

# Adding and Subtracting Decimals



# Place Value

When adding and subtracting decimals, it is important to understand the place value of the numbers.

With  $11 + 1.1$  the numbers both have 2 digits, however only one digit in each number has the same place value.

$11 + 1.1$  is not 2.2 or 22

$$11 + 1.1 = 12.1$$



# Right or Wrong?

Here are some calculations involving decimals. Which have the correct answer? Where the answer is incorrect, can you explain what mistakes have been made?

$$23 + 2.3 = 25.3$$

$$38 + 3.8 = 38.38$$

$$5.6 + 5.6 = 10.12$$

# Mental Practice

Calculate the answers to these in your head:

$2.4 + 24 =$

$5.7 - 0.57 =$

$56 - 5.6 =$

$0.04 + 37 =$

$19 + 9.1 =$

$7 - 0.06 =$

$87 + 0.34 =$

$280 - 63.2 =$

$56 - 0.26 =$

$0.23 + 0.062 =$

Write some of your own for a partner, making sure you have the answer yourself.

# Correct?

With formal methods, you need to line up the different place values. The decimal point will also be lined up.

Which calculation is correct? Explain why.

$$\begin{array}{r} 345.6 \\ + 49.24 \\ \hline \end{array}$$

The matching place values and decimal point are lined up.



$$\begin{array}{r} 345.6 \\ + 49.24 \\ \hline \end{array}$$

The matching place values and decimal point are **not** lined up.

x

Hide  
Answers

# Formal Methods

Complete these calculations using a formal written method.

$$\begin{array}{r} 38.29 \\ + 451.7 \\ \hline \end{array}$$

\_\_\_\_\_

$$\begin{array}{r} 799 \\ + 8.54 \\ \hline \end{array}$$

\_\_\_\_\_

$$\begin{array}{r} 2.08 \\ + 34.7 \\ \hline \end{array}$$

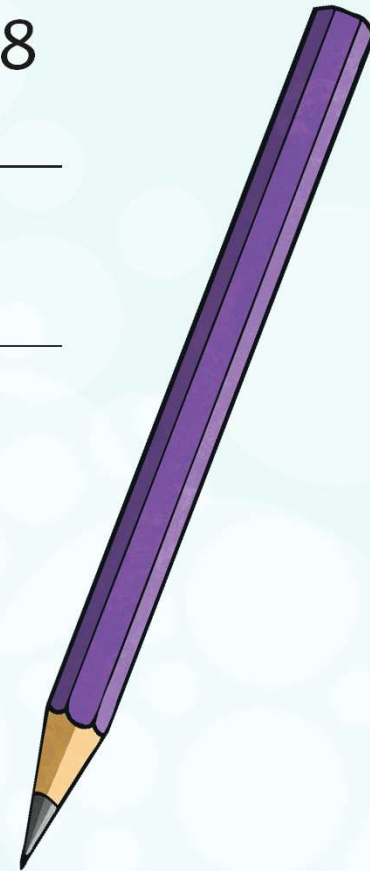
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$$\begin{array}{r} 394.1 \\ - 89.3 \\ \hline \end{array}$$

\_\_\_\_\_

$$\begin{array}{r} 40.2 \\ - 37.62 \\ \hline \end{array}$$

\_\_\_\_\_



# Using 0's

Sometimes it is helpful to place a zero (0) where a digit is not given.

$$\begin{array}{r} 345.6 \\ + 49.24 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 345.60 \\ + 49.24 \\ \hline \\ \hline \end{array}$$

It is more useful with subtraction.

$$\begin{array}{r} 345.6 \\ - 49.24 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 345.60 \\ - 49.24 \\ \hline \\ \hline \end{array}$$

# Adding

Step 1

$$\begin{array}{r} 345.6 \\ + 49.24 \\ \hline .4 \end{array}$$

Place the decimal in the correct position in the answer section. Start by adding the smallest value together.

0 hundredths +  
4 hundredths =  
4 hundredths

Step 2

$$\begin{array}{r} 345.6 \\ + 49.24 \\ \hline .84 \end{array}$$

6 tenths + 2  
tenths = 8 tenths

Step 3

$$\begin{array}{r} 1 \\ 345.6 \\ + 49.24 \\ \hline 4.84 \end{array}$$

5 ones + 9 ones  
= 14 ones

Place the 1 ten  
into the tens  
column and the  
4 in the ones  
column in the  
answer section.

Step 4

$$\begin{array}{r} 1 \\ 345.6 \\ + 49.24 \\ \hline 94.84 \end{array}$$

1 ten + 4 tens  
+ 4 tens = 9  
tens

Step 5

$$\begin{array}{r} 1 \\ 345.6 \\ + 49.24 \\ \hline 394.84 \end{array}$$

3 hundreds +  
0 hundreds =  
3 hundreds

Remember to place the answers within the correct columns in the answer section.



# Quick Practice

$$\begin{array}{r} 349.84 \\ + 397.16 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 293.04 \\ + 517.59 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 348.14 \\ + 364.57 \\ \hline \\ \hline \end{array}$$

# Subtracting

Step 1

$$\begin{array}{r} \phantom{3}5 \\ 345.\overset{1}{\cancel{0}} \\ - 49.24 \\ \hline .6 \end{array}$$

Start by subtracting the smallest value. In this example, this is the hundredths column.

0 - 4 hundredths.  
This cannot be done therefore we exchange a tenth for 10 hundredths and regroup these. 10 + 0 = 10 hundredths.  
10 hundredths - 4 hundredths = 6 hundredths.

Step 2

$$\begin{array}{r} \phantom{3}5 \\ 345.\overset{1}{\cancel{0}} \\ - 49.24 \\ \hline .36 \end{array}$$

5 tenths - 2 tenths  
= 3 tenths

Step 3

$$\begin{array}{r} \phantom{3}5 \\ 3\overset{1}{\cancel{4}}5.\overset{1}{\cancel{0}} \\ - 49.24 \\ \hline 6.36 \end{array}$$

5 ones - 9 ones.  
This cannot be done so we exchange 1 ten for 10 ones and regroup these into the ones column: 10 ones + 5 ones = 15 ones.  
15 ones - 9 ones = 6 ones.

Step 4

$$\begin{array}{r} \phantom{2}3 \phantom{5} \\ 3\overset{1}{\cancel{4}}\overset{1}{\cancel{5}}.\overset{1}{\cancel{0}} \\ - 49.24 \\ \hline 96.36 \end{array}$$

3 tens - 4 tens.  
This cannot be done, therefore we exchange 1 hundred for 10 tens and regroup these into the tens column: 10 tens + 3 tens = 13 tens.  
13 tens - 4 tens = 9 tens

Step 5

$$\begin{array}{r} \phantom{2}3 \phantom{5} \\ 2\overset{1}{\cancel{3}}\overset{1}{\cancel{4}}\overset{1}{\cancel{5}}.\overset{1}{\cancel{0}} \\ - 49.24 \\ \hline 296.36 \end{array}$$

2 hundreds - 0 hundreds = 2 hundreds

Remember to place the answers within the correct columns in the answer section.

# Quick Practice

$$\begin{array}{r} 343.7 \\ - 121.5 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 587.14 \\ - 249.56 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 348.75 \\ - 124.94 \\ \hline \\ \hline \end{array}$$

# Formal Practice

Calculate the answers to these using a formal method:

$278 + 87.5 =$

$23.01 - 8.3 =$

$703 - 27.7 =$

$323.47 + 298.2 =$

$64 + 287.2 =$

$832.19 - 287.4 =$

$23.87 + 198.5 =$

$9023.7 - 298.53 =$

$516.4 - 67.39 =$

$492.78 + 3987.59 =$

Write some of your own for a partner, making sure you have the answer yourself.

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