Chapter 9
Multiplying and Dividing Decimals

Practice 1  Multiplying Decimals

Multiply. Write the product as a decimal.

Example

2 \times 0.3 = 2 \times \underline{3} \text{ tenths}

= \underline{6} \text{ tenths}

= \underline{0.6}

So, 2 \times 0.3 = \underline{0.6}.

1. 5 \times 0.6 = 5 \times \underline{\phantom{0}} \text{ tenths}

= \underline{\phantom{0}} \text{ tenths}

= \underline{\phantom{0}} \text{ or } \underline{\phantom{0}}

So, 5 \times 0.6 = \underline{\phantom{0}}.

2. 7 \times 0.8 = 7 \times \underline{\phantom{0}} \text{ tenths}

= \underline{\phantom{0}} \text{ tenths}

= \underline{\phantom{0}}

So, 7 \times 0.8 = \underline{\phantom{0}}.

3. 10 \times 0.4 = 10 \times \underline{\phantom{0}} \text{ tenths}

= \underline{\phantom{0}} \text{ tenths}

= \underline{\phantom{0}} \text{ or } \underline{\phantom{0}}

So, 10 \times 0.4 = \underline{\phantom{0}}.

Lesson 9.1  Multiplying Decimals

Multiply. Write the product as a decimal.

**Example**

\[
3 \times 0.03 = 3 \times \frac{3}{100} \text{ hundredths} \\
= \frac{9}{100} \text{ hundredths} \\
= 0.09
\]

So, \( 3 \times 0.03 = 0.09 \).

4. \( 5 \times 0.02 = 5 \times \frac{2}{100} \text{ hundredths} \\
= \frac{10}{100} \text{ hundredths} \\
= \frac{1}{10} \text{ or } 0.01 \\
So, 5 \times 0.02 = \frac{1}{10}.

5. \( 7 \times 0.07 = 7 \times \frac{7}{100} \text{ hundredths} \\
= \frac{49}{100} \text{ hundredths} \\
= \frac{49}{100} \\
So, 7 \times 0.07 = \frac{49}{100}.

6. \( 6 \times 0.12 = 6 \times \frac{12}{100} \text{ hundredths} \\
= \frac{72}{100} \text{ hundredths} \\
= \frac{72}{100} \\
So, 6 \times 0.12 = \frac{72}{100}.

**Chapter 9** Multiplying and Dividing Decimals
Follow the steps to multiply 2.6 by 3. Fill in the blanks.

7. Step 1

Multiply the tenths by 3.

\[
\begin{array}{c}
2.6 \\
\times 3 \\
\end{array}
\]

3 \times 6 \text{ tenths} = \underline{\hspace{1cm}} \text{ tenths}

Regroup the tenths.

\underline{\hspace{1cm}} \text{ tenths} = \underline{\hspace{1cm}} \text{ one and } \underline{\hspace{1cm}} \text{ tenths}

Step 2

Multiply the ones by 3.

\[
\begin{array}{c}
2.6 \\
\times 3 \\
\end{array}
\]

3 \times 2 \text{ ones} = \underline{\hspace{1cm}} \text{ ones}

Add the ones.

\underline{\hspace{1cm}} \text{ ones} + \underline{\hspace{1cm}} \text{ one} = \underline{\hspace{1cm}} \text{ ones}

So, 3 \times 2.6 = \underline{\hspace{1cm}}.

Multiply.

8. \[
\begin{array}{c}
0.3 \\
\times 8 \\
\end{array}
\]

9. \[
\begin{array}{c}
2.6 \\
\times 4 \\
\end{array}
\]

10. \[
\begin{array}{c}
7.9 \\
\times 5 \\
\end{array}
\]

11. \[
\begin{array}{c}
12.4 \\
\times 7 \\
\end{array}
\]
Follow the steps to multiply 1.46 by 6. Fill in the blanks.

12. 

Step 1

Multiply the hundredths by 6.

\[
\begin{array}{c}
1.46 \\
\times 6
\end{array}
\]

\[6 \times 6 \text{ hundredths} = \underline{______} \text{ hundredths}\]

Regroup the hundredths.

\[\underline{______} \text{ hundredths} = \underline{______} \text{ tenths} \underline{______} \text{ hundredths}\]

Step 2

Multiply the tenths by 6.

\[
\begin{array}{c}
1.46 \\
\times 6
\end{array}
\]

\[6 \times 4 \text{ tenths} = \underline{______} \text{ tenths}\]

Add the tenths.

\[\underline{______} \text{ tenths} + \underline{______} \text{ tenths} = \underline{______} \text{ tenths}\]

Regroup the tenths.

\[\underline{______} \text{ tenths} = \underline{______} \text{ ones} \underline{______} \text{ tenths}\]

Step 3

Multiply the ones by 6.

\[
\begin{array}{c}
1.46 \\
\times 6
\end{array}
\]

\[6 \times 1 \text{ one} = \underline{______} \text{ ones}\]

Add the ones.

\[\underline{______} \text{ ones} + \underline{______} \text{ ones} = \underline{______} \text{ ones}\]

So, \[6 \times 1.46 = \underline{______} \].
Multiply.

13. \(10.07 \times 5\)

14. \(0.75 \times 4\)

15. \(3.06 \times 9\)

16. \(15.24 \times 8\)

17. \(4 \times 2.08 = \) 

18. \(3 \times 3.29 = \)

19. \(7 \times 5.71 = \)

20. \(6 \times 4.81 = \)

21. \(9 \times 7.46 = \)

22. \(8 \times 6.52 = \)
Write the correct decimal in each box.

Example

0.8 0.8 0.8 0.8

10 11 12 13 14 15

13.2

23. 0.46 0.46 0.46

20 20.5 21 21.5 22 22.5 23

24. 0.84 0.84 0.84 0.84 0.84 0.84

15 16 17 18 19 20 21

25. 1.28 1.28 1.28 1.28 1.28

25 26 27 28 29 30 31 32
Practice 2  Multiplying by Tens, Hundreds, or Thousands

Complete. Draw chips and use arrows to show how the chips move. Then fill in the blanks.

1.

<table>
<thead>
<tr>
<th></th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
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<tr>
<td>2</td>
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</tr>
<tr>
<td>2 × 10</td>
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<tr>
<td>0.2</td>
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</tr>
<tr>
<td>0.2 × 10</td>
<td></td>
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</tr>
<tr>
<td>0.12</td>
<td></td>
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</tr>
<tr>
<td>0.12 × 10</td>
<td></td>
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</tbody>
</table>

12 × 10 = _______  
2 × 10 = _______  
0.2 × 10 = _______  
0.12 × 10 = _______

Multiply.

2. 0.5 × 10 = _______  
3. 1.9 × 10 = _______  
4. 3.42 × 10 = _______  
5. 7.035 × 10 = _______  
6. 10 × 7.9 = _______  
7. 10 × 4.8 = _______  
8. 10 × 27.54 = _______  
9. 10 × 12.009 = _______
Complete.

10. \(0.7 \times _____ = 7\)  
11. \(15.72 \times _____ = 157.2\)

12. \(10 \times _____ = 534.2\)  
13. \(_____ \times 10 = 19.07\)

Complete.

Example

\[
8 \times 50 = (8 \times \frac{5}{1}) \times 10
\]
\[
= \frac{40}{1} \times 10
\]
\[
= 400
\]

So, \(8 \times 50 = 400\).

14. \(0.8 \times 50 = (0.8 \times 5) \times _____\)
\[
= _____ \times 10
\]
\[
= _____
\]

So, \(0.8 \times 50 = _____\).

15. \(0.88 \times 50 = (0.88 \times _____) \times 10\)
\[
= _____ \times 10
\]
\[
= _____
\]

So, \(0.88 \times 50 = _____\).

Find each product.

16. \(0.9 \times 40 = _____\)  
17. \(1.5 \times 60 = _____\)

18. \(0.05 \times 80 = _____\)  
19. \(9.17 \times 70 = _____\)

20. \(6.358 \times 30 = _____\)  
21. \(34.6 \times 50 = _____\)

22. \(41.32 \times 60 = _____\)  
23. \(23.05 \times 40 = _____\)
Multiply.

24. \(1.3 \times 100 = \) 
25. \(6.8 \times 100 = \)

26. \(4.196 \times 100 = \)
27. \(100 \times 74.3 = \)

28. \(46.8 \times 100 = \)
29. \(4.68 \times 100 = \)

30. \(5.095 \times 100 = \)
31. \(100 \times 50.95 = \)

Multiply.

32. \(1.8 \times 1,000 = \)
33. \(2.1 \times 1,000 = \)

34. \(9.097 \times 1,000 = \)
35. \(1,000 \times 7.007 = \)

36. \(2.74 \times 1,000 = \)
37. \(27.4 \times 1,000 = \)

38. \(1,000 \times 10.81 = \)
39. \(108.1 \times 1,000 = \)

Complete.

Example

\[
1.2 = 0.12 \times \frac{10}{100} = 0.012 \times \frac{100}{10} = 0.36 \times \frac{100}{100}
\]

40. \(360 = 36 \times \) 

41. \(438 = \) 

42. \(7,256 = \)
Complete.

Example
\[
0.75 \times 10^2 = 0.75 \times (10 \times \underline{10})
\]
\[= 0.75 \times 100 \]
\[= 75 \]
\[
1.3 \times 10^3 = 1.3 \times (10 \times 10 \times \underline{10})
\]
\[= 1.3 \times 1,000 \]
\[= 1,300 \]

43. \[0.8 \times 10^2 = 0.8 \times (\underline{\phantom{1}} \times 10)\]
\[= 0.8 \times \underline{\phantom{1}} \]
\[= \underline{\phantom{1}} \]

44. \[0.96 \times 10^2 = 0.96 \times (\underline{\phantom{1}} \times 10)\]
\[= 0.96 \times \underline{\phantom{1}} \]
\[= \underline{\phantom{1}} \]

45. \[0.065 \times 10^2 = 0.065 \times (\underline{\phantom{1}} \times 10)\]
\[= 0.065 \times \underline{\phantom{1}} \]
\[= \underline{\phantom{1}} \]

46. \[13.8 \times 10^2 = 13.8 \times (\underline{\phantom{1}} \times \underline{\phantom{1}})\]
\[= 13.8 \times \underline{\phantom{1}} \]
\[= \underline{\phantom{1}} \]

47. \[9.849 \times 10^2 = 9.849 \times (\underline{\phantom{1}} \times \underline{\phantom{1}})\]
\[= 9.849 \times \underline{\phantom{1}} \]
\[= \underline{\phantom{1}} \]

Example 1,000
48. $0.2 \times 10^3 = 0.2 \times (_____ \times 10 \times 10)$
   $= 0.2 \times _____$
   $= _____$

49. $0.06 \times 10^3 = 0.06 \times (_____ \times _____ \times 10)$
   $= 0.06 \times _____$
   $= _____$

50. $12.7 \times 10^3 = 12.7 \times (_____ \times _____ \times 10)$
   $= 12.7 \times _____$
   $= _____$

51. $2.007 \times 10^3 = 2.007 \times (_____ \times _____ \times _____)$
   $= 2.007 \times _____$
   $= _____$

Write $10$, $10^2$, or $10^3$.

52. $12.2 \times _____ = 1,220$

53. $0.7 \times _____ = 700$

54. $1.5 \times _____ = 150$

55. $181.8 \times _____ = 1,818$
Multiply.

Example

\[
0.3 \times 700 = (0.3 \times 7) \times 100
= \underline{2.1} \times 100
= \underline{210}
\]

So, \(0.3 \times 700 = \underline{210}\).

56. \(0.003 \times 700 = (0.003 \times \underline{_____}) \times 100\)

\[
e = \underline{_____} \times 100
= \underline{_____}
\]

So, \(0.003 \times 700 = \underline{_____}\).

57. \(0.03 \times 2,000 = (0.03 \times \underline{_____}) \times 1,000\)

\[
e = \underline{_____} \times 1,000
= \underline{_____}
\]

So, \(0.03 \times 2,000 = \underline{_____}\).

58. \(0.003 \times 2,000 = (0.003 \times \underline{_____}) \times 1,000\)

\[
e = \underline{_____} \times 1,000
= \underline{_____}
\]

So, \(0.003 \times 2,000 = \underline{_____}\).

Find each product.

59. \(0.49 \times 300 = \underline{_____}\)

60. \(3.148 \times 500 = \underline{_____}\)

61. \(900 \times 3.18 = \underline{_____}\)

62. \(1.8 \times 2,000 = \underline{_____}\)

63. \(4,000 \times 2.5 = \underline{_____}\)

64. \(72.5 \times 6,000 = \underline{_____}\)
Practice 3  Dividing Decimals

Divide. Write the quotient as a decimal.

Example

\[0.6 \div 2 = \frac{6}{10} \text{ tenths} \div 2\]
\[= \frac{3}{10} \text{ tenths}\]
\[= 0.3\]

So, \(0.6 \div 2 = 0.3\).

1. \(0.8 \div 4 = \frac{\text{______ tenths}}{10} \div 4\)
\[= \frac{\text{______ tenths}}{10}\]
\[= \text{______}\]

So, \(0.8 \div 4 = \text{______}\).

2. \(1 \div 5 = \frac{\text{______ tenths}}{10} \div 5\)
\[= \frac{\text{______ tenths}}{10}\]
\[= \text{______}\]

So, \(1 \div 5 = \text{______}\).

3. \(2.4 \div 6 = \frac{\text{______ tenths}}{10} \div 6\)
\[= \frac{\text{______ tenths}}{10}\]
\[= \text{______}\]

So, \(2.4 \div 6 = \text{______}\).
Complete. Write the quotient as a decimal.

Example

\[ \frac{0.08}{2} = \underline{8} \text{ hundredths} \div \underline{2} \]
\[ = \underline{4} \text{ hundredths} \]
\[ = 0.04 \]
So, \( 0.08 \div 2 = 0.04 \).

4. \( \frac{0.14}{7} = \underline{\hspace{1cm}} \text{ hundredths} \div \underline{\hspace{1cm}} \)
\[ = \underline{\hspace{1cm}} \text{ hundredths} \]
\[ = \underline{\hspace{1cm}} \]
So, \( 0.14 \div 7 = \underline{\hspace{1cm}} \).

5. \( \frac{0.27}{9} = \underline{\hspace{1cm}} \text{ hundredths} \div \underline{\hspace{1cm}} \)
\[ = \underline{\hspace{1cm}} \text{ hundredths} \]
\[ = \underline{\hspace{1cm}} \]
So, \( 0.27 \div 9 = \underline{\hspace{1cm}} \).

6. \( \frac{0.1}{2} = \underline{\hspace{1cm}} \text{ hundredths} \div \underline{\hspace{1cm}} \)
\[ = \underline{\hspace{1cm}} \text{ hundredths} \]
\[ = \underline{\hspace{1cm}} \]
So, \( 0.1 \div 2 = \underline{\hspace{1cm}} \).
Follow the steps to divide 8.4 by 3. Fill in the blanks.

7. \[ \underline{3 \big| 8.4} \]
   
   **Step 1**
   
   Divide the ones by 3.
   
   \[ 8 \text{ ones} \div 3 = \underline{\text{ }} \text{ ones} \ \underline{\text{R } \underline{\text{ }} \text{ ones}} \]
   
   Regroup the remainder into tenths.
   
   \[ \underline{3 \big| 8.4} \]
   
   \[ \underline{\text{ }} \text{ ones} = \underline{\text{ }} \text{ tenths} \]
   
   Add the tenths.
   
   \[ \underline{\text{ }} \text{ tenths} + 4 \text{ tenths} = \underline{\text{ }} \text{ tenths} \]
   
   **Step 2**
   
   Divide the tenths by 3.
   
   \[ \underline{3 \big| 8.4} \]
   
   \[ \underline{\text{ }} \text{ tenths} \div 3 = \underline{\text{ }} \text{ tenths} \]
   
   So, \[ 8.4 \div 3 = \underline{\text{ }} \].
Divide.

8. \(3 \div 1 \) \( .9 \)

9. \(8 \div 5 \) \( .6 \)

10. \(3 \div 8 \) \( .7 \)

11. \(9 \div 2 \) \( 4 \) \( .3 \)

12. \(4 \div 0 \) \( .6 \)

13. \(5 \div 5 \) \( .2 \)
Follow the steps to divide 5.48 by 4. Fill in the blanks.

14. **Step 1**

\[ 4 \overline{) 5.48} \]

Divide the ones by 4.

5 ones \( \div 4 = \) _______ one \( R \) _______ one

Regroup the remainder into tenths.

_______ one = _______ tenths

Add the tenths.

_______ tenths + 4 tenths = _______ tenths

**Step 2**

\[ 4 \overline{) 5.48} \]

Divide the tenths by 4.

_______ tenths \( \div 4 = \) _______ tenths \( R \) _______ tenths

Regroup the remainder into hundredths.

_______ tenths = _______ hundredths

Add the hundredths.

_______ hundredths + 8 hundredths = _______ hundredths

**Step 3**

\[ 4 \overline{) 5.48} \]

Divide the hundredths by 4.

_______ hundredths \( \div 4 = \) _______ hundredths

So, 5.48 \( \div 4 = \) _______.

Lesson 9.3 Dividing Decimals

Divide.

15. \[ 4 \overline{)0.52} \]

16. \[ 9 \overline{)0.81} \]

17. \[ 6 \overline{)12.12} \]

18. \[ 7 \overline{)9.66} \]

19. \[ 5 \overline{)15.65} \]

20. \[ 4 \overline{)3} \]
Divide. Round each quotient to the nearest tenth.

**Example**

\[ 7 \div 8 \]

\[
\begin{array}{c}
8)7.00 \\
\hline \\
7 \\
\hline \\
10 \\
6 \\
\hline \\
40 \\
36 \\
\hline \\
4
\end{array}
\]

First, divide to two decimal places. Then round the answer to the nearest tenth.

\[ 7 \div 8 \text{ is about 0.9.} \]

21. \[ 5 \div 7 \]

\[
\begin{array}{c}
7)5.00 \\
\hline \\
5 \\
\hline \\
0
\end{array}
\]

22. \[ 11 \div 9 \]

\[
\begin{array}{c}
9)11.00 \\
\hline \\
9 \\
\hline \\
20 \\
18 \\
\hline \\
2
\end{array}
\]
Divide. Round each quotient to the nearest hundredth.

**Example**

\[ 14.7 \div 9 \]

\[ \begin{array}{c|c}
\hline
9 & 14.7 \\
\hline
9 & 57 \\
\hline
54 & 30 \\
\hline
27 & 27 \\
\hline
3 & 3 \\
\hline
\end{array} \]

First, divide to three decimal places. Then round the answer to the nearest hundredth.

\[ 14.7 \div 9 \text{ is about } 1.63. \]

23. \[ 3.2 \div 7 \]

\[ 7 \overline{)3.2} \]

24. \[ 13 \div 6 \]

\[ 6 \overline{)13} \]

**Chapter 9**  Multiplying and Dividing Decimals
Practice 4  Dividing by Tens, Hundreds, or Thousands

Complete. Draw chips and use arrows to show how the chips move. Then fill in the blanks.

1.  

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<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
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<td>140 ÷ 10</td>
<td></td>
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<td>20</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>20 ÷ 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6 ÷ 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.3</td>
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<tr>
<td>0.3 ÷ 10</td>
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</table>

140 ÷ 10 = ______  20 ÷ 10 = ______  
6 ÷ 10 = ______  0.3 ÷ 10 = ______

Divide.

2. 6 ÷ 10 = ______  3. 54 ÷ 10 = ______  
4. 215 ÷ 10 = ______  5. 5.2 ÷ 10 = ______  
6. 64.6 ÷ 10 = ______  7. 4.08 ÷ 10 = ______  
8. 180.4 ÷ 10 = ______  9. 1.84 ÷ 10 = ______
Complete.

10. 23.7 ÷ ______ = 2.37

11. 0.78 ÷ ______ = 0.078

12. ______ ÷ 10 = 4.106

13. ______ ÷ 10 = 6.4

Divide

Example

\[
9 \div 30 = (9 \div 3) \div 10
\]

\[
= \frac{3}{10}
= 0.3
\]

So, 9 ÷ 30 = 0.3.

14. 0.9 ÷ 30 = (0.9 ÷ ______) ÷ 10

= ______ ÷ 10

= ______

So, 0.9 ÷ 30 = ______.

15. 0.09 ÷ 30 = (0.09 ÷ ______) ÷ 10

= ______ ÷ 10

= ______

So, 0.09 ÷ 30 = ______.

16. 1.8 ÷ 90 = (1.8 ÷ ______) ÷ 10

= ______ ÷ 10

= ______

So, 1.8 ÷ 90 = ______.
Divide.

17. $4.8 \div 20 = \underline{0.24}$

18. $0.32 \div 40 = \underline{0.008}$

19. $2.08 \div 80 = \underline{0.026}$

20. $2.55 \div 50 = \underline{0.051}$

21. $3.5 \div 70 = \underline{0.05}$

22. $0.3 \div 60 = \underline{0.005}$

Divide.

23. $\sqrt[3]{7.5} \div 100 = \underline{0.0075}$

24. $\sqrt[3]{49.3} \div 100 = \underline{0.000493}$

25. $6,001 \div 100 = \underline{60.01}$

26. $708.2 \div 100 = \underline{7.082}$

27. $\sqrt[3]{900} \div 1,000 = \underline{0.0009}$

28. $\sqrt[3]{4,103} \div 1,000 = \underline{0.004103}$

29. $909 \div 1,000 = \underline{0.000909}$

30. $9,009 \div 1,000 = \underline{0.009009}$

Complete.

31. $86.2 \div \underline{100} = 0.862$

32. $275 \div \underline{1000} = 0.275$

33. $\underline{\phantom{0}} \div 100 = 0.006$

34. $\underline{\phantom{0}} \div 1,000 = 3.082$

Example

$$0.07 = 0.7 \div \frac{10}{\phantom{0}} = \frac{7}{\phantom{0}} \div \frac{100}{\phantom{0}} = \frac{70}{\phantom{0}} \div \frac{1,000}{\phantom{0}}$$

35. $0.31 = 3.1 \div \underline{10}$

$= 31 \div \underline{\phantom{0}}$

$= 310 \div \underline{\phantom{0}}$

36. $8.06 = \underline{\phantom{0}} \div 10$

$= 80.6 \div \underline{\phantom{0}}$

$= 8,060 \div \underline{\phantom{0}}$

37. $5.115 = \underline{\phantom{0}} \div 10$

$= \underline{\phantom{0}} \div 100$

$= 5,115 \div \underline{\phantom{0}}$
Complete.

Example

\[
42 \div 200 = (42 \div \underline{2}) \div 100
\]
\[
= \underline{21} \div 100
\]
\[
= 0.21
\]
So, \( 42 \div 200 = 0.21 \).

38. \( 18.9 \div 900 = (18.9 \div \underline{____}) \div 100 \)
\[
= \underline{____} \div 100
\]
\[
= \underline{____}
\]
So, \( 18.9 \div 900 = \underline{____} \).

39. \( 2 \div 2,000 = (2 \div \underline{____}) \div 1,000 \)
\[
= \underline{____} \div 1,000
\]
\[
= \underline{____}
\]
So, \( 2 \div 2,000 = \underline{____} \).

40. \( 1,500 \div 6,000 = (1,500 \div \underline{____}) \div 1,000 \)
\[
= \underline{____} \div 1,000
\]
\[
= \underline{____}
\]
So, \( 1,500 \div 6,000 = \underline{____} \).

Divide.

41. \( 306 \div 600 = \underline{____} \quad 42. \ 29.7 \div 900 = \underline{____} \)

43. \( 1,056 \div 800 = \underline{____} \quad 44. \ 48 \div 2,000 = \underline{____} \)

45. \( 408 \div 3,000 = \underline{____} \quad 46. \ 805 \div 7,000 = \underline{____} \)
Practice 5  Estimating Decimals

Round each decimal to the nearest whole number. Then estimate the sum or difference.

**Example**

\[
\begin{align*}
7.7 & \quad 21.8 \\
12.3 & \quad 11.5
\end{align*}
\]

7.7 rounds to 8.
12.3 rounds to 12.
8 + 12 = 20
7.7 + 12.3 is about 20.

21.8 rounds to 22.
11.5 rounds to 12.
22 − 12 = 10
21.8 − 11.5 is about 10.

1. $2.90 + 7.15$
2. 9.05 + 19.55
3. 35.67 − 15.09
4. $15.40 − 5.95$
Estimate the product by rounding the decimal to the nearest whole number.

\[ \text{Example} \]
\[ 4.5 \times 4 \]
4.5 rounds to 5.
\[ 5 \times 4 = 20 \]
4.5 \times 4 \text{ is about } 20.

5. \[ 19.6 \times 3 \]

6. \[ 0.95 \times 8 \]

7. \[ 8.25 \times 3 \]

Estimate the quotient by choosing a whole number close to the dividend that can be evenly divided by the divisor.

\[ \text{Example} \]
\[ 24.6 \div 5 \]
24.6 is about 25.
\[ 25 \div 5 = 5 \]
24.6 \div 5 \text{ is about } 5.

8. \[ 38.4 \div 6 \]

9. \[ 71.09 \div 8 \]

10. \[ 99.75 \div 5 \]
Round each decimal to the nearest tenth. Then estimate.

11. 0.47 + 15.51

12. 9.95 − 1.46

13. 2.89 pounds × 4

Estimate the quotient by choosing a tenth close to the dividend that can be evenly divided by the divisor.

14. 6.34 kilograms ÷ 7
Solve. Show your work.

15. A bag of walnuts sells for $1.95. Estimate the cost of 8 bags of walnuts.

16. A piece of plywood is 1.27 centimeters thick. Find the thickness of a pile of 9 pieces of plywood to the nearest tenth of a centimeter. Estimate to check if your answer is reasonable.
Practice 6 Converting Metric Units

Convert centimeters to meters or meters to centimeters.

Example

\[0.7 \text{ m} = 0.7 \times 100\]
\[= 70 \text{ cm}\]

\[14.5 \text{ cm} = 14.5 \div 100\]
\[= 0.145 \text{ m}\]

Remember, 1 m = 100 cm.

1. \[0.9 \text{ m} = 0.9 \times ______\]
   \[= _____ \text{ cm}\]

2. \[1.06 \text{ m} = 1.06 \times ______\]
   \[= _____ \text{ cm}\]

3. \[3.75 \text{ m} = 3.75 \times ______\]
   \[= _____ \text{ cm}\]

4. \[39.23 \text{ m} = 39.23 \times ______\]
   \[= _____ \text{ cm}\]

5. \[124 \text{ m} = 124 \times ______\]
   \[= _____ \text{ cm}\]

6. \[7.2 \text{ cm} = 7.2 \div ______\]
   \[= _____ \text{ m}\]

7. \[180.7 \text{ cm} = 180.7 \div ______\]
   \[= _____ \text{ m}\]

8. \[0.6 \text{ cm} = 0.6 \div ______\]
   \[= _____ \text{ m}\]

9. \[312 \text{ cm} = 312 \div ______\]
   \[= _____ \text{ m}\]

10. \[369.8 \text{ cm} = 369.8 \div ______\]
    \[= _____ \text{ m}\]
Convert meters to meters and centimeters.

Example

9.28 m

\[
0.28 \text{ m} = 0.28 \times \frac{100}{100} = 28 \text{ cm} \\
9.28 \text{ m} = \underline{9} \text{ m} \underline{28} \text{ cm}
\]

Convert the decimal part to centimeters.

11. 1.98 m

\[
0.98 \text{ m} = 0.98 \times \underline{100} = \underline{98} \text{ cm} \\
1.98 \text{ m} = \underline{1} \text{ m} \underline{98} \text{ cm}
\]

12. 9.3 m

\[
0.3 \text{ m} = 0.3 \times \underline{100} = \underline{30} \text{ cm} \\
9.3 \text{ m} = \underline{9} \text{ m} \underline{30} \text{ cm}
\]

13. 817.5 m

\[
0.5 \text{ m} = 0.5 \times \underline{100} = \underline{50} \text{ cm} \\
817.5 \text{ m} = \underline{817} \text{ m} \underline{50} \text{ cm}
\]

14. 150.07 m

\[
0.07 \text{ m} = 0.07 \times \underline{100} = \underline{7} \text{ cm} \\
150.07 \text{ m} = \underline{150} \text{ m} \underline{7} \text{ cm}
\]
Convert meters and centimeters to meters.

Example

\[ 41 \text{ m} 80 \text{ cm} \]
\[ 80 \text{ cm} = 80 \div 100 \]
\[ = 0.8 \text{ m} \]
\[ 41 \text{ m} 80 \text{ cm} = \quad \boxed{41} \text{ m} + \quad \boxed{0.8} \text{ m} \]
\[ = 41.8 \text{ m} \]

First, convert centimeters to meters. Then, combine the two measurements.

15. \[ 97 \text{ m} 6 \text{ cm} \]
\[ 6 \text{ cm} = 6 \div \boxed{100} \]
\[ = \boxed{0.06} \text{ m} \]
\[ 97 \text{ m} 6 \text{ cm} = \boxed{97} \text{ m} + \boxed{0.06} \text{ m} \]
\[ = \boxed{97.06} \text{ m} \]

16. \[ 192 \text{ m} 12 \text{ cm} \]
\[ 12 \text{ cm} = 12 \div \boxed{100} \]
\[ = \boxed{0.12} \text{ m} \]
\[ 192 \text{ m} 12 \text{ cm} = \boxed{192} \text{ m} + \boxed{0.12} \text{ m} \]
\[ = \boxed{192.12} \text{ m} \]

17. \[ 4 \text{ m} 500 \text{ cm} \]
\[ 500 \text{ cm} = 500 \div \boxed{100} \]
\[ = \boxed{5} \text{ m} \]
\[ 4 \text{ m} 500 \text{ cm} = \boxed{4} \text{ m} + \boxed{5} \text{ m} \]
\[ = \boxed{9} \text{ m} \]
18. 7 m 7 cm
   7 cm = \( 7 \div \quad \) 
   = \( \quad \) m
   7 m 7 cm = \( \quad \) m + \( \quad \) m
   = \( \quad \) m

Convert meters to kilometers or kilometers to meters.

**Example**

\[
3.987 \text{ km} = 3.987 \times \frac{1,000}{1} = 3,987 \text{ m} \\
8,457 \text{ m} = 8,457 \div \frac{1,000}{1} = 8.457 \text{ km}
\]

Remember, 1 km = 1,000 m.

19. 0.6 km = 0.6 \( \times \quad \) \( = \quad \) m
20. 71.2 km = 71.2 \( \times \quad \) \( = \quad \) m
21. 15.34 km = 15.34 \( \times \quad \) \( = \quad \) m
22. 9.056 km = 9.056 \( \times \quad \) \( = \quad \) m
23. 800 m = 800 \( \div \quad \) \( = \quad \) km
24. 5,780 m = 5,780 \( \div \quad \) \( = \quad \) km
25. 30 m = 30 \( \div \quad \) \( = \quad \) km
26. 6 m = 6 \( \div \quad \) \( = \quad \) km
Convert grams to kilograms or kilograms to grams.

Example

\[
36.7 \text{ kg} = 36.7 \times \frac{1,000}{1,000} \\
= 36,700 \text{ g}
\]

\[
78 \text{ g} = 78 \div \frac{1,000}{1,000} \\
= 0.078 \text{ kg}
\]

Remember, 1 kg = 1,000 g.

27. \[0.87 \text{ kg} = 0.87 \times \underline{\quad}\]

\[= \underline{\quad} \text{ g}\]

28. \[0.006 \text{ kg} = 0.006 \times \underline{\quad}\]

\[= \underline{\quad} \text{ g}\]

29. \[2.48 \text{ kg} = 2.48 \times \underline{\quad}\]

\[= \underline{\quad} \text{ g}\]

30. \[59.1 \text{ kg} = 59.1 \times \underline{\quad}\]

\[= \underline{\quad} \text{ g}\]

31. \[531 \text{ g} = 531 \div \underline{\quad}\]

\[= \underline{\quad} \text{ kg}\]

32. \[2 \text{ g} = 2 \div \underline{\quad}\]

\[= \underline{\quad} \text{ kg}\]

33. \[61,900 \text{ g} = 61,900 \div \underline{\quad}\]

\[= \underline{\quad} \text{ kg}\]
Convert milliliters to liters or liters to milliliters.

Example

\[ 3.975 \text{ L} = 3.975 \times \frac{1,000}{1,000} \]
\[ = 3,975 \text{ mL} \]

\[ 550 \text{ mL} = 550 \div \frac{1,000}{1,000} \]
\[ = 0.55 \text{ L} \]

Remember, 
1 L = 1,000 mL.

34. \[ 2.09 \text{ L} = 2.09 \times \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ mL} \]

35. \[ 0.054 \text{ L} = 0.054 \times \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ mL} \]

36. \[ 13.9 \text{ L} = 13.9 \times \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ mL} \]

37. \[ 1.4 \text{ L} = 1.4 \times \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ mL} \]

38. \[ 58.12 \text{ L} = 58.12 \times \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ mL} \]

39. \[ 940 \text{ mL} = 940 \div \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ L} \]

40. \[ 8,500 \text{ mL} = 8,500 \div \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ L} \]

41. \[ 917 \text{ mL} = 917 \div \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ L} \]

42. \[ 25 \text{ mL} = 25 \div \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ L} \]

43. \[ 3,575 \text{ mL} = 3,575 \div \underline{\text{______}} \]
\[ = \underline{\text{______}} \text{ L} \]
Convert each measurement.

Example

19.03 kilometers to kilometers and meters

\[
0.03 \text{ km} = 0.03 \times \frac{1,000}{1} = 30 \text{ m}
\]

19.03 km = 19 km 30 m

Convert the decimal part to meters.

4.025 kilograms to kilograms and grams

\[
0.025 \text{ kg} = 0.025 \times \frac{1,000}{1} = 25 \text{ g}
\]

4.025 kg = 4 kg 25 g

Convert the decimal part to grams.

62.09 liters to liters and milliliters

\[
0.09 \text{ L} = 0.09 \times \frac{1,000}{1} = 90 \text{ mL}
\]

62.09 L = 62 L 90 mL

Convert the decimal part to milliliters.

44. 0.73 kilometer to kilometers and meters

\[
0.73 \text{ km} = 0.73 \times \quad = 730 \text{ m}
\]

0.73 km = 0.73 km 730 m
45. 90.04 kilometers to kilometers and meters
0.04 km = 0.04 × ________
= ________ m
90.04 km = ________ km ________ m

46. 1.008 kilometers to kilometers and meters
0.008 km = 0.008 × ________
= ________ m
1.008 km = ________ km ________ m

47. 50.05 kilometers to kilometers and meters
0.05 km = 0.05 × ________
= ________ m
50.05 km = ________ km ________ m

48. 15.3 kilograms to kilograms and grams
0.3 kg = 0.3 × ________
= ________ g
15.3 kg = ________ kg ________ g

49. 20.05 kilograms to kilograms and grams
0.05 kg = 0.05 × ________
= ________ g
20.05 kg = ________ kg ________ g
50. 8.214 kilograms to kilograms and grams

0.214 kg = 0.214 × ______

= ______ g

8.214 kg = ______ kg ______ g

51. 7.09 liters to liters and milliliters

0.09 L = 0.09 × ______

= ______ mL

7.09 L = ______ L ______ mL

52. 66.8 liters to liters and milliliters

0.8 L = 0.8 × ______

= ______ mL

66.8 L = ______ L ______ mL

53. 867.001 liters to liters and milliliters

0.001 L = 0.001 × ______

= ______ mL

867.001 L = ______ L ______ mL
Convert each measurement.

**Example**

9 kilometers 8 meters to kilometers

\[ 8 \text{ m} = 8 \div \frac{1,000}{1} = 0.008 \text{ km} \]

\[ 9 \text{ km} 8 \text{ m} = 9 \text{ km} + 0.008 \text{ km} = 9.008 \text{ km} \]

12 kilograms 510 grams to kilograms

\[ 510 \text{ g} = 510 \div \frac{1,000}{1} = 0.51 \text{ kg} \]

\[ 12 \text{ kg} 510 \text{ g} = 12 \text{ kg} + 0.51 \text{ kg} = 12.51 \text{ kg} \]

4 liters 25 milliliters to liters

\[ 25 \text{ mL} = 25 \div \frac{1,000}{1} = 0.025 \text{ L} \]

\[ 4 \text{ L} 25 \text{ mL} = 4 \text{ L} + 0.025 \text{ L} = 4.025 \text{ L} \]
54. 25 kilometers 80 meters to kilometers
\[
80 \text{ m} = 80 \div _______
\]
\[
= _______ \text{ km}
\]
25 km 80 m = _______ km + _______ km
\[
= _______ \text{ km}
\]

55. 17 kilometers 6 meters to kilometers
\[
6 \text{ m} = 6 \div _______
\]
\[
= _______ \text{ km}
\]
17 km 6 m = _______ km + _______ km
\[
= _______ \text{ km}
\]

56. 7 kilometers 35 meters to kilometers
\[
35 \text{ m} = 35 \div _______
\]
\[
= _______ \text{ km}
\]
7 km 35 m = _______ km + _______ km
\[
= _______ \text{ km}
\]

57. 41 kilometers 990 meters to kilometers
\[
990 \text{ m} = 990 \div _______
\]
\[
= _______ \text{ km}
\]
41 km 990 m = _______ km + _______ km
\[
= _______ \text{ km}
\]
58. 5 kilograms 73 grams to kilograms
73 g = 73 ÷ ______
= ______ kg
5 kg 73 g = ______ kg + ______ kg
= ______ kg

59. 10 kilograms 5 grams to kilograms
5 g = 5 ÷ ______
= ______ kg
10 kg 5 g = ______ kg + ______ kg
= ______ kg

60. 90 liters 70 milliliters to liters
70 mL = 70 ÷ ______
= ______ L
90 L 70 mL = ______ L + ______ L
= ______ L

61. 58 liters 650 milliliters to liters
650 mL = 650 ÷ ______
= ______ L
58 L 650 mL = ______ L + ______ L
= ______ L
Solve. Show your work.

62. William runs 5 meters in 20 steps. How many kilometers will he run after taking 1,000 steps?

63. A bottle of fruit juice is 800 milliliters. How many liters of fruit juice are in 120 bottles?
64. A box weighs 750 grams. There are 25 such boxes. What is the total weight of the boxes in kilograms? Give your answer to the nearest tenth.

65. Trees are planted along a road that is 2 kilometers 50 meters long. Eleven trees are planted at an equal distance apart along the road. What is the distance in meters between each tree?
Practice 7  Real-World Problems: Decimals

Solve. Show your work.

1. How many liters of spring water are in six bottles if each bottle contains 0.33 liter of spring water? Round your answer to the nearest liter.

2. A plumber has a copper pipe 0.9 meter long. He cuts the pipe into four equal pieces. Find the length of each piece in meters. Round your answer to the nearest tenth of a meter.

3. Ashton is thinking of a number. When she divides it by 7, she gets a quotient of 7.35. What number is Ashton thinking of?
Solve. Show your work.

4. Mr. Kasac drives 32.27 miles from his office to his home. After driving 15.65 miles, he stopped at the dry cleaner’s. How much farther does he have to drive before he gets home? Round your answer to the nearest mile.

5. 4 gallons of low fat milk cost $13.80. Find the cost of 6 gallons of low fat milk.

6. 3 cans of green beans cost $1.80. Rizal bought 9 cans of green beans. How much did he pay?
Solve. Show your work.

7. During the summer, Andrew worked for 5 days each week. He worked 8 hours each day. In a week, he earned $360. How much was he paid for each hour of work?

8. A bag contains 10 pounds of dog food. A family feeds their dogs 0.85 pound of dog food a day. How much dog food is left in the bag after 7 days? Round your answer to the nearest pound.
Solve. Show your work.

9. A box of rice cakes costs $1.95. What is the greatest number of boxes of rice cakes Jared can buy with $10?

10. A metal rod 9.4 meters long is cut into two pieces. One piece is 3 times as long as the other. Find the length of the longer piece in meters. Round your answer to the nearest tenth of a meter.
Solve. Show your work.

11. Rani bought 9 similar notebooks. She gave the cashier $10 and received change of $5.05. What was the cost of 1 notebook?

12. A kilogram of whole-wheat flour costs $6. What is the cost of 400 grams of the flour?
Solve. Show your work.

13. A shop owner bought 30 folders and some journals. He paid $82.50 for the folders. Each journal cost 10 times as much as a folder. What was the cost of each journal?

14. There are 1,000 workers in a factory. Each worker works 30 hours a week and is paid $10.50 an hour. How much does the company pay the workers altogether each week?
Practice 8  Real-World Problems: Decimals

Solve. Show your work.

1. Mrs. Lee uses 0.025 kilogram of wax to make a candle. On Monday, she made 50 candles. On Tuesday, she made 4 times as many candles as on Monday. How much wax did she use to make the candles on Tuesday?

2. One lap of a race track measures 4.68 kilometers. During a race of 56 laps, a driver stops to refuel after completing 48 laps. How many more kilometers does he have to drive to finish the race?
Solve. Show your work.

3. Mrs. Rahlee bought 300 yards of ribbon to make flowers. She used 1.22 yards to make one large flower. She made 200 such large flowers. She used all of the remaining ribbon to make 100 small flowers. What was the length of ribbon Mrs. Rahlee used to make one small flower?

4. Britta bought some carrots and apples for $24.80. A carrot and an apple cost $0.90 altogether. She bought more carrots than apples. The cost of the extra number of carrots was $6.80. How many apples did Britta buy?
Solve. Show your work.

5. A plastic tub has a capacity of 13.5 quarts. It can hold 3 times as much liquid as a pail. The pail can hold twice as much liquid as a can. Find the capacity of the pail and that of the can in quarts.

6. Marcy paid $35 for 10 kilograms of raisins. She divided the raisins equally into two containers. Then she sold the raisins in the first container at $4.50 per kilogram and those in the second container at $5.50 per kilogram. How much money did Marcy earn after selling all the raisins?
Math Journal

Solve. Show your work.

1. James has a square piece of paper. He wants to cut it into 20 strips of equal width. He says, ‘This piece of paper is about 48 centimeters wide.’ How can he find out the width of each strip without measuring? Is this width accurate?

2. James takes a ruler and measures the width of the piece of paper. He finds that the actual width is 48.8 centimeters. Find the width of each strip. How can you check if your answer is reasonable?
Solve. Show your work.

1. A plumber has two pipes. One pipe is 7 times as long as the other pipe. She cuts 2.2 meters from the longer pipe. The remaining length of this pipe is 3 times that of the shorter pipe. Find the length of the shorter pipe in meters.

2. At a farmer’s market, 5 pounds of strawberries cost $21.50. At a supermarket, 3 pounds of the same quality strawberries cost $15.75.

   a. Which is a better buy?

   b. How much can you save by buying 20 pounds of the strawberries that are the better buy?
Put On Your Thinking Cap!

Problem Solving

Solve. Show your work.

1. Sam buys 10 oranges and 11 apples for $10.05. The total cost of 1 orange and 1 apple is $0.94. How much does an apple cost?

2. A bucket filled with sand has a mass of 11.15 kilograms. When it is filled with water, the mass is 5.95 kilograms. The mass of the sand is twice that of the water. Find the mass of the bucket in grams.
Solve. Show your work.

3. The total capacity of 6 pitchers and 12 glasses is 21 liters. The capacity of a pitcher is 5 times that of a glass. Find the capacity of each glass. Give your answer in liters.
Solve. Show your work.

4. Dahlia has just enough money to buy either 6 pears and 20 oranges or 12 oranges and 11 pears. A pear costs $0.80. How much does an orange cost?