

Chapter 9

Multiplying and Dividing Decimals

Practice 1 Multiplying Decimals

Multiply. Write the product as a decimal.

Example

$$\begin{aligned} 2 \times 0.3 &= 2 \times \underline{3} \text{ tenths} \\ &= \underline{6} \text{ tenths} \\ &= \underline{0.6} \end{aligned}$$

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

1. $5 \times 0.6 = 5 \times \underline{6}$ tenths
 $= \underline{30}$ tenths
 $= \underline{3.0}$ or $\underline{3}$

So, $5 \times 0.6 = \underline{3}$.

2. $7 \times 0.8 = 7 \times \underline{8}$ tenths
 $= \underline{56}$ tenths
 $= \underline{5.6}$

So, $7 \times 0.8 = \underline{5.6}$.

3. $10 \times 0.4 = 10 \times \underline{4}$ tenths
 $= \underline{40}$ tenths
 $= \underline{40}$ or $\underline{4}$

So, $10 \times 0.4 = \underline{4}$.

Multiply. Write the product as a decimal.

Example

$$\begin{aligned} 3 \times 0.03 &= 3 \times \underline{3} \text{ hundredths} \\ &= \underline{9} \text{ hundredths} \\ &= \underline{0.09} \end{aligned}$$

$$\text{So, } 3 \times 0.03 = \underline{0.09}.$$

4. $5 \times 0.02 = 5 \times \underline{2} \text{ hundredths}$
 $= \underline{10} \text{ hundredths}$
 $= \underline{0.10} \text{ or } \underline{0.1}$

$$\text{So, } 5 \times 0.02 = \underline{0.1}.$$

5. $7 \times 0.07 = 7 \times \underline{7} \text{ hundredths}$
 $= \underline{49} \text{ hundredths}$
 $= \underline{0.49}$

$$\text{So, } 7 \times 0.07 = \underline{0.49}.$$

6. $6 \times 0.12 = 6 \times \underline{12} \text{ hundredths}$
 $= \underline{72} \text{ hundredths}$
 $= \underline{0.72}$

$$\text{So, } 6 \times 0.12 = \underline{0.72}.$$

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Follow the steps to multiply 2.6 by 3. Fill in the blanks.**7.** Step 1

$$\begin{array}{r} 2.6 \\ \times 3 \\ \hline 8 \end{array}$$

Multiply the tenths by 3.

$$3 \times 6 \text{ tenths} = \underline{18} \text{ tenths}$$

Regroup the tenths.

$$\underline{18} \text{ tenths} = \underline{1} \text{ one and } \underline{8} \text{ tenths}$$

Step 2

$$\begin{array}{r} 2.6 \\ \times 3 \\ \hline 7.8 \end{array}$$

Multiply the ones by 3.

$$3 \times 2 \text{ ones} = \underline{6} \text{ ones}$$

Add the ones.

$$\underline{6} \text{ ones} + \underline{1} \text{ one} = \underline{7} \text{ ones}$$

$$\text{So, } 3 \times 2.6 = \underline{7.8}.$$

Multiply.

$$\begin{array}{r} 8. \quad 0.3 \\ \times 8 \\ \hline 2.4 \end{array}$$

$$\begin{array}{r} 9. \quad 2.6 \\ \times 4 \\ \hline 10.4 \end{array}$$

$$\begin{array}{r} 10. \quad 7.9 \\ \times 5 \\ \hline 39.5 \end{array}$$

$$\begin{array}{r} 11. \quad 12.4 \\ \times 7 \\ \hline 86.8 \end{array}$$

Follow the steps to multiply 1.46 by 6. Fill in the blanks.

12.

Step 1

$$\begin{array}{r} 1.46 \\ \times \quad 6 \\ \hline \end{array}$$

³
6

Multiply the hundredths by 6.

6×6 hundredths = 36 hundredths

Regroup the hundredths.

36 hundredths = 3 tenths 6 hundredths

Step 2

$$\begin{array}{r} 1.46 \\ \times \quad 6 \\ \hline \end{array}$$

²³
76

Multiply the tenths by 6.

6×4 tenths = 24 tenths

Add the tenths.

24 tenths + 3 tenths = 27 tenths

Regroup the tenths.

27 tenths = 2 ones and 7 tenths

Step 3

$$\begin{array}{r} 1.46 \\ \times \quad 6 \\ \hline \end{array}$$

8.76

Multiply the ones by 6.

6×1 one = 6 ones

Add the ones.

6 ones + 2 ones = 8 ones

So, $6 \times 1.46 = \underline{8.76}$.

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Multiply.

$$\begin{array}{r} 13. \quad 10.07 \\ \times \quad 5 \\ \hline 50.35 \end{array}$$

$$\begin{array}{r} 14. \quad 0.75 \\ \times \quad 4 \\ \hline 3.00 \end{array}$$

$$\begin{array}{r} 15. \quad 3.06 \\ \times \quad 9 \\ \hline 27.54 \end{array}$$

$$\begin{array}{r} 16. \quad 15.24 \\ \times \quad 8 \\ \hline 121.92 \end{array}$$

$$17. \quad 4 \times 2.08 = \underline{8.32}$$

$$18. \quad 3 \times 3.29 = \underline{9.87}$$

$$19. \quad 7 \times 5.71 = \underline{39.97}$$

$$20. \quad 6 \times 4.81 = \underline{28.86}$$

$$21. \quad 9 \times 7.46 = \underline{67.14}$$

$$22. \quad 8 \times 6.52 = \underline{52.16}$$

Practice 2 Multiplying by Tens, Hundreds, and Thousands

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

1.

	Hundreds	Tens	Ones	Tenths	Hundredths
12		○	○ ○		
12×10	○	○ ○			
2			○ ○		
2×10		○○			
0.2				○ ○	
0.2×10			○○		
0.12				○	○ ○
0.12×10			○	○○	

$12 \times 10 = \underline{120}$

$2 \times 10 = \underline{20}$

$0.2 \times 10 = \underline{2}$

$0.12 \times 10 = \underline{1.2}$

Multiply.

2. $0.5 \times 10 = \underline{5}$

3. $1.9 \times 10 = \underline{19}$

4. $3.42 \times 10 = \underline{34.2}$

5. $7.035 \times 10 = \underline{70.35}$

6. $10 \times 7.9 = \underline{79}$

7. $10 \times 4.8 = \underline{48}$

8. $10 \times 27.54 = \underline{275.4}$

9. $10 \times 12.009 = \underline{120.09}$

Complete.

10. $0.7 \times \underline{10} = 7$

11. $15.72 \times \underline{10} = 157.2$

12. $10 \times \underline{53.42} = 534.2$

13. $\underline{1.907} \times 10 = 19.07$

Complete.*Example*

$$\begin{aligned} 8 \times 50 &= (8 \times \underline{5}) \times 10 \\ &= \underline{40} \times 10 \\ &= \underline{400} \end{aligned}$$

So, $8 \times 50 = \underline{400}$.

$$\begin{aligned} 14. \quad 0.8 \times 50 &= (0.8 \times 5) \times \underline{10} \\ &= \underline{4} \times 10 \\ &= \underline{40} \end{aligned}$$

So, $0.8 \times 50 = \underline{40}$.

$$\begin{aligned} 15. \quad 0.88 \times 50 &= (0.88 \times \underline{5}) \times 10 \\ &= \underline{4.4} \times 10 \\ &= \underline{44} \end{aligned}$$

So, $0.88 \times 50 = \underline{44}$.

Find each product.

16. $0.9 \times 40 = \underline{36}$

17. $1.5 \times 60 = \underline{90}$

18. $0.05 \times 80 = \underline{4}$

19. $9.17 \times 70 = \underline{641.9}$

20. $6.358 \times 30 = \underline{190.74}$

21. $34.6 \times 50 = \underline{1,730}$

22. $41.32 \times 60 = \underline{2,479.2}$

23. $23.05 \times 40 = \underline{922}$

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Multiply.

24. $1.3 \times 100 = \underline{130}$

25. $6.8 \times 100 = \underline{680}$

26. $4.196 \times 100 = \underline{419.6}$

27. $100 \times 74.3 = \underline{7.430}$

28. $46.8 \times 100 = \underline{4,680}$

29. $4.68 \times 100 = \underline{468}$

30. $5.095 \times 100 = \underline{509.5}$

31. $100 \times 50.95 = \underline{5.095}$

Multiply.

32. $1.8 \times 1,000 = \underline{1,800}$

33. $2.1 \times 1,000 = \underline{2,100}$

34. $9.097 \times 1,000 = \underline{9,097}$

35. $1,000 \times 7.007 = \underline{7,007}$

36. $2.74 \times 1,000 = \underline{2,740}$

37. $27.4 \times 1,000 = \underline{24,400}$

38. $1,000 \times 10.81 = \underline{10.810}$

39. $108.1 \times 1,000 = \underline{108,100}$

Complete.*Example*

$$1.2 = 0.12 \times \underline{10}$$

$$= 0.012 \times \underline{100}$$

40. $360 = 36 \times \underline{10}$
 $= 3.6 \times \underline{100}$
 $= 0.36 \times \underline{1,000}$

41. $438 = \underline{43.8} \times 10$
 $= \underline{4.38} \times 100$
 $= \underline{0.438} \times 1,000$

42. $7,256 = \underline{725.6} \times 10$
 $= \underline{72.56} \times 100$
 $= \underline{7.256} \times 1,000$

Multiply.

Example

$$\begin{aligned} 0.3 \times 700 &= (0.3 \times 7) \times 100 \\ &= \underline{2.1} \times 100 = \underline{210} \end{aligned}$$

$$\text{So, } 0.3 \times 700 = \underline{210}.$$

$$\begin{aligned} 43. \quad 0.003 \times 700 &= (0.003 \times \underline{7}) \times 100 \\ &= \underline{0.021} \times 100 = \underline{2.1} \end{aligned}$$

$$\text{So, } 0.003 \times 700 = \underline{2.1}.$$

$$\begin{aligned} 44. \quad 0.03 \times 2,000 &= (0.03 \times \underline{2}) \times 1,000 \\ &= \underline{0.06} \times 1,000 = \underline{60} \end{aligned}$$

$$\text{So, } 0.03 \times 2,000 = \underline{60}.$$

$$\begin{aligned} 45. \quad 0.003 \times 2,000 &= (0.003 \times \underline{2}) \times 1,000 \\ &= \underline{0.006} \times 1,000 = \underline{6} \end{aligned}$$

$$\text{So, } 0.003 \times 2,000 = \underline{6}.$$

Find each product.

$$46. \quad 4.5 \times 200 = \underline{900}$$

$$47. \quad 0.49 \times 300 = \underline{147}$$

$$48. \quad 3.148 \times 500 = \underline{1,574}$$

$$49. \quad 2.27 \times 700 = \underline{1,589}$$

$$50. \quad 900 \times 3.18 = \underline{2,862}$$

$$51. \quad 1.8 \times 2,000 = \underline{3,600}$$

$$52. \quad 4,000 \times 2.5 = \underline{10,000}$$

$$53. \quad 72.5 \times 6,000 = \underline{435,000}$$

$$54. \quad 1.75 \times 8,000 = \underline{14,000}$$

$$55. \quad 4.19 \times 9,000 = \underline{37,710}$$

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Practice 3 Dividing Decimals

Divide. Write the quotient as a decimal.

Example

$$0.6 \div 2 = \underline{6} \text{ tenths} \div 2$$

$$= \underline{3} \text{ tenths}$$

$$= \underline{0.3}$$

$$\text{So, } 0.6 \div 2 = \underline{0.3}.$$

1. $0.8 \div 4 = \underline{8} \text{ tenths} \div 4$
 $= \underline{2} \text{ tenths}$
 $= \underline{0.2}$

$$\text{So, } 0.8 \div 4 = \underline{0.2}.$$

2. $1 \div 5 = \underline{10} \text{ tenths} \div 5$
 $= \underline{2} \text{ tenths}$
 $= \underline{0.2}$

$$\text{So, } 1 \div 5 = \underline{0.2}.$$

3. $2.4 \div 6 = \underline{24} \text{ tenths} \div 6$
 $= \underline{4} \text{ tenths}$
 $= \underline{0.4}$

$$\text{So, } 2.4 \div 6 = \underline{0.4}.$$

Complete. Write the quotient as a decimal.

Example

$$\begin{aligned} 0.08 \div 2 &= \underline{8} \text{ hundredths} \div \underline{2} \\ &= \underline{4} \text{ hundredths} \\ &= \underline{0.04} \end{aligned}$$

$$\text{So, } 0.08 \div 2 = \underline{0.04}.$$

4. $0.14 \div 7 = \underline{14} \text{ hundredths} \div \underline{7}$
 $= \underline{2} \text{ hundredths}$
 $= \underline{0.02}$

$$\text{So, } 0.14 \div 7 = \underline{0.02}.$$

5. $0.27 \div 9 = \underline{27} \text{ hundredths} \div \underline{9}$
 $= \underline{3} \text{ hundredths}$
 $= \underline{0.03}$

$$\text{So, } 0.27 \div 9 = \underline{0.03}.$$

6. $0.1 \div 2 = \underline{10} \text{ hundredths} \div \underline{2}$
 $= \underline{5} \text{ hundredths}$
 $= \underline{0.05}$

$$\text{So, } 0.1 \div 2 = \underline{0.05}.$$

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Follow the steps to divide 8.4 by 3. Fill in the blanks.

7.

Step 1

$$3 \overline{) 8.4}$$

Divide the ones by 3.

$$8 \text{ ones} \div 3 = \underline{2} \text{ ones R } \underline{2} \text{ ones}$$

$$3 \overline{) 8.4}$$

Regroup the remainder into tenths.

$$\underline{2} \text{ ones} = \underline{20} \text{ tenths}$$

Add the tenths.

$$\underline{20} \text{ tenths} + 4 \text{ tenths} = \underline{24} \text{ tenths}$$

Step 2

$$3 \overline{) 8.4}$$

Divide the tenths by 3.

$$\underline{24} \text{ tenths} \div 3 = \underline{8} \text{ tenths}$$

$$\text{So, } 8.4 \div 3 = \underline{2.8}$$

Divide.

8.

$$3 \overline{) 12.9}$$

Handwritten answer: 4.3

9.

$$8 \overline{) 5.6}$$

Handwritten answer: 0.7

10.

$$3 \overline{) 8.7}$$

Handwritten answer: 2.9

11.

$$9 \overline{) 24.3}$$

Handwritten answer: 2.7

12.

$$4 \overline{) 0.6}$$

Handwritten answer: 0.15

13.

$$5 \overline{) 5.2}$$

Handwritten answer: 1.04

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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.

$$5 \text{ ones} \div 4 = \underline{\hspace{2cm}} \text{ one R } \underline{\hspace{2cm}} \text{ one}$$

Regroup the remainder into tenths.

$$\underline{\hspace{2cm}} \text{ one} = \underline{\hspace{2cm}} \text{ tenths}$$

Add the tenths.

$$\underline{\hspace{2cm}} \text{ tenths} + 4 \text{ tenths} = \underline{\hspace{2cm}} \text{ tenths}$$

Step 2

$$4 \overline{) 5.48}$$

Divide the tenths by 4.

$$\underline{\hspace{2cm}} \text{ tenths} \div 4 = \underline{\hspace{2cm}} \text{ tenths R } \underline{\hspace{2cm}} \text{ tenths}$$

Regroup the remainder into hundredths.

$$\underline{\hspace{2cm}} \text{ tenths} = \underline{\hspace{2cm}} \text{ hundredths}$$

Add the hundredths.

$$\underline{\hspace{2cm}} \text{ hundredths} + 8 \text{ hundredths} = \underline{\hspace{2cm}} \text{ hundredths}$$

Step 3

$$4 \overline{) 5.48}$$

Divide the hundredths by 4.

$$\underline{\hspace{2cm}} \text{ hundredths} \div 4 = \underline{\hspace{2cm}} \text{ hundredths}$$

$$\text{So, } 5.48 \div 4 = \underline{\hspace{2cm}}.$$

Divide.

15. $4 \overline{)0.52}$ *.13*

16. $9 \overline{)0.81}$ *.09*

17. $6 \overline{)12.12}$ *2.02*

18. $7 \overline{)9.66}$ *1.38*

19. $5 \overline{)15.65}$ *3.13*

20. $4 \overline{)3}$ *0.75*