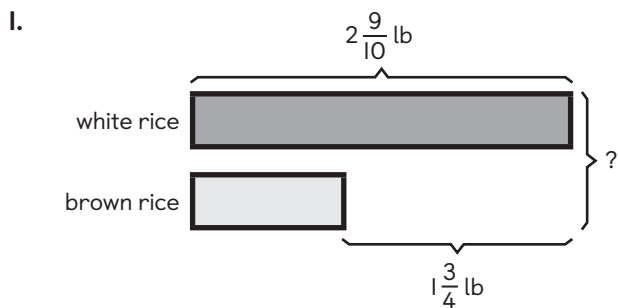
$$\begin{aligned} \text{(a)} \quad 3\frac{7}{10} - 1\frac{1}{4} &= 3\frac{14}{20} - 1\frac{5}{20} \\ &= 2\frac{9}{20} \end{aligned}$$

Luke used  $2\frac{9}{20}$  pounds of flour.

$$\begin{aligned} \text{(b)} \quad 3\frac{7}{10} + 2\frac{9}{20} &= 3\frac{14}{20} + 2\frac{9}{20} \\ &= 5\frac{23}{20} \\ &= 6\frac{3}{20} \end{aligned}$$

Both of them used  $6\frac{3}{20}$  pounds of flour altogether.

### Exercise 3C Word Problems (2)

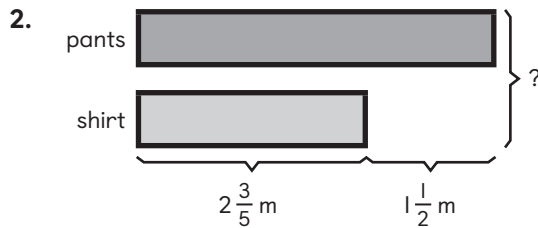


$$\begin{aligned} 2\frac{9}{10} - 1\frac{3}{4} &= 2\frac{18}{20} - 1\frac{15}{20} \\ &= 1\frac{3}{20} \end{aligned}$$

Fiona bought  $1\frac{3}{20}$  pounds of brown rice.

$$\begin{aligned} 2\frac{18}{20} + 1\frac{3}{20} &= 3\frac{21}{20} \\ &= 4\frac{1}{20} \end{aligned}$$

Fiona bought  $4\frac{1}{20}$  pounds of rice altogether.

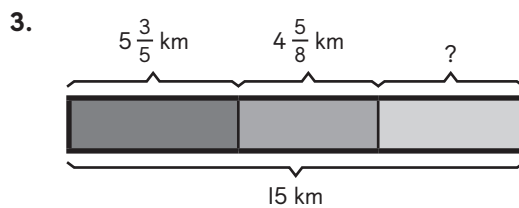


$$\begin{aligned} 2\frac{3}{5} + 1\frac{1}{2} &= 2\frac{6}{10} + 1\frac{5}{10} \\ &= 3\frac{11}{10} \\ &= 4\frac{1}{10} \end{aligned}$$

Sam uses  $4\frac{1}{10}$  meters of cloth to make the pair of pants.

$$\begin{aligned} 2\frac{3}{5} + 4\frac{1}{10} &= 2\frac{6}{10} + 4\frac{1}{10} \\ &= 6\frac{7}{10} \end{aligned}$$

Sam uses  $6\frac{7}{10}$  meters of cloth in all.

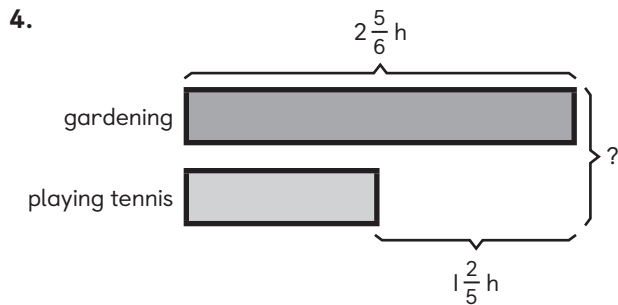


$$\begin{aligned} 5\frac{3}{5} + 4\frac{5}{8} &= 5\frac{24}{40} + 4\frac{25}{40} \\ &= 9\frac{49}{40} \\ &= 10\frac{9}{40} \end{aligned}$$

Keith and Diana ran  $10\frac{9}{40}$  kilometers in all.

$$\begin{aligned} 15 - 10\frac{9}{40} &= 14\frac{40}{40} - 10\frac{9}{40} \\ &= 4\frac{31}{40} \end{aligned}$$

Peter ran  $4\frac{31}{40}$  kilometers.



$$2\frac{5}{6} - 1\frac{2}{5} = 2\frac{25}{30} - 1\frac{12}{30}$$

$$= 1\frac{13}{30} \text{ h}$$

Gordon spent  $1\frac{13}{30}$  hours playing tennis.

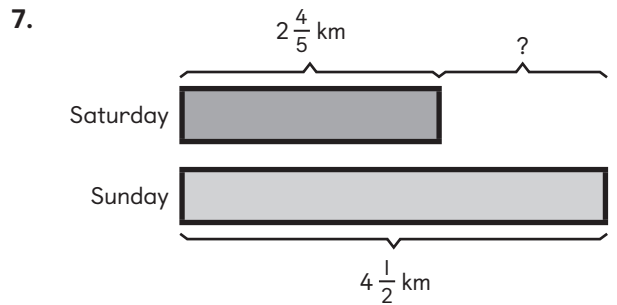
$$2\frac{5}{6} + 1\frac{13}{30} = 2\frac{25}{30} + 1\frac{13}{30}$$

$$= 3\frac{38}{30}$$

$$= 4\frac{8}{30}$$

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

Gordon spent  $4\frac{4}{15}$  hours altogether on the two activities.

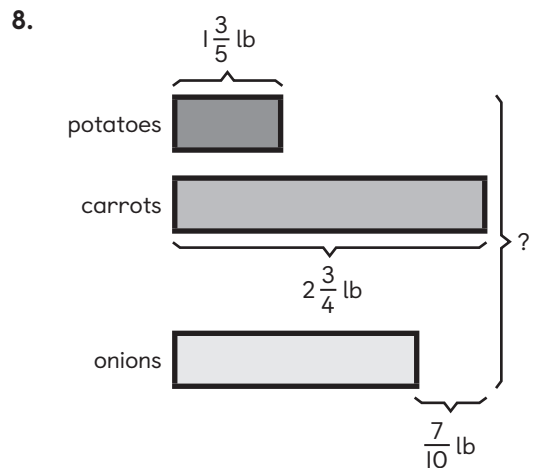


$$4\frac{1}{2} - 2\frac{4}{5} = 4\frac{5}{10} - 2\frac{8}{10}$$

$$= 3\frac{15}{10} - 2\frac{8}{10}$$

$$= 1\frac{7}{10}$$

Clinton jogged  $1\frac{7}{10}$  kilometers farther on Sunday.



$$2\frac{3}{4} - \frac{7}{10} = 2\frac{15}{20} - \frac{14}{20}$$

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

Chef Kendrick bought  $2\frac{1}{20}$  pounds of onions.

$$1\frac{3}{5} + 2\frac{15}{20} + 2\frac{1}{20} = 1\frac{12}{20} + 2\frac{15}{20} + 2\frac{1}{20}$$

$$= 5\frac{28}{20}$$

$$= 6\frac{8}{20}$$

$$= 6\frac{2}{5}$$

Chef Kendrick bought  $6\frac{2}{5}$  pounds of vegetables altogether.

### Chapter Practice

1. D

2. C

3. C

4. B

5.

$$8 - \frac{3}{5} = 7\frac{5}{5} - \frac{3}{5} = 7\frac{2}{5}$$

$$7\frac{2}{5} + 3\frac{3}{7} = 7\frac{14}{35} + 3\frac{15}{35}$$

$$= 10\frac{29}{35}$$

6.

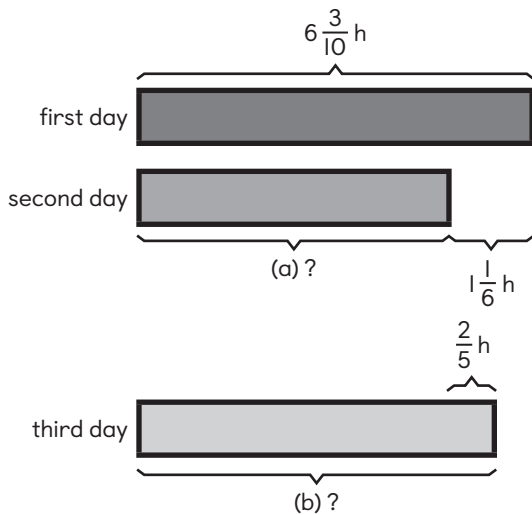
$$3\frac{3}{4} - \frac{5}{7} = 3\frac{21}{28} - \frac{20}{28}$$

$$= 3\frac{1}{28}$$

$$5\frac{1}{2} + 3\frac{1}{28} = 5\frac{14}{28} + 3\frac{1}{28}$$

$$= 8\frac{15}{28}$$

9.



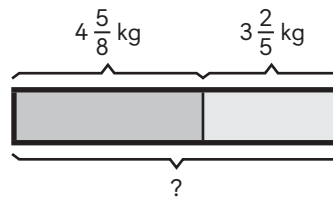
$$\begin{aligned} \text{(a)} \quad 6\frac{3}{10} - 1\frac{1}{6} &= 6\frac{9}{30} - 1\frac{5}{30} \\ &= 5\frac{4}{30} \\ &= 5\frac{2}{15} \end{aligned}$$

The workers spent  $5\frac{2}{15}$  hours renovating the house on the second day.

$$\begin{aligned} \text{(b)} \quad 5\frac{2}{15} + \frac{2}{5} &= 5\frac{2}{15} + \frac{6}{15} \\ &= 5\frac{8}{15} \end{aligned}$$

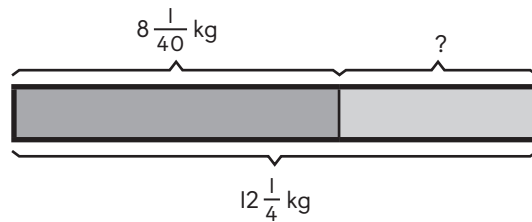
The workers spent  $5\frac{8}{15}$  hours renovating the house on the third day.

10.



$$\begin{aligned} 4\frac{5}{8} + 3\frac{2}{5} &= 4\frac{25}{40} + 3\frac{16}{40} \\ &= 7\frac{41}{40} \\ &= 8\frac{1}{40} \end{aligned}$$

Patricia does not have enough flour to bake the muffins.



$$\begin{aligned} 12\frac{1}{4} - 8\frac{1}{40} &= 12\frac{10}{40} - 8\frac{1}{40} \\ &= 4\frac{9}{40} \end{aligned}$$

Patricia needs another  $4\frac{9}{40}$  kilograms of flour.

Patricia will need to buy 1 packet of 5-kilogram flour.

## Chapter 4 MULTIPLICATION AND DIVISION OF FRACTIONS

### Exercise 4A Product of Fractions and Whole Numbers (I)

1. (a) Method 1:

$$\begin{aligned} \cancel{10}^2 \times \frac{3}{\cancel{10}_1} &= 2 \times 3 \\ &= 6 \end{aligned}$$

Method 2:

$$\begin{aligned} 10 \times \frac{3}{5} &= \frac{\cancel{10}^2 \times 3}{\cancel{5}_1} \\ &= \frac{2 \times 3}{1} \\ &= 6 \end{aligned}$$

(b) Method 1:

$$\begin{aligned} \frac{3}{\cancel{4}_1} \times \cancel{16}^4 &= 3 \times 4 \\ &= 12 \end{aligned}$$

Method 2:

$$\begin{aligned} \frac{3}{4} \times 16 &= \frac{3 \times \cancel{16}^4}{\cancel{4}_1} \\ &= \frac{3 \times 4}{1} \\ &= 12 \end{aligned}$$

$$2. \quad (a) \quad 27 \times \frac{5}{6} = \frac{\overset{9}{\cancel{27}} \times 5}{\cancel{6}_2} \\ = \frac{45}{2} \\ = 22\frac{1}{2}$$

$$(b) \quad 30 \times \frac{3}{8} = \frac{\overset{15}{\cancel{30}} \times 3}{\cancel{8}_4} \\ = \frac{45}{4} \\ = 11\frac{1}{4}$$

$$(c) \quad 20 \times \frac{8}{3} = \frac{20 \times 8}{3} \\ = \frac{160}{3} \\ = 53\frac{1}{3}$$

$$(d) \quad 24 \times \frac{7}{5} = \frac{24 \times 7}{5} \\ = \frac{168}{5} \\ = 33\frac{3}{5}$$

$$3. \quad (a) \quad 39 \times \frac{2}{3} = \frac{\overset{13}{\cancel{39}} \times 2}{\cancel{3}_1} \\ = 26$$

$$(b) \quad 45 \times \frac{2}{5} = \frac{\overset{9}{\cancel{45}} \times 2}{\cancel{5}_1} \\ = 18$$

$$(c) \quad 48 \times \frac{4}{3} = \frac{\overset{16}{\cancel{48}} \times 4}{\cancel{3}_1} \\ = 64$$

$$(d) \quad 63 \times \frac{11}{9} = \frac{\overset{7}{\cancel{63}} \times 11}{\cancel{9}_3} \\ = 77$$

$$4. \quad (a) > \qquad (b) <$$

$$(c) > \qquad (d) =$$

5. (a) When a number is multiplied by a fraction greater than 1, the value is greater than the number. For example: When 40 is multiplied by a fraction greater than 1, say,  $\frac{8}{5}$ , the answer is:

$$\overset{8}{\cancel{40}} \times \frac{8}{\cancel{5}_1} = 8 \times 8 = 64$$

(b) When a number is multiplied by a fraction less than 1, the value is less than the number. For example:

When 40 is multiplied by a fraction less than 1, say,  $\frac{5}{8}$ , the answer is:

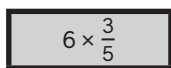
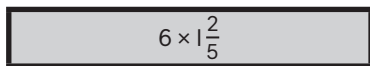
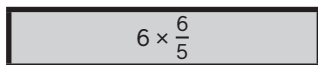
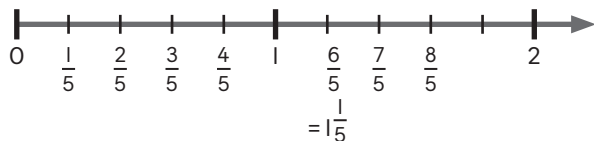
$$\overset{5}{\cancel{40}} \times \frac{5}{\cancel{8}_1} = 5 \times 5 = 25$$

#### Exercise 4A Product of Fractions and Whole Numbers (2)

$$1. \quad (a) \quad 1\frac{1}{4} \times 6 = \frac{5}{4} \times 6 \\ = \frac{5 \times \cancel{6}^3}{\cancel{4}_2} \\ = \frac{15}{2} \\ = 7\frac{1}{2}$$

$$(b) \quad 2\frac{2}{3} \times 3 = 2 \times 3 + \frac{2}{3} \times 3 \\ = 6 + 2 \\ = 8$$

2.  $6 \times 1\frac{2}{5}$  has the greatest product.



$$6 \times \frac{6}{5} = \frac{36}{5} \\ = 7\frac{1}{5}$$

$$6 \times 1\frac{2}{5} = 6 \times 1 + 6 \times \frac{2}{5} \\ = 6 + \frac{12}{5} \\ = 6 + 2\frac{2}{5} \\ = 8\frac{2}{5}$$

$$6 \times \frac{3}{5} = \frac{18}{5} \\ = 3\frac{3}{5}$$

3. (a) **Method 1:**

$$3\frac{4}{5} \times 2 \\ = \frac{19}{5} \times 2 \\ = \frac{19 \times 2}{5} \\ = \frac{38}{5} \\ = 7\frac{3}{5}$$

**Method 2:**

$$3\frac{4}{5} \times 2 \\ = 3 \times 2 + \frac{4}{5} \times 2 \\ = 6 + \frac{8}{5} \\ = 6 + 1\frac{3}{5} \\ = 7\frac{3}{5}$$

(b) **Method 1:**

$$2\frac{1}{6} \times 4 \\ = \frac{13}{3} \times \cancel{4}^2 \\ = \frac{13 \times 2}{3} \\ = \frac{26}{3} \\ = 8\frac{2}{3}$$

**Method 2:**

$$2\frac{1}{6} \times 4 \\ = 2 \times 4 + \frac{1}{3} \times \cancel{4}^2 \\ = 8 + \frac{2}{3} \\ = 8\frac{2}{3}$$

(c) **Method 1:**

$$18 \times 1\frac{2}{7} \\ = 18 \times \frac{9}{7} \\ = \frac{18 \times 9}{7} \\ = \frac{162}{7} \\ = 23\frac{1}{7}$$

**Method 2:**

$$18 \times 1\frac{2}{7} \\ = 18 \times 1 + 18 \times \frac{2}{7} \\ = 18 + \frac{36}{7} \\ = 18 + 5\frac{1}{7} \\ = 23\frac{1}{7}$$

(d) **Method 1:**

$$6 \times 3\frac{4}{9} \\ = \cancel{6}^2 \times \frac{31}{\cancel{9}_3} \\ = \frac{2 \times 31}{3} \\ = \frac{62}{3} \\ = 20\frac{2}{3}$$

**Method 2:**

$$6 \times 3\frac{4}{9} \\ = 6 \times 3 + \cancel{6}^2 \times \frac{4}{\cancel{9}_3} \\ = 18 + \frac{8}{3} \\ = 18 + 2\frac{2}{3} \\ = 20\frac{2}{3}$$

(e) **Method 1:**

$$4 \times 3\frac{3}{10} \\ = \cancel{4}^2 \times \frac{33}{\cancel{10}_5} \\ = \frac{2 \times 33}{5} \\ = \frac{66}{5} \\ = 13\frac{1}{5}$$

**Method 2:**

$$4 \times 3\frac{3}{10} \\ = 4 \times 3 + \cancel{4}^2 \times \frac{3}{\cancel{10}_5} \\ = 12 + \frac{6}{5} \\ = 12 + 1\frac{1}{5} \\ = 13\frac{1}{5}$$

(f) **Method 1:**

$$9 \times 2\frac{5}{6} \\ = \cancel{9}^3 \times \frac{17}{\cancel{6}_2} \\ = \frac{3 \times 17}{2} \\ = \frac{51}{2} \\ = 25\frac{1}{2}$$

**Method 2:**

$$9 \times 2\frac{5}{6} \\ = 9 \times 2 + \cancel{9}^3 \times \frac{5}{\cancel{6}_2} \\ = 18 + \frac{15}{2} \\ = 18 + 7\frac{1}{2} \\ = 25\frac{1}{2}$$

(g) **Method 1:**

$$21 \times 1\frac{6}{7} \\ = \cancel{21}^3 \times \frac{13}{\cancel{7}_1} \\ = \frac{3 \times 13}{1} \\ = 39$$

**Method 2:**

$$21 \times 1\frac{6}{7} \\ = 21 \times 1 + \cancel{21}^3 \times \frac{6}{\cancel{7}_1} \\ = 21 + 18 \\ = 39$$

(h) Method 1:

$$\begin{aligned}
40 \times 2\frac{5}{8} &= 40 \times 2\frac{5}{8} \\
&= \cancel{40}^5 \times \frac{21}{\cancel{8}_1} \\
&= \frac{5 \times 21}{1} \\
&= 105
\end{aligned}$$

Method 2:

$$\begin{aligned}
40 \times 2\frac{5}{8} &= 40 \times 2 + \cancel{40}^5 \times \frac{5}{\cancel{8}_1} \\
&= 80 + 25 \\
&= 105
\end{aligned}$$

(i) Method 1:

$$\begin{aligned}
40 \times 1\frac{3}{5} &= 40 \times 1\frac{3}{5} \\
&= \cancel{40}^8 \times \frac{8}{\cancel{5}_1} \\
&= \frac{8 \times 8}{1} \\
&= 64
\end{aligned}$$

Method 2:

$$\begin{aligned}
40 \times 1\frac{3}{5} &= 40 \times 1 + \cancel{40}^8 \times \frac{3}{\cancel{5}_1} \\
&= 40 + 24 \\
&= 64
\end{aligned}$$

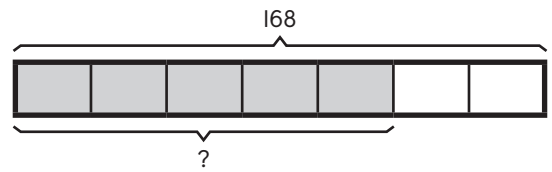
(j) Method 1:

$$\begin{aligned}
36 \times 1\frac{2}{9} &= 36 \times 1\frac{2}{9} \\
&= \cancel{36}^4 \times \frac{11}{\cancel{9}_1} \\
&= \frac{4 \times 11}{1} \\
&= 44
\end{aligned}$$

Method 2:

$$\begin{aligned}
36 \times 1\frac{2}{9} &= 36 \times 1 + \cancel{36}^4 \times \frac{2}{\cancel{9}_1} \\
&= 36 + 8 \\
&= 44
\end{aligned}$$

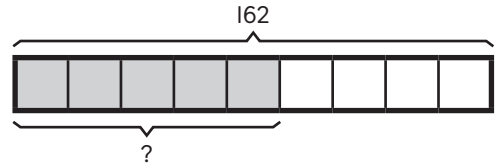
3.



$$\begin{aligned}
168 \times \frac{5}{7} &= \frac{\cancel{168}^{24} \times 5}{\cancel{7}_1} \\
&= 120
\end{aligned}$$

Sofia baked 120 vanilla puffs.

4.

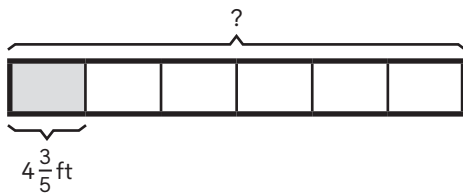


$$\begin{aligned}
162 \times \frac{9}{5} &= \frac{\cancel{162}^{18} \times 9}{\cancel{5}_1} \\
&= 90
\end{aligned}$$

90 eggs were done sunny-side up.

### Exercise 4A Product of Fractions and Whole Numbers (3)

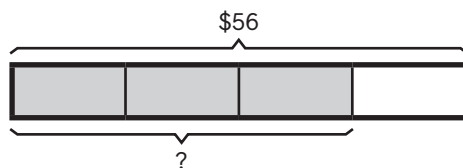
1.



$$\begin{aligned}
6 \times 4\frac{3}{5} &= 6 \times \frac{23}{5} \\
&= \frac{6 \times 23}{5} \\
&= \frac{138}{5} \\
&= 27\frac{3}{5}
\end{aligned}$$

$27\frac{3}{5}$  feet of cloth were used.

2.



$$\begin{aligned}
56 \times \frac{3}{4} &= \frac{\cancel{56}^{14} \times 3}{\cancel{4}_1} \\
&= 42
\end{aligned}$$

The pair of headphones cost \$42.

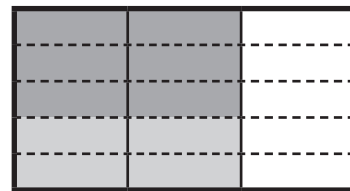
### Exercise 4B Product of Fractions (I)

1. (a)



$$\begin{aligned}
\frac{1}{4} \times \frac{2}{3} &= \frac{\cancel{1}^1 \times \cancel{2}^2}{\cancel{4}_2 \times 3} \\
&= \frac{1 \times 1}{2 \times 3} \\
&= \frac{1}{6}
\end{aligned}$$

(b)



$$\begin{aligned}
\frac{3}{5} \times \frac{2}{3} &= \frac{3 \times 2}{5 \times \cancel{3}_1} \\
&= \frac{\cancel{3}^2 \times 2}{5} \\
&= \frac{2}{5}
\end{aligned}$$

**2. Method 1:**

$$\begin{aligned} \text{Area of 1 unit} &= \frac{1}{5} \times \frac{1}{8} \\ &= \frac{1 \times 1}{5 \times 8} \\ &= \frac{1}{40} \text{ square ft} \end{aligned}$$

Area of the towel = 15 units

$$\begin{aligned} &= 15 \times \frac{1}{40} \\ &= \frac{3}{8} \text{ square ft} \end{aligned}$$

**Method 2:**

$$\begin{aligned} \frac{5}{8} \times \frac{3}{5} &= \frac{\cancel{5}^1}{8} \times \frac{3}{\cancel{5}_1} \\ &= \frac{1 \times 3}{8 \times 1} \\ &= \frac{3}{8} \end{aligned}$$

The area of the towel is  $\frac{3}{8}$  square foot.

$$\begin{aligned} \text{3. (a)} \quad \frac{5}{6} \times \frac{9}{10} &= \frac{\cancel{5}^1}{2} \times \frac{\cancel{9}^3}{\cancel{10}_2} \\ &= \frac{1 \times 3}{2 \times 2} \\ &= \frac{3}{4} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad \frac{7}{9} \times \frac{3}{14} &= \frac{\cancel{7}^1}{3} \times \frac{\cancel{3}^1}{\cancel{14}_2} \\ &= \frac{1 \times 1}{3 \times 2} \\ &= \frac{1}{6} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad \frac{3}{5} \times \frac{5}{9} &= \frac{\cancel{3}^1}{1} \times \frac{\cancel{5}^1}{\cancel{9}_3} \\ &= \frac{1 \times 1}{1 \times 3} \\ &= \frac{1}{3} \end{aligned}$$

$$\begin{aligned} \text{(d)} \quad \frac{7}{8} \times \frac{4}{7} &= \frac{\cancel{7}^1}{2} \times \frac{\cancel{4}^2}{\cancel{7}_1} \\ &= \frac{1 \times 2}{2 \times 1} \\ &= \frac{1}{1} \end{aligned}$$

$$\begin{aligned} \text{(e)} \quad \frac{8}{15} \times \frac{5}{12} &= \frac{\cancel{8}^2}{3} \times \frac{\cancel{5}^1}{\cancel{12}_3} \\ &= \frac{2 \times 1}{3 \times 3} \\ &= \frac{2}{9} \end{aligned}$$

$$\begin{aligned} \text{(f)} \quad \frac{5}{9} \times \frac{3}{10} &= \frac{\cancel{5}^1}{3} \times \frac{\cancel{3}^1}{\cancel{10}_2} \\ &= \frac{1 \times 1}{3 \times 2} \\ &= \frac{1}{6} \end{aligned}$$

$$\begin{aligned} \text{(g)} \quad \frac{5}{21} \times \frac{7}{10} &= \frac{\cancel{5}^1}{3} \times \frac{\cancel{7}^1}{\cancel{10}_2} \\ &= \frac{1 \times 1}{3 \times 2} \\ &= \frac{1}{6} \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad \frac{7}{12} \times \frac{3}{7} &= \frac{\cancel{7}^1}{4} \times \frac{\cancel{3}^1}{\cancel{7}_1} \\ &= \frac{1 \times 1}{4 \times 1} \\ &= \frac{1}{4} \end{aligned}$$

$$\begin{aligned} \text{(i)} \quad \frac{5}{12} \times \frac{9}{10} &= \frac{\cancel{5}^1}{4} \times \frac{\cancel{9}^3}{\cancel{10}_2} \\ &= \frac{1 \times 3}{4 \times 2} \\ &= \frac{3}{8} \end{aligned}$$

$$\begin{aligned} \text{(j)} \quad \frac{9}{20} \times \frac{8}{15} &= \frac{\cancel{9}^3}{5} \times \frac{\cancel{8}^2}{\cancel{15}_3} \\ &= \frac{3 \times 2}{5 \times 5} \\ &= \frac{6}{25} \end{aligned}$$

**Exercise 4B Product of Fractions (2)**

$$\begin{aligned} \text{1.} \quad \frac{2}{5} \times \frac{3}{2} &= \frac{\cancel{2}^1}{5} \times \frac{3}{\cancel{2}_1} \\ &= \frac{1 \times 3}{5 \times 1} \\ &= \frac{3}{5} \end{aligned}$$

$$\begin{aligned} \text{2.} \quad \frac{2}{3} \times \frac{5}{4} &= \frac{\cancel{2}^1}{3} \times \frac{5}{\cancel{4}_2} \\ &= \frac{1 \times 5}{3 \times 2} \\ &= \frac{5}{6} \end{aligned}$$



$$3. \quad (a) \quad \frac{3}{4} \times \frac{8}{7} = \frac{3}{\cancel{4}} \times \frac{\cancel{8}^2}{7}$$

$$= \frac{3 \times 2}{1 \times 7}$$

$$= \frac{6}{7}$$

$$(b) \quad \frac{7}{3} \times \frac{9}{14} = \frac{\cancel{7}}{3} \times \frac{\cancel{9}^3}{\cancel{14}_2}$$

$$= \frac{1 \times 3}{1 \times 2}$$

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

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

$$(c) \quad \frac{2}{3} \times \frac{21}{16} = \frac{\cancel{2}}{3} \times \frac{\cancel{21}^7}{\cancel{16}_8}$$

$$= \frac{1 \times 7}{1 \times 8}$$

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

$$(d) \quad \frac{12}{5} \times \frac{5}{6} = \frac{\cancel{12}}{5} \times \frac{\cancel{5}}{\cancel{6}_1}$$

$$= \frac{2 \times 1}{1 \times 1}$$

$$= 2$$

$$4. \quad (a) \quad \frac{9}{8} \times \frac{16}{15} = \frac{\cancel{9}}{8} \times \frac{\cancel{16}^2}{\cancel{15}_5}$$

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

$$= \frac{6}{5}$$

$$= 1\frac{1}{5}$$

$$(b) \quad \frac{10}{9} \times \frac{6}{5} = \frac{\cancel{10}}{9} \times \frac{\cancel{6}^2}{\cancel{5}_1}$$

$$= \frac{2 \times 2}{3 \times 1}$$

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

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

$$(c) \quad \frac{5}{2} \times \frac{21}{20} = \frac{\cancel{5}}{2} \times \frac{\cancel{21}}{\cancel{20}_4}$$

$$= \frac{1 \times 21}{2 \times 4}$$

$$= \frac{21}{8}$$

$$= 2\frac{5}{8}$$

$$(d) \quad \frac{13}{12} \times \frac{9}{7} = \frac{13}{\cancel{12}} \times \frac{\cancel{9}^3}{7}$$

$$= \frac{13 \times 3}{4 \times 7}$$

$$= \frac{39}{28}$$

$$= 1\frac{11}{28}$$

$$(e) \quad \frac{9}{5} \times \frac{25}{18} = \frac{\cancel{9}}{5} \times \frac{\cancel{25}^5}{\cancel{18}_2}$$

$$= \frac{1 \times 5}{1 \times 2}$$

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

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

$$(f) \quad \frac{11}{6} \times \frac{27}{22} = \frac{\cancel{11}}{6} \times \frac{\cancel{27}^9}{\cancel{22}_2}$$

$$= \frac{1 \times 9}{2 \times 2}$$

$$= \frac{9}{4}$$

$$= 2\frac{1}{4}$$

$$(g) \quad \frac{17}{12} \times \frac{9}{4} = \frac{17}{\cancel{12}} \times \frac{\cancel{9}^3}{4}$$

$$= \frac{17 \times 3}{4 \times 4}$$

$$= \frac{51}{16}$$

$$= 3\frac{3}{16}$$

$$(h) \quad \frac{7}{3} \times \frac{21}{5} = \frac{\cancel{7}}{3} \times \frac{\cancel{21}^7}{5}$$

$$= \frac{7 \times 7}{1 \times 5}$$

$$= \frac{49}{5}$$

$$= 9\frac{4}{5}$$

$$(i) \quad \frac{10}{7} \times \frac{14}{9} = \frac{\cancel{10}}{7} \times \frac{\cancel{14}^2}{9}$$

$$= \frac{10 \times 2}{1 \times 9}$$

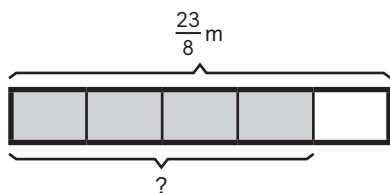
$$= \frac{20}{9}$$

$$= 2\frac{2}{9}$$

$$\begin{aligned}
 \text{(j)} \quad \frac{13}{10} \times \frac{15}{8} &= \frac{13}{\cancel{2} \times 10} \times \frac{\cancel{15}^3}{8} \\
 &= \frac{13 \times 3}{2 \times 8} \\
 &= \frac{39}{16} \\
 &= 2\frac{7}{16}
 \end{aligned}$$

### Exercise 4B Product of Fractions (3)

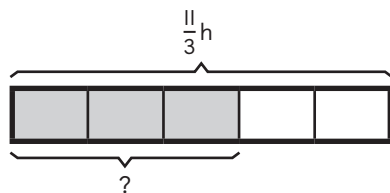
1.



$$\begin{aligned}
 \frac{4}{5} \times \frac{23}{8} &= \frac{\cancel{4}^1}{5} \times \frac{23}{\cancel{8}_2} \\
 &= \frac{23}{10} \\
 &= 2\frac{3}{10}
 \end{aligned}$$

$2\frac{3}{10}$  meters of ribbon were used.

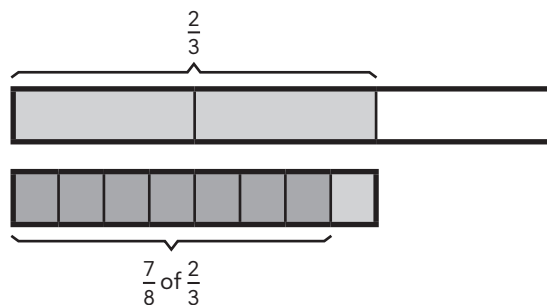
2.



$$\begin{aligned}
 \frac{3}{5} \times \frac{11}{3} &= \frac{\cancel{3}^1}{5} \times \frac{11}{\cancel{3}_1} \\
 &= \frac{11}{5} \\
 &= 2\frac{1}{5}
 \end{aligned}$$

Donald took  $2\frac{1}{5}$  hours to paint the room.

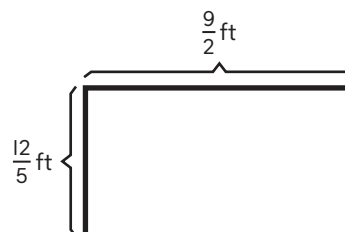
3.



$$\begin{aligned}
 \frac{7}{8} \times \frac{2}{3} &= \frac{7}{\cancel{4}^2} \times \frac{\cancel{2}^1}{3} \\
 &= \frac{7 \times 1}{4 \times 3} \\
 &= \frac{7}{12}
 \end{aligned}$$

$\frac{7}{12}$  of the magnetic building tiles are given to Joyce.

4.



$$\begin{aligned}
 \frac{12}{5} \times \frac{9}{2} &= \frac{\cancel{12}^6}{5 \times \cancel{2}_1} \times 9 \\
 &= \frac{54}{5} \\
 &= 10\frac{4}{5}
 \end{aligned}$$

The area of the tablecloth is  $10\frac{4}{5}$  square feet.

### Exercise 4C Product of Mixed Numbers

#### 1. Method 1:

Multiply the side lengths.

$$\begin{aligned} 2\frac{1}{2} \times 1\frac{3}{4} &= \frac{5}{2} \times \frac{7}{4} \\ &= \frac{35}{8} \\ &= 4\frac{3}{8} \text{ square m} \end{aligned}$$

#### Method 2:

Find the area by tiling.

$$\begin{aligned} \text{Area of 1 unit} &= \frac{1}{4} \times \frac{1}{4} \\ &= \frac{1}{16} \text{ square m} \\ \text{Area of the curtain} &= 70 \times \frac{1}{16} \\ &= \frac{70}{16} \\ &= \frac{35}{8} \\ &= 4\frac{3}{8} \text{ square m} \end{aligned}$$

The area of the rectangular curtain is  $4\frac{3}{8}$  square meters.

#### 2. Method 1:

$$\begin{aligned} 2\frac{1}{4} \times 1\frac{3}{5} &= (2 \times 1) + (2 \times \frac{3}{5}) + (\frac{1}{4} \times 1) + (\frac{1}{4} \times \frac{3}{5}) \\ &= 2 + \frac{6}{5} + \frac{1}{4} + \frac{3}{20} \\ &= 2 + 1\frac{4}{20} + \frac{5}{20} + \frac{3}{20} \\ &= 3\frac{12}{20} \\ &= 3\frac{3}{5} \end{aligned}$$

#### Method 2:

$$\begin{aligned} 2\frac{1}{4} \times 1\frac{3}{5} &= \frac{9}{4} \times \frac{8}{5} \\ &= \frac{9 \times 2}{1 \times 5} \\ &= \frac{18}{5} \\ &= 3\frac{3}{5} \end{aligned}$$

3. (a)  $3\frac{3}{4} \times 2\frac{4}{5} = \frac{15}{4} \times \frac{14}{5}$

$$\begin{aligned} &= \frac{3 \times 7}{2 \times 1} \\ &= \frac{21}{2} \\ &= 10\frac{1}{2} \end{aligned}$$

(b)  $4\frac{1}{6} \times 1\frac{4}{5} = \frac{25}{6} \times \frac{9}{5}$

$$\begin{aligned} &= \frac{5 \times 3}{2 \times 1} \\ &= \frac{15}{2} \\ &= 7\frac{1}{2} \end{aligned}$$

(c)  $3\frac{3}{10} \times 2\frac{2}{9} = \frac{38}{10} \times \frac{20}{9}$

$$\begin{aligned} &= \frac{11 \times 2}{1 \times 3} \\ &= \frac{22}{3} \\ &= 7\frac{1}{3} \end{aligned}$$

(d)  $1\frac{5}{7} \times 2\frac{1}{4} = \frac{12}{7} \times \frac{9}{4}$

$$\begin{aligned} &= \frac{3 \times 9}{7 \times 1} \\ &= \frac{27}{7} \\ &= 3\frac{6}{7} \end{aligned}$$

(e)  $1\frac{5}{16} \times 3\frac{3}{7} = \frac{21}{16} \times \frac{24}{7}$

$$\begin{aligned} &= \frac{3 \times 3}{2 \times 1} \\ &= \frac{9}{2} \\ &= 4\frac{1}{2} \end{aligned}$$

(f)  $1\frac{7}{15} \times 1\frac{7}{8} = \frac{22}{15} \times \frac{15}{8}$

$$\begin{aligned} &= \frac{11 \times 1}{1 \times 4} \\ &= \frac{11}{4} \\ &= 2\frac{3}{4} \end{aligned}$$

(g)  $2\frac{2}{3} \times 1\frac{7}{8} = \frac{8}{3} \times \frac{15}{8}$

$$\begin{aligned} &= \frac{1 \times 5}{1 \times 1} \\ &= 5 \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad 1\frac{5}{9} \times 2\frac{4}{7} &= \frac{14}{9} \times \frac{18}{7} \\ &= \frac{2 \times 2}{1 \times 1} \\ &= 4 \end{aligned}$$

$$\begin{aligned} \text{(i)} \quad 3\frac{1}{3} \times 4\frac{1}{5} &= \frac{10}{3} \times \frac{21}{5} \\ &= \frac{2 \times 7}{1 \times 1} \\ &= 14 \end{aligned}$$

$$\begin{aligned} \text{(j)} \quad 2\frac{1}{12} \times 1\frac{1}{15} &= \frac{25}{12} \times \frac{16}{15} \\ &= \frac{5 \times 4}{3 \times 3} \\ &= \frac{20}{9} \\ &= 2\frac{2}{9} \end{aligned}$$

#### Exercise 4D Fraction as Division

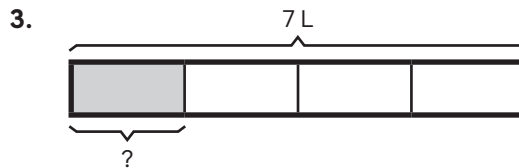
$$\text{1. (a)} \quad 2 \div 5 = \frac{2}{5} \qquad \text{(b)} \quad 5 \div 2 = \frac{5}{2} = 2\frac{1}{2}$$

$$\text{2. (a)} \quad 5 \div 12 = \frac{5}{12} \qquad \text{(b)} \quad 6 \div 9 = \frac{6}{9} = \frac{2}{3}$$

$$\text{(c)} \quad 10 \div 12 = \frac{10}{12} = \frac{5}{6} \qquad \text{(d)} \quad 12 \div 15 = \frac{12}{15} = \frac{4}{5}$$

$$\begin{aligned} \text{(e)} \quad 52 \div 6 &= \frac{52}{6} = 8\frac{4}{6} = 8\frac{2}{3} \\ \text{(f)} \quad 38 \div 4 &= \frac{38}{4} = 9\frac{2}{4} = 9\frac{1}{2} \end{aligned}$$

$$\begin{aligned} \text{(g)} \quad 42 \div 8 &= \frac{42}{8} = 5\frac{2}{8} = 5\frac{1}{4} \\ \text{(h)} \quad 48 \div 9 &= \frac{48}{9} = 5\frac{3}{9} = 5\frac{1}{3} \end{aligned}$$



$$\begin{aligned} 7 \div 4 &= \frac{7}{4} \\ &= 1\frac{3}{4} \end{aligned}$$

There were  $1\frac{3}{4}$  liters of juice in each bottle.

#### Exercise 4E Divide a Fraction by a Whole Number (I)

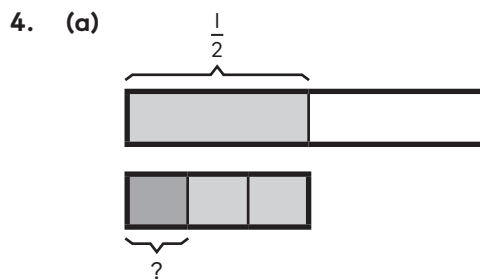
$$\text{1.} \quad \frac{1}{3} \div 3 = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$$

$$\text{2.} \quad \frac{1}{5} \div 2 = \frac{1}{5} \times \frac{1}{2} = \frac{1}{10}$$

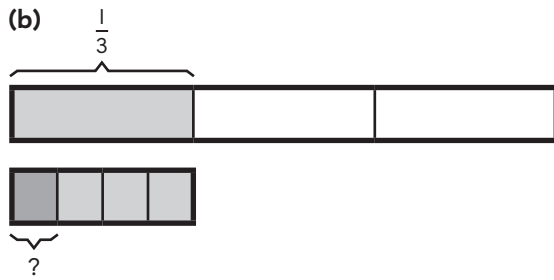
$\frac{1}{10}$  liter of paint was on each tray.

$$\text{3.} \quad \frac{1}{4} \div 4 = \frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$$

Each girl received  $\frac{1}{16}$  of the cake.



$$\begin{aligned} \frac{1}{2} \div 3 &= \frac{1}{2} \times \frac{1}{3} \\ &= \frac{1}{6} \end{aligned}$$



$$\frac{1}{3} \div 4 = \frac{1}{3} \times \frac{1}{4}$$

$$= \frac{1}{12}$$

5. (a)  $\frac{1}{10} \div 3 = \frac{1}{10} \times \frac{1}{3}$

$$= \frac{1}{30}$$

(b)  $\frac{1}{4} \div 5 = \frac{1}{4} \times \frac{1}{5}$

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

(c)  $\frac{1}{6} \div 4 = \frac{1}{6} \times \frac{1}{4}$

$$= \frac{1}{24}$$

(d)  $\frac{1}{5} \div 3 = \frac{1}{5} \times \frac{1}{3}$

$$= \frac{1}{15}$$

(e)  $\frac{1}{8} \div 2 = \frac{1}{8} \times \frac{1}{2}$

$$= \frac{1}{16}$$

(f)  $\frac{1}{7} \div 2 = \frac{1}{7} \times \frac{1}{2}$

$$= \frac{1}{14}$$

#### Exercise 4E Divide a Fraction by a Whole Number (2)

1.  $\frac{3}{4} \div 6 = \frac{3}{4} \times \frac{1}{6}$

$$= \frac{3 \times 1}{4 \times 6}$$

$$= \frac{1}{8}$$

Each girl had  $\frac{1}{8}$  of the pie.

2.  $\frac{2}{5} \div 4 = \frac{2}{5} \times \frac{1}{4}$

$$= \frac{2 \times 1}{5 \times 4}$$

$$= \frac{1}{10}$$

$\frac{1}{10}$  pound of peanuts was on each plate.

3.  $\frac{2}{5} \div 8 = \frac{2}{5} \times \frac{1}{8}$

$$= \frac{2 \times 1}{5 \times 8}$$

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

Ms. Kirk used  $\frac{1}{20}$  kilogram of flour for each cupcake.

4. (a)  $\frac{9}{10} \div 3 = \frac{9}{10} \times \frac{1}{3}$

$$= \frac{3 \times 1}{10 \times 1}$$

$$= \frac{3}{10}$$

(b)  $\frac{3}{8} \div 9 = \frac{3}{8} \times \frac{1}{9}$

$$= \frac{1 \times 1}{8 \times 3}$$

$$= \frac{1}{24}$$

(c)  $\frac{5}{6} \div 10 = \frac{5}{6} \times \frac{1}{10}$

$$= \frac{1 \times 1}{6 \times 2}$$

$$= \frac{1}{12}$$

(d)  $\frac{8}{9} \div 4 = \frac{8}{9} \times \frac{1}{4}$

$$= \frac{2 \times 1}{9 \times 1}$$

$$= \frac{2}{9}$$

(e)  $\frac{6}{7} \div 3 = \frac{6}{7} \times \frac{1}{3}$

$$= \frac{2 \times 1}{7 \times 1}$$

$$= \frac{2}{7}$$

(f)  $\frac{8}{11} \div 4 = \frac{8}{11} \times \frac{1}{4}$

$$= \frac{2 \times 1}{11 \times 1}$$

$$= \frac{2}{11}$$

5. (a) Yes, I agree with Ana.

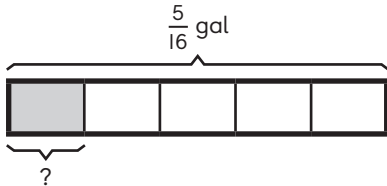
$\frac{9}{12}$  is equal to  $\frac{3}{4}$ .

$$\begin{aligned}\frac{9}{12} \div 6 &= \frac{3}{4} \times \frac{1}{6} \\ &= \frac{1}{8}\end{aligned}$$

Each child will get  $\frac{1}{8}$  of the pizza.

#### Exercise 4E Divide a Fraction by a Whole Number (3)

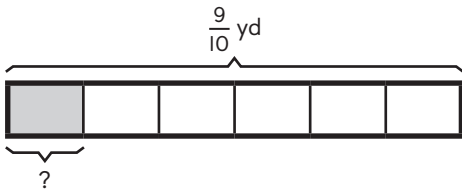
1.



$$\begin{aligned}\frac{5}{16} \div 5 &= \frac{5}{16} \times \frac{1}{5} \\ &= \frac{1}{16}\end{aligned}$$

There is  $\frac{1}{16}$  gallon of juice in each glass.

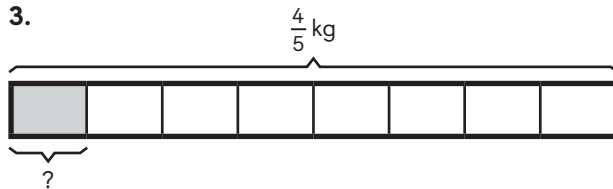
2.



$$\begin{aligned}\frac{9}{10} \div 6 &= \frac{9}{10} \times \frac{1}{6} \\ &= \frac{3}{20}\end{aligned}$$

The length of each piece of ribbon is  $\frac{3}{20}$  yard.

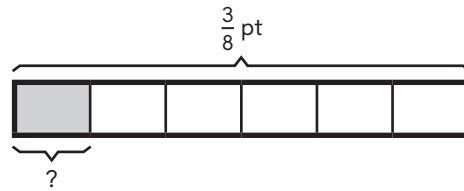
3.



$$\begin{aligned}\frac{4}{5} \div 8 &= \frac{4}{5} \times \frac{1}{8} \\ &= \frac{1}{10}\end{aligned}$$

Each piece of salmon is  $\frac{1}{10}$  kilogram heavy.

4.



$$\begin{aligned}\frac{3}{8} \div 6 &= \frac{3}{8} \times \frac{1}{6} \\ &= \frac{1}{16}\end{aligned}$$

Each kitten got  $\frac{1}{16}$  pint of milk.

#### Exercise 4F Divide a Whole Number by a Unit Fraction (1)

1.  $5 \div \frac{1}{5} = 5 \times 5$   
 $= 25$

There are 25 fifths in 5 wholes.

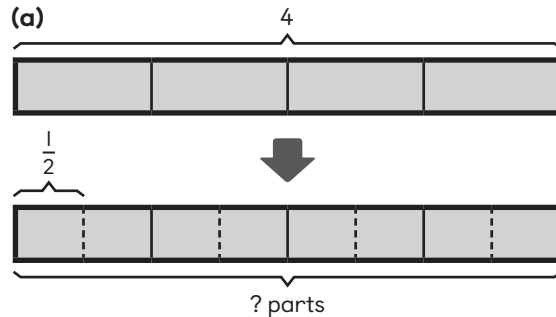
2.  $4 \div \frac{1}{6} = 4 \times 6$   
 $= 24$

There are 24 sixths in 4 wholes.

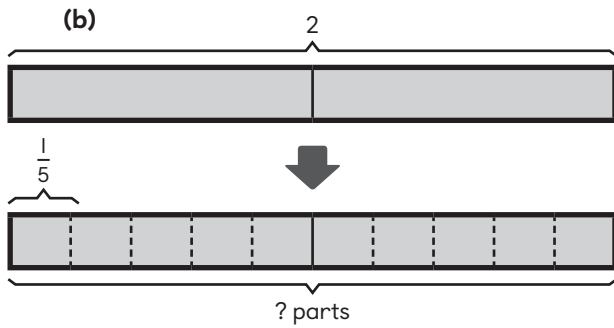
3.  $3 \div \frac{1}{4} = 3 \times 4$   
 $= 12$

Thomas can tie 12 identical gifts.

4. (a)



$$\begin{aligned}4 \div \frac{1}{2} &= 4 \times 2 \\ &= 8\end{aligned}$$



$$2 \div \frac{1}{5} = 2 \times 5$$

$$= 10$$

5. (a)  $3 \div \frac{1}{10} = 3 \times 10$

$$= 30$$

(b)  $6 \div \frac{1}{4} = 6 \times 4$

$$= 24$$

(c)  $5 \div \frac{1}{3} = 5 \times 3$

$$= 15$$

(d)  $2 \div \frac{1}{6} = 2 \times 6$

$$= 12$$

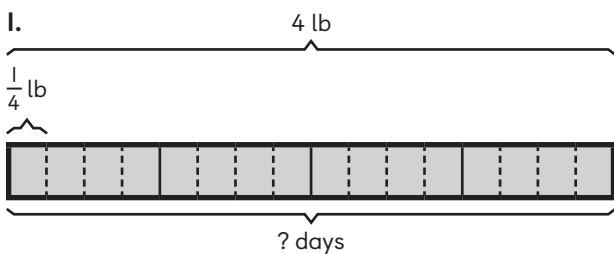
(e)  $4 \div \frac{1}{7} = 4 \times 7$

$$= 28$$

(f)  $3 \div \frac{1}{8} = 3 \times 8$

$$= 24$$

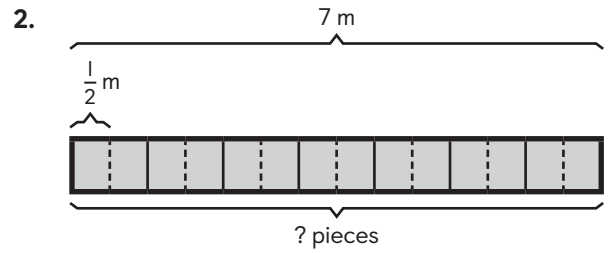
#### Exercise 4F Divide a Whole Number by a Unit Fraction (2)



$$4 \div \frac{1}{4} = 4 \times 4$$

$$= 16$$

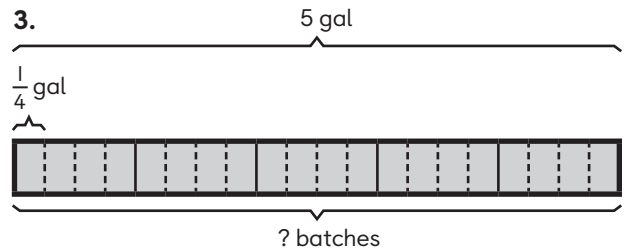
Faith will use up all the flour in 16 days.



$$7 \div \frac{1}{2} = 7 \times 2$$

$$= 14$$

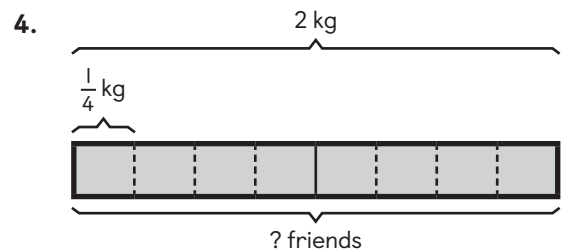
David gets 14 pieces of ribbon.



$$5 \div \frac{1}{4} = 5 \times 4$$

$$= 20$$

Mr. White can make 20 similar batches of pancakes with 5 gallons of milk.



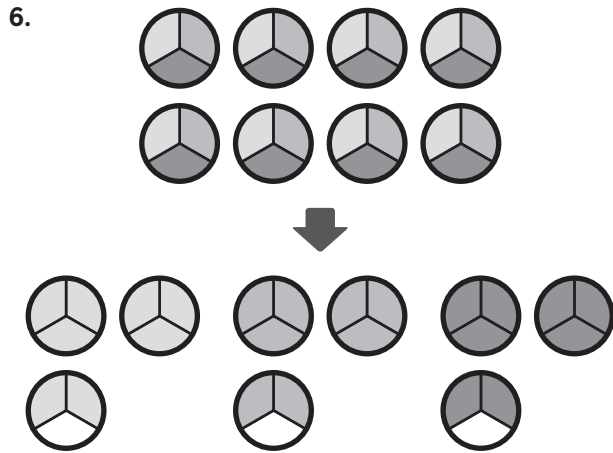
$$2 \div \frac{1}{4} = 2 \times 4$$

$$= 8$$

There are 8 friends.

#### Chapter Practice

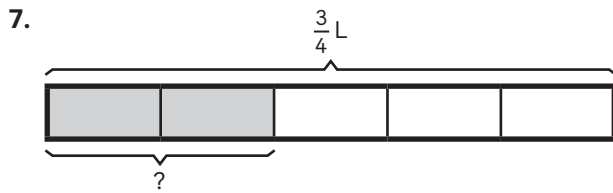
1. C
2. B
3. C
4. B
5. A



$$8 \div 3 = \frac{8}{3}$$

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

Each child got  $2\frac{2}{3}$  pies.

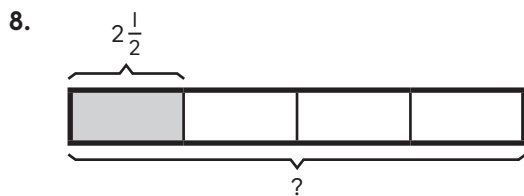


$$\frac{2}{5} \times \frac{3}{4} = \frac{1\cancel{2}}{5} \times \frac{3}{\cancel{4}_2}$$

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

$$= \frac{3}{10}$$

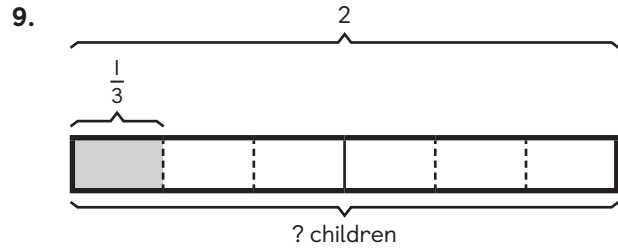
Matias drank  $\frac{3}{10}$  liter of orange juice.



$$4 \times 2\frac{1}{2} = \cancel{4}_2 \times \frac{5}{\cancel{2}_1}$$

$$= 10$$

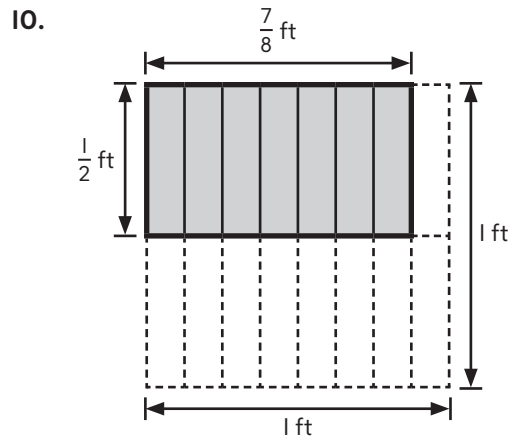
Ms. Lindsey needs 10 loaves of bread.



$$2 \div \frac{1}{3} = 2 \times 3$$

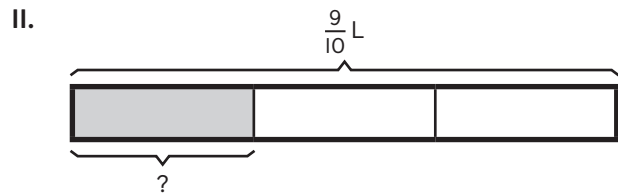
$$= 6$$

Mr. Handy has 6 children.



$$\frac{7}{8} \times \frac{1}{2} = \frac{7}{16}$$

The area of the piece of paper is  $\frac{7}{16}$  square foot.



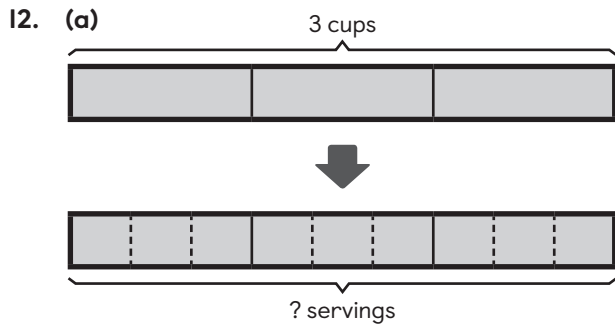
$$\frac{9}{10} \div 3 = \frac{\cancel{9}_3}{10} \times \frac{1}{\cancel{3}_1}$$

$$= \frac{3 \times 1}{10 \times 1}$$

$$= \frac{3}{10}$$

Each child gets  $\frac{3}{10}$  liter of yogurt.

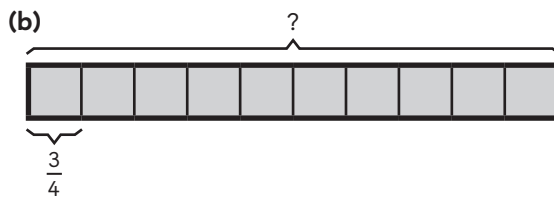




$$3 \div \frac{1}{3} = 3 \times 3$$

$$= 9$$

Florence makes 9 servings of blueberry smoothie.

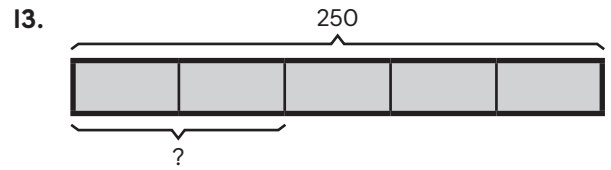


$$10 \times \frac{3}{4} = \frac{5 \times 3}{2}$$

$$= \frac{15}{2}$$

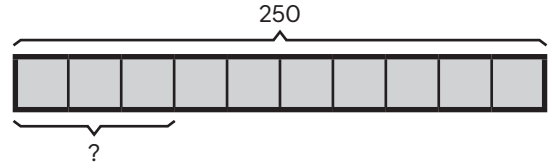
$$= 7\frac{1}{2}$$

Ivan needs  $7\frac{1}{2}$  cups of blueberry.



$$\frac{2}{5} \times 250 = 100$$

100 small boxes are needed each day.



$$\frac{3}{10} \times 250 = 75$$

75 medium boxes are needed each day.

$$250 - 100 - 75 = 75$$

75 large boxes are needed each day.

$$100 \times 15 = 1,500$$

1,500 prawns are packed in small boxes each day.

$$75 \times 20 = 1,500$$

1,500 prawns are packed in medium boxes each day.

$$75 \times 30 = 2,250$$

2,250 prawns are packed in large boxes each day.

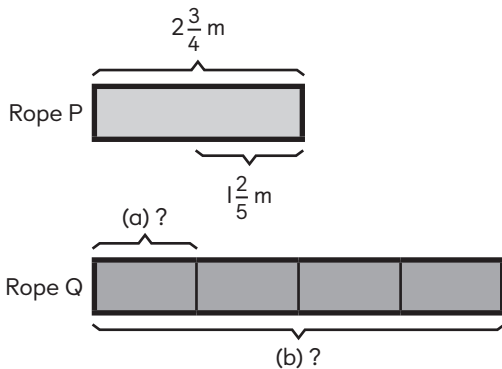
$$1,500 + 1,500 + 2,250 = 5,250$$

5,250 prawns are packed each day.

## Chapter 5 WORD PROBLEMS: THE FOUR OPERATIONS OF FRACTIONS

### Exercise 5A Word Problems (I)

1.



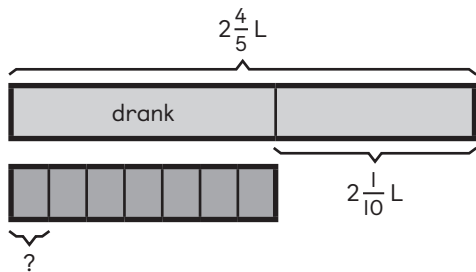
$$\begin{aligned} \text{(a)} \quad 2\frac{3}{4} - 1\frac{2}{5} &= 2\frac{15}{20} - 1\frac{8}{20} \\ &= 1\frac{7}{20} \end{aligned}$$

The length of each smaller piece of Rope Q is  $1\frac{7}{20}$  meters.

$$\begin{aligned} \text{(b)} \quad 1\frac{7}{20} \times 4 &= \frac{27}{20} \times 4 \\ &= \frac{27}{5} \\ &= 5\frac{2}{5} \end{aligned}$$

The length of Rope Q is  $5\frac{2}{5}$  meters.

2.



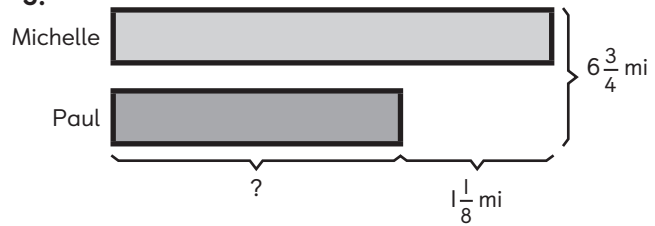
$$\begin{aligned} 2\frac{4}{5} - 2\frac{1}{10} &= 2\frac{8}{10} - 2\frac{1}{10} \\ &= \frac{7}{10} \end{aligned}$$

The kitten drank  $\frac{7}{10}$  liter of milk altogether.

$$\begin{aligned} \frac{7}{10} \div 7 &= \frac{7}{10} \times \frac{1}{7} \\ &= \frac{1}{10} \end{aligned}$$

Ms. Hernandez's kitten drank  $\frac{1}{10}$  liter of milk each day.

3.

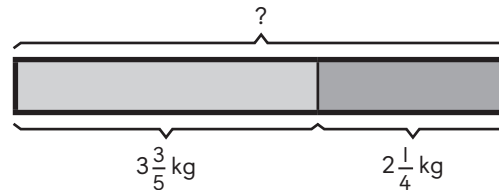


$$\begin{aligned} 6\frac{3}{4} - 1\frac{1}{8} &= 6\frac{6}{8} - 1\frac{1}{8} \\ &= 5\frac{5}{8} \end{aligned}$$

$$\begin{aligned} 5\frac{5}{8} \div 2 &= \frac{45}{8} \times \frac{1}{2} \\ &= \frac{45}{16} \\ &= 2\frac{13}{16} \end{aligned}$$

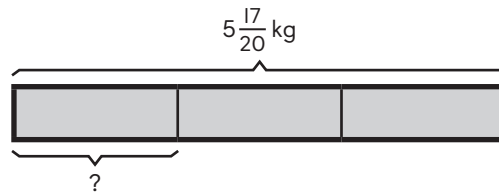
Paul cycled  $2\frac{13}{16}$  miles.

4.



$$\begin{aligned} 3\frac{3}{5} + 2\frac{1}{4} &= 3\frac{12}{20} + 2\frac{5}{20} \\ &= 5\frac{17}{20} \end{aligned}$$

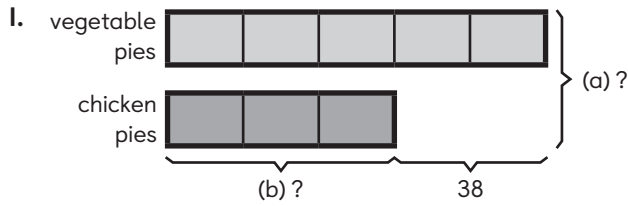
The baker had  $5\frac{17}{20}$  kilograms of walnuts altogether.



$$\begin{aligned} 5\frac{17}{20} \div 3 &= \frac{117}{20} \times \frac{1}{3} \\ &= \frac{39}{20} \\ &= 1\frac{19}{20} \end{aligned}$$

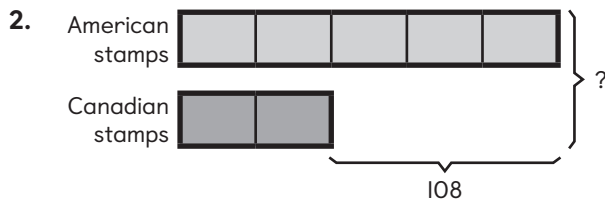
$1\frac{19}{20}$  kilograms of walnuts were in each container.

### Exercise 5A Word Problems (2)

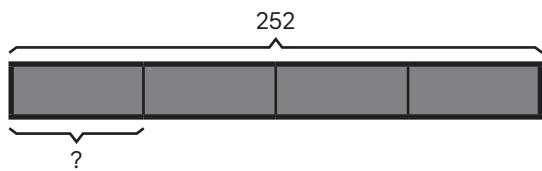


(a)  $2 \text{ units} = 38$   
 $1 \text{ unit} = 38 \div 2$   
 $= 19$   
 $8 \text{ units} = 8 \times 19$   
 $= 152$   
 Emily bakes 152 pies in all.

(b)  $\frac{3}{8} \times 152 = 57$   
 Emily bakes 57 chicken pies.



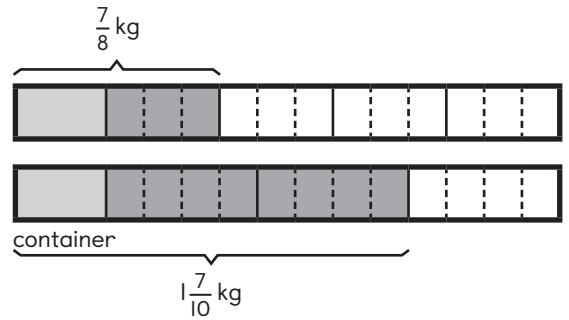
$3 \text{ units} = 108$   
 $1 \text{ unit} = 108 \div 3$   
 $= 36$   
 $7 \text{ units} = 7 \times 36$   
 $= 252$   
 Nicole has 252 stamps altogether.



$\frac{1}{4} \times 252 = 63$   
 Nicole gives 63 stamps to her brother.

3.  $\frac{1}{4} = \frac{3}{12}$       $\frac{2}{3} = \frac{8}{12}$

There are 12 units of flour if the container is full with flour.



$5 \text{ units} = 1\frac{7}{10} - \frac{7}{8}$   
 $= \frac{17}{10} - \frac{7}{8}$   
 $= \frac{68}{40} - \frac{35}{40}$   
 $= \frac{33}{40} \text{ kg}$

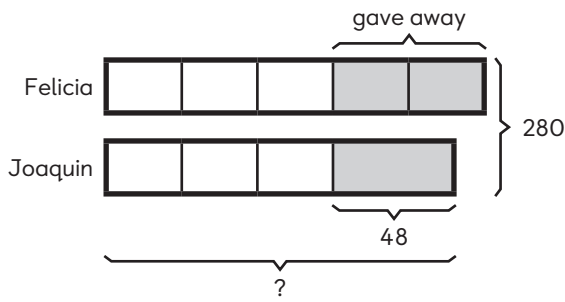
$1 \text{ unit} = \frac{33}{40} \div 5$   
 $= \frac{33}{40} \times \frac{1}{5}$   
 $= \frac{33}{200} \text{ kg}$

$3 \text{ units} = 3 \times \frac{33}{200}$   
 $= \frac{99}{200} \text{ kg}$

$\frac{7}{8} - \frac{99}{200} = \frac{175}{200} - \frac{99}{200}$   
 $= \frac{76}{200}$   
 $= \frac{19}{50}$

The mass of the empty container is  $\frac{19}{50}$  kilogram.

4. Felicia had 5 units of beads at first.



$$8 \text{ units} = 280 - 48$$

$$= 232$$

$$1 \text{ unit} = 232 \div 8$$

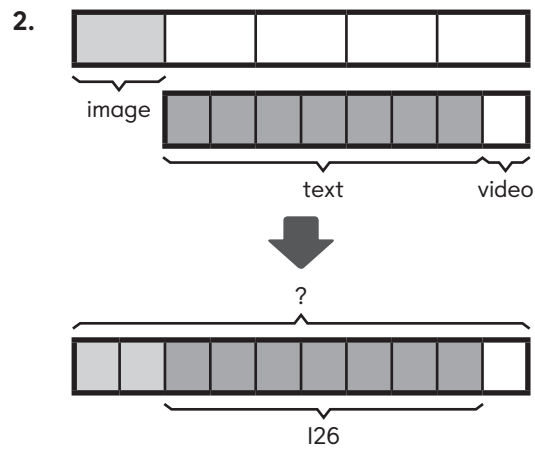
$$= 29$$

$$3 \text{ units} = 3 \times 29$$

$$= 87$$

$$87 + 48 = 135$$

Joaquin had 135 beads at first.



$$7 \text{ units} = 126$$

$$1 \text{ unit} = 126 \div 7$$

$$= 18$$

$$10 \text{ units} = 10 \times 18$$

$$= 180$$

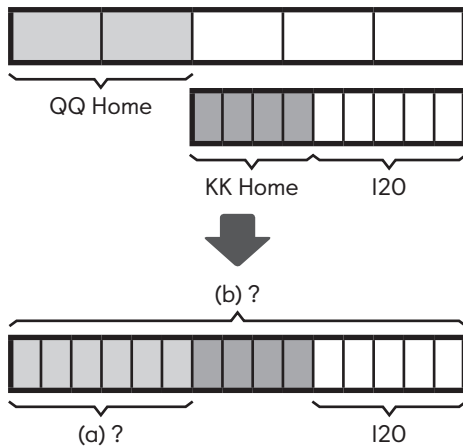
Steve received 180 messages in all today.

### Exercise 5A Word Problems (3)

1.  $1 - \frac{2}{5} = \frac{5}{5} - \frac{2}{5}$

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

$\frac{3}{5}$  of the bread buns were left after giving some to QQ home.



(a)  $5 \text{ units} = 120$

$$1 \text{ unit} = 120 \div 5$$

$$= 24$$

$$6 \text{ units} = 6 \times 24$$

$$= 144$$

Sam gave 144 bread buns to QQ Home.

(b)  $15 \text{ units} = 15 \times 24$

$$= 360$$

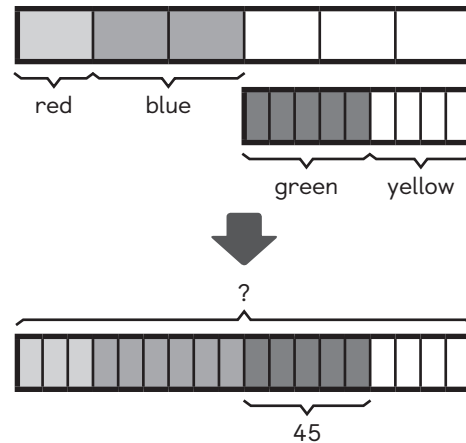
Baker Sam made 360 bread buns.

3.  $1 - \frac{1}{6} - \frac{1}{3} = \frac{6}{6} - \frac{1}{6} - \frac{2}{6}$

$$= \frac{3}{6}$$

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

$\frac{1}{2}$  of the balls are green and yellow.



$$5 \text{ units} = 45$$

$$1 \text{ unit} = 45 \div 5$$

$$= 9$$

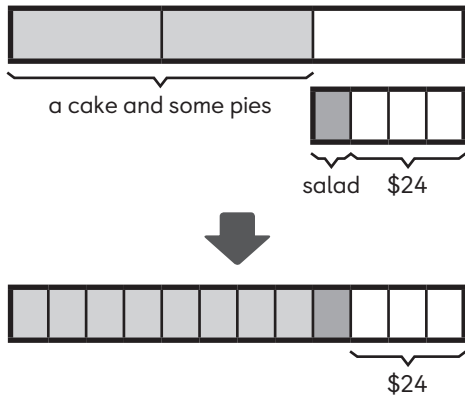
$$18 \text{ units} = 18 \times 9$$

$$= 162$$

There are 162 balls altogether.

4.  $1 - \frac{2}{3} = \frac{1}{3}$

Victoria had  $\frac{1}{3}$  of her money left after spending on the cake and some pies.



$$\begin{aligned} 3 \text{ units} &= \$24 \\ 1 \text{ unit} &= 24 \div 3 \\ &= \$8 \\ 12 \text{ units} &= 12 \times 8 \\ &= \$96 \end{aligned}$$

Victoria had \$96 at first.

$$\frac{3}{4} \times \frac{2}{3} = \frac{1}{2}$$

Victoria spent  $\frac{1}{2}$  of her money on the cake.

$$\frac{1}{2} \times \$96 = \$48$$

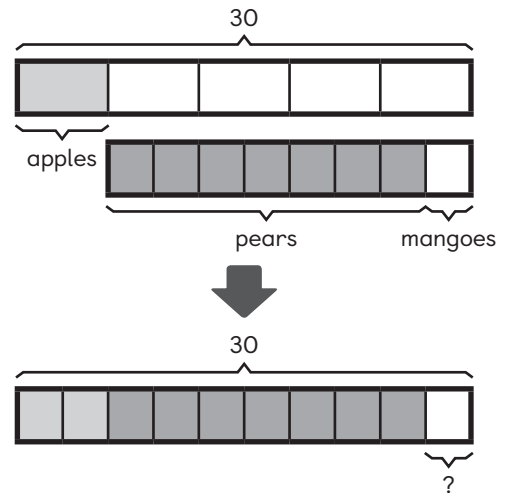
The cake cost \$48.

### Chapter Practice

1. C
2. A
3. A

4.  $1 - \frac{1}{5} = \frac{4}{5}$

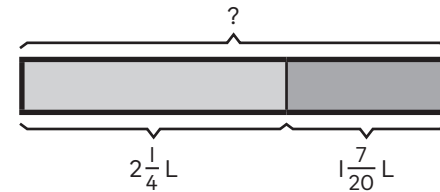
$\frac{4}{5}$  of the fruit were pears and mangoes.



$$\begin{aligned} 10 \text{ units} &= 30 \\ 1 \text{ unit} &= 30 \div 10 \\ &= 3 \end{aligned}$$

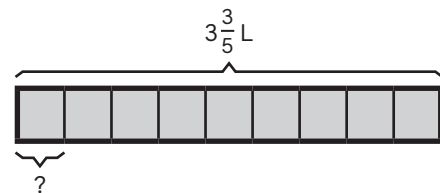
Laila bought 3 mangoes.

5.



$$\begin{aligned} 2\frac{1}{4} + 1\frac{7}{20} &= \frac{9}{4} + \frac{27}{20} \\ &= \frac{45}{20} + \frac{27}{20} \\ &= \frac{72}{20} \\ &= 3\frac{12}{20} \\ &= 3\frac{3}{5} \end{aligned}$$

Jenny has  $3\frac{3}{5}$  liters of juice altogether.



$$\begin{aligned} 3\frac{3}{5} \div 9 &= \frac{18}{5} \times \frac{1}{9} \\ &= \frac{2}{5} \end{aligned}$$

$\frac{2}{5}$  liter of juice is in each cup.

6.  $1 - \frac{1}{5} - \frac{1}{2} = \frac{10}{10} - \frac{2}{10} - \frac{5}{10}$   
 $= \frac{3}{10}$

Angela gave  $\frac{3}{10}$  of her beads to Santiago.



3 units = 78

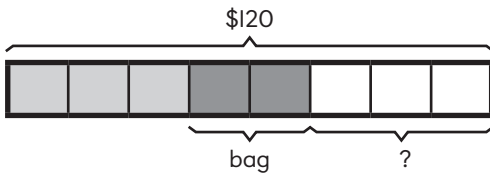
1 unit =  $78 \div 3$   
 $= 26$

5 units =  $5 \times 26$   
 $= 130$

Angela had 130 beads left.

7.  $1 - \frac{3}{8} = \frac{5}{8}$

Vivian had  $\frac{5}{8}$  of his savings left after spending on a racket.



8 units = \$120

1 unit =  $120 \div 8$   
 $= \$15$

3 units =  $3 \times 15$   
 $= \$45$

Vivian had \$45 left.

8. total number of adults

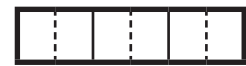


left early

$\frac{1}{8} \times \frac{4}{7} = \frac{1}{14}$

$\frac{1}{14}$  of the total number of people who left early were adults.

total number of children



left early

$\frac{1}{6} \times \frac{3}{7} = \frac{1}{14}$

$\frac{1}{4}$  of the total number of people who left early were children.

$1 - \frac{1}{14} - \frac{1}{14} = \frac{12}{14}$   
 $= \frac{6}{7}$

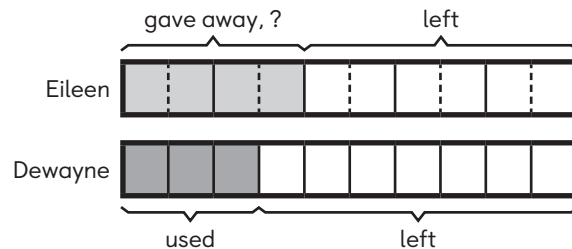
$\frac{6}{7}$  of the people remained at the camp.

$84 \times \frac{6}{7} = 72$

72 people remained at the camp.

9. Both had 10 units of stickers at first.

Eileen gave away  $\frac{2}{5} = \frac{4}{10}$  of her stickers.



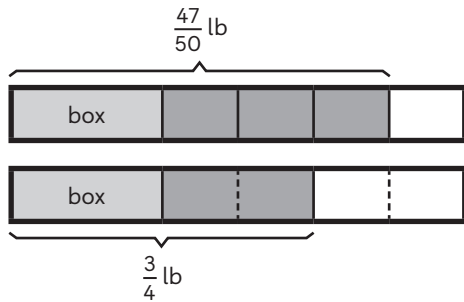
13 units = 156

1 unit =  $156 \div 13$   
 $= 12$

4 units =  $4 \times 12$   
 $= 48$

Eileen gave away 48 stickers.

10. The mass given includes the mass of the box.



$$\begin{aligned} 1 \text{ unit} &= \frac{47}{50} - \frac{3}{4} \\ &= \frac{94}{100} - \frac{75}{100} \\ &= \frac{19}{100} \text{ lb} \\ 2 \text{ units} &= 2 \times \frac{19}{100} \\ &= \frac{38}{100} \text{ lb} \\ \frac{3}{4} - \frac{19}{100} &= \frac{75}{100} - \frac{38}{100} \\ &= \frac{37}{100} \end{aligned}$$

The mass of the empty box is  $\frac{37}{100}$  pound.

$$(c) \quad 3 + \frac{6}{10} + \frac{2}{100} + \frac{8}{1,000} = 3 \frac{628}{1,000}$$

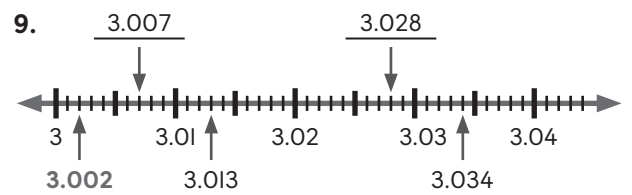
$$(d) \quad 40 + 9 + \frac{4}{10} + \frac{0}{100} + \frac{8}{1,000} = 49 \frac{408}{1,000}$$

$$(e) \quad 70 + 5 + \frac{0}{10} + \frac{3}{100} + \frac{2}{1,000} = 75 \frac{32}{1,000}$$

5. (a) 0.005                      (b) 0.603  
 (c) 0.078                      (d) 3.256  
 (e) 2.508                      (f) 7.009
6. (a) 50; tens                      (b) 6; ones  
 (c) 0.2; tenths                      (d) 0.04; hundredths  
 (e) 0.009; thousandths

7. (a) 4.835                      (b) 12.029  
 (c) 7.906                      (d) 15.642  
 (e) 280.305                      (f) 91.083  
 (g) 120.578

8. (a) 0.05                      (b) 0.002  
 (c) 0.09                      (d) 0.2  
 (e) 0.005

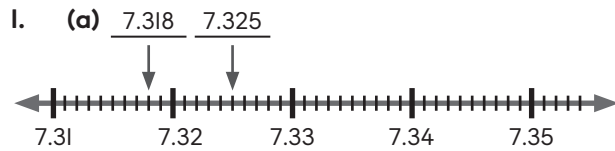


## Chapter 6 DECIMALS

### Exercise 6A Thousandths (I)

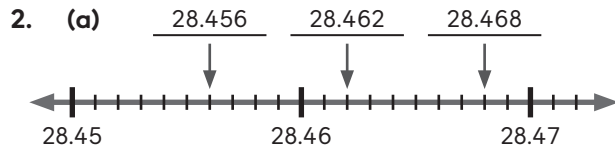
1. (a) 2.654                      (b) 6.087
2. (a) 0.856                      (b) 0.056  
 (c) 8.609                      (d) 2.705
3. (a)  $4.563 = 4 + 0.5 + \underline{0.06} + \underline{0.003}$   
 (b)  $9.624 = 9 + \underline{0.6} + \underline{0.02} + \underline{0.004}$   
 (c)  $7.805 = 7 + \underline{0.8} + \underline{0.005}$   
 (d)  $2.049 = \underline{2} + \underline{0.04} + \underline{0.009}$
4. (a)  $6 + \frac{3}{10} + \frac{5}{100} + \frac{9}{1,000} = 6 \frac{359}{1,000}$   
 (b)  $8 + \frac{2}{10} + \frac{7}{100} + \frac{5}{1,000} = 8 \frac{275}{1,000}$

### Exercise 6A Thousandths (2)



The missing decimals are  $\underline{7.318}$   
and  $\underline{7.325}$ .

(b)  $\underline{7.318}$  is less than  $\underline{7.325}$ .



The missing decimals are  $\underline{28.456}$ ,  
 $\underline{28.462}$ , and  $\underline{28.468}$ .

(b)  $\underline{28.462}$  is greater than  $\underline{28.456}$  but  
less than  $\underline{28.468}$ .

3.  $\underline{3.054}$  is greater than  $\underline{3.045}$ .

4. (a) < (b) > (c) < (d) <

5. (a) 0.902,  $\textcircled{0.092}$ , 9.002

(b) 3.103,  $\textcircled{3.031}$ , 3.310

6. (a) 0.936,  $\textcircled{0.963}$ , 0.693

(b) 8.927, 8.792,  $\textcircled{8.972}$

7. (a)  $\frac{0.057}{\text{least}}, \frac{0.075}, \frac{0.507}{\text{greatest}}$

(b)  $\frac{5.064}{\text{least}}, \frac{5.406}, \frac{5.604}{\text{greatest}}$

8. (a)  $\frac{0.983}{\text{greatest}}, \frac{0.938}, \frac{0.839}, \frac{0.398}{\text{least}}$

(b)  $\frac{6.875}{\text{greatest}}, \frac{6.857}, \frac{6.785}, \frac{6.758}{\text{least}}$

### Exercise 6A Thousandths (3)

1. (a) 0.189 (b) 0.027

(c) 5.003 (d) 9.007

(e) 8.079 (f) 12.048

(g) 21.453 (h) 15.136

2. (a)  $0.045 = \frac{45}{1,000} = \frac{9}{200}$  (b)  $0.088 = \frac{88}{1,000} = \frac{11}{125}$

(c)  $0.075 = \frac{75}{1,000} = \frac{3}{40}$  (d)  $0.365 = \frac{365}{1,000} = \frac{73}{200}$

(e)  $2.625 = 2\frac{625}{1,000} = 2\frac{5}{8}$  (f)  $5.048 = 5\frac{48}{1,000} = 5\frac{6}{125}$

(g)  $3.126 = 3\frac{126}{1,000} = 3\frac{63}{500}$  (h)  $16.092 = 16\frac{92}{1,000} = 16\frac{23}{250}$

3. (a)  $3\frac{4}{5} = 3\frac{8}{10} = 3.8$  (b)  $8\frac{1}{2} = 8\frac{5}{10} = 8.5$

(c)  $10\frac{3}{4} = 10\frac{75}{100} = 10.75$  (d)  $16\frac{9}{20} = 16\frac{45}{100} = 16.45$

(e)  $24\frac{18}{25} = 24\frac{72}{100} = 24.72$  (f)  $20\frac{148}{200} = 20\frac{74}{100} = 20.74$

(g)  $9\frac{64}{125} = 9\frac{512}{1,000} = 9.512$  (h)  $30\frac{52}{250} = 30\frac{208}{1,000} = 30.208$

(i)  $14\frac{12}{125} = 14\frac{96}{1,000} = 14.096$  (j)  $29\frac{21}{250} = 29\frac{84}{1,000} = 29.084$

### Exercise 6B Rounding Decimals

1. (a) 10 (b) 6.08

2. 131

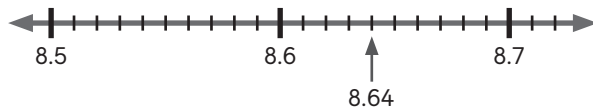


3. 2.7
4. 3.46
5. 1.0

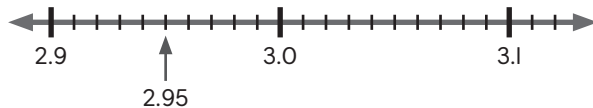
6.

| Decimal    | Round to the nearest |       |           |
|------------|----------------------|-------|-----------|
|            | whole number         | tenth | hundredth |
| (a) 1.284  | 1                    | 1.3   | 1.28      |
| (b) 8.736  | 9                    | 8.7   | 8.74      |
| (c) 19.459 | 19                   | 19.5  | 19.46     |
| (d) 15.396 | 15                   | 15.4  | 15.40     |
| (e) 23.994 | 24                   | 24.0  | 23.99     |

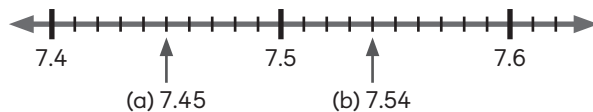
7. (a)



- (b)

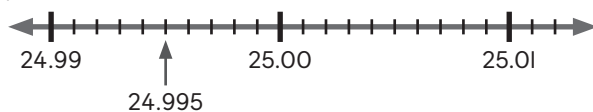


- 8.



### Chapter Practice

1. B
2. B
3. C
4. C
- 5.



The least possible decimal is 24.995.

6. (a) 8.336 (b) 8.345

7. 8 tenths are greater than 6 tenths.  
So, 5.826 is greater than 5.682.

The order should be: 5.862, 5.826, 5.682

$\frac{5.862}{\text{greatest}}, \frac{5.826}{\text{middle}}, \frac{5.682}{\text{least}}$

- 8.

| Ones | Tenths | Hundredths | Thousandths |
|------|--------|------------|-------------|
| 4    | 3      | 9          | 7           |
| 4    | 7      | 9          | 3           |
| 3    | 9      | 7          | 4           |
| 4    | 7      | 3          | 9           |

First, I compare the digit in the ones place. 3 ones are less than 4 ones. So, 3.974 is the least decimal.

Next, I compare digit in the tenths place for 4.397, 4.793, and 4.739. 7 tenths are more than 3 tenths. So, 4.397 is the second least decimal.

Next, I compare digit in the hundredths place for 4.793 and 4.739. 9 hundredths are more than 3 hundredths. So, the greatest decimal is 4.793.

The order is:

$\frac{3.974}{\text{least}}, \frac{4.397}{\text{middle}}, \frac{4.739}{\text{middle}}, \frac{4.793}{\text{greatest}}$

9. No, I do not agree with Benedict.  
In a swimming competition, the fastest swimmer who takes the least time is the winner.

$\frac{1.89}{\text{least}}, \frac{1.95}{\text{middle}}, \frac{1.98}{\text{middle}}, \frac{2.05}{\text{middle}}, \frac{2.08}{\text{greatest}}$

Benedict takes the longest time to complete the race. Thus he comes in last.

Daniel comes in first. The results for the swimming competition are:

$\frac{\text{Daniel}}{\text{1st}}, \frac{\text{Calvin}}{\text{2nd}}, \frac{\text{Adam}}{\text{3rd}}, \frac{\text{Gary}}{\text{4th}}, \frac{\text{Benedict}}{\text{5th}}$