Chapter 9 Decimals

Exercise 1

Basics

1 (a) $\boxed{\frac{1}{10}} = 0.1$

(b) $\boxed{\frac{1}{100}} = 0.01$

(c) $\boxed{\frac{1}{1{,}000}} = 0.001$

2

(a) 1 mm = $\boxed{\frac{1}{1{,}000}}$ m = 0.001 m

(b) Express 9 mm in meters as a decimal. 0.009 m

(c) Express 31 mm in meters as a decimal. 0.031 m

(d) Express 105 mm in meters as a decimal. 0.105 m

3 Express $\frac{3}{25}$ as a decimal.

$\frac{3}{25} = \boxed{\frac{12}{100}} = \boxed{0.12}$

4 (a) Express $\frac{1}{8}$ as a decimal.

$\frac{1}{8} = \boxed{\frac{125}{1{,}000}} = \boxed{0.125}$

(b) Express $5\frac{3}{8}$ as a decimal.

$5\frac{3}{8} = 5\boxed{\frac{375}{1{,}000}} = \boxed{5.375}$

5 Express 0.052 as a fraction in simplest form.

$0.052 = \boxed{\frac{52}{1{,}000}} = \boxed{\frac{13}{250}}$

6 Express 3.135 as a mixed number in simplest form.

$3.135 = 3\boxed{\frac{135}{1{,}000}} = 3\boxed{\frac{27}{200}}$

Practice

7 Express each decimal as a fraction or mixed number.

(a) 0.09 $\frac{9}{100}$ (b) 0.11 $\frac{11}{100}$

(c) 0.407 $\frac{407}{1{,}000}$ (d) 0.003 $\frac{3}{1{,}000}$

(e) 8.23 $8\frac{23}{100}$ (f) 11.017 $11\frac{17}{1{,}000}$

8 Circle the two decimals below that are equal.

(0.32) 0.032 3.2 (0.320) 32.0

9 Express each of the following measurements as a decimal.

(a) 987 mm = $\boxed{0.987}$ m (b) 42 mL = $\boxed{0.042}$ L

(c) 60 g = $\boxed{0.06}$ kg (d) 3 m = $\boxed{0.003}$ km

10 Express each fraction or mixed number as a decimal.

(a) $\frac{147}{1{,}000}$ 0.147 (b) $3\frac{3}{50}$ 3.06

(c) $6\frac{2}{5}$ 6.4 (d) $20\frac{7}{8}$ 20.875

(e) $6\frac{9}{40}$ 6.225 (f) $1\frac{93}{200}$ 1.465

11 Express each decimal as a fraction or mixed number in simplest form.

(a) 0.48 $\frac{12}{25}$ (b) 1.65 $1\frac{13}{20}$

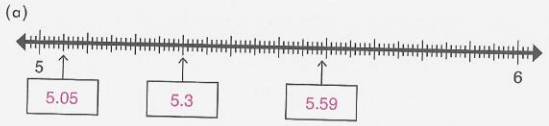
(c) 0.002 $\frac{1}{500}$ (d) 8.075 $8\frac{3}{40}$

(e) 1.408 $1\frac{51}{125}$ (f) 3.625 $3\frac{5}{8}$

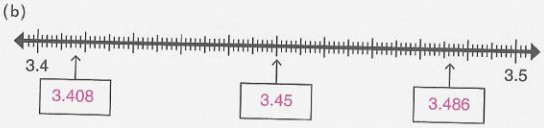
Challenge

12 Label each arrow with a decimal.

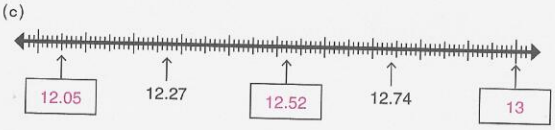
(a)



(b)



(c)



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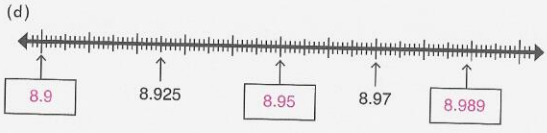
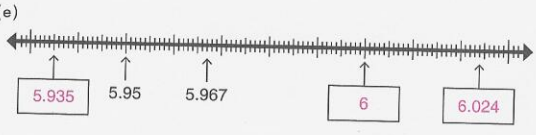


(e)



Exercise 2

Basics

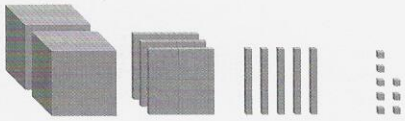
1 (a) $\boxed{\frac{1}{10}}$ of 1 = 0.1

(b) $\frac{1}{10}$ of $\frac{1}{10}$ = $\boxed{\frac{1}{100}}$ = 0.01

(c) $\frac{1}{10}$ of $\frac{1}{10}$ of $\frac{1}{10}$ = $\boxed{\frac{1}{1,000}}$ = 0.001

2 Fill in the blanks with whole numbers or decimals.

(a)



Ones	Tenths	Hundredths	Thousandths
2	3	5	8

$\boxed{2} \times 1$ $\boxed{3} \times 0.1$ $\boxed{5} \times 0.01$ $8 \times \boxed{0.001}$

(b) The decimal represented by the blocks is 2.358.

(c) The digit 3 is in the tenths place. Its value is 0.3.

(d) The digit 5 is in the hundredths place. Its value is 0.05.

(e) The digit 8 is in the thousandths place. Its value is 0.008.

(f) 2 + 0.3 + 0.05 + 0.008 = $\boxed{2.358}$

3 (a) Complete the chart.

Tens	Ones	Tenths	Hundredths	Thousandths
7	5	0	4	9

(b) Write the number in expanded form.
70 + 5 + 0.04 + 0.009

(c) Write the number that is 0.001 more than the number on the chart.
75.05

(d) Write the number that is 0.1 less than the number on the chart.
74.949

4 Complete the number patterns.

(a) $\boxed{3.047}$ $\boxed{3.048}$ $\boxed{3.049}$ $\boxed{3.05}$ $\boxed{3.051}$

(b) $\boxed{10.202}$ $\boxed{10.2}$ $\boxed{10.198}$ $\boxed{10.196}$ $\boxed{10.194}$

5 Express the sum as a decimal.

(a) $10 + 6 + \frac{7}{10} + \frac{9}{100} + \frac{5}{1,000} = \boxed{16.795}$

(b) $2 + 0.4 + 0.006 = \boxed{2.406}$

(c) $8 + 0.05 + 0.009 = \boxed{8.059}$

Practice

6 Use the number 98.958 to answer the following problems.

(a) The value of the digit in the hundredths place is 0.05.

(b) The value of the digit in the ones place is 1,000 times the value of the digit in the thousandths place.

(c) The digit with a value of 0.9 is in the tenths place.

(d) Write the number in expanded form. 90 + 8 + 0.9 + 0.05 + 0.008

7 Write the numbers in expanded form.

(a) 0.092 0.09 + 0.002

(b) 12.007 10 + 2 + 0.007

(c) 401.206 400 + 1 + 0.2 + 0.006

8 Write the decimal.

(a) $\frac{6}{100} + 3 + \frac{5}{1,000} + \frac{1}{10} = \boxed{3.165}$

(b) $\frac{2}{1,000} + 4 + \frac{3}{10} = \boxed{4.302}$

(c) 0.004 + $\boxed{0.3}$ + 90 + 1 = 91.304

(d) 80 + 0.3 + $\boxed{0.02}$ + 0.006 = 80.326

9 (a) 0.999 + 0.001 = $\boxed{1}$ (b) 1 − 0.001 = $\boxed{0.999}$

(c) 0.006 + 0.004 = $\boxed{0.01}$ (d) 0.1 − 0.001 = $\boxed{0.099}$

(e) 0.13 − 0.001 = $\boxed{0.129}$ (f) 7.009 + 0.001 = $\boxed{7.01}$

Challenge

10 Complete the number pattern.

$\boxed{_\ 3}$ $\boxed{3.004}$ $\boxed{3.008}$ $\boxed{3.012}$ $\boxed{3.016}$ →

→ $\boxed{3.02}$ $\boxed{3.024}$ $\boxed{3.028}$ $\boxed{3.032}$ $\boxed{3.036}$

11 Study the number pattern.

2.985, 2.99, 2.995, ... 3.04

List all the numbers in the pattern between 2.995 and 3.04.
3, 3.005, 3.01, 3.015, 3.02, 3.025, 3.03, 3.035

12 Complete the fraction and write the decimal.

$\frac{1}{10}$ of $\frac{1}{10}$ of $\frac{1}{10}$ of $\frac{1}{10}$ = $\boxed{\frac{1}{10,000}}$ = $\boxed{0.0001}$

Exercise 3

Basics

1 Write > or < in each ◯.

(a)

Ones	Tenths	Hundredths	Thousandths
6	3	1	9
6	3	1	2

9 thousandths (>) 2 thousandths

6.319 (>) 6.312

(b)

Ones	Tenths	Hundredths	Thousandths
4	0	7	2
4	0	7	

2 thousandths (>) 0 thousandths

4.072 (>) 4.07

(c)

Ones	Tenths	Hundredths	Thousandths
9	1	5	3
9	1	6	

5 hundredths (<) 6 hundredths

9.153 (<) 9.16

2 Label the numbers 6.455, 6.484, 6.408, 6.43, 6.445, and 6.48 on the number line below. Then write them in order from least to greatest.

6.408 | 6.43 | 6.445 | 6.455 | 6.48 | 6.484

Practice

3 Write >, <, or = in each ◯.

(a) 1.514 (<) 1.72

(b) 0.064 (<) 0.64

(c) 8.2 (>) 8.126

(d) 5.32 (=) 5.320

(e) 0.041 (<) $\frac{41}{100}$

(f) $2\frac{10}{1,000}$ (>) 2.002

4 Circle the greatest decimal and cross off the least decimal.

0.325 0.35 ~~0.053~~ 0.53 0.32 (0.532)

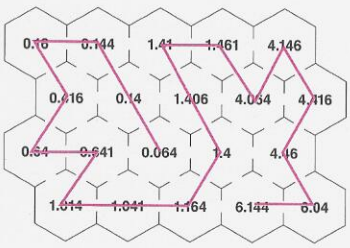
5 Write the numbers in increasing order.

(a) 7.41, 7.04, 4.704, 7.047 — 4.704, 7.04, 7.047, 7.41

(b) 0.69, 6.89, 0.968, 6.986 — 0.69, 0.968, 6.89, 6.986

(c) 14.64, 1.464, 4.641, 1.646 — 1.464, 1.646, 4.641, 14.64

6 Draw a path through the maze from the least number to the greatest number. The path should pass through all of the hexagons, but never go through the same hexagon more than once.



Challenge

7 Use the decimal point and each of the digits 6, 3, 2, and 0 only once in each number to write 6 numbers that are less than 1. List them in order from least to greatest.

0.236, 0.263, 0.326, 0.362, 0.623, 0.632

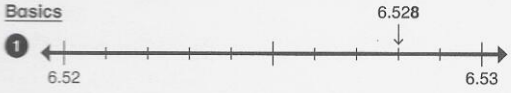
8 Use the decimal point and each of the digits 1, 2, 3, and 4 only once in each number to write as many decimal numbers between 4 and 14 as possible. List them in order from least to greatest.

4.123, 4.132, 4.213, 4.231, 4.312, 4.321, 12.34, 12.43, 13.24, 13.42

Exercise 4

Basics

1

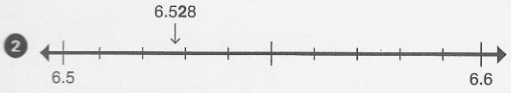


(a) Is 6.528 closer to 6.52 or 6.53? 6.53

(b) 6.528 is 6.53 when rounded to the second decimal place.

(c) To round a number to the second decimal place, look at the digit in the third decimal place.

2



(a) Is 6.528 closer to 6.5 or 6.6? 6.5

(b) 6.528 is 6.5 when rounded to the first decimal place.

(c) To round to the first decimal place, look at the digit in the second decimal place. If it is less than 5, round down.

3

(a) 6.528 is 7 when rounded to a whole number.

(b) To round to a whole number, look at the digit in the first decimal place. If it is 5 or greater, round up.

4 Circle the statement below that shows that 2.014 was rounded to the first decimal place, and not to a whole number.

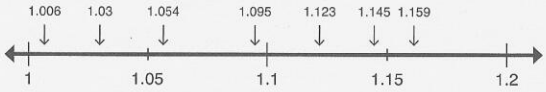
2.014 ≈ 2 (2.014 ≈ 2.0) 2.014 ≈ 2.00

5 Circle the statement below that shows that 10.004 was rounded to the second decimal place, and not to the first decimal place or a whole number.

10.004 ≈ 10 10.004 ≈ 10.0 (10.004 ≈ 10.00)

Practice

6 Answer the questions below using the given decimals above the number line.



(a) Which decimals are 1 when rounded to a whole number?
1.006, 1.03, 1.054, 1.095, 1.123, 1.145, 1.159

(b) Which decimals are 1.0 when rounded to the first decimal place?
1.006, 1.03

(c) Which decimals are 1.1 when rounded to the first decimal place?
1.054, 1.095, 1.123, 1.145

(d) Which decimals are 1.15 when rounded to the second decimal place?
1.145

7 Round each decimal to the second decimal place, to the first decimal place, and to a whole number.

Decimal	Second Decimal Place	First Decimal Place	Whole Number
9.285	9.29	9.3	9
29.761	29.76	29.8	30
0.647	0.65	0.6	1
32.253	32.25	32.3	32
13.604	13.60	13.6	14
9.007	9.01	9.0	9
6.995	7.00	7.0	7

Challenge

8 Write the least and greatest possible numbers with 3 decimal places and a digit greater than 0 in the thousandths place that are:

(a) 3.48 when rounded to the second decimal place.

Least: 3.475 Greatest: 3.484

(b) 7.7 when rounded to the first decimal place.

Least: 7.651 Greatest: 7.749

(c) 12 when rounded to a whole number.

Least: 11.501 Greatest: 12.499

Exercise 5

Check

1 Use the number 9,200.029 to answer the following problems.

(a) The value of the digit in the thousandths place is 0.009.

(b) The digit with a value of 0.02 is in the hundredths place.

(c) Write the number in expanded form.
9,000 + 200 + 0.02 + 0.009

(d) 1 thousand more than this number is 10,200.029.

(e) 1 thousandth more than this number is 9,200.03 (or 9,200.030)

(f) 1 ten less than this number is 9,190.029.

(g) 1 tenth less than this number is 9,199.929.

2 Write >, <, or = in each ◯.

(a) $5.904 \bigcirc 5 + 0.004 + \frac{90}{100}$ → $5.904 = 5 + 0.004 + \frac{90}{100}$

(b) $8 + 0.9 + 0.04 + 0.009 \bigcirc 0.008 + 7 + 0.05 + 0.1$ → $8 + 0.9 + 0.04 + 0.009 > 0.008 + 7 + 0.05 + 0.1$

(c) $0.06 + 3 + 0.1 + 0.007 \bigcirc 3 + 0.006 + 0.06$ → $0.06 + 3 + 0.1 + 0.007 > 3 + 0.006 + 0.06$

(d) $10 + 6 + \frac{7}{10} + \frac{9}{100} + \frac{5}{1{,}000} \bigcirc 10 + 6 + \frac{90}{100} + \frac{5}{1{,}000}$ → $10 + 6 + \frac{7}{10} + \frac{9}{100} + \frac{5}{1{,}000} < 10 + 6 + \frac{90}{100} + \frac{5}{1{,}000}$

(e) $3 + 0.2 + 0.006 \bigcirc \frac{6}{100} + 3 + \frac{2}{1{,}000}$ → $3 + 0.2 + 0.006 > \frac{6}{100} + 3 + \frac{2}{1{,}000}$

3 Express each value as a decimal.

(a) $\frac{3}{25}$ 0.12

(b) $7\frac{9}{200}$ 7.045

(c) $\frac{5}{8}$ 0.625

(d) $10\frac{7}{40}$ 10.175

(e) $\frac{37}{4}$ 9.25

(f) $\frac{45}{8}$ 5.625

(g) $1 + \frac{1}{5} + \frac{1}{20} + \frac{1}{250}$ 1.254

(h) $2 + \frac{1}{2} + \frac{7}{125}$ 2.556

4 Express each value as a fraction or mixed number in simplest form.

(a) 0.14 $\frac{7}{50}$

(b) 8.320 $8\frac{8}{25}$

(c) 2.008 $2\frac{1}{125}$

(d) 0.145 $\frac{29}{200}$

(e) 4.875 $4\frac{7}{8}$

(f) 1.275 $1\frac{11}{40}$

5 Write the numbers in increasing order.

(a) **0.409, 0.049, 0.044, 0.49, 0.4** 0.044, 0.049, 0.4, 0.409, 0.49

(b) 4.386, 4.683, 4.638, 4.68 4.386, 4.638, 4.68, 4.683

(c) $6\frac{1}{4}$, $\frac{6{,}521}{1{,}000}$, 6.215, $6\frac{63}{250}$ 6.215, $6\frac{1}{4}$, $6\frac{63}{250}$, $\frac{6{,}521}{1{,}000}$

6 Round each decimal to the second decimal place, to the first decimal place, and to a whole number.

Decimal	Second Decimal Place	First Decimal Place	Whole Number
0.785	0.79	0.8	1
8.058	8.06	8.1	8
5.994	5.99	6.0	6
42.899	42.90	42.9	43
199.902	199.90	199.9	200

Challenge

7 Use the decimal point and any of the digits 3, 4, 5, and 6. Write all the numbers with up to 3 decimal places that round to 6.5 when rounded to the first decimal place. The digits can be used more than once.
6.53, 6.533, 6.534, 6.535, 6.536, 6.54, 6.543, 6.544, 6.545, 6.546, 6.45, 6.453, 6.454, 6.455, 6.456, 6.463, 6.464, 6.465, 6.466

Exercise 6

Basics

1 (a)

0.324 | 3.24 | 32.4 | 324

(b) 0.324 × 10 × 10 = 0.324 × 100 = 32.4

(c) 0.324 × 10 × 10 × 10 = 0.324 × 1,000 = 324

(d) 3.24 × 100 = 324

2 Complete the charts and fill in the blanks.

(a)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		3	4	1	2
	3	4	1	2	

× 10

3 . 4 1 2 × 10 = 34.12

(b)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		2	7	0	1
2	7	0	1		

× 100

2 . 7 0 1 × 100 = 270.1

(c)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		0	1	6	4
1	6	4			

× 1,000

0 . 1 6 4 × 1,000 = 164

(d)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		0	1	9	
1	9	0			

× 1,000

0 . 1 9 0 × 1,000 = 190

Practice

3 (a) 0.01 × 10 = 0.1 (b) 0.001 × 10 = 0.01

(c) 6.094 × 10 = 60.94 (d) 10 × 55.7 = 557

4 (a) 0.01 × 100 = 1 (b) 0.001 × 100 = 0.1

(c) 6.094 × 100 = 609.4 (d) 100 × 55.7 = 5,570

5 (a) 0.01 × 1,000 = 10 (b) 0.001 × 1,000 = 1

(c) 6.094 × 1,000 = 6,094 (d) 1,000 × 55.7 = 55,700

6 (a) 0.17 × 1,000 = 170 (b) 10 × 89.2 = 892

(c) 2.391 × 100 = 239.1 (d) 100 × 98.05 = 9,805

(e) 1,000 × 0.43 = 430 (f) 23.942 × 10 = 239.42

7 (a) 3.73 × 10 = 37.3 (b) 0.709 × 1,000 = 709

(c) 1,000 × 0.051 = 51 (d) 10 × 20.94 = 209.4

(e) 0.8 × 100 = 80 (f) 1,000 × 9.86 = 9,860

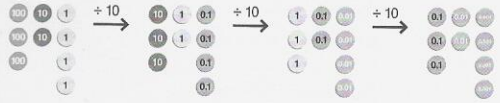
Challenge

8 (a) 0.004 × 10,000 = 40 (b) 0.621 × 100,000 = 62,100

(c) 0.0008 × 100 = 0.08 (d) 10,000 × 0.0092 = 92

Exercise 7

Basics

1 (a) 

324 → 32.4 → 3.24 → 0.324

(b) 324 ÷ 10 = 32.4

(c) 324 ÷ 10 ÷ 10 = 324 ÷ 100 = 3.24

(d) 324 ÷ 10 ÷ 10 ÷ 10 = 324 ÷ 1,000 = 0.324

2 Complete the charts and fill in the blanks.

(a)

	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
÷ 10			8	3	2	
				8	3	2

8.32 ÷ 10 = 0.832

(b)

	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
÷ 100	1	4	2	7		
			1	4	2	7

142.7 ÷ 100 = 1.427

(c)

	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
÷ 1,000	4	1	0			
				4	1	0

410 ÷ 1,000 = 0.41

(d)

	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
÷ 1,000		2	5			
				0	2	5

25 ÷ 1,000 = 0.025

Practice

3 (a) 0.1 ÷ 10 = 0.01 (b) 0.01 ÷ 10 = 0.001

(c) 16.59 ÷ 10 = 1.659 (d) 32 ÷ 10 = 3.2

4 (a) 10 ÷ 100 = 0.1 (b) 0.1 ÷ 100 = 0.001

(c) 30.9 ÷ 100 = 0.309 (d) 2,400.3 ÷ 100 = 24.003

5 (a) 100 ÷ 1,000 = 0.1 (b) 10 ÷ 1,000 = 0.01

(c) 146 ÷ 1,000 = 0.146 (d) 2,981 ÷ 1,000 = 2.981

6 (a) 18 ÷ 1,000 = 0.018 (b) 278.1 ÷ 10 = 27.81

(c) 41.3 ÷ 100 = 0.413 (d) 2,003.1 ÷ 100 = 20.031

(e) 89.89 ÷ 10 = 8.989 (f) 16,004 ÷ 1,000 = 16.004

7 (a) 82.7 ÷ 10 = 8.27 (b) 902 ÷ 1,000 = 0.902

(c) 3.4 ÷ 100 = 0.034 (d) 123.82 ÷ 10 = 12.382

(e) 701.8 ÷ 10 = 70.18 (f) 1,401 ÷ 1,000 = 1.401

Challenge

8 (a) 0.3 ÷ 1,000 = 0.0003 (b) 0.13 ÷ 100 = 0.0013

(c) 0.08 ÷ 100 = 0.0008 (d) 54.321 ÷ 10 = 5.4321

Exercise 8

Basics

1 (a) Express 8.7 cm in millimeters.

1 cm = 10 mm

8.7 cm = 8.7 × 10 mm = [87] mm

(b) Express 75 mm in centimeters.

1 mm = 1 ÷ 10 cm

75 mm = 75 ÷ 10 cm = [7.5] cm

2 (a) Express 4.8 m in centimeters.

1 m = [100] cm

4.8 m = 4.8 × [100] cm = [480] cm

(b) Express 14.7 cm in meters.

1 cm = 1 ÷ [100] m

14.7 cm = 14.7 ÷ [100] m = [0.147] m

3 (a) Express 6.89 km in meters.

1 km = [1,000] m

6.89 km = 6.89 × [1,000] m = [6,890] m

(b) Express 12 m in kilometers.

1 m = 1 ÷ [1,000] km

12 m = 12 ÷ [1,000] km = [0.012] km

4 (a) Express 3.091 L in liters and milliliters.

0.091 L = 0.091 × [1,000] mL = [91] mL

3.091 L = [3] L [91] mL

(b) Express 5.89 L in milliliters.

5.89 L = 5.89 × [1,000] mL = [5,890] mL

5 Express 2 kg 40 g in kilograms.

40 g = 40 ÷ [1,000] kg = [0.04] kg

2 kg 40 g = 2 kg + [0.04] kg = [2.04] kg

Practice

6 Find the equivalent measures in whole numbers or decimals.

(a) 0.5 m = [50] cm

(b) 0.592 km = [592] m

(c) 4.7 L = [4,700] mL

(d) 0.03 kg = [30] g

(e) 6.52 cm = [65.2] mm

(f) 420 m = [0.42] km

(g) 95 g = [0.095] kg

(h) 362 mm = [36.2] cm

(i) 1,842 mL = [1.842] L

(j) 4,000 cm = [40] m

7 Find the equivalent measures.

(a) 3.2 kg = [3] kg [200] g

(b) 8.7 m = [8] m [70] cm

(c) 20.92 L = [20] L [920] mL

(d) 14 L 200 mL = [14,200] mL

(e) 3 cm 7 mm = [37] mm

(f) 10 km 80 m = [10,080] m

8 An exercise ball weighs 3.5 kg. How much does it weigh in grams?
3,500 g

9 A piece of wire is 149.7 cm long. How long is it in meters?
1.497 m

Exercise 9

Basics

1 (a) 15 × 3 = 45

(b) 15 tenths × 3 = 45 tenths = 4.5

(c) 15 hundredths × 3 = 45 hundredths = 0.45

(d) 15 thousandths × 3 = 45 thousandths = 0.045

2 0.15 × 3,000 = 0.15 × 3 × 1,000

= 15 hundredths × 3 × 1,000

= 45 hundredths × 1,000

= 0.45 × 1,000

= 450

3 (a) 36 ÷ 2 = 18

(b) 36 tenths ÷ 2 = 18 tenths = 1.8

(c) 36 hundredths ÷ 2 = 18 hundredths = 0.18

(d) 36 thousandths ÷ 2 = 18 thousandths = 0.018

4 3.6 ÷ 200 = 3.6 ÷ 2 ÷ 100

= 36 tenths ÷ 2 ÷ 100

= 18 tenths ÷ 100

= 1.8 ÷ 100

= 0.018

5 2.8 × 400 = 2.8 × 4 × 100

= 11.2 × 100

= 1,120

6 (a) 0.4 ÷ 8 = 0.40 ÷ 8

= 0.05

(b) 0.4 ÷ 80 = 0.40 ÷ 8 ÷ 10

= 0.005

7 0.015 × 8,000 = 0.015 × 8 × 1,000

= 0.12 × 1,000

= 120

Practice

8 Find the values.

(a) 0.3 × 30 = 9

(b) 0.06 × 800 = 48

(c) 0.006 × 700 = 4.2

(d) 1.2 × 400 = 480

(e) 0.025 × 500 = 12.5

(f) 0.12 × 30 = 3.6

(g) 4.2 ÷ 60 = 0.07

(h) 8 ÷ 2,000 = 0.004

(i) 56 ÷ 800 = 0.07

(j) 9.6 ÷ 300 = 0.032

(k) 14.8 ÷ 200 = 0.074

(l) 0.6 ÷ 50 = 0.012

9 A pencil costs $0.35. How much do 20 pencils cost?

0.35 × 20 = 7.00

$7

10 50 erasers cost $4.50. How much does 1 eraser cost?

4.5 ÷ 50 = 0.09

$0.09 (or 9¢)

Exercise 10

Check

1 Complete the equations.

(a) 24 ÷ 1,000 = 0.024 (b) 0.089 × 10 = 0.89

(c) 41.323 × 100 = 4,132.3 (d) 3.1 ÷ 100 = 0.031

(e) 89.89 ÷ 10 = 8.989 (f) 0.04 × 1,000 = 40

(g) 10.59 × 1,000 = 10,590 (h) 7.5 ÷ 100 = 0.075

(i) 69 ÷ 1,000 = 0.069 (j) 0.076 × 100 = 7.6

2 Find the equivalent measures.

(a) 6.09 m = 609 cm (b) 2,060 g = 2.06 kg

(c) 720 mL = 0.72 L (d) 2.08 km = 2,080 m

(e) 0.7 mm = 0.07 cm (f) 0.77 kg = 770 g

(g) 4 L 50 mL = 4.05 L (h) 20 m 20 cm = 20.2 m

3 Complete the equations.

(a) 0.007 × 90 = 0.63 (b) 4.8 ÷ 800 = 0.006

(c) 2.1 ÷ 70 = 0.03 (d) 0.03 × 6,000 = 180

(e) 2.08 × 3,000 = 6,240 (f) 7.2 ÷ 600 = 0.012

(g) 155 ÷ 5,000 = 0.031 (h) 0.12 × 80 = 9.6

(i) 0.006 × 600 = 3.6 (j) 3 ÷ 500 = 0.006

4 Complete the equations.

(a) 0.26 × 10 = 260 ÷ 100

(b) 7,200 ÷ 6,000 = 0.004 × 300

5 Paul earned $8,040 for 400 hours of work as a life guard. How much was he paid for 8 hours of work?

8,040 ÷ 400 = 20.1

20.1 × 8 = 160.8

$160.80

6 The total weight of 500 identical books is 160 kg. How much does one book weigh in grams?

160 ÷ 500 = 0.32

0.32 kg × 1,000 = 320 g

320 g

7 1 inch is equal to 2.54 centimeters. How many centimeters are in 20 inches?

2.54 × 20 = 50.8

50.8 cm

8 200 identical sheets of glass are 48 cm thick.

(a) How thick is 1 sheet of glass in centimeters?

48 ÷ 200 = 0.24

0.24 cm

(b) How thick is 1 sheet of glass in millimeters?

0.24 cm = 0.24 × 10 mm = 2.4 mm

2.4 mm

9 1 can contains 0.342 L of juice.

(a) How many liters of juice are in 200 of these cans?

0.342 × 200 = 68.4

68.4 L

(b) How many milliliters of juice are in 200 cans?

68.4 L = 68.4 × 1,000 mL = 68,400 mL

Challenge

10 Write × or ÷ in each ◯.

(a) 5.68 (×) 700 = 3,976 (b) 8.28 (÷) 120 = 0.069

11 At a supermarket, prawns are sold at $2.58 for 100 g. How much do 3 kg of prawns cost?

100 g × 10 = 1,000 g = 1 kg

3 kg = 30 100-g units

2.58 × 30 = 77.40

$77.40

12 (a) What is the least whole number that can be multiplied by 0.02 to get a whole number product?

0.02 × 100 = 2

The smallest whole number is 1, which is half of 2.

Multiply 0.002 by half of 100:

0.02 × 50 = 1

50

(b) What is the least whole number that can be multiplied by 0.025 to get a whole number product?

0.025 × 1,000 = 25

The smallest whole number is 1, which is $\frac{1}{25}$ of 25.

$\frac{1}{25}$ of 1,000 = 40

0.025 × 40 = 1

40