

Unit 7 : Decimals

Friendly Notes

Tenths, Hundredths, and Thousandths

1 one = 10 tenths
1 tenth = 10 hundredths
1 hundredth = 10 thousandths

1. Write 42 tenths as a decimal.

$$\begin{aligned}42 \text{ tenths} &= 40 \text{ tenths} + 2 \text{ tenths} \\ &= 4 \text{ ones} + 2 \text{ tenths} \\ &= 4 + 0.2 \\ &= 4.2\end{aligned}$$

2. Find the value of the digit 6 in 2.563.

$$\begin{aligned}2.563 &= 2 \text{ ones } 5 \text{ tenths } 6 \text{ hundredths } 3 \text{ thousandths} \\ &= 2 + 0.5 + 0.06 + 0.003\end{aligned}$$

The digit 6 is in the hundredths place.

The value of the digit 6 is 0.06.



2.563 has 3 decimal places.
The tenths place, hundredths place, and thousandths place are called decimal places.

3. What number is 0.001 more than 5.083?

$5.083 = 5 \text{ ones} + 8 \text{ hundredths} + 3 \text{ thousandths}$

$0.001 = 1 \text{ thousandth}$
 $3 \text{ thousandths} + 1 \text{ thousandth} = 4 \text{ thousandths}$



5.084 is 0.001 more than 5.083.

4. Which is smaller, 8.246 or 8.232?

Ones	Tenths	Hundredths	Thousandths
8	2	4	6
8	2	3	2

3 hundredths is smaller than 4 hundredths.
So, 8.232 is smaller.

5. Which is greater, 51.378 or 51.379?

Tens	Ones	Tenths	Hundredths	Thousandths
5	1	3	7	8
5	1	3	7	9

9 thousandths is greater than 8 thousandths.
So, 51.379 is greater.

Approximation

To round a decimal to the nearest whole number, we look at the digit in the first decimal place. If it is 5 or greater, we round up. If it is less than 5, we round down.

1. Round 4.2 m to the nearest meter.

↓
4.2

4.2 m \approx 4 m

The digit 2 in the first decimal place is less than 5. So, we round down.



To round a decimal to 1 decimal place, we look at the digit in the second decimal place. If it is 5 or greater, we round up. If it is less than 5, we round down.

2. Round 6.28 to 1 decimal place.

↓
6.28

6.28 \approx 6.3

The digit 8 in the second decimal place is greater than 5. So, we round up.



3. Round 10.845 to 1 decimal place.

$$\begin{array}{r} \downarrow \\ 10.845 \\ 10.845 \approx 10.8 \end{array}$$

The digit 4 in the second decimal place is less than 5. So, we round down.



To round a decimal to 2 decimal places, we look at the digit in the third decimal place. If it is 5 or greater, we round up. If it is less than 5, we round down.

4. Round 15.649 to 2 decimal places.

$$\begin{array}{r} \downarrow \\ 15.649 \\ 15.649 \approx 15.65 \end{array}$$

The digit 9 in the third decimal place is greater than 5. So, we round up.



5. Round 103.821 to 2 decimal places.

$$103.821 \approx 103.82$$

103.821



Add and Subtract Decimals

1. Add 5.84 and 6.78.

$\begin{array}{r} 5.84 \\ + 6.78 \\ \hline \end{array}$ <p>Add the hundredths.</p>	$\begin{array}{r} 5.84 \\ + 6.78 \\ \hline \end{array}$ <p>Add the tenths.</p>	$\begin{array}{r} 5.84 \\ + 6.78 \\ \hline \end{array}$ <p>Add the ones.</p>
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2. Subtract 4.29 from 7.03.

$\begin{array}{r} 7.03 \\ - 4.29 \\ \hline \end{array}$ <p>Subtract the hundredths.</p>	$\begin{array}{r} 7.03 \\ - 4.29 \\ \hline \end{array}$ <p>Subtract the tenths.</p>	$\begin{array}{r} 7.03 \\ - 4.29 \\ \hline \end{array}$ <p>Subtract the ones.</p>
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3. Estimate. Then find the value of $2.2 + 4.95$.

$$\begin{aligned} 2.2 + 4.95 &\approx 2 + 5 \\ &= 7 \\ 2.2 + 4.95 &= 7.15 \end{aligned}$$

4. Estimate. Then find the value of $8.05 - 3.47$.

$$\begin{aligned} 8.05 - 3.47 &\approx 8.10 - 3.50 \\ &= 4.60 \\ 8.05 - 3.47 &= 4.58 \end{aligned}$$

Multiply and Divide Decimals by a 1-Digit Whole Number

1. Multiply 8.62 by 4.

$\begin{array}{r} 8.62 \\ \times \quad 4 \\ \hline \end{array}$ <p>Multiply the hundredths by 4.</p>	$\begin{array}{r} 8.62 \\ \times \quad 4 \\ \hline \end{array}$ <p>Multiply the tenths by 4.</p>	$\begin{array}{r} 8.62 \\ \times \quad 4 \\ \hline \end{array}$ <p>Multiply the ones by 4.</p>
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2. Divide 3.15 by 5.

$\begin{array}{r} 0.6 \\ 5 \overline{) 3.15} \\ \underline{30} \\ 1 \end{array}$ <p>Divide 31 tenths by 5.</p>	$\begin{array}{r} 0.63 \\ 5 \overline{) 3.15} \\ \underline{30} \\ 15 \\ \underline{15} \\ 0 \end{array}$ <p>Divide 15 hundredths by 5.</p>
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3. Estimate. Then find the value of 3.12×4 .

$$3.12 \times 4 \approx 3 \times 4$$

$$= 12$$

$$3.12 \times 4 = 12.48$$

4. Estimate. Then find the value of $14.6 \div 8$.

$$14.6 \div 8 \approx 16 \div 8$$

$$= 2$$

$$14.6 \div 8 = 1.825$$

Multiplication by Tens, Hundreds, or Thousands

The value of a decimal is increased 10 times when multiplied by 10.

1. Multiply 0.425 by 10.

$$0.425 \times 10 = 4.25$$

$$0.425 \times 10^1 = 4.25$$

0.425



2. Multiply 0.425 by 20.

$$0.425 \times 20 = 0.425 \times 2 \times 10$$

$$= 0.85 \times 10$$

$$= 8.5$$

When a decimal is multiplied by 10, we move the decimal point 1 place to the right.

The value of a decimal is increased 100 times when multiplied by 100.

3. Multiply 3.806 by 100.

$$3.806 \times 100 = 380.6$$

$$3.806 \times 10^2 = 380.6$$

3.806



When a decimal is multiplied by 100, we move the decimal point 2 places to the right.

4. Multiply 3.806 by 500.

$$3.806 \times 500 = 3.806 \times 5 \times 100$$

$$= 19.03 \times 100$$

$$= 1,903$$

19.03



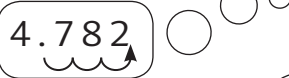
The value of a decimal is increased 1,000 times when multiplied by 1,000.

5. Multiply 4.782 by 1,000.

$$4.782 \times 1,000 = 4,782$$

$$4.782 \times 10^3 = 4,782$$

4.782



When a decimal is multiplied by 1,000, we move the decimal point 3 places to the right.

6. Multiply 0.365 by 6,000.

$$0.365 \times 6,000 = 0.365 \times 6 \times 1,000$$

$$= 2.19 \times 1,000$$

$$= 2,190$$

2.190



Division by Tens, Hundreds, or Thousands

The value of a decimal is reduced 10 times when divided by 10.

1. Divide 0.89 by 10.



$$0.89 \div 10 = \frac{0.89}{10}$$

$$= 0.089$$

$$0.89 \div 10^1 = 0.89 \times \frac{1}{10^1}$$

$$= 0.089$$

0.89



When a decimal is divided by 10, we move the decimal point 1 place to the left.

2. Divide 52.5 by 30.

$$\begin{aligned} 52.5 \div 30 &= 52.5 \div 3 \div 10 \\ &= 17.5 \div 10 \\ &= 1.75 \end{aligned}$$

17.5



The value of a decimal is reduced 100 times when divided by 100.

3. Divide 18.8 by 100.

$$\begin{aligned} 18.8 \div 100 &= \frac{18.8}{100} \\ &= 0.188 \end{aligned}$$

$$\begin{aligned} 18.8 \div 10^2 &= \frac{18.8}{10^2} \\ &= 0.188 \end{aligned}$$

18.8

When a decimal is divided by 100, we move the decimal point 2 places to the left.



4. Divide 27.9 by 900.

$$\begin{aligned} 27.9 \div 900 &= 27.9 \div 9 \div 100 \\ &= 3.1 \div 100 \\ &= 0.031 \end{aligned}$$

3.1



The value of a decimal is reduced 1,000 times when divided by 1,000.

5. Divide 62.7 by 1,000.

$$62.7 \div 1,000 = \frac{62.7}{1,000}$$
$$= 0.0627$$

$$62.7 \div 10^3 = \frac{62.7}{10^3}$$
$$= 0.0627$$

62.7



When a decimal is divided by 1,000, we move the decimal point 3 places to the left.

6. Divide 49 by 7,000.

$$49 \div 7,000 = 49 \div 7 \div 1,000$$
$$= 7 \div 1,000$$
$$= 0.007$$

7

