**Modelling and Comparing Numbers**

Sam read that walking about 10,000 steps a day is healthy. Sam and 3 of her friends counted their steps one day. Sam showed the number of steps she walked with a base ten block tower and a sketch.

<table>
<thead>
<tr>
<th>Healthy Walking</th>
<th>Number of steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>Sam</td>
<td>7423</td>
</tr>
<tr>
<td>Stefan</td>
<td>8917</td>
</tr>
<tr>
<td>Mateo</td>
<td>6023</td>
</tr>
<tr>
<td>Lauren</td>
<td>7447</td>
</tr>
</tbody>
</table>

? How can you use models to show which student walked closest to 10,000 steps?

A. Write the number of steps Sam walked, in words.

B. How does Sam’s tower show that 7423 equals 7000 + 400 + 20 + 3?
   - How many large cubes did Sam use? ________
   - What does each large cube represent? ________
   - How many hundreds blocks did Sam use? ________
   - How many tens blocks did Sam use? ________
   - How many ones blocks did Sam use? ________

C. How do you know that Sam walked about 7500 steps?
   Place 7423 on the following number line to help you explain.

![Number line with 7423 marked]
2.2 Using Expanded Form  Page 2

Step 4: Write the 3 possible distances.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundreds</td>
<td>Tens</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

Step 5: 344 800, 348 400, and 384 400 are possible distances. Find out which is greater. Write each number in expanded form.

344 800 = 3 hundred thousands + 4 ten thousands + 8 hundreds
       = 300 000 + 40 000 + 800

348 400 = 3 hundred thousands + ___ ten thousands + ___ thousands + ___ hundreds
       = 300 000 + _______ + _______ + _______

384 400 = 3 hundred thousands + ___ ten thousands + ___ thousands + ___ hundreds
       = _______ + _______ + _______ + _______

The number of hundred thousands (3) is the same in each number.

Compare the ten thousands. **Circle** the number that has the most ten thousands.

344 800  348 400  384 400

So, _______ is the greatest number.
The distance between Earth and the Moon is _______ km.

Reflecting

384 400 is a 6-digit number. Why does the expanded form of 384 400 only have 4 values added together?

__________________________________________________________

__________________________________________________________
2.2 Using Expanded Form  Page 1
Student Book pages 44–47

Checking

1. **a)** It takes the planet Jupiter **one hundred three thousand nine hundred forty-four** hours to travel around the Sun. Show this number on the place value chart below.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundreds</td>
<td>Tens</td>
</tr>
<tr>
<td>Hundreds</td>
<td>Tens</td>
</tr>
</tbody>
</table>

Write the number in standard form. __________

It takes Saturn \(200\ 000 + 50\ 000 + 8000 + 100 + 40 + 4\) hours to travel around the Sun. Show this number on the place value chart below.

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundreds</td>
<td>Tens</td>
</tr>
<tr>
<td>Hundreds</td>
<td>Tens</td>
</tr>
</tbody>
</table>

Write the number in standard form. __________

**b)** Does Jupiter or Saturn take longer to go around the Sun? __________
How do you know?

______________

______________
2.2 Using Expanded Form  Page 2

Practising

2. Use 8 counters to model 3 different 6-digit numbers.

Draw your models in the place value charts below.

Model a 6-digit number.
Write it in standard form.

_______

Write it in expanded form.

_______ + _______ + _______ + _______ + _______ + _______

Model another 6-digit number.
Write it in standard form.

_______

Write it in expanded form.

_______

Model another 6-digit number.
Write it in standard form.

_______

Write it in expanded form.

_______
Using Expanded Form

GOAL
Represent, describe, and compare numbers to one million.

1. Write the number 863 291 in expanded form.
   
   ____ hundred thousands + ____ ten thousands 
   + ____ thousands + ____ hundreds 
   + ____ tens + ____ one

2. Write the number 582 100 in expanded form using numerals.
   
   582 100

   Write each number in standard form.
   a) 1 hundred thousand + 2 ten thousands
      + 5 thousands + 7 hundreds + 8 tens + 2 ones
      _______
   b) 50 000 + 3000 + 200 + 60 + 9
      _______
   c) 500 000 + 30 000 + 5000 + 100 + 90 + 2
      _______
   d) 700 000 + 10 000 + 800 + 40 + 3
      _______

4. Write the numbers in Question 3 in order from greatest to least.

5. Draw seven counters on the place value chart to make a six-digit number. Write the standard form and the expanded form of your number.

   Standard form: ___________
   Expanded form: ___________

At-Home Help
Expanded form is a way to write a number that shows the value of each digit. For example, the expanded form of 193 245 is:
1 hundred thousand
+ 9 ten thousands
+ 3 thousands + 2 hundreds
+ 4 tens + 5 ones, OR
100 000 + 90 000 + 3000 + 200
+ 40 + 5.
Expanded Notation

Fill in the blanks

\[ 5,987 = \_ + \_ + \_ + 7 \]

\[ \_ = 2,000 + 300 + 30 \]

\[ 6,764 = \_ + 700 + 60 + \_ \]

\[ 7,544 = \_ + \_ + \_ + 4 \]

\[ 9,235 = \_ + 200 + \_ + 5 \]

\[ 8,897 = \_ + 800 + \_ + 7 \]

\[ 5,001 = \_ + 1 \]

\[ \_ = 4,000 + 500 + 60 + 7 \]

\[ 5,009 = 5,000 + \_ + \_ + 9 \]

\[ 4,887 = \_ + \_ + \_ + \_ \]

\[ 4,771 = \_ + \_ + \_ + 1 \]

\[ \_ = 2,000 + 100 + 90 + 8 \]

\[ 2,298 = \_ + \_ + \_ + 8 \]

\[ 3,000 = 3,000 + \_ + \_ + \_ \]

\[ 4,987 = \_ + \_ + \_ + \_ \]

\[ \_ = 4,000 + 900 + 80 + 7 \]

\[ 8,444 = \_ + \_ + \_ + \_ \]

\[ \_ = 8,000 + 800 + 80 + 8 \]

\[ 3,985 = 3,000 + \_ + \_ + 5 \]

\[ 3,911 = \_ + \_ + \_ + 1 \]

\[ \_ = 1,000 + 700 + 50 \]

\[ 3,929 = \_ + \_ + \_ + \_ \]

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A group of students broke a world record by filling a container with 221 947 L of popcorn.

Which of these containers could you use to measure 221 947 L?

Write 221 947 in expanded form.

Use the expanded form to show one way you could measure 221 947 L.

2 \times 100 000 L + \_
\times 10 000 L + \_
\times 1000 L + \_
\times 100 L + \_
\times 10 L + \_
\times 1 L

Or, you could fill the 1 L container _______ times to measure 221 947 L.

Look at the two groups of 3 digits in 221 947.

221 947 = 221 thousands + _______ ones

You could fill the 1000 L container _______ times and the 1 L container _______ times.

Describe other ways you could use the containers to measure 221 947 L.

**Idea:** Represent 221 947 using counters on a place value chart. Then, regroup tens as ones, or hundreds as thousands, and so on, to find new combinations.
2.3 Renaming Numbers

Student Book page 48

**GOAL:**
Rename numbers that have up to five digits.

A litre (L) is a unit used to measure capacity. Capacity is the amount that a container can hold. A group of students broke a school record by filling a container with 21 947 L of popcorn.

**Which containers could you fill if you had 21 947 L of popcorn?**

A. Decide how many of each container you need to make 21 947 L.
   Fill in the number of each container in the place value chart below.

### Measuring 21 947 L

<table>
<thead>
<tr>
<th>20 000</th>
<th>+</th>
<th>+</th>
<th>+</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ten thousands)</td>
<td>(one thousands)</td>
<td>(hundreds)</td>
<td>(tens)</td>
<td>(ones)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V</th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 000 L</td>
<td>1000 L</td>
<td>100 L</td>
<td>10 L</td>
<td>1 L</td>
</tr>
</tbody>
</table>

B. Here is another way to measure 21 947 L.

21 947 is 21 thousands and 947 ones. You could fill the 1000 L container ________ times and the 1 L container ________ times.
Chapter 2  Lesson 3

Renamining Numbers

GOAL

Rename numbers that have up to seven digits.

1. Mateo, Jolie, and Tyler are playing a game. Each student has play money. They can use the money to buy decorated tiles. Mateo has $387 622. Jolie has $186 200. Tyler has $420 331.

   a) Which student has the most play money? _________
   b) How many leaf tiles can Mateo buy? _________
   c) Jolie says that she can buy 18 flower tiles. Is she correct? Explain.

   d) Tyler says, "I can buy 42 flower tiles and 331 plain tiles." Write two other sets of tiles that Tyler can buy with his money.

   e) Write three different sets of tiles that Mateo can buy.

   ____________________________

   ____________________________

   ____________________________
2.4 Rounding Numbers Page 1

Student Book pages 50-52

**GOAL**

Round numbers to the nearest thousand, the nearest hundred, and the nearest ten.

The population of an area is the total number of people who live there.

The Inuvik Region in the Northwest Territories had a population of 9192 in 2006.

**What other ways can you use to show the population of the Inuvik Region?**

A. The population of an area is always changing.

You could use an estimate to show the population of the Inuvik Region.

![Population estimate diagram]

You could round 9192 to the nearest thousand.

How do you know that 9000 is the nearest thousand?

B. Round the population of the Inuvik Region to the nearest hundred.

**Hint:** Is 9192 closest to 9100, 9200, 9300, ...?

The population of the Inuvik Region is ______________.

C. Round the population of the Inuvik Region to the nearest ten.

The population of the Inuvik Region is ______________.

Learning BLM 2.4: Rounding Numbers | 53
Reflecting

You rounded 9192 to the nearest thousand.
Was the number rounded up or down? _______ Why?

__________________________

You rounded 9192 to the nearest hundred.
Was the number rounded up or down? _______ Why?

__________________________

You rounded 9192 to the nearest ten.
Was the number rounded up or down? _______ Why?

__________________________

Which rounded number would you use to describe the population of the Inuvik Region?
_______ Why?

__________________________

If the population of the Inuvik Region increased by 900, what number would you round the population to? ________
2.4 Rounding Numbers  Page 1
Student Book pages 50–52

**Checking**

1. **a)** Round the populations of Kelowna and Abbotsford to the nearest hundred thousand, the nearest ten thousand, and the nearest thousand. Use number lines. Record your estimates in the table below.

<table>
<thead>
<tr>
<th>City</th>
<th>Population in 2006</th>
<th>Nearest 100 000</th>
<th>Nearest 10 000</th>
<th>Nearest 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelowna</td>
<td>162 276</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abbotsford</td>
<td>159 020</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use this number line to round the populations to the nearest hundred thousand.

Use this number line to round the populations to the nearest ten thousand.

Use this number line to round the populations to the nearest thousand.

**b)** Do the 2 populations round to the same hundred thousand? __________

Do the 2 populations round to the same ten thousand? __________

Do the 2 populations round to the same thousand? __________
2.4 Rounding Numbers  Page 2

Practising

3. Vasco looked up the total land and fresh water area of each Western province.

a) Round each area to the nearest hundred thousand, ten thousand, and thousand.
   Use the number lines on this page to help you estimate.

<table>
<thead>
<tr>
<th>Province</th>
<th>Land and fresh water (km²)</th>
<th>Nearest 100 000</th>
<th>Nearest 10 000</th>
<th>Nearest 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>944 735</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alberta</td>
<td>661 848</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>651 036</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manitoba</td>
<td>647 797</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Which provinces have the same area, to the nearest hundred thousand?
   ______________________
   ______________________
   ______________________

b) Which provinces have the same area, to the nearest ten thousand?
   ______________________
   ______________________
   ______________________
Rounding Numbers

GOAL
Round numbers to the nearest hundred thousand, the nearest ten thousand, and the nearest thousand.

1. Mark each number on the number line. Then round each number to the nearest hundred thousand.
   a) 215 000
   b) 557 000

2. Is 863 371 closer to 800 000 or 900 000? How do you know?

3. Round each number to the nearest ten thousand.
   a) 741 938
   b) 116 220
   c) 578 000
   d) 386 442

4. Round each number to the nearest thousand.
   a) 561 372
   b) 110 283
   c) 983 871
   d) 453 666

5. Round 736 927 to the nearest hundred thousand, ten thousand, and thousand.

At-Home Help
You can round 486 186 in different ways:
- to the nearest hundred thousand: 500 000
- to the nearest ten thousand: 490 000
- to the nearest thousand: 486 000
4. Round to the nearest hundred.

a) 385- 
   
   b) 847- 
   
   c) 602- 
   
   d) 769- 
   
   e) 7754- 
   
   f) 999- 
   
   g) 867635- 
   
   h) 64687- 
   
   i) 387524- 

5. Round to the nearest thousand.

a) 4875- 
   
   b) 7463- 
   
   c) 57635- 
   
   d) 736057- 
   
   e) 305736- 
   
   f) 746857- 
   
   g) 730263- 
   
   h) 630784- 
   
   i) 1857937- 

6. Round to the nearest ten thousand.

a) 384746- 
   
   b) 3756938- 
   
   c) 384968- 
   
   d) 765374- 
   
   e) 384056-
If you wrote a book about 1 million, what interesting facts would you include?

A humpback whale has a mass of 40 000 kg.

\[ 40 \, 000 \times 25 = \underline{1000000} \]

_______ humpback whales have a mass of 1 million kg.

A Pacific walrus has a mass of 4000 kg.

_______ Pacific walruses have a mass of 1 million kg.

A bottlenosed dolphin has a mass of 400 kg.

_______ bottlenosed dolphins have a mass of 1 million kg.

Research another animal mass.

Use the mass to write an interesting fact about 1 million.

---------------------------------------------------------------

The distance between Vancouver and Winnipeg is about 2000 km.

Divide 1 million km by the distance. Use a calculator.

\[ 1 \, 000 \, 000 \, \text{km} \div \underline{2000} \, \text{km} = \underline{500} \]

You would need to travel between Vancouver and Winnipeg _______ times to travel 1 million km.

Research the distance between 2 other cities in Canada.

Use the distance to write an interesting fact about 1 million.

---------------------------------------------------------------
2.5 Exploring One Million

Student Book page 53

GOAL

Describe one million in various ways.

If you wrote a book about 1 million, what interesting facts would you include?

The mass of a blue whale is about 100 000 kg.
What number can you multiply 100 000 by to get 1 million?
100 000 \times \underline{\hspace{1cm}} = 1\,000\,000
So, \underline{\hspace{1cm}} blue whales have a total mass of 1 million kg.

Cats sleep about 10 hours a day.
How many cats will it take to sleep 1 million hours in 1 day?
1\,000\,000 \div 10 = \text{about} \underline{\hspace{1cm}} \text{cats}
It will take about \underline{\hspace{1cm}} cats to sleep 1 million hours in 1 day.

The distance from Calgary to Vancouver is about 1000 km.
1 km = 1000 m
Write the distance from Calgary to Vancouver in metres.
1000 km \times 1000 m = \underline{\hspace{1cm}} m

Length of 1 bobcat = 1 m
Length of a row of 1 million bobcats = 1\,000\,000 \times 1 m
= \underline{\hspace{1cm}} m
A row of 1 million bobcats would stretch from Calgary to \underline{\hspace{1cm}}.
Millions

The place value chart shows the number 378 206 542.

<table>
<thead>
<tr>
<th>Millions</th>
<th>Thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>T</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

To read 378 206 542, first read millions: 378 million, then read thousands: 206 thousand, then read the last 3 digits: 542. 378 million 206 thousand 542.

The value of 3 in 378 206 542 is 300 000 000.

What place is underlined? Circle the answer.

1. | Millions | Thousands |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>T</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

   millions        thousands

2. | Millions | Thousands |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>T</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

   ten millions    ten thousands

3. 688 532 194 hundred millions hundred thousands
4. 924 336 172 hundred millions hundred thousands

What is the value of the underlined digit? Circle the answers.

5. 234 566 918
   We say:
   3 million
   3 ten million
   3 hundred million
   We write:
   3 000 000
   30 000 000
   300 000 000

6. 212 784 966
   7 thousand
   7 ten thousand
   7 hundred thousand
   7 000
   70 000
   700 000

What is the value of the underlined digit?

7. 977 536 820
8. 824 399 752
9. 114 673 982
10. 733 574 021
Exploring One Million

GOAL

Describe one million in various ways.

Tyler collects pennies. He wants to know how many pennies he needs to collect to have $10, $100, $1000, and $10000.

1. How many pennies are in $1?
   _______ pennies in $1

2. How many pennies are in $10?
   _______ hundreds = _______ pennies in $10

3. How many pennies are in $100?
   _______ hundreds = _______ pennies in $100

4. How many pennies are in $1000?
   _______ hundreds = _______ pennies in $1000

5. What pattern do you notice in your answers?

6. How many pennies are in $10000?
   _______ pennies in $10000

7. It takes Tyler 1 month to collect 100 pennies.
   How many months would it take him to collect $1?
   How many months would it take him to collect $10000 worth of pennies? Explain your thinking.
Numbers to 9999

Write the number shown in this diagram 3 different ways.

Think: 2 thousands 4 hundreds 5 tens 3 ones
Write in words: two thousand four hundred fifty-three
Write the number: 2453
Write in expanded form: 2000 + 400 + 50 + 3

Write in words.
1. 3458
2. 6205
3. 8286
4. 1018

Write in numerals.
5. four thousand eighty-two
6. nine hundred fifty-four
7. six hundred forty-nine
8. one thousand five hundred one
9. seven thousand eight hundred twenty-nine

Write in expanded form.
10. 2134
11. 1977
12. 5806
13. 7300
Rounding Numbers

Round 473 to the nearest 10.

Think: the closest multiples of 10 are 470 and 480.
473 is closer to 470.
473 rounded to the nearest 10 is 470.

Use the number lines to complete the sentences.

Round 6350 to the nearest 100.
1. Think: the closest multiples of 100 are 6300 and 6400.
6350 is halfway between _____ and _____.
6350 rounded to the nearest 100 is _____.

Round 87 692 to the nearest 1000.
2. Think: the closest multiples of 1000 are _____ and _____.
87 692 is closer to _____.
87 692 rounded to the nearest 1000 is _____.

Round the numbers. Use the number lines above if you wish.
3. 497 to the nearest 10 _____
4. 6420 to the nearest 1000 _____
5. 6180 to the nearest 100 _____
6. 89 500 to the nearest 1000 _____
GOAL
Read, write, and model decimals.

Mateo bought a package of trail mix to take on a hike.
The mass of the trail mix is 1.393 kg.

How can Mateo model the mass of the trail mix?

You can write fractions as decimals.

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Decimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 tenth</td>
<td>0.1</td>
</tr>
<tr>
<td>1 hundredth</td>
<td>0.01</td>
</tr>
<tr>
<td>1 thousandth</td>
<td>0.001</td>
</tr>
</tbody>
</table>

You can write decimals in expanded form.
1.257 = 1 whole + 2 tenths + 5 hundredths + 7 thousandths

Write these decimals in expanded form.

1.834 = __ whole + __ tenths + __ hundredths + __ thousandths
2.696 = __ wholes + __ tenths + __ hundredths + __ thousandths

You can use base ten blocks to model fractions or decimals.
2.6 Decimal Place Value  Page 2

Use base ten blocks to model 1.393 on a decimal place value chart. Make a copy of this model.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
<th>Thousandths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>

Write 1.393 in expanded form.

1.393 = 1 whole + _ tenths + _ hundredths + _ thousandths

or 1 + 10 + 100 + 1000

or _ + 0._ + 0._ + 0._

= 300 + 90 + 3 small cubes

= ______ thousandths

Write 1.393 in words.

one and __________ thousandths

Reflecting

In 1.393, the 3 in the 1st place after the decimal point represents ________.
The 3 in the 3rd place after the decimal point represents ________.
Which of these 3s represents a greater mass?

____________
2.6 Decimal Place Value  Page 1

Student Book pages 56–59

Checking

1. a) Rachel bought a 1.098 kg package of trail mix.
   Model 1.098 kg using base ten blocks.
   **Hint:** Leave the column empty when the place value is 0.
   Sketch your model.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
<th>Thousandths</th>
</tr>
</thead>
</table>

   Write 1.098 in expanded form.
   **Hint:** Do not include place values that are 0.
   1.098 = 1 whole + __ hundredths + __ thousandths
   or 1 + \[\frac{9}{100} + \frac{8}{1000}\]
   or 1 + 0.__ + 0.___

   Write 1.098 kg in words.
   *one and ______________ thousandths of a kilogram*

b) Lauren bought a 1.401 kg package of trail mix.
   Model 1.401 kg using base ten blocks.
   Sketch your model.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
<th>Thousandths</th>
</tr>
</thead>
</table>
2.6 Decimal Place Value  Page 2

Write 1.401 in expanded form.

\[ 1.401 = \_\text{ whole} + \_\text{ tenths} + \_\text{ thousandth} \]

or \[ \_\_\_ + \_\_\_ + \_\_\_ \]

or \[ \_\_\_ + 0.\_ + 0.\_\_\_ \]

Write 1.401 kg in words.

---

Practising

2. A Canadian penny costs 0.008 cents to make.

a) Model 0.008 on a place value chart.

Hint: Leave the column empty when the place value is 0.

Sketch your model.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
<th>Thousandths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Write the cost in expanded form.

Hint: Only include place values that are not 0.

The expanded form of 0.008 is just \[ \_\_\_ \] or \[ \_\_\_ \] or 0.\_ \_\_.

c) Write the cost in words.

---

3. a) Write 6 + 0.5 + 0.02 + 0.006 in standard form. \_\_\_\_\_\_

b) Write 1 + 0.2 + 0.005 in standard form. \_\_\_\_\_
<table>
<thead>
<tr>
<th>Thousands</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundreds</td>
<td></td>
</tr>
<tr>
<td>Tenths</td>
<td></td>
</tr>
<tr>
<td>Ones</td>
<td></td>
</tr>
<tr>
<td>Tens</td>
<td></td>
</tr>
<tr>
<td>Hundreds</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 2
Lesson 6

Decimal Place Value

GOAL
Read, write, and model decimals.

1. Write each number in standard form.
   a) \(1 + 0.3 + 0.02 + 0.007\)
   b) \(6 + 0.4 + 0.009\)
   c) \(0.5 + 0.03 + 0.005\)

2. Write each number in expanded form using numerals.
   a) 3.573
   b) 0.486
   c) 1.081

3. Write each number in words. The first one is done for you.
   a) 1.522 \text{ one and five hundred twenty-two thousandths}
   b) 4.112
   c) 0.703
   d) 0.008

4. Owen modelled a decimal using base ten blocks on a place value chart. What is Owen’s decimal?

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundreds</td>
<td>Tens</td>
</tr>
<tr>
<td>[Diagram of base ten blocks]</td>
<td>[Diagram of base ten blocks]</td>
</tr>
</tbody>
</table>

At-Home Help
You can use base ten blocks to model decimal values.
- one block, or 1
- one tenth of a block, or 0.1
- one hundredth of a block, or 0.01
- one thousandth of a block, or 0.001

To read a number with a decimal, say “and” for the decimal part. Omit the “and” if there is no whole number part. For example:
- 1.382 is one and three hundred eighty-two thousandths.
- 0.047 is forty-seven thousandths.
2.7 Renaming Decimals  Page 1
Student Book pages 60–63

**GOAL**
Represent decimals and relate them to fractions.

Anne goes to a school with 100 students.
Belle goes to a school with 1000 students.
There are 24 Grade 5 students in Anne’s school.
There are 240 Grade 5 students in Belle’s school.

How can you use decimals to compare the Grade 5 students in the 2 schools?

**Step 1:** Write a fraction for the number of Grade 5 students in Anne’s school. \( \frac{24}{100} \)

**Step 2:** Model the fraction on a hundredths grid.
There are 10 columns in a hundredths grid.
Each column is one tenth or \( \frac{1}{10} \) or 0.1.
There are 100 squares in a hundredths grid.
Each square is one hundredth or \( \frac{1}{100} \) or 0.01.
How many squares are in 1 column? _______
So, one tenth = _______ hundredths.
Colour 24 hundredths on the grid.

**Step 3:** Write the fraction \( \frac{24}{100} \) as a decimal. 0._______

**Step 4:** Write the fraction \( \frac{24}{100} \) in expanded form.
\( \frac{24}{100} \) is the same as 24 hundredths.
24 hundredths is _______ tenths + _______ hundredths.
2.7 Renaming Decimals  Page 2

Step 5: Write a fraction for the number of Grade 5 students in Belle's school. 

Step 6: Model the fraction on a thousandths grid. 
There are 10 columns in a thousandths grid. 
Each column is one tenth or $\frac{1}{10}$ or 0.1. 
There are ______ squares in a thousandths grid. 
Each square is one ______ or $\frac{1}{1000}$ or 0.001. 
How many squares are in a column? ______ 
So, 1 tenth = ______ hundredths. 
There are 1000 rectangles in a thousandths grid. 
Each rectangle is one thousandth or $\frac{1}{1000}$ or 0.001. 
There are 100 rectangles in a column. 
So, 1 tenth = ______ thousandths. 
Colour 240 hundredths on the grid.

Step 7: Write the fraction $\frac{240}{1000}$ as a decimal. 0._______

Step 8: Write the fraction $\frac{240}{1000}$ in expanded form. 
$\frac{240}{1000}$ is the same as 240 thousandths. 
240 thousands is ______ tenths + ______ hundredths + ______ thousandths 
The amount that is coloured on both grids is the same. 
The decimals 0.24 and 0.240 are equivalent decimals.

Reflecting 
How did writing both decimals in expanded form show that they are equivalent?
1. There are 1000 students at Belle's school. 400 students play an instrument.

a) Colour a thousandths grid to show 400 out of 1000 students.

   Hint: Each column is 1 tenth. $1000 \div 10 = \underline{\phantom{00}}$, so each column is \underline{\phantom{00}} thousandths.

b) Write a fraction to represent the coloured part of the grid.

   Write this fraction as a decimal. \underline{\phantom{00000000000000}}

   Each square on the grid is 1 \underline{\phantom{0}}.
   Count the number of squares you coloured.
   Write another fraction to represent the coloured part of the grid. \underline{\phantom{000000}}

   Each column on the grid is 1 \underline{\phantom{0}}.
   Count the number of columns you coloured.
   Write another fraction to represent the coloured part of the grid. \underline{\phantom{00000000}}

   Write this fraction as a decimal. \underline{\phantom{00000000000000}}
2.7 Renaming Decimals

Practising

2. Emanuel coloured part of a thousandths grid.
   a) Write a fraction to represent the coloured part.
   b) Write a decimal thousandth to represent the coloured part.

5. a) 0.29
   Write the decimal in expanded form.
   _______ tenths + _______ hundredths
   1 column is 1 tenth.
   1 square is 1 _______.
   Colour the decimal on the grid.
   Write the decimal as an equivalent decimal thousandth.
   $0.29 = _______

b) 0.68
   Colour the decimal on the grid.
   Write the decimal as an equivalent decimal thousandth.
   $0.68 = _______
Chapter 2
Lesson 7

Renaming Decimals

GOAL
Represent decimals and relate them to fractions.

1. There are 1000 cans of drinks. 350 of the cans hold juice.
   a) Colour the thousandths grid to represent the number of juice cans.

   b) Complete these fractions to show the number of juice cans. \( \frac{250}{100} \) or \( \frac{350}{1000} \)

   c) Write the number of juice cans as a decimal hundredth. \( 0.35 \)

   d) Write the number of juice cans as a decimal thousandth. \( 0.350 \)

2. Write each decimal as a decimal hundredth and as a decimal thousandth.
   a) 0.4 \( 0.40 \) and \( 0.04 \)
   b) 0.1 \( 0.10 \) and \( 0.01 \)
   c) 0.9 \( 0.09 \) and \( 0.009 \)
   d) 0.7 \( 0.07 \) and \( 0.007 \)

3. Write each fraction as a decimal thousandth and as a decimal hundredth.
   a) \( \frac{730}{1000} \) \( 0.73 \) and \( 0.0073 \)
   b) \( \frac{120}{1000} \) \( 0.12 \) and \( 0.0012 \)
   c) \( \frac{80}{1000} \) \( 0.08 \) and \( 0.0008 \)
   d) \( \frac{10}{1000} \) \( 0.01 \) and \( 0.0001 \)

At-Home Help
Equivalent means having the same value. For example:
- 0.4, 0.40, and 0.400 are equivalent decimals.
- \( \frac{3}{10} \) and \( \frac{30}{100} \) are equivalent fractions.
- 0.08 is equivalent to 0.080, or \( \frac{8}{100} \) or \( \frac{80}{1000} \)
Ones and Tenths

You can use a decimal number to show part of a whole.

Each square has 10 equal parts. Each part is 1 tenth of the whole square.

3 whole squares and 6 tenths of another square are shaded.

<table>
<thead>
<tr>
<th>We think of place values.</th>
<th>We say in words.</th>
<th>We write as a decimal number.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tens</td>
<td>Ones</td>
<td>Tenths</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>3 and 6 tenths</td>
</tr>
</tbody>
</table>

Write a decimal number to show how much is shaded.

1. 2.3

Write each decimal number in the place value chart.

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>15.5</td>
<td></td>
</tr>
</tbody>
</table>

Write each decimal number:

8. 8 and 4 tenths
9. 5 and 3 tenths
10. 22 and 7 tenths
11. 30 and 5 tenths
12. 75 and 8 tenths
13. 52 and 1 tenth
14. 16 and 2 tenths
15. 81 and 0 tenths
16. 594 and 6 tenths
17. 284 and 9 tenths
18. 415 and 7 tenths
19. 309 and 4 tenths
Hundredths

There are 100 boxes in the whole square. Each box is 1 hundredth of the whole square.

8 of the 100 boxes are shaded.

We think:

<table>
<thead>
<tr>
<th></th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

We say in words: 8 hundredths

We write as a decimal number: 0.08

Look at the 100 boxes above. Complete.

<table>
<thead>
<tr>
<th>We see:</th>
<th>We think:</th>
<th>We say:</th>
<th>We write:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. 6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Write each decimal number.

4. sixty hundredths
5. sixteen hundredths
6. twenty-four hundredths
7. five hundredths

Write a decimal number to show how much is shaded.

8. 
9. 
10. 
11. 

_________________ ___________________ ___________________ ___________________
Ones, Tenths, and Hundredths

Write the decimal number shown by the picture.

How many ones are shown? 2

How many tenths are shown? 6

How many hundredths are shown? 3

We think:

<table>
<thead>
<tr>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

We say:

2 and 63 hundredths

We write:

2.63

Fill in the place value charts. Write the decimal number for each.

1. 

<table>
<thead>
<tr>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

Decimal Number

1.06

2. 

<table>
<thead>
<tr>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Decimal Number

Write the value of each underlined digit.

3. 5.63

6 tenths

4. 9.29

5. 8.12

6. 4.41

7. 7.85

8. 6.56

9. 3.34

10. 3.77

11. 1.85

12. 9.25

13. 5.91

14. 4.08

15. 2.83

16. 4.59

60 Reteaching For use with MathQuest 5, page 221 MathQuest 5 TRB
2.8 Communicating about Equivalent Decimals  Page 1

Student Book pages 64–65

Checking

1. Emily explained why 0.2 and 0.20 are equivalent.

I can model 0.2 and 0.20 on a place value chart.
They are equivalent.

Use the Communication Checklist to improve Emily’s explanation.

☐ Did Emily use math language?

Underline the math language Emily used in her explanation.

☐ Did Emily include the right amount of detail?

Rewrite Emily’s explanation using more detail.

I can model 0.2 and 0.20 on a place value chart:
0.2 is _____ tenths and 0.20 is _____ hundredths.
I can regroup 20 hundredths as 2 ____.
So, 0.2 and 0.20 are _____ decimals.

☐ Did Emily include a diagram?

Show 0.2 and 0.20 on the place value chart below.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
<th>Thousandths</th>
</tr>
</thead>
</table>
Practising

2. Jeremy and Anna are driving to Peace River with their parents.
   Jeremy says that they have driven 0.3 of the way.
   Anna says that they have driven \( \frac{30}{100} \) of the way.
   Explain why they are both right.
   Represent 0.3 and \( \frac{30}{100} \) on the hundredths grids.

Use your diagrams to help you explain why 0.3 and \( \frac{30}{100} \) are equivalent.

Use the Communication Checklist.

Communication Checklist

- Did you use math language?
- Did you include the right amount of detail?
- Did you include a diagram?
2.8 Communicating about Equivalent Decimals Page 1

GOAL

Explain whether two decimals are equivalent.

Stefan has a chocolate bar.
His brother, Colin, wants him to share it.
Stefan tells Colin that 0.5, 0.50, and 0.500 of the chocolate bar are the same amount.
Colin wants to know why.

How can Stefan explain how he knows that the decimals are equivalent?

This is Stefan’s explanation.
I’ll use models to represent the chocolate bar, and I’ll colour the decimals.

I can model 0.5 on a tenths grid.

I can model 0.50 on a hundredths grid.

I can model 0.500 on a thousandths grid.

The decimals 0.5, 0.50, and 0.500 are equivalent because the same amount is coloured on all 3 grids.
2.8 Communicating about Equivalent Decimals

What did Stefan explain well? Use the Communication Checklist.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Improve Stefan’s explanation.

Explain why Stefan modelled 0.5 on a tenths grid, 0.50 on a hundredths grid, and 0.500 on a thousandths grid.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Explain why Stefan could compare the coloured amounts on the 3 different grids.

**Hint:** How are the grids alike? How are they different?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

**Reflecting**

How did the diagrams help Stefan explain?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
COMMUNICATING ABOUT EQUVALENT DECIMALS

GOAL

Explain whether two decimals are equivalent.

1. Explain how you know that 0.6 is equivalent to 0.60. Use the Communication Checklist.

At-Home Help

Communication Checklist

Yes Did you use math language?
Yes Did you include the right amount of detail?
Yes Did you include a diagram?

2. Brandon lives 100 m away from the school. He says, “I walked 50 m. This means that I walked 0.05 of the distance.” Do you agree with Brandon? Explain why or why not.

3. Jay’s home is 100 m away from the school. He walked 0.6 of the distance. How many metres did he walk? How do you know?

4. Rachel’s home is 1000 m away from the school. She walked 0.8 of the distance. How many metres did she walk? How do you know?
Equivalent Decimals

Different decimals can have the same value. These are called equivalent decimals.

There are 10 boxes in the rectangle. Each box is \( \frac{1}{10} \) tenth of the rectangle. 3 boxes are shaded.

0.3 of the rectangle is shaded.

There are 1000 small squares in the rectangle. Each small square is \( \frac{1}{1000} \) thousandth of the rectangle. 300 small squares are shaded.

0.300 of the rectangle is shaded.

So 3 tenths and 300 thousandths are equivalent. 0.3 = 0.300

Write 2 decimal numbers for each picture.

1. [Diagram of 4 tenths] 4 tenths
   0.4 = 0.40

2. [Diagram of 7 tenths] 7 tenths
   _______ = _______ 700 thousandths

Write an equivalent decimal number.

3. 0.08 0.080
4. 0.1 _______
5. 0.200 _______
6. 0.6 _______
7. 0.06 _______
8. 0.370 _______
9. 0.57 _______
10. 0.400 _______
11. 0.16 _______
12. 0.12 _______
13. 0.010 _______
14. 0.5 _______
2.9 Rounding Decimals  Page 1
Student Book pages 66–68

**Goal**
Interpret rounded decimals, and round decimals to the nearest tenth.

Rachel has a Little League batting average of 0.28.
This means she can expect to get 28 hits in 100 times at bat.

About how many hits would you expect Rachel to get in 10 times at bat?

Rachel modelled 0.28 on a hundredths grid.

```
```

A. Did Rachel colour more or less than 3 full columns? _______
Is the part Rachel coloured closer to 2 full columns or 3 full columns?

_______________

3 columns are _______ tenths.

B. Round Rachel's batting average to the nearest tenth. 0.__
Rachel will probably get about _______ hits in 10 times at bat.
C. Rachel’s batting average is 0.28.
   This means that she can expect to get 28 hits in 100 times at bat.
   How many hits would Rachel need to get a batting average of 0.30? _____
   How many squares would need to be coloured in on a hundredths grid? _____
   0.30 = ______ hundredths

Reflecting

Round 0.71 to the nearest tenth. _______
How many full columns would you colour in on a hundredths grid? _____
How many squares in the next column would be coloured in? _______
What does this tell you about rounding 0.71 to the nearest tenth?
Check your pages 66–68.

2.9 Rounding Decimals  Page 1

Checking

1. The chart on this page shows batting averages for 2 professional baseball players.

   Batting averages are reported in decimal thousandths. A batting average of 0.447 means the player can expect to get 447 hits in 1000 times at bat.

   a) Model J. McDonald's batting average of 0.447 on the thousandths grid provided here.

   b) Round 0.447 to the nearest hundredth.
      0.447 is about _______

   c) J. McDonald will probably get about _______ hits in 100 times at bat.

   d) Round 0.447 to the nearest tenth.
      0.447 is about ________

   e) J. McDonald will probably get about _______ hits in 10 times at bat.

   f) Round R. Clayton's batting average of 0.288 without using a grid.
      Think of 288 as a whole number.
      You can round 288 to 290. You can round 0.288 to 0.___.
      You can round 288 to 300. You can round 0.288 to 0.__.
2. Round each decimal to the nearest hundredth and the nearest tenth.

Circle the nearest hundredth and nearest tenth for each decimal in the chart below.

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Nearest hundredth</th>
<th>Nearest tenth</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 0.158</td>
<td>0.15</td>
<td>0.1</td>
</tr>
<tr>
<td>b) 0.228</td>
<td>0.22</td>
<td>0.2</td>
</tr>
<tr>
<td>c) 1.067</td>
<td>1.06</td>
<td>1.0</td>
</tr>
<tr>
<td>d) 2.039</td>
<td>2.03</td>
<td>2.0</td>
</tr>
</tbody>
</table>

3. Which numbers below round to the same hundredth?

0.234  0.324  0.237  0.229

Look at the digits in the tenths place in each number.

Could 0.324 round to the same hundredth as the other 3 numbers? 
Explain why or why not.

______________________________

Look at 0.234 and 0.237.

Would you round 0.234 to 0.23 or 0.24? 
Would you round 0.237 to 0.23 or 0.24? 
Do these 2 numbers round to the same hundredth? 
Look at 0.229. Would you round 0.229 to 0.22 or 0.23? 
Which of the other numbers rounds to the same hundredth?
<table>
<thead>
<tr>
<th>Thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundredths</td>
</tr>
<tr>
<td>Tenths</td>
</tr>
<tr>
<td>Ones</td>
</tr>
<tr>
<td>Tens</td>
</tr>
<tr>
<td>Hundreds</td>
</tr>
</tbody>
</table>
Rounding Decimals

GOAL:
Interpret rounded decimals, and round decimals to the nearest tenth or the nearest hundredth.

1. Round each decimal to the nearest hundredth. Use the number line to help you.
   a) 0.239 ______
   b) 0.213 ______
   c) 0.224 ______
   d) 0.207 ______

   ![Number Line]

2. Round each decimal to the nearest tenth. Use the number line to help you.
   a) 0.420 ______
   b) 0.570 ______
   c) 0.385 ______
   d) 0.612 ______

   ![Number Line]

3. Taylor surveyed 1000 students at her school. These are her results:
   - 549 students have cats
   - 304 students have dogs
   - 118 students have fish.

   a) Out of 100 students, about how many have cats? about ______ students
   b) Out of 100 students, about how many have dogs? about ______ students
   c) Out of 100 students, about how many have fish? about ______ students

4. Circle the numbers that round to 2.78 if you are rounding to the nearest hundredth.
   2.783  2.787  2.778  2.786  2.773  2.777
Student Activity

From Fractions to Decimals

Jamal made a fraction train. \( \frac{1}{10} \) of the train is grey. One tenth can also be written as 0.1.

Name the shaded part of each fraction train as a decimal.

1. \( \frac{5}{10} \)

2. \( \frac{2}{10} \)

3. \( \frac{9}{10} \)

4. \( \frac{3}{10} \)

5. \( \frac{7}{10} \)

6. \( \frac{4}{10} \)

7. \( \frac{6}{10} \)

8. \( \frac{8}{10} \)

Name the shaded part of each fraction circle as a decimal.

9. \( \frac{2}{10} \)

10. \( \frac{6}{10} \)

11. \( \frac{7}{10} \)

Name each point on the number line as a decimal. The first one is done for you.

12. 0.4

13. 

14. 

15. 

16. 

17. 

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Rounding Decimal Numbers

Jumping Jack made a jump of 3.974 m and a jump of 4.285 m.

Round these lengths to the nearest hundredth.
Look at the thousandths digit when rounding to the nearest hundredth.

3.974: Is the thousandths digit less than 5? yes → Round down.
3.974 rounded to the nearest hundredths is 3.97

4.285: Is the thousandths digit less than 5? no → Round up.
4.285 rounded to the nearest hundredth is 4.29

Circle the thousandths digit. Tell if you would round up or down to the nearest hundredth.

1. 8.98₂; down
2. 4.163
3. 3.466
4. 6.257
5. 2.115
6. 1.388
7. 5.514
8. 4.373

Round these lengths to the nearest hundredth of a metre.

9. 2.284 2.28
10. 1.631
11. 5.966
12. 6.732
13. 9.483
14. 3.148
15. 2.577
16. 7.047
2.10 Comparing and Ordering Decimals

A Grade 5 class organized a cotton-ball toss for Olympics Day at their school. The results are in the chart.

How can you compare the tosses?

You can use benchmarks to compare numbers.
A benchmark is a familiar number, like 0 or 1.
Benchmarks often have a digit that is 1 or 5, and 0s for the other digits.
Some examples are 10, 50, 100, 0.1, 0.5, 0.10, and 0.50.
Compare Erica’s distance with Conor’s distance using a benchmark of 0.50.

Was Erica’s distance less than (<) 0.50 or greater than (>) 0.50? ______________
Was Conor’s distance less than 0.50 or greater than 0.50? ______________
0.77 > 0.45
Whose distance was greater? ______________

Compare Erica’s distance of 0.45 m with Travis’s distance of 0.92 m.
Was Erica’s distance less than (<) 0.50 or greater than (>) 0.50? ______________
Was Travis’s distance less than 0.50 or greater than 0.50? ______________
0.92 _______ 0.45
Whose distance was greater? ______________
2.10 Comparing and Ordering Decimals

You can use place value charts to compare numbers.

**Erica's Distance**

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Conor's Distance**

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Which is greater, 7 tenths or 4 tenths? ______________

0.77 > 0.45

So, __________'s distance is greater than ________'s distance.

Travis tossed the cotton ball ______ m. Conor tossed it ______ m.

Represent these distances on the place value charts below.

**Travis's Distance**

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Conor's Distance**

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
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</thead>
<tbody>
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</tbody>
</table>

Compare the distances. 0.92 ______ 0.77

Whose distance is greater? ______________

**Reflecting**

Which of the 4 students tossed the cotton ball the farthest? ______________

How do you know?

________________________

Learning BLM 2.10: Comparing and Ordering Decimals

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2.10 Comparing and Ordering Decimals

Checking

1. Here are the distances for the penny-flicking event on Olympics Day.

   a) Place each distance on the number line below.

   Travis's distance has been done for you.

   ![Number line with distances]

   Travis 0.99

   Write the distances in order from least to greatest.

   Penny-Flicking

<table>
<thead>
<tr>
<th>Student</th>
<th>Distance (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>1.02</td>
</tr>
<tr>
<td>Erica</td>
<td>1.20</td>
</tr>
<tr>
<td>Travis</td>
<td>0.99</td>
</tr>
<tr>
<td>Conor</td>
<td>1.15</td>
</tr>
</tbody>
</table>

   b) Which student flicked the penny the farthest? ____________

Practising

2. For a craft, Jacqui needed:
   - 1.6 m of string
   - 1.2 m of wool
   - 0.9 m of wire
   - 0.1 m of ribbon

   Place these materials on the number line below.

   ![Number line with materials]

   Order the lengths from least to greatest.
3. The masses of 3 salmon are 0.548 kg, 0.521 kg, and 0.621 kg. Use either a number line or place value charts to compare the masses.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
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</table>

<table>
<thead>
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<th>Tens</th>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
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<th>Tens</th>
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<th>Hundredths</th>
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</thead>
<tbody>
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</tbody>
</table>

Which salmon has the greatest mass? 
Explain your strategy.
Comparing and Ordering Decimals

GOAL

Compare and order decimals up to decimal thousandths.

   a) Which lunch cost the most? ________________
   b) Which lunch cost the least? ________________
   c) Put the lunch costs in order from least cost to greatest cost.

2. Compare each pair of numbers using <, >, or =.
   a) 4.0 □ 0.4     c) 5.3 □ 6.8
   b) 0.20 □ 0.2     d) 0.45 □ 0.29
   e) 6.72 □ 6.027
   f) 1.515 □ 5.105

3. Order each set of numbers from greatest to least.
   a) 5.68, 3.02, 6.33, 8.21, 4.99
   b) 0.831, 3.23, 0.996, 0.5, 1.005
   c) 0.090, 0.281, 0.300, 0.007, 0.111

4. Jolie ran 0.074 km, Tyler ran 0.114 km, and Rachel ran 0.099 km.
   Who ran the shortest distance? Who ran the farthest?

5. Sam, Brandon, Sydney, and Rachel made towers of bricks. They measured the heights of their towers.
   Put the tower heights in order from least to greatest.

<table>
<thead>
<tr>
<th>Student</th>
<th>Height (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachel</td>
<td>0.729</td>
</tr>
<tr>
<td>Sam</td>
<td>1.730</td>
</tr>
<tr>
<td>Brandon</td>
<td>0.972</td>
</tr>
<tr>
<td>Sydney</td>
<td>1.400</td>
</tr>
</tbody>
</table>

At-Home Help

Here are some ways to compare and order decimals:
- Use a place value chart.
- Use a number line.
- Use a thousandths grid.
Comparing Decimal Numbers

Compare 3.87 and 3.89.

To compare the numbers, line up the decimal points.

<table>
<thead>
<tr>
<th>Compare the whole number parts.</th>
<th>Compare the tenths digits.</th>
<th>Compare the hundredths digits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare: 3.87</td>
<td>Compare: 3.87</td>
<td>Compare: 3.87</td>
</tr>
<tr>
<td>Compare: 3.89</td>
<td>Same</td>
<td>3.89 different</td>
</tr>
</tbody>
</table>

3.89 is greater than 3.87

Compare the numbers.

1. 8.81
   8.17

2. 1.83
   1.84

3. 5.52
   5.42

8.81 > 8.17

Write > or <.

4. 8.48 ___ 7.84
5. 2.9 ___ 3.1
6. 6.11 ___ 6.24

7. 4.07 ___ 3.97
8. 9.25 ___ 9.27
9. 3.6 ___ 2.6

10. 5.3 ___ 5.4
11. 7.10 ___ 7.13
12. 8.74 ___ 8.76

Write in order from greatest to least.

13. 3.41, 3.56, 3.52
14. 8.75, 8.83, 8.72
15. 6.31, 6.18, 6.35
16. 4.1, 4.3, 4.2
Chapter 2 - Test Yourself

Circle the correct answer.

1. What number is represented on the place value chart?

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hundreds</td>
<td>Tens</td>
</tr>
<tr>
<td>●●</td>
<td>●●</td>
</tr>
</tbody>
</table>

A. 203 115        C. two hundred five thousand one hundred fifteen
B. 250 150        D. two hundred fifty thousand one hundred fifteen

2. Which number is greatest?

A. 800 000 + 60 000       C. 800 000 + 60 000 + 30
B. 800 000 + 6 000 + 300   D. They all have the same value.

3. Jolie rounded a number to the nearest hundred thousand, ten thousand, and thousand. She got 700 000, 720 000, and 719 000. Which number could Jolie have started with?

A. 719 201        B. 720 201        C. 719 701        D. 720 701

4. What is the standard form of the number 7 + 0.4 + 0.06 + 0.001?

A. 7.4061        B. 7.461        C. 7.4601        D. 74.06001

5. What is the equivalent decimal hundredth and decimal thousandth of 0.8?

A. 0.08 and 0.008       C. 800 and 8 000
B. 0.88 and 0.888        D. 0.80 and 0.800

6. Which pair of numbers round to the same hundredth?

A. 0.680 and 0.699       C. 0.582 and 0.679
B. 0.680 and 0.679        D. 0.699 and 0.582

7. Which comparison is not true?

A. 0.090 < 0.900       B. 1.6 > 2.5       C. 1.92 > 0.92        D. 0.284 > 0.274
Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGES 73-76

Q: How are decimals such as 0.4, 0.40, and 0.400 alike?

A: ____________________________________________________________

How are they different?

________________________________________________________________

________________________________________________________________

________________________________________________________________

Q: How can you compare and order decimals?

A: ____________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________
Chapter 2 Test  Page 1

1. At a Fall Forest Festival, a large container of acorns was used in an estimation contest. The person who guessed closest to the actual number won a prize. The container held 128 247 acorns.

a) Model the number of acorns on a place value chart. Sketch your model.

<table>
<thead>
<tr>
<th>Thousands</th>
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</thead>
<tbody>
<tr>
<td>Hundreds</td>
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</tr>
</tbody>
</table>

b) Write the number of acorns in words.

2. Nicholas wrote three numbers in expanded form. Write these numbers in standard form.

400 000 + 70 000 + 8000 = _________

400 000 + 20 000 + 3000 + 600 + 50 + 2 = _________

400 000 + 70 000 + 800 + 1 = _________

Arrange them in order from least to greatest.

3. a) Arrange these numbers in order from least to greatest.

565 127    565 120    566 112    556 121    556 128

b) List three numbers between 284 531 and 285 396. Each number should have six different digits.

4. Bryne used 816 792 stitches to make a quilt.

a) Write the words for the number of stitches.

b) Round the number in a) to the nearest

- hundred thousand
- ten thousand
- thousand
Chapter 2 Test  Page 2

5. Write each number in standard form.
   a) 
   b) $1 + 0.8 + 0.02 + 0.006$

6. Write each number in words.
   a) 0.370
   b) 0.004
   c) 2.185
   d) 0.406

7. A pizza delivery business reported that, for every 1000 pizzas ordered, 390 are plain cheese.
   a) Colour a thousandths grid to represent the portion of pizzas that are plain cheese.
   b) Write a fraction with a denominator of 1000 for the coloured part.

   Write a fraction with a denominator of 100 for the coloured part.
   c) Write a decimal thousandth for the coloured part.

   Write a decimal hundredth for the coloured part.

8. Olivia said that 20 of the 100 pages in her book have pictures. Karla said that is the same as saying 0.020 of the pages have pictures. Is Karla correct? Explain.
Chapter 2 Test  Page 3

9. Round each decimal to the nearest hundredth and to the nearest tenth.
   a) 0.429
   b) 1.074
   c) 0.523
   d) 6.458

10. In a survey, 1000 people were asked to identify their favourite colour.
    
    a) Write a decimal thousandth to represent each colour.
        blue ____
        red ____
        green ____
        purple ____
        pink ____
    
    b) Round each decimal to the nearest hundredth.
        
        ________, ________, ________, ________, ________
        
        5
    
    c) In a group of 100 people, about how many might say red is their favourite colour?
        about ____ people out of 100

11. Arrange each set of numbers in order from least to greatest.
    a) 4.032, 0.261, 0.008, 1.329
        
        ____________, ____________, ____________, ____________, 
        
        8
    
    b) 0.092, 0.099, 0.909, 0.209
        
        ____________, ____________, ____________, ____________, 
        
        27