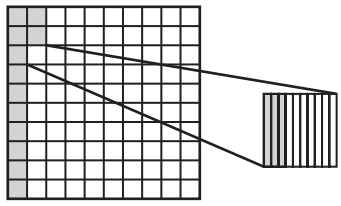
Name _____

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 enlarged one-hundredth 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.

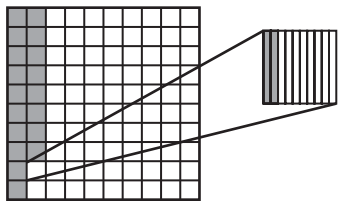
Ones	Tenths	Hundredths	Thousandths
0	8		
0	0	8	
0	0	0	8

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.

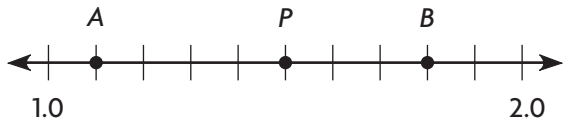
Decimal	10 times as much as	$\frac{1}{10}$ of
2. 0.1		
3. 0.03		
4. 0.5		

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

Name _____

Decimals on the Number Line

The number line below shows decimal values between 1.0 and 2.0. Which number does point *P* represent?



Since the distance between 1.0 and 2.0 is divided into 10 equal parts, each part is one-tenth. Start at 1.0 and count up by tenths

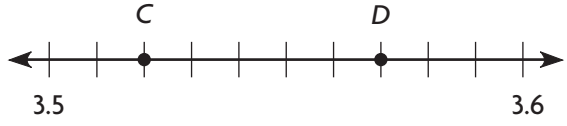
until you reach point *P*. Point *P* is at _____.

Use the number line above to write the number for each point.

1. point *A* _____

2. point *B* _____

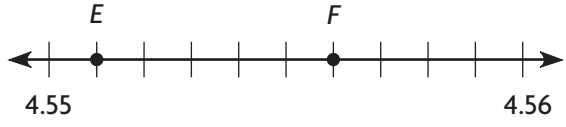
Use the number line below to write the number for each point.



3. point *C* _____

4. point *D* _____

Use the number line below to write the number for each point.



5. point *E* _____

6. point *F* _____

7. Write Math Draw a number line from 1.88 to 1.89. Label the number 1.886 as point *X*. **Explain** your thinking.

_____

_____

_____

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. 0.79<u>2</u_____ **3.** 4.<u>6</u>91 **4.** 3.80<u>5</u>

Name _____

Decimals as Scores

Four gymnasts competed in three events at a gymnastics meet. The table shows the gymnasts' scores.

Gymnast	Balance Beam	Uneven Bars	Floor Exercise
Cara	8.975	9.025	9.537
Addison	9.152	9.25	8.805
Shelby	8.575	9.375	8.75
Meg	9.5	8.85	9.05

Use the data in the table to answer the questions.

1. Who earned a score of eight and five hundred seventy-five thousandths? In which event did she earn that score?

_____

2. Who earned a score of $9 \times 1 + 2 \times (\frac{1}{100}) + 5 \times (\frac{1}{1{,}000})$? In which event did she earn that score?

_____

3. Who earned a score with a 3 in the tenths place? In which event did she earn that score?

_____

4. Who earned a score of nine and five hundredths? In which event did she earn that score?

_____

5. Who earned a score with a 2 in the thousandths place? In which event did she earn that score?

_____

6. Who earned a score of $8 \times 1 + 8 \times (\frac{1}{10}) + 5 \times (\frac{1}{1{,}000})$? In which event did she earn that score?

_____

7. How many gymnasts earned a score in which one of the digits has a value of 0.07?

_____

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 greatest 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 _____

Order Your Own Decimals

Solve each problem. In each row, use each digit exactly once.

1. Place the digits 0, 2, 5, 8 in each row of the table to create four decimals that are in order from least to greatest.

Ones	•	Tenths	Hundredths	Thousandths
	•			
	•			
	•			
	•			

2. Place the digits 1, 3, 6, 9 in each row of the table to create four decimals that are in order from greatest to least.

Ones	•	Tenths	Hundredths	Thousandths
	•			
	•			
	•			
	•			

3. Place the digits 0, 1, 4, 7, 8 in each row of the table to create four decimals that are in order from least to greatest.

Tens	Ones	•	Tenths	Hundredths	Thousandths
		•			
		•			
		•			
		•			

4. Place the digits 2, 3, 6, 8, 9 in each row of the table to create four decimals that are in order from greatest to least.

Tens	Ones	•	Tenths	Hundredths	Thousandths
		•			
		•			
		•			
		•			

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)	8	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, increase the circled digit by 1.

8 > 5, so increase 6 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. 0.3<u>9</u>2

2. 5.<u>7</u>14

3. 1<u>6</u>.908

Name the place value to which each number was rounded.

4. 0.825 to 0.83

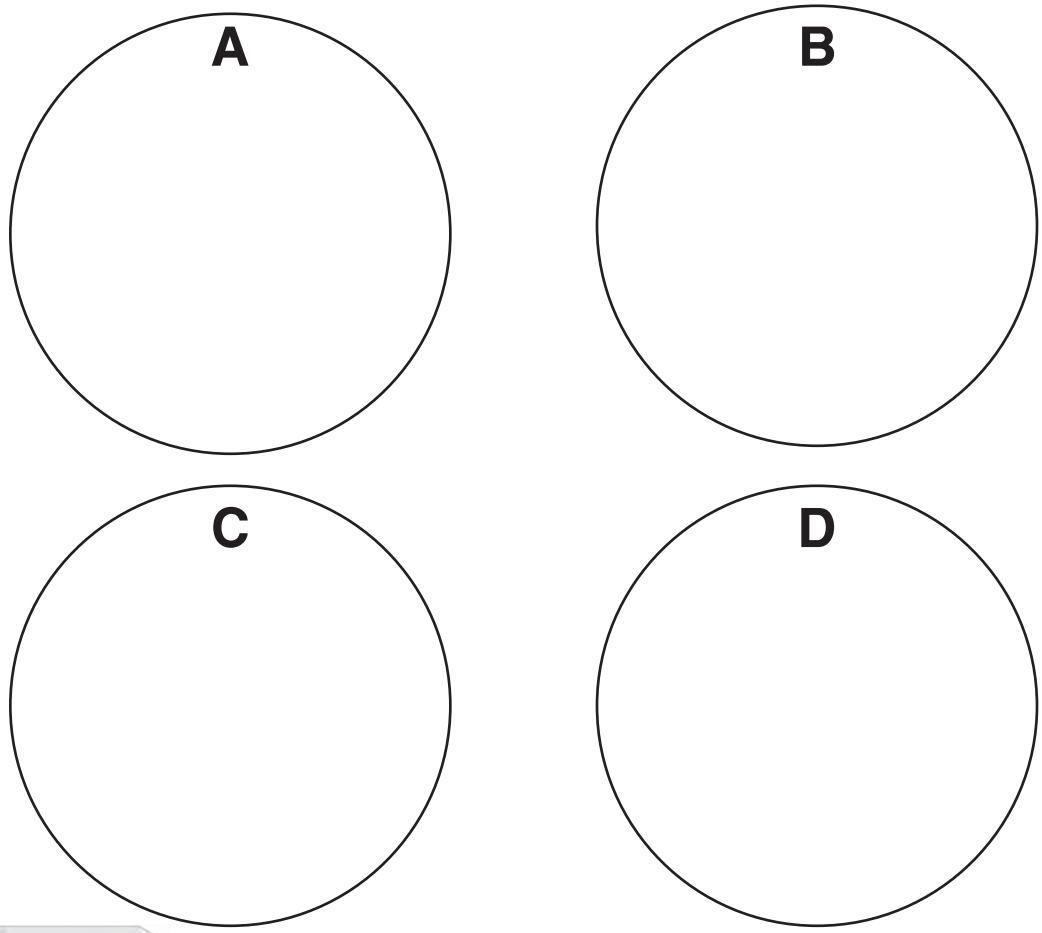
5. 3.815 to 4

6. 1.546 to 1.5

Name _____

Decimal Round Up

1. In circle A, write 9 decimals, with three decimal places, that when rounded to the nearest hundredth, round to 4.56.
2. In circle B, write 9 decimals, with one decimal place, that when rounded to the nearest one, round to 7.
3. In circle C, write 9 decimals, with two decimal places, that when rounded to the nearest tenth, round to 8.7.
4. In circle D, write 9 decimals, with three decimal places, that when rounded to the nearest tenth, round to 1.3.



5. Write Math In which circle are more than 9 decimals possible? **Explain**.

_____

_____

_____

_____

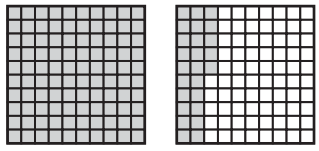
Name _____

Decimal Addition

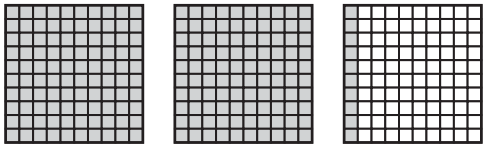
You can use decimal models to help you add decimals.

Add. 1.25 + 0.85

Step 1 Shade squares to represent 1.25.



Step 2 Shade additional squares to represent adding 0.85.



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

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 = 2.10.

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

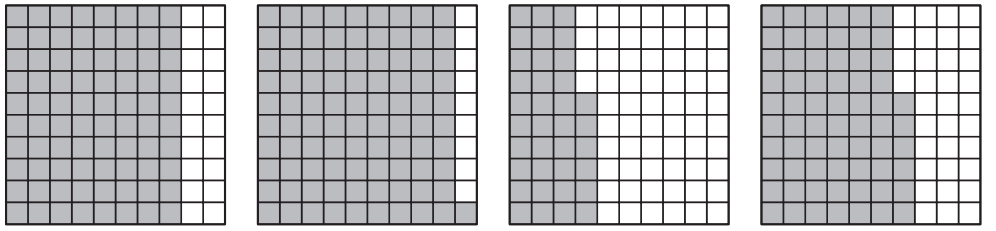
_____

Name _____

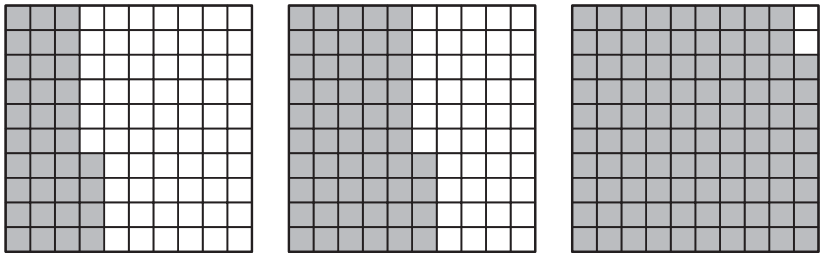
Model Connection

Draw lines to match the addition expression shown in each rectangle with the model that represents its sum. Then write the sum on the line below the model.

0.23 + 0.09 + 0.02	0.02 + 0.49 + 0.03	0.12 + 0.12 + 0.12
0.45 + 0.47 + 0.06	0.82 + 0.09 + 0.00	0.33 + 0.23 + 0.10
	0.29 + 0.20 + 0.31	

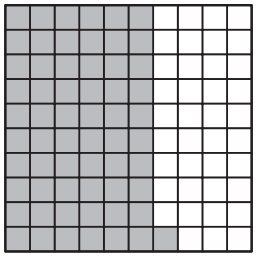


_____ _____ _____ _____



_____ _____ _____

1. **Stretch Your Thinking** Write a decimal addition sentence whose sum could be represented by the model.



_____

_____

2. Write Math **Explain** the strategy you used to find the sum of three addends.

_____

_____

_____

_____

_____

_____

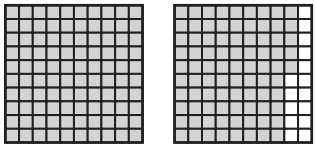
Name _____

Decimal Subtraction

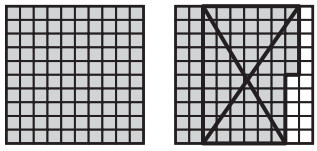
You can use decimal models to help you subtract decimals.

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.



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

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 = 1.20.

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

_____

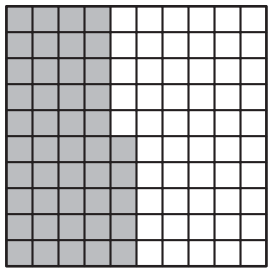
4. 1.39 − 1.14

_____

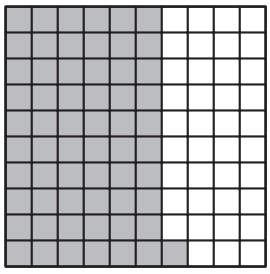
Name _____

Model Building

Subtract 0.25 from each decimal represented by the models below. Then write the difference on the line provided.



_____



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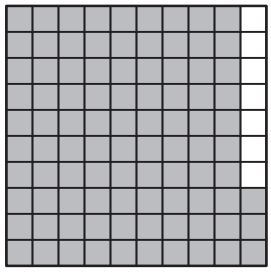

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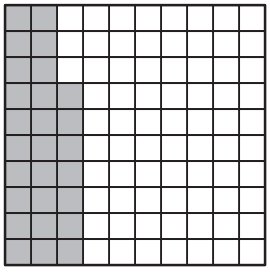

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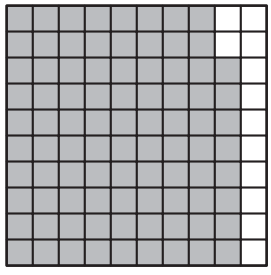

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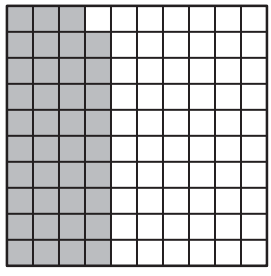


_____

1. **Stretch Your Thinking** Without subtracting, how can you tell which decimal modeled above will have the least difference when you subtract 0.25 from it?

_____

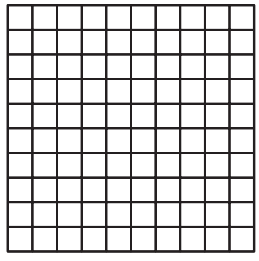
_____

_____

_____

_____

2. Write Math Write a decimal subtraction sentence whose difference is greater than the greatest difference you found above. Shade the model to show the difference.



_____

_____

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. 51.23 − 28.4

2. $29.38 + $42.75

3. 7.6 − 2.15

4. 0.74 + 0.20

5. 2.08 + 0.56 + 0.41

Use benchmarks to estimate.

6. 6.17 − 3.5

7. 1.73 + 1.4 + 3.17

8. 3.28 − 0.86

9. 15.27 + 41.8

10. $23.07 − $ 7.83

11. 0.427 + 0.711

12. 61.05 − 18.63

13. 40.51 + 30.39

Name _____

Driving Decimals

Round the number of miles driven each day to the nearest whole number. Write the estimated total for each person in the last column. Then use the data in the table to solve the problems.

Number of Miles Driven				
Driver	**Friday**	**Saturday**	**Sunday**	**Estimated Total**
Mrs. McEnery	14.57	36.92	17.9	
Ms. Sanders	90.7	39.77	24.33	
Mrs. Adams	44.63	21.16	39.1	
Mr. Harrison	73.23	50.58	45.55	
Mr. Volga	68.85	32.46	62.12	

1. On Friday, about how many more miles did Ms. Sanders drive compared to Mr. Volga?

_____

2. About how many more estimated total miles did Mr. Harrison drive than Mrs. Adams?

_____

3. What is the estimated total number of miles all five drivers traveled on Saturday?

_____

4. About how many miles did Mr. Volga drive on Saturday and Sunday?

_____

5. What is the estimated difference between the driver who traveled the greatest distance in one day and the driver who traveled the least distance in one day?

_____

6. Estimate the difference between the greatest daily distance Mr. Harrison traveled and the least daily distance Mr. Harrison traveled.

_____

7. About how many more miles did the driver who traveled the greatest estimated total distance drive than the driver who traveled the least estimated total distance?

_____

8. Write and solve your own estimation problem using the data from the table.

_____

_____

_____

_____

Name _____

Add Decimals

Add. 4.17 + 9.8

Step 1 Estimate the sum.

4.17 + 9.8
↓ ↓
Estimate: 4 + 10 = 14

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

	Ones	Tenths	Hundredths
	4	1	7
+	9	8	
	13	9	7

← sum

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

Think: 13.97 is close to the estimate, 14. The answer is reasonable.

So, 4.17 + 9.8 = 13.97.

Estimate. Then find the sum.

1. Estimate: _____

1.20
+ 0.34

2. Estimate: _____

1.52
+ 1.21

3. Estimate: _____

12.25
+ 11.25

4. Estimate: _____

10.75
+ 1.11

5. Estimate: _____

22.65
+ 18.01

6. Estimate: _____

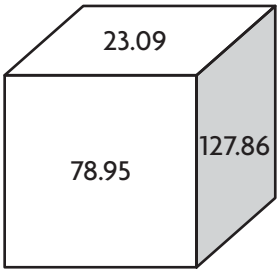
34.41
+ 15.37

Name _____

Sum Match-Up

Find the sum of the decimals shown on each cube. Then match each sum to the square with the correct sum.

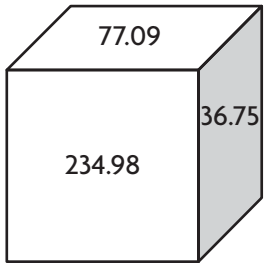
1.



418.08

_____

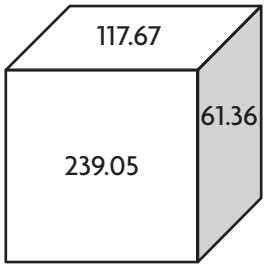
2.



229.9

_____

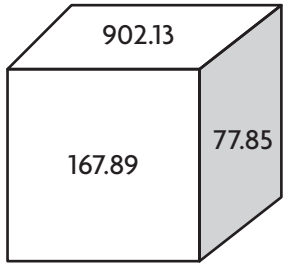
3.



1,147.87

_____

4.



348.82

_____

5. Write Math Tell how you found the sum in Exercise 2.

_____

_____

_____

6. **Stretch Your Thinking** Tell how you can check your answer for Exercise 4.

_____

_____

_____

Name _____

Subtract Decimals

Subtract. 6.56 − 4.33

Step 1 Estimate the difference.

6.56 − 4.33
↓ ↓
Estimate: 7 − 4 = 3

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

	Ones	Tenths	Hundredths	
	6	5	6	
−	4	3	3	
	2	2	3	← difference

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

Think: 2.23 is close to the estimate, 3. The answer is reasonable.

So, 6.56 − 4.33 = 2.23.

Estimate. Then find the difference.

1. Estimate: ____

1.97
− 0.79

2. Estimate: ____

4.42
− 1.26

3. Estimate: ____

10.25
− 8.25

Find the difference. Check your answer.

4. 5.75
− 1.11

5. 25.21
− 19.05

6. 42.14
− 25.07

Name _____

In the Box Decimals

For 1–6, find the unknown numbers that make the subtraction sentence true.

1.
$$\begin{array}{r} 1\,4\,7\,.\,0\,\square \\ -\ \square\,5\,.\,0\,9 \\ \hline 1\,0\,\square\,.\,9\,8 \end{array}$$

2.
$$\begin{array}{r} \square\,8\,3\,.\,4\,1 \\ -1\ 1\,9\,.\,7\,\square \\ \hline 4\,\square\,3\,.\,6\,4 \end{array}$$

3.
$$\begin{array}{r} 9\,4\,2\,.\,9\,9 \\ -\ 5\,3\,.\,6\,5 \\ \hline 8\,8\,\square\,.\,\square\,4 \end{array}$$

4.
$$\begin{array}{r} 6\,\square\,4\ .\,1\,0 \\ -5\,2\,9\ .\,1\,\square \\ \hline 1\,\square\,4\ .\,9\,8 \end{array}$$

5.
$$\begin{array}{r} \$\ 1,\square\,2\,4\,.\,1\,\square \\ -\$\ \ 4\,4\,5\,.\,\square\,3 \\ \hline \$\ \ 5\,7\,\square\,.\,2\,2 \end{array}$$

6.
$$\begin{array}{r} \$\ 8\,\square\,4\,.\,9\,2 \\ -\$\,\square\,5\,6\,.\,0\,\square \\ \hline \$\ \ 7\,8\,.\,8\,5 \end{array}$$

7. Write Math **Explain** how to subtract decimals.

_____

_____

_____

8. Stretch Your Thinking Tell how you can check your answer for Exercise 1.

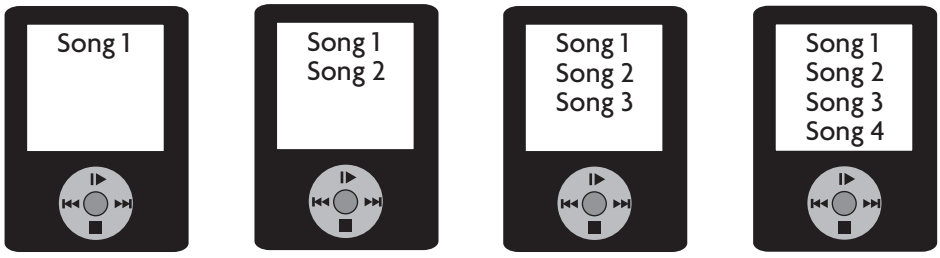
_____

_____

_____

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, …

Rule: _____

2. 5.25, 5.00, 4.75, 4.50, …

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 _____

Pattern Match

**Write the letter of the sequence that matches each clue.
Each sequence has 5 terms and is used exactly once.
Then write the unknown terms in the sequence.**

	Clue	Sequence
_____	**1.** Start at 1.2, end at 10.	**a.** 1.2, 1.15, _____, _____, _____
_____	**2.** Start at 8, add 0.3.	**b.** 6, 9.5, _____, _____, _____
_____	**3.** Start at 8.02, end at 8.22.	**c.** _____, 4.8, _____, 4.4, _____
_____	**4.** Start at 4, subtract 0.02.	**d.** 1.2, 3.4, _____, _____, _____
_____	**5.** Start at 1.2, subtract 0.05.	**e.** 8.08, _____, _____, 8.02, _____
_____	**6.** Start at 5, end at 4.2.	**f.** _____, 8.3, _____, 8.9, _____
_____	**7.** Subtract 2.4, end at 10.	**g.** 8.02, 8.07, _____, _____, _____
_____	**8.** Add 3.5, end at 20.	**h.** _____, 3.98, _____, 3.94, _____
_____	**9.** Subtract 0.02, end at 8.	**i.** _____, 14.6, _____, _____, 13.4
_____	**10.** Start at 15, subtract 0.4.	**j.** 19.6, _____, _____, 12.4, _____

11. Write Math **Explain** how you found the matching sequence in Exercise 6.

_____

_____

_____

_____

_____

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

What do I need to find?

I need to find Mrs. Lei's correct checkbook balance.

What information do I need to use?

I need to use the April balance, and the check and deposit amounts.

How will I use the information?

I need to make a table and use the information to subtract the checks and add the deposit to find the correct balance.

Solve the Problem

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

Mrs. Lei's correct balance is $543.31.

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 _____

Balancing Act

Make and complete a table to solve.

1. Felicia wants to buy a new soccer ball. It is on sale for $12.60. She has one $10 bill, two $5 bills, three $1 bills, 6 quarters, and 3 nickels. Make a table to find four ways she could pay for the soccer ball.

2. Since his January statement, Mr. Park has written two checks for $6,098.11 and $3,876.99 and made a deposit. His January statement shows a balance of $12,897.55, and his checkbook balance shows he currently has $6,984.85.

How much did Mr. Park deposit? _____

Balancing Mr. Park's Checkbook	
January balance	

3. Mrs. Chen wrote two checks and made a deposit of $1,987.09 since her October statement. The October statement shows a balance of $3,611.08, and her checkbook balance shows she currently has $2,778.69. What is the total amount of the checks that Mrs. Chen wrote? _____

Balancing Mrs. Chen's Checkbook	
October balance	

4. **Stretch Your Thinking** **Explain** how you could use another strategy to solve Exercise 3.

_____

_____

_____

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.

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

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

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 _____

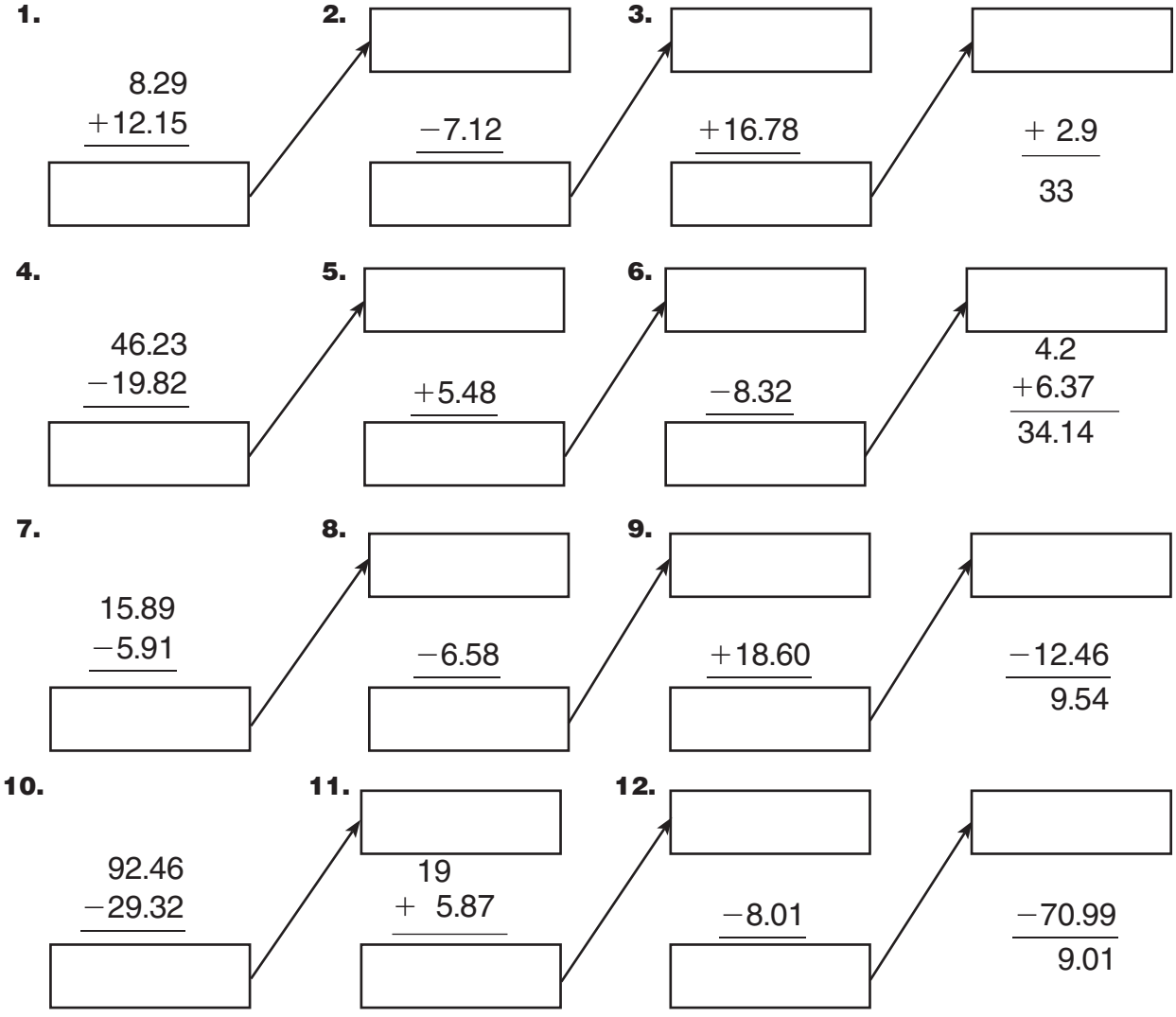
11. 875.33 − 467.79 _____

12. 97.26 − 54.90 _____

Name _____

Decimal Dance

Use mental math, place value, or a calculator to solve 1–12. Write each sum or difference in the top box of the next column until you finish the last exercise in each row.



13. Write Math What if the first number in Exercise 1 were 8.39? How would the sums and differences in the first row change?

_____

_____

_____