

Name _____

Thousandths

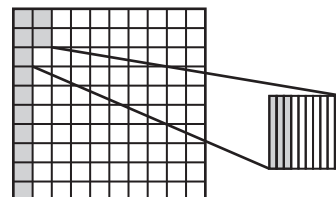
Thousandths are smaller parts than hundredths. If one hundredth is divided into 10 equal parts, each part is one **thousandth**.

Write the decimal shown by the shaded parts of the model.

One column of the decimal model is shaded.
It represents one tenth, or 0.1.

Two small squares of the decimal model are shaded.
They represent two hundredths, or 0.02.

A one-hundredth square is divided into 10 equal parts,
or thousandths. Three columns of the thousandth square are shaded. They represent 0.003.



So, 0.123 of the decimal model is shaded.

The relationship of a digit in different place-value positions is the same for decimals as for whole numbers.

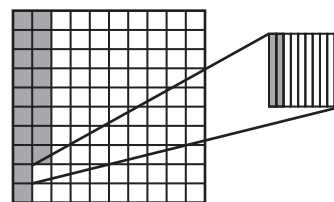
Write the decimals in a place-value chart.

Ones	Tenths	Hundredths	Thousandths
0	8		
0	0	8	
0	0	0	8

0.08 is $\frac{1}{10}$ of 0.8.

0.08 is 10 times as much as 0.008.

1. Write the decimal shown by the shaded parts of the model.



Use place-value patterns to complete the table.

Decimal	10 times as much as	$\frac{1}{10}$ of
2. 0.1		
3. 0.03		
4. 0.5		

Decimal	10 times as much as	$\frac{1}{10}$ of
5. 0.02		
6. 0.4		
7. 0.06		

Name _____

Place Value of Decimals

You can use a place-value chart to find the value of each digit in a decimal.
Write whole numbers to the left of the decimal point.
Write decimals to the right of the decimal point.

Ones	Tenths	Hundredths	Thousandths
3	• 8	4	7
3×1	• $8 \times \frac{1}{10}$	$4 \times \frac{1}{100}$	$7 \times \frac{1}{1,000}$
3.0	• 0.8	0.04	0.007

Value

The place value of the digit 8 in 3.847 is tenths.

The value of 8 in 3.847 is $8 \times \frac{1}{10}$, or 0.8.

You can write a decimal in different forms.

Standard Form: 3.847

Expanded Form: 3 $\times 1$ + 8 $\times \frac{1}{10}$ + 4 $\times (\frac{1}{100})$ + 7 $\times (\frac{1}{1,000})$

When you write the decimal in word form, write “and” for the decimal point.

Word Form: three and eight hundred forty-seven thousandths

1. Complete the place-value chart to find the value of each digit.

Ones	Tenths	Hundredths	Thousandths
2	• 6	9	5
2×1	•	$9 \times \frac{1}{100}$	
	0.6		

Value

Write the value of the underlined digit.

2. 0.792

3. 4.691

4. 3.805

Name _____

Compare and Order Decimals

You can use a place-value chart to compare decimals.

Compare. Write $<$, $>$, or $=$.

4.375 4.382

Write both numbers in a place-value chart. Then compare the digits, starting with the highest place value. Stop when the digits are different and compare.

Ones	Tenths	Hundredths	Thousandths
4	3	7	5
4	3	8	2

↑ ↑ ↑
 The ones digits are the same. The tenths digits are the same. The hundredths digits are different.

The digits are different in the hundredths place.

Since 7 hundredths $<$ 8 hundredths, 4.375 4.382.

1. Use the place-value chart to compare the two numbers. What is the greatest place-value position where the digits differ?

Ones	Tenths	Hundredths	Thousandths
2	8	6	5
2	8	6	1

Compare. Write $<$, $>$, or $=$.

2. 5.37 5.370

3. 9.425 9.417

4. 7.684 7.689

Name the greatest place-value position where the digits differ.

Name the greater number.

5. 8.675; 8.654

6. 3.086; 3.194

7. 6.243; 6.247

Order from least to greatest.

8. 5.04; 5.4; 5.406; 5.064

9. 2.614; 2.146; 2.46; 2.164

Name _____

Round Decimals

Rounding decimals is similar to rounding whole numbers.

Round 4.682 to the nearest tenth.

Step 1 Write 4.682 in a place-value chart.

Ones	Tenths	Hundredths	Thousandths
4	6	<u>8</u>	2

Step 2 Find the digit in the place to which you want to round.
Circle that digit.

The digit 6 is in the tenths place, so circle it.

Step 3 Underline the digit to the right of the circled digit.

The digit 8 is to the right of the circled digit, so underline it.

Step 4 If the underlined digit is less than 5, the circled digit stays the same.
If the underlined digit is 5 or greater, round up the circled digit.

8 > 5, so round 6 up to 7.

Step 5 After you round the circled digit, drop the digits to the right of the circled digit.

So, 4.682 rounded to the nearest tenth is 4.7.

Write the place value of the underlined digit. Round each number to the place of the underlined digit.

1. 0.392

2. 5.714

3. 16.908

Name the place value to which each number was rounded.

4. 0.825 to 0.83

5. 3.815 to 4

6. 1.546 to 1.5

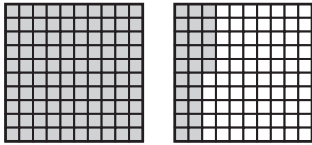
Name _____

Decimal Addition

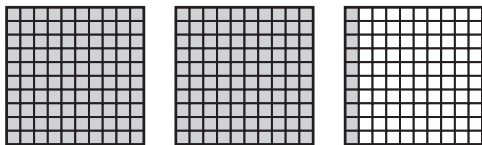
You can use decimal models to help you add decimals.

Add. $1.25 + 0.85$

Step 1 Shade squares to represent 1.25.



Step 2 Shade additional squares to represent adding 0.85.



Step 3 Count the total number of shaded squares.
There are 2 whole squares and 10 one-hundredths squares shaded. So, 2.10 wholes in all are shaded.

So, $1.25 + 0.85 = \underline{2.10}$.

Remember:

Since there are only 75 squares left in the second model, you need to add another whole model for the remaining 10 squares.

Add. Use decimal models. Draw a picture to show your work.

1. $2.1 + 0.59$

2. $1.4 + 0.22$

3. $1.27 + 1.15$

4. $0.81 + 0.43$

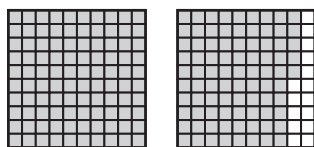
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Decimal Subtraction

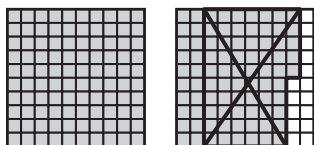
You can use decimal models to help you subtract decimals.

Subtract. $1.85 - 0.65$

Step 1 Shade squares to represent 1.85.



Step 2 Circle and cross out 65 of the shaded squares to represent subtracting 0.65.



Step 3 Count the shaded squares that are not crossed out. Altogether, 1 whole square and 20 one-hundredths squares, or 1.20 wholes, are NOT crossed out.

So, $1.85 - 0.65 = \underline{1.20}$.

Remember:

By circling and crossing out shaded squares, you can see how many squares are taken away, or subtracted.

Subtract. Use decimal models. Draw a picture to show your work.

1. $1.4 - 0.61$

2. $1.6 - 1.08$

3. $0.84 - 0.17$

4. $1.39 - 1.14$

Name _____

Estimate Decimal Sums and Differences

You can use rounding to help you estimate sums and differences.

Use rounding to estimate $1.24 + 0.82 + 3.4$.

Round to the nearest whole number. Then add.

$$\begin{array}{rcl} 1.24 & \longrightarrow & 1 \\ 0.82 & \longrightarrow & 1 \\ + 3.4 & \longrightarrow & + 3 \\ \hline & & 5 \end{array}$$

So, the sum is about 5.

Remember:

If the digit to the right of the place you are rounding to is:

- less than 5, the digit in the rounding place stays the same.
- greater than or equal to 5, the digit in the rounding place increases by 1.

Use benchmarks to estimate $8.78 - 0.30$.

$$\begin{array}{rcl} 8.78 & \longrightarrow & 8.75 \\ - 0.30 & \longrightarrow & - 0.25 \\ \hline & & 8.5 \end{array}$$

Think: 0.78 is between 0.75 and 1.

It is closer to 0.75.

Think: 0.30 is between 0.25 and 0.50.

It is closer to 0.25.

So, the difference is about 8.5.

Use rounding to estimate.

1.
$$\begin{array}{r} 51.23 \\ - 28.4 \\ \hline \end{array}$$

2.
$$\begin{array}{r} \$29.38 \\ + \$42.75 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 7.6 \\ - 2.15 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 0.74 \\ + 0.20 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 2.08 \\ 0.56 \\ + 0.41 \\ \hline \end{array}$$

Use benchmarks to estimate.

6.
$$\begin{array}{r} 6.17 \\ - 3.5 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 1.73 \\ 1.4 \\ + 3.17 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 3.28 \\ - 0.86 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 15.27 \\ + 41.8 \\ \hline \end{array}$$

10.
$$\begin{array}{r} \$23.07 \\ - \$7.83 \\ \hline \end{array}$$

11. $0.427 + 0.711$

12. $61.05 - 18.63$

13. $40.51 + 30.39$

Add Decimals

Add. $4.37 + 9.8$

Step 1 Estimate the sum.

$$\begin{array}{r} 4.37 + 9.8 \\ \downarrow \quad \downarrow \\ \text{Estimate: } 4 + 10 = 14 \end{array}$$

Step 2 Line up the place values for each number in a place-value chart. Then add.

	Ones	Tenths	Hundredths	
	4	• 3	7	
+	9	• 8		
	14	• 1	7	← sum

Step 3 Use your estimate to determine if your answer is reasonable.

Think: 14.17 is close to the estimate, 14. The answer is reasonable.

So, $4.37 + 9.8 = \underline{14.17}$.

Estimate. Then find the sum.

1. Estimate: _____

$$\begin{array}{r} 1.20 \\ + 0.34 \\ \hline \end{array}$$

2. Estimate: _____

$$\begin{array}{r} 1.52 \\ + 1.21 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 12.25 \\ + 11.25 \\ \hline \end{array}$$

4. Estimate: _____

$$\begin{array}{r} 10.75 \\ + 1.11 \\ \hline \end{array}$$

5. Estimate: _____

$$\begin{array}{r} 22.65 \\ + 18.01 \\ \hline \end{array}$$

6. Estimate: _____

$$\begin{array}{r} 34.41 \\ + 15.37 \\ \hline \end{array}$$

Name _____

Subtract Decimals

Subtract. $12.56 - 4.33$

Step 1 Estimate the difference.

$$\begin{array}{r} 12.56 - 4.33 \\ \downarrow \quad \downarrow \\ \text{Estimate: } 13 - 4 = 9 \end{array}$$

Step 2 Line up the place values for each number in a place-value chart. Then subtract.

	Ones	Tenths	Hundredths	
	12	• 5	6	
–	4	• 3	3	
	8	• 2	3	← difference

Step 3 Use your estimate to determine if your answer is reasonable.

Think: 8.23 is close to the estimate, 9. The answer is reasonable.

So, $12.56 - 4.33 = \underline{8.23}$.

Estimate. Then find the difference.

1. Estimate: _____

$$\begin{array}{r} 1.97 \\ - 0.79 \\ \hline \end{array}$$

2. Estimate: _____

$$\begin{array}{r} 4.42 \\ - 1.26 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 10.25 \\ - 8.25 \\ \hline \end{array}$$

Find the difference. Check your answer.

4. $\begin{array}{r} 5.75 \\ - 1.11 \\ \hline \end{array}$

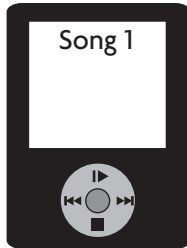
5. $\begin{array}{r} 25.21 \\ - 19.05 \\ \hline \end{array}$

6. $\begin{array}{r} 42.14 \\ - 25.07 \\ \hline \end{array}$

Name _____

Algebra • Patterns with Decimals

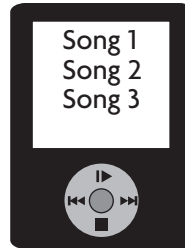
Marla wants to download some songs from the Internet. The first song costs \$1.50, and each additional song costs \$1.20. How much will 2, 3, and 4 songs cost?



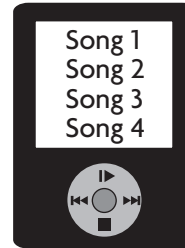
1 song
\$1.50



2 songs
?



3 songs
?



4 songs
?

Step 1 Identify the first term in the sequence.

Think: The cost of 1 song is \$1.50. The first term is \$1.50.

Step 2 Identify whether the sequence is increasing or decreasing from one term to the next.

Think: Marla will pay \$1.20 for each additional song.
The sequence is increasing.

Step 3 Write a rule that describes the sequence. Start with \$1.50 and add \$1.20.

Step 4 Use your rule to find the unknown terms in the sequence.

Number of Songs	1	2	3	4
Cost	\$1.50	$1.50 + 1.20 = \$2.70$	$2.70 + 1.20 = \$3.90$	$3.90 + 1.20 = \$5.10$

So, 2 songs cost \$2.70, 3 songs cost \$3.90, and 4 songs cost \$5.10.

Write a rule for the sequence.

1. 0.4, 0.7, 1.0, 1.3, ...

2. 5.25, 5.00, 4.75, 4.50, ...

Rule: _____

Rule: _____

Write a rule for the sequence, then find the unknown term.

3. 26.1, 23.8, 21.5, _____, 16.9

4. 4.62, 5.03, _____, 5.85, 6.26

Name _____

Problem Solving • Add and Subtract Money

At the end of April, Mrs. Lei had a balance of \$476.05. Since then she has written checks for \$263.18 and \$37.56, and made a deposit of \$368.00. Her checkbook balance currently shows \$498.09. Find Mrs. Lei's correct balance.

Read the Problem	Solve the Problem																																
<p>What do I need to find?</p> <p>I need to find <u>Mrs. Lei's</u> <u>correct checkbook balance</u>.</p>	<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th colspan="4" style="background-color: #d3d3d3; text-align: center;">Balancing Mrs. Lei's Checkbook</th> </tr> </thead> <tbody> <tr> <td style="width: 30%;">April balance</td> <td style="width: 10%;"></td> <td style="width: 20%;"></td> <td style="width: 40%; text-align: right;">\$476.05</td> </tr> <tr> <td>Deposit</td> <td></td> <td style="text-align: right;">\$368.00</td> <td style="text-align: right;">+\$368.00</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;">\$844.05</td> </tr> <tr> <td>Check</td> <td style="text-align: right;">\$263.18</td> <td></td> <td style="text-align: right;">-\$263.18</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;">\$580.87</td> </tr> <tr> <td>Check</td> <td style="text-align: right;">\$37.56</td> <td></td> <td style="text-align: right;">-\$37.56</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;">\$543.31</td> </tr> </tbody> </table> <p>Mrs. Lei's correct balance is <u style="text-align: center;">\$543.31</u></p>	Balancing Mrs. Lei's Checkbook				April balance			\$476.05	Deposit		\$368.00	+\$368.00				\$844.05	Check	\$263.18		-\$263.18				\$580.87	Check	\$37.56		-\$37.56				\$543.31
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<p>What information do I need to use?</p> <p>I need to use the <u>April balance, and</u> <u>the check and deposit amounts</u>.</p>																																	
<p>How will I use the information?</p> <p>I need to make a table and use the information to <u>subtract the checks</u> <u>and add the deposit to find the</u> <u>correct balance</u>.</p>																																	

1. At the end of June, Mr. Kent had a balance of \$375.98. Since then he has written a check for \$38.56 and made a deposit of \$408.00. His checkbook shows a balance of \$645.42. Find Mr. Kent's correct balance.
2. Jordan buys a notebook for himself and each of 4 friends. Each notebook costs \$1.85. Make a table to find the cost of 5 notebooks.

Name _____

Choose a Method

There is more than one way to find the sums and differences of whole numbers and decimals. You can use properties, mental math, place value, a calculator, or paper and pencil.

Choose a method. Find the sum or difference.

- Use mental math for problems with fewer digits or rounded numbers.

$$\begin{array}{r} 2.86 \\ - 1.2 \\ \hline 1.66 \end{array}$$

- Use place value for larger numbers.

$$\begin{array}{r} ^1^1 \\ \$15.79 \\ + \$32.81 \\ \hline \$48.60 \end{array}$$

- Use a calculator for difficult numbers or very large numbers.

3 8 . 4 4 - 2 5 . 8 6 = 12.58

Find the sum or difference.

1. $\begin{array}{r} 73.9 \\ + 4.37 \\ \hline \end{array}$

2. $\begin{array}{r} 127.35 \\ + 928.52 \\ \hline \end{array}$

3. $\begin{array}{r} 10 \\ + 2.25 \\ \hline \end{array}$

4. $\begin{array}{r} 0.36 \\ + 1.55 \\ \hline \end{array}$

5. $\begin{array}{r} 71.4 \\ + 11.5 \\ \hline \end{array}$

6. $\begin{array}{r} 90.4 \\ + 88.76 \\ \hline \end{array}$

7. $\begin{array}{r} 3.3 \\ + 5.6 \\ \hline \end{array}$

8. $\begin{array}{r} 14.21 \\ 1.79 \\ + 15.88 \\ \hline \end{array}$

9. $68.20 - 42.10$

10. $2.25 - 1.15$

11. $875.33 - 467.79$

12. $97.26 - 54.90$
