Chapter 3

Add and Subtract Decimals

Show What You Know

Check your understanding of important skills.

Name _____

2-Digit Addition and Subtraction Find the sum or difference.

1.

	Hundreds	Tens	Ones
	☐	☐	
		5	8
+		7	6

2.

	Hundreds	Tens	Ones
		☐	☐
		8	2
−		4	7

Decimals Greater Than One Write the word form and the expanded form for each.

3. 3.4

_____

_____

4. 2.51

_____

_____

Relate Fractions and Decimals Write as a decimal or a fraction.

5. 0.8 _____

6. $\frac{5}{100}$ _____

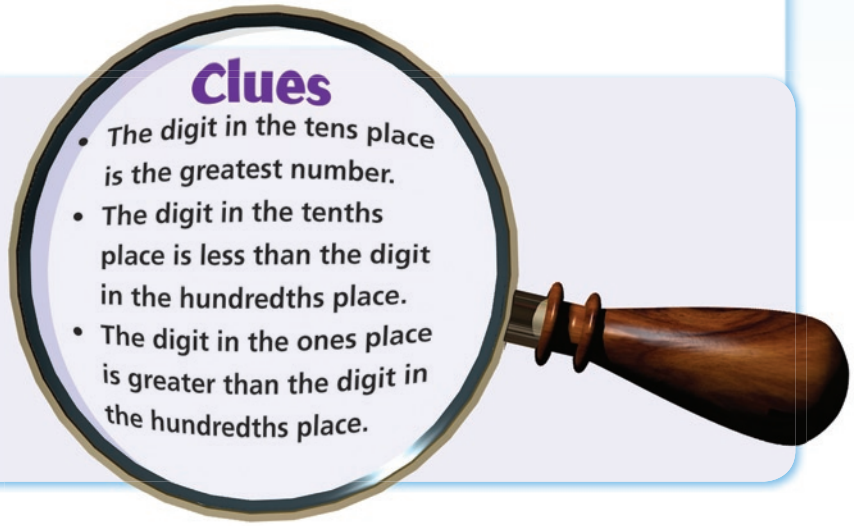
7. 0.46 _____

8. $\frac{6}{10}$ _____

9. 0.90 _____

10. $\frac{35}{100}$ _____

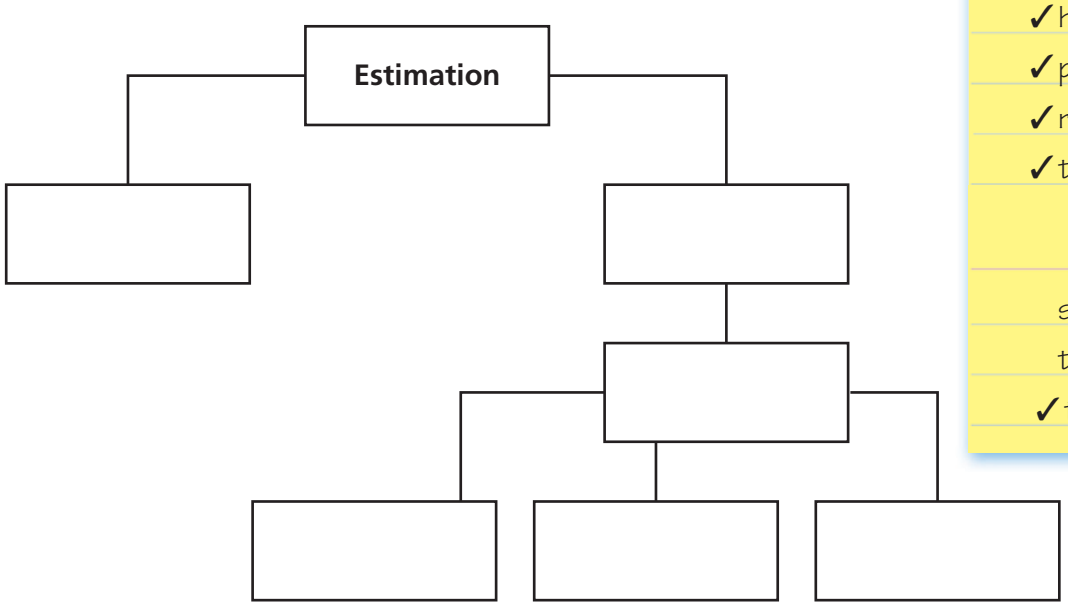
Jason has 4 tiles. Each tile has a number printed on it. The numbers are 2, 3, 6, and 8. A decimal number is formed using the tiles and the clues. Be a Math Detective and find the number.



Vocabulary Builder

Visualize It

Use the ✓ words to complete the tree map.



Review Words

- ✓ benchmark
- ✓ hundredth
- ✓ place value
- ✓ round
- ✓ tenth

Preview Words

- sequence
- term
- ✓ thousandth

Understand Vocabulary

Read the description. Which word do you think is described?

1. One of one hundred equal parts _____
2. The value of each digit in a number based on the location of the digit _____
3. To replace a number with one that is simpler and is approximately the same size as the original number _____
4. An ordered set of numbers _____
5. One of ten equal parts _____
6. A familiar number used as a point of reference _____
7. One of one thousand equal parts _____
8. Each of the numbers in a sequence _____

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Name _____

Thousandths

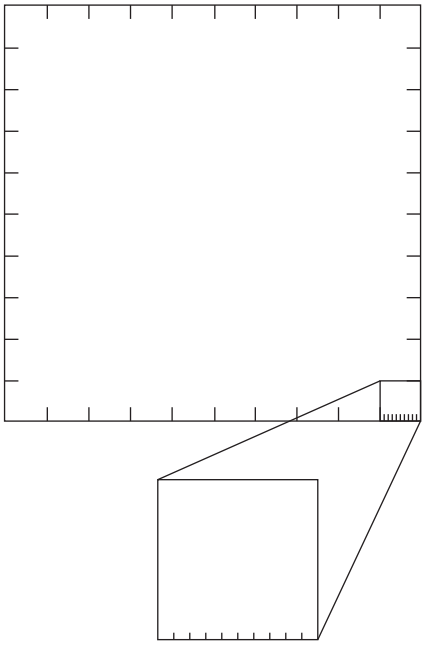
Essential Question How can you describe the relationship between two decimal place-value positions?

Investigate

Materials ■ color pencils ■ straightedge

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

Use the model at the right to show tenths, hundredths, and thousandths.



A. Divide the larger square into 10 equal columns or rectangles. Shade one rectangle. What part of the whole is the shaded rectangle? Write that part as a decimal and a fraction.

_____

B. Divide each rectangle into 10 equal squares. Use a second color to shade in one of the squares. What part of the whole is the shaded square? Write that part as a decimal and a fraction.

_____

C. Divide the enlarged hundredths square into 10 equal columns or rectangles. If each hundredths square is divided into ten equal rectangles, how many parts will the model have?

_____

Use a third color to shade one rectangle of the enlarged hundredths square. What part of the whole is the shaded rectangle? Write that part as a decimal and a fraction.

_____

MATHEMATICAL PRACTICES

Math Talk There are 10 times as many hundredths as there are tenths. **Explain** how the model shows this.

Draw Conclusions

1. **Explain** what each shaded part of your model in the Investigate section shows. What fraction can you write that relates each shaded part to the next greater shaded part? _____

2. **Identify** and describe a part of your model that shows one thousandth. **Explain** how you know.

Make Connections

The relationship of a digit in different place-value positions is the same with decimals as it is with whole numbers. You can use your understanding of place-value patterns and a place-value chart to write decimals that are 10 times as much as or $\frac{1}{10}$ of any given decimal.

Ones	Tenths	Hundredths	Thousandths
	?	0.04	?

10 times as much

$\frac{1}{10}$ of

_____ is 10 times as much as 0.04.

_____ is $\frac{1}{10}$ of 0.04.

Use the steps below to complete the table.

STEP 1 Write the given decimal in a place-value chart.

STEP 2 Use the place-value chart to write a decimal that is 10 times as much as the given decimal.

STEP 3 Use the place-value chart to write a decimal that is $\frac{1}{10}$ of the given decimal.

Decimal	10 times as much as	$\frac{1}{10}$ of
0.03		
0.1		
0.07		

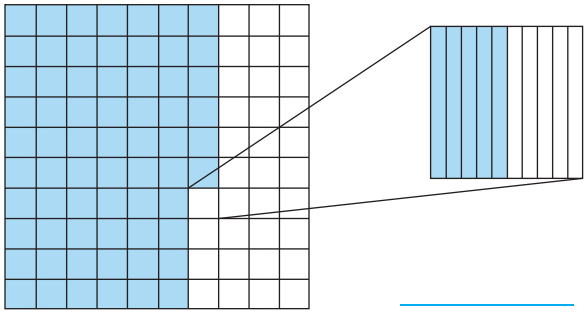
MATHEMATICAL PRACTICES

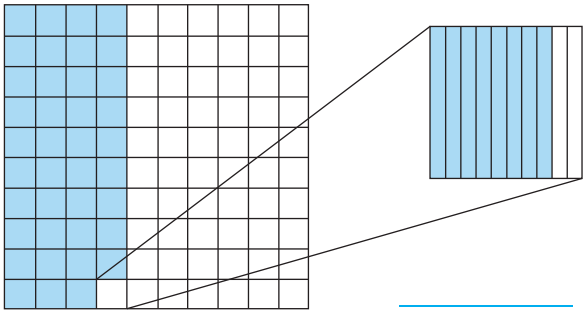
Math Talk **Describe** the pattern you see when you move one decimal place value to the right and one decimal place value to the left.

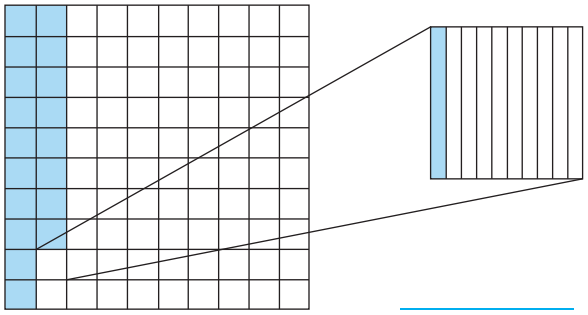
Name _____

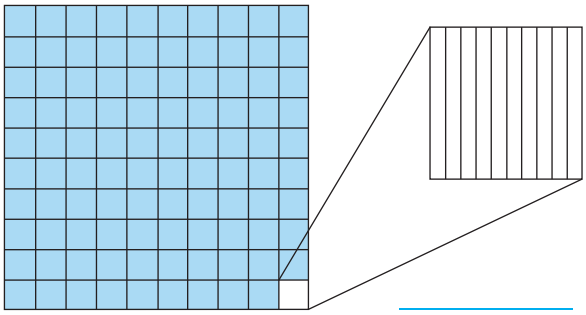
Share and Show MATH BOARD

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

1. 

2. 

3. 

4. 

Complete the sentence.

5. 0.6 is 10 times as much as _____.

6. 0.007 is $\frac{1}{10}$ of _____.

7. 0.008 is $\frac{1}{10}$ of _____.

8. 0.5 is 10 times as much as _____.

Use place-value patterns to complete the table.

	Decimal	10 times as much as	$\frac{1}{10}$ of
9.	0.2		
10.	0.07		
11.	0.05		
12.	0.4		

	Decimal	10 times as much as	$\frac{1}{10}$ of
13.	0.06		
14.	0.9		
15.	0.3		
16.	0.08		

Problem Solving REAL WORLD

Use the table for 17–20.

Bee Lengths (in meters)	
Bumblebee	0.019
Carpenter Bee	0.025
Leafcutting Bee	0.014
Orchid Bee	0.028
Sweat Bee	

17. What is the value of the digit 2 in the carpenter bee's length?

18. If you made a model of a bumblebee that was 10 times as large as the actual bee, how long would the model be in meters? Write your answer as a decimal.

19. The sweat bee's length is 6 thousandths of a meter. Complete the table by recording the sweat bee's length.

20. H.O.T. An atlas beetle is about 0.14 of a meter long. How does the length of the atlas beetle compare to the length of a leafcutting bee?

SHOW YOUR WORK

21. Write Math **Explain** how you can use place value to describe how 0.05 and 0.005 compare.

22. **Test Prep** What is the relationship between 1.0 and 0.1?

Ⓐ 0.1 is 10 times as much as 1.0

Ⓑ 1.0 is $\frac{1}{10}$ of 0.1

Ⓒ 0.1 is $\frac{1}{10}$ of 1.0

Ⓓ 1.0 is equal to 0.1

FOR MORE PRACTICE:
Standards Practice Book, pp. P53–P54

Name _____

Place Value of Decimals

Essential Question How do you read, write, and represent decimals through thousandths?

UNLOCK the Problem REAL WORLD

The Brooklyn Battery Tunnel in New York City is 1.726 miles long. It is the longest underwater tunnel for vehicles in the United States. To understand this distance, you need to understand the place value of each digit in 1.726.

▲ The Brooklyn Battery Tunnel passes under the East River.

You can use a place-value chart to understand decimals. Whole numbers are to the left of the decimal point. Decimals are to the right of the decimal point. The thousandths place is to the right of the hundredths place.

Tens	Ones	Tenths	Hundredths	Thousandths
	1 •	7	2	6
1	1×1	$7 \times \frac{1}{10}$	$2 \times \frac{1}{100}$	$6 \times \frac{1}{1{,}000}$
	1.0	0.7	0.02	0.006

Value

The place value of the digit 6 in 1.726 is thousandths. The value of 6 in 1.726 is $6 \times \frac{1}{1{,}000}$, or 0.006.

Standard Form: 1.726
Word Form: one and seven hundred twenty-six thousandths

Expanded Form: $1 \times 1 + 7 \times \left(\frac{1}{10}\right) + 2 \times \left(\frac{1}{100}\right) + 6 \times \left(\frac{1}{1{,}000}\right)$

Math Talk MATHEMATICAL PRACTICES

Explain how the value of the last digit in a decimal can help you read a decimal.

Try This! **Use place value to read and write decimals.**

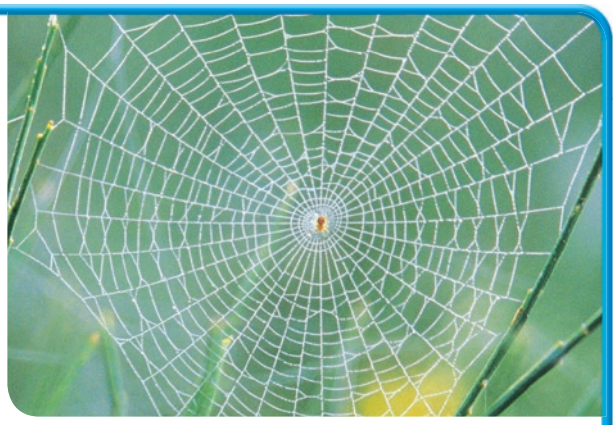
A **Standard Form:** 2.35
Word Form: two and _____

Expanded Form: $2 \times 1 +$ _____

B **Standard Form:** _____
Word Form: three and six hundred fourteen thousandths

Expanded Form: _____ $+ 6 \times \left(\frac{1}{10}\right) +$ _____ $+$ _____

Example Use a place-value chart.



The silk spun by a common garden spider is about 0.003 millimeter thick. A commonly used sewing thread is about 0.3 millimeter thick. How does the thickness of the spider silk and the thread compare?

STEP 1 Write the numbers in a place-value chart.

Ones	Tenths	Hundredths	Thousandths

STEP 2

Count the number of decimal place-value positions to the digit 3 in 0.3 and 0.003.

0.3 has _____ fewer decimal places than 0.003

2 fewer decimal places: $10 \times 10 =$ _____

0.3 is _____ times as much as 0.003

0.003 is _____ of 0.3

So, the thread is _____ times as thick as the garden spider's silk. The thickness of the garden spider's silk is

_____ that of the thread.

You can use place-value patterns to rename a decimal.

Try This! **Use place-value patterns.**

Rename 0.3 using other place values.

0.300	3 tenths	$3 \times \frac{1}{10}$
0.300	_____ hundredths	_____ $\times \frac{1}{100}$
0.300	_____	_____

Name _____

Share and Show

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

Ones	Tenths	Hundredths	Thousandths
3	5	2	4
3×1		$2 \times \frac{1}{100}$	
	0.5		

Value

Write the value of the underlined digit.

2. $0.5\underline{4}3$

3. $6.\underline{2}34$

4. $3.95\underline{4}$

Write the number in two other forms.

5. 0.253

6. 7.632

On Your Own

Write the value of the underlined digit.

7. $0.4\underline{9}6$

8. $2.\underline{7}26$

9. $1.06\underline{6}$

10. $6.\underline{3}99$

11. $0.00\underline{2}$

12. $14.37\underline{1}$

Write the number in two other forms.

13. 0.489

14. 5.916

Problem Solving REAL WORLD

Use the table for 15–17.

Average Annual Rainfall (in meters)	
California	0.564
New Mexico	0.372
New York	1.041
Wisconsin	0.820
Maine	

15. What is the value of the digit 7 in New Mexico's average annual rainfall?

16. The average annual rainfall in Maine is one and seventy-four thousandths of a meter per year. Complete the table by writing that amount in standard form.

17. Which of the states has an average annual rainfall with the least number in the thousandths place?

SHOW YOUR WORK

18. H.O.T. **What's the Error?** Damian wrote the number four and twenty-three thousandths as 4.23. **Describe** and correct his error.

19. Write Math **Explain** how you know that the digit 6 in the numbers 3.675 and 3.756 does not have the same value.

20. **Test Prep** In 24.736, which digit is in the thousandths place?

Ⓐ 3 Ⓒ 6

Ⓑ 4 Ⓓ 7

Name _____

Compare and Order Decimals

Essential Question How can you use place value to compare and order decimals?

UNLOCK the Problem REAL WORLD

The table lists some of the mountains in the United States that are over two miles high. How does the height of Cloud Mountain in New York compare to the height of Boundary Mountain in Nevada?

Mountain Heights	
Mountain and State	**Height (in miles)**
Boundary, Nevada	2.488
Cloud, New York	2.495
Grand Teton, Wyoming	2.607
Wheeler, New Mexico	2.493

▲ The Tetons are located in Grand Teton National Park.

One Way Use place value.

Line up the decimal points. Start at the left. Compare the digits in each place-value position until the digits are different.

STEP 1 Compare the ones.

2.495
↓
2.488 $\quad 2 = 2$

STEP 2 Compare the tenths.

2.495
↓
2.488 $\quad 4 \bigcirc 4$

STEP 3 Compare the hundredths.

2.495
↓
2.488 $\quad 9 \bigcirc 8$

Since 9 ◯ 8, then 2.495 ◯ 2.488, and 2.488 ◯ 2.495.

So, the height of Cloud Mountain is _____ the height of Boundary Mountain.

Another Way Use a place-value chart to compare.

Compare the height of Cloud Mountain to Wheeler Mountain.

Ones	Tenths	Hundredths	Thousandths
2	4	9	5
2	4	9	3

$2 = 2 \quad 4 = \_\_\_\_ \quad 9 = \_\_\_\_ \quad 5 > \_\_\_\_$

Since 5 ◯ 3, then 2.495 ◯ 2.493, and 2.493 ◯ 2.495.

So, the height of Cloud Mountain is _____ the height of Wheeler Mountain.

Math Talk MATHEMATICAL PRACTICES

Explain why it is important to line up the decimal points when comparing decimals.

Order Decimals You can use place value to order decimal numbers.

Example

Mount Whitney in California is 2.745 miles high, Mount Rainier in Washington is 2.729 miles high, and Mount Harvard in Colorado is 2.731 miles high. Order the heights of these mountains from least to greatest. Which mountain has the least height? Which mountain has the greatest height?

STEP 1

Line up the decimal points. There are the same number of ones. Circle the tenths and compare.

2.745 **Whitney**

2.729 **Rainier**

2.731 **Harvard**

There are the same number of tenths.

STEP 2

Underline the hundredths and compare. Order from least to greatest.

2.745 **Whitney**

2.729 **Rainier**

2.731 **Harvard**

Since ◯ < ◯ < ◯, the heights in order from least to greatest are _____, _____, _____.

So, _____ has the least height and _____ has the greatest height.

MATHEMATICAL PRACTICES

Math Talk **Explain** why you do not have to compare the digits in the thousandths place to order the heights of the 3 mountains.

Try This! **Use a place-value chart.**

What is the order of 1.383, 1.321, 1.456, and 1.32 from greatest to least?

- Write each number in the place-value chart. Compare the digits, beginning with the greatest place value.
- Compare the ones. The ones are the same.
- Compare the tenths. 4 > 3.

Ones	Tenths	Hundredths	Thousandths
1 •	3	8	3
1 •			
1 •			
1 •			

The greatest number is _____.
Circle the greatest number in the place-value chart.

- Compare the remaining hundredths. 8 > 2.

The next greatest number is _____.
Draw a rectangle around the number.

- Compare the remaining thousandths. 1 > 0.

So, the order of the numbers from greatest to least is: _____ .

Name _____

Share and Show

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
3	4	7	2
3	4	4	5

_____

Compare. Write <, >, or =.

2. 4.563 ◯ 4.536

3. 5.640 ◯ 5.64

4. 8.673 ◯ 8.637

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

5. 3.579; 3.564

_____

_____

6. 9.572; 9.637

_____

_____

7. 4.159; 4.152

_____

_____

Order from least to greatest.

8. 4.08; 4.3; 4.803; 4.038

_____

9. 1.703; 1.037; 1.37; 1.073

_____

On Your Own

Compare. Write <, >, or =.

10. 8.72 ◯ 8.720

11. 5.4 ◯ 5.243

12. 1.036 ◯ 1.306

13. 2.573 ◯ 2.753

14. 9.300 ◯ 9.3

15. 6.76 ◯ 6.759

Order from greatest to least.

16. 2.007; 2.714; 2.09; 2.97

_____

17. 0.386; 0.3; 0.683; 0.836

_____

18. 5.249; 5.43; 5.340; 5.209

_____

19. 0.678; 1.678; 0.587; 0.687

_____

H.O.T. **Algebra** **Find the unknown digit to make each statement true.**

20. 3.59 > 3.5 ☐ 1 > 3.572

21. 6.837 > 6.83 ☐ > 6.835

22. 2.45 < 2. ☐ 6 < 2.461

Problem Solving REAL WORLD

Use the Table for 23–26.

Mountains Over Three Miles High

Mountain and Location	Height (in miles)
Blackburn, Alaska	3.104
Bona, Alaska	3.134
Steele, Yukon	3.152

23. In comparing the height of the mountains, which is the greatest place value where the digits differ?

24. How does the height of Steele Mountain compare to the height of Blackburn Mountain? Compare the heights using words.

25. Write Math **Explain** how to order the height of the mountains from greatest to least.

SHOW YOUR WORK

26. H.O.T. **What if** the height of Blackburn Mountain were 0.05 mile greater. Would it then be the mountain with the greatest height? **Explain**.

27. **Test Prep** Mount Logan in the Yukon is 3.702 miles high. Mount McKinley in Alaska is 3.848 miles high and Pico de Orizaba in Mexico is 3.571 miles high. Order these mountains by height from greatest to least.

Ⓐ Logan, McKinley, Pico de Orizaba

Ⓑ McKinley, Logan, Pico de Orizaba

Ⓒ Pico de Orizaba, Logan, McKinley

Ⓓ Logan, Pico de Orizaba, McKinley

FOR MORE PRACTICE:
Standards Practice Book, pp. P57–P58

Name _____

Round Decimals

Essential Question How can you use place value to round decimals to a given place?

UNLOCK the Problem REAL WORLD

The Gold Frog of South America is one of the smallest frogs in the world. It is 0.386 of an inch long. What is this length rounded to the nearest hundredth of an inch?

- Underline the length of the Gold Frog.
- Is the frog's length about the same as the length or the width of a large paper clip?

_____

One Way Use a place-value chart.

- Write the number in a place-value chart and circle the digit in the place value to which you want to round.
- In the place-value chart, underline the digit to the right of the place to which you are rounding.
- If the digit to the right is less than 5, the digit in the place value to which you are rounding stays the same. If the digit to the right is 5 or greater, the digit in the rounding place increases by 1.
- Drop the digits after the place to which you are rounding.

Ones	Tenths	Hundredths	Thousandths
0	3	8	6

Think: Does the digit in the rounding place stay the same or increase by 1?

So, to the nearest hundredth of an inch, a Gold Frog is about _____ of an inch long.

Another Way Use place value.

The Little Grass Frog is the smallest frog in North America. It is 0.437 of an inch long.

A **What is the length of the frog to the nearest hundredth of an inch?**

0.437 $7 > 5$
↓
0.44

So, to the nearest hundredth of an inch, the frog is about _____ of an inch long.

B **What is the length of the frog to the nearest tenth of an inch?**

0.437 $3 < 5$
↓
0.4

So, to the nearest tenth of an inch, the frog is about _____ of an inch long.

Example

The Goliath Frog is the largest frog in the world. It is found in the country of Cameroon in West Africa. The Goliath Frog can grow to be 11.815 inches long. How long is the Goliath Frog to the nearest inch?

STEP 1 Write 11.815 in the place-value chart.

Tens	Ones	Tenths	Hundredths	Thousandths
	•			

STEP 2 Find the place to which you want to round. Circle the digit.

STEP 3 Underline the digit to the right of the place value to which you are rounding. Then round.

Think: Does the digit in the rounding place stay the same or increase by 1?

So, to the nearest inch, the Goliath Frog is about _____ inches long.

- **Explain** why any number less than 12.5 and greater than or equal to 11.5 would round to 12 when rounded to the nearest whole number.

Try This! Round. 14.603

A **To the nearest hundredth:**

Tens	Ones	Tenths	Hundredths	Thousandths
	•			

Circle and underline the digits as you did above to help you round to the nearest hundredth.

So, 14.603 rounded to the nearest hundredth is _____.

B **To the nearest whole number:**

Tens	Ones	Tenths	Hundredths	Thousandths
	•			

Circle and underline the digits as you did above to help you round to the nearest whole number.

So, 14.603 rounded to the nearest whole number is _____.

Name _____

Share and Show

MATH BOARD

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

1. 0.6$\underline{7}$3 _____ _____

2. 4.$\underline{2}$82 _____ _____

3. 1$\underline{2}$.917 _____ _____

Name the place value to which each number was rounded.

4. 0.982 to 0.98 _____

5. 3.695 to 4 _____

6. 7.486 to 7.5 _____

On Your Own

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

7. 0.$\underline{5}$92 _____ _____

8. $\underline{6}$.518 _____ _____

9. 0.8$\underline{0}$9 _____ _____

10. 3.$\underline{3}$34 _____ _____

11. 12.$\underline{0}$74 _____ _____

12. 4.4$\underline{9}$4 _____ _____

Name the place value to which each number was rounded.

13. 0.328 to 0.33 _____

14. 2.607 to 2.61 _____

15. 12.583 to 13 _____

Round 16.748 to the place named.

16. tenths _____

17. hundredths _____

18. ones _____

19. Write Math **Explain** what happens when you round 4.999 to the nearest tenth. _____ _____ _____

Problem Solving REAL WORLD

Use the table for 20–22.

Insect Speeds (meters per second)	
Insect	**Speed**
Dragonfly	6.974
Horsefly	3.934
Bumblebee	2.861
Honeybee	2.548
Housefly	1.967

20. The speeds of two insects when rounded to the nearest whole number are the same. Which two insects are they?

21. What is the speed of the housefly rounded to the nearest hundredth?

22. H.O.T. **What's the Error?** Mark said that the speed of a dragonfly rounded to the nearest tenth was 6.9 meters per second. Is he correct? If not, what is his error?

SHOW YOUR WORK

23. H.O.T. Write Math A rounded number for the speed of an insect is 5.67 meters per second. What are the fastest and slowest speeds to the thousandths that could round to 5.67? **Explain**.

24. **Test Prep** To which place value is the number rounded?

6.706 to 6.71

Ⓐ ones Ⓒ hundredths

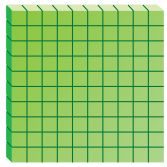
Ⓑ tenths Ⓓ thousandths

Name _____

Decimal Addition

Essential Question How can you use base-ten blocks to model decimal addition?

CONNECT You can use base-ten blocks to help you find decimal sums.



1
one

0.1
one tenth

0.01
one hundredth

Investigate

Materials ■ base-ten blocks

A. Use base-ten blocks to model the sum of 0.34 and 0.27.

B. Add the hundredths first by combining them.

- Do you need to regroup the hundredths? **Explain**.

_____

_____

_____

C. Add the tenths by combining them.

- Do you need to regroup the tenths? **Explain**.

_____

_____

_____

D. Record the sum. $0.34 + 0.27 =$ _____

Draw Conclusions

1. **What if** you combine the tenths first and then the hundredths? **Explain** how you would regroup.

_____

_____

2. H.O.T. **Synthesize** If you add two decimals that are each greater than 0.5, will the sum be less than or greater than 1.0? **Explain**.

_____

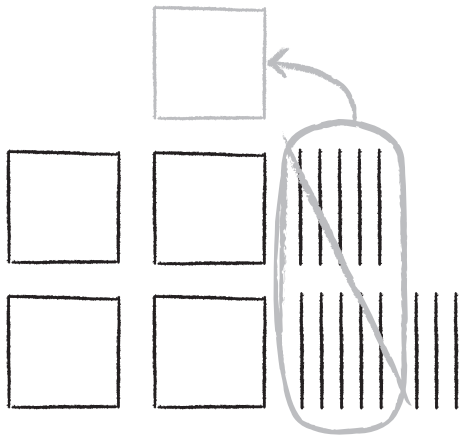
_____

Make Connections

You can use a quick picture to add decimals greater than 1.

STEP 1

Model the sum of 2.5 and 2.8 with a quick picture.



STEP 2

Add the tenths.

- Are there more than 9 tenths? _____
  If there are more than 9 tenths, regroup.

Add the ones.

STEP 3

Draw a quick picture of your answer. Then record.

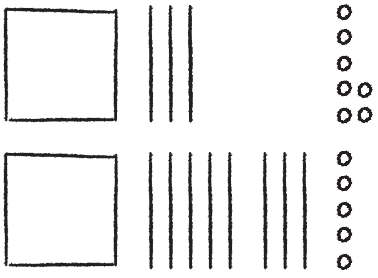
$2.5 + 2.8 =$ _____

Share and Show

MATH BOARD

Complete the quick picture to find the sum.

1. $1.37 + 1.85 =$ _____



Math Talk MATHEMATICAL PRACTICES

Explain how you know where to write the decimal point in the sum.

Name _____

Add. Draw a quick picture.

2. $0.9 + 0.7 =$ _____

3. $0.65 + 0.73 =$ _____

4. $3.71 + 0.54 =$ _____

5. $1.05 + 0.78 =$ _____

6. $1.3 + 0.7 =$ _____

7. $2.72 + 0.51 =$ _____

MATHEMATICAL PRACTICES

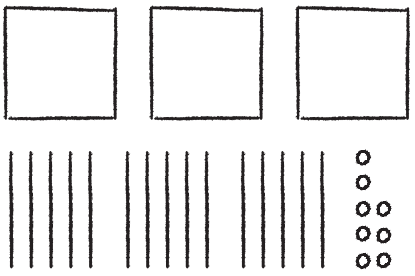
Math Talk **Explain** how you solved Exercise 6.

Problem Solving

H.O.T. Sense or Nonsense?

8. Robyn and Jim used quick pictures to model $1.85 + 2.73$.

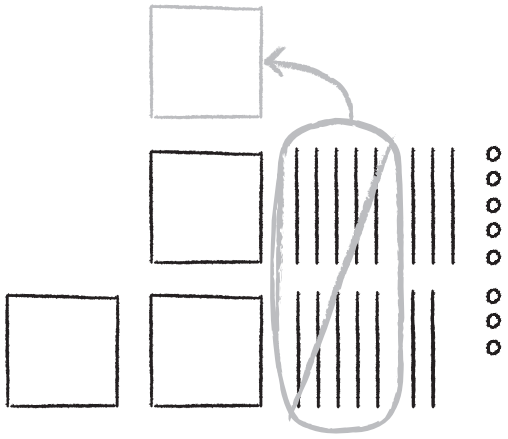
Robyn's Work



$1.85 + 2.73 = 3.158$

Does Robyn's work make sense?
Explain your reasoning.

Jim's Work



$1.85 + 2.73 = 4.58$

Does Jim's work make sense?
Explain your reasoning.

- **Explain** how you would help Robyn understand that regrouping is important when adding decimals.

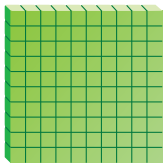
FOR MORE PRACTICE:
Standards Practice Book, pp. P61–P62

Name _____

Decimal Subtraction

Essential Question How can you use base-ten blocks to model decimal subtraction?

CONNECT You can use base-ten blocks to help you find the difference between two decimals.



1
one

0.1
one tenth

0.01
one hundredth

Investigate

Materials ■ base-ten blocks

A. Use base-ten blocks to find $0.84 - 0.56$. Model 0.84.

B. Subtract 0.56. Start by removing 6 hundredths.

- Do you need to regroup to subtract? **Explain**.

_____

_____

C. Subtract the tenths. Remove 5 tenths.

D. Record the difference. $0.84 - 0.56 =$ _____

Draw Conclusions

1. **What if** you remove the tenths first and then the hundredths? **Explain** how you would regroup.

_____

_____

2. H.O.T. **Synthesize** If two decimals are both less than 1.0, what do you know about the difference between them? **Explain**.

_____

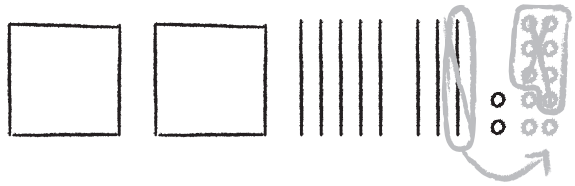
_____

Make Connections

You can use quick pictures to subtract decimals that need to be regrouped.

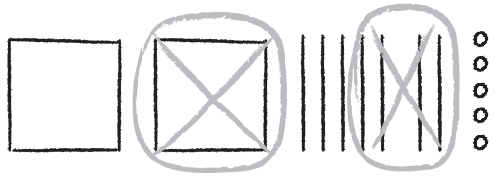
STEP 1

- Use a quick picture to model 2.82 − 1.47.
- Subtract the hundredths.
- Are there enough hundredths to remove? _____
  If there are not enough hundredths, regroup.



STEP 2

- Subtract the tenths.
- Are there enough tenths to remove? _____
  If there are not enough tenths, regroup.
- Subtract the ones.



STEP 3

Draw a quick picture of your answer. Then record.

$2.82 - 1.47 =$ _____

MATHEMATICAL PRACTICES

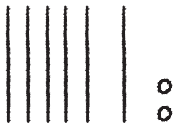
Math Talk **Explain** why you have to regroup in Step 1.

Name _____

Share and Show MATH BOARD

Complete the quick picture to find the difference.

1. $0.62 - 0.18 =$ _____



Subtract. Draw a quick picture.

2. $3.41 - 1.74 =$ _____

3. $0.84 - 0.57 =$ _____

4. $0.93 - 0.38 =$ _____

5. $2.71 - 1.34 =$ _____

6. $4.05 - 1.61 =$ _____

7. $1.37 - 0.52 =$ _____

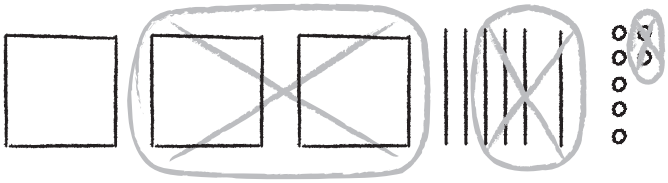
MATHEMATICAL PRACTICES

Math Talk **Explain** how you can use a quick picture to find $0.81 - 0.46$.

Problem Solving

H.O.T. Pose a Problem

8. Antonio left his MathBoard on his desk during lunch. The quick picture below shows the problem he was working on when he left.



Write a problem that can be solved using the quick picture above.

Pose a problem.

Solve your problem.

- **Describe** how you can change the problem by changing the quick picture.

FOR MORE PRACTICE:
Standards Practice Book, pp. P63–P64

Name _____

Mid-Chapter Checkpoint

Concepts and Skills

1. **Explain** how you can use base-ten blocks to find $1.54 + 2.37$.

_____

_____

_____

Complete the sentence.

2. 0.04 is $\frac{1}{10}$ of _____.

3. 0.06 is 10 times as much as _____.

Write the value of the underlined digit.

4. $6.5\underline{4}$

_____

_____

5. $0.\underline{8}37$

_____

_____

6. $8.70\underline{2}$

_____

_____

7. $\underline{9}.173$

_____

_____

Compare. Write <, >, or =.

8. 6.52 ◯ 6.520

9. 3.589 ◯ 3.598

10. 8.463 ◯ 8.483

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

11. $0.\underline{7}24$

_____

_____

12. $\underline{2}.576$

_____

_____

13. $4.7\underline{6}9$

_____

_____

Draw a quick picture to find the sum or difference.

14. $2.46 + 0.78 =$ _____

15. $3.27 - 1.84 =$ _____

Fill in the bubble completely to show your answer.

16. Marco read that a honeybee can fly up to 2.548 meters per second. He rounded the number to 2.55. To which place value did Marco round the speed of a honeybee?

Ⓐ ones Ⓒ hundredths

Ⓑ tenths Ⓓ thousandths

17. What is the relationship between 0.04 and 0.004?

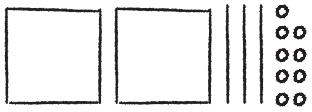
Ⓐ 0.04 is 10 times as much as 0.004

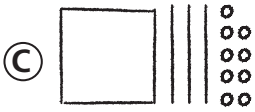
Ⓑ 0.04 is $\frac{1}{10}$ of 0.004

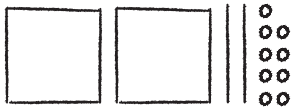
Ⓒ 0.004 is 10 times as much as 0.04

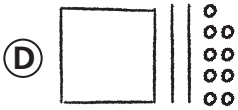
Ⓓ 0.04 is equal to 0.004

18. Jodi drew a quick picture to model the answer for $3.14 - 1.75$. Which picture did she draw?

Ⓐ 

Ⓒ 

Ⓑ 

Ⓓ 

19. The average annual rainfall in California is 0.564 of a meter per year. What is the value of the digit 4 in that number?

Ⓐ 4×1 Ⓒ $4 \times \frac{1}{100}$

Ⓑ $4 \times \frac{1}{10}$ Ⓓ $4 \times \frac{1}{1{,}000}$

20. Jan ran 1.256 miles on Monday, 1.265 miles on Wednesday, and 1.268 miles on Friday. What were her distances from greatest to least?

Ⓐ 1.268 miles, 1.256 miles, 1.265 miles

Ⓑ 1.268 miles, 1.265 miles, 1.256 miles

Ⓒ 1.265 miles, 1.256 miles, 1.268 miles

Ⓓ 1.256 miles, 1.265 miles, 1.268 miles

Name _____

Estimate Decimal Sums and Differences

Essential Question How can you estimate decimal sums and differences?

UNLOCK the Problem REAL WORLD

A singer is recording a CD. The lengths of the three songs are 3.4 minutes, 2.78 minutes, and 4.19 minutes. About how much recording time will be on the CD?

Use rounding to estimate.

Round to the nearest whole number. Then add.

3.4	3
2.78	
+ 4.19	+

So, there will be about _____ minutes of recording time on the CD.

Remember

To round a number, determine the place to which you want to round.

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

Try This! **Use rounding to estimate.**

A Round to the nearest whole dollar. Then subtract.

$27.95	
– $11.72	–

To the nearest dollar, $27.95 – $11.72 is about _____.

B Round to the nearest ten dollars. Then subtract.

$27.95	
– $11.72	–

To the nearest ten dollars, $27.95 – $11.72 is about _____.

- Do you want an overestimate or an underestimate when you estimate the total cost of items you want to buy? **Explain**.

_____

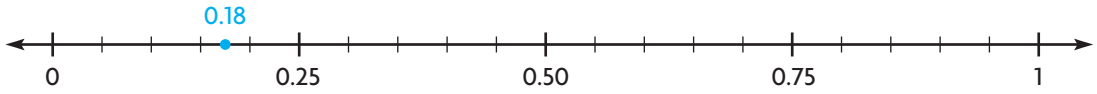
_____

_____

Use Benchmarks Benchmarks are familiar numbers used as points of reference. You can use the benchmarks 0, 0.25, 0.50, 0.75, and 1 to estimate decimal sums and differences.

Example 1 Use benchmarks to estimate. 0.18 + 0.43

Locate and graph a point on the number line for each decimal. Identify which benchmark each decimal is closer to.



Think: 0.18 is between 0 and 0.25.

It is closer to _____.

Think: 0.43 is between _____ and _____. It is closer to _____.

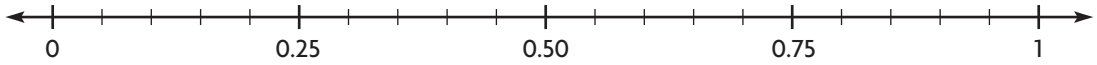
$$0.18 + 0.43$$

_____ + _____ = _____

So, 0.18 + 0.43 is about _____.

Example 2 Use benchmarks to estimate. 0.76 − 0.22

Locate and graph a point on the number line for each decimal. Identify which benchmark each decimal is closer to.



Think: 0.76 is between _____ and _____. It is closer to _____.

Think: 0.22 is between 0 and 0.25. It is closer to _____.

$$0.76 - 0.22$$

_____ − _____ = _____

So, 0.76 − 0.22 is about _____.

MATHEMATICAL PRACTICES

Math Talk Use Example 2 to **explain** how using rounding or benchmarks to estimate a decimal difference can give you different answers.

Name _____

Share and Show

Use rounding to estimate.

1. 2.34 + 1.9 + 5.23

2. 10.39 − 4.28

3. $19.75 + $3.98

Use benchmarks to estimate.

4. 0.34 + 0.1 + 0.25

5. 10.39 − 4.28

MATHEMATICAL PRACTICES

Math Talk **Describe** the difference between an estimate and an exact answer.

On Your Own

Use rounding to estimate.

6. 0.93 + 0.18

7. 7.41 − 3.88

8. 14.68 − 9.93

Use benchmarks to estimate.

9. 12.41 − 6.47

10. 8.12 + 5.52

11. 9.75 − 3.47

Practice: Copy and Solve Use rounding or benchmarks to estimate.

12. 12.83 + 16.24

13. $26.92 − $11.13

14. 9.41 + 3.82

H.O.T. Estimate to compare. Write < or >.

15. 2.74 + 4.22 ◯ 3.13 + 1.87

_____ estimate _____ estimate

16. 6.25 − 2.39 ◯ 9.79 − 3.84

_____ estimate _____ estimate

Problem Solving REAL WORLD

Use the table to solve 17–18. Show your work.

17. For the week of April 4, 1964, the Beatles had the top four songs. About how long would it take to listen to these four songs?

Top Songs

Number	Song Title	Song Length (in minutes)
1	"Can't Buy Me Love"	2.30
2	"She Loves You"	2.50
3	"I Want to Hold Your Hand"	2.75
4	"Please Please Me"	2.00

18. **What's the Error?** Isabelle says she can listen to the first three songs in the table in 6 minutes.

19. **Test Prep** Fran bought sneakers for $54.26 and a shirt for $34.34. If Fran started with $100, about how much money does she have left?

Ⓐ $5

Ⓑ $20

Ⓒ $35

Ⓓ $80

Connect to Science

Nutrition

Your body needs protein to build and repair cells. You should get a new supply of protein each day. The average 10-year-old needs 35 grams of protein daily. You can find protein in foods like meat, vegetables, and dairy products.

Grams of Protein per Serving

Type of Food	Protein (in grams)
1 scrambled egg	6.75
1 cup shredded wheat cereal	5.56
1 oat bran muffin	3.99
1 cup low-fat milk	8.22

Use estimation to solve.

20. Gina had a scrambled egg, an oat bran muffin, and a cup of low-fat milk for breakfast. About how many grams of protein did Gina have at breakfast?

21. Pablo had a cup of shredded wheat cereal, a cup of low-fat milk, and one other item for breakfast. He had about 21 grams of protein. What was the third item Pablo had for breakfast?

FOR MORE PRACTICE:
Standards Practice Book, pp. P65–P66

Name _____

Add Decimals

Essential Question How can place value help you add decimals?

UNLOCK the Problem REAL WORLD

Henry recorded the amount of rain that fell over 2 hours. In the first hour, Henry measured 2.35 centimeters of rain. In the second hour, he measured 1.82 centimeters of rain.

Henry estimated that about 4 centimeters of rain fell in 2 hours. What is the total amount of rain that fell? How can you use this estimate to decide if your answer is reasonable?

Add. 2.35 + 1.82

- Add the hundredths first.

  5 hundredths + 2 hundredths = _____ hundredths.

- Then add the tenths and ones. Regroup as needed.

  3 tenths + 8 tenths = _____ tenths. Regroup.

  2 ones + 1 one + 1 regrouped one = _____ ones.

- Record the sum for each place value.

$$\begin{array}{r} 2.35 \\ +\ 1.82 \\ \hline \end{array}$$

Draw a quick picture to check your work.

Math Talk MATHEMATICAL PRACTICES

Explain how you know when you need to regroup in a decimal addition problem.

So, _____ centimeters of rain fell.

Since _____ is close to the estimate, 4, the answer is reasonable.

Equivalent Decimals When adding decimals, you can use equivalent decimals to help keep the numbers aligned in each place. Add zeros to the right of the last digit as needed, so that the addends have the same number of decimal places.

Try This! **Estimate. Then find the sum.**

STEP 1

Estimate the sum.

$20.4 + 13.76$

$\downarrow \quad \downarrow$

Estimate: $20 + 14 = \_\_\_\_$

STEP 2

Find the sum.

Add the hundredths first.
Then, add the tenths, ones, and tens.
Regroup as needed.

	2	0.	4	0	
+	1	3.	7	6	

Think: 20.4 = 20.40

$20.40 + 13.76 = \_\_\_\_\_$

- Is your answer reasonable? **Explain**.

Share and Show

Estimate. Then find the sum.

1. Estimate: _____

$$\begin{array}{r} 2.5 \\ +\ 4.6 \\ \hline \end{array}$$

2. Estimate: _____

$$\begin{array}{r} 8.75 \\ +\ 6.43 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 2.03 \\ +\ 7.89 \\ \hline \end{array}$$

4. Estimate: _____

$6.34 + 3.8 = \_\_\_\_\_$

5. Estimate: _____

$5.63 + 2.6 = \_\_\_\_\_$

MATHEMATICAL PRACTICES

Math Talk **Explain** why it is important to remember to line up the place values in each number when adding or subtracting decimals.

Name _____

On Your Own

Estimate. Then find the sum.

6. Estimate: _____

$$\begin{array}{r} 12.3 \\ +\ 4.9 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} 19.2 \\ +\ 12.68 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 6.8 \\ +\ 7.4 \\ \hline \end{array}$$

9. Estimate: _____

$7.86 + 2.9 =$ _____

10. Estimate: _____

$4.3 + 2.49 =$ _____

11. Estimate: _____

$9.95 + 0.47 =$ _____

Find the sum.

12. seven and twenty-five hundredths added to nine and four tenths

_____

13. twelve and eight hundredths added to four and thirty-five hundredths

_____

14. nineteen and seven tenths added to four and ninety-two hundredths

_____

15. one and eighty-two hundredths added to fifteen and eight tenths

_____

Practice: Copy and Solve **Find the sum.**

16. $7.99 + 8.34$

17. $15.76 + 8.2$

18. $9.6 + 5.49$

19. $33.5 + 16.4$

20. $9.84 + 21.52$

21. $3.89 + 4.6$

22. $42.19 + 8.8$

23. $16.74 + 5.34$

24. $27.58 + 83.9$

UNLOCK the Problem REAL WORLD

25. A city receives an average rainfall of 16.99 centimeters in August. One year, during the month of August, it had rained 8.33 centimeters by August 15th. Then it rained another 4.65 centimeters through the end of the month. What was the total rainfall in centimeters for the month?

Ⓐ 3.68 centimeters

Ⓑ 4.68 centimeters

Ⓒ 12.98 centimeters

Ⓓ 13.98 centimeters

a. What do you need to find? _____

b. What information are you given? _____

_____

c. How will you use addition to find the total number of centimeters of rain that fell?

_____

d. Show how you solved the problem.

e. Fill in the bubble for the correct answer choice above.

26. Tania measured the growth of her plant each week. The first week, the plant's height measured 2.65 decimeters. During the second week, Tania's plant grew 0.38 decimeter. How tall was Tania's plant at the end of the second week?

Ⓐ 2.27 decimeters

Ⓑ 3.03 decimeters

Ⓒ 3.23 decimeters

Ⓓ 3.93 decimeters

27. Maggie had $35.13. Then her mom gave her $7.50 for watching her younger brother. How much money does Maggie have now?

Ⓐ $31.63

Ⓑ $32.63

Ⓒ $41.63

Ⓓ $42.63

FOR MORE PRACTICE:
Standards Practice Book, pp. P67–P68

Name _____

Subtract Decimals

Essential Question How can place value help you subtract decimals?

UNLOCK the Problem REAL WORLD

Hannah has 3.36 kilograms of apples and 2.28 kilograms of oranges. Hannah estimates she has about 1 more kilogram of apples than oranges. How many more kilograms of apples than oranges does Hannah have? How can you use this estimate to decide if your answer is reasonable?

- What operation will you use to solve the problem?

  _____

- Circle Hannah's estimate to check that your answer is reasonable.

Subtract. 3.36 − 2.28

- Subtract the hundredths first. If there are not enough hundredths, regroup 1 tenth as 10 hundredths.

  _____ hundredths − 8 hundredths = 8 hundredths

- Then subtract the tenths and ones. Regroup as needed.

  _____ tenths − 2 tenths = 0 tenths

  _____ ones − 2 ones = 1 one

- Record the difference for each place value.

$$\begin{array}{r} 3.36 \\ -\ 2.28 \\ \hline \end{array}$$

Draw a quick picture to check your work.

So, Hannah has _____ more kilograms of apples than oranges.

Since _____ is close to 1, the answer is reasonable.

Math Talk MATHEMATICAL PRACTICES

Explain how you know when to regroup in a decimal subtraction problem.

Try This! **Use addition to check.**

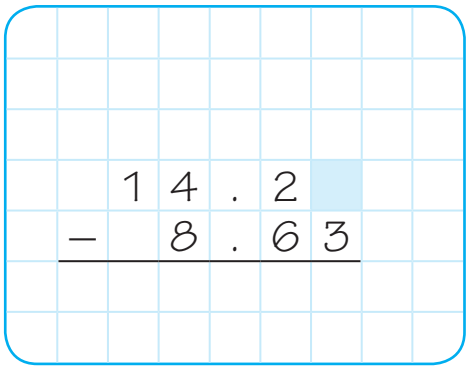
Since subtraction and addition are inverse operations, you can check subtraction by adding.

STEP 1

Find the difference.

Subtract the hundredths first.

Then, subtract the tenths, ones, and tens. Regroup as needed.



$$\begin{array}{r} 14.2\square \\ -\ 8.63 \\ \hline \end{array}$$

STEP 2

Check your answer.

Add the difference to the number you subtracted. If the sum matches the number you subtracted from, your answer is correct.

$$\begin{array}{r} \square \quad \leftarrow \text{difference} \\ +\ 8.63 \quad \leftarrow \text{number subtracted} \\ \hline \square \quad \leftarrow \text{number subtracted from} \end{array}$$

- Is your answer correct? **Explain**.

Share and Show

Estimate. Then find the difference.

1. Estimate: _____

$$\begin{array}{r} 5.83 \\ -2.18 \\ \hline \end{array}$$

2. Estimate: _____

$$\begin{array}{r} 4.45 \\ -1.86 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 4.03 \\ -2.25 \\ \hline \end{array}$$

Find the difference. Check your answer.

4.

$$\begin{array}{r} 0.70 \\ -\ 0.43 \\ \hline \end{array}$$

5.

$$\begin{array}{r} 13.2 \\ -\ 8.04 \\ \hline \end{array}$$

6.

$$\begin{array}{r} 15.8 \\ -\ 9.67 \\ \hline \end{array}$$

Name _____

On Your Own

Estimate. Then find the difference.

7. Estimate: _____

$$\begin{array}{r} 4.08 \\ -1.74 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 13.54 \\ -\ 6.7 \\ \hline \end{array}$$

9. Estimate: _____

$$\begin{array}{r} 19.64 \\ -\ 8.12 \\ \hline \end{array}$$

Find the difference. Check your answer.

10.
$$\begin{array}{r} 16.05 \\ -\ 1.5 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 7.3 \\ -5.4 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 21.4 \\ -16.97 \\ \hline \end{array}$$

H.O.T. **Find the difference.**

13. three and seventy-two hundredths subtracted from five and eighty-one hundredths

_____

14. one and six hundredths subtracted from eight and thirty-two hundredths

_____

H.O.T. **Algebra** **Write the unknown number for *n*.**

15. $5.28 - 3.4 = n$

$n =$ _____

16. $n - 6.47 = 4.32$

$n =$ _____

17. $11.57 - n = 7.51$

$n =$ _____

Practice: Copy and Solve **Find the difference.**

18. $8.42 - 5.14$

19. $16.46 - 13.87$

20. $34.27 - 17.51$

21. $15.83 - 11.45$

22. $12.74 - 10.54$

23. $48.21 - 13.65$

UNLOCK the Problem REAL WORLD

24. In peanut butter, how many more grams of protein are there than grams of carbohydrates? Use the label at the right.

PEANUT BUTTER
Nutrition Facts
Serving Size 2 Tbsp (32.0 g)

Amount Per Serving	
Calories	190
Calories from Fat	190
	% Daily Value*
Total Fat 16g	25%
Saturated Fat 3g	18%
Polyunsaturated Fat 4.4g	
Monounsaturated Fat 7.8g	
Cholesterol 0mg	0%
Sodium 5mg	0%
Total Carbohydrates 6.2g	2%
Dietary Fiber 1.9g	8%
Sugars 2.5g	8%
Protein 8.1g	

*Based on a 2,000 calorie diet

a. What do you need to know? _____

_____

_____

b. How will you use subtraction to find how many more grams of protein there are than grams of carbohydrates?

_____

_____

c. Show how you solved the problem.

d. Complete each sentence.

The peanut butter has _____ grams of protein.

The peanut butter has _____ grams of carbohydrates.

There are _____ more grams of protein than grams of carbohydrates in the peanut butter.

25. Kyle is building a block tower. Right now the tower stands 0.89 meter tall. How much higher does the tower need to be to reach a height of 1.74 meters?

_____

26. **Test Prep** Allie is 158.7 centimeters tall. Her younger brother is 9.53 centimeters shorter than she is. How tall is Allie's younger brother?

Ⓐ 159.27 centimeters

Ⓑ 159.23 centimeters

Ⓒ 149.27 centimeters

Ⓓ 149.17 centimeters

Name _____

Patterns with Decimals

Essential Question How can you use addition or subtraction to describe a pattern or create a sequence with decimals?

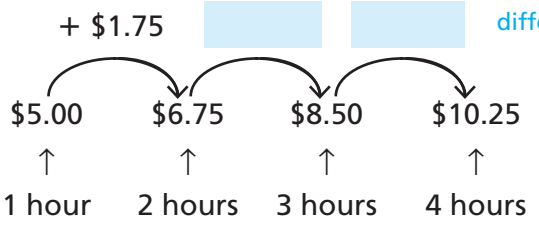
UNLOCK the Problem REAL WORLD

A state park rents canoes for guests to use at the lake. It costs $5.00 to rent a canoe for 1 hour, $6.75 for 2 hours, $8.50 for 3 hours, and $10.25 for 4 hours. If this pattern continues, how much should it cost Jason to rent a canoe for 7 hours?

A **sequence** is an ordered list of numbers. A **term** is each number in a sequence. You can find the pattern in a sequence by comparing one term with the next term.

STEP 1

Write the terms you know in a sequence. Then look for a pattern by finding the difference from one term in the sequence to the next.



STEP 2

Write a rule that describes the pattern in the sequence.

Rule: _____

STEP 3

Extend the sequence to solve the problem.

$5.00, $6.75, $8.50, $10.25, _____, _____, _____

So, it should cost _____ to rent a canoe for 7 hours.

- What observation can you make about the pattern in the sequence that will help you write a rule?

_____

_____

Example Write a rule for the pattern in the sequence. Then find the unknown terms in the sequence.

29.6, 28.3, 27, 25.7, _____, _____, _____, 20.5, 19.2

STEP 1 Look at the first few terms in the sequence.

Think: Is the sequence increasing or decreasing from one term to the next?

STEP 2 Write a rule that describes the pattern in the sequence.

What operation can be used to describe a sequence that increases?

_____

What operation can be used to describe a sequence that decreases?

_____

Rule: _____

STEP 3 Use your rule to find the unknown terms. Then complete the sequence above.

- **Explain** how you know whether your rule for a sequence would involve addition or subtraction. _____

Try This!

A **Write a rule for the sequence. Then find the unknown term.**

65.9, 65.3, _____, 64.1, 63.5, 62.9

Rule: _____

B **Write the first four terms of the sequence.**

Rule: start at 0.35, add 0.15

_____, _____, _____, _____

Name _____

Share and Show

Write a rule for the sequence.

1. 0.5, 1.8, 3.1, 4.4, …

Think: Is the sequence increasing or decreasing?

Rule: _____

2. 23.2, 22.1, 21, 19.9, …

Rule: _____

Write a rule for the sequence. Then find the unknown term.

3. 31.5, 25.2, 18.9, _____, 6.3

Rule: _____

4. 0.25, 0.75, _____, 1.75, 2.25

Rule: _____

5. 0.3, 1.5, _____, 3.9, 5.1

Rule: _____

6. 19.5, 18.8, 18.1, 17.4, _____

Rule: _____

MATHEMATICAL PRACTICES

Math Talk What operation, other than addition, suggests an increase from one term to the next?

On Your Own

Write a rule for the sequence. Then find the unknown term.

7. 1.8, 4.1, _____, 8.7, 11

Rule: _____

8. 6.85, 5.73, 4.61, _____, 2.37

Rule: _____

9. 33.4, _____, 28.8, 26.5, 24.2

Rule: _____

10. 15.9, 16.1, 16.3, _____, 16.7

Rule: _____

Write the first four terms of the sequence.

11. **Rule:** start at 10.64, subtract 1.45

_____, _____, _____, _____

12. **Rule:** start at 0.87, add 2.15

_____, _____, _____, _____

13. **Rule:** start at 19.3, add 1.8

_____, _____, _____, _____

14. **Rule:** start at 29.7, subtract 0.4

_____, _____, _____, _____

Problem Solving REAL WORLD

H.O.T. Pose a Problem

15. Bren has a deck of cards. As shown below, each card is labeled with a rule describing a pattern in a sequence. Select a card and decide on a starting number. Use the rule to write the first five terms in your sequence.

Add 1.6	Add 0.33	Add 6.5	Add 0.25	Add 1.15

Sequence: _____, _____, _____, _____, _____

Write a problem that relates to your sequence and requires the sequence be extended to solve.

Pose a Problem

Solve your problem.

- **Explain** how you solved your problem. _____

FOR MORE PRACTICE:
Standards Practice Book, pp. P71–P72

Name _____

Problem Solving • Add and Subtract Money

Essential Question How can the strategy *make a table* help you organize and keep track of your bank account balance?

UNLOCK the Problem REAL WORLD

At the end of May, Mrs. Freeman had an account balance of $442.37. Since then, she has written a check for $63.92 and made a deposit of $350.00. Mrs. Freeman says she has $729.45 in her account. Make a table to determine if Mrs. Freeman is correct.

Read the Problem

What do I need to find?

I need to find _____

_____

What information do I need to use?

I need to use the _____

_____

_____

How will I use the information?

I need to make a table and use the information to

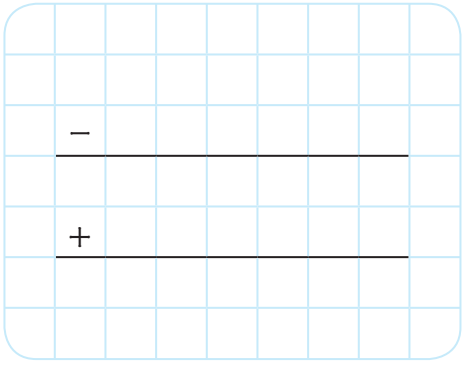
_____

_____

_____

Solve the Problem

Mrs. Freeman's Checkbook			
May balance			$442.37
Check	$63.92		−$63.92
Deposit		$350.00	



Mrs. Freeman's correct balance is _____.

1. How can you tell if your answer is reasonable? _____

_____

Try Another Problem

Nick is buying juice for himself and 5 friends. Each bottle of juice costs $1.25. How much does 6 bottles of juice cost? Make a table to find the cost of 6 bottles of juice.

Use the graphic below to solve the problem.

Read the Problem	Solve the Problem
What do I need to find?	
What information do I need to use?	
How will I use the information?	So, the total cost of 6 bottles of juice is _____.

2. **What if** Ginny says that 12 bottles of juice cost $25.00? Is Ginny's statement reasonable? **Explain**. _____

_____

_____

3. If Nick had $10, how many bottles of juice could he buy? _____

Math Talk MATHEMATICAL PRACTICES

Explain how you could use another strategy to solve this problem.

Name _____

Share and Show

1. Sara wants to buy a bottle of apple juice from a vending machine. She needs exactly $2.30. She has the following bills and coins:

Make and complete a table to find all the ways Sara could pay for the juice.

First, draw a table with a column for each type of bill or coin.

Next, fill in your table with each row showing a different way Sara can make exactly $2.30.

2. **What if** Sara decides to buy a bottle of water that costs $1.85? What are all the different ways she can make exactly $1.85 with the bills and coins she has? Which coin must Sara use?

3. At the end of August, Mr. Diaz had a balance of $441.62. Since then, he has written two checks for $157.34 and $19.74 and made a deposit of $575.00. Mr. Diaz says his balance is $739.54. Find Mr. Diaz's correct balance.

On Your Own

Use the following information to solve 4–7.

At Open Skate Night, admission is $3.75 with a membership card and $5.00 without a membership card. Skate rentals are $3.00.

Choose a STRATEGY

- Act It Out
- Draw a Diagram
- Make a Table
- Solve a Simpler Problem
- Work Backward
- Guess, Check, and Revise

4. Aidan paid the admission for himself and two friends at Open Skate Night. Aidan had a membership card, but his friends did not. Aidan paid with a $20 bill. How much change should Aidan receive?

SHOW YOUR WORK

5. The Moores and Cotters were at Open Skate Night. The Moores paid $6 more for skate rentals than the Cotters did. Together, the two families paid $30 for skate rentals. How many pairs of skates did the Moores rent?

6. H.O.T. Jennie and 5 of her friends are going to Open Skate Night. Jennie does not have a membership card. Only some of her friends have membership cards. What is the total amount that Jennie and her friends might pay for admission?

7. **Test Prep** Sean and Hope each have a membership card for Open Skate Night. Sean has his own skates, but Hope will have to rent skates. Sean gives the clerk $15 for their admission and skate rental. How much change should he receive?

Ⓐ $3.50 Ⓒ $5.00

Ⓑ $4.50 Ⓓ $6.50

Name _____

Choose a Method

Essential Question Which method could you choose to find decimal sums and differences?

UNLOCK the Problem REAL WORLD

At a track meet, Steven entered the long jump. His jumps were 2.25 meters, 1.81 meters, and 3.75 meters. What was the total distance Steven jumped?

To find decimal sums, you can use properties and mental math or you can use paper and pencil.

- Underline the sentence that tells you what you are trying to find.
- Circle the numbers you need to use.
- What operation will you use?

_____

One Way Use properties and mental math.

Add. 2.25 + 1.81 + 3.75

$2.25 + 1.81 + 3.75$

$= 2.25 + 3.75 + 1.81$ Commutative Property

$= (\_\_\_\_ + \_\_\_\_) + 1.81$ Associative Property

$= \_\_\_\_ + 1.81$

$= \_\_\_\_$

Another Way Use place-value.

Add. 2.25 + 1.81 + 3.75

$$\begin{array}{r} 2.25 \\ 1.81 \\ +\,3.75 \\ \hline \end{array}$$

So, the total distance Steven jumped was _____ meters.

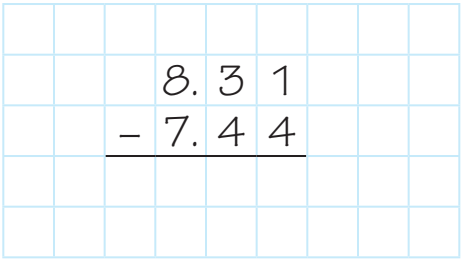
Math Talk MATHEMATICAL PRACTICES

Explain why you might choose to use the properties to solve this problem.

Try This!

In 1924, William DeHart Hubbard won a gold medal with a long jump of 7.44 meters. In 2000, Roman Schurenko won the bronze medal with a jump of 8.31 meters. How much longer was Schurenko's jump than Hubbard's?

A **Use place-value.**



B **Use a calculator.**

So, Schurenko's jump was _____ meter longer than Hubbard's.

- **Explain** why you cannot use the Commutative Property or the Associative Property to find the difference between two decimals.

Share and Show

Find the sum or difference.

1. $4.19 + 0.58$

2. $9.99 - 4.1$

3. $5.7 + 2.25 + 1.3$

4. $28.6 - 9.84$

5. $\$15.79 + \$32.81$

6. $38.44 - 25.86$

Name _____

On Your Own

Find the sum or difference.

7. $\$18.39 + \$7.56$

8. $8.22 - 4.39$

9. $93.6 - 79.84$

10. $1.82 + 2.28 + 2.18$

11. $2.35 - 0.16$

12. $5.16 + 4.54$

13. $15.3 - 6.53$

14. $2.64 + 8.41$

Practice: Copy and Solve **Find the sum or difference.**

15. $6.3 + 2.98 + 7.7$

16. $27.96 - 16.2$

17. $12.63 + 15.04$

18. $9.24 - 2.68$

19. $\$18 - \$3.55$

20. $9.73 - 2.52$

21. $\$54.78 + \$43.62$

22. $7.25 + 0.25 + 1.5$

23. $14.56 - 7.8$

24. $3.35 + 1.4 + 3.65$

25. $\$22.50 - \$8.99$

26. $9.77 + 5.54$

H.O.T. **Algebra** **Find the missing number.**

27. $n - 9.02 = 3.85$

$n =$ _____

28. $n + 31.53 = 62.4$

$n =$ _____

29. $9.2 + n + 8.4 = 20.8$

$n =$ _____

Problem Solving REAL WORLD

Use the table to solve 30–32.

2008 Men's Olympic Long Jump Results	
Medal	**Distance (in meters)**
Gold	8.34
Silver	8.24
Bronze	8.20

30. How much farther did the gold medal winner jump than the silver medal winner?

31. Write Math The fourth-place competitor's jump measured 8.19 meters. If his jump had been 0.10 meter greater, what medal would he have received? **Explain** how you solved the problem.

SHOW YOUR WORK

32. In the 2004 Olympics, the gold medalist for the men's long jump had a jump of 8.59 meters. How much farther did the 2004 gold medalist jump compared to the 2008 gold medalist?

33. Jake cuts a length of 1.12 meters from a 3-meter board. How long is the board now?

34. **Test Prep** In the long jump, Danny's first attempt was 5.47 meters. His second attempt was 5.63 meters. How much farther did Danny jump on his second attempt than on his first?

Ⓐ 11.1 meters Ⓒ 5.16 meters

Ⓑ 10.1 meters Ⓓ 0.16 meter

Name _____

Chapter Review/Test

Vocabulary

Choose the best term from the box.

Vocabulary
sequence
term
thousandth

1. If one hundredth is divided into ten equal parts, each part is one _____. (p. 105)

2. An ordered list of numbers is called a _____. (p. 143)

Concepts and Skills

3. **Explain** how the value of a decimal changes as you move to the left or the right in a place-value chart.

_____

_____

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

4. $0.7\underline{3}5$

5. $\underline{9}.283$

6. $4.\underline{0}79$

Find the sum or difference.

7. $\$12.87 - \$5.75$

8. $\$32.64 + \$18.78$

9. $9.28 - 0.54$

10. $14.36 + 7.87$

11. $10.05 - 6.38$

12. $3.25 + 6.75 + 8.75$

GO Online Assessment Options Chapter Test

Fill in the bubble completely to show your answer.

13. Doug bought a pair of sneakers for $47.82 and a shirt for $13.36. If Doug had $100 before his purchase, about how much money does Doug have left now?

Ⓐ $29.00

Ⓑ $39.00

Ⓒ $48.00

Ⓓ $61.00

14. Since September, Mrs. Bishop has written a check for $178.23 and made a deposit of $363.82. Her balance was $660.00. Which amount should Mrs. Bishop's checkbook balance show now?

Ⓐ $481.77

Ⓑ $483.77

Ⓒ $845.59

Ⓓ $847.59

15. Helen earns $12 each weekend babysitting her brother. After the third weekend, Helen buys a new CD for $12.48. How much money does Helen have left after buying the CD?

Ⓐ $36.00

Ⓑ $24.00

Ⓒ $23.52

Ⓓ $11.52

16. Morgan jogged 51.2 kilometers one week. Karen jogged 53.52 kilometers the same week. How many more kilometers did Karen jog that week than Morgan?

Ⓐ 48.4 kilometers

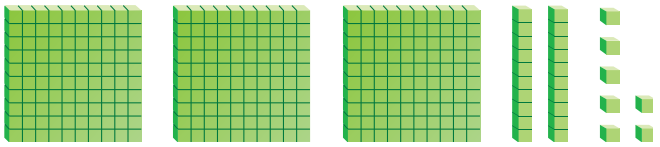
Ⓑ 12.3 kilometers

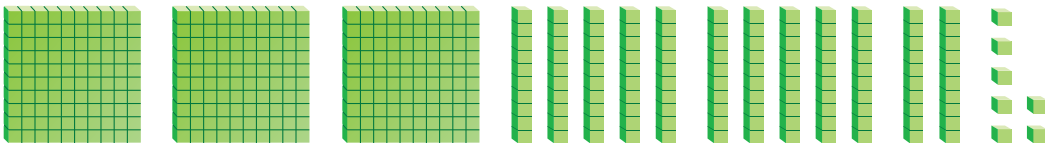
Ⓒ 2.32 kilometers

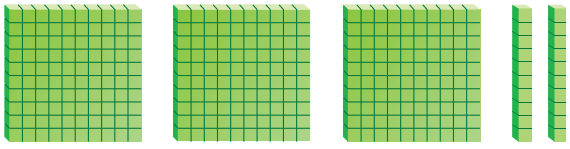
Ⓓ 2.3 kilometers

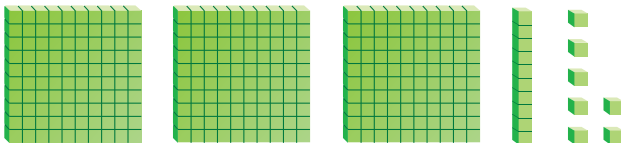
Name _____

17. Angelo measured the amount of rain that fell on July 14th. His rain gauge recorded 1.54 centimeters. If 1.73 centimeters fell between July 1st and July 13th, which model shows the total amount of rain that fell from July 1st through July 14th?

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

18. The Ruby Throated Hummingbird has an average weight of just 4.253 grams. What is its average weight rounded to the nearest tenth?

Ⓐ 4.3 grams

Ⓑ 4.253 grams

Ⓒ 4.25 grams

Ⓓ 4.2 grams

Constructed Response

19. The Smiths are on a summer road trip. They travel 10.9 hours the first day, 8.6 hours the second day, and 12.4 hours the final day. About how may hours does the Smith family travel over the 3-day trip?

Explain how you found your answer.

Performance Task

20. The prices for different beverages and snacks at a snack stand in a park are shown in the table.

Park Snacks	
Item	**Price**
Fruit Juice	$0.89
Iced Tea	$1.29
Lemonade	$1.49
Pretzel	$2.50
Popcorn	$1.25

A Blair buys a pretzel and fruit juice. Jen buys popcorn and iced tea. Find the difference between the cost of the snacks Blair buys and the cost of the snacks Jen buys.

B For which two beverages is the difference between the prices the greatest? What is the difference?

C **What if** a frosty beverage was being added to the menu that would cost $\$0.20$ more than the fruit juice? How much would the frosty beverage cost? **Explain** how you can determine the cost by using mental math.